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CYCLOPÆDIA:

OR, AN

UNIVERSAL DICTIONARY

OF

ARTS AND SCIENCES;

CONTAINING

AN EXPLICATION OF THE TERMS, AND AN ACCOUNT OF
THE THINGS SIGNIFIED THEREBY,

IN THE

SEVERAL ARTS, BOTH LIBERAL AND MECHANICAL;

AND THE

SEVERAL SCIENCES, HUMAN AND DIVINE:

The Figures, Kinds, Properties, Productions, Preparations, and Uſes of Things
NATURAL AND ARTIFICIAL:

The Riſe, Progreſs, and State of Things
ECCLESIASTICAL, CIVIL, MILITARY, AND COMMERCIAL:

With the ſeveral Syſtems, Sects, Opinions, &c. among

PHILOSOPHERS,
DIVINES,
MATHEMATICIANS,
PHYSICIANS,
ANTIQUARIES,
CRITICS, &c.

The whole intended as a Courſe of antient and modern Learning.

Extracted from the beſt Authors, Dictionaries, Journals, Memoirs, Tranſactions,
Ephemerides, &c. in ſeveral Languages.

By E. CHAMBERS, F.R.S.

Floriferis ut apes in ſaltibus omnia libant,
Omnia nos ———————— LUCRET.

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ARTS AND SCIENCES.

L, *El*, a ſemi-vowel, or liquid; making the eleventh letter of the alphabet. See LETTER, and ALPHABET.

The *l* has a ſweet ſound, and is pronounced by applying the tongue to the palate.

Paſſerat obſerves, that *l* was frequently uſed among the antients for *b*; as in *cillibæ* for *cibillæ*: for *d*; as, *alipe* for *adipe*: for *c*; as, *mutila* for *mutica*: for *n*; as, *arvilla* for *arvina*, *belle* for *bene*, *colligo* for *conligo*: for *r*; as *fratellus* of *frater*, *balatrones* for *baratrones*: for *ſ*; as *ancile*, of *am* and *cæſum*, *equilio* for *equiſio*: for *t*; as *equiſelis* for *equiſetis*, *Thelis* for *Thetis*. See B, T, &c.

The double *ll* is a modern contrivance, and was never uſed among antient Roman authors: they wrote *alium* not *allium*, *macelum* not *macellum*, *polucere* not *pollucere*.

The double *l* of the Greeks was ſometimes changed by the Romans into *li*, as in ἁλλομαι, *ſalio*; αλλος, *alius*; φυλλον, *folium*: *r* has alſo been turned into two *ll*; as *hira*, *hilla*; *ſarare*, *ſatullare*, &c. and *l* into *x* or *xill*; as, *ala*, *axilla*; *mala*, *maxilla*; *velum*, *vexillum*; *d* was alſo uſed for *l*; *n* for two *ll*, and *r* for one *l*. See R, &c.

L is alſo frequently uſed inſtead of *d*, as in *Ulyſſes*, from the Greek οδυσσευς, in the Æolic dialect υδυσσης. Thus alſo for *dautia*, we ſay *lautia*; for *dacrumæ*, *lacrymæ*, &c. See D.

There are ſeveral people, for inſtance, the Chineſe in Aſia, the Ilinois in America, &c. who cannot pronounce the *r*, but always change it into *l*. Thus, when any of them have been baptized by the name of *Petrus*, *Franciſcus*, &c. they always pronounce it *Petlus*, *Flanciſcus*, &c. See R.

The Spaniards and Welſh uſually double the *l* at the beginning of a word, which ſounds nearly the ſame with our *hl* or *fl*.

The figure of our *l* we borrowed from the Latins, they from the Greeks, and they again from the Hebrews, whoſe *lamed* is much like our *l*, excepting that the angle is ſomewhat more acute.

L was alſo a numeral letter among the antients, and is ſtill ſo in the Roman ciphering, ſignifying *fifty*; according to the verſe,

> *Quinquies* L *denos numero deſignat habendos.*

When a daſh was added at top $\overline{\text{L}}$, it ſtood for *fifty thouſand*. *L* was uſed for fifty, as being half a C, which ſignified a hundred, and was formerly written thus Ⅽ, which, according to Paſquier, makes two LL, the one upright, the other inverted.

The French louis d'ors have a croſs on them, conſiſting of eight L's interwoven, and diſpoſed in form of a croſs. See LOUIS.

The epocha's on Greek medals are uſually written with the antient *lamda*, L; which, according to the tradition of the antiquaries, ſtands for Λυκοβαντος, a poetical word, unknown in common ſpeech, ſignifying *anno*, and which, it is probable, was more uſed in Egypt than Greece.

LABARUM, the banner, or ſtandard born before the Roman emperors in the wars. See ENSIGN, and STANDARD.

The *labarum* conſiſted of a long lance, with a ſtaff atop, croſſing it at right angles; from which hung a rich ſtreamer, of a purple colour, adorned with precious ſtones.

Till the time of Conſtantine it had an eagle painted on it, but that emperor, in lieu thereof, added a croſs with a cipher expreſſing the name of Jeſus.

Conſtantine choſe fifty of the braveſt men in his guards to bear it on their ſhoulders, each in his turn. — Euſebius tells us, that in the battle againſt Maxentius, the perſon who bore it being fatigued, gave it to another, and that he had no ſooner parted with it, but he was killed; all the ſtrokes he received while the *labarum* was in his charge, not being able to wound him.—The author adds, he had this miracle from the emperor's mouth.

This ſtandard the Romans took from the Germans, Dacæ, Sarmatæ, Pannonians, &c. whom they had overcome.

The name *labarum* * was not known before the time of Conſtantine; but the ſtandard itſelf, in the form we have deſcribed it, abating the ſymbols of Chriſtianity, was uſed by all the preceding emperors. See EAGLE.

* Some derive the word from *labor*, as if this finiſhed their labours; ſome from ευλαβεια, reverence, piety; others from λαμβανειν, to take; and others from λαφυρα, ſpoils.

The *labarum* has afforded ample matter for criticiſm, and has been diſcourſed of by Fuller, Alciatus, Cujas, Gyraldus, Lipſius, Meurſius, Voſſius, Hoffman, Valois, Du Cange, &c.

LABEL, a long, thin braſs ruler, with a ſmall ſight at one end, and a centre hole at the other; commonly uſed with a tangent line on the edge of a circumferentor, to take altitudes, &c. See CIRCUMFERENTOR.

LABEL, in law, is a narrow ſlip of paper, or parchment, affixed to a deed or writing, in order to hold the appending ſeal.—Any paper annexed by way of addition, or explication, to any will or teſtament, is alſo called a *label*, or codicil. See CODICIL.

LABEL, in heraldry, a kind of addition to the arms of a younger brother, eſpecially a ſecond, to diſtinguiſh him from the firſt or eldeſt. See DIFFERENCE.

The *label* is eſteemed the moſt honourable of all differences; and is formed by a fillet uſually placed in the middle, and along the chief of the coat, without touching its extremities. Its breadth ought to be a ninth part of the chief.

It is adorned with pendants ſomewhat like the drops under the trigliphs in the Doric freeze. — When there are above three pendants, the number muſt be ſpecified in blazoning.—There are ſometimes ſix.

LABIA, in anatomy. See the article LIPS.

Depreſſor LABIORUM. } See the article { DEPRESSOR.
Elevator LABIORUM. } { ELEVATOR.

LABIAL, a term in the French law, uſed in the ſame ſenſe with *oral*. See ORAL.

LABIAL *Letters*, among grammarians, are thoſe whoſe pronunciation is chiefly effected by the motion of the lips. See LETTER.

By which they ſtand contradiſtinguiſhed from *palatal*, *dental*, *guttural*, &c. letters. See PALATAL, GUTTURAL, &c.

LABIAL *Offers*, are ſuch as are only made by word of mouth, or even by writing, where there is no valuable conſideration: In courts of equity theſe are not regarded.

LABIATE *Flowers*, from the word *labium*, a lip, is a term applied by herbaliſts to ſuch flowers as have one or two lips, ſome of which repreſent a kind of helmet or monk's hood. See FLOWER.

LABORATORY, or ELABORATORY, the chymiſts workhouſe; or the place where they perform their operations; where their furnaces are built, their veſſels kept, *&c.*

In general, the term *laboratory* is applied to any place, where phyſical experiments, and operations in pharmacy, chymiſtry, pyrotechnia, *&c.* are performed.

LABORATORY of an hoſpital, is a place where the chymical, &c. remedies are made up.

LABORATORY, in a camp, is the tent where the fireworkers and bombardeers prepare their works, drive their fuſees, fix their ſhells, and carcaſſes, make quick match, &c.

LABYRINTH, ΛΑΒΥΡΙΝΘΟΣ, among the antients, was a large intricate edifice cut out into various iſles, and meanders, running into each other, ſo as to render it difficult to get out of it.

There is mention made of four celebrated *labyrinths* among the antients, ranked by Pliny in the number of the wonders of the world; *viz.* the *Cretan*, *Egyptian*, *Lemnian*, and *Italian*.

That of Crete is the moſt famed; it was built by Dædalus; and it was hence that Theſeus made his eſcape by means of Ariadne's clue.

That of Egypt, according to Pliny, was the oldeſt of all, and was ſubſiſting in his time, after having ſtood 3600 years. He ſays it was built by king Peteſucus, or Tithoës, but Herodotus makes it the work of ſeveral kings: It ſtood on the banks of the lake Myris, and conſiſted of twelve palaces, and 1500 apartments: Mela ſays, *ter mille domos.*

That of Lemnos was ſupported by columns of wonderful beauty, there were ſome remains of it at the time when Pliny wrote.—That of Italy, was built by Porſenna king of Hetruria, for his tomb.

LABYRINTH, in anatomy, denotes the ſecond cavity of the internal ear, which is formed or excavated out of the os petroſum; and is thus called, as having ſeveral windings in it. See EAR.

This cavity is divided into three parts; the firſt called the *veſtibulum* of the *labyrinth*, becauſe it leads into the other two. The ſecond comprehends three canals bent ſemicircularly, and thence called *ſemicircular canals*, placed on one ſide of the veſtibulum, towards the back of the head. The third called the *cochlea*, is ſituate on the other ſide. See COCHLEA, VESTIBULUM, *&c.*

Dr. Vieuſſens obſerves, that the bone out of which the *labyrinth* is dug, is white, hard, and very compact; that the ethereal matter of ſounds laden with impreſſions ſtriking againſt its ſide, may loſe little or nothing of its motion, but communicate it entire to the nerves of the ear. See HEARING, SOUND, *&c.*

LAC *Lunæ.* See the article MINERAL AGARIC.

LACCA, or LAKE, a ſort of gum, or rather wax, hard, red, brittle, clear and tranſparent, brought from Malabar, Bengal, and Pegu, and uſed in dying ſcarlet, painting, *&c.*

Authors differ as to the production of this curious drug. F. Tachard, who was on the ſpot, tells us, that a kind of little ants fixing themſelves on the branches of ſeveral trees, leave behind them a reddiſh moiſture, which lying expoſed to the air and ſun, hardens in five or ſix days time, and becomes *lacca.*—Some imagine this is not the production of the ants, but a juice which they draw out of the tree, by making little inciſions in it; and in effect, the trees where the *lacca* is found, do yield a gum; but then it is of a very different nature from the *lacca.*

The ants act here in quality of bees, and the *lacca* is their honey. They work at it eight months in the year, and the reſt of the time lie by, becauſe of the rains.

Lemery having examined the gum *lacca* chymically, judges it to be a mean mixture between a gum and a reſin, more abundant in ſalt than oil. See GUM, *&c.*

To prepare the *lacca* for uſe, they firſt ſeparate it from the branches to which it adheres, pound it in a mortar, and throw it into boiling water; and when the water is well dyed, they pour on freſh, till ſuch time as it will tinge no more. Part of the water thus tinged is evaporated in the ſun; after which the thickened tincture is ſtrained through a linnen cloth.

M. Geoffroy, examining the gum *lacca*, found it to be a kind of comb, ſuch as the bees, and ſome other inſects, are accuſtomed to make. Upon breaking it into pieces, it appears divided into a great number of alveoli, or little cells of an uniform figure, and which plainly ſhew that it never ouzed from trees. Theſe cells are not mere excrements, as ſome imagine, but are intended for ſomething to be depoſited in them. And accordingly are found to contain little bodies, which the firſt obſervers took for the wings or other parts of the inſects that produced the *lacca.*—Theſe little bodies are of a beautiful red colour; and when broke, make a powder as fine as cochineel. It is moſt probable, theſe cells are deſtined to lodge the young brood, as thoſe of the bees, and that theſe little carcaſſes are the embryo's of inſects, or perhaps their skins.

There are ſeveral ſorts of *lacca*; that mentioned in the laſt paragraph is the natural; when it is prepared, as in the former, thoſe kinds of dry cells are not ſeen. — M. Geoffroy reckons ſix or ſeven different kinds; beſides which, there are ſeveral paſtes uſed by the painters, that go by this name, or that of *laque.* This gum boiled in water with acids, makes a beautiful red dye. See RED, COLOUR, and DYING.

Artificial LACCA, or LAQUE, is alſo a name given to a coloured ſubſtance, drawn from ſeveral flowers; as the yellow from the flower of the juniper, the red from the poppy, and and the blue from the iris or violet.

The tinctures of theſe flowers are expreſſed by diſtilling them ſeveral times in aqua vitæ, or by boiling them over a ſtovefire in a lixivium of pot-aſhes and alum.

Artificial lacca is alſo made of Brazile wood boiled in a lixivium of the branches of the vine, adding a little cochineel, terramerita, calcined alum, and arſenic incorporated with the bones of the cuttle-fiſh pulverized, made up into little cakes, and dried.

If it be to be very red, they add the juice of citron to it; to make it brown, they add oil of tartar.

Dove-coloured or columbine *lacca*, is made with brazile of Fernambuc ſteeped in diſtilled vinegar for the ſpace of a month, mixed with alum incorporated in cuttle-fiſh bone.

LACERNA, a thick coarſe ſort of military garment worn by the antients.

The *lacerna* was a kind of cloke of woollen, only uſed by the men; who wore it over the toga, and when that was not on, over the tunica.—It was at firſt very ſhort, but growing popular in the Roman army, was ſoon lengthened.

The *lacerna* was ſcarce known in Rome till the time of the civil wars and the triumvirate; then indeed it came into faſhion, for the ſoldiers being then frequently in the city, or at the city-gates, the ſight became familiar to the citizens, and they fell into the uſe of it; inſomuch that it became the common dreſs of the knights and ſenators, till the time of Valentinian and Theodoſius, when the ſenators were prohibited the wearing of it in the city.

The *lacerna* appears to have been much the ſame with the *chlamys* and *birrus.* See CHLAMYS, *&c.*

Martial mentions *lacernæ* of ten thouſand ſeſterces price.

LACHRYMAL, or LACRYMAL *Gland*, in anatomy, a ſmall oblong gland ſituate above the eye, near the little canthus, whence proceed two or three ſmall ducts, which opening on the inward ſurface of the eye-lid, filtrate a ſeroſity ſerving to moiſten the ball of the eye, and facilitate its motion. See EYE.

Near the larger angle is alſo a little eminence, in form of a caruncle, which ſome have taken for another *glandula lachrymalis*, but by miſtake; this being no more than the duplicature of the inner membrane of the eye-lids. See CARUNCULA.

On the ſame ſide, near the leſſer angle, are two little perforations, called *puncta lachrymalia.* See LACHRYMALIA *Puncta.*

On the ſame ſide is alſo a ſmall bone, one of thoſe of the upper jaw, ſometimes called *os lachrymale*, but more uſually *os unguis.* See UNGUIS.

Fiſtula LACHRYMALIS, is a fiſtula in the larger angle of the eye. See FISTULA.

It uſually happens after an abſceſs formed in the ſacculus lachrymalis, by means of the ſeroſity lodged there; which being retained too long, becomes acrimonious, and occaſions an ulcer, which frequently degenerates into a fiſtula.

Sacculus LACHRYMALIS. See SACCULUS, and LACHRYMALIA.

LACHRYMALIA, or LACRYMALIA *Puncta*, in anatomy, two little apertures in the great angle of each eye, into which an aqueo-ſaline pellucid humour, ſecreted from the blood by the glandula lachrymalis, is conveyed, and thence carried off by the lachrymal canals into a little bag called *ſacculus lachrymalis*, in the canal of the noſe; whence, by a pipe, always open, it is carried into the cavity of the noſe immediately under the lower os ſpongioſum. See DUCTUS, and SACCULUS.

Hence appears the reaſon why people, in crying, run at the noſe.

This humour, ſeparated by the glandula lachrymalis, ſerves to moiſten and lubricate the ball of the eye, and prevent any hurtful attrition: when it is ſecreted in any great quantity, ſo as to overflow the eye-lids, it is called *tears.* See TEARS.

LACHRYMATORIES, or LACRYMATORIES, were antiently ſmall glaſs or earthen veſſels, wherein the tears of the weeping friends that ſurvived were repoſited, and buried with the aſhes and urns of the dead. See ASHES, FUNERAL, *&c.*

Some of theſe are ſtill ſeen in the cabinets of the curious.

LAC *Lunæ*, or *Milk of the Moon.* See the article MILK.

LACONIC *Style.* } See the article { STYLE.
LACONICA *Scytala.* } See the article { SCYTALA.

LACONISM, ΛΑΚΩΝΙΣΜΟΣ, a ſhort, pithy, ſententious ſpeech, in the manner of the Lacedæmonians, who were remarkable for the cloſeneſs and conciſeneſs of their way of delivering themſelves.

LACRYMAL. See the article LACHRYMAL.

LACTATION, the act of giving ſuck.

The word is alſo applied to the time during which the mother doth that office to her young. See ABLACTATION.

LACTEALS, or LACTEAL *Veins*, a kind of long ſlender tubes, for the conveyance of the chyle from the inteſtines to the common reſervatory. See CHYLE.

They appear to have been known to Hippocrates, Eraſiſtratus, and Galen; but were firſt duly deſcribed and publiſhed by Aſellius, an Italian phyſician in 1622, and called *lacteal*, from the liquor they contain, which reſembles milk. Vid. *Dougl. Bibl. Anat.* p. 236. Ed. 1734. Their coats are ſo thin as to be inviſible, except when diſtended with chyle, or lympha. — They ariſe from all the parts of the ſmall guts, and as they run from the ſides of the guts to the glands in the meſentery, unite and form larger branches, called *venæ lacteæ primi generis*. — The mouths of theſe *lacteals*, which are open into the cavity of the guts, from whence they receive the chyle, are ſo ſmall, as not to be ſeen by the beſt microſcope. It was neceſſary they ſhould be ſmaller than the fineſt arteries in the body, that nothing might enter to ſtop the circulation of the blood.

The ſame extremity of the *lacteals* has likewiſe communication with the capillary arteries of the guts, by which they receive a lympha that dilutes, and propels the chyle forwards, and waſhes the *lacteals* and glands, that they might not fur, and be obſtructed by the chyle's ſtaying in them upon faſting.

The other extremity of the *lacteals* diſcharges the chyle into the veſicular cells of the glands diſperſed up and down the meſentery: And from thoſe ariſe other *lacteals*, of a larger ſize, which carry the chyle immediately into the receptaculum chyli, and theſe are called *lacteæ ſecundi generis*.

The *lacteal veins* have valves at proper diſtances, which hinder the chyle from returning back into the inteſtines. See VALVE.

It is ſtill doubted, whether or no the inteſtina craſſa have any *lacteals* or not? The impoſſibility of human diſſection proper for ſuch an enquiry, gives no room either to affirm or deny. But the contents of the thick inteſtines ſeem not likely to afford much chyle, and therefore if there be any *lacteals*, it is probable they are very few.

In brutes, if diſſected at a reaſonable time after feeding, as two or three hours, the *lacteals* appear very tumid and white; and if wounded, the chyle flows plentifully from them. But if inſpected when the ſtomach of the animal has lain ſome time empty, they appear like lymphatics, viſible indeed, but filled with a tranſparent liquor.

That the *lacteals* have a communication with the cavities of the inteſtines, is demonſtrated by their contents, the chyle; but how their pores are diſpoſed to receive it, has not yet been diſcovered; nor is there any way known whereby to fill the *lacteals* from the cavities of the guts after death. It is probable then, their entrance into the gut is oblique, ſince neither wind nor liquors can paſs from thence. As it is found theſe pores can only receive any thing in their living ſtate, we may be allowed to imagine, that it is the periſtaltic motion of the guts which diſpoſes them in that ſtate to receive the chyle. And this may be done by means of the circular and longitudinal fibres of the inteſtines ſtill applying the internal coats of the guts to their contents, by which means its pores abſorb the chyle from the excrementitious part.

LACTARY *Column*. See the article COLUMN.

LACTEA *Via*, the milky way. See the article GALAXY.

LACTIFERI *Tubuli*. See the article TUBULI.

LACUNÆ, among anatomiſts, certain excretory canals in the genital parts of women. — See *Tab. Anat. (Splanch) fig.* 11. *litt. H.*

Between the fleſhy fibres of the ureters, and the membrane of the vagina, is found a whitiſh glandulous body, about a finger thick, running round the neck of the bladder, having a great number of excretory ducts, which de Graef calls *lacunæ*, and which terminate in the lower part of the orifice of the womb; conveying thither a ſlimy matter, that mixes with the ſeed of the male. See GENERATION, CONCEPTION, SEED, &c.

LACUNAR, in architecture, an arched roof, or cieling; more eſpecially the planking, or flooring over portico's, or piazza's. See ARCH, VAULT, ROOF, CEILING, &c.

LADANUM, or LABDANUM, in pharmacy, a gummous, or a reſinous matter, ouzing out of the leaves of a ſhrub called *ciſtus ladanifera*, which is very common in the hot countries of the Levant, and whereof there are various kinds.

Dioſcorides ſays, they gather the *ladanum* by means of goats, which brouzing on the leaves of this ſhrub, return to the ſtable with their beards loaded with a fat ſubſtance, which the peaſants rake off, with a kind of combs made for that purpoſe. This matter they thus collect into lumps, and, as it is mixed with the goats hair, and other impurities, call it *ladanum in the beard*, or *natural ladanum*. — Others are ſaid to draw cords over the leaves, and other parts of the ſhrub; and ſcraping off what had ſtuck to the cords, make up the *ladanum* into little balls.

Tournefort aſſures us, that the common way of gathering the *ladanum* is, by bruſhing it off the leaves with a ſort of whip, compoſed of many laſhes, or ſtraps: after it is ſcraped off the ſtraps, they make it into cakes of different ſizes.

Ladanum is uſed in phyſic, to ſoften, digeſt, deterge, attenuate, and reſolve. That which is brittle, of an aſh colour, ſweet ſcented, &c. is the beſt.

Pietro della Valle tells us, he was informed by the Indians, that *ladanum* is formed like dew, and falls from heaven like manna; that it is gathered on the leaves of a plant a palm and a half high; that, after gathering, they boil it, by which means it becomes ſoft, like wax. See DEW, and MANNA.

Liquid LADANUM, more properly called *clear*, or *purified ladanum*, is a preparation of the natural *ladanum*, by melting and purifying it from the hairs, &c.

This is ſometimes ſold for a ſort of black amber.

LADING. See the article BILL *of Lading*.

LADY *of the Thiſtle.* } See { THISTLE.
Preſentation of our LADY. } See { PRESENTATION.

LAGAN*, or LAGON, in our antient ſea laws, ſhipwrecked goods, left by the ſea, lying on the ſand, either aſhore, or out at ſea. See WRECK.

* The word ſeems formed from the Saxon leᵹan, or luᵹan, *jacere*, to lie. — Though others deduce it from the Latin *ligare*, to bind; and ſuppoſe it to denote goods tied together with a buoy, or the like, to hinder their ſinking to the bottom, that they may be found again.

Lagan, is uſually joined with *jetſon*, and *flotſon*. See JETSON, and FLOTSON.

LAGOPHTHALMIA*, ΛΑΓΟΦΘΑΛΜΙΑ, a diſeaſe of the eye-lids, when the upper lid is ſo contracted, that the eye cannot be quite ſhut, but remains open even in the time of ſleep. See PALPEBRÆ.

* The word comes from the Greek λαγως, hare, and οφθαλμος, eye: this being the property of the eyes of hares.

LAICA *Vi removenda*. See the article VI.

LAID *under Metal*. See the article METAL.

LAIR, or LAYER, in gardening. See the article LAYER.

LAIR, LAYR, or LAYER, among ſportſmen, denotes a place where deer harbour by day. See HARBOUR.

LAIR, or LAYR *of a Deer*, is the impreſſion which the beaſt has made on the graſs, and ground, where he has lain down, or repoſed. See HUNTING.

LAIR, among huſbandmen, alſo denotes a place, where cattle uſually reſt, under ſome ſhelter; the ground being enriched by their dung.

LAKE, a collection of ſtanding water, incloſed in the cavity of ſome inland place, of a conſiderable extent, and depth.

According to ſome authors, thoſe only are properly called *lakes*, which receive and emit rivers. See RIVER.

Lakes, however, may be divided into four kinds; 1°. Such as neither emit nor receive rivers. 2°. Such as emit rivers, without receiving any. 3°. Such as receive, without emitting any. 4°. Such as both receive, and emit rivers.

Of the firſt kind, ſome are perennial, others temporary: the temporary owe their origin, moſt of them, to rain, and to the cavity, or depreſſion of the place where they are lodged. See RAIN.

In the Indies they make artificial *lakes*, which they wall about, to catch the rain in wet ſeaſons, and preſerve it for their uſe in the dry ones. — There are ſeveral of this kind of *lakes*, formed by the inundations of the ſea and rivers, particularly the Nile, and Niger; which, when they retire within their banks, leave floods of water, which the inhabitants take care to incloſe, to ſerve as a magazine for the enſuing months.

The generation of perennial *lakes* may be alſo referred to rain, where the cavity is ſo deep as to receive a quantity in winter, more than the heat of the ſun will exhale in ſummer; though it is probable many of theſe *lakes* have their ſprings at bottom, by which they are continually ſupplied. — To this claſs may be referred the turloughs, i. e. *terreus lacus*, or land-*lakes*, in Ireland, which are *lakes* one part of the year, and the reſt ſmooth fields: At the bottom of theſe turloughs are found holes, through which the water ſprings in winter, and ſinks towards ſummer.

The ſecond ſpecies of *lakes*, which emit, without receiving rivers, is very numerous; they owe their origin to ſprings, the cavities where the ſpring is found not being able to contain all the waters it yields. See SPRING.

The third kind, *viz.* thoſe which receive rivers without emitting any, apparently owe their origin to thoſe rivers which in their progreſs from their ſource falling into ſome ample cavity, are collected together, and form a *lake* of ſuch dimenſions, as may loſe as much by exhalation as it continually receives from its ſprings; or to a river's flowing on a ſoft ſpongy ſoil, which imbibes the water, and tranſmits it to the neighbouring grounds. — The number of theſe is but ſmall.

Of the fourth ſpecies, which both receive and emit rivers, we reckon three kinds; as the quantity of water they emit is greater, equal, or leſs than that they receive. If the quantity they emit be greater, it is plain they muſt have a ſpring at the bottom; if leſs, there muſt be ſome ſubterraneous ducts, or canals, or elſe the earth muſt be ſpongy; if it be equal, we gather, that they have neither any hidden ſprings, nor canals. — Of theſe *lakes* we have a great number, and thoſe very conſiderable ones.

The generality of *lakes* conſiſt of freſh waters, as moſt of thoſe which are ſupplied either from ſome ſpring, far from the ſea, or a river, or from the rain: ſome few of ſalt water, as thoſe produced by the inundation of the ſea, or by its immiſſion through ſome duct of the earth, or that have ſalt ſprings at bottom. See UNDER-CURRENT.

Dr. Halley is of opinion, that all great perennial *lakes* are ſaline, either in a greater or leſs degree; and that this ſaltneſs increaſes with time; and on this foundation, propoſes a method for determining the age of the world. See AGE, and SALTNESS.

The large *lakes*, wherewith the northern regions abound, ſerve for very good purpoſes, inaſmuch as the warm vapours ariſing from them, ſerve for a defenſative againſt the pinching cold of thoſe climates. — To this it is owing, that Ireland, Scotland, &c. are leſs affected with froſts than much warmer countries. See COLD, FROST, VAPOUR, &c.

LAKE, among painters, &c. See the article LACCA.

LAMA, or LAMAS, the title of an order of prieſts among the weſtern Tartars, on the frontiers of China; who are held in great veneration.

They have a grand *lama*, who is their high-prieſt, and who is the ſecond perſon in the kingdom, being the next in authority to the king. He receives homage, and adoration, not only from the people, but from the neighbouring kings; none of whom are ever inthroned, without ſending ambaſſadors to him to obtain his benediction.

The *lama's* are extremely ſuperſtitious, and are remarkably given to magic.

LAMB. See the article PASCAL *Lamb*.

LAMBATIVES, or rather LAMBITIVES, a form of medicine to be licked off the end of a liquorice-ſtick.

Lambatives amount to the ſame with *linctus's*, *lohocks*, and *eclegma's*. See LINCTUS, ECLEGMA, &c.

LAMBDOIDES, ΛΑΜΒΔΟΕΙΔΗΣ, in anatomy, an epithet applied to the third proper ſuture of the cranium, in regard it reſembles the form of a Greek λ, *lambda*. See SUTURE.

For the ſame reaſon it is ſometimes called *ypſiloides*, as bearing ſome reſemblance to a Greek Υ, *ypſilon*. See YPSILOIDES.

LAMELLÆ *, little, thin plates, or laminæ, whereof the ſcales, and ſhells of fiſhes, &c. are compoſed.

* The word is a derivative of *lamina*; and ſignifies as much as *little laminæ*. See LAMINA.

LAMIÆ, ΛΑΜΙΑΙ, among the antients, a kind of dæmons, or evil ſpirits, who, under the form of beautiful women, are ſaid to have devoured children. See DÆMON.

Horace makes mention of them in his *Art of Poetry*. — Some authors call them *laniæ*, *à laniando*. — Philoſtratus ſays, they are alſo called *larvæ*, or *lemures*, as if they were all the ſame thing. — Bochart will have the word to be Phœnician, and derives it from לחם to devour; alledging, the fable of the *lamiæ* came from Libya. See LEMURES.

LAMINÆ, in phyſiology, thin plates, or tables, whereof any thing conſiſts; particularly the human skull, which are two, the one laid over the other. See CRANIUM, and BONE.

LAMMAS-DAY, the firſt of Auguſt; ſo called, as ſome will have it, becauſe lambs then grow out of ſeaſon, as being too big. Others derive it from a Saxon word, ſignifying *loaf-maſs*, becauſe on that day our fore-fathers made an offering of bread made with new wheat.

On this day, the tenants who formerly held lands of the cathedral church in York, were bound by their tenure to bring a lamb alive into the church at high-maſs.

LAMP, ΛΑΜΠΑΣ, a ſort of luminary, conſiſting of oil diſpoſed with a wick in a proper veſſel for burning.

The uſe of lighted *lamps* in churches, and places of devotion, is very antient. — In the city of Fez is a moſque, wherein are nine hundred brazen *lamps* burning every night. — In Turkey, all the illuminations are made with *lamps*. — Polydore Vergil aſcribes the firſt invention of *lamps* to the Egyptians; and Herodotus deſcribes a feaſt of *lamps* held annually in Egypt.

Kircher ſhews the manner of preparing *lamps*, which ſhall diffuſe a light ſo diſpoſed, as to make the faces of thoſe preſent appear black, blue, red, or of any other colour.

There has been a great diſpute among the learned, about the ſepulchral *lamps* of the antients: ſome maintain, they had the ſecret of making *lamps* that were inextinguiſhable, alledging ſeveral that had been found burning, at the opening of tombs, fifteen or ſixteen hundred years old. But others treat theſe relations as fables; and others think that the *lamps* which before were extinguiſhed, took light afreſh upon the admiſſion of freſh air.

Dr. Plott, however, is of opinion, ſuch perpetual *lamps* are things practicable, and has himſelf made ſome propoſals of this kind. The linum asbeſtinum, he thinks, may do pretty well for the wick, and that naphta, or liquid bitumen, conſtantly ſpringing into ſome of the coal mines, will anſwer for the oil. See ASBESTOS, and NAPHTA.

If the asbeſtos will not make a perpetual wick, he thinks there is no matter in the world that will; and argues, that the tradition of ſuch *lamps* muſt be fabulous, or that they made them without wicks.

Such a *lamp* he thinks it poſſible to make of the bitumen ſpringing into the coal mines at Pitchford in Shropſhire; which, he ſays, like other liquid bitumens, will burn without a wick.

Thoſe *lamps* that kindle on the immiſſion of freſh air, the ſame author thinks might be imitated by incloſing ſome of the liquid phoſphorus in the recipient of an air-pump; which, under thoſe circumſtances, will not ſhine at all; but on letting in the air into the recipient, there will poſſibly, ſays he, appear as good a perpetual *lamp*, as ſome that have been found in the ſepulchres of the antients. See PHOSPHORUS.

Cardan's LAMP, is a contrivance of the author of that name, which furniſhes itſelf with its own oil.

It conſiſts of a little column of braſs, tin, or the like, well cloſed every where, excepting a ſmall aperture at bottom, in the middle of a little gullet, or canal, where the wick is placed.

Here the oil cannot get out, but in proportion as it ſpends, and ſo opens the paſſage of that little aperture.

This kind of *lamp* was in much uſe ſome years ago; but it has ſeveral inconveniences; as that the air gets into it by ſtarts and gluts; and that when the air in the cavity comes to be much rarefied by heat, it drives out too much oil, ſo as ſometimes to extinguiſh the *lamp*.

Dr. Hook, and Mr. Boyle, have invented other *lamps*, that have all the conveniences of Cardan's, without the inconveniences. — See ſome improvements in the doctrine of *lamps*, under MIRROR.

LAMP *Black*.	See the article	BLACK.
Cul de LAMP.		CUL.
Enamelling by LAMP.		ENAMELLING.
Fire of a LAMP.		FIRE.

LAMPADARY, LAMPADARIUS, an officer in the antient church of Conſtantinople; whoſe buſineſs was to ſee the church well lighted, and to bear a taper before the emperor, the empreſs, and the patriarch, when they went to church, or in proceſſion. See TAPER.

The taper born by the *lampadary* before the emperor, was incompaſſed with diverſe circles of gold, in manner of crowns; thoſe held before the empreſs, and patriarch, had but one. — It ſeems they were of emblematical uſe, and were intended to keep thoſe great perſons in mind, that their light was to illumine thoſe underneath them.

There were alſo *lampadaries* in the emperor's palaces; and others in the houſes of the grandees: at firſt, the privilege of having a *lampadary*, or torch-bearer, was only granted to the great officers of the crown, and the chief magiſtrates; but afterwards the emperor allowed it to other inferior officers, as queſtors, treaſurers, &c.

Together with the taper, they bore before the magiſtrates the emperor's image, &c. And it is very probable, it was on account of this image, that they were firſt permitted to have a *lampadary*.

LAMPAS, a kind of fiery meteor, reſembling a burning lamp, hence alſo denominated *fax ardens*. See METEOR.

LAMPAS, or LAMPERS, a kind of ſwelling in the palate of a horſe; ſo called, becauſe it is cured by burning with a lamp, or an hot iron.

The *lampas* is an inflammation, or tumor, in the roof of a horſe's mouth, behind the nippers of the upper jaw. — It ariſes from abundance of blood reſorting to the firſt furrow of the mouth, near the fore teeth, which cauſes that furrow to ſwell as high as his gatherers: It hinders the beaſt's feeding, and makes him let his meat fall, half chewed, out of his mouth again.

The *lampas* is a natural infirmity, which every horſe has, firſt or laſt, and every ſmith can cure.

LAMPETIANS, LAMPETIANI, a ſect of antient heretics, who fell in with ſome of the opinions of the Aerians. See AERIAN.

Their founder, Lampetius, is ſaid to have been one of the chiefs of the Marcionites. They condemned all kind of vows, particularly that of obedience, as inconſiſtent with the liberty of the ſons of God.

LAMPROPHORUS, an appellation antiently given to the Neophytes, during the ſeven days that ſucceeded their baptiſm. In the ceremony of baptiſm, the new Chriſtian was clothed with a white robe, which he wore for the week following; and was thence called *lamprophorus*, which ſignifies a *perſon wearing a ſhining garment*; from λαμπρος, ſhining, and φερω, I carry.

The Greeks alſo gave this name to the day of the reſurrection, in regard their houſes were adorned and illuminated on that day with an infinite number of torches, as a ſymbol of the light which that myſtery diffuſed in the world.

LANÆ *Petra*. See the article PETRA.

LANCE, LANCEA, a ſpear; an offenſive weapon, bore by the antient cavaliers, in form of a half pike.

The *lance* conſiſted of three parts, the ſhaft, or handle, the wings, and the dart. — Pliny attributes the invention of *lances* to the Ætolians. Varro, and Aulus Gellius ſay, the word *lance* is Spaniſh; whence others conclude the uſe of this weapon was borrowed by the people of Italy from the Spaniards. — Diodorus Siculus derives it from the Gauliſh, and Feſtus from the Greek, λογχη, which ſignifies the ſame.

LANCETI, a name given by the antient laws of England to a kind of vaſſals, who were obliged to work for the lord one day in a week, from Michaelmas to Autumn, either with fork, ſpade, or flail, at the option of the lord.

LANCETTE, a fine, ſmall, chirurgeon's knife; ſtreight-pointed, and two edged; uſed in opening veins, &c. See PHLEBOTOMY.

LAND, in a general ſenſe. See the articles SOIL, EARTH, &c.

Fardel of LAND.	See	FARDEL.
Oxgang of LAND.		OXGANG.
Plow-LAND.		PLOW-*land*.
Yard-LAND.		YARD-*land*.
Yoak of LAND.		YOAK *of land*.
Arable LAND.		ARABLE.
Champion LANDS.		CHAMPION.
Up-LAND.		UP-*land*.
Wood-LANDS.		WOOD-*lands*.
Catch-LAND.		CATCH-*land*.
Charter-LAND.		CHARTER-*land*.
Court-LANDS.		COURT-*lands*.
Fabric-LANDS.		FABRIC-*lands*.
Folk-LAND.		FOLK-*land*.
Forelet-LAND.		FORELET.
Glebe-LAND.		GLEBE-*land*.
Tenementary-LANDS.		TENEMENTARY.
Thane-LANDS.		THANE-*lands*.
Fore-LAND.		FORE-*land*.
Head-LAND.		HEAD-*land*.
In-LAND.		IN-*land*.
Lay the LAND.		LAY.
Burning of LAND.		BURNING.
Holding LAND *in Peerage*.		PEERAGE.
LAND *Army*.		ARMY.
LAND *Roads*.		ROAD.
LAND *Teleſcope*.		TELESCOPE.

LANDAN, in phyſiology. See the article SAGO.

LAND-CHEAP, an antient cuſtomary fine, paid either in cattle, or money, upon the alienating or ſelling of *land* in certain manors, or within the liberty of certain boroughs.

At Malden in Eſſex, a payment is ſtill made of 13*d.* in every mark of the purchaſe-money, for lands and houſes ſold in that town; which is called *land-cheap*.

LAND-FALL, is a ſea term, ſignifying to fall in with the land.

Good **LAND-FALL**, is when a ſhip makes, or ſees the *land* as ſhe expected, according to her reckoning. — The contrary is called a *bad land-fall*.

LAND-GABLE, an antient term for a tax, or rent iſſuing out of *land*; anſwering to what we now call *ground-rent*.

LAND-LOCKED, a ſhip is ſaid to ride *land-locked*, when ſhe is ſurrounded with land; that is, is at anchor in a place where there is no point open to the ſea, ſo that ſhe is ſafe from the violence of winds, and tides.

LANDSKIP, or LANDSCHAPE, the view, or proſpect of a country, extended as far as the eye will carry.

LANDSKIPS, in painting, are pieces repreſenting ſome champaign, or rural ſubject, as hills, vales, rivers, country houſes, where human figures are only introduced as accidents, or circumſtances.

Landſkip painting is eſteemed one of the loweſt branches of painting. See PAINTING.

LANGREL SHOT, is a ſort of ſhot ſometimes uſed at ſea, made of two bars of iron, with a joint, or ſhackle, in the middle; by which means it can be ſhortned, and ſo put the better into the gun; and at each end there is a half bullet, either of lead, or iron.

This ſhot, when diſcharged, flies out at length, and ſo does more execution among the enemies rigging, &c.

LANGUAGE, a ſet of words which any people have agreed upon, whereby to communicate their thoughts to each other. See WORD.

The firſt principles of all *languages*, F. Buffier obſerves, may be reduced to expreſſions, ſignifying, firſt, The ſubject ſpoke of. Secondly, The thing affirmed of it. Thirdly, The circumſtances of the one and the other. But as each *language* has its particular ways of denoting each of theſe, a *language* is only to be looked on as an aſſemblage of expreſſions, which chance or caprice has eſtabliſhed among a certain people; juſt as we look on the mode of dreſſing, &c. — It is uſage and cuſtom is the rule of a *language*; and theſe hold their empire independant of reaſon, or any other cauſe: nor has reaſon any thing to do in *language*, unleſs to ſtudy or teach it, ſuch as it is: Here then commences grammar; a juſt plan of which, ſuppoſes a *language* already introduced by uſe; and without pretending to alter or amend a tittle, only furniſhes reflections, called *rules*, to which the manners of ſpeaking uſed in that *language* may be reduced; which aſſemblage of reflections, is what we call the *grammar of that language*. — This remark may obviate an abuſe introduced among grammarians, who are ever crying out, 'Uſage is, in this point, oppoſite to 'grammar; or the *language* here frees itſelf from the rules of 'grammar, &c. See GRAMMAR.

It is chance then to which we owe uſage, and uſage that makes the rules and meaſures of a *language*. Uſage, indeed, is ſomewhat dubious, and may be divided into *good* and *bad*: If it be asked, Wherein the difference between theſe lies? it is in this; that the one is better eſtabliſhed, or authorized, than the other: and if it be asked, Wherein that difference of authority conſiſts? it is anſwered, That in dead *languages*, that which makes the good uſage is the writings of the beſt authors in that *language*: and if it be further queſtioned, Which are the beſt? thoſe are allowed ſuch, who wrote when that ſtate was in its greateſt glory. Thus the age of Auguſtus, being the moſt diſtinguiſhed by great men, who then flouriſhed, we call that *good Latin* which is conformable to the manners of ſpeaking uſed by authors who wrote fifty years before, and fifty after the reign of that emperor. — As to living *languages*, the good uſage, or mode, is that which obtains among the moſt eminent perſons, whether as to quality, and authority, or as to learning, and the reputation of writing well.

With this view, M. Vaugelas defines uſage of a *language*, the manner of ſpeaking uſed by the ſoundeſt or beſt part of the court, conformably to the manner of writing among the beſt part of the authors of the time. — But this definition, how judicious ſoever, may occaſion infinite doubt; for which is to be deemed the beſt part of the court, and of the writers? Each party, doubtleſs, thinks itſelf the beſt. — F. Buffier, therefore, very juſtly, inſtead of the beſt part, ſubſtitutes the greateſt part, which brings the matter nearer to a certainty; the moſt numerous part being ſomething fixed, and palpable, whereas the moſt ſound part may be inſenſible, or arbitrary.

There is found a conſtant reſemblance between the genius or natural complexion of each people, and the *language* they ſpeak.—Thus the Greeks, a polite, but voluptuous nation, had a *language* perfectly ſuitable, full of delicacy and ſweetneſs.—The Romans, who ſeemed only born to command, had a *language* noble, nervous, and auguſt; and their deſcendants, the Italians, are ſunk into ſoftneſs, and effeminacy, which is as viſible in their *language*, as their manners.—The *language* of the Spaniards is full of that gravity, and haughtineſs of air, which make the diſtinguiſhing character of that people.—The French, who have a world of vivacity, have a *language* that runs extremely brisk and lively. — And the Engliſh, who are naturally blunt, thoughtful, and of few words, have a *language* exceedingly ſhort, conciſe, and ſententious.

The diverſity of **LANGUAGES** is generally allowed to have taken its riſe from the confuſion of Babel, both by Jews, Chriſtians, and Mahometans: but the manner in which this diverſity was effected, is ſtill in diſpute among the learned.—The queſtion is, Whether God only expunged the remembrance of the ſignification of terms in thoſe who built the tower? or, Whether he immediately inſpired them with new words? Scaliger holds, that they only forgot the meaning of the words, and named one thing inſtead of another; though all indifferently ſpoke the Hebrew tongue. — Nor does Caſaubon allow, that they immediately ſpoke different *languages*: the confuſion of tongues, he thinks, might be very well effected, without introducing a multiplicity of *languages*. See Ziegra *de confuſione Linguarum Babylonica ad Geneſ. XI.*

As to the point of antiquity, and priority among *languages*, that too has been extremely controverted. — Herodotus tells us, that in the diſpute between the Egyptians and Phrygians, about the antiquity of their *languages*, Pſammetichus, king of Egypt, ordered two children to be brought up, with expreſs prohibition not to have one word pronounced before them, but to leave nature to ſpeak of herſelf; and the firſt word they ſpoke happened to be *beccos*, which, in the Phrygian *language*, ſignifies *bread*. The Egyptians, however, were not convinced with this proof.—The Arabs diſpute the point of antiquity with the Hebrews: but the Jews, jealous, even to exceſs, of the honour of their nation, poſitively inſiſt on it, that the Hebrew tongue, ſuch as it is found in the holy ſcriptures, is the primitive *language*, and that ſpoken by the firſt man.

Others maintain, that the *language* ſpoken by Adam is loſt, and that the Hebrew, Chaldee, and Arabic, are only dialects of that original tongue. So far are they from giving the priority to the Hebrew, that they maintain Abraham ſpoke Chaldee before he paſſed the Euphrates; and that he firſt learned the Hebrew in the land of Canaan: ſo that this was not a ſpecial *language* conſecrated to the people of God, but was originally the *language* of the Canaanites.

M. le Clerc is of opinion, the Hebrew is far inferior to the Greek, both in copiouſneſs, elegancy, and perſpicuity; it is dry and deſtitute of ornaments, inſomuch, that wanting expreſſions to vary the phraſe, the ſame periods are perpetually returning.—The Rabbins ſay, it is ſo pure and chaſte, that it has no proper names for the parts of generation, nor for thoſe by which the excrements are diſcharged. See HEBREW.

The Arabic is held the moſt copious of all *languages*; being ſaid to have 300 different words to expreſs a lion, and no leſs than 1200 for a ſword.

LANGUAGES are divided into—*original*, or *mother tongues*; as the Hebrew, and Arabic, in the Eaſt, the Teutonic, and Sclavonic in the Weſt. See SCLAVONIC, and TEUTONIC.

Secundary, or *derivative* **LANGUAGES**, which are thoſe formed out of a mixture of ſeveral others, as Latin, French, &c.

Kircher will have the Cophtic a mother tongue, independant of all others. See COPHTIC.

Du Jon maintains the Gothic a primitive *language*, and the mother of all the Teutonic tongues; that is, of all thoſe ſpoke in the North. See RUNIC.

Some add the Baſque, or Biſcayan, and Bas Briton, to the number of mother tongues, imagining them to have been thoſe of the antient Celtæ, or Gauls.

Learned, or *dead* **LANGUAGES**, are thoſe which only ſubſiſt in books, and which muſt be learned by the rules of grammar; as the Greek, Hebrew, Syriac, and Chaldee. See the articles HEBREW, GREEK, &c.

Raimond Lully ſolicited the eſtabliſhment of the ſtudy of the learned *languages* a long time, in the thirteenth and fourteenth Centuries. At length, in the year 1312, pope Clement, and the council of Vienne, appointed, that in the court of Rome, and in the univerſities of Paris, Oxford, Bologna, and Salamanca, there ſhould be inſtituted profeſſors of each, who ſhould have ſalaries from the reſpective courts.—The monks, however, vigorouſly oppoſed the ſpreading of theſe ſtudies; and with ſo much ſucceſs, that Eraſmus tells us, in his time *Græce noſſe ſuſpectum, Hebraice prope hæreticum.*

Living **LANGUAGES**, are thoſe ſtill ſpoke in ſome country, or other; and which may be learned by converſation.—The moſt popular among theſe are the French, Italian, Spaniſh, and Engliſh: which ſee under their reſpective names, ENGLISH, FRENCH, ITALIAN, &c.

The Spaniards ſeem to place the nobleneſs, and gravity of their language, in the number of ſyllables, and the ſwelling of words; and ſpeak leſs to be underſtood, than to be admired. Their terms are big, and ſonorous, their expreſſions haughty, and boiſterous, and pomp and oſtentation run through all they ſay: their *language* cannot paint a thought to the life; it always magnifies it, frequently diſtorts it; and does nothing, if it do not exceed nature.

The Italian tongue does not ſwell up things to that degree, but it adorns, and embelliſhes them more; yet theſe ornaments, and embelliſhments, are not real beauties.—The Italian expreſſions, thus rich and brilliant, are like thoſe faces covered with patch and paint, which make a fine ſhow; but the finery is all deceit. See ITALIAN.

The French *language* (as ſome of their authors expreſs themſelves) is ſimple, without lowneſs; bold, without indecency; elegant, and florid, without affectation; harmonious, without ſwelling; majeſtic, without pride; delicate, without ſoftneſs; and ſtrong, without roughneſs.—Though, as to the points of ſtrength, and majeſty, the French muſt give way to the Engliſh; which, in theſe, as well as in copiouſneſs, exceeds moſt of the living *languages*; as far as it comes behind ſome of them in ſmoothneſs, and delicacy.

Of all the modern *languages*, the French is allowed to be the moſt clear and fit for philoſophical and critical ſubjects; the chaſteſt and moſt reſerved in its diction; the moſt judicious and ſevere in its ornaments.—Of all others, the Engliſh is ſaid to be the moſt honeſt, open, and undeſigning; it will not bear double meanings, nor can it palliate, or hide nonſenſe: bad ſenſe, and good Engliſh, being things inconſiſtent. With all its ſublimity, it is gay and pleaſant on occaſion; but its gaiety is ſtill moderated, and reſtrained by good ſenſe; it hates exceſſive ornaments; and, for the greater ſimplicity, would almoſt chuſe, as ſome ſay of the French, to go naked: it never dreſſes more than decorum and neceſſity requires.

The Spaniſh reſembles thoſe rivers whoſe waters are always ſwelling, and always muddy, and turbulent; that never keep long within their channel, but are ever overflowing, and their overflowings ever noiſy, and precipitate.—The Italian is like thoſe pleaſing rivulets that purl agreeably among the ſtones, and glide in meanders through meadows full of flowers.—The French reſembles one of thoſe beautiful ſtreams that always run briskly; but, at the ſame time, ſmoothly, and equally; without much noiſe, or much depth.—The Engliſh, like the Nile, preſerves a majeſty even in its abundance; its waters roll rapidly, notwithſtanding their depth; it never roars, but when its banks are too narrow; nor overflows, without enriching the ſoil.

The Latin is the common mother of the three former; but the daughters have very different genius's, and inclinations.—The Spaniſh, a haughty dame, that piques herſelf on her quality, and loves exceſs, and extravagancy in every thing. The Italian, a coquette, full of fine airs; always appearing dreſs'd, and taking all occaſions of ſhewing her finery: to be admired being all ſhe aims at. The French, an eaſy prude, that has her ſhare of modeſty, and diſcretion; but, on occaſion, can lay them both aſide.—The Engliſh is of a more maſculine temperament: it is not only of a different family from the others, but appears of a different ſex too: its virtues are thoſe of a man: indeed, it is the product of a colder climate, and a rougher people; and its features may be ſomewhat coarſer than thoſe of its neighbours, but its faculties are more extenſive, its conduct more ingenuous, and its views more noble. See ENGLISH, &c.

Ennius, and Cecrops, are celebrated for their knowledge of many *languages*. Mithridates, king of Pontus, underſtood twenty two tongues, which was the number of different people over whom he commanded; and thoſe *languages* he knew ſo well, that he was able to harangue each of his people in their own tongue. It was a ſaying of Charles the fifth, 'That ſo many *languages* as a man underſtands, 'ſo many times he is man.' Sultan Soliman's interpreter ſpoke perfectly well ſeventeen different *languages*. But among the moderns, none have been more remarkable in this way, than Poſtellus; who, beſides a perfect knowledge of all the dead *languages*, was ſo well acquainted with the living, that it is ſaid he could have made the tour of the globe, without the uſe of an interpreter.

Bibliander has written of the analogy, and proportion of *languages* and letters, *De ratione communi linguarum*, in 1518. Geſner, of the difference of *languages*, in 1572. Lazius publiſhed an *Introduction to the learning of the politer languages, in a common method*, in 1548. Megiſſier, a ſcheme of forty different *languages*, and different dialects, ſpecimens of each whereof he gives in the Lord's-prayer, in 1593. De Recoles, in his *addition to the world of Daviti*, has publiſhed the Pater-noſter in all the *languages* ſpoken among Chriſtians; and Mr. Chamberlayne has lately propoſed to do the ſame in 100 *languages*, a ſpecimen of which has been already publiſhed. Albericus Gentilis wrote of the mixture of *languages*, in 1603. And father Reinier's diſcourſe on etymologies, is a work of the ſame kind. In 1613, Duret publiſhed a treaſure of the hiſtory of all the *languages* in the univerſe: Guichart has a treatiſe of the etymological harmony of *languages*, publiſhed in 1619. Brerewood has given us curious enquiries into the diverſities of *languages*, and religions, publiſhed in 1635.

LANGUAGE, is alſo uſed in the order of Malta, for *nation*.

The knights of Malta are divided into eight *languages*; three whereof are for France, *viz.* the *language* of Provence, of Auvergne, and of France; two for Spain, thoſe of Caſtile, and Arragon; the other three are the *languages* of Italy, England, and Germany.

Each of theſe *languages* has its chiefs, who preſides in aſſemblies of the *language* to which he belongs. See MALTA.

Frank **LANGUAGE.** } See the article { FRANK.
Helleniſtic **LANGUAGE.** } See the article { HELLENISTIC.

LANGUED, LANGUE', in heraldry, is applied to ſuch animals whoſe tongues appear out of their mouths; being of a colour different from that of the body of the animal.

LANGUOR ſignifies a *faintneſs*, or relaxation of the members ariſing either from a want, or decay of ſpirits, through indigeſtion, or too much exerciſe; or from an additional weight of fluids, cauſed by a diminution of the excretion by the common diſcharges. See LASSITUDE.

LANIGEROUS, any thing that bears wool. See WOOL.—Hence,

LANIGEROUS, or **LANUGINOUS** *Trees*, among herbaliſts, are thoſe trees that bear a woolly, downy ſubſtance; as, the black, white, and trembling poplars, oſiers, and willows of all ſorts. See LANUGO, and TREE.

LANTERN *, or **LANTHORN**, a cover for a luminary, made of ſome tranſparent matter; ſerving to tranſmit the light, and, at the ſame time, to ſkreen it from the wind, and weather. See LIGHT, &c.

* The word is derived from the French *lanterne*, and that from the Latin *laterna*, of *lateo*, I am hidden; *eo quod lucem habeat interius clauſam*, in regard the light is hidden within, ſay Iſidore, and Lambin. But according to Pezron, *laterna* comes from the Celtic *latern*; and according to Salmaſius, *lantern* comes from *lato*, of *fero*, in regard it bears a lamp, or a light.

Epictetus's *lantern* is ſaid to have been ſold for 3000 drachms. That of Diogenes was held in great veneration among the antients; and that of Judas is ſtill preſerved in the treaſury of S. Denys, as a very curious piece of antiquity.

Lanterns are made of glaſs, horn, paper, &c. formerly, they were made of the horn of a wild bull, called *urus*; which when cut into thin laminæ, Pliny tells us, was very tranſparent.

Dark LANTERN, is a *lantern* with only one opening, or light, which, too, may be cloſed up, when the light is to be entirely hid; and may be preſented to the perſon one would ſee, without being perceived one's ſelf.

The antients had their dark *lanterns*, but they differed from ours; they were covered with four ſkins, one on each ſide, or light, three whereof were black, and only the fourth tranſparent. — Caſaubon, who gives us the deſcription, took it from a manuſcript of Julius Frontinus.

Theſe were principally uſed in their armies, when they were to march privately off from their enemies in the night-time.

Feaſt of LANTERNS, in China, is a celebrated feaſt held on the fifteenth day of the firſt month; ſo called from the infinite number of *lanterns* hung out of the houſes, and ſtreets; which, it is ſaid, is not leſs than two hundred millions: inſomuch, that it rather appears a fit of madneſs, than of feaſting. On this day are expoſed *lanterns* of all prices, whereof ſome are ſaid to coſt 2000 crowns. — Some of their grandees retrench ſomewhat every day, out of their table, out of their dreſs, equipage, *&c.* to appear the more magnificent in *lanterns.* They are adorned with gilding, ſculpture, painting, japanning, *&c.* and as to their ſize, it is extravagant; ſome are from 25 to 30 foot diameter: they repreſent halls, and chambers, and two or three ſuch machines together would make handſome houſes; ſo that in China they are able to eat, lodge, receive viſits, have balls, and act plays in a *lantern.*

To illumine them, they ſhould have bonfires; but as that would be inconvenient, they content themſelves with lighting up in them an infinite number of torches, or lamps; which, at a diſtance, have a beautiful effect.—In theſe they exhibit various kinds of ſhews to divert the people.

Beſides theſe enormous *lanterns*, there is a multitude of other ſmaller: theſe uſually conſiſt of ſix faces or lights, each about four feet high, and one and a half broad, framed in wood finely gilt and adorned; over theſe they ſtretch a fine tranſparent ſilk, curiouſly painted with flowers, trees, and ſometimes human figures: the painting is very extraordinary, and the colours extremely bright; and when the torches are lighted, they appear highly beautiful, and ſurprizing.

LANTERN, in architecture, a kind of little dome raiſed over a large one, or over the roof of a building, to give light, and to ſerve for an acroter to finiſh the building. See CUPOLA.

LANTERN is alſo uſed for a ſquare cage of timber, with glaſs in it, placed over the ridge of a corridor, or a gallery between two rows of ſhops, to illumine them; as that in the Royal-Exchange, London.

Magic LANTERN, in optics, the name of a machine, which in the dark repreſents various images, and ſpectres on a wall, or other white ſurface, ſo odd and ſurprizing, that thoſe who are not in the ſecret, think them the effect of magic. See MAGIC.

LANUGINOUS. See the article LANIGEROUS.

LANUGO, in botany, *down*; that ſoft, hairy, or woolly covering, which grows on the leaves, ſtalks, or fruit of divers plants. See LANIGEROUS.

Such is that found on the leaves of the roſe campion, and on the fruit of the peach-tree.

LAPIDARY, LAPIDARIUS, an artificer who cuts precious ſtones. See GEM, and PRECIOUS *Stone.*

The art of cutting precious ſtones is very antient; but, like other arts, its original was very imperfect: the French have ſucceeded in it the beſt; and the *lapidaries* of Paris, who have been a corporation ſince the year 1290, have carried it, eſpecially cutting of diamonds called *brilliants*, to its laſt perfection.

There are various machines uſed in the cutting of precious ſtones, according to the quality of the matter to be cut: the diamond, which is extremely hard, is cut and formed on a wheel of ſoft ſteel, turned by a kind of mill, with diamond duſt tempered in oil of olives; and this ſerves to poliſh them, as well as to cut them. See DIAMOND.

Oriental rubies, ſapphires, and topazes, are cut and formed on a copper wheel, with oil of olives, and diamond duſt: they are poliſhed on another copper wheel, with tripoly and water. See RUBY, *&c.*

Emeralds, hyacinths, amethyſts, garnets, agats, and other ſtones leſs hard, are cut on a leaden wheel, with ſmalt and water, and poliſhed on a tin wheel with tripoly. See EMERALD, *&c.*

Turquois, of the old and new rock, lapis, giraſol, and opal, are cut and poliſhed on a wooden wheel with tripoly. See TURQUOIS, *&c.*

LAPIDARY is alſo uſed for a virtuoſo ſkilled in the nature, kinds, *&c.* of precious ſtones; or a merchant who deals in them.

In which ſenſe, the preſent great mogul is ſaid to be one of the greateſt *lapidaries* in the world.

LAPIDARY *Style*, denotes the ſtyle proper for inſcriptions. See STYLE, and INSCRIPTION.

This is a kind of medium between proſe and verſe; the jejune and the brilliant are here equally to be avoided. Cicero has preſcribed the rules of it; *Accedat oportet oratio varia, vehemens, plena ſpiritus. Omnium ſententiarum gravitate, omnium verborum ponderibus eſt utendum.*

The *lapidary ſtyle*, which was loſt with the antient monuments, has been retrieved, at the beginning of this age, by count Emanuel Teſoro: It is now uſed various ways at the beginning of books; and even epiſtles dedicatory are compoſed in it, whereof we have no example among the antients.

LAPIDESCENT, any thing which has the faculty of petrifying, or turning bodies to a ſtony nature. See STONE.

Naturaliſts ſpeak of a *lapideſcent* principle, a *lapideſcent* ſpirit, *lapideſcent* juice, *&c.*

LAPIDESCENT *Waters* or *Springs*, are ſuch as having ſtony particles diſſolved, and ſwimming in them, do depoſite the ſame on wood, leaves, and other bodies immerged therein; which being incruſted herewith, are commonly conſidered as petrifactions. See SPRING, and PETRIFACTION.

LAPIDIFICATION, in chemiſtry, an operation whereby any ſubſtance is converted into ſtone. See PETRIFACTION.

This is done by diſſolving a metal, for inſtance, in a corroſive ſpirit or menſtruum, and afterwards baking that diſſolution into the conſiſtence of a ſtone.

Lapidification is practiſed in metals, fixed ſalts, and ſalts of plants.

The term is alſo uſed for the making of artificial ſtones.

LAPIS, in the general ſenſe. See the article STONE.

LAPIS *Asbeſtos.* ⎫   ⎧ ASBESTOS.
LAPIS *Calaminaris.* ⎬ See the article ⎨ CALAMINE.
LAPIS *Dentalis.* ⎭   ⎩ DENTALIS.

LAPIS *Infernalis*, a cauſtic ſtone prepared various ways; ſometimes of ſtrong ſoap-lees evaporated to a drineſs, and the remainder kept in a glaſs well ſtopped from the air.

Sometimes it is made of calcined vitriol, tartar, and ſal armoniac, and boiled in quick-lime water to a ſtrong lixivium; then ſtrained and evaporated till dry. See CAUSTIC.

LAPIS *Judaicus.* See the article JUDAICUS.

LAPIS *Lazuli.* See the article LAZULI.

LAPIS *Medicamentoſus*, or the medicinal ſtone; is a compoſition of roch alum, litharge, colcothar of vitriol, Armenian bole, and vinegar; boiled to the conſiſtence of a hard ſtone. — It is uſed to faſten the teeth, preſerve the gums, heal and dry up ulcers and wounds, and is uſed in injections, and in compoſitions uſed for ſore eyes.

LAPIS *Specularis.* See the article SPECULARIS.

LAPSARII. See INFRALAPSARII, SUBLAPSARII, and SUPRALAPSARII.

LAPSE, a ſlip, or omiſſion of a patron to preſent a clerk to a benefice within ſix months of its being void; in which caſe the benefice is ſaid to be in *lapſe*, or *lapſed*, and the right of preſentation devolved to the ordinary. See PRESENTATION.

LAQUEARIUS*, a kind of athleta among the antients, who in one hand held a *laqueus*, i. e. a ſort of ſnare, wherewith to embaraſs and intangle his antagoniſt, and in the other a poinard to ſtab him. See ATHLETA.

* The word comes from the Latin *laqueus*, a ſnare, or nooze.

LAQUEUS, in ſurgery, a *nooze* or *ſnare*; or a kind of ligature ſo contrived, that when ſtretched by any weight, or the like, it draws up cloſe.

Its uſe is to extend broken or disjointed bones, to keep them in their places, when they are ſet, and to bind the parts cloſe together.

LAR-BOARD, the left-hand ſide of a ſhip when you ſtand with your face toward the head. See STARBOARD.

LARCENY*, in law, is a theft of perſonal goods, or chattels, in the owner's abſence. See THEFT.

* The word comes from the French *larcin*, and that from the Latin *latrocinium*, theft.

In reſpect of the things ſtolen, *larceny* is either *great*, or *ſmall*,

Great LARCENY, is when the things ſtolen, though ſeverally, exceed the value of 12 *d.*

Petty LARCENY, is when the goods ſtolen, exceed not the value of 12 *d.*

Civilians define *larceny*, a fraudulent ſubtraction of another man's property, with deſign to appropriate it without the owner's leave.

When it is done by force, it is called a *robbery*. See ROBBERY.

By the Roman law, the penalty of *ſimple* and *ſecret larceny* was the returning it twofold; and of *manifeſt larceny*, fourfold: *manifeſt larceny*, was where the criminal was taken in the fact; *ſimple*, where he was not. The Lacedæmonians never puniſhed *larceny*, provided the perſon was not caught in the fact; but, on the contrary, it was applauded as a mark of dexterity and addreſs. — The Circaſſians are ſaid to honour it at this day; inſomuch that at their public feaſts their youth are not ſuffered to drink, if they have not performed ſomething remarkable in that way.—Solinus tells us, that in Sardinia there was a fountain that had the virtue of diſcovering a perſon that had committed *larceny*.

LARENTINALIA, in antiquity, a feaſt held among the Romans on the 23d day of September; by ſome ſuppoſed to have been in honour of the Lares, but by others, with more probability, in honour of Acca Laurentia; and to have been the ſame with *laurentalia*. See LAURENTALIA.

LARES, among the antients, a kind of domeſtic genii, or divinities, worſhipped in houſes, and eſteemed the guardians and protectors of families; ſuppoſed to reſide more immediately in the chimney-corner. See GOD.

Plutarch diſtinguiſhes good and evil *lares*, as he had before done good and evil genii. See GENIUS.

There were alſo ſome public, others private *lares*.

Apuleius tells us, the domeſtic *lares* were no more than the ſouls of departed perſons, who had lived well, and diſcharged the duties of their ſtation; whereas thoſe who had done otherwiſe, were vagabonds, wandering about and frightening people, called *larvæ* and *lemures*. See LEMURES.

The *lares* were alſo called *penates*, and were worſhipped under the figures of little marmouſets, or images of wax, ſilver, or earthen ware. See PENATES.

The public *lares* were alſo called *compitales*, from *compitum*, a croſs-way; and *viales*, from *via*, a way, or public road; as being placed at the meetings of roads, and in the high-ways, and eſteemed the patrons and protectors of travellers. See VIALES.

Their private *lares* took care of particular houſes and families: theſe they alſo called *præſtites*, from præſto;

Quod præſtant oculis omnia tuta ſuis. Ovid. Faſt.

They gave the name *urbani*, i. e. *lares* of cities, to thoſe who had cities under their care; and *hoſtilii*, to thoſe who were to keep their enemies off.—There were alſo *lares* of the country, called *rurales*, as appears by ſeveral antique inſcriptions.

The *lares* were alſo genial gods, and were ſuppoſed to take care of children from their birth. It is for this reaſon, that when Macrobius tells us the Egyptians had four gods who preſided over the births of children, *viz.* the *genius*, *fortune*, *love*, and *neceſſity*, called *præſtites*; ſome interpret him as if he had ſaid the Egyptians had *lares*; but there was a world of difference between the *lares* of the Romans, and the præſtites of the Egyptians.

The antients differ extremely about the origin of the *lares*. Varro and Macrobius ſay they were the children of Mania; Ovid makes them the iſſue of Mercius, and the naiad Lara, whom Lactantius and Auſonius call *Larunda*; Apuleius aſſures us, they were the poſterity of the Lemures; Nigridius, according to Arnobius, made them ſometimes the guardians and protectors of houſes, and ſometimes the ſame with the *Curetes* of Samothracia, which the Greeks call *Idæi dactyli*. Nor was Varro more conſiſtent in his opinion of theſe gods; ſometimes making them the manes of heroes, and ſometimes gods of the air.

T. Tatius, king of the Sabines, was the firſt who built a temple to the *lares*. The chimney and fire-place in the houſe were particularly conſecrated to them.

Tertullian tells us, the cuſtom of worſhipping the *lares* aroſe from this, that they antiently interred their dead in their houſes; whence the credulous people took occaſion to imagine their ſouls continued there alſo, and proceeded to pay them divine honours.—To this it may be added, that the cuſtom being afterwards introduced of burying in the highways, they might hence take occaſion to regard them as gods of the highways. See COMPITALITIA.

The victim offered to the *lares*, in the public ſacrifices, was a hog: In private, they offered them wine, incenſe, a crown of wool, and a little of what was left at the table.—They alſo crowned them with flowers, particularly the violet, myrtle, and roſemary. Their ſymbol was a dog, which was uſually repreſented by their ſide, on account of its fidelity, and the ſervice it does to man, in watching his houſe. They were ſometimes alſo repreſented as clothed in a dog's ſkin. See PENATES.

See further on the *lares*, in Arnobius, Lactantius, Auguſtin *De Civit.* Natalis Comes, Lambin on *Plaut. Aulul.* and on *Hor.* Caſaubon on *Sueton.* &c.

The pantheons, or images repreſenting ſeveral gods at once, were alſo called *lares*.—Harpocrates was one of theſe. See PANTHEON.

LARGE, a ſea-term. See the article VEERING.

LARGE *Minion*. See the article MINION.

LARMIER, in architecture, a flat, ſquare, maſſive member of the cornice, between the cymatium and the ovolo; ſo called from its uſe, which is to diſperſe the water, and cauſe it to fall at a diſtance from the wall, drop by drop, or as it were, by tears; *larme*, in French, ſignifying a *tear*.—See *Tab. Architect. fig.* 9. *fig.* 24. *lit. d. fig.* 28. *lit. f.*

The *larmier* is alſo called *corona*; and in Engliſh, the *drip*. See CORONA, and CORNICHE.

LARYNGOTOMIA *, an inciſion in the trachea, or wind-pipe between two of its annuli, or rings, in order to give paſſage for the breath, when there is danger of ſuffocation, from a ſquinancy, or the like. See ANGINA, and QUINZY.

* The word is Greek, Λαρυγγοτομια; formed of λαρυγξ, and τεμνω, *ſeco*, I cut.

Laryngotomy is the ſame with what is otherwiſe called *bronchotomy*. See BRONCHOTOMY.

Dr. Muſgrave obſerves, that in all medicine there is not one method that works ſo great a change, for the better, in ſo ſhort a time. However, it is ſeldom practiſed, in regard that gap which appears on the cutting a throat, (the divided parts being then drawn towards their more fixed ends) together with the great efflux of blood, when the jugulars and carotid arteries are alſo wounded, create in moſt men a dread of the operation, and make many believe all wounds of the trachea mortal. The ſame author makes no ſcruple, however, to ſay, it ought to be practiſed in quinzies, and other dangers of ſuffocation from cauſes of a like nature with them; from an extraordinary cure which he himſelf had wrought in this way.

LARYNX, ΛΑΡΥΓΞ, in anatomy, the upper part, or head of the trachea, lying below the root of the tongue, and before the pharynx. See TRACHEA.

The *larynx* is one of the organs of reſpiration, and the principal inſtrument of voice. See RESPIRATION, &c.

Its body is almoſt wholly cartilaginous, and it is to be conſtantly open to give room for the air to paſs and repaſs. Its figure is circular, thought it jets out a little before, and is a little flatted behind, leſt it ſhould incommode the œſophagus, whereon it is placed.

The *larynx* is of different diameters, according to the different ages; in young people it is narrow, whence their voice comes to be acute; in thoſe more advanced in years, it is more ample, which occaſions their voice to be ſtronger and deeper. In men it is bigger than in women, for which reaſon mens voice is more grave than that of women.

It appears the leſs in women, in regard the glands ſituate at the bottom of the *larynx*, are bigger in women than in men. See VOICE.

The *larynx* moves at the time of deglutition; when the œſophagus is lowered for the reception of the food, the *larynx* raiſes itſelf to compreſs it, and facilitate its deſcent. See DEGLUTITION.

There are five kinds of parts belonging to the *larynx*, viz. *cartilages*, *muſcles*, *membranes*, *nerves*, and *glands*.—Its cartilages are the thyroides, cricoides, arytænoides, glottis, and epiglottis, by means of which it can eaſily dilate and contract, ſhut and open itſelf. Theſe form the whole body of the *larynx*, and grow dry and harden, in proportion as the perſon grows old, when the *larynx* ſometimes appears as if it were bony.

The biggeſt of theſe is the *thyroides* or *ſcutiformis*, this guards the forepart, and has its name from ſome ſuppoſed reſemblance it bears to a ſhield. It is of a concavo-convex ſquare figure, the hollow part being inward, and the gibbous outward, having a little prominence in the middle called *pomum Adami*, as if ſome of the forbidden fruit had ſtuck in Adam's throat, and occaſioned that ſwelling.

The ſecond is called *cricoides*, or *annularis*, from its reſemblance to a ring which the Turks put on their thumb for the drawing of their bows. The fore part of this is very narrow, coming under the other cartilage, but behind it is broad, thick, and ſtrong, being, as it were, the baſis of all the others.

The third and fourth are called *arytænoides*, or *guttales*, from the figure of an ewer, which theſe two together ſomewhat reſemble. At the juncture of theſe there is a little cleft, or chink, in form of a little tongue, and for that reaſon called *glottis*, or *lingula*. Through this chink the air deſcends into the lungs, and the pituitous matter ejected by coughing, in catarrhs, is let out. It ſerves alſo for modulating the voice, and is imitated in flutes and the pipes of organs. See GLOTTIS.

Over the glottis lies a fifth cartilage called the *epiglottis*, which is very thin and ſoft, and in non-adults almoſt membranous, concave on the under ſide, and convex on the upper: It defends the entrance of the *larynx*, and hinders the liquids, which in drinking ſlip over it into the œſophagus, from falling into the trachea. See EPIGLOTTIS.

The *larynx* has ſeven pair of muſcles, which ſerve to move its ſeveral cartilages, and to contract or dilate them at pleaſure; two pair of them are common, the other five proper: the proper are thoſe which have both their origination and inſertion in the *larynx*; the common have only their inſertion there.

Of the former kind are the cricothyroides, which moves the ſcutiform cartilage; the crico-arytænoides poſticum, which ſerves, by its contraction, to draw the arytænoides cartilage, and to open the rima. The third is the arytænoides; which ſerves to bring the two cartilages of that name together, and to ſhut the rima. The fourth is the crico-arytænoides laterale, and the fifth the thyreo-arytænoides, which ſhuts the *larynx*.

The common muſcles are the ſternothyroides, which ſerve to draw down the thyroide cartilage, and the hyothyroides, which lift up that cartilage.

The *larynx* has but two membranes, the one *external*, which is a continuation of that which covers the trachea; the other *internal*, which is the ſame that lines the whole mouth.

It receives two branches of nerves from the recurrents, and is moiſtned by four large glands, two ſituate above, called *tonſils*; and two underneath, called *thyroideæ*. See TONSIL, *&c.*

The *larynx* is of very conſiderable uſe, not only in forming and modulating the voice, by the different apertures of its rima, or chink, but alſo in compreſſing the lungs to a greater or leſs degree, by the air: for if the internal diameter of the *larynx* had been equal to that of the trachea, the lungs could have undergone little or no compreſſion at all; nor, conſequently, without the *larynx* could we have reaped any advantage from breathing, in regard the air would not have reſiſted that force wherewith it is driven out in expiration, nor, conſequently, could the compreſſion have been made in the lungs, which is found neceſſary for the comminution of the globules of the blood, and the mixing of the two fluids, air and blood, together. See RESPIRATION.

For the action of the *larynx* in ſound, ſee GLOTTIS, and SOUND; ſee alſo EPIGLOTTIS, TRACHEA, *&c.*

LASH, or LACE, in the ſea language, ſignifies *to bind*, or *make faſt*.

Laſhing is chiefly uſed for binding up to the ſhip's ſide, muſkets, butts of water or beer, or pieces of timber to make ſpare top-maſts.

LASHERS, are properly thoſe ropes only which bind faſt the tackles, and the breeches of the ordnance, when they are haled, or made faſt within board.

LASKING, a ſea term, for going large, or veering. See VEERING.

LASSITUDE, among phyſicians, expreſſes that wearineſs, or heavineſs of members, that proceeds from a diſtempered ſtate of body, and not from exerciſe; either from an increaſe of bulk, a diminution of proper evacuation, or too great a conſumption of that fluid which is neceſſary to maintain the force and ſpring of the ſolids, as in fevers and convulſions; or from a vitiated ſecretion of that juice, whereby the fibres are not ſupplied either in due quantity or quality.

The remedy, in the firſt caſe, is evacuation: in the latter, proper diet, or ſuch alterative medicines as influence ſuch a ſecretion.

LAST, or LEST, in general, ſignifies the burden or load of a ſhip. See BURTHEN.

LAST, is alſo uſed for a certain weight and meaſure, which is various in various countries; though in the general, the *laſt* is eſtimated at four thouſand pounds weight. See WEIGHT.

A *laſt* of cod-fiſh, white herrings, meal, and aſhes for ſoap, is twelve barrels: Of corn, or rape-ſeed, ten quarters: Of gunpowder, twenty four barrels, or 2400 pounds weight: Of red herrings, twenty cades: Of hides, twelve dozen: Of leather, twenty dickers: Of pitch, or tar, fourteen barrels: Of wool, twelve ſacks: Of ſtock-fiſh, a thouſand: Of flax, or feathers, 1700 pounds weight.

LAST *Heir*, is he to whom lands come by eſcheat, for want of lawful heirs; which, in many caſes, is the lord whereof they are held, but in others the king. See HEIR, and ESCHEAT.

LAST *Will.* } See the article { WILL.
Port-LAST. } See the article { PORT-*Laſt*.

LASTAGE, or LESTAGE, according to Raſtal, is a duty exacted in ſome fairs and markets, for carrying things bought where one will.

LASTAGE, according to another author, is properly that cuſtom which is paid for wares ſold by the *laſt*. See LAST.

In a law of Ric. II. *laſtage* is taken for the ballaſt or lading of a ſhip. See BALLAST, *&c.*

LASTAGE is ſometimes alſo uſed for garbage, rubbiſh, or ſuch filth.

LATE *Flowers*. See the article FLOWERS.

LATENT *Acids*. See the article ACID.

LATERAL. See COLLATERAL, MULTILATERAL, and QUADRILATERAL.

LATERAL *Equation*, in algebra, denotes a ſimple equation; or an equation whoſe root is only of one dimenſion. See EQUATION.

LATERAL *Palſy*. } See the article { PALSY.
LATERAL *Operation*. } See the article { LITHOTOMY.

LATERALIS *Rectus Capitis*. See the article RECTUS.

LATERAN, was originally the proper name of a man, whence it deſcended to an antient palace in Rome, and to the buildings ſince erected in its place; particularly a church called *S. John of Lateran*, which is the principal ſee of the popedom. See POPE.

Councils of the LATERAN, are thoſe held in the baſilica of the *Lateran*: Of theſe there have been five, held in 1123, 1139, 1179, 1215, and 1513. See COUNCIL.

Canons Regular of the Congregation of the LATERAN, is a congregation of regular canons, whereof that church is the principal place, or ſeat.

It is pretended, there has been an uninterrupted ſucceſſion of clerks, living in community from the time of the apoſtles; and that a number of theſe were eſtabliſhed in the *Lateran* in the time of Conſtantine. But the canons were not introduced till the time of Leo I. and theſe held the church 800 years, till the reign of Boniface, who took it from them, and placed ſecular canons in their room: 150 years after, the regulars were reinſtated. See CANON.

A LATERE, a Latin term, uſed to denote the qualification of cardinals whom the pope ſends as legates into foreign courts; who are called cardinals *à latere*, as being his holineſs's counſellors in ordinary, and aſſiſtants. See LEGATE.

The guards of princes were heretofore called *laterones*, becauſe always attending at their ſides, *à latere*.

Du Cange, in his *Gloſſary*, ſays, there were antiently counts *à latere*, and monitors *à latere*.

LATH *, in building, a long, thin, narrow ſlip of wood, nailed on the rafters of a roof, to ſuſtain the covering.

* Theſe are what Feſtus calls *ambrices*; in other Latin writers they are denominated *templa*; and by Gregory of Tours, *ligaturæ*.

Laths are divided into three kinds, with regard to the different woods they are made of, viz. *heart of oak laths*, *ſap laths*, and *deal laths*: The two laſt uſed only for ceiling and partitioning, and the firſt only for tyling. — *Laths* are alſo diſtinguiſhed, with regard to their length, into *five* foot, *four* foot, and *three* foot *laths*: though the ſtatute allows but of two lengths, *viz.* thoſe of five foot and of three, each of which are to be an inch and half in breadth, and half an inch in thickneſs.

LATHE, or LEATHE, a very uſeful engine for the turning of wood, ivory, metals, and other materials. See TURNING.

The invention of the *lathe* is very antient: Diodorus Siculus ſays, the firſt who uſed it was a grandſon of Dædalus, named Talus. Pliny aſcribes it to Theodore of Samos, and mentions one Thericles, who rendered himſelf very famous by his dexterity in managing the *lathe*.

With this inſtrument the antients turned all kinds of vaſes, many whereof they enriched with figures and ornaments in baſſo relievo. Thus Virgil,

Lenta quibus torno facili ſuperaddita vitis.

The Greek and Latin authors make frequent mention of the *lathe*; and Cicero calls the workmen who uſed it, *vaſcularii*.

It was a proverb among the antients, to ſay a thing was formed in the *lathe*, to expreſs its delicacy and juſtneſs.

The *lathe* is compoſed of two wooden cheeks, or ſides, parallel to the horizon, having a groove or opening between; perpendicular to theſe, are two other pieces, called *puppets*, made to ſlide between the cheeks, and to be fixed down at any point at pleaſure. See CHEEK.

Theſe have two points, between which the piece to be turned is ſuſtained; the piece is turned round, backwards and forwards, by means of a ſtring put round it, and faſtned above to the end of a pliable pole, and underneath to a tredle or board moved with the foot. There is alſo a reſt which bears up the tool, and keeps it ſteady.

As it is the uſe and application of this inſtrument that makes the greateſt part of the art of turning, we refer the particular deſcription thereof, as well as the manner of applying it in various works, to that head. See TURNING.

LATHE, in law. See the article LETH.

LATIAR, a feaſt or ceremony inſtituted by Tarquinius Superbus, in honour of Jupiter Latiaris, or Latialis.

Tarquin, having made a treaty of alliance with the Latins, propoſed, in order for perpetuating it, to erect a common temple, where all the allies, the Romans, Latins, Hernici, Volſci, *&c.* ſhould aſſemble themſelves every year, hold a kind of fair, exchange merchandizes, feaſt, ſacrifice, and make merry together. — Such was the inſtitution of the *latiar*.

The founder only appointed one day for this feaſt; the firſt conſuls added another to it, upon concluding the peace with the Latins; a third was added, after the people who had retired to the Mons Sacer were returned to Rome, and a fourth after appeaſing the ſedition raiſed on occaſion of the conſulate, in which the people would needs have a ſhare.

Theſe four days were called the *Latin feriæ*, and every thing done during the courſe of theſe feriæ, as feaſts, ſacrifices, offerings, *&c.* were called *latiares*. See FERIÆ.

LATICLAVIUM, or LATUS-CLAVUS, a garment of diſtinction and dignity among the Romans; contradiſtinguiſhed from the *anguſticlavium*. See ANGUSTICLAVIUM.

The *laticlavium* was a kind of tunic, or long coat, faced with one, or two ſlips of purple, applied lengthwiſe to the two ſides of the tunic.

In the *latus-clavus* theſe ſlips were pretty broad, and in the anguſtus-clavus narrower; though there is nothing about which the learned differ more, than the difference between thoſe two habits.

There were buttons ſet on the *latus-clavus*, which appeared like the heads of large nails; whence ſome think it took its name.

The ſenators, prætors, and the chief magiſtrates of colonies and municipal cities, had a right to wear it. The robe called prætexta, was wore over the *latus-clavus*. When the prætor pronounced ſentence of death, he put off the prætexta, but retained the *latus-clavus*. See PRETEXTA.

LATIN, a dead language, firſt ſpoken in Latium, and afterwards at Rome; and ſtill uſed in the Romiſh church, and among men of letters. See LANGUAGE.

Some authors rank the *Latin* among the number of original languages, but by miſtake: it is formed principally from the Greek, and particularly the Æolic dialect of that tongue; though it has a great number of words which it borrowed from the languages of the Etruſci, Oſci, and other antient people of Italy; and foreign commerce and wars, in courſe of time, added a great many more.

The *Latin* is a ſtrong, robuſt language, perfectly ſuitable to the character of the people who ſpoke it. We have, ſtill, works of every kind, admirably well written in *Latin*, though there are an infinite number loſt. The *Latin* is more figurative than the Engliſh, leſs pliant than the French, leſs copious than the Greek, leſs pompous than the Spaniſh, leſs delicate than the Italian, but cloſer and more nervous than any of them.

For a while, the *Latin* tongue was confined almoſt wholly within the walls of Rome; nor would the Romans allow the common uſe of it to their neighbours, or to the nations they ſubdued. — Cicero obſerved, that, even in his time, Greek was uſed almoſt among every people, but the *Latin* only confined to a very narrow compaſs; *Græca leguntur in omnibus ferè gentibus, Latina ſuis finibus exiguis ſanè continentur.* By degrees they were brought to grant the uſe of it as a favour; and in time became ſenſible of the neceſſity there was of its being generally underſtood, for the conveniency of commerce; and accordingly uſed their utmoſt endeavours, that all the nations ſubject to their empire, ſhould be united by one common language: ſo that at length they impoſed that as a law, which they had before granted as a favour.

After the tranſlation of the ſeat of the empire from Rome to Conſtantinople, the emperors of the eaſt, being always deſirous of retaining the title of Roman emperors, appointed the *Latin* to be ſtill retained in uſe, both in their reſcripts and edicts, as appears by the conſtitutions of the eaſtern emperors, collected in the Theodoſian Code: But at length the emperors neglecting the empire of the weſt, abandoned all care of the *Latin* tongue, and allowed their judges to paſs ſentence in Greek; and accordingly, we find the emperor Juſtinian's *Novels* compoſed in Greek.

Charlemagne coming to the empire of the weſt, appointed the law proceedings in ſovereign courts to be in *Latin*; and the notaries were to draw their acts and inſtruments in the ſame tongue: This practice continued a long time through a great part of Europe, but at length it gave way, and the French took place of the *Latin*, not only in France, but in ſome meaſure in England too; and the reaſon given for it was, that abundance of difficulties aroſe about the underſtanding of *Latin* terms.

The *Latin*, however, was prodigiouſly degenerated and corrupted, ere it came to be laid aſide. The incurſions of the Goths and Vandals into Italy, brought an inundation of foreign words and phraſes into it; inſomuch that Valla and Naude call Boethius the laſt *Latin* author. But that was not all; when it once got into the courts of juſtice, it was ſtill worſe handled; till at laſt being introduced amongſt the monks, and become the common language of miſſals and breviaries, it was debauched to that degree, that it was almoſt become ſcandalous to uſe it.

In this condition it was found at the time of the Reformation; when Vives, Eraſmus, &c. began to open the way for its recovery; ſince which time, monkiſh latinity has been declining, and all endeavours have been uſed to retrieve the pure language of the Auguſtan age.

It was ſaid of cardinal Bembo, that he would never read the Breviary, for fear of corrupting his fine *Latin*.

LATIN *Church*, is a term uſed for the Romiſh or weſtern church, by way of oppoſition to the Greek church. See CHURCH, GREEK, &c.

LATIN *Bibles*.	See the article	BIBLE.
LATIN *Character*.		CHARACTER.

LATISSIMUS *Dorſi*, in anatomy, a muſcle ſo called from its ſhape, covering almoſt the whole back.

It has a thin, broad, tendinous beginning, which comes from the poſterior part of the ſpine of the ilium, from the ſuperior ſpines of the os ſacrum, from all the ſpines of the vertebræ of the loins, and from the ſeven lower of the thorax; it paſſes by the inferior angle of the ſcapula, from which ſome of its fleſhy fibres ſometimes ariſe, and is inſerted with the teres major, by a ſtrong and broad tendon, with which it pulls the arm downwards.

It is alſo called *ani ſcalptor*, becauſe it carries the arm to the anus. — See *Tab. Anat.* (*Myol.*) *fig.* 6. *n.* 28.

LATITAT *, a writ, whereby all men in perſonal actions are called originally to the King's Bench.

LATITUDE, LATITUDO, in geography, the diſtance of a place from the equator; or an arch of the meridian intercepted between the zenith of the place and the equator. — Hence, *latitude* is either *northern* or *ſouthern*, according as the place whoſe *latitude* is ſpoke of, is on this, or that ſide, of the equator. — Thus, London is ſaid to be in 51 degrees, 32 minutes, northern *latitude*.

Circles parallel to the equator are called *parallels of latitude*, becauſe they ſhew the *latitudes* of places by their interſection with the meridian. See PARALLEL.

If through the poles of the world we conceive innumerable great circles drawn, theſe are called *ſecondaries* of the equator; and by their help, the poſition of every point, either on earth, or in the heavens, with regard to the equinoctial (that is, the *latitude* of any point) is determined. See SECONDARY.

One of theſe ſecondaries paſſing through any place on the earth's ſurface, is called the *meridian* of that place, and on it the *latitude* of that place is meaſured. See MERIDIAN.

The *latitude* of a place, and the elevation of the pole of that place above the horizon, are terms uſed indifferently for each other, in regard the *latitude* and the elevation of the pole are always equal. See POLE, and ELEVATION.

This will appear from *Tab. Geography*, *fig.* 5. — where the circle HZQ repreſents the meridian, HO the horizon, ÆCQ the equator, Z the zenith, and P the pole.

Here, the *latitude* of the place, or its diſtance from the equator, is the arch ZÆ, and the elevation of the pole, or its diſtance from the horizon, the arch PO. — Now the arch PÆ between the pole and the equator, is a quadrant of a circle, and the arch ZO, from the zenith to the horizon, is likewiſe a quadrant. Therefore the two arches, PÆ and ZO, muſt be equal; and taking away the arch ZP, which is common to both, there will remain the arch ZÆ, equal to the arch PO; that is, the *latitude* of the place equal to the pole above the horizon.

Hence we have a method of meaſuring the circumference of the earth, or of determining the quantity of a degree on its ſurface: for by going directly northward or ſouthward, till the pole be elevated one degree more or leſs, and then meaſuring that interval accurately, we ſhall have the number of miles in a degree of a great circle of the earth's globe. See DEGREE.

The knowledge of the *latitude* of the place is of the utmoſt conſequence, both in geography, navigation, and aſtronomy: The methods of determining it, both at ſea and land, are as follow:

The altitude of the pole, it has been already ſhewn, is always equal to the *latitude*; for which reaſon the *latitude* might be beſt found by obſerving the pole's heighth: But in regard the pole is only a mathematical point, and no ways to be obſerved by our ſenſes, its heighth cannot be determined in the ſame manner as that of the ſun and ſtars, &c. for which reaſon, another manner has been contrived.

In order to this, a meridian line is firſt drawn; the method of doing which, ſee under the word MERIDIAN.

Place a quadrant on this line, ſo as its plane may be in the plane of the meridian; then take ſome ſtar near the pole, *v. gr.* the pole ſtar, which never ſets, and obſerve both its greateſt and leaſt altitude. See QUADRANT.

Let the greateſt, *v. gr.* be SO, (*Tab. Geography*, *fig.* 5.) and the leaſt *s*O; the half of which PS or P*s*, deducted from the greateſt altitude SO, or added to the leaſt *s*O, will give PO, the altitude of the pole above the horizon, which is equal to the *latitude* of the place.

The *latitude* may alſo be found, by having the ſun's, or a ſtar's declination, and meridian altitude, taken with a quadrant or aſtrolabe. — The method is this:

Obſerve the meridian diſtance of the ſun from the vertex or zenith, which is always the complement of his meridian altitude: and add to this the ſun's declination, when the ſun and the place are on the ſame ſide the equator, or ſubtract the declination when they are on different ſides: the ſum, in the former caſe, and the difference in the latter, will be the *latitude* required. But when the declination of the ſun is greater than the *latitude* of the place, which is known from the ſun's being nearer to the elevated pole than the vertex of the place is, as it frequently happens in the torrid zone; then the difference between the ſun's declination, and his zenith diſtance, is the *latitude* of the place.

If the ſun, or ſtar, have no declination, but move in the equinoctial that day, then the elevation of the equator will be equal to his meridian altitude, and conſequently his meridian altitude is the complement of the *latitude* to 90.

This latter method is beſt accommodated to the uſes of navigation, as being practicable at ſea; but the former method preferable at land.

LATITUDE, in aſtronomy, is the diſtance of a ſtar or planet from the ecliptic.

Or, it is an arch of a great circle, TS (*Tab. Aſtron. fig.* 14. *n.* 2.) intercepted between the centre of the ſtar S, and the ecliptic EL; and perpendicular thereto.

* It has this name, as ſuppoſing the defendant lurks, lies hid, and cannot be found in the county of Middleſex, to be taken by bill; but is gone to ſome other county, to the ſheriff whereof this writ is directed.

Through the poles of the ecliptic are ſuppoſed to paſs an indefinite number of great circles, cutting the ecliptic at right angles, called *circles* of *latitude*, or ſecondaries of the ecliptic: By means of which, every ſtar and point of the heavens is reduced to the ecliptic, and has its place in regard thereto determined; the *latitude* of a ſtar being an arch of one of theſe ſecondaries, intercepted between that ſtar and the point where it interſects the ecliptic.

In which the *latitude* differs from the *declination*, which is the diſtance of a ſtar from the equator towards one of the poles of the world. See DECLINATION.

So that the geographical *latitude* is the ſame thing with the aſtronomical declination, and the aſtronomical *latitude* a quite different thing.

The *latitude* of a planet is an angle, as P T R, (*Tab. Aſtronomy*, *fig.* 26.) under which a planet's diſtance from the ecliptic P R is ſeen on the earth.

The ſun never has any *latitude*, but the planets have: for which reaſon, in the common ſphere the zodiac has ſome breadth.—The antients only allowed ſix degrees on each ſide the ecliptic, but the moderns have extended it to nine.

According to the obſervation of ſome of the modern aſtronomers, the greateſt *latitude* of the planets is not always the ſame; but Venus never exceeds 9 degrees northern *latitude*; Mercury 5 degrees; the Moon in her quadrant with the Sun 5 degrees; Saturn 2 degrees, 50 minutes; Jupiter one degree, 50 minutes; Mars 7 degrees, 31 minutes.

When they have no *latitude*, they are ſaid to be in the *nodes* of the ecliptic, or in the interſection of their orbit with that of the ſun; and in this ſituation it is that they eclipſe, or are eclipſed by the ſun. See NODE, and ECLIPSE.

Circle of LATITUDE, is a great circle, M S T *m*, paſſing through the poles of the ecliptic. See CIRCLE.

North aſcending LATITUDE of the moon, is when ſhe proceeds from the aſcending node towards her northern limit, or greateſt elongation. See MOON, *&c.*

North deſcending LATITUDE, is when the moon returns from her northern limit to the aſcending node.

South deſcending LATITUDE, is when ſhe proceeds from the deſcending node to her ſouthern limit.

South aſcending LATITUDE, is when ſhe returns from her ſouthern limit to her aſcending node.

And the ſame holds good of the other planets. See ASCENDING, and DESCENDING.

Heliocentric LATITUDE of a planet, is its diſtance from the ecliptic, ſuch as it is ſeen from the ſun.

This, when the planet comes to the ſame point of its orbit, is always the ſame, and unchangeable.

Geocentric LATITUDE of a planet, is the diſtance of the planet from the ecliptic, as it is ſeen from the earth.

This, though the planet be in the ſame point of its orbit, yet is not conſtantly the ſame, but alters according to the poſition of the earth, in reſpect to the planet. See HELIOCENTRIC, and GEOCENTRIC.

Dr. Halley has ſome conſiderations in the *Philoſophical Tranſactions*, which make it probable, the *latitudes* of ſome of the principal fixed ſtars, particularly Palilicium, Sirius, and Arcturus, alter in time; whence it may be argued, the reſt likewiſe alter, though the variation may be leſs conſpicuous in theſe, by reaſon they are ſuppoſed at a greater diſtance from us. See STAR.

Parallax of LATITUDE. } See the article { PARALLAX.
Refraction of LATITUDE. } { REFRACTION.

LATITUDINARIAN, among divines, ſignifies a *moderate perſon*, not over-cloſely tied to any religious opinions, but who thinks there is a breadth, or latitude, in the road to heaven; which may admit people of different perſuaſions. See ADIAPHORIST, TOLERATION, *&c.*

LATOMIA *, ΛΑΤΟΜΙΑ, properly ſignifies a *quarry*, or place whence ſtones are dug. See QUARRY.

* The word comes from the Greek λας, ſtone, and τεμνω, I cut.

Theſe were antiently uſed as goals for criminals. — Dionyſius had a place of this kind dug in a rock near Syracuſe, where an infinite number of people were ſhut up. Cicero reproaches Verres with impriſoning Roman citizens in *latomiæ*; ſo that *latomia* became a general name for a priſon, and the priſoners incloſed in them were called *latomarii*.

LATRIA, ΛΑΤΡΕΙΑ, in theology, a religious worſhip due only to God. See WORSHIP, ADORATION, *&c.*

The Romaniſts ſay, 'They honour God with the worſhip 'of *latria*; and the ſaints with the worſhip of *dulia*:' but the terms, however diſtinct, are uſually confounded. See SAINT, RELIC, *&c.*

The worſhip of *latria*, beſides its inner characters, has its external marks to diſtinguiſh it; the principal whereof is ſacrifice, which cannot be offered to any other but God himſelf, as being a ſolemn acknowledgment, or recognition of the ſovereignty of God, and our dependance on him. See SACRIFICE.

M. Daille ſeems to own, that ſome of the fathers of the fourth century allowed the diſtinction between *latria* and *dulia*.

LATUS *rectum*, in conics, the ſame with *parameter*. See PARAMETER.

LATUS *tranſverſum* of the hyperbola, is a right line intercepted between the vertices of the two oppoſite ſections; or that part of the common axis, which is between the vertices of the upper and lower cone.

Such is the line E D, (*Tab. Conics*, *fig.* 1.) where alſo D *d*, and E *e*, may be the parameters, or *latus rectums* belonging to the two oppoſite ſections, DLRO, and OEOR.

To this *latus tranſverſum* anſwers the longeſt diameter in the ellipſis; which Apollonius calls the *tranſverſe axis*, or *diameter*. See TRANSVERSE.

LATUS *primarium*, is a right line bolonging to a conic ſection, drawn through the vertex of the ſection of the cone, and within it; as the line E E, or D D, in the figure above referred to.

LAVATORY, or LAVADERO, a name given to certain places in Chili, and Peru, where gold is got out of earth by waſhing. See GOLD.

M. Frezier gives us the following deſcription of the *lavatories* of Chili: they dig deep into the earth, in ſuch places as they have reaſon to expect gold in; and in order to facilitate this digging, turn a ſtream of water upon the ſpot, looſening the earth as much as poſſible all the time, that the current may have the greater effect, and tear up the earth more ſtrongly. When they are got to the earth they want, they turn off the ſtream, and dig dry.

The earth that they now get, is carried on mules, and diſcharged into a baſon, made ſomewhat in the manner of a ſmith's bellows; into which a little rivulet of water runs with a great deal of rapidity, diſſolving the parts of the earth, and carrying every thing away with it, excepting the particles of gold, which, by their great weight, precipitate to the bottom of the baſon, and mix with a fine black ſand, where they are almoſt as much hidden, as they were before in the earth.

Sometimes, they find very conſiderable pieces in *lavatories*, particularly pieces of twenty four ounces each. — There are ſeveral *lavatories*, where they find pepitas, or pieces of virgin gold, of a prodigious ſize. Among others, they tell of one that weighed 512 ounces, bought by the count de la Moncloa, viceroy of Peru.

Nine or ten leagues to the eaſt of Coquimbo, are the *lavatories* of Andacoll, the gold whereof is twenty three carats fine.—Their work, here, always turns to great profit, excepting when the water fails them. — The natives maintain, that the earth is creative, (*creatrix*) that is, it produces gold continually; becauſe, after having been waſhed ſixty or eighty years, they find it impregnated afreſh, and draw almoſt as much out of it as at firſt.

LAUDANUM, a name given by the chymiſts to certain preparations, chiefly extracts, of opium; by reaſon of their excellent qualities: as who ſhould ſay, *laudandum*, from *laudare*, to praiſe. See OPIUM.

We have divers kinds of *laudanum*; as Sydenham's *liquid laudanum*, *tartarized liquid laudanum*, &c.

LAUDS, LAUDES, the ſecond part of the ordinary office of the Breviary, ſaid after mattins; though heretofore it ended the office of the night. See MATTINS, and BREVIARY.

The *laudes* conſiſt principally of pſalms, hymns, *&c.* whence they took their name: from *laus*, *laudis*, praiſe.

LAUGHTER, an action, or paſſion peculiar to man. See RISIBILITY.

Authors attribute *laughter* to the fifth pair of nerves, which ſending branches to the eye, ear, lips, tongue, palate, and muſcles of the cheek, parts of the mouth, præcordia, *&c.* there hence ariſes a ſympathy, or conſent, between all theſe parts; ſo that when one of them is acted upon, the others are proportionably affected. See CONSENT.

Hence, a ſavoury thing ſeen, or ſmelt, affects the glands, and parts of the mouth; a thing ſeen, or heard, that is ſhameful, affects the cheeks with bluſhes: on the contrary, if it pleaſe and tickle the fancy, it affects the præcordia, and muſcles of the mouth and face with *laughter*; if it cauſe ſadneſs and melancholy, it likewiſe affects the præcordia, and demonſtrates itſelf by cauſing the glands of the eyes to emit tears.

Dr. Willis accounts for the pleaſure of kiſſing from the ſame cauſe, the branches of this fifth pair being ſpread to the lips, the præcordia, and the genital parts; whence ariſes a ſympathy between thoſe parts.

LAUNCH, in the ſea phraſe, is *to put out*: thus they ſay, *launch the ſhip*; that is, put her out of the dock, or out of the key, &c.

LAURA *, a name given to the reſidences of the antient monks. See MONK.

* The word is originally Greek λαυρα, where it primarily ſignifies *village*, *ſtreet*, or *hamlet*.

Authors cannot agree about the difference between a *laura* and a monaſtery: ſome pretend, that a *laura* was a monaſtery wherein there lived, at leaſt, a thouſand monks; but this is in no wiſe credible. The more natural opinion is, that the antient monaſteries were the ſame with the modern, conſiſting

ing of large buildings, divided into halls, chapels, and cells poſſeſſed by the monks, each of whom had his apartment; but the *lauræ* were a kind of villages, whereof, each ſeveral houſe was inhabited by one or two ſeveral monks at the moſt: ſo that the houſes of the chartreux ſeem, in ſome meaſure, to repreſent the antient *lauræ*, and thoſe of the other monks, proper monaſteries. See MONASTERY, CARTHUSIAN, &c.

The term *laura* was only underſtood of the religious places in Egypt, and the Eaſt, where their houſes ſtood apart from each other, and were not joined by any common cloiſter, the monks that inhabited them only meeting in public once a week. See HERMIT, ANACHORET, &c.

LAUREATION, a term in the Scottiſh univerſities uſed for the act of taking up the degree of a maſter of arts, to which the ſtudents are admitted after four years ſtudy in the univerſity. See MASTER.

LAURENCE—*Canons of S. Laurence*, an order of regular canons, ſo called from the monaſtery of S. Laurence d'Oulx in Dauphine. See CANON.

This congregation is ſaid to have been founded by S. Benedict. It was deſtroyed by the Vandals, and continued uninhabited till the middle of the eleventh century. In 1057, Odo, count of Savoy, gave it to one Gerard, and his canons. This donation was confirmed in 1065, by Cunibert, biſhop of Turin, who added to it above forty other churches. By which means a very conſiderable congregation was formed, to whom the ſucceeding popes, and counts of Savoy, granted a great many privileges.

It had thirty priories; the chief, who is the prior of the congregation, bears the title of provoſt, and exerciſes a ſpiritual juriſdiction throughout his provoſtſhip.

LAURENTALIA *, or LARENTALIA, called alſo *larentinalia*, *laurentales*, and *larentales*; feaſts celebrated among the Romans on the tenth of the calends of January, or twenty third of December, in memory of Acca Laurentia, wife of the ſhepherd Fauſtulus, and nurſe of Romulus and Remus.

* Acca Laurentia, from whom the ſolemnity took its name, is repreſented as no leſs remarkable for the beauty of her perſon, than her laſciviouſneſs: on account of which, ſhe was nick-named by her neighbours, *lupa*, ſhe wolf; which is ſaid to have given riſe to the tradition of Romulus and Remus being ſuckled by a wolf.—She afterwards married a very rich man, who brought her great wealth; which, at her death, ſhe left to the Roman people; in conſideration whereof they performed her theſe honours: though others repreſent the feaſt as held in honour of Jupiter Latiaris.

LAW *, a command, or precept, coming from ſome ſuperior authority, which an inferior is obliged to obey; or, more properly, a command, or mandate of ſome perſon, or power, whoſe precept carries with it the reaſon of obedience.

* The word is formed from the Saxon lah, laᵹa, which ſignifies the ſame.

Thus, the commands of God, with reſpect to men, of a city, with reſpect to the citizens, and univerſally of all powerful beings, in reſpect to thoſe who cannot reſiſt, are called their *laws*.

The nature of a *law* will be moſt clearly diſcovered, by ſhewing wherein it differs from *covenant*, *counſel*, and *right* or *equity*; with all which it is frequently confounded. The difference between a counſel and a *law*, will be beſt determined from the difference between counſel and command. A counſel is a precept, wherein the reaſon of obedience is taken from the thing itſelf preſcribed; a command is a precept, wherein the reaſon of obedience depends on the will of the preſcriber; for we cannot properly ſay, *ſic volo, ſic jubeo*, unleſs *ſtet pro ratione voluntas*. But ſince in *laws* we do not obey for the ſake of the thing itſelf, but for the ſake of the perſon who preſcribes it, a *law* is not properly a counſel, but a command. A *law* comes from a perſon who has a power over thoſe whom he commands; a counſel, from him who has no ſuch power. To do what is enjoined by a *law*, is an act of duty; what by a counſel, an act of choice, or free-will. A counſel is directed to his advantage who receives it, a *law* to his who gives it. A counſel only takes effect over thoſe who are willing; a *law*, over thoſe that are unwilling. Laſtly, the authority of the counſellor is taken away at the diſcretion of him to whom the counſel is given; but the authority of the legiſlator is not taken away at the diſcretion of him on whom the *law* is impoſed.

Law is always confounded with covenant, by thoſe who take *laws* to be nothing elſe but ὁμολογηματα, or forms of living determined by the conſent of mankind: among whom is Ariſtotle, who defines a *law*, 'A declaration determined by the 'common conſent of a city, ſhewing in what manner things 'are to be done;' which is not ſo much the definition of a *law*, as of a *civil law*: nor yet properly of a civil *law*; for this common conſent is no more than a mutual covenant, which does not oblige any perſon, and conſequently is not any *law*, till ſome ſupreme power be conſtituted with a power to compel, and to make it penal to tranſgreſs it. Here then the covenant is confounded with the *law*, which leads into abſurdities; for a covenant is a promiſe; a *law*, a command. In a covenant it is ſaid, *I will do*; in a *law*, *do*. By a covenant we are obliged, (that is, we muſt perform according to our promiſe) by a *law* we are preſerved under that obligation, (that is, we are forced to perform, for fear of the puniſhment awarded by it;) a covenant obliges by itſelf, a *law* preſerves the obligation by force. In a covenant, therefore, we conſider what is to be done ere we be obliged to do it; in a *law* we are obliged to do, in the firſt place, and what is to be done is determined afterwards.

Law is confounded with right or equity, by thoſe who perſiſt in doing what is permitted by the *divine law*, though prohibited by the *laws* of the country. What is prohibited by the *divine law*, cannot be permitted by the *civil law*; nor what is commanded by the *divine law*, be prohibited by the *civil law*; but what is permitted by the *divine law*, may, notwithſtanding, be prohibited by the *civil law*: for the inferior *laws* have a power of reſtraining the liberty left the ſuperior *laws*, though they cannot enlarge it. Now right or equity is a natural liberty, not conſtituted by *laws*, but free of them; for take away *laws*, and liberty is compleat. This liberty is firſt reſtrained by the *natural* and the *divine law*, the reſt reſtrained by the *civil laws*; and what remains unreſtrained by the *civil law*, may be again reſtrained by the conſtitutions of particular cities, and ſocieties. There is a great difference, therefore, between *law* and right, *lex & jus*; for *law* is a chain, but right, a liberty; and they differ as two contraries. See RIGHT.

Law may be divided, with reſpect to its different authors, into *divine*, and *human*.

Divine LAW may be conſidered as twofold, with reſpect to the two different manners in which God notifies his will to man, viz. *natural*, (or *moral*) and *poſitive*.

Natural LAW, is that which he has made known to all mankind, by that innate light, called *natural reaſon*.

Poſitive LAW, is that which he has revealed by his prophets; as thoſe *laws* delivered to the Jews, relating to the divine worſhip, and polity, which may be called *divino-civil laws*, as being peculiarly directed to that people.—Again,

Natural law may be divided into that *natural law* of men, which, in a peculiar ſenſe, is called *the* LAW *of nature*: and the *natural law* of countries, commonly called *the* LAW *of nations*.—The precepts are the ſame in both: but becauſe, when ſocieties are once inſtituted, certain perſonal properties become veſted in men; that *law*, which, when we ſpeak of the duties of men ſeverally, we call *the natural law*; when transferred to cities, or countries, we call *the law of nations*.

M. Regis ſays, that the *laws* of nature are the dictates of right reaſon, which teach every man how he is to uſe his natural right; and the *laws* of nations, the dictates, in like manner, of right reaſon, which teach every ſtate how to act and behave themſelves towards others.

Human LAWS are all civil. See the article CIVIL.

For, according to Hobbes, the ſtate of man, out of ſociety, is a ſtate of war; wherein, no one being ſubject to another, there can be no other *law* beſides the dictates of natural reaſon, which is the *divine law*.

Civil LAWS may be divided, with regard to the difference of their ſubject matter, into *ſacred*, and *ſecular*.

Sacred LAWS, are thoſe that relate to religion; that is, to the ceremonies and worſhip of the Deity, and which are not preſcribed by any poſitive divine *law*.

Secular LAWS, are thoſe that relate to property, &c. commonly called by the name *civil*.—Further,

Civil laws, conſidered with regard to the two offices of the legiſlator, *viz.* to judge, and to compel, may be divided into two branches; the one *diſtributive*, the other *vindictive*, and *penal*.

Diſtributive LAW, is that by which every man has his right; or, it is that which conſtitutes the rules and meaſures of things, whereby we know what belongs to us, and what to others; ſo as we may not diſturb or interrupt others in the enjoyment of their own, nor be interrupted by them; and what each man may lawfully do, or not do.

Vindictive LAW, is that branch by which the puniſhments to be inflicted on thoſe who violate the *laws*, are determined.

The diſtributive, and vindictive, are not two ſpecies of *laws*, but two parts of the ſame *law*. For if a *law* ſay no more than 'Whatever you catch in your net, in the ſea, ſhall be 'yours,' it is in vain; for though another take from you what you have caught, it is ſtill yours; in regard, in the ſtate of nature, where all things are common, yours and another's are the ſame thing. So that what the *law* defines to be yours, was yours before that *law*, and will be yours after it, though poſſeſſed by another.—A *law*, therefore, is but an empty ſound, unleſs it determine the thing to be yours in ſuch a ſenſe, as to forbid every body elſe from diſturbing you in the poſſeſſion of it. But ſuch prohibition will be vain, unleſs there be a penalty annexed to it.—A *law*, therefore, muſt contain both theſe parts, that which prohibits, and that which puniſhes. The firſt whereof, which is called *diſtributive*, is prohibitory, and ſpeaks to all: the latter, called *vindictive*, or *penal*, is mandatory, and ſpeaks only to the public officers. Whence it follows, that to all *civil laws* there is annexed a penalty, either implicitly, or explicitly: and where that puniſhment is not aſcertained, either by writing, or by example, it is ſuppoſed to be arbitrary, and to depend on the pleaſure of the legiſlator; for that is no *law* which may be violated impunè.

Civil laws, conſidered with regard to the different manners of promulgating them, are of two kinds; *ſcriptæ*, and *non-ſcriptæ*, or *written*, and *unwritten*.

Written LAWS, are thoſe which require either the voice, or ſome other ſign of the legiſlator's will, to become *laws*.

Unwritten LAWS, are ſuch as need no other promulgation beſides the voice of nature, or natural reaſon; of which kind are all natural *laws*.

Hence it appears, that though the natural *laws* be deſcribed in the writings of philoſophers, they are not therefore to be called *written laws*. Nor are the writings of lawyers, *laws*, for want of the ſupreme authority: nor the *reſponſam prudentum*, or opinions of judges, *laws*, excepting ſo far as they are allowed by the ſupreme power to paſs into uſe; and then they are called *leges ſcriptæ*, written laws; not becauſe of their uſe, but becauſe of the will of the ſupreme power, which is argued from their paſſing into uſe.

The firſt principle, or *law* of nature, according to Hobbes, is ſelf-preſervation.—Thomaſius will have it to be our own happineſs, which falls in at laſt with the ſentiment of Hobbes. Puffendorf maintains it to be ſociality.— Valentine Alberti, the belief that we are the image of God.—Henry and Samuel Cocceius, the will of God. — Grotius, right reaſon. —Velthemius, the intrinſic decency, or turpitude of actions. —Strimeſius and Janus, that we are to love God, ourſelves, and our neighbour.

LAW is alſo applied to the ſeveral policies of ſtates and people, or the maxims and rules they have agreed upon, or received from their magiſtrates, whereby to live in peace and mutual ſociety.

The *laws* of the twelve tables, were the antient *laws* of the Romans, for which the Decemviri were ſent into Greece, and which ſerved them for the ground-work of all their juriſprudence. See TABLE, and ROMAN.

The celebrated *laws* of the more modern days, are thoſe of the Angli, the Werini, or Thuringi; of the Boii, or Bavarians; thoſe of the Burgundi, Germans, Danes, and Norwegians; of the Franks, the Friſons, the Lumbards, the Gothic *laws*, the Martian, or Mercian *law*; the *laws* of the Saxons, Scots, Sicilians, Viſigoths; the *laws* of Oleron, the Molmutin *law*, and the Salic *law*. See SALIC, SUMPTUARY, &c.

LAW, *Lex*, among the firſt Romans, properly ſignified an ordinance of the people, made at the requeſt of a magiſtrate, particularly a conſul.

Theſe ordinances differed from the plebiſcita, and ſenatusconſulta, and even from other ordinances made at the requeſt of any other magiſtrate beſide a conſul, though thoſe too bore the name of *laws*.

Thus, though Aquilius and Falcidius were only tribunes when they made their requeſt, yet we ſtill ſay, the *Aquilian law*, the *Falcidian law*, &c.

The ſeveral *laws* of the Romans are diſtinguiſhed, 1°. By the name of him at whoſe requeſt they were paſſed; as the *Cornelian law*, the *Julian law*, &c.—2°. By the matter or ſubject of the *law*; and hence came the terms *Teſtamentary laws*, *Judiciary laws*, *Agrarian laws*, &c. See AGRARIAN, &c.

3°. Sometimes, by the crimes againſt which they were made; for inſtance, the *laws* touching *poiſoning*, *parricides*, &c. the *laws* of *concuſſion*, *peculate*, &c.

The *Codex*, and *Authenticæ*, are the *laws*, and conſtitutions of the Roman emperors: the *Digeſt* is a compilation, made by the emperor Juſtinian's order, of the ſeveral opinions, and judgments of the moſt learned in the Roman *law*; to which he gave the ſanction of *laws*, as appears by the epiſtle prefixed to the work: and it is this that properly conſtitutes the Roman *law*. See CODE, DIGEST, CIVIL *Law*, &c.

The *lex talionis*, or *law of like for like*, is the moſt antient, and equitable *law* in the world. It was obſerved by the Hebrews.

LAW *of England*, conſiſts of three parts: 1°. The common *law*, which is the moſt antient, and general *law* of the realm. See COMMON.

2°. Statutes, or acts of parliament.—3°. Particular cuſtoms. See STATUTE, CUSTOM, &c.

The common *law* of England, is derived from the Engliſh, Saxons, and Danes, and was antiently divided into three parts, *viz.* the *Mercian law*, the *Weſt-Saxon law*, and the *Daniſh law*.

Thoſe called *Mercian laws*, are commonly ſaid to have been compoſed by Martia, queen of the Britons, from whom there was a province called *provincia Merciorum*. — Many *laws* were alſo publiſhed by Ethelred, king of Kent, by king Ina, and Offa: but Alfred, who ſubdued the whole kingdom, having reviſed all the *laws* of his predeceſſors, retained thoſe which he thought proper, and aboliſhed the reſt; whence he is called *Anglicarum legum conditor*; and theſe *laws* were called *Weſtſexenelaga*.

But the kingdom being afterwards ſubdued by the Danes, they introduced another *law*, called *Danelaga*, by which their people were governed: And they being afterwards deſtroyed, Edward the confeſſor, out of the former *laws*, compoſed that which we now call the *common law*; for which reaſon he is called by our hiſtorians, *Anglicarum legum reſtitutor*.

Theſe *laws* were only general cuſtoms obſerved through the nation, and for that reaſon were called *common*; and perhaps, alſo, becauſe *leges omnibus in commune reddidit*, to be obſerved by all, with ſuch amendments as were afterwards to be made.

William the conqueror did not enact many new *laws*, but confirmed the old, *viz.* S. Edward's *laws*; and abrogated none that any way concerned compoſitions, or mulcts of delinquents.

The *common law* is alſo called *lex non ſcripta* (not but that we have moſt of them written in the old Norman dialect, but) becauſe it cannot be made by charter, or parliament; for thoſe are always matters of record, whereas cuſtoms are only matters of fact, and are no where but in the memory of the people, and of all *laws* muſt be the beſt for the Engliſh: for the written *laws*, made by king and parliament, are impoſed upon the ſubjects before any probation, or trial whether they are beneficial to the nation, or agreeable to the nature of the people, except where they are firſt made temporary, and for their experienced uſefulneſs afterwards made perpetual; but cuſtoms bind not till they have been tried and approved time out of mind.

Beſides the *common law* of England in general, there are in ſeveral parts of it certain cuſtoms and common uſages, which have the force of *common law* among thoſe people to whoſe property they belong; as, *borough Engliſh*, a cuſtom ſo called as not being in uſe out of England; where the youngeſt ſon, or, for want of ſons, the youngeſt brother, is to inherit; the eldeſt being ſuppoſed to have learnt the father's trade, and the youngeſt the leaſt able to ſhift for himſelf. See BOROUGH ENGLISH, GAVELKIND, &c.

Where the *common law* is ſilent, there we have *ſtatute laws*, made by the ſeveral kings of England, with the advice and conſent of both houſes of parliament. See STATUTE.

Beſides theſe, we make uſe of the *civil* and *canon laws* in eccleſiaſtical courts. See CIVIL, and CANON.

We have alſo *military* or *martial law*, in uſe among the ſoldiery in time of war; and *foreſt law*, for the regulation of foreſts. See MARTIAL, FOREST, &c.

LAW has alſo a more ſpecial ſignification, wherein it is taken for that which is lawful with us, and not elſewhere; as, 'Tenant by the courteſy of England.'

Thus, we alſo ſay, to *wage law (vadiare legem)* and to *make* or *do law (facere legem)*. See WAGE, and MAKE.

When an action of debt is brought againſt one upon ſome ſecret agreement or contract, the defendant may wage his *law* if he pleaſes; that is, ſwear, and certain perſons with him, that he owes the plaintiff nothing: but this is only allowed in caſe of the plaintiff's want of evidence, and when he cannot prove his ſurmiſe by any deed, or open act.

When one wages his *law*, he ſhall bring with him ſo many of his neighbours as the court ſhall aſſign, (Sir Edward Coke ſays, *eleven*) to ſwear with him, that they believe, in their conſciences, he hath ſworn truly; and theſe, in our *law*, are called *compurgators*; by the feudiſts, *ſacramentales*.

The officer, to make oath, is called the *wager of law*; and when it is accompliſhed, it is called the *making* or *doing of law*. This cuſtom is ſaid to have obtained, formerly, among the Egyptians.

Aſſignee by LAW.	See	ASSIGNEE.
Covenant of LAW.		COVENANT.
Frank LAW.		FRANK.
Intendment of LAW.		INTENDMENT.
Poyning's LAW.		POYNING.
Releaſe in LAW.		RELEASE.
Salic LAW.		SALIC.
Suit in LAW.		SUIT.
Sumptuary LAW.		SUMPTUARY.
Surrender in LAW.		SURRENDER.
By-LAWS.		BY-LAW.
Cock-pit LAWS.		COCKPIT.
LAWS *of the Stage.*		STAGE.

LAW *of Arms*, is that *law* which gives precepts how rightly to proclaim war, to make and obſerve leagues, to attack the enemy, and to puniſh offenders in the camp. See WAR, ARMS, MARTIAL, &c.

LAW *of Marque*, a *law* by which thoſe who are driven to make uſe of it, take the goods, or ſhipping of the party that has done them wrong, and of whom they cannot get ordinary juſtice, whenever they can take them within their own bounds, or precincts. See REPRISALS.

LAWS *of Molmutius.*	See the article	MOLMUTIN *Laws.*
LAWS *of Oleron.*		OLERON.

LAW *of the Staple*, the ſame with LAW *Merchant*.

LAW *Merchant*, a ſummary ſort of *law*, originally differing from the *common law*, though now adopted and become a part of the laws of the kingdom; one point of it conſiſts in this, that if there be two joint merchants of wares, and one of them dies, his executor ſhall have the moiety: which is not allowed in the caſe of others, not merchants.

LAW *Spiritual*, is the eccleſiaſtical or canon *law*, allowed and authorized in this realm; ſo far as it is not againſt the common *law*, nor againſt the ſtatutes and cuſtoms of the kingdom. And according to ſuch eccleſiaſtical *laws*, the ordinary and other eccleſiaſtical judges do proceed in caſes within their cognizance. See CANON *Law*.

LAW is alſo uſed figuratively, in ſpeaking of the rules, or order wherein any thing is performed.

Thus we ſay, the *laws* of motion, the *laws* of mechanics, the *laws* of fluids, the *laws* of chance, of a game, &c. See MOTION, FLUID, GAME, &c. — *Laws* of friction, of reſiſtance, of deſcent of bodies, &c. See FRICTION, RESISTANCE, DESCENT, &c. — *Laws* of elaſticity, rarefaction, reflection, refraction, &c. See ELASTICITY, RAREFACTION, REFLECTION, REFRACTION, &c.

LAWFUL. See the article UNLAWFUL.

LAWFUL *Naam*. See the article NAAM.

LAWING *of Dogs*, a phraſe uſed in our antient law-writers. Thus, maſtiffs muſt be *lawed* every three years; *Crompton Juriſd.* fol. 163. that is, three claws of the fore foot ſhall be cut off by the ſkin, or the ball of the fore foot cut out. See EXPEDITATING.

LAWLESS *Court*, a court held on King's-hill, at Rochford in Eſſex, every Wedneſday morning next after Michaelmas-day, at cock-crowing; at which court they whiſper, and have no candle, nor any pen and ink, but a coal: he that owes ſuit or ſervice there, forfeits double his rent every hour he is miſſing.

This court is called *lawleſs*, becauſe held at an unlawful hour, or, perhaps, *quia dicta ſine lege*, becauſe opened without any form. It is mentioned by Camden, who ſays, this ſervile attendance was impoſed on the tenants, for conſpiring at the like unſeaſonable time to raiſe a commotion.

LAWLESS *Man*, *Exlex*. See the article OUTLAW.

LAXATIVE, in medicine, is uſed to ſignify a looſe ſtate, or diſpoſition of the body; ſo as to go frequently to ſtool.

LAXATIVES, or LAXATIVE *Medicines*, are ſuch as promote that diſpoſition, which they do by ſome ſmooth, ſoftening quality, taking away the tenſity of the fibres, and facilitating the paſſage of the contents of the inteſtinal tube, through it; for which reaſon all oily ſubſtances come under this claſs. See PURGATIVES.

LAXIOR *Toga*. See the article TOGA.

LAY, the name of a kind of antient poeſy, or poem among the French; conſiſting of very ſhort verſes.

There were two ſorts of *lays*, the *great*, and the *little*.

Greater LAY, was a poem conſiſting of twelve couplets of verſes, of different meaſures.

Little LAY, was a poem conſiſting of ſixteen or twenty verſes, divided into four couplets.

Theſe *lays* were the lyric poetry of the old French poets, who were imitated by ſome among the Engliſh. They were principally uſed on melancholly ſubjects, and are ſaid to have been formed on the model of the trochaic verſes of the Greek and Latin tragedies.

Father Mourgues gives us an extraordinary inſtance of one of theſe antient *lays*, in his treatiſe of French poetry:

Sur l'appui du monde
Que faut il qu'on fonde
D'eſpoir?
Cette mer profonde,
En debris feconde
Fait voir
Calme au matin, l'onde
Et l'orage y gronde
Le ſoir.

LAY *the Land*, a ſea phraſe, uſed for ſailing out of ſight of land. In ſuch caſes they ſay, *they have laid the land*: and if another point of land exclude the ſight of the former, they ſay, *they have ſhut the firſt land in*.

LAY-*Land*, in huſbandry, denotes fallow ground, which lies untilled. See FALLOW, and PLOUGHING.

LAY-*Brother*, among the Romaniſts, a pious, but illiterate perſon, who devotes himſelf, in ſome convent, to the ſervice of the religious. See BROTHER.

The *lay-brother* wears a habit different from that of the religious, nor ever enters into the choir, or the chapter. He is not in any orders, nor does he make any vow, excepting of conſtancy and obedience.

LAY-*Brother* is alſo uſed for an illiterate religious, who takes care of ſome of the temporal concerns of the convent, as the kitchin, the gate, &c.

Theſe *lay-brothers* make the three vows of religion.

In the nunneries are alſo *lay-ſiſters*, who never enter the choir, &c. and who are only retained for the ſervice of the convent.

The inſtitution of *lay-brothers* began in the eleventh century. The perſons on whom this title was conferred, were ſuch as were too ignorant to become clerks, and who therefore applied themſelves wholly to bodily labour. It ſeems to have taken its riſe from hence, that the laity in thoſe days had not, for the generality, the leaſt tincture of learning; whence alſo thoſe came to be called *clerks*, by way of diſtinction, who had ſtudied a little, and were able to read. See CLERK.

LAY-*Canons.*	See the article	CANON.
LAY-*Communities.*		COMMUNITY.
LAY-*Corporation.*		CORPORATION.
LAY-*Patronage.*		PATRONAGE.
LAYS-*ſide.*	See the article	SIDE-*lays.*
Vaunt-LAY.		VAUNT-*lay.*

LAYER, in huſbandry, and gardening, a young tender ſhoot or twig of a plant, not far from the ground, which is bent down, and ſeveral joints or knots of it buried three or four inches under ground: the other part ſtill remaining united with the parent tree; till having ſtruck root below, it is cut and ſeparated from the reſt, and produces a new plant.

LAYMAN, a perſon not engaged in any order of eccleſiaſtics. See CLERGY, SECULAR, &c.

LAYMAN, among painters, a little ſtatue or model, either of wax or wood, whoſe joints are ſo made, that it may be put into any attitude, or poſture: its chief uſe is for the caſting, and adjuſting draperies, for the clothing of figures.

Some call it, after the French, *manequin*, *q. d.* a little man.

LAZARETTO, or LAZAR-HOUSE, a public building in manner of an hoſpital, for the reception of poor ſick. See HOSPITAL, &c.

LAZARETTO, in ſome countries, is an edifice appointed for perſons coming from places ſuſpected of the plague, to perform quarantain in.

This is uſually a large building, at a diſtance from any city, whoſe apartments ſtand detached from each other, &c. where ſhips are unladen, and their crew is laid up for forty days, more or leſs, according to the time and place of departure. See QUARANTAIN.

S. LAZARUS, or LAZARO, a military order, inſtituted at Jeruſalem by the Chriſtians of the Weſt, when they became maſters of the holy land, whoſe buſineſs was to receive pilgrims under their care, guard them on the roads, and defend them from the inſults of the Mahometans.

Some ſay, this order was inſtituted in 1119. Pope Alexander IV. confirmed it by a bull in 1255, giving it the rule of S. Auguſtine.

The knights of this order being driven out of the holy land, part of them retired into France, and were eſtabliſhed there under Louis III. who beſtowed on them the country of Boigny near Orleans. Innocent VIII. ſuppreſſed the order of *S. Lazaro* in Italy in 1490, or rather united it to that of Malta. Leo X. re-eſtabliſhed it in Italy in the beginning of the ſixteenth century. In 1572, Gregory XIII. united it in Savoy to that of S. Maurice, juſt inſtituted by duke Emanuel Philibert.

In France, this order was united to that of N. D. of Mount Carmel in 1608, and had ſome new advantages conferred on it by the late king Louis XIV. The knights of *S. Lazarus* are allowed to marry, and yet have penſions upon benefices.

Fathers of S. LAZARUS, called alſo LAZARITES, a name given to certain regular clerks of a congregation inſtituted in France, in the ſeventeenth century, by M. Vincent.

They take the denomination from a houſe in the Fauxbourg of Paris. They have a ſeminary in Paris, called, *The ſeminary des bons enfans*. The vows they make are ſimple, and on occaſion may be diſpenſed withal.

LAZULI. — *Lapis* LAZULI, a ſort of precious ſtone, of a blue colour, veined and ſpotted with white, and yellow. See STONE.

This is the ſame with what is otherwiſe called *azure* ſtone, by the antients *cyaneus*, and *cæruleum*; by Meſue, the *ſtarry* ſtone; by Pliny, as Dr. Woodward imagines, *ſapphirus*. See AZURE, SAPPHIRE, &c.

Of the *lapis lazuli* is prepared the fine pigment called *ultra marine*. See ULTRAMARINE.

To be good, it ſhould be able to reſiſt fire and ſmoke; and come out of them with new luſtre. — It is found in mines of gold, ſilver, and copper, as alſo in pits of marble; which laſt is that generally in uſe.

Naturaliſts diſtinguiſh three kinds of *lapis*: The firſt called *old rock*, which is pure, ſmooth, a fine blue, with beautiful yellow ſtreaks like veins of gold, which yet are frequently no more than veins of pyrites. — The ſecond, called the *new rock*, is ſtuffed with common ſtones; its colour is weaker, and its price lower: theſe two kinds are brought from Perſia and Siam. — The third kind is brought from the mountains of Auvergne. This is mixed with the common rock whence it is dug; it is of a pale blue, and is ſprinkled with greeniſh ſpots, with veins of pyrites. This, when ſufficiently charged with ſpots of green, is ſold for the Armenian ſtone. See ARMENIAN.

The *lapis* is of ſome uſe in medicine; they prepare it by calcining and waſhing it ſeveral times; which done, it makes an ingredient in the famous confection of alkermes. Sometimes, in ſpite of all its lotions, it continues to be purgative, by reaſon of the vitriolic matter it contains.

Le *Roy le veut.* } See the article Le Roy.
Le *Roy s'adviſera.* }

LEAD, a coarſe, heavy, impure metal, of all others the ſofteſt and moſt fuſible, when purified; called by the chymiſts *ſaturn*. See Me[illegible]

Thoſe who have made [illegible] of *lead*, find it to contain a little mercury, ſome ſulphur, and a great deal of bituminous earth.

Lead is found in various countries, but abounds particularly in England. It is found, too, in ſeveral kinds of ſoils, and ſtones, ſome whereof, beſides, contain gold, ſome ſilver, others tin, &c.

It is melted in a furnace provided for that purpoſe, with a ſtrong coal-fire upon it; as it melts, it runs through a canal on one ſide; leaving the earth, ſtone, and ſcoria, with the aſhes of the coals.

It is purified by ſkimming it ere cold, and throwing ſuet and other fat bodies into it.

Lead is found of a lighter, or deeper colour, according as it is more or leſs purified; though ſome make a difference in the colour of the ore, always eſteeming that moſt which is the whiteſt.

Some very able naturaliſts obſerve, that the weight of *lead* increaſes, either in the open air, or under ground. —Mr. Boyle obſerves this particularly of the *lead* of churches, which, he ſays, frequently grows both in bulk and weight, ſo as to become too ponderous for the timber that before ſuſtained it; which ſome account for from the impurity, heterogeneity, and looſe texture of its parts, by means whereof the particles of the air getting admiſſion within its pores, are attracted, and eaſily aſſimilated to it. But others, who rely wholly on experience, abſolutely deny the fact, as alſo that it is reproduced in mines before exhauſted, by letting them lie long open to the air; which others aſſert.

Lead is a metal of much uſe; it eaſily melts, and mixes with gold, ſilver, and copper, and communicates, as they talk, its humidity to them; but not being able to endure the violence of the fire which they undergo, it retires, and carries with it all that was heterogeneous in them; ſo as neither gold nor ſilver are refined without *lead*. See Refining.

To which it may be added, that the coarſer kind of precious ſtones, boiled in *lead*, are thereby rendered much more brilliant.

Lead is much uſed in building, particularly for covering, gutters, pipes, and in glaſs-windows. For which uſes, it is either caſt into ſheets in a mold, or milled; which laſt, ſome have pretended, is the leaſt ſerviceable, not only on account of its thinneſs, but alſo becauſe it is ſo exceedingly ſtretched in milling; that when it comes to lie in the hot ſun, it is apt to ſhrink and crack, and conſequently will not keep out the water: But this appears to be a ſuggeſtion without grounds. *Vid.* Bayl. *Build. Dict.* Suppl. in voc.

The *lead* uſed by glaziers is firſt caſt into ſlender rods, twelve or fourteen inches long, called *cames*; which being afterwards drawn through their vice, comes to have a groove on either ſide for the panes of glaſs; and this they call *turned lead.*

The method of paleing or ſoldering *lead* for fitting on of imboſſed figures, &c. is by placing the part whereon the figure is to be paled, horizontal, and ſtrewing on it ſome pulveriſed roſin; under this they place a chaffing-diſh of coals, till ſuch time as the roſin becomes reddiſh, and riſes in pimples; then apply the figure, and rub ſome ſoft ſolder into the joining: when this is done, the figure will be paled on, and as firm as if it had been caſt on it.

Borrichius aſſerts, that *lead* reverberated into minium, converted into glaſs, reduced into ceruſs, and burnt into litharge, immediately reſumes its original figure, upon the dexterous application of a lixivial ſalt.

Lead-*works*. — Mr. Glanville obſerves, that the ſmoke of the *lead-works* at Mendip in Somerſetſhire is a prodigious annoyance, and ſubjects both the workmen, and the cattle that graze about them, to a mortal diſeaſe. The trees that grow near them have their tops burnt, and their leaves and outſides diſcoloured and ſcorched.

When the *lead* ore is dug out, they beat it ſmall, then waſh it clean in a running ſtream, and ſift it in iron rudders. Their hearth or furnace is made of the clay or fire-ſtone; this they ſet in the ground, and on it build their fire, which they light with charcoal, continuing it with young oaken gads, blown with bellows, by mens treading on them. After the fire is lighted, and the fire-place hot, they throw their *lead* ore on the wood, which melts down into the furnace, and then with an iron ladle they take it out, and upon ſand caſt it into what form they pleaſe.

The mine-men ſometimes find the vein run up into the roots of trees, and yet do not obſerve any difference between thoſe and other trees. When the mine is near the ſurface, the graſs is ſometimes found yellow. They make no account of the virgula divinatoria; yet ſay, that when a mine is open, they may gueſs by it how far the vein will lead. The ore runs ſometimes in a vein, ſometimes diſperſed in banks; it lies many times between rocks; ſome of it is harder, others milder; ſometimes they have branched ore in the ſpar; about the ore is ſpar and caulk; and another ſubſtance, which they call *crootes.*

For the manufacture of **Lead**, ſee the article Plumbery.

There are various preparations of *lead*, ſerving for various purpoſes:

Lead *Duſt*, is a preparation uſed by the potters; made by throwing charcoal duſt into melted *lead*, and ſtirring them a long time together; to ſeparate the coal again, they only waſh it in water, and dry it afreſh. —Its uſe is to give a varniſh and gloſs to their works.

Burnt **Lead**, *plumbum uſtum*, is a chymical preparation uſed in medicine, made of plates of *lead* melted in a pot with ſulphur, and reduced by fire into a brown powder.

White **Lead**, uſed by painters, is only thin plates of *lead* diſſolved with vinegar. See White *Lead*, and Ceruss.

Litharge of gold or ſilver, is only the *lead* uſed in purifying copper. See Litharge.

Red **Lead**, a preparation of mineral *lead* calcined, and rubified; uſed by painters, potters, and phyſicians. See Minium.

By help of chymiſtry, there are alſo drawn from *lead*, ſalts, balſams, oils, vinegar, a magiſtery, &c. diſguiſed under the name of *ſaturn*, to amuſe the ignorant.

Salt, or *Sugar of* **Lead**, *Saccharum ſaturni*, is an eſſential ſalt of vinegar, incorporated with the proper ſubſtance of *lead*, or ceruſs diſſolved in ſpirit of vinegar.

Balm of **Lead**, or *Saturn*, is an oil drawn from the ſalt of *lead* by diſtillation, after having diſſolved it in ſpirit of turpentine.

Magiſtery of **Lead**, is the calx of *lead* purified and ſubtilized. It is made of *lead* diſſolved in aqua fortis, pouring a filtrated ſalt water into it; whence reſults a magiſtery extremely white, which, when ſoftened by ſeveral lotions, is mixed with pomatums for the face and complexion. See Magistery.

Black **Lead**, is a kind of mineral ſtone, of a black colour, but ſilvered, and ſhining, found chiefly in *lead* mines, and appearing to be nothing elſe but *lead* not yet arrived at maturity; much uſed for pencils, or crayons for deſigning. — It is melted like the common *lead.*

Eſſay of **Lead**. } See the article { Essay.
Refining of **Lead**. } See the article { Refining.
Caſting of **Lead** *on Cloth.* } See the article { Casting.

Lead *Nails.* See the article Nails.

Leaden *Bullet Moulds.* See the article Moulds.

LEAF, a part of a plant, ordinarily very thin and flat, growing in the ſpring, and falling off in autumn. See Plant.

There are ſome plants without *leaves*, as truffles and muſhrooms. See Truffle, and Mushroom.

As to the ſtructure of *leaves*, Dr. Grew obſerves, that their fibres never ſtand on the ſtalk in an even line, but always in an angular or circular poſture, and their vaſcular fibres or threads are 3, 5, or 7. The reaſon of which poſition is for their more erect growth, and the greater ſtrength of the *leaf.*

Another obſervable in the fibres of *leaves*, is their orderly poſition; ſo as in ſome to take in an eighth part of a circle, as in mallows; in ſome a tenth, but in moſt a twelfth.

The ſame author obſerves ſix ſeveral parts intended by nature for the preſervation of gems; *viz.* *leaves*, ſurfoils, interfoils, ſtalks of *leaves*, hoods, and mantlings that cover them.

The ſkin or coat of the *leaves* is no more than that of the branches extended, as gold, by beating, is reduced into leaves. — In the gem, the *leaves* are folded, ſometimes in two, and ſometimes in ſeveral plaits, ſomewhat after the manner of a fan. If the leaves be too thick to plait commodiouſly in two, and to be ranged againſt each other; or if they be in too ſmall a number, and their fibres too delicate, inſtead of being plaited, they are rolled up, and form either a ſingle roll, as the *leaves* of the mountain cowſlip, which are thick; or two rolls, which begin at each extremity of the *leaf*, and meet in the middle. — There are alſo ſome plants whoſe *leaves* form three rolls, as fern; ſeveral *leaves* are covered with hair of ſeveral figures, thoſe of lavender and olive-tree have hair reſembling ſtars. See Lanugo.

Botaniſts conſider the *leaves* of plants, with regard to their ſtructure, ſurface, figure, conſiſtence, edges, ſituation and ſize. — With regard to their ſtructure, *leaves* are either *ſingle*, as thoſe of the apple-tree, pear-tree, &c. or *double*, as thoſe of angelica, parſley, &c.

With regard to their ſurface, *leaves* are either *flat*, as the nummularia, aſarum, origany, androſæmum, brionia canadenſis, &c. or *hollow*, as thoſe of the onion and aſphodel; or *in bunches*, as ſeveral kinds of kali, and houſe-leeks.

With regard to their conſiſtence, *leaves* are either *thin* and fine, as thoſe of S. John's-wort, and dog's graſs; or *thick* and groſs, as thoſe of portulaca; or *fleſhy*, as thoſe of ſeveral kinds of houſe-leeks; or *woolly*, as thoſe of the wool-blade.

With regard to their verge, or edges, *leaves* are either *cut ſlightly*, as ſome ſpecies of geum, and cannabis lutea; or *deep*, as treſoil, *&c.* See DENTED *Verge*.

With regard to their ſituation, *leaves* are either *alternate*, that is, ranged alternately, as the philyca; or oppoſite to each other, as the phillyrea, and ſome ſpecies of the rubia.

With regard to their ſize, *leaves* are either very *big*, as thoſe of the colocaſia, and ſphondylium; *moderate*, as thoſe of the biſtort, the fig-tree; *ſmall*, as thoſe of the apple-tree, pear-tree, peach-tree; or *very ſmall*, as thoſe of mille-pertuis, or S. John's-wort.

Annual LEAVES.	See the article	ANNUAL.
Crenated LEAVES.	See the article	CRENATED.
Diſſimilar LEAVES.	See the article	DISSIMILAR.
Procumbent LEAVES.	See the article	PROCUMBENT.
Segment LEAVES.	See the article	SEGMENT.
Seminal LEAVES.	See the article	SEMINAL.
Vernal LEAVES.	See the article	VERNAL.

LEAF, is alſo applied to the fineſt and moſt beautiful parts of flowers. See FLOWER.

It is true, all flowers have not *leaves*, and it is ſometimes difficult to determine which is to be called the *leaves*, and which the calyx of the ſame flower. See CALYX.

To prevent confounding the *leaves* of the flower with thoſe of the reſt of the plant; the former are called by botaniſts *petala*, the latter *folia*. See PETALA.

LEAVES, in architecture, are an ornament of the Corinthian capital, and thence borrowed into the Compoſite; conſiſting in the repreſentation of a double row of *leaves* covering the vaſe, tympanum, or neck of the column. See CAPITAL.

Theſe *leaves* are uſually formed in imitation of thoſe of the acanthus; ſometimes of thoſe of olive, and ſometimes of laurel. See ACANTHUS.

The *leaves* are divided; each making three ranges of leſſer, and are bent, atop, one third of their heighth. — *See Tab. Archit. fig.* 30. *lit. CC.*

LEAF-*Silver*. See the article SILVER.

LEAGUE*, an extent of ground, conſidered lengthwiſe; ſerving to meaſure the diſtances of one place from another; and containing more or leſs geometrical paces, according to the different uſages and cuſtoms of countries.

* The word comes from *leuca*, or *leuga*, an antient Gauliſh word, for an itinerary meaſure, and adopted in that ſenſe by the Romans. — Some derive the word *leuca* from λευκος, white; in regard the Gauls, in imitation of the Romans, marked the ſpaces and diſtances of their roads with white ſtones.

A *ſea league* is uſually reckoned 3000 geometrical paces, or three Engliſh miles: the large *leagues* of France, are uſually 3000, and in ſome places 3500 paces; the mean or common *league* is 2400 paces, and the little *league* 2000. Chorier obſerves, that the antient Gauliſh *leagues* were but 1500 paces.

The Spaniſh *leagues* are larger than the French, 17 Spaniſh *leagues* make a degree, or 20 French *leagues*, or 69 ½ Engliſh ſtatute miles. The *leagues* of Germany and Holland contain four geographical miles each.

The Perſian *leagues* are nearly the ſame with the Spaniſh; that is, they are equivalent to four Italian miles; which comes pretty near to what Herodotus mentions of the paraſanga, an antient meaſure among the Perſians, containing thirty ſtadia; eight whereof, according to Strabo, make a mile. See PARASANG.

The Perſians mark their *leagues* by trees, as the antient Romans did by ſtones, *lapides*; for which reaſon they are alſo called *agag*, a Turkiſh word ſignifying *tree*. — In Japan, the *league* conſiſts of 1800 fathoms. — Theſe are all diſtinguiſhed by little hillocks, raiſed on purpoſe by the road ſide. See the *leagues* of moſt countries, reduced to the Roman foot, under the word MILE.

LEAGUE * alſo denotes an alliance, or confederacy between princes, and ſtates, for their mutual aid, either in attacking ſome common enemy, or in defending themſelves. See ALLIANCE.

* The word comes from *liga*; which, in the corrupt Latin, was uſed for a *confederacy*: Qua quis cum alio ligatur.

There have been ſeveral holy *leagues* entered into by the Chriſtians, againſt the Saracens and infidels; called alſo *cruſado's*, or *croiſades*. See CROISADE.

The **LEAGUE**, by way of eminence, denotes that famous one on foot in France, from the year 1576, to 1593. Its intent was to prevent the ſucceſſion of Henry IV. who was of the Reformed religion, to the crown; and it ended with his abjuration of that faith.

The *leaguers*, or confederates, were of three kinds: the *zealous leaguers* aimed at the utter deſtruction, not only of the Huguenots, but alſo of the miniſtry. The *Spaniſh leaguers* had principally in view the transferring the crown of France to the king of Spain, or the infanta his daughter. The *moderate leaguers* aimed only at the extirpation of Calviniſm, without any alteration of the government.

LEAKAGE, the ſtate of a veſſel that *leaks*; that is, lets water, or other liquid ouze in or out.

LEAKAGE alſo denotes an allowance of 12 per cent. to merchants importing wine, out of the cuſtoms thereof; and of 2 barrels in 22 of ale to brewers, *&c.* out of the exciſe.

LEAP, and **STEP**. See the article STEP.

LEAP-YEAR*, the ſame with *biſſextile*. See BISSEXTILE.

* It is thus called, by reaſon, in the common year, any fixed day of the month changes ſucceſſively the day of the week; but, in the *leap-year*, it ſkips or *leaps* over one day.

The common year hath 365 days in it, but the *leap-year* 366 days; and in this caſe February hath 29 days; which, in the common year, hath but 28.

To find the *leap-year*, the rule is,

Divide by 4, *what's left ſhall be,*
For leap-year 0, *for paſt*, 1, 2, *or* 3.

For example; Is the year 1720 a *leap-year*, or a common year?

4) 1720 (430

There is 0 remainder, ſo that it is *leap-year*.

LEASE, in law, a demiſe, or letting of lands, tenements, or hereditaments unto another for life, term of years, or at will, for a rent reſerved. See RENT.

A *leaſe* is either written, called an *indenture*, *deed poll*, or *leaſe* in writing; or by word of mouth, called *leaſe parol*. See PAROL.

The party who lets a *leaſe*, is called the *leſſor*; and the party to whom it is let, the *leſſee*.

LEASH, or **LEASE**, among ſportſmen, denotes three creatures of any kind; but chiefly greyhounds, foxes, bucks, and hares.

We ſay, a *leaſh* of greyhounds, a couple and a half of hounds.

LEATHER-*Mills.* See the article MILL.
LEATHER-*Money.* See the article COIN, and MONEY.

LEAVE *and take*. See the article TAKE.

LEAVEN*, any thing that will make a body ſwell, and ferment. See FERMENT, and FERMENTATION.

* The word is formed from the French *levain*, which ſignifies the ſame, of the verb *lever*, or Latin, *levare*, to riſe.

Beer, ale, wine, and cyder, only work by means of the *leaven* in them. — Sour paſte, barm, rennet, *&c.* are *leavens* uſed in baking bread, brewing beer, making cheeſe, *&c.* See YEST, RENNET, BAKING, *&c.*

LEAVER. See the article LEVER.

LECTICARIUS, an officer in the Greek church, whoſe buſineſs it was to bear off the bodies of thoſe who died, and to bury them. — Theſe were otherwiſe denominated *decani* and *copiatæ*. See DEAN, and COPIATÆ.

The Romans had two kinds of *lecticarii*, different from thoſe of the Greeks, and who anſwered nearly to the office of our chairmen. See LITTER.

LECTISTERNIUM, a religious ceremony among the antient Romans; being a feſtival prepared, and ſolemnly ſerved up in a temple. See FEAST.

And becauſe, according to the cuſtoms of thoſe times, they placed beds around the tables, and ſet the ſtatues of the gods on thoſe beds, in the ſame manner as men ſat at meals; they called the ſolemnity *lectiſternium*, from *lectus*, bed, and *ſternere*, of *ſterno*, to ſpread, prepare.

In this ceremony the Epulones preſided. See EPULO.

Caſaubon has obſerved from a paſſage in the ſcholiaſt of Pindar, that the Greeks had alſo a ſort of *lectiſternium* in uſe.

Livy obſerves, that the firſt *lectiſternium* ſeen in Rome, was that which held for eight days ſucceſſively, in honour of Apollo, Latona, Diana, Hercules, Mercury, and Neptune; on occaſion of a contagious diſeaſe which killed all their cattle, in the year of Rome 354; though Valerius Maximus mentions one before that.

LECTURES. See the article BOYLE'S *Lectures*.

LEDGER. See the article BOOK.

LEE, a term variouſly uſed at ſea; though its general uſe be to ſignify the part towards, or oppoſite to the wind. — Thus the

LEE-*Shore*, is that on which the wind blows; ſo that to be under the *lee* of the ſhore, is to be cloſe under the weather-ſhore, or under wind.

A **LEE** *the Helm*, ſignifies, put the helm to the lee-ward ſide of the ſhip.

Take care of the **LEE** *Hatch*, is a word of command to the man at the helm, to take care that the ſhip do not go to the leeward of her courſe.

LEE-*ward Ship*, is one that is not faſt by the wind, or which doth not ſail ſo near the wind, nor make ſo good way as ſhe ſhould.

To lay a Ship by the **LEE**, or *to come up by the* **LEE**, is to bring her ſo, that all her ſails may lie flat againſt her maſts and ſhrouds, and that the wind may come right upon her broadſide.

LEE-*way*, or **LEE**-*ward-way of a Ship*, is the angle made by the line on which the ſhip ſhould run according to her courſe; or the point of the compaſs ſteered upon, and the real line of the ſhip's way.

All ſhips are apt to make ſome *lee-way*; ſo that in caſting up the log-board, ſomething muſt be allowed for *lee-way*. The ordinary rules are theſe:

1°. If the ſhip be upon a wind, allow one point for *lee-way*. 2°. If the wind blow hard, ſo that you are forced to take in one top-ſail, allow two points for *lee-way*. 3°. If it blow ſo hard, that both top-ſails muſt be taken in, and the ſea runs high, allow three points for *lee-way*. 4°. If her fore-ſail being furled, ſhe try under a main-ſail, or mizzen, ſhe will make her way four points before the beam. 5°. If ſhe try with a main-ſail only, ſhe will make her way near three points before the beam. But, 6°. If under a mizzen only, ſhe will make her way about two points before the beam. 7°. If ſhe lie a hull, with all her ſails furled, ſhe will make her way one point before the beam.

LEER *Furnace*. See the article FURNACE.

LEES *, the groſſeſt and thickeſt parts of wine, oil, and other liquors; or the ſediment found at the bottom of the veſſel.

* The word comes from the French, *lie*, and that either from *limus*, mud, or from *Lyeus*, one of the ſurnames of Bacchus; or according to Du Cange, from *lia*, a corrupt Latin word, ſignifying the ſame.

A kind of gravelly ſand is made with the *lees* of wine burnt, and prepared, uſed by dyers, *&c.* which ought to ſtand as a caution to people troubled with the ſtone, *&c.*

The vinegar-makers make a great trade of the *lees* of wine dried, and made into cakes, after having ſqueezed out the remains of the liquor in preſſes. See WINE, and CAPITAL.

LEET, LETA, a court held by the lord of a manor; though, in reality, it is the king's court, in whoſe manor ſoever it is held; by reaſon the authority thereof belongs originally to the crown, and is derived thence to other perſons.

A *court-leet*, is a court of record, and inquires of all offences under high-treaſon; though it cannot puniſh many, but muſt certify them to the juſtice of aſſize. See COURT.

LEFT *Hand*. See the article HAND.

LEG, *Crus*. See the article LEGS.

LEGACY, LEGATUM, in the civil law, a donation by teſtament; anſwering to what in common law is called a *demiſe*. See DONATION, TESTAMENT, DEMISE, *&c.*

Legacy is uſually defined ſome particular thing given by a laſt will, and teſtament; for that if a man thus diſpoſe, or transfer his whole eſtate on another, it is called *hæreditas*; and he to whom it is given, is called *hæres*.—Though, in common law, the diſtinction is this; that he to whom all a man's lands, and hereditaments deſcend by right of blood, is *hæres natus*; the other, to whom it is bequeathed, is called *hæres factus*. See HEIR.

LEGACY, in an eccleſiaſtical ſenſe, was a ſoul-ſeat, a bequeſt to the church, or accuſtomed mortuary: which was to hold good, even though the teſtament itſelf were declared null, and invalid. See MORTUARY.

LEGAL *Column.*	See the article	COLUMN.
LEGAL *Oeconomy.*		OECONOMY.
LEGAL *Subrogation.*		SUBROGATION.
LEGAL *Tutorage.*		TUTORAGE.

LEGALIS *Homo*, in law, a perſon who ſtands rectus in curia, not out-lawed, nor excommunicated, nor defamed.

And in this ſenſe are thoſe words ſo often uſed *probi, & legalis homines*.

Hence all *legality* is taken for the condition of ſuch a man.

LEGATE, a prelate, whom the pope ſends as ambaſſador to any ſovereign prince. See EMBASSADOR, and VICE-LEGATE.

* The term *legate* comes from that of *legatus*, which Varro derives from *legere*, to chuſe; and others from *legare*, *delegare*, to ſend, delegate. *Wicquefort.*

There are three kinds of *legates*, viz. *legates à latere*, *legates de latere*, and *legates* by office, or *legati nati*.

Of theſe, the moſt conſiderable are the *legates à latere*; ſuch are thoſe whom the pope commiſſions to take his place in councils; who are thus called, in regard the pope never gives this office to any but his greateſt favourites, and confidents, who are always at his ſide, *à latere*; that is, to the cardinals. See LATERE.

A *legate à latere*, may confer benefices without mandate, legitimate baſtards to hold offices, and has a croſs carried before him, as the enſign of his authority.

The *legates de latere*, are thoſe who are not cardinals, but are yet intruſted with an apoſtolical legation.

Legates by office, *legati nati*, are thoſe who have not any particular legation given them; but who, by virtue of their dignity, and place in the church, become *legates*. Such are the archbiſhops of Rheims and Arles. — But the authority of theſe *legates*, is much inferior to that of the *legates à latere*.

The power of a *legate* is ſometimes alſo given without the title: ſome of the nuntio's are inveſted with it. See NUNTIO.

Court of the LEGATE. See the article COURT.

LEGATIS *Tenementis*. See the article TENEMENTIS.

LEGATORY, or LEGATARY, a term uſed in ſpeaking of the government of the antient Romans: Auguſtus divided the provinces of the empire into conſular, *legatory*, and preſidial.

LEGATORY *Provinces* were thoſe whereof the emperor himſelf was governor, but where he did not reſide, but adminiſtred affairs by his lieutenant, or *legatus*. See LEGATUS.

LEGATUS, among the Romans, a military officer, who commanded as deputy of the chief general.

Of theſe there were divers kinds, *viz.* a *legatus* in the army under the imperator, or general, anſwering to our lieutenant-general; and a *legatus* in the provinces, under the proconſul, or governor.

When any conſiderable perſon, among the Roman citizens, had occaſion to paſs through any of the provinces, the ſenate gave him the title of *legatus*; that is, of envoy from the ſenate, to the end he might be received with the greater reſpect; and that the cities and towns, through which he travelled, might defray his expences. — This they called a *free legation*, libera legatio; in regard the perſon was not incumbered with any truſt, and might lay it aſide as ſoon as he pleaſed.

LEGEND, LEGENDA, was originally a book uſed in the old Romiſh churches, containing the leſſons that were to be read in divine ſervice.

Hence alſo the lives of ſaints, and martyrs came to be called *legends*; becauſe chapters were read out of them at mattins, and in the refectories of the religious houſes. See SAINT.

Golden LEGEND, is a collection of the lives of the ſaints, compiled by James de Varaſe, better known by his Latin name of *J. de Voragine*, vicar-general of the Dominicans, and afterwards archbiſhop of Genoa, who died in 1298.

It was received into the church with a world of applauſe, which it maintained for 200 years; but, in effect, is ſo full of ridiculous and romantic accounts, that the Romaniſts themſelves are now generally aſhamed of it. — The word *legend* itſelf is, on that account, come into diſrepute.

LEGEND is alſo uſed to ſignify the words, or letters engraven about the margins, *&c.* of coins. See COIN.

Thus the *legend* of a French crown is, *Sit nomen domini benedictum*; that of a moidore, *In hoc ſigno vinces*: on thoſe of the laſt emperors of Conſtantinople, we find *Jeſus Chriſtus Baſileus Baſileon*, IHS XPS NIKA, *Jeſus Chriſtus vincit.*

LEGEND is alſo applied to the inſcriptions of medals, which ſerve to explain the figures, or deviſes thereof. See MEDAL, DEVISE, *&c.*

In ſtrictneſs, the *legend* differs from the *inſcription*; this laſt properly ſignifying words placed on the reveſe of a medal, in lieu of figures.

It ſeems as if the antients had intended their medals ſhould ſerve both as images, and as emblems; the one for the common people, and the other for perſons of taſte, and parts: the images to repreſent the faces of princes; and emblems to repreſent their virtues, and great actions: ſo that the *legend* is to be looked on as the ſoul of the medal, and the figures as the body.

Every medal has two *legends*; that on the front, and that on the reverſe. The firſt, for the generality, ſerves only to diſtinguiſh the perſon by his name, titles, offices, *&c.* the latter is intended to expreſs his noble and virtuous ſentiments, his good deeds, and the advantages the publick has reaped by him.—This, however, does not hold univerſally; for ſometimes we find the titles ſhared between both ſides, and ſometimes alſo the *legend*.

In the medals of cities, and provinces, as the head is uſually the genius of the place, or at leaſt ſome deity adored there; the *legend* is the name of the city, province, or deity, or of both together; and the reverſe, ſome ſymbol of the city, *&c.* frequently without a *legend*; ſometimes, with that of one of its magiſtrates.

The ordinary ſubjects of *legends*, are the virtues of princes, the honours they have received, conſecrations, ſignal events, public monuments, deities, public vows, privileges, *&c.*

Legends, and inſcriptions of medals, are either in Latin, or Greek.—The Greek character, conſiſting of majuſcule, or capital letters, appears uniform on all the medals; no change, or alteration being found in confronting the ſeveral characters; though, it is certain, there was in the ordinary uſe, and pronunciation. — All we obſerve on medals, is ſometimes a mixture of Greek and Latin letters. — The character was preſerved in all its beauty, till the time of Gallienus.

From the time of Conſtantine, and for the ſpace of 500 years, the Latin tongue was alone uſed in the *legends* of medals, even in thoſe ſtruck at Conſtantinople. — Michael begun the firſt, whoſe *legend* was in Greek; and from his time the language, as well as the characters, began to alter for the worſe. See CHARACTER.

LEGION *, a kind of regiment, or body of forces, of a number whereof the Roman armies were chiefly compoſed.

* The word comes from the Latin, *legere*, to chuſe; becauſe, when the *legions* were raiſed, they made choice of ſuch of their youth, as were the moſt proper to bear arms.

The number of ſoldiers, and officers, whereof the *legion* conſiſted, was different at different times: but it is impoſſible to determine the preciſe time, and manner of their alteration. —In the time of Romulus, each *legion* contained 3000 foot, and 300 equites, or horſe: theſe were divided into three bodies, which made as many orders of battle.—Each body conſiſted of ten companies, or manipules, ranged at ſome diſtance from each other, though in the ſame front. — Each body had two general officers to command it, called *tribunes*; and each manipule, two centurions.

Under the conſuls, the *legion* conſiſted of 4000 men, who made four bodies, commanded by a conſul, or one of his lieutenants; and each legion had its ſhare of cavalry, which was from two to three hundred horſe.

Afterwards, in the time of Marius, theſe four diviſions of the *legion* were united into one, and augmented; and cohorts were appointed from five to ſix hundred men, each under the command of a tribune. — Each cohort conſiſted of three companies, or manipules, each manipule of two centuries, and the *legion* was divided into ten cohorts, who made as many diſtinct battalions, diſpoſed in three lines; ſo that the *legion*, then, conſiſted of five or ſix thouſand men.

Iſidore tells us, that the *legion* conſiſted of ſix thouſand men, divided into ſixty centuries, thirty manipules, twelve cohorts, and two hundred troops.—According to the French academy, the *legion* conſiſted of ſix thouſand foot, and ſeven hundred twenty five horſe.

The *legions* were, by far, the moſt conſiderable part of the Roman army; their number, in the time of Auguſtus, was thirty three; they were compoſed wholly of Roman citizens. —The allies formed a body of auxiliary forces.

The ſtandard bore by the *legions* was various: at firſt, a wolf, in honour of that which ſuckled Romulus; afterwards a hog, by reaſon, ſays Feſtus, war is only undertaken with a view to peace, which was concluded by ſacrificing a hog. Sometimes, they bore the minotaur, to remind their general that their deſigns were to be kept ſecret, and inacceſſible as the minotaur in the labyrinth. — They alſo bore a horſe, a boar, *&c.* — Pliny tells us, that Marius was the firſt who changed all theſe ſtandards into eagles. See EAGLE.

Square LEGION, *Legio quadrata*, was a legion conſiſting of 4000 men. See QUADRATA.

Domeſticus LEGIONUM.	See	DOMESTICUS.
Thundering LEGION.		THUNDERING.

LEGISLATOR, *Law-giver*; he who frames the laws of a kingdom, or ſtate founded by him. See LAW.

The principal antient *legiſlators* are,—Moſes, *legiſlator* of the Hebrews; Mercurius Triſmegiſtus, and Bocchyris, of the Egyptians; Italus, of the Oenotrians; Theſeus, Draco, and Solon, of the Athenians; Zoroaſter, of the Bactrians; Charondas, of the Cappadocians; and Charondas, or Phaleas, of the Carthaginians; Androdamas, of the Chalcidians; Eudoxus of the Cnidians; Phido, of the Corinthians; Minos, of the Cretans; Pythagoras, of the Crotoniates, and moſt of the cities of Græcia Major; Parmenides, and Zeno, of Elea in Lucania; Zamolxis, of the Getæ; Phoroneus, of the Greeks; Bacchus, of the Indians; Saturn, of Italy; Macarius, of the iſle of Lesbos; Zaleucus, of the Locrians; Nicodorus Athleta, of the city of Mutina; Hippodamia, of Miletus; Charondas, of Rheggio; Lycurgus, of the Lacedæmonians; Archytas, of Tarentum; Philolaus, of the Thebans.

At Rome, the people were in great meaſure their own *legiſlators*; though Solon may be ſaid, in ſome ſenſe, to have been their *legiſlator*, in regard the Decemviri, who were created for the making of laws, borrowed a great number from thoſe of Solon. See DECEMVIRI, and TABLES.

LEGITIMATE *Delivery.*	See	DELIVERY.
LEGITIMATE *Tertian.*		FEVER.

LEGITIMATION, an act by which natural, or illegitimate children are rendered legitimate. See BASTARD, *&c.*

By the French law, the father and mother, by marrying, render their children, begotten before marriage, legitimate; and this is called *legitimatio per ſubſequens matrimonium.*

The right of *legitimation*, was a thing unknown to princes till the time of Conſtantine; but, ſince his time, has been exerciſed by moſt of them. The Greek emperors invented ſeveral kinds of *legitimation.*

Anaſtaſius put it in the power of the father to *legitimate* his natural children, by a bare adoption, provided he had no legitimate children. — But Juſtin, by his conſtitution, and Juſtinian, by his *Novel* 74, aboliſhed this *legitimation*, as fearing the too eaſy acceſs to *legitimation* ſhould encourage concubinage.

In lieu of this, he eſtabliſhed a way of *legitimation* by the emperor's letters. — This rendered baſtards capable of attaining to honours, and even of ſucceeding to inheritances, provided the perſons were *legitimated* with the conſent of their father and mother; which is agreeable to the canon law.

LEGS, the lower extremes of the bodies of moſt animals, ſerving them for ſupport and motion. See ANIMAL, and EXTREME.

Some anatomiſts divide the foot of man into three parts, *viz.* the thigh, the *leg*, and the leſſer foot. See FOOT.

In the *leg*, there are two conſiderable bones; the one called the *great focile*, or *tibia*; the other the *little focile*, or *fibula.* See TIBIA, and FIBULA.

The *legs* and feet of the ſeveral animals, Mr. Derham obſerves, are exactly conformable to the poſture, make, nay, to the motion and exerciſes of thoſe animals. In ſome they are made for ſtrength only, in others for agility and ſwiftneſs; in ſome, for walking and running, in others for ſwimming, in others for digging, and in others for flying. In ſome more lax, and weak, for traverſing the plain land; in others ſtiff, and rigid, for ice and precipices. In ſome, ſhod with tough and hard hoofs, ſome whole, ſome cleft. In ſome the feet are compoſed of toes, ſome ſhort, for only going, others long, to ſupply the place of hands; ſome are armed with talons, to catch and tear their prey; ſome with ſhort nails, to confirm their ſteps in running and walking. See NAIL, *&c.*

In birds, the *legs* are curved, for their eaſy perching, rooſting, and reſt, as alſo to help them on the wing in taking their flight, and to be therein commodiouſly tucked up to the body, ſo as not to obſtruct their flight. In ſome, long, for wading, *&c.* See BIRD.

LEGS *of a Triangle*,—when one ſide of a triangle is taken as a baſe, the other two are called *legs.* See TRIANGLE.

Arched LEGS.	See the article	ARCHED.
Hyperbolic LEGS.		HYPERBOLIC.
Compaſſes of three LEGS.		COMPASSES.

LEGUMEN, LEGUME, is applied, by botaniſts, to beans, peas, vetches, &c. otherwiſe called *pulſe.* See PULSE, and LEGUMINOUS.

Some will have them thus called, in regard they are gathered with the hand; by which they are diſtinguiſhed from corn, &c. which are mowed, or reaped: *eo quod manu legatur, & non ſecatur.*

Yet the antient writers on husbandry conſider corn, and even turneps, and all grains, and roots for family uſe, as *legumina.*

LEGUMINOUS, an appellation given to thoſe plants which yield legumes, or pulſe. See LEGUMEN.

Of this kind are moſt plants which grow in pods, as beans, peas, &c.

Ray ranks all plants as *leguminous*, which have a papilionaceous or butter-fly-like flower. See PLANT.

LEGUMINOUS *Flowers.* See the article FLOWER.

LEMMA, ΛΗΜΜΑ, in mathematics, denotes a previous propoſition, laid down in order to clear the way for ſome following demonſtration; and prefixed either to theorems, in order to render their demonſtration leſs perplexed, and intricate; or to problems, to make their reſolution more eaſy, and ſhort.

Thus, to prove a pyramid one third of a priſm, or parallelepipid of the ſame baſe and heighth with it; the demonſtration whereof in the ordinary way, is difficult, and troubleſome; this *lemma* may be premiſed, which is proved in the rules of progreſſion; that the ſum of the ſeries of the ſquares, in numbers in arithmetical progreſſion, beginning from 0, and going on 1, 4, 9, 16, 25, 36, &c. is always ſubtriple of the ſum of as many terms equal to the greateſt; or is always one third of the greateſt term multiplied by the number of terms.

Thus, to find the inflection of a curve line, this *lemma* is firſt premiſed; that a tangent may be drawn to the given curve, in a given point.

So, in phyſics, to the demonſtration of moſt propoſitions, ſuch *lemmata* as theſe are neceſſary firſt to be allowed; that there is no penetration of dimenſions; that all matter is diviſible; and the like.—As alſo in the theory of medicine, that where the blood circulates, there is life, *&c.*

LEMNIAN *Earth*, *Terra* LEMNIA, a medicinal, aſtringent, ſort of earth, of a fatty conſiſtence, and reddiſh colour; uſed in the ſame caſes as bole. See BOLE.

It has its name from the iſland of *Lemnos*, whence it is chiefly brought.

Many form it into round cakes, and impreſs a ſeal upon it; whence it is alſo called, *terra ſigillata.* See SIGILLATA.

LEMONADE, a drink prepared of water, ſugar, and citron, or lemon juice.

This factitious liquor is ſo popular in Paris, that it has given its name to a new eſtabliſhed company, called *lemonadiers.*

LEMURES, in antiquity, *ſprites* or *hobgoblins*; reſtleſs ghoſts of departed perſons, who return to terrify and torment the living. See MANES.

Theſe are the ſame with *larvæ*, which the antients imagined to wander round the world, to frighten good people, and plague the bad.—For which reaſon, at Rome they had *lemuria*, or feaſts inſtituted to appeaſe the manes of the defunct.

Apuleius explains the antient notion of manes thus: The ſouls of men releaſed from the bands of the body, and freed from performing their bodily functions, become a kind of dæmons, or genii, formerly called *lemures.* — Of theſe *lemures*, thoſe that were kind to their families, were called *lares familiares*; but thoſe who, for their crimes, were condemned to wander continually, without meeting with any place of reſt, and terrified good men, and hurt the bad, are vulgarly called *larvæ*. See LARES.

An antient commentator on Horace mentions, that the Romans wrote *lemures* for *remures*; which laſt word was formed from Remus, who was killed by his brother Romulus, and who returned to earth to torment him. See LEMURIA.

But Apuleius obſerves, that in the antient Latin tongue *lemures* ſignifies the ſoul of a man ſeparated from the body by death.

LEMURIA, or **LEMURALIA**, a feaſt ſolemnized at Rome on the ninth of May, to pacify the manes of the dead, or in honour of the lemures. See LEMURES.

The inſtitution of this feaſt is aſcribed to Romulus, who, to rid himſelf of the phantom of his brother Remus (whom he had ordered to be murdered) appearing always before him, ordained a feaſt called after his name *remuria*, or *lemuria*.

In the *lemuria*, they offered ſacrifices for three nights together; during which time all the temples of the gods were ſhut up, nor any marriages permitted. — There were a world of ceremonies in this feaſt, chiefly intended to exorciſe the *lemures*, and prevent their appearing, or giving any diſturbance to the living.

LENIS *Spiritus*, in proſody. See the article SPIRIT.

LENITIVE, in phyſic, ſometimes denotes a ſoftening, reſolutive remedy, that moiſtens the parts diſeaſed, and diſſipates any ſharp humour collected there.

LENITIVE, is more frequently uſed for *laxative*. See LAXATIVE.

LENITIVE *Electuary*, is more peculiarly uſed for a gentle ſort of electuary, compoſed of ſena, polypody, *&c.* ſo called, in regard it purges eaſily, and by reſolving. See ELECTUARY.

LENS, in dioptrics, properly ſignifies a ſmall, oblong glaſs, of the figure of a *lentil*; but is extended to any optic glaſs, not very thick, which either collects the rays of light into a point, in their paſſage through it, or diſperſes them farther apart, according to the laws of refraction. See GLASS, LIGHT, RAYS, *&c.*

Lens's have various figures; that is, are terminated by various ſurfaces, from which they acquire various names. Some are plane on one ſide, and convex on the other; others convex on both ſides; both which are ordinarily called *convex lens's:* though, when we ſpeak accurately, the former are called *plano-convex*. — Again, ſome are plane on one ſide, and concave on the other; and others are concave on both ſides, which are both uſually ranked among the concave *lens's*; though, when diſtinguiſhed, the former is called a *plano-concave*. — Others, again, are concave on both ſides; others are concave on one ſide, and convex on the other; which are called *convexo-concave*, or *concavo-convex lens's*, according as the one or the other ſurface is more curve, or a portion of a leſs ſphere. See CONVEX, CONCAVE, *&c.*

It is to be here obſerved, that in every *lens* terminated in any of the forementioned manners, a right line perpendicular to the two ſurfaces is called the *axis* of the *lens*. — Which axis, when both ſurfaces are ſpherical, paſſes through both their centres; but if one of them be plane, it falls perpendicularly upon that, and goes through the centre of the other. See AXIS.

A *lens*, one of whoſe ſurfaces is convex, and the other concave, is called a *meniſcus*; the properties of which, ſee under MENISCUS.

See alſo the *Theory of* LENS's *demonſtrated* under REFRACTION; and the application thereof, under MICROSCOPE, TELESCOPE, BURNING-GLASS, FOCUS, *&c.*

Some confine *lens's* within the diameter of five or ſix lines, and will have ſuch as exceed that diameter called *lenticular glaſſes*.

Lens's are diſtinguiſhed, with regard to the manner of their preparation, into *ground*, and *blown*.

Blown **LENS's**, are little globules of glaſs, melted in the flame of a lamp, or taper. See MICROSCOPE.

But the figure of theſe is ſeldom exact; beſides, that the ſmoke of the lamp cleaves to the ſurface in melting: on both which accounts, they come ſhort of the clearneſs of thoſe that are ground, or turned and poliſhed in the lathe, in little copper baſons, or diſhes. — The ſecret is now found of making theſe exquiſitely ſmall, ſo as ſome of them do not exceed, in diameter, the ſixth part of a line, which are found to magnify objects ſeveral millions of times.

Manner of grinding **LENS's**. — A little piece of copper is cemented to the end of the arbor of a lathe, and turned, till it form a diſh, or baſon of the diameter of the *lens* required. — Then a piece of clear glaſs is cemented on one of its flat ſides, to the end of a little maundrel, with black Spaniſh wax; and thus ground, on the ſide not cemented, on a grindſtone, with water, till it have nearly acquired a concave figure. — It is finiſhed in the lathe, by turning it in the baſon, with fine wet ſand, or gritt-ſtone. The gritt muſt be often repeated freſh, till the *lens* appear very round; when it is come to that point, they ceaſe to take any freſh ſtone, but continue to turn it in the baſon, till the remains of the ſand be become ſo fine as to have poliſhed it. — This they perceive, when, upon wiping it, the image of the window of the place is ſeen painted on its ſurface; if it does not, it is wetted in water without any ſand, and turned till it have got a poliſh. — The baſon is then covered, within ſide, with two or three folds of linen, and the poliſh finiſhed with putty, or tripoly of Venice ſteeped in water. — It is known to be perfectly poliſhed, when, viewing it with a magnifier, there appear no ſcratches of the ſand. — The cement is then broke off, and the ſide poliſhed cemented, to work and grind the other, as before, till the edges of the *lens* be become ſharp, and it be perfectly poliſhed on either ſide. — When finiſhed, it is waſhed in ſpirit of wine, to take off all remains of the wax.

For Convex **LENS's**, the laws of their refraction, and their effects depending thereon, are as follow. — 1°. A ray of light, EG, near the axis, (*Tab. Optics, fig.* 1.) and parallel thereto, ſtriking on the plane ſurface of a plano-convex *lens*, directly oppoſite to the luminous body, after refraction concurs with the axis in the point F: and if C be the centre of the convexity, CF will be to FL, that is, the diſtance of the centre from the point of concourſe, or focus, will be to the diſtance of the centre in the convex ſurface, in the ratio of the refraction. See REFRACTION.

For the plane ſurface being directly oppoſed to the luminous body, the ray EG is perpendicular to AB, and therefore will paſs unrefracted to H: thus it ſtrikes on AHB, ſtill parallel to the axis; and therefore coming out of a denſer medium into a rarer, will meet with the axis of the *lens* in F; and ſo, as that CF will be to FL in the ratio of the ſine of the refracted angle to the ſine of the angle of inclination: as will be demonſtrated under the head REFRACTION.

If then the refraction be out of a glaſs *lens* into air $CF : EL :: 3 : 2$, and therefore $FL = 2\,CL$. That is, parallel rays, near the axis, will concur with it at the diſtance of the diameter. — Again, if the refraction were out of a water *lens*, *i. e.* out of a plano-convex *lens* filled with water, $CF : EL :: 4 : 3$, and therefore $FL = 3\,CL$; *i. e.* parallel rays, near the axis, will concur with it at the diſtance of half the diameter. So that if a lighted candle be placed in the focus of a plano-convex *lens*, that is, in the point F, diſtant from the ſurface of the *lens* ALB, by the length of the diameter; and from the ſurface of the water *lens*, by half the diameter, its rays, after refraction, will become parallel. See REFRACTION.

2°. If the ray KI, (*Tab. Optics, fig.* 2.) near the axis of a plano-convex *lens*, and parallel thereto, ſtrike on its convex ſurface AHB, after a double refraction, it will meet the axis in F; ſo as that HG will be to GC, and GF to FH, in the ratio of the refraction.

For the ray KI, parallel to the axis EG, by virtue of the firſt refraction in I, will tend to the point G, ſo as GH will be to GC in the ratio of the ſine of the angle of inclination to the ſine of the refracted angles: therefore, by virtue of the ſecond refraction in L, it will concur with the axis in F; ſo as GD will be to FD in the ratio of the ſine of the refracted angle, to the ſine of the angle of inclination. See REFRACTION.

So that the ſemidiameter, and thickneſs of the plano-convex *lens*, with the ratio of refraction being given, hence ariſes a method of determining the focus of parallel rays ſtriking on the convex ſurface. For,

Hence, if the *lens* be glaſs, $FD = 2\,CH - \frac{2}{3}HD$. So that if two thirds of the thickneſs of the *lens* be inconſiderable (as in practice it uſually happens) parallel rays meet with the axis at the diſtance of the diameter from the *lens*, even when they ſtrike on the convex ſurface.

So that as to the place of the focus, it is the ſame thing whether the plane ſurface, or the convex one, be turned to a luminary of parallel rays; though it appears, both from experience, and trigonometrical calculations, that there are more rays united in a leſs ſpace, if the convex ſurface, than if the plane one be turned towards the ſun.

If the *lens* were full of water, $FD = 3\,CH - \frac{3}{4}HD$. Wherefore if $\frac{3}{4}HD$ be inconſiderable, $FD = 3\,CH$, or if $\frac{1}{4}HD$ be inconſiderable, $FH = 3\,CH$. Parallel, and near rays, therefore, are united at the diſtance of half the diameter, if the refraction be in water, even when the convex ſurface is oppoſed to the luminous body. Hence, alſo, ariſes a method of determining the focus of parallel rays ſtriking on a *lens* convex on both ſides, the two ſemidiameters, and the thickneſs of the *lens*, being given.

On theſe principles is founded the ſtructure of refracting burning-glaſſes, the ſun's light, and heat, being exceedingly augmented in the focus of a *lens*, whether convex or plano-convex; ſince the rays falling parallel to the axis of the *lens*, are reduced into a much narrower compaſs; ſo that it is no wonder they burn ſome bodies, melt others, and produce other extraordinary phænomena. See BURNING-GLASS.

3°. If a luminous body be placed in a focus behind a *lens*, whether plano-convex, or convex on both ſides; or whether equally, or unequally, the rays, after refraction, become parallel.

Hence, by means of a convex *lens*, or a little glaſs bubble full of water, a very intenſe light may be projected to a vaſt diſtance. See MIRROUR.

And this furniſhes us with the ſtructure of a lamp, or lantern, to project an intenſe light to an immenſe diſtance: for a *lens*, convex on both ſides, being placed oppoſite to a concave mirror, if in the common focus of both be placed a lighted candle, or wick, the rays reflected back from the mirror to the *lens* will be parallel to each other; and after refraction will converge, till they concur to the diſtance of the ſemidiameter, after which they will again diverge. — But the candle being likewiſe in the focus of the *lens*, the rays it throws on the *lens* will be parallel: and therefore a very intenſe light meeting with another equally intenſe, at the diſtance of the diameter from the *lens*, the light will be ſurprizing: and though it afterwards decreaſe, yet the parallel and diverging rays going a long way together, it will be very great at a very great diſtance. Lanterns of this kind are of conſiderable ſervice in the night-time to diſcover remote objects, and are uſed, with ſucceſs, by fowlers and fiſhermen, to gather their prey together, in order to take them.

If it be required to have the light, at the ſame time, tranſmitted to ſeveral places, as through ſeveral ſtreets, &c. the number of *lens's* and mirrors is to be encreaſed.

If the luminous body, placed in the focus, be of a larger extent, the rays flowing from points ſenſibly diſtant from each other, cannot be parallel; but will conſtitute ſeveral trains, or parcels of rays, parallel to each other.

3°. The images of objects, oppoſed in any manner to a convex *lens*, are exhibited, invertedly, in its focus.

Hence, if a paper be applied to a convex *lens*, (eſpecially in a dark room) at the diſtance of its focus, the images of objects ſhining upon it, will be repreſented diſtinctly, and in their natural colours, thereon: nor is the focus of the ſun's rays any thing elſe, in effect, but the image of the ſun. — Hence, in ſolar eclipſes, the ſun's image, eclipſed as it is, may be burnt by a large *lens* on a board, &c. a very entertaining phænomenon!

Hence alſo, if a convex *lens*, of any kind, be expoſed both to nearer and remoter objects, and a paper at the ſame time be applied, ſo as to receive the images of objects diſtinctly, the diſtance of the focus from the *lens*, and thence the diameter of the convexity, may be determined.

4°. If a concave mirror be ſo placed, as that an inverted image, formed by refraction through a *lens*, be found between the centre and the focus, or even beyond the centre, it will again be inverted by reflection, and ſo appear erect in the firſt caſe beyond the centre; and in the latter, between the centre and the focus. On theſe principles is built the camera obſcura. See CAMERA *obſcura*.

5°. The diameter of the image of an object delineated beyond a convex *lens*, is to the object itſelf in the ratio of the diſtance of the image to that of the object.

Since then the image of a remoter object is leſs diſtant from the *lens* than that of the nearer, the image of the more remote will be leſs than that of the nearer. And becauſe the diſtance of the image from the *lens* is greater, if the *lens* be a ſegment of a greater ſphere than of a leſs; hence the image will be greater in the former caſe than in the latter. The image therefore will be of ſuch a magnitude, as it would be of, were the object to ſhine into a dark room through a little hole upon a wall, at the ſame diſtance from the hole, at which the focus is from the *lens*. — When an object is leſs diſtant from a *lens* than the focus of parallel rays, the diſtance of the image is greater than that of the object, otherwiſe, the diſtance of the image is leſs than that of the object; in the former caſe, therefore, the image is greater than the object, in the latter, leſs.

If the images be made greater than the objects, they will not appear diſtinctly; becauſe in that caſe there are fewer rays which meet after refraction in the ſame point; whence it happens, that rays proceeding from different points of an object, terminate in the ſame point of an image, which is the cauſe of confuſion. — Hence it appears, that the ſame aperture of a *lens* may not be admitted in every caſe, if we would keep off the rays which produce confuſion. However, though the image is then more diſtinct, when no rays are admitted but thoſe near the axis, yet for want of rays the image is apt to be dim. See APERTURE.

6°. If the eye be placed in the focus of a convex *lens*, an object viewed through it appears erect, and enlarged in the ratio of the diſtance of the object from the eye, to that of the eye from the *lens*, if it be near; but infinitely, if remote. See MICROSCOPE; ſee alſo PRISM.

For concave LENS'S, *their laws* are as follow. — 1°. If parallel rays ſtrike on a plano-concave *lens* K L, and F C be to F B in the ratio of refraction, the rays will diverge from the axis, and the point of divergency, or diſperſion, called the *virtual focus*, will be F. *See Tab. Optics, fig.* 3.

For the ray H I, parallel to the axis, is perpendicular to K L, and will therefore paſs unrefracted to E. Wherefore, F C being to F B in the ratio of refraction, F will be the virtual focus. See REFRACTION.

If then the *lens* be glaſs, $FB = 2\,BC$; *i. e.* the virtual focus F will be diſtant from the *lens* K L by the ſpace of the diameter 2 B C.

If the refraction be in water, $FB = 3\,BC$; *i. e.* the virtual focus F will be diſtant from the *lens* K L a diameter and a half 3 B C.

2°. If the ray A E, parallel to the axis F P, ſtrike on a *lens* concave on both ſides; and both F C be to F B, and I P to P H in the ratio of refraction; and $FP : PH :: FB : BG$; G will be the point of diſperſion, or the virtual focus. See *Tab. Optics, fig.* 4.

If therefore the refraction be in a glaſs *lens*, the ſums of the ſemi-diameters C B and H I, will be to the diameter of the concavity of either, 2 H I, as the ſemidiameter of the other C B, to the diſtance of the virtual focus from the *lens* B G.

Hence, the ſun's rays ſtriking on a concave *lens*, their light, after refraction, will be conſiderably weakened; ſo that the effect of concave *lens's* is oppoſite to that of convex ones.

3°. An object viewed through a concave *lens*, appears erect, and diminiſhed in a ratio compounded of the ratio's of the ſpace in the axis, between the point of incidence, and the point to which an oblique ray would paſs without refraction, to the ſpace in the axis between the eye and the middle of the object; and the ſpace in the ſame axis between the eye and the point of incidence, to the ſpace between the middle of the object and the point the oblique ray would paſs to without refraction.

Though the properties of *lens's* have been here conſidered principally with regard to rays falling near the axis, and parallel thereto; yet the reaſoning will be eaſily transferred to rays remoter from the axis, and falling in any direction. — Thus we may ſay univerſally, that in a convex *lens*, all parallel rays become converging, and concur in a focus; that diverging rays either become leſs diverging, or run parallel, or converge; and that converging rays converge the more: All which alterations are more ſenſible in oblique rays, than in perpendicular ones, by reaſon the angles of incidence in that caſe are greater.

In concave *lens's* all parallel rays become diverging, diverging rays diverge more; converging rays either converge leſs, or become parallel, or go out diverging: all which things hold of oblique as well as direct rays, but more ſenſibly in the firſt.

LENS, or LENTICULA, was alſo the name of a kind of weight among the Romans; being the hundred and eighth part of a drachm; equal to a grain and a half. See DRACHM, and GRAIN.

LENT, *Quadrageſima*, a time of mortification, during the ſpace of forty days, wherein Chriſtians are enjoined to faſt, in commemoration of our Saviour's miraculous faſting ſo long in the deſart, and by way of preparation for the feaſt of Eaſter. See FAST.

In the antient Latin church, *Lent* only conſiſted of thirty-ſix days. In the ninth century, to come ſomewhat nearer to the miracle, ſeveral took upon them to add four days more; which in time, became a general practice; though the church of Milan is ſaid ſtill to take up with the antient thirty-ſix.

According to S. Jerom, S. Leo, S. Auguſtine, and others, *Lent* muſt have been inſtituted by the apoſtles. — Their way of reaſoning is thus: Whatever is generally received throughout the whole church, and whoſe inſtitution we do not find in any council, muſt be eſteemed to have been eſtabliſhed by the apoſtles. — Now ſuch, they ſay, is the faſt of *Lent*. Its inſtitution is not ſpoke of in any council; but many of the antient councils, particularly that of Nice, that of Laodicea, &c. and ſome of the oldeſt fathers, particularly Tertullian, ſpeak of it as a thing of ſome ſtanding.

The Reformed, generally, hold *Lent* to be a ſuperſtitious inſtitution, ſet on foot by ſome vain enthuſiaſts, who durſt undertake to ape the miracles of Jeſus Chriſt; as, in effect, it appears to have been from a paſſage of Irenæus, quoted by Euſebius.

Some will have it to have been firſt inſtituted by pope Teleſphorus, in the ſecond century: others, who own that there was a kind of abſtinence obſerved in the antient church before Eaſter, yet contend that it was voluntary, and was never enjoined by any law, till the third century.

There was ſome difference between the practice of the Greek and Latin churches as to the buſineſs of *Lent*; the Greeks beginning it a week ſooner, but at the ſame time allowing more days of intermiſſion than the Latins: thoſe who held it ſeven weeks, did not faſt on Saturdays, as thoſe who obſerved it but ſix did.

The antient Latin monks had three *Lents*; the grand *Lent* before Eaſter; another before Chriſtmas, called the *Lent of S. Martin*; and a third after Whitſunday, called the *Lent of S. John Baptiſt*: each of which conſiſted of forty days.

The Greeks, beſides that before Eaſter, obſerved four others; that of the *Apoſtles*, of the *Aſſumption*, of *Chriſtmas*, and of the *Transfiguration*: but they reduced each of them to the ſpace of ſeven days. — The Jacobites added a fifth, which they call the *repentance of Nineveh*; and the Maronites a ſixth, called the *exaltation of the holy croſs*.

By the ninth canon of the eighth council of Toledo it is ordained, ‘ That if any perſons, without evident neceſſity, eat fleſh in *Lent*, ‘ they ſhall be deprived the uſe of it all the reſt of the year.

The forty days in *Lent*, ſay ſome, are obſerved in remembrance of the forty days wherein the world was drowned; or, as others ſay, of the forty years wherein the Jews wandered in the deſart; others, of the forty days allowed Nineveh for repentance; others, of the forty ſtripes by which malefactors were to be corrected; or, the forty days faſted by Moſes at the receiving of the law; or, the forty days faſted by Elias; or, the forty days faſted by our Saviour.

LENTIGO, a cutaneous diſorder, popularly called *freckles*. See FRECKLES.

LENTIGO, is alſo uſed by Dr. Quincy for a freckly, or ſcurfy eruption upon the skin; ſuch, eſpecially, as is common to women in the time of child-bearing.

LENTISCUS, the wood of an evergreen tree of the ſame name, of ſome uſe in phyſic; it is aſtringent and fortifying, and much uſed for tooth-picks.

It contains a kind of gum, or reſin, much like maſtic, or rather the maſtic itſelf, or incenſe of Perſia, ſo highly commended by Strabo. See MASTIC.

The *lentiſcus* has nearly the ſame properties with the ſaunders; but has more of the turpentine in it, and ſometimes paſſes by urine. See SANTALUM.

LEO, *Lion*, the fifth of the twelve ſigns of the zodiac. See STAR, SIGN, and CONSTELLATION.

The ſtars in the conſtellation *Leo* in Ptolemy's catalogue are 32, in Tycho's 37, in the Britannic catalogue 94; the names, places, longitudes, latitudes, and magnitudes whereof, are as follow.

Names and Situations of the Stars.	Sign.	Longitude			Latitude				Magnit.
		°	′	″	°	′	″		
That in the noſtrils	♌	10	57	28	10	23	51	N	4
In the foremoſt toe of the ſouth. foref.		17	12	57	5	35	27	S	5
		17	29	46	6	24	22	S	6
In the aperture of the mouth		13	32	13	7	51	27	N	4
In third toe of the northern forefoot		17	19	44	3	11	22	S	4
5									
Northern and following in the claw		17	50	1	4	41	12	S	6
		17	14	26	0	1	52	N	6
		14	21	5	9	55	48	N	6
		20	0	3	6	59	47	S	5
		14	24	14	10	41	9	N	7 8
10									
		14	45	14	11	23	26	N	7
Following in ſouthern forefoot		19	56	8	3	46	50	S	3 4
		13	42	32	15	21	3	N	6
In the preceding knee		19	10	4	0	19	3	N	6
South. of three in the head		16	22	16	9	41	4	N	3
15									
		20	30	28	1	33	23	S	6
		20	49	20	1	42	11	S	7
		18	7	32	7	32	58	N	6
		21	31	2	1	9	33	S	7
Middle one of the head		17	27	35	10	45	1	N	6
20									
North. in the head		17	6	26	12	19	29	N	3 4
		23	49	32	3	25	39	S	7
		22	3	5	2	37	58	N	7
Juſt before the heart		23	0	52	0	1	25	N	4 5
		24	24	12	3	51	45	S	7 6
25									
In the following knee		24	59	4	3	56	18	S	4
South. of three in the neck		23	34	24	4	50	20	N	3 4
In the breaſt below the heart		26	5	36	1	26	15	S	5
The lion's heart, called alſo *Regulus*		25	31	20	0	26	38	N	1
		24	44	0	4	8	45	N	7
30									
		25	45	10	2	1	10	N	6
		23	11	12	11	55	37	N	6
North. in the neck		23	13	41	11	50	13	N	3
		26	46	1	2	48	7	N	6
		23	30	52	11	37	13	N	6
35									
		25	22	25	8	26	51	N	6
Middle and ſubſeq. in the neck		25	15	5	8	47	27	N	2
		27	29	23	4	24	54	N	6
	♍	0	47	10	3	20	14	S	6
		0	30	39	1	2	27	S	5 6
40									
Preceding and leſſer		0	42	45	0	5	8	N	6
Preceding of three in the belly		0	7	58	4	33	27	N	6
In the axilla		2	3	40	0	7	48	N	4
		3	24	5	1	52	27	S	6
		2	49	25	0	16	10	S	7
45									
Informis 40th of Urſa Maj. Tych.	♌	24	30	58	21	37	1	N	3
	♍	0	53	30	7	0	25	N	6 7
Foremoſt of two over the back	♌	27	49	14	16	49	4	N	6 5
		29	9	15	13	56	46	N	5
In the middle of the back	♍	1	30	14	10	14	52	N	6
50									
North. of three in the belly		3	19	21	5	54	48	N	6
South. and ſubſeq. in the belly		5	21	19	2	47	40	N	6
Subſeq. over the back		1	10	21	16	28	40	N	4 5
		10	34	32	5	39	57	S	5 5
	♍	8	33	35	0	35	42	S	5 7
	♍	10	48	37	5	54	3	S	7
South. of three under the belly		10	35	34	2	31	51	S	5
Middle under the belly		9	40	33	0	13	16	S	5
Preceding in the loins		4	31	8	12	53	37	N	5
		13	13	40	8	3	1	S	5
60									
		13	42	11	5	34	35	S	6
North. of three under the belly		10	12	9	1	20	21	N	4 5
		4	23	30	16	16	29	N	6
		12	43	44	3	26	1	S	6
		14	8	56	6	24	8	S	6
65									
		4	4	56	17	35	54	N	6
A bright one following in the loins		6	57	21	14	19	4	N	2 3
		15	4	39	4	38	53	S	5 6
South. in the hip		9	5	31	9	39	50	N	3
North. in the hip		8	26	34	11	35	5	N	6
70									
That over the bright one in the loins		6	8	13	16	46	2	N	5
North. of two in the thigh		10	18	7	7	51	41	N	6
That before the hindmoſt claw		17	10	19	7	39	5	S	4
		15	3	39	2	22	53	S	6
		15	35	19	2	33	21	S	7
75									
In the ham		14	22	25	1	40	53	N	4 5
South. in the thigh		13	12	58	6	5	10	N	4
		16	51	53	2	16	55	S	5 6
		15	57	57	0	0	35	N	6
		11	14	1	11	41	39	N	7
80									
		16	27	22	0	18	5	S	7 8
		16	53	27	0	32	7	S	8
More ſouth. as in the leg		17	11	2	0	34	4	S	4
		12	34	10	11	8	9	N	6
		11	31	15	13	56	16	N	6
85									
South. in the nail of the hind-foot		20	3	13	5	42	22	S	4 5
		13	29	27	10	23	53	N	6
		18	35	11	0	16	9	N	6
		13	6	41	12	53	8	N	6
North. in the nail of the hind-foot		20	42	52	3	3	35	S	4
90									
		12	32	21	17	38	0	N	6
That over the tail		14	38	50	17	18	9	N	4
In the extremity of the tail		17	19	14	12	16	51	N	1 2
That following the tail.	♍	18	19	27	13	53	21	N	6

Cor LEONIS, *Lion's Heart*, a fixed ſtar of the firſt magnitude in the ſign *Leo:* called alſo *Regulus*, *Baſilicus*, &c. See REGULUS, *&c.*

LEONINE, in poetry, is applied to a kind of verſes which rime at every hemiſtic, the middle always chiming to the end. See VERSE, and RIME.

Of which kind we find ſeveral antient hymns, epigrams, prophecies, *&c.* — For inſtance, Muretus ſpeaking of the poetry of Lorenzo Gambara of Breſſe, ſays,

> *Brixia*, *veſ*tratis *merdoſa volumina* vatis,
> *Non ſunt noſ*trates *tergere digna* nates.

The following one is from the ſchool of Salernum:

> *Ut vites* pœnam *de potibus incipe* cœnam.

The origin of the word is ſomewhat obſcure; Paſquier derives it from one Leoninus, or Leonius, who excelled in this way, and dedicated ſeveral pieces to pope Alexander III. Others derive it from pope Leo; and others from the beaſt called *lion*, by reaſon it is the loftieſt of all verſes.

M. Fauchet makes the *leonine* rime the ſame with what the French call the *rich*, and we the *double rime*, *i. e.* where two ſyllables have the ſame orthography, accentuation, and pronunciation with two others.

LEONTICA, feaſts or ſacrifices celebrated among the antients, in honour of the ſun.

They were called *leontica*, and the prieſts who officiated at them *leones*, in regard they repreſented the ſun under the figure of a lion radiant, bearing a tiara, and griping in his two fore paws the horns of a bull, who ſtruggled in vain to diſengage himſelf.

The critics are extremely divided about this feaſt; ſome will have it anniverſary, and to have made its return not in a ſolar, but a lunar year; but others hold its return more frequent, and give inſtances where the period was not above two hundred and twenty days.

The ceremony was ſometimes alſo called *Mithriaca*, Mithras being the name of the ſun among the antient Perſians.

There was always a man ſacrificed at theſe feaſts till the time of Hadrian, who prohibited it by a law. Commodus introduced the cuſtom afreſh, after whoſe time it was again exploded.

LEPIDOIDES*, or LEPIDOEIDES, in anatomy, a name of the ſquammous or ſcaly ſuture of the cranium. See SUTURE.

LEPROSY*, LEPRA, a foul, cutaneous diſeaſe, appearing in dry, white, thin, ſcurfy ſcabs, either over the whole body, or only ſome part of it; and uſually attended with a vehement itching, and other pains.

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* The word is Greek, λεπιδοειδὴς; formed of λεπὶς, ſcale, and εἶδος, form, figure. See SQUAMMOUS.

* The word is derived from the Greek λεπρα, which ſignifies the ſame; and that from λεπις, *ſquamma*, ſcale.

The *leproſy* ſeems to ariſe from a great obſtruction of perſpiration; whereby the thin, ſaline humours, are thrown off from the blood, and arreſted by the denſity and cloſeneſs of the cuticula. See CUTIS, and CUTICULA.

This diſtemper has been much more frequent in former times than at preſent, and much more in the hot countries of the eaſt, particularly among the Jews, than among us; perhaps by reaſon the ſalts which, by the appointment of nature, are to be eliminated through the pores of the ſkin, along with the recrementitious ſerum their proper vehicle, are, in hot countries, conveyed in greater plenty to the ſurface of the body, than in theſe northern regions they ordinarily are; and ſticking in their paſſage in the thin dry membrane of the cuticle, the aqueous parts, which are their vehicle, ſlip away from them by inſenſible evaporation, and leave them there to corrode and fret it, till at length, through the quantity ſo gathered, the membrane becomes dry, brittle, and white, which is the cauſe of that diſquammation, or falling away in white ſcales: that whiteneſs, as well as the brittleneſs, proceeding merely from the quantity of theſe ſalts, which are themſelves white; and when the moiſture is drawn from them, being aculeated, and having inſinuated themſelves into the pores of the cuticle, diſſolve the continuity of it by their points and edges, which, thus mortified and broken, is apt, on the leaſt friction, to fall off, as abovementioned.

The antients diſtinguiſhed two kinds of *leproſy*; *viz.* the *lepra Græcorum*, and *lepra Arabum:* though the two ſeem only to have differed in degree; the ſymptoms of the Grecian being further heightened and aggravated in the Arabian.

LEPRA *Arabum*, is the ſame with what is otherwiſe called *elephantiaſis*, by reaſon in this the patient's ſkin is rough and wrinkled like an elephant's hide. See ELEPHANTIASIS.

In the *lepra Arabum*, the ſkin is beſet with a dry ſcabby cruſt. As in the former caſe the ſalts, being left deſtitute of their humidity, are not ſo active, and therefore affect only the cuticle; in the latter caſe theſe ſalts, with their vehicle, crowding faſter than they can be evaporated through the pores of the ſkin (being ſtill *in fluore*, and ſo more cauſtic) corrode deeper, and eat not only the cuticle, but the excretory veſſels, and ſurface of the ſkin itſelf, which thereby ſpews out a liquor ſomewhat thicker than uſual; which, when the thinneſt and moſt aqueous parts are evaporated, are condenſed into that cruſt or ſcab, which is the diſtinguiſhing character of this diſeaſe.

Galen defines the *lepra*, an effuſion of thick diſorderly blood, that corrupts the whole habit of the body. Avicenna calls it an *univerſal cancer*.

The *lepra* begins within-ſide, a long time before it appears without-ſide: It was frequent in Europe in the Xth and XIth centuries, but ſeems at preſent almoſt extinct; unleſs we allow the venereal diſeaſe to be the ſame with the *lepra*, as was the opinion, among many others, of the learned Pitcairn, and as has been lately endeavoured to be proved by Mr. Becket, in a diſcourſe expreſly on the ſubject in the *Philoſophical Tranſactions*. See VENEREAL.

The ſymptoms of the antient *lepra*, as laid down by Galen, Aretæus, Pontanus, Ægineta, Cardan, Varanda, Gordon, Pharæus, and others, are as follow: The patient's voice is hoarſe, and comes rather through the noſe than the mouth; the blood full of little white ſhining bodies, like grains of millet, which upon filtration ſeparate themſelves from it; the ſerum is ſcabious, and deſtitute of its natural humidity, inſomuch that ſalt applied to it does not diſſolve; it is ſo dry, that vinegar poured on it boils; and is ſo ſtrongly bound together by little imperceptible threads, that calcined lead thrown into it ſwims. The face reſembles a coal half extinct, unctuous, ſhining, and bloated, with frequent hard knobs, green at bottom, and white at top. The hair is ſhort, ſtiff, and brinded, and not to be torn off without bringing away ſome of the rotten fleſh to which it adheres; if it grows again, either on the head or chin, it is always white. Athwart the forehead run large wrinkles, or furrows, from one temple to the other; the eyes red and enflamed, and ſhine like thoſe of a cat; the ears ſwoln and red, eaten with ulcers towards the bottom, and encompaſſed with little glands; the noſe ſunk, becauſe of the rotting of the cartilage; the tongue dry and black, ſwollen, ulcerated, divided with furrows, and ſpotted with grains of white; the ſkin covered with ulcers, that die and revive on each other, or with white ſpots or ſcales like a fiſh; it is rough and inſenſible, and when cut, inſtead of blood, yields a ſanious liquor. It arrives in time to ſuch a degree of inſenſibility, that the wriſt, feet, or even the large tendon, may be pierced with a needle, without the patient's feeling any pain. At laſt the noſe, fingers, toes, and even privy members fall off entire, and by a death peculiar to each of them, anticipate that of the patient. It is added, that the body is ſo hot, that a freſh apple held in the hand an hour, will be dried and wrinkled, as if expoſed to the ſun for a week.

Matthew Prior ſays, that in Chriſtendom there were fifteen thouſand hoſpitals for *lepers*; but the diſeaſe having been diſcontinued for two hundred years, the revenues of thoſe hoſpitals were abuſed, and perſons feigned themſelves *lepers*, to be entitled to the proviſion; which occaſioned their regulation in ſome countries, and their entire ſuppreſſion in others.

In France, they were united to the order of the religious of S. Lazarus and mount Carmel in 1664, and the adminiſtration of them given to the knights of that order. See LAZARUS.

In England, they have been converted to other purpoſes.

Formerly the cauſes of *lepers* were committed to the eccleſiaſtical tribunals; and it was prohibited to proſecute a *leper* before a lay-judge, in regard they were under the protection of the church, which ſeparated them from the reſt of the people by a ceremony ſtill to be ſeen in the antient rituals.

As to the cure, that which proved effectual in thoſe ſouthern countries, fails among us, where the ſtrongeſt medicaments, and the moſt powerful mercurials, are neceſſary. Bathing is judged to be of good uſe in the *lepra*. Dogs and hares are ſaid to be ſubject to this diſeaſe. Among the Indians a white man is deſpiſed, this paſſing with them for the mark of a *leper*.

LEPUS, the *Hare*, a conſtellation of the ſouthern hemiſphere; whoſe ſtars in Ptolemy's catalogue are 12, in that of Tycho 13, in the Britannic catalogue 19; the names, places, longitudes, latitudes, and magnitudes whereof are as follow.

Names and Situations of the Stars.	Sign.	Longitude			Latitude South.			Magnit.
		°	′	″	°	′	″	
	♊	6	44	2	45	20	17	6
In the preceding anterior foot		7	45	6	45	0	18	4
North. in the preceding ear		11	27	20	34	45	39	5
South. of the ſame ear		11	35	43	35	50	25	5
Againſt the knee		11	4	35	39	5	28	4 5
South. of the following ear		13	27	47	36	13	59	4 5
North. of the following ear		13	40	32	35	23	10	5 6
		14	34	52	37	3	42	6
That under the belly		15	21	25	43	57	24	3
		16	18	14	44	6	50	6
In the middle of the body		17	4	47	41	6	28	3
		19	15	0	45	46	6	6
Preced. and ſouth. in the poſter. foot		20	36	20	45	49	58	4 3
In the loins		21	39	52	38	15	30	4
North. and ſubſeq. in poſterior foot		22	51	9	44	17	19	4 3
Preceding in the tail		24	35	48	37	39	27	4
		27	15	13	39	57	35	6
Subſequent in the tail		27	37	34	38	24	26	4
	♊	28	9	50	42	38	23	4

LE ROY *le veut*, words by which the royal aſſent is ſignified by the clerk of the parliament to public bills: to private bills this aſſent is expreſſed by *ſoit fait comme il eſt deſire*. See ROYAL.

LE ROY *s'aviſera*.—By theſe words to a bill, preſented to the king by his parliament, are underſtood his abſolute denial of that bill in a more civil way; and the bill thereby becomes wholly null and void. See PARLIAMENT.

LESBIAN *Cymatium*. See the article CYMATIUM.

LESSER *Barons.*	See	BARON.
LESSER *Bear.*		BEAR.
LESSER *Centaury.*		CENTAURY.
LESSER *Circle of a Sphere.*		CIRCLE.
LESSER *enharmonical Dieſis.*		DIESIS.
LESSER *Excommunication.*		EXCOMMUNICATION.
LESSER *Hexachord.*		HEXACHORD.

LESSOR, and **LESSEE**. See the article LEASE.

LETHARGY*, ΛΗΘΑΡΓΙΑ, in medicine, a diſeaſe conſiſting of a profound drowſineſs or ſleepineſs, wherein the patient can ſcarce be awaked; or, if awaked, remains ſtupid, without ſenſe or memory, and preſently ſinks again into his former ſleep.

* The word comes from the Greek ληθη, oblivion, and αργια, numbneſs, lazineſs.

The *lethargy* is uſually accompanied with a fever and delirium.

Boerhaave makes the *lethargy* a gentle apoplexy, ariſing from the ſame cauſes, and to be known and cured in the ſame manner. See APOPLEXY.

Some Authors diſtinguiſh the *lethargy* from the carus, in that this latter is without a fever, or at moſt is preceded with a violent one; whereas the *lethargy* is attended with a ſlow one.

Celſus ranges the *lethargy* in the number of acute diſeaſes, the patient uſually dying on the ſeventh day. A *lethargy* frequently ſucceeds a frenzy.

LETHE, **LETH**, or **LATHE**, a meaſure or portion of lands, making one of the antient diviſions of England.

King Ælfred divided England into counties, as it ſtands at preſent; thoſe counties he ſubdivided into hundreds or tithings. The hundred was a diviſion, wherein were an hundred officers to ſecure the peace; the *lethe* or *lathe* comprehended three or four of theſe hundreds. See HUNDRED.

LETHE was alſo the juriſdiction of a viſcount; or a kind of aſſize, held once a year in each village, about Michaelmas.—Whether this was inſtituted by Ælfred, or no, is a queſtion?

LETTER, *Litera*, a character either in print or writing, by which any people have agreed to expreſs one of the ſounds, uſed

A SPECIMEN

By WILLIAM CASLON, Letter-Founder, in Chiſwell-Street, LONDON.

ABCD
ABCDE
ABCDEFG
ABCDEFGHI
ABCDEFGHIJK
ABCDEFGHIJKL
ABCDEFGHIKLMN

French Cannon.

Quouſque tandem abutere, Catilina, pati-

abutere, Catilina,

DOUBLE PICA ROMAN.

Quouſque tandem abutere, Catilina, patientia noſtra? quamdiu nos etiam furor iſte tuus eludet? quem ad finem ſeſe effrenata jac-
ABCDEFGHJIKLMNOP

GREAT PRIMER ROMAN.

Quouſque tandem abutêre, Catilina, patientia noſtra? quamdiu nos etiam furor iſte tuus eludet? quem ad finem ſeſe effrenata jactabit audacia? nihilne te nocturnum præſidium palatii, nihil urbis vigiliæ, nihil timor populi, nihil con-
ABCDEFGHIJKLMNOPQRS

ENGLISH ROMAN.

Quouſque tandem abutêre, Catilina, patientia noſtra? quamdiu nos etiam furor iſte tuus eludet? quem ad finem ſeſe effrenata jactabit audacia? nihilne te nocturnum præſidium palatii, nihil urbis vigiliæ, nihil timor populi, nihil conſenſus bonorum omnium, nihil hic munitiſſimus
ABCDEFGHIJKLMNOPQRSTVUW

PICA ROMAN.

Melium, novis rebus ſtudentem, manu ſua occîdit. Fuit, fuit iſta quondam in hac repub. virtus, ut viri fortes acrioribus ſuppliciis civem pernicioſum, quam acerbiſſimum hoſtem coërcerent. Habemus enim ſenatuſconſultum in te, Catilina, vehemens, & grave: non deeſt reip. conſilium, neque autoritas hujus or-

At nos vigeſimum jam diem patimur hebeſcere aciem horum autoritatis. habemus enim hujuſmodi ſenatuſconſultum, ve-

Double Pica Italick.

Quouſque tandem abutere, Catilina, patientia noſtra? quamdiu nos etiam furor iſte tuus eludet? quem ad finem ſeſe effrenata jac-
ABCDEFGHJIKLMNO

Great Primer Italick.

Quouſque tandem abutêre, Catilina, patientia noſtra? quamdiu nos etiam furor iſte tuus eludet? quem ad finem ſeſe effrenata jactabit audacia? nihilne te nocturnum præſidium palatii, nihil urbis vigiliæ, nihil timor populi, nihil con-
ABCDEFGHIJKLMNOPQR

Engliſh Italick.

Quouſque tandem abutere, Catilina, patientia noſtra? quamdiu nos etiam furor iſte tuus eludet? quem ad finem ſeſe effrenata jactabit audacia? nihilne te nocturnum præſidium palatii, nihil urbis vigiliæ, nihil timor populi, nihil conſenſus bonorum omnium, nihil hic munitiſſimus habendi ſe-
ABCDEFGHIJKLMNOPQRSTVU

Pica Italick.

Melium, novis rebus ſtudentem, manu ſua occîdit. Fuit, fuit iſta quondam in hac repub. virtus, ut viri fortes acrioribus ſuppliciis civem pernicioſum, quam acerbiſſimum hoſtem coërcerent. Habemus enim ſenatuſconſultum in te, Catilina, vehemens, & grave: non deeſt reip. conſilium, neque autoritas hujus ordinis: nos, nos, dico aperte, conſules deſumus. Decrevit quondam ſenatus

At nos vigeſimum jam diem patimur hebeſcere aciem horum autoritatis. habemus enim hujuſmodi ſenatuſconſultum, verum-

Pica Black.

And be it further enacted by the Authority aforeſaid, That all and every of the ſaid Exchequer Bills to be made forth by virtue of this Act, or ſo many of them as ſhall from
ABCDEFGHIKLMNOPQRST

Brevier Black.

And be it further enacted by the Authority aforeſaid, That all and every of the ſaid Exchequer Bills to be made forth by virtue of this Act, or ſo many of them as ſhall from time to time remain undiſcharged and uncancelled, until the diſcharging and cancelling the ſame purſuant to this Act,

Pica Gothick.

𐌰𐍄𐍄𐌰 𐌿𐌽𐍃𐌰𐍂 𐌸𐌿 𐌹̈𐌽 𐌷𐌹𐌼𐌹𐌽𐌰𐌼 𐍅𐌴𐌹𐌷𐌽𐌰𐌹
𐌽𐌰𐌼𐍉 𐌸𐌴𐌹𐌽 𐌵𐌹𐌼𐌰𐌹 𐌸𐌹𐌿𐌳𐌹𐌽𐌰𐍃𐍃𐌿𐍃 𐌸𐌴𐌹𐌽𐍃
𐍅𐌰𐌹𐍂𐌸𐌰𐌹 𐍅𐌹𐌻𐌾𐌰 𐌸𐌴𐌹𐌽𐍃 𐍃𐍅𐌴 𐌹̈𐌽 𐌷𐌹𐌼𐌹𐌽𐌰

Pica Coptick.

Ϧⲉⲛ ⲟⲩⲁⲣⲭⲏ ⲁ̀ⲫϯ ⲑⲁⲙⲓⲟ̀ ⲛ̀ⲧⲫⲉ ⲛⲉⲙ ⲡⲕⲁϩⲓ ⳾ ⲡⲓⲕⲁϩⲓ ⲇⲉ ⲛⲉ ⲟⲩⲁⲑⲛⲁⲩ ⲉ̀ⲣⲟϥ ⲡⲉ ⲟⲩⲟϩ ⲛ̀ⲁⲧⲥⲟⲃϯ ⲟⲩⲭⲁⲕⲓ ⲛⲁϥⲭⲏ ⲉϫⲉⲛ ⲫⲛⲟⲩⲛ ⲟⲩⲟϩ ⲟⲩⲡ̅ⲛ̅ⲁ̅ ⲛ̀ⲧⲉⲫϯ ⲛⲁϥⲛⲏⲟⲩ ϩⲓϫⲉⲛ ⲛⲓⲙⲱⲟⲩ ⳾ ⲟ-

Pica Armenian.

Արշակ Թագաւոր՝ երկրի՝ և ծովու, որոյ անձն և պատկեր՝ որպէս և է իսկ մեր Աստուծոց՝ իսկ բախտ՝ և պատահումն 'ի վեր քան զամ Թագաւորաց. և մտաց լայնութի, որչափ երկնի

Engliſh Syriack.

[illegible]

Pica Samaritan.

[illegible]

abutere, Catilina,
patientia noſtra?

Two Lines Great Primer.

Quouſque tandem
abutere, Catilina,
patientia noſtra ?
quamdiu nos etiam
Quouſque tandem a-
butere, Catilina, pa-
tientia noſtra? quam-
diu nos etiam furor

Two Lines Engliſh.

Quouſque tandem abu-
tere, Catilina, patientia
noſtra ? quamdiu nos e-
tiam furor iſte tuus elu-
Quouſque tandem abutere,
Catilina, patientia noſtra?
quamdiu nos etiam furor

Habemus enim ſe-
conſultum in te, Catilina, vehemens, & grave:
non deeſt reip. conſilium, neque autoritas hujus or-

At nos vigeſimum jam diem patimur hebeſcere aciem horum
autoritatis. habemus enim hujuſmodi ſenatuſconſultum, ve-
rumtamen incluſum in tabulis, tanquam gladium in vagina
reconditum : quo ex ſenatuſconſulto confeſtim interfectum te
eſſe, Catilina, convenit. Vivis: & vivis non ad deponen-
dam, ſed ad confirmandam audaciam. Cupio, P. C., me
eſſe clementem : cupio in tantis reipub. periculis non diſ-
ABCDEFGHIJKLMNOPQRSTVUWXYZ

Small Pica Roman. No 2.

At nos vigeſimum jam diem patimur hebeſcere aciem horum
autoritatis. habemus enim hujuſmodi ſenatuſconſultum, ve-
rumtamen incluſum in tabulis, tanquam gladium in vagina
reconditum : quo ex ſenatuſconſulto confeſtim interfectum te
eſſe, Catilina, convenit. Vivis : & vivis non ad deponendam,
ſed ad confirmandam audaciam. Cupio, P. C., me eſſe
clementem : cupio in tantis reipub. periculis non diſſolutum
ABCDEFGHIJKLMNOPQRSTVUWXYZ

Long Primer Roman No 1.

Verum ego hoc, quod jampridem factum eſſe oportuit, certa de
cauſſa nondum adducor ut faciam. tum denique interficiam te, cum
jam nemo tam improbus, tam perditus, tam tui ſimilis inveniri po-
terit, qui id non jure factum eſſe fateatur. Quamdiu quiſquam erit
qui te defendere audeat, vives : & vives, ita ut nunc vivis, multis
meis & firmis præſidiis obſeſſus, ne commovere te contra rempub.
poſſis. multorum te etiam oculi & aures non ſentientem, ſicut adhuc
fecerunt, ſpeculabuntur, atque cuſtodient. Etenim quid eſt, Cati-
ABCDEFGHIJKLMNOPQRSTUVWXYZÆ

Long Primer Roman. No 2.

Verum ego hoc, quod jampridem factum eſſe oportuit, certa de
cauſſa nondum adducor ut faciam. tum denique interficiam te, cum
jam nemo tam improbus, tam perditus, tam tui ſimilis inveniri pote-
rit, qui id non jure factum eſſe fateatur. Quamdiu quiſquam erit
qui te defendere audeat, vives : & vives, ita ut nunc vivis, multis
meis & firmis præſidiis obſeſſus, ne commovere te contra rempub.
poſſis. multorum te etiam oculi & aures non ſentientem, ſicut adhuc
fecerunt, ſpeculabuntur, atque cuſtodient. Etenim quid eſt, Catili-
ABCDEFGHIJKLMNOPQRSTVUWXYZÆ

Brevier Roman.

Novemb. C. Manlium audaciæ ſatellitem atque adminiſtrum tuæ ? num me fefellit,
Catilina, non modo res tanta,tam atrox, tam incredibilis, verum, id quod multo
magis eſt admirandum, dies ? Dixi ego idem in ſenatu, cædem te optimatum con-
tuliſſe in ante diem v Kalend. Novemb. tum cum multi principes civitatis Rom.
non tam ſui conſervandi, quam tuorum conſiliorum reprimendorum cauſſa profu-
gerunt. num inficiari potes, te illo ipſo die meis præſidiis, mea diligentia circum-
cluſum, commovere te contra rempub. non potuiſſe; cum tu diſceſſu ceterorum,
noſtra tamen, qui remanſiſſemus, cæde contentum te eſſe dicebas ? Quid ? cum te
ABCDEFGHIJKLMNOPQRSTVUWXYZÆ

Nonpareil Roman.

O dii immortales ! ubi-nam gentium ſumus ? quam rempub. habemus ? in qua urbe vivimus ?
hic, hic ſunt in noſtro numero, P. C., in hoc orbis terræ ſanctiſſimo graviſſimoque conſilio, qui
de meo, noſtrumque omnium interitu, qui de hujus urbis, atque adeo orbis terrarum exitio co-
gitent. hoſce ego video conſul, & de republica ſententiam rogo : & quos ferro trucidari oportebat,
eos nondum voce vulnero. Fuiſti igitur apud Leccam ea nocte, Catilina : diſtribuiſti partes Ita-
liæ : ſtatuiſti quo quemque proficiſci placeret : delegiſti quos Romæ relinqueres, quos tecum
educeres : deſcripſiſti urbis partes ad incendia : confirmaſti, te ipſum jam eſſe exiturum : dixiſti
paululum tibi eſſe etiam tum moræ, quod ego viverem. Reperti ſunt duo equites Romani, qui te
iſta cura liberarent, & ſeſe illa ipſa nocte paulo ante lucem me in meo, lectulo interfecturos
pollicerentur. Hæc ego omnia, vix dum etiam coetu veſtro dimiſſo, comperi : domum meam
ABCDEFGHIKLMNOPQRSTVUWXYZÆ

Pearl Roman.

O dii immortales ! ubi-nam gentium ſumus ? quam
rempub. habemus ? in qua urbe vivimus ? hic, hic
ſunt in noſtro numero, P. C., in hoc orbis terrae
ſanctiſſimo graviſſimoque conſilio, qui de meo, no-
ſtrumque omnium interitu, qui de hujus urbis, atque
adeo orbis terrarum exitio cogitent. hoſce ego video
conſul, & de republica ſententiam rogo : & quos ferro
trucidari oportebat, eos nondum voce vulnero. Fu-

perniciosum, quam a-
cerbiſſimum hoſtem coërcerent. Habemus enim ſenatuſ-
conſultum in te, Catilina, vehemens, & grave: non deeſt
reip. conſilium, neque autoritas hujus ordinis : nos, nos,
Decrevit quondam ſenatus

At nos vigeſimum jam diem patimur hebeſcere aciem horum
autoritatis. habemus enim hujuſmodi ſenatuſconſultum, verum-
tamen incluſum in tabulis, tanquam gladium in vagina recon-
ditum : quo ex ſenatuſconſulto confeſtim interfectum te eſſe, Ca-
tilina, convenit. Vivis : & vivis non ad deponendam, ſed ad
confirmandam audaciam. Cupio, P. C., me eſſe clementem :
cupio in tantis reipub. periculis non diſſolutum videri : ſed jam
ABCDEFGHIJKLMNOPQRSTVWUXYZ

Small Pica Italick. No 2.

At nos vigeſimum jam diem patimur hebeſcere aciem horum au-
toritatis. habemus enim hujuſmodi ſenatuſconſultum, verumtamen
incluſum in tabulis, tanquam gladium in vagina reconditum :
quo ex ſenatuſconſulto confeſtim interfectum te eſſe, Catilina, con-
venit. Vivis : & vivis non ad deponendam, ſed ad confirman-
dam audaciam. Cupio, P. C., me eſſe clementem : cupio in tantis
reipub. periculis non diſſolutum videri : ſed jam meipſum inertiæ
ABCDEFGHIJKLMNOPQRSTVUWXYZ

Long Primer Italick. No 1.

Verum ego hoc, quod jampridem factum eſſe oportuit, certa de cauſſa
nondum adducor ut faciam. tum denique interficiam te, cum jam nemo
tam improbus, tam perditus, tam tui ſimilis inveniri poterit, qui id
non jure factum eſſe fateatur. Quamdiu quiſquam erit qui te defen-
dere audeat, vives : & vives, ita ut nunc vivis, multis meis &
firmis præſidiis obſeſſus, ne commovere te contra rempub. poſſis. multo-
rum te etiam oculi & aures non ſentientem, ſicut adhuc fecerunt, ſpe-
culabuntur, atque cuſtodient. Etenim quid eſt, Catilina, quod jam
ABCDEFGHIJKLMNOPQRSTVUWXYZÆ

Long Primer Italick. No 2.

Verum ego hoc, quod jampridem factum eſſe oportuit, certa de cauſſa
nondum adducor ut faciam. tum denique interficiam te, cum jam nemo
tam improbus, tam perditus, tam tui ſimilis inveniri poterit, qui id non
jure factum eſſe fateatur. Quamdiu quiſquam erit qui te defendere
audeat, vives : & vives, ita ut nunc vivis, multis meis & firmis
præſidiis obſeſſus, ne commovere te contra rempub. poſſis. multorum te
etiam oculi & aures non ſentientem, ſicut adhuc fecerunt, ſpeculabuntur,
atque cuſtodient. Etenim quid eſt, Catilina, quod jam amplius exſpectes,
ABCDEFGHIJKLMNOPQRSTVUWXYZÆ

Brevier Italick.

Novemb. C. Manlium audaciæ ſatellitem atque adminiſtrum tuæ ? num me fefellit,
Catilina, non modo res tanta, tam atrox, tam incredibilis, verum, id quod multo magis
eſt admirandum, dies ? Dixi ego idem in ſenatu, cædem te optimatum contuliſſe in ante
diem v Kalend. Novemb. tum cum multi principes civitatis Rom. non tam ſui conſer-
vandi, quam tuorum conſiliorum reprimendorum cauſſa profugerunt. num inficiari potes,
te illo ipſo die meis præſidiis, mea diligentia circumcluſum, commovere te contra rempub.
non potuiſſe ; cum tu diſceſſu ceterorum, noſtra tamen, qui remanſiſſemus, cæde contentum
te eſſe dicebas ? Quid ? cum te Præneſte Kalend. ipſis Novembris occupaturum nocturno
ABCDEFGHIJKLMNOPQRSTVUWXYZÆ

Nonpareil Italick.

O dii immortales ! ubi-nam gentium ſumus ? quam rempub. habemus ? in qua urbe vivimus ? hic, hic
ſuntin noſtro numero, P. C., in hoc orbis terrae ſanctiſſimo graviſſimoque conſilio, qui de meo, noſtrumque
omnium interitu, qui de hujus urbis, atque adeo orbis terrarum exitio cogitent. hoſce ego video conſul, et de
republica ſententiam rogo : et, quos ferro trucidari oportebat, eos nondum voce vulnero. Fuiſti igitur apud
Leccam ea nocte, Catilina : diſtribuiſti partes Italiae : ſtatuiſti quo quemque proficiſci placeret : delegiſti quos
Romae relinqueres, quos tecum educeres : deſcripſiſti urbis partes ad incendia : confirmaſti, te ipſum jam eſſe
exiturum : dixiſti, paululum tibi eſſe etiam tum morae, quod ego viverem. Reperti ſunt duo equites Ro-
mani, qui te iſta cura liberarent, et ſeſe illa ipſa nocte paulo anto lucem me in meo lectulo interfecturos
pollicentur. Haec ego omnia, vix dum etiam coetu veſtro dimiſſo, comperi : domum meam majoribus prae-
ſidiis munivi, atque firmavi : excluſi eos, quos tu mane ad me ſalutatum miſeras, cum illi ipſi veniſſent,
ABCDEFGHIJKLMNOPQRSTVUWYZ

Pearl Italick.

O dii immortales ! ubi-nam gentium ſumus ? quam
rempub. habemus ? in qua urbe vivimus ? hic, hic
ſunt in noſtro numero, P. C., in hoc orbis terrae
ſanctiſſimo graviſſimoque conſilio, qui de meo, noſtrum-
que omnium interitu, qui de hujus urbis, atque adeo
orbis terrarum exitio cogitent. hoſce ego video conſul,
& de republica ſententiam rogo : & quos ferro tru-
cidari oportebat, eos nondum voce vulnero. Fuiſt

Long Primer Saxon.

Ða he ða mid ȝrimmum ⁊ tint
reȝum ƿæceð ƿæs ⁊ he ealle þa
ƿitu ðe him man dyde ȝeþyldelice
⁊ ȝefeonde for drihtne abær ar

Pica Saxon.

Ða he ða mid ȝrimmum
ƿpinȝlum ⁊ tintreȝum ƿæ
ceð ƿæs ⁊ he ealle þa ƿitu

Pica Samaritan.

[illegible]
[illegible]

ولا يكن لك الاه اخر غيري * لا تاخذ لك صورة * ولا تمثيل كل ما
في السّمآء من فوق * وما في الارض من اسغل * ولا ما في
المآء من تحت الارض * لا تسجد لهنّ * ولا تعبدهنّ *
فانّي انا الربّ الاهك الاه غيور * اجتزي ذنوب الاباء من

Hebrew with Points.

בְּרֵאשִׁית בָּרָא אֱלֹהִים אֵת הַשָּׁמַיִם וְאֵת הָאָרֶץ ׃ וְהָאָרֶץ
הָיְתָה תֹהוּ וָבֹהוּ וְחֹשֶׁךְ עַל־פְּנֵי תְהוֹם וְרוּחַ אֱלֹהִים
מְרַחֶפֶת עַל־פְּנֵי הַמָּיִם ׃ וַיֹּאמֶר אֱלֹהִים יְהִי אוֹר וַיְהִי־אוֹר ׃
וַיַּרְא אֱלֹהִים אֶת־הָאוֹר כִּי־טוֹב וַיַּבְדֵּל אֱלֹהִים בֵּין הָאוֹר
וּבֵין הַחֹשֶׁךְ ׃ וַיִּקְרָא אֱלֹהִים לָאוֹר יוֹם וְלַחֹשֶׁךְ קָרָא לָיְלָה

Hebrew without Points.

בראשית ברא אלהים את השמים ואת הארץ ׃ והארץ
היתה תהו ובהו וחשך על־פני תהום ורוח אלהים
מרחפת על־פני המים ׃ ויאמר אלהים יהי אור ויהי־אור ׃
וירא אלהים את־האור כי־טוב ויבדל אלהים בין האור
ובין החשך ׃ ויקרא אלהים לאור יום ולחשך קרא לילה

Brevier Hebrew.

בראשית ברא אלהים את השמים ואת הארץ ׃ והארץ היתה תהו
ובהו וחשך על־פני תהום ורוח אלהים מרחפת על־פני המים ׃
ויאמר אלהים יהי אור ויהי־אור ׃ וירא אלהים את־האור כי־טוב
ויבדל אלהים בין האור ובין החשך ׃ ויקרא אלהים לאור יום ולחשך

Engliſh Greek.

Πρόδικος ὁ σοφὸς ἐν τῷ συγγράμματι τῷ περὶ τοῦ Ηρακ-
λέους (ὅπερ δὴ καὶ πλείστοις ἐπιδείκνυται) οὕτως περὶ τῆς
ἀρετῆς ἀποφαίνεται, ὧδέ πως λέγων, ὅσα ἐγὼ μέμνημαι·
Φησὶ μὲν Ηρακλέα, ἐπεὶ ἐκ παίδων εἰς ἥβην ὡρμᾶτο,
(ἐν ᾗ οἱ νέοι ἤδη αὐτοκράτορες γιγνόμενοι δηλοῦσιν, εἴτε τὴν

Pica Greek.

Πρόδικος ὁ σοφὸς ἐν τῷ συγγράμματι τῷ περὶ τοῦ Ηρακλέους
(ὅπερ δὴ καὶ πλείστοις ἐπιδείκνυται) οὕτως περὶ τῆς ἀρετῆς ἀπο-
φαίνεται, ὧδέ πως λέγων, ὅσα ἐγὼ μέμνημαι· Φησὶ μὲν
Ηρακλέα, ἐπεὶ ἐκ παίδων εἰς ἥβην ὡρμᾶτο, (ἐν ᾗ οἱ νέοι ἤδη
αὐτοκράτορες γιγνόμενοι δηλοῦσιν, εἴτε τὴν δι᾽ ἀρετῆς ὁδὸν τρέψονται

Long Primer Greek.

Πρόδικος ὁ σοφὸς ἐν τῷ συγγράμματι τῷ περὶ τοῦ Ηρακλέους (ὅπερ δὴ καὶ
πλείστοις ἐπιδείκνυται) οὕτως περὶ τῆς ἀρετῆς ἀποφαίνεται, ὧδέ πως λέγων, ὅσα
ἐγὼ μέμνημαι· Φησὶ μὲν Ηρακλέα, ἐπεὶ ἐκ παίδων εἰς ἥβην ὡρμᾶτο, (ἐν
ᾗ οἱ νέοι ἤδη αὐτοκράτορες γιγνόμενοι δηλοῦσιν, εἴτε τὴν δι᾽ ἀρετῆς ὁδὸν τρέψονται

Brevier Greek.

Πρόδικος ὁ σοφὸς ἐν τῷ συγγράμματι τῷ περὶ τοῦ Ηρακλέους (ὅπερ δὴ καὶ πλείστοις ἐ-
πιδείκνυται) οὕτως περὶ τῆς ἀρετῆς ἀποφαίνεται, ὧδέ πως λέγων, ὅσα ἐγὼ μέμνημαι.
γισνὶ μεν Ηρακλέα, ἐπεὶ ἐκ παίδων εἰς ἥβην ὡρμᾶτο, (ἐν ᾗ οἱ νέοι ἤδη αὐτοκράτορες
ηφσόμενον δηλοῦσιν, εἴτε τὴν δι᾽ ἀρετῆς ὁδὸν τρέψονται ἐπὶ τὸν βιον, εἴτε τὴν διὰ 1734.

This SPECIMEN to be placed in the Middle of the Sheet 5 U u, Vol. II.

uſed in conveying their thoughts to each other in ſpeech. See CHARACTER.

Letter is by ſome defined, a ſimple uncompounded ſound of the voice, that cannot be ſubdivided into any more ſimple, and generally marked with a particular character.

But it muſt be owned, that, ſtrictly ſpeaking, a *letter* is not the ſound itſelf, but rather the ſign of a ſound; for γϱαμμα, *litera*, is derived from γεγϱαμμαῖ, of γϱαφω, to write, and *litera* is formed from *litus*, the participle of *linere*, to ſmear, or mark: whence *obliterare* ſignifies to blot out. See WRITING.

Where a ſign or character does not expreſs a ſound entirely ſimple, but one reſolvible into ſeveral, it is not ſo properly a *letter* as an abbreviation, containing in itſelf as many *letters* as its power does ſimple ſounds. This is evident in the Latin *&*, *x*, and the Greek ξ, ψ, ϛ, *&c.* which are compoſed of *e t*, *k s*, κς, ϖς, στ, *&c.*

On the contrary, a ſimple ſound, though expreſſed by ſeveral characters, is yet to be eſteemed one *letter*; for *th*, *ph*, are ſingle *letters*, as much as φ, θ, and *f*.

The *letters* F, G, H, K, Q, X, Y, Z, were unknown to the antient Romans, as is proved by Dauſquius in his *Orthography*, where he traces the origin of the ſeveral *letters*. See F, G, H, *&c.*

Grammarians diſtinguiſh *letters* into *vowels* and *conſonants*; into *mutes*, *diphthongs*, *liquids*, and *characteriſtics*. See VOWEL, CONSONANT, DIPHTHONG, *&c.*

The Hebrews divide their *letters* into *guttural*, as *a*, *h*, *ch*, *gn*, aleph, he, chaph, hain; *dental*, as z, *ts*, *r*, zain, tſade, reſh; *labial*, as *b*, *m*, *u*, *p*, beth, mem, vau, phe; *lingual*, or thoſe chiefly formed by the tongue, as *d*, *t*, *l*, *n*, daleth, tau, lamed, nun; and *palatal*, as *g*, *i*, *c*, *k*, ghimel, jod, caph, coph. See GUTTURAL, DENTAL, *&c.*

Printers diſtinguiſh their *letters* into *capital*, majuſcule, initial, or upper caſe *letters*, which ſerve for the titles of books, proper names, *&c.* And minuſcule, *ſmall*, or under caſe *letters*: which are again divided, according to their ſize, into *pearl*, *nonpareil*, *pica*, *great canon*, &c.—They have alſo their flouriſhed *letters*, engraven on wood or metal, which take place of the illumined *letters* of the antient manuſcripts.

There are *letters* of various ſizes, or bodies; each of which, again, are ſometimes caſt with the Roman, ſometimes an Italic, and ſometimes an Engliſh, or Black *letter* face. There are alſo bodies with Greek, Hebrew, Arabic, the muſic face, *&c.*

The moſt uſual ſizes, or bodies, with their proportions, are ſhewn and exemplified in the following table; where it is to be obſerved, that the verſe anſwering to each is compoſed in the reſpective ſize or *letter*.

Pearl.	Which when he knew, and felt our feeble hearts,
Nonpareil.	Emboſt with bale, and bitter biting grief,
Brevier.	Which love had launced with his deadly darts;
Long Primer.	With wounding words, and terms of foul reprief,
Small Pica.	He pluck'd from us all hope of due relief,
Pica.	That erſt us held in love of ling'ring life.
Engliſh.	The hopeleſs, heartleſs 'gan the cunning thief
Great Primer.	Perſuade to die to ſtint all further ſtrife:
Double Pica.	To me he lent this rope, to him a ruſty knife:
Two lined Engliſh.	With which ſad inſtrument of haſty death,
Great Canon.	That woful lover lothing longer life,

The above ſizes were all caſt in the foundery of Mr. W. Caſlon; a perſon who, though not bred to the art of letter-founding, has, by dint of genius, arrived at an excellency in it unknown hitherto in England, and which even ſurpaſſes any thing of the kind done in Holland, or elſewhere.

A ſet or fount of any of theſe ſizes, includes current letters, capitals, numeral figures, points, ſpaces, *&c.* See FOUNT.

Letters make the firſt part or elements of grammar; an aſſemblage of theſe compoſe *ſyllables*, of thoſe *words*, and of theſe *ſentences*. See SYLLABLE, WORD, SENTENCE, *&c.*

The alphabet of every language conſiſts of a certain number of theſe *letters*, which ought each to have a different ſound, figure, and ſignification. See ALPHABET.

As the difference of articulate ſounds was intended to expreſs the different ideas of the mind, ſo one *letter* was originally intended to ſignify only one ſound, and not, as at preſent, to expreſs ſometimes one ſound, and ſometimes another; which practice has brought a great deal of confuſion into the languages, and rendered the learning of the modern tongues infinitely more difficult than it would otherwiſe have been. This conſideration, together with the poverty of all the known alphabets, and their want of ſome *letters* to expreſs certain ſounds by, has occaſioned ſeveral attempts towards an univerſal alphabet, to contain an enumeration of all ſuch ſingle ſounds or *letters* as are uſed in any language. A thing of very conſiderable uſe; a ſpecimen of which is given us by Mr. Lodwick, in the *Philoſophical Tranſactions*.

According to Crinitus, Moſes invented the Hebrew *letters*, Abraham the Syriac and Chaldee; the Phœnicians thoſe of Attica, brought into Greece by Cadmus, and thence by the Pelaſgians into Italy; Nicoſtrata the Latin; Iſis the Egyptian; and Uulfilas thoſe of the Goths. See HEBREW, GOTHIC, *&c.*

As to the firſt *letters*, what they were, who firſt invented them, and among what people they were firſt in uſe, there is ſtill room to doubt; however, ſetting aſide conjectures, and prejudice, the buſineſs of antiquity ſeems to lie between the Egyptians and Chineſe. — Philo attributes the firſt invention of *letters* to Abraham; Joſephus, S. Irenæus, and others, to Enoch; Bibliander, to Adam; Euſebius, Clemens Alexandrinus, Corn. Agrippa, *&c.* to Moſes; Pomponius Mela, Herodian, Rufus Feſtus, Pliny, Lucan, *&c.* to the Phœnicians; S. Cyprian, to Saturn; Tacitus, to the Egyptians; and ſome to the Ethiopians.

The Egyptian mummies, and obelisks, prove a great antiquity on the ſide of the hieroglyphics; but if the Chineſe chronology may be credited, their characters are vaſtly more antient than thoſe of the Egyptians. — The Chineſe make Fohi, the firſt of their kings, the inventer of their *letters*, and compute him to have lived 2950 years before Chriſt. During all which time, they pretend to have certain and written accounts in their books. — If this holds true, their character muſt be older than Moſes by 1400 years, and even before Menes, the firſt king of Egypt, by 500 years: ſo that the Chineſe *letters* appear to be the moſt antient of that kind; and the book *Yekim*, ſaid to be written by Fohi, the moſt antient book.

But as China is ſo remote, and had ſo little communication with theſe parts of the world, we may reaſonably make another enquiry into the original of *letters* in the hither parts of Aſia, Egypt, and Europe.—Here, indeed, the Egyptians ſeem to have the beſt title.—It is more than probable, from the obelisks, *&c.* that their hieroglyphics were the firſt manner of writing, and the original characters in theſe parts, as being prior to Moſes; and made, at leaſt in great meaſure, while the Iſraelites were ſlaves among them, and conſequently not well qualified for inventions ſo very curious, and judicious. See HIEROGLYPHIC.

Whether Cadmus, and the Phœnicians learnt *letters* from the Egyptians, or from their nearer neighbours of Judæa, and Samaria, is a queſtion? ſince ſome of the books of the Old Teſtament, being written in *letters*, is more likely to have given them the hint, than the hieroglyphics of Egypt. — But when, or whereſoever the Phœnicians learnt this art, it is generally agreed, that Cadmus, the ſon of Agenor, firſt brought *letters* to Greece; whence, in the following ages, they ſpread over the reſt of Europe. See GREEK.

Rudbecks, who in his *Atlantica* claims the glory of all inventions, from all other nations, for the Swedes, maintains, that the Ionians had *letters* before Cadmus; that at the time of the ſiege of Troy, the Greeks had but 16 *letters*, whereas the Phœnicians had 22: whence he concludes, that it was not either Cadmus, or the Phœnicians, who taught this art to the Greeks. — But, in regard the antient northern nations had juſt 16 *letters*, like the Greeks, he concludes the Greeks muſt either have taught them to the people of the North, or have learnt them of them. — But becauſe the form and make of the Runic *letters* is more artleſs, and coarſe, than that of the Greek *letters*, he concludes that theſe laſt muſt be derived from the former; taking it as a principle, that thoſe who derive any thing from another, poliſh and improve it. — He even aſſerts, that by the golden apples which Hercules was obliged to ſteal, muſt be underſtood the *letters* in uſe among the Hyperboreans. See RUNIC.

There are few things on which there has been ſo much written, as on the original Hebrew *letters*; ſince Origen, Euſebius Cæſarienſis, S. Jerom, &c. have made it the ſubject of their enquiry. If they do not always go back to the beginning of the world, and the origin of *letters*, it is at leaſt enquired, what were the characters made uſe of by Moſes to tranſmit the law to poſterity, or thoſe uſed by the other hiſtorians, and prophets of the Old Teſtament, or even thoſe uſed by the Hebrews before the Babylonian captivity? — With regard to which, there are three principal opinions: ſome imagine the antient Hebrew *letter* the ſame with that now in uſe; of this opinion are ſeveral doctors of the talmud, Poſtellus, Buxtorf, &c. — The ſecond opinion is, of thoſe who believe the Samaritan *letter* the more antient; which is now the more common opinion, as without doubt it is the elder: ſeveral Miſchnic and Gemaric doctors, many of the rabbins, and fathers, Origen, Jerom, Euſebius, Beda, Genebrard, Ramban, Bellarmine, Scaliger, Druſius, Capella, Bibliander, Brerewood, Montanus, Walton, the two Voſſius's, Bochart, and Bernard, are of this opinion. — The third is, that from the beginning there were two Hebrew characters; the one ſacred, the other profane; which is the opinion of Azarias, R. de Bartenora, Poſtel, Buxtorf, Conringius, &c. — But this diſtinction of two kinds of characters ſeems a mere chimera. — See P. Souciet on the Samaritan medals, where he proves, that the *letters* in the inſcriptions of thoſe medals, are the genuine, original Hebrew characters. — See alſo the articles SAMARITAN, and HEBREW.

The art of joining *letters* to form words, and of combining the one and the other an infinite number of different ways, is a ſecret unknown to the Chineſe. Inſtead of the alphabetical *letters*, they at firſt, like the Egyptians, uſed hieroglyphics: they painted rather than wrote; ſtriving, by the natural images of things drawn on paper, to expreſs and communicate their ideas to one another. To write a bird, they were obliged to paint its figure; and to ſignify a foreſt, they drew a great number of trees. A circle ſerved for the ſun, and a creſcent for the moon. — But this manner of writing was not only very incommodious, but alſo very imperfect. For, beſides that they could but expreſs their thoughts by halves, even that little they could expreſs, was but very imperfectly delivered; and it was ſcarce poſſible not to be frequently deceived in it. — Further, they were under a neceſſity of writing large volumes to ſay very little matters, in regard their pictures took up a great deal of room. — To remedy theſe inconveniencies, they changed, by little and little, their manner of writing, making it more ſimple, though leſs natural. They even invented ſeveral characters, to expreſs things that did not come within the reach of painting to repreſent; as voice, ſmell, thoughts, paſſions, and a thouſand other objects that have no body, or figure. — From ſeveral ſimple ſtrokes, they afterwards framed others more compound; and in this manner multiplied their *letters* and characters to infinity, contriving one or more for every word.

This multitude of *letters* ſeems the ſource of that ignorance which we find among the Chineſe. Their whole lives being ſpent in learning their *letters*, they have no time to apply themſelves to the ſtudy of things, but think themſelves very learned when they are able to read. — There are ſcarce any of them that know all their *letters*: they think it is a great progreſs they have made, when, after forty or fifty years hard ſtudy, they are able to underſtand fifteen or twenty thouſand. — But the generality of their learned men come ſhort of this: father le Compte is of opinion, that the greateſt doctor among them never underſtood half of their *letters* well; for the whole number he reckons eighty thouſand. — This is a prodigious inconvenience to foreigners, of which the miſſionaries in that country make loud complaints.

Among the Chineſe *letters*, there are ſome now almoſt wore out of uſe, and only preſerved out of reſpect to antiquity. — There is a ſecond claſs much leſs antient than the former, only uſed in public inſcriptions.—A third, much more regular and beautiful, uſed in printing, and even in ordinary writing. — However, as the ſtrokes are to be diſtinctly formed, they cannot be wrote with any expedition.—For this reaſon, they have invented a fourth kind, where the ſtrokes being cloſer, and leſs diſtant from each other, allow them to be writ with more eaſe and readineſs. And this they call the *running letter*.

The Americans had no *letters* before the diſcovery of that country by the Spaniards. — The Acaanibas engrave their memorable events and epocha's on ſtones, and metals: their ſongs ſupply the reſt.—In Peru, and Chili, to keep an account of their goods and chattles, and to preſerve the memory of their particular affairs, the Indians have recourſe to certain knots of wool; which, by the variety of their colours, and ties, ſerve inſtead of characters and writing. The knowledge of theſe knots, which they call *quipos*, is one of their great ſciences; but which is always kept as a ſecret, and never revealed to the children, till the fathers think themſelves at the end of their days.

Double LETTER.	See	DOUBLE.
Final LETTER.		FINAL.
Guttural LETTER.		GUTTURAL.
Labial LETTER.		LABIAL.
LETTER *Foundery*.		FOUNDERY.
LETTER-*Founders Furnace*.		FURNACE.
LETTER-*Founders Mould*.		MOULD.

Numeral LETTERS, are thoſe uſed inſtead of ciphers, to expreſs numbers.

The Roman numerals are, C, D, I, L, M, V, X; which are all formed by deſcribing a circle, and drawing two lines through it, croſſing each other at right angles in the centre. See CHARACTER.

Dominical LETTER.	See the article	DOMINICAL.
Nundinal LETTER.		NUNDINAL.

LETTER is alſo a writing addreſſed, and ſent to one. See EPISTLE.

LETTER *of Attorney*, a writing authorizing an attorney to do ſome legal act in our ſtead; as, to give ſeiſin of lands, to receive debts, to ſue a third perſon, &c.

LETTER *of Credit*, among merchants, a *letter* which a merchant or banker directs to his correſpondent abroad, ordering him to credit the bearer as far as a certain ſum. See CREDIT.

LETTER *of Exchange*. See BILL, and EXCHANGE.

LETTER *of Licence*, in trade, is an inſtrument, or writing granted to a man who has failed, or broke, ſigned and ſealed by his creditors; which *letter* uſually gives a longer time for payment: ſo that the debtor having ſuch an aſſurance, may go about his buſineſs without fearing an arreſt.

LETTERS *of Mart*, or *Marque*, are *letters* under the privy-ſeal, granted to the king's ſubjects; impowering them to take, by force of arms, what was formerly taken from them by the ſubjects of ſome other ſtate, contrary to the law of mart. See MARQUE, and REPRIZAL.

LETTERS *Patent*, or *Overt*, are writings ſealed with the great ſeal of England, whereby a man is authorized to do, or enjoy any thing, which, of himſelf, he could not do. See PATENT.

They are ſo called, by reaſon of their form; as being open, with the ſeal affixed, ready to be ſhewn for the confirmation of the authority given by them.

Common perſons may grant *letters patent*; but they are rather called *patents*, than *letters patent*; yet, for diſtinction, thoſe granted by the king are ſometimes called *letters patent royal*.

Letters patent conclude with *teſte meipſo*; charters, with *hiis teſtibus*. See CHARTER, &c.

LETTERS *of Reſpite*, *letters* iſſued out by a prince, in favour of honeſt, unfortunate debtors, againſt too rigorous creditors, whereby payment is delayed for a certain term.

The uſe of theſe *letters* is very antient: Caſſiodorus obſerves, they were in uſe in the time of Theodoric, king of the Goths; others will have them introduced towards the end of the eleventh century, by pope Urban II. in favour of thoſe who went on the croiſades.

The are ſtill in uſe in France, and ſome other countries: and take their name *à reſpirando*, becauſe they give the debtor a breathing while. See RESPITE.

Circular LETTERS.	See the article	CIRCULAR.
Dimiſſory LETTERS.		DIMISSORY.
Monitory LETTERS.		MONITORY.
Pacific LETTERS.		PACIFIC.
Paſchal LETTERS.		PASCHAL.

LETTERED, LETRADOS, *Literati*. See LITERATI.

LEVANDIS *militum Expenſis*. See the article EXPENSIS.

LEVANT, in geography, ſignifies any country ſituate to the eaſt of us, or the eaſtern ſide of any continent or country, or that on which the ſun riſes. See EAST.

LEVANT, in matters of commerce, &c. is generally reſtrained to the Mediterranean ſea; or, rather, to the country on the eaſtern part of it.

Hence, our trade thither is called the *Levant trade*; and a wind that blows from thence, out of the Streights-mouth, is called a *Levant wind*. See *Turkey* COMPANY.

LEVANT *Meaſures*.	See the article	MEASURE.
Bole of the LEVANT.		BOLE.

LEVANT *and couchant*, in law, is, when cattle have been ſo long in another man's ground, that they have lain down, and riſen again to feed.

LEVARI *Facias*, a writ directed to the ſheriff for levying a ſum of money on a man's lands and tenements, who has forfeited his recognizance.

LEVATIO *Arietum*. See the article ARIETUM.

LEVATOR, an epithet which anatomiſts give to ſeveral muſcles, whoſe uſe is to raiſe, or lift up the parts to which they belong. See ELEVATOR.

There are *levators* of they eye-lids, of the omoplate, of the anus, of the ſcapula, &c. — See *Tab. Anat. (Myol.) fig.* 2. *n.* 3.

LEVATUM. See TERRIS, & *Catalis tentis ultra debitum.*

LEUCOMA *, in phyſic, a little white ſpot on the cornea of the eye, called by the Latins *albugo*. See ALBUGO.

* The word is Greek, λευκωμα, from λευκος, white.

It is occaſioned by a humour gathered in this membrane; or by the ſcar following a wound, or by an ulcer in this part, as ſometimes happens in the ſmall-pox.

LEUCOPHLEGMATIA *, a kind of dropſy, otherwiſe called *anaſarca*. See ANASARCA.

* The word is Greek, λευκοφλεγματια, formed from λευκος, white, and φλεγμα, *pituita*, phlegm.

The *leucophlegmatia* conſiſts in a tumor, or bloating of the whole outer ſurface of the body, or ſome of its parts; white and ſoft, eaſily giving way to the touch, and preſerving the impreſſion made by the finger for ſome time.

It may either be owing to ſome diſorder of the blood; which, in this diſeaſe, is of a pale colour, viſcid, and cold; or, to an aqueous humour extravaſated, and gathered together in the muſcles, and the pores of the ſkin. See DROPSY.

LEVEL *, an inſtrument, wherewith to draw a line parallel to the horizon, and continue it out at pleaſure; and by this means to find the true level, or the difference of aſcent or deſcent, between ſeveral places, for conveying water, draining fens, &c.

* The word comes from the Latin, *libella*, the croſs beam that forms the brachia of a balance; which, to be juſt, muſt ſtand horizontally.

There are ſeveral inſtruments of different contrivance, and matter, invented for the perfection of *levelling*; all of which, for the practice, may be reduced to theſe that follow.

Air LEVEL, that which ſhews the line of *level*, by means of a bubble of air incloſed with ſome liquor in a glaſs tube of an indeterminate length and thickneſs, whoſe two edges are ſealed hermetically; that is, are cloſed with the glaſs itſelf, by heating it with the flame of a lamp, till it become ſoft and tractable. — When the bubble of air fixes itſelf at a certain mark, made exactly in the middle of the tube, the plane, or ruler wherein it is fixed, is *level*. When it is not *level*, the bubble will riſe to one end.

This glaſs tube may be ſet in another of braſs, having an aperture in the middle, whence the bubble of air may be obſerved.

The liquor wherewith the tube is filled, is ordinarily either oil of tartar, or aqua ſecunda; thoſe not being liable to freeze, as common water, nor to rarefaction and condenſation, as ſpirit of wine is.

The invention of this inſtrument is aſcribed to M. Thevenot.

Air LEVEL, *with Sights*, is an improvement on that laſt deſcribed; which, by the addition of more apparatus, becomes more commodious, and exact.

It conſiſts of an *air level*, (*Tab. Surveying*, *fig.* 4.) about eight inches long, and ſeven or eight inches in diameter, ſet in a braſs tube, with an aperture in the middle. The tubes are carried in a ſtrong ſtreight ruler, a foot long, at whoſe ends are fixed two ſights exactly perpendicular to the tubes, and of an equal heighth, having a ſquare hole, formed by two fillets of braſs, croſſing each other at right angles, in the middle whereof is drilled a very little hole; through which, a point on a *level* with the inſtrument is deſcried.—The braſs tube is faſtened on the ruler by means of two ſcrews; one whereof, marked 4, ſerves to raiſe or depreſs the tube at pleaſure, for bringing it towards a *level*. The top of the ball and ſocket, is riveted to a little ruler that ſprings; one end whereof is faſtened with ſcrews to the great ruler, and the other end has a ſcrew 5, ſerving to raiſe and depreſs the inſtrument, when nearly *level*.

This inſtrument is yet leſs commodious than the following one; becauſe, though the holes be ever ſo ſmall, yet they will ſtill take in too great a ſpace to determine the point of *level* preciſely.

Air LEVEL, *with Teleſcope Sights*.—This *level*, repreſented in *Tab. Surveying*, *fig.* 5. is like the laſt; with this difference, that inſtead of plain ſights, it carries a teleſcope, to determine exactly a point of *level* at a good diſtance.

The teleſcope is in a little braſs tube, about 15 inches long, faſtened on the ſame rule as the *level*. — At the end of the tube of the teleſcope, marked 1, enters the little tube 1, carrying the eye-glaſs, and a hair horizontally placed in the focus of the object-glaſs 2; which little tube may be drawn out, or puſhed into the great one, for adjuſting the teleſcope to different ſights. — At the other end of the teleſcope is placed the object-glaſs; the ſcrew 3, is for raiſing or lowering the little fork carrying the hair, and making it agree with the bubble of air, when the inſtrument is *level*; and the ſcrew 4, is for making the bubble of air agree with the teleſcope.—The whole is fitted to a ball and ſocket.

M. Huygens is ſaid to have been the inventor of this *level*; which has this advantage, that it may be inverted, by turning the ruler and teleſcope half round: and if then the hair cut the ſame point that it did before the turn, it is a proof the operation is juſt.

It may be here obſerved, that one may add a teleſcope to any kind of *level*, by applying it upon, or parallel to the baſe, or ruler, when there is occaſion to take the *level* of remote objects.

Foot-LEVEL. See the article FOOT-*Level*.

Artillery Foot-LEVEL, is in form of a ſquare, having its two legs or branches of an equal length; at the juncture whereof is a little hole, whence hangs a thread and plummet, playing on a perpendicular line in the middle of the quadrant: it is frequently divided into 90 degrees, or rather into twice 45 degrees from the middle. See *Fig.* 6. *lit.* F.

This inſtrument may be uſed on other occaſions, by placing the ends of its two branches on a plane; for when the thread plays perpendicularly over the middle diviſion of the quadrant, that plane is aſſuredly *level*.

To uſe it in gunnery, place the two ends on the piece of artillery, which you may raiſe to any propoſed heighth by means of the plummet, whoſe thread will give the degree above the *level*.

Carpenters and Paviors LEVEL, conſiſts of a long ruler, in the middle whereof is fitted, at right angles, another ſomewhat bigger, at the top of which is faſtened a line with a plummet; which, when it hangs over a fiducial line at right angles with the baſe, ſhews that the ſaid baſe is horizontal.

This and the maſons *level*, though very common, are eſteemed the beſt for the practice of building, though the operations made by them can only be ſhort.

Gunners LEVEL, for levelling cannons and mortars, is an inſtrument, repreſented *Tab. Surveying*, *fig.* 8. conſiſting of a triangular braſs plate about four inches high, at the bottom of which is a portion of a circle divided into 45°; which number is ſufficient for the higheſt elevation of cannons and mortars, and for giving ſhot the greateſt range. On the center of this ſegment of a circle is ſcrewed a piece of a braſs, by means whereof it may be fixed or moved at pleaſure. The end of this piece of braſs is made ſo, as to ſerve for a plummet and index, in order to ſhew the different degrees of elevation of pieces of artillery. — This inſtrument has alſo a braſs foot to ſet upon cannon or mortars, ſo as when thoſe pieces are horizontal, the whole inſtrument will be perpendicular.

The uſe of this *level* is obvious; and conſiſts in placing the foot thereof on the piece to be elevated; in ſuch manner as that the point of the plummet may fall on the proper degree: this is what they call *levelling* the piece.

Maſons LEVEL, is compoſed of three rules, ſo joined as to form an iſoſceles rectangle, ſomewhat like a Roman A; at the vertex whereof is faſtened a thread, from which hangs a plummet, which paſſes over a fiducial line marked in the middle of the baſe, when the thing to which the *level* is applied is horizontal; but declines from the mark, when the thing is lower on one ſide than the other.

Plumb, or *Pendulum* LEVEL, that which ſhews the horizontal line, by means of another line perpendicular to that deſcribed by its plummet, or pendulum.

This inſtrument, repreſented *Tab. Surveying*, *fig.* 6. conſiſts of two legs, or branches, joined together at right angles; whereof that which carries the thread and plummet, is about a foot and a half long. This thread is hung towards the top of the branch, at the point 2. The middle of the branch where the thread paſſes, is hollow, that ſo it may hang free every where but towards the bottom, where there is a little blade of ſilver, whereon is drawn a line perpendicular to the teleſcope.—The ſaid cavity is covered by two pieces of braſs, making, as it were, a kind of caſe, leſt the wind ſhould agitate the thread; for which reaſon the ſilver blade is covered with a glaſs, G, to the end that it may be ſeen when the thread and plummet play upon the perpendicular. — The teleſcope 1, is faſtened to the other branch, or leg of the inſtrument, and is about two foot long; having a hair placed horizontally acroſs the focus of the object-glaſs, which determines the point of *level*, when the ſtring and plummet hang againſt the line on the ſilver blade.

All the accuracy of this inſtrument depends on the teleſcope's being fitted at right angles to the perpendicular. — It has a ball and ſocket, by which it is faſtened to its foot, and is ſaid to have been the invention of M. Picard.

Reflecting LEVEL, is that made by means of a pretty long ſurface of water, repreſenting the ſame object inverted, which we ſee erect by the eye; ſo that the point where thoſe two objects appear to meet, is in a *level* with the place where the ſurface of water is found. — This is the invention of M. Mariotte.

There is alſo another *reflecting level*, conſiſting of a mirror of ſteel, or the like, well poliſhed, and placed a little before the object-glaſs of a teleſcope ſuſpended perpendicularly.— This mirror muſt make an angle of 45 degrees with the teleſcope; in which caſe, the perpendicular line of the ſaid teleſcope is converted into an horizontal line; which is the ſame with the line of *level*. The invention of this is owing to M. Caſſini.

Water LEVEL, that which ſhews the horizontal line by means of a ſurface of water, or other liquid; founded on this principle, that water always naturally places itſelf level.

The moſt ſimple is made of a long wooden trough, or canal, whoſe ſides are parallel to its baſe; ſo that being equally filled with water, the ſurface thereof ſhews the line of *level*.— This is the chorobates of the antients, deſcribed by Vitruvius, Lib. VIII. c. 6. See CHOROBATES.

This ſort of *level* is alſo made with two cups fitted to the two ends of a pipe three or four foot long, about an inch in diameter; by means whereof the water communicates from the one to the other cup: and this pipe being moveable on its ſtand, by means of a ball and ſocket, when the two cups become equally full of water, their two ſurfaces mark the line of *level*.

This inſtrument, inſtead of cups, may alſo be made with two ſhort cylinders of glaſs, three or four inches long, faſtened to each extreme of the pipe with wax, or maſtic. Into the pipe is filled ſome common or coloured water, which ſhews itſelf through the cylinders, by means whereof the line of *level* is determined; the heighth of the water, with reſpect to the center of the earth, being always the ſame in both cylinders. This *level* though very ſimple, is yet very commodious for levelling ſmall diſtances.

LEVEL *of M. Huygens's Invention*, conſiſts of a teleſcope, *a*, (*Tab. Surveying, fig.* 7.) in form of a cylinder; going through a ferril, in which it is faſtened by the middle. — This ferril has two flat branches, *b b*, one above, and the other below; at the ends whereof are faſtened little moving pieces, which carry two rings, by one of which the teleſcope is ſuſpended to a hook at the end of the ſcrew 3; and by the other, a pretty heavy weight is ſuſpended, in order to keep the teleſcope in equilibrio.—This weight hangs in the box 5, which is almoſt filled with linſeed oil, oil of wallnuts, or other matter that will not eaſily coagulate, for more aptly ſettling the ballance of the weight and teleſcope.—The inſtrument carries two teleſcopes cloſe and very parallel to each other, the eye-glaſs of the one being againſt the object-glaſs of the other, that one may ſee each way without turning the *level*. — In the focus of the object-glaſs of each teleſcope, muſt a little hair be ſtrained horizontally, to be raiſed and lowered as occaſion requires, by a little ſcrew.—If the tube of the teleſcope be not found *level*, when ſuſpended, a ferril, or ring 4, is put on it, to be ſlid along till it fixes to a *level*. — The hook on which the inſtrument is hung, is fixed to a flat wooden croſs; at the ends of each arm whereof there is a hook, ſerving to keep the teleſcope from too much agitation in uſing, or in carriage. To the ſaid flat croſs is applied another hollow croſs, that ſerves as a caſe for the inſtrument; but the two ends are left open, that the teleſcope may be ſecured from the weather, and always in a condition to uſe. The foot of this inſtrument is a round braſs plate, to which are faſtened three braſs ferrils, moveable by means of joints, wherein are put ſtaves: and on this foot is placed the box.

LEVELLING, the art or act of finding a line parallel to the horizon, at one or more ſtations, in order to determine the height of one place with reſpect to another; for the laying grounds even, regulating deſcents, draining moraſſes, conducting waters, *&c.* See LEVEL.

One place is ſaid to be higher than another, or *out of level* with it, when it is more remote from the center of the earth; and a line equally diſtant from the center of it in all its points, is called the *line of true level*: whence, becauſe the earth is round, that line muſt be a curve, and make a part of the earth's circumference, or an arch concentrical with it, as the line B C F G, *Tab. Surveying, fig.* 9. all the points whereof are equally diſtant from the center of the earth A.

But the line of ſight, which the operations of levels give, is a tangent, or a right line perpendicular to the ſemidiameter of the earth; one extreme of which tangent being the point of contact, the other will be that of a ſecant drawn from the center of the earth; and the point which determines it, will be above the ſurface of the earth, and of the true level, as much as that ſecant exceeds the radius, or ſemidiameter of the earth.

This extremity of the tangent is ſaid to be in the *apparent level*; as being that given by the ſight; but is eaſily reduced to the *true level*, becauſe we know, by trigonometry, how much each ſecant exceeds the radius; and becauſe, by meaſuring, we have diſcovered the preciſe length of that radius. —It was for want of the knowledge of this, that the antients were not able to reduce the apparent level to the true one; and accordingly, to prevent falling into an error, never *levelled* above 20 feet at once, where ſuch reduction was not neceſſary.

By the tables ſince made, it appears, that at the diſtance of 100 yards, the apparent level is raiſed above the true one about one third of a line: ſo that the antients, in this reſpect, were more ſcrupulous than needed.—By means of this reduction, we are now able to *level* diſtances of one or two miles, at a ſingle operation, which the antients could not do in leſs than 300.

The operation of *levelling* is as follows: Suppoſe the heighth of the point A, (*Tab. Surveying, fig.* 10.) on the top of a mountain, above that of the point B, and at the foot thereof, required?—Place the level about the middle diſtance, between the two points, as in D, and ſtaffs in A and B, and let there be perſons inſtructed with ſignals for raiſing and lowering on the ſaid ſtaffs, little marks of paſteboard, or other matter. The level being placed horizontally by the bubble, *&c.* look towards the ſtaff A E, and cauſe the mark to be raiſed, or lowered, till the middle, upper edge, or other moſt conſpicuous part appear in the viſual ray. Then meaſuring exactly the perpendicular heighth of the point A, above the point E, which ſuppoſe 6 feet 4 inches, ſet that down in your book: then turn the level horizontally about, that the eye-glaſs of the teleſcope may be ſtill next the eye when you look the other way, (if you have only plain ſights, the inſtrument need not be turned) and cauſe the perſon at the ſtaff B to raiſe or lower his mark, till ſome conſpicuous part of it fall in the viſual ray, as at C; then meaſure the perpendicular heighth of C above B, which ſuppoſe 16 feet, 16 inches; ſet this alſo down in the book above the other number of the firſt obſervation; ſubſtract the one from the other, the remainder will be 10 feet 4 inches, which is the difference of level between A and B, or the heighth of the point A above the point B.

Note, If the point D, where the inſtrument is fixed, be in the middle between the two points A and B, there will be no neceſſity for reducing the apparent level to the true level; the viſual ray, in that caſe, being raiſed equally above the true level.

If it be further required to know whether there be a ſufficient deſcent for conveying water from the ſpring A, to the point B, *Tab. Surveying, fig.* 11.—Here, in regard the diſtance from A to B is conſiderable, it is required that ſeveral operations be made. Having then choſen a proper place for the firſt ſtation, as at I, ſet up a ſtaff in the point A, near the ſpring, with a proper mark to ſlide up and down the ſtaff, as L; and meaſure the diſtance from A to I, which ſuppoſe 2000 yards. Then the level being adjuſted in the point I, let the mark L be raiſed and lowered till ſuch time as you ſpy ſome conſpicuous part of it through the teleſcope, or ſights of the level, and meaſure the heighth A L, which ſuppoſe 13 foot 5 inches. But in regard the diſtance A I is 2000 yards, you muſt have recourſe to your table for a reduction, ſubſtracting 11 inches, which will leave the heighth A L, 12 feet 6 inches; and this note down in your book. Now turn the level horizontally about, ſo as the eye-glaſs of the teleſcope may be towards the ſtaff at A; and fixing up another ſtaff at H, cauſe the mark G to be moved up and down, till you ſpy ſome conſpicuous part through the teleſcope, or ſights. Meaſure the heighth H G, which ſuppoſe 6 yards, 4 feet, 2 inches. Meaſure likewiſe the diſtance of the points I H, which ſuppoſe 1300 yards; for which diſtance, according to the table, 4 inches 8 lines muſt be ſubſtracted from the heighth H G, which conſequently will but leave 6 yards, 3 feet, 9 inches, 4 lines, to be taken down in your book.

This done, remove the level forwards to ſome other eminence, as E, whence the ſtaff H may be viewed; as alſo another ſtaff at D, near the place whither the water is to be conveyed. The level being again adjuſted in the point E, look back to the ſtaff H; and managing the mark as before, the viſual ray will give the point F. Meaſure the heighth H F, which ſuppoſe 11 feet, 6 inches. Meaſure likewiſe the diſtance H E, which ſuppoſe 1000 yards; for which diſtance the table gives 2 inches, 9 lines of abatement; which being taken from the heighth H F, there will remain 11 feet, 3 inches, 3 lines, which enter in your book. Laſtly, turning the level to look at the next ſtaff D, the viſual ray will give the point D. Meaſure the heighth of D from the ground, which ſuppoſe 8 feet, 3 inches. Meaſure alſo the diſtance from the ſtation E to B, which ſuppoſe 900 yards; for which diſtance the table gives 2 inches, 3 lines of abatement; which being taken from the heighth B D, there will remain 8 feet, 9 lines, which enter as before.

For the manner of entering down obſervations in your book, obſerve that when a proper place or ſtation for the level, between the two points, has been pitched upon, you muſt write down the two heighths obſerved at that ſtation, in two different columns, *viz.* under the firſt column, thoſe obſerved in looking through the teleſcope when the eye was from the ſpring, or towards the point, which we may call *back-ſights*; and under the ſecond column, thoſe obſerved when the eye was next the ſpring, which we call *fore-ſights*, in the manner following:

Back-ſights.	*foot.*	*inch.*	*line.*
Firſt heighth corrected	12	6	0
Third heighth	11	3	3
	23	9	3

Fore-ſights.	*foot.*	*inch.*	*lin.*
Second heighth	21	09	4
Fourth heighth	8	00	9
	29	10	1

Having ſummed up the heighths of each column ſeparately, ſubſtract the leſſer from the greater, the remainder will be the difference of level between the points A and B; as in this example,

feet.	*inch.*	*line.*	
29	10	01	
23	09	03	
6	00	10	— The difference of heighth, or level, between the points A and B.

If the diſtance of the two points be required, add all the diſtances meaſured, together; and dividing the difference of heighth by the yards of the diſtances, for each 200 yards you will have a deſcent of about 2 inches, 9 lines.

Dr. Halley ſuggeſts a new method of *levelling*, which has been put in practice by ſome of the French academy: this is performed wholly by means of the barometer, in which the mercury is found to be ſuſpended to ſo much the leſs heighth, as the place is further remote from the center of the earth.— Hence it follows, that the different heighths of the mercury, in two places, give the difference of level. See BAROMETER.

Mr. Derham, from ſome obſervations he made at the top and bottom of the Monument, found that the mercury fell one tenth of an inch at every 82 feet of perpendicular aſcent, when the mercury was at 30 inches. — Dr. Halley allows of one tenth of an inch for every 30 yards; which, conſidering how accurately the barometers are now made, an inch in ſome of them being divided into an hundred or more parts, all very ſenſible, he thinks this method ſufficiently exact to take the levels for the conveyance of water, and leſs liable to errors than the common levels.

The ſame author found a difference of three inches eight tenths, between the heighth of the mercury, at the top and bottom of Snowden hill in Wales.

For the common occaſions of *levelling* to be performed without much apparatus of inſtruments, time, or trouble, the following method may ſerve. — Set a pole upright in a ſpring, pond, river, or other place whence water is to be brought, and mark how many feet and inches are above water. — Then ſet up another pole, of equal length with the other, in the place to which the water is to come. Place the center of a quadrant on the top of this laſt pole, the plummet hanging free; ſpy through the ſights the top of the pole that is in the water, and if the thread cuts any degree of the quadrant, the water may be conveyed by a pipe laid in the earth. — If you cannot ſee from one extreme to the other, the operation may be repeated in the manner already directed.

LEVELLING *Staves*, are inſtruments uſed in *levelling*, ſerving to carry the marks to be obſerved, and at the ſame time to meaſure the heighths of thoſe marks from the ground.

They uſually conſiſt each of two long ſquare wooden rulers, made to ſlide over one another, and divided into feet, inches, &c.

LEVER *, or **LEAVER**, in mechanics, an inflexible right line, ſupported, in a ſingle point, on a fulcrum or prop; and uſed for the raiſing of weights: being either void of weight itſelf, or, at leaſt, having ſuch a weight as may be commodiouſly counter-balanced.

* The word is formed of the French *levier*, which ſignifies the ſame, formed of the verb *lever*, or Latin *levare*, to raiſe.

The *lever* is the ſecond, or, as others will have it, the firſt of thoſe called mechanical powers, or ſimple machines, as being, of all others, the moſt ſimple; and is chiefly applied for raiſing weights to ſmall heighths. See MECHANIC *Powers*.

In a *lever* there are three things conſidered: The weight to be raiſed, or ſuſtained, as O, (*Tab. Mechanics*, *fig.* 1.) — The power by which it is to be raiſed, or ſuſtained, as B. And the fulcrum, or prop D, whereon the *lever* is ſuſtained, or rather, on which it moves round, the fulcrum remaining fixed.

Levers are of three kinds: Sometimes, the fulcrum is placed between the weight and the power, as in *fig.* 1. this we call a *lever of the firſt kind*. Sometimes, the weight is between the fulcrum and the power; which is called a *lever of the ſecond kind*, as in *fig.* 2. And ſometimes, the power acts between the weight and the fulcrum, as *fig.* 3. which is the *lever of the third kind*.

The power of the *lever* is founded on the following theorem, *viz.* 'That the ſpace, or arch deſcribed by each point of a '*lever*, and conſequently the velocity of each point of a *lever*, 'is as its diſtance from the fulcrum, or prop.'

From hence it follows, that the action of a power, and the reſiſtance of the weight, increaſe in proportion to their diſtance from the fulcrum.

And hence alſo it follows, that a power will be able to ſuſtain a weight, if the diſtance of the point in the *lever*, to which it is applied, be to the diſtance of the weight, as the weight to the intenſity of the power; which, if it be ever ſo little increaſed, muſt raiſe the weight. See this doctrine demonſtrated under the word MECHANIC *Powers*; and further illuſtrated under the word BALLANCE: between which, and the *lever*, there is a great analogy; a *lever* of the firſt kind being a ſort of ſtilyard to raiſe weights. See STILYARD.

The power and action of the *lever* will be fully illuſtrated by the following propoſitions.

1°. If the power applied to a *lever*, of any kind, ſuſtain a weight, the power is to the weight in a reciprocal ratio of their diſtances from the fulcrum.

This is the converſe of that demonſtrated under the head MECHANIC *Powers*.

2°. The weight of a *lever* of the firſt or ſecond kind AB, *fig.* 1. the diſtance of the center of gravity from the fulcrum C V, and the diſtances of the weight, and the power A C and C B, being all given; to find the power that will ſuſtain it. —Suppoſe the *lever* void of gravity, but in lieu thereof a weight hung at V; if then A C be made to C V, as the gravity of the *lever* to a fourth number, we ſhall have the weight which the *lever* is able to ſuſtain; and this ſubſtracted from the given weight, the remainder will be the weight to be ſuſtained by the power. Let C B then be to C A, as the remaining weight to a fourth weight; and we ſhall have the power to be applied in B, in order to ſuſtain the given weight with the given *lever*.

3°. The gravity of a *lever* of the firſt or ſecond kind A B, the diſtance of its center of gravity from the fulcrum C V, the diſtances of the power, and the weight B C and C A, being all given; to find the weight to be ſuſtained. — Find the part of the weight ſuſtained by the *lever* alone, as in the former problem; in the ſame manner find the other part of the weight, which the power applied in B is able to ſuſtain: add the two numbers together, the ſum is the weight required.

4°. The gravity, and center of gravity F, of a *lever* of the ſecond kind C B, with the weight G, its diſtance from the fulcrum C A, and from the power C B, being given; to find the power capable to ſuſtain the weight. — Suppoſe the *lever* void of gravity, but in lieu thereof a weight equal thereto hung in F, the power required to ſuſtain the *lever* alone; then find the power requiſite to ſuſtain the given weight G: add the powers together, the ſum will be the power required.

5°. If a power applied to a *lever* of any kind lift a weight, the ſpace of the firſt is to that of the laſt, as this laſt to a power able to ſuſtain the ſame weight; whence it follows, that the gain of force is always attended with the loſs of time, and vice verſa.

LEVERET, among ſportſmen, a young hare in the firſt year of its age. See *Hare*-HUNTING.

LEVIGATION, the reduction of hard and ponderous bodies, as coral, tutty, precious ſtones, &c. into a light, ſubtile powder; by grinding upon porphyry, a ſea-ſhell, marble, ſtone, or the like, as painters do their colours.

Levigation is much uſed in pharmacy, and chymiſtry; but unleſs the grinding inſtruments be extremely hard, they will wear away, ſo as ſometimes to double the weight of the medicine thus managed.

LEVITE *, an inferior kind of miniſter in the Jewiſh tabernacle, and temple, who had the care and management of the ſacred utenſils.

* The word comes from the Greek, λευίτης; the root of which is the name *Levi*, which was given to that patriarch by his mother Leah, from the Hebrew לוה *lavah*, to be tied, or united; Leah hoping, by the birth of this ſon, to be more cloſely linked to her huſband Jacob.

The *levites*, in the Jewiſh church, were an order inferior to the prieſts; and anſwered, in ſome meaſure, to deacons in the Chriſtian church. See PRIEST, and DEACON.

The *levites* of the old law had no ſettled lands allotted them for their maintenance, but lived chiefly of the offerings made to God. — They were diſtributed through all the tribes, each of which gave ſome of their cities to the *levites*, with grounds in their neighbourhood for the ſubſiſtence of their flocks. — According to the numeration made by Solomon, from the age of twenty, there were thirty eight thouſand *levites* capable of ſerving: twenty four thouſand of theſe he appointed for the daily miniſtry under the prieſts; ſix thouſand to be inferior judges in the cities, and to decide matters relating to religion, and of no great conſequence to the ſtate; four thouſand to be door-keepers, and to take care of the riches of the temple; and the reſt to do the office of chanters, or ſingers. See TEMPLE, TABERNACLE, &c.

LEVITY, the privation, or want of weight in any body, when compared with another that is heavier. See WEIGHT. In which ſenſe, *levity* ſtands oppoſed to *gravity*. See GRAVITY.

The ſchools maintain, that there is ſuch a thing as *poſitive* and *abſolute levity*, and impute to this the riſe or emergency of bodies lighter in ſpecie than the fluids wherein they riſe.

But we find by experience, that all bodies tend towards the earth, ſome ſlower, and ſome faſter, in all fluids or mediums, whether water, air, *&c.* — Thus, cork is ſaid to be lighter than gold; becauſe, under equal dimenſions, the gold will ſink in, and the cork ſwim upon water. See SPECIFIC *Gravity*. Archimedes has demonſtrated, that a ſolid body will float any where in a fluid of the ſame ſpecific gravity, and that a lighter body will keep above a heavier. — The reaſon is, that of bodies falling towards the earth, thoſe which have a like number of equal parts, have equal gravity; ſince the gravity of the whole, is the ſum of the gravity of all its parts. —Now two bodies have an equal number of equal parts, if under the ſame dimenſions there be no intervals deſtitute of matter; whence it follows, that as no portion of matter is ſo ſmall, but that the body wherein it is contained may be wholly divided into parts equally ſmall, there can be no reaſon for the deſcent of theſe, which will not equally hold for the deſcent of that. See DESCENT, FLUID, *&c.*

Hence it may be concluded, that thoſe bodies which do not equally gravitate under the ſame dimenſions, do not contain equal portions of matter; and therefore when we ſee, that a cube of gold ſubſides in water, at the ſame time that an equal bulk of cork ſwims upon it, it is evident, that the gold muſt have a greater number of equal parts of matter, under the ſame bulk, than the cork, or the cork muſt have a greater number of vacuities than the gold; and that there are alſo in the water a greater number of vacuities, than in gold.

Hence, we have a clear idea both of denſity or gravity, and of *levity*; and know, that the latter cannot in a ſtrict ſenſe, be accounted any thing poſitive, but a mere negation, or abſence of body, which determines that body to be lighter than another which contains more matter.

Dr. Hooke, it is true, ſeems to maintain ſomething like a poſitive *levity*: which, if we miſtake not, is what he means by the term *levitation*; *viz.* a property of bodies directly contrary to that of gravitation towards the ſun.

This, he thinks, he has diſcovered in the ſtreams of ſeveral comets; which, though they had a deſcent from the nucleus of the comet towards the ſun, yet they quickly returned, and went oppoſite to the ſun, and that to a prodigious extent. See COMET, and ATMOSPHERE.

In effect, where the power of gravitation ceaſes, it ſhould ſeem ſome ſuch contrary force does begin; whereof we have inſtances in the phænomena of attraction. — This is what Sir Iſaac Newton calls the *vis repellens*, and appears to be one of the laws of nature; without which, it would be hard to account for rarefaction, and ſome other appearances. See REPULSION.

Paracentric Solicitation of LEVITY. See PARACENTRIC.

LEVY, LEVARE, in law, ſignifies *to gather*, or *collect*: as, to *levy* money, to *levy* troops, *&c.*

LEVY ſometimes alſo denotes to erect, or ſet up: as, to *levy* a mill.—*Levy* alſo ſignifies to raiſe, or caſt up; as, to *levy* a ditch.

LEX, *Law*. See the article LAW.

LEX *amiſſa*, or *legem amittere*, in law, is underſtood of an infamous perjured perſon, who is ſaid to *loſe his law*; or, as Bracton has it, *non eſt ulterius dignus lege*. See INFAMOUS.

LEX *Judicialis*, is properly *purgatio per judicium ferri*; ſometimes called ſimply *judicium*. See JUDICIUM, and PURGATION.

LEX *Sacramentalis*, *purgatio per ſacramentum*. See OATH, and PURGATION.

LEX *Talionis*. See the article TALIO.

LEX *Terræ*, the law and cuſtom of the land; by which name it is diſtinguiſhed from the *civil law*. See COMMON *Law*.

LEGEM *Terræ amittere*. See the article AMITTERE.

LEXICON *, ΛΕΞΙΚΟΝ, the ſame with *dictionary*. See DICTIONARY.

* The word is chiefly uſed in ſpeaking of Greek dictionaries: it is derived from the Greek λεξις, word, diction; of λεγω, I ſpeak.

LIBATION, LIBATIO, a ceremony in the heathen ſacrifices, wherein the prieſt ſpilt ſome wine, milk, or other liquor, in honour of the deity to whom the ſacrifice was offered, after having firſt taſted it himſelf. See SACRIFICE.

Alexander is ſaid to have ſacrificed a bull to Neptune; and for an offering to the ſea-gods, threw the golden veſſel, uſed for the *libation*, into the ſea.

Libations were alſo in uſe under the law of Moſes, being enjoined by God in Exodus xxix, and Numbers xv.

LIBEL, *Famoſus* LIBELLUS, a writing containing injuries, reproaches, or accuſations againſt the honour, and reputation of any perſon, particularly of a ſuperior, or governor. See SATYR.

Platina is of opinion, that a writing, how injurious ſoever it is, cannot be called a *libel*, if the author's name be to it. Libellers, among the antient Romans, were puniſhed with death, but in after-times they were only whipped. Auguſtus ranked *famoſos libellos*, defamatory libels, among the crimes *læſæ majeſtatis*, of high treaſon.—F. Baldwin has publiſhed a comment on the imperial laws againſt *libels*. Scandalous pictures are reckoned amongſt *libels*.

A *libel*, the lawyers ſay, may be either *in ſcriptis*, or *ſine ſcriptis*: *in ſcriptis*, when a writing is compoſed, or publiſhed to another's diſgrace, which may be done either *verbis*, *aut cantilenis*; as, where this is maliciouſly repeated, or ſung in the preſence of others: or elſe *traditione*, when the *libel*, or any copy of it, is delivered out to ſcandalize the party.

A *libel ſine ſcriptis*, may be twofold. 1°. *Picturis*, as to paint the party in a ſhameful, or ignominious manner: or, 2°. *Signis*, as to fix a gallows, or other ignominious ſigns, at the door of the party, or elſewhere.

The puniſhment of *libelling* in England, is putting the criminal in the pillory, whipping, fining, *&c.*

LIBEL alſo ſignifies the original declaration of any action in the civil law. See ACTION, and DECLARATION.

LIBELLATICI, an antient kind of apoſtates from Chriſtianity, under the perſecution of Decius; who, to prevent their being obliged to renounce the faith, and ſacrifice to idols in public, made application to the magiſtrates, and abjured their faith in private; obtaining certificates of them, either by intreaty or by money *; by which they were atteſted to have complied with the orders of the emperor, and were thereby ſheltered from any further moleſtation, on account of their religion.

* Theſe certificates were called *libelli*; whence the people, who obtained them, came to be denominated *libellatici*.

Others, particularly the centuriators of Magdebourg, are of opinion, that the *libellatici* were only ſuch as fed the magiſtrates with money, to ſcreen them from perſecution, and from being obliged to renounce Chriſtianity.

M. Tillemont retains ſomewhat of each opinion; he thinks the *libellatici*, applying themſelves to the magiſtrates, bought off the ſacrificing and abjuration, and obtained letters by which they were declared to have renounced Chriſt, and ſacrificed to idols, though, in effect, they had done neither.

LIBERAL * *Arts*, are ſuch as depend more on the labour of the mind, than on that of the hand; or, that conſiſt more in ſpeculation, than operation; and have a greater regard to amuſement and curioſity, than neceſſity. See ART.

* The word comes from the Latin *liberalis*; which, among the Romans, ſignified a perſon who was not a ſlave, and whoſe will, of conſequence, was not checked by the command of any maſter.

Such are grammar, rhetoric, painting, ſculpture, architecture, muſic, *&c.*—The *liberal arts* uſed formerly to be ſummed up in the following Latin verſe:

Lingua, Tropus, Ratio, Numerus, Tonus, Angulus, Aſtra.

And the *mechanical arts*, which, however, are innumerable, under this:

Rus, Nemus, Arma, Faber, Vulnera, Lana, Rates.

LIBERALIA, feaſts celebrated by the antient Romans, in honour of Liber, or Bacchus: the ſame with thoſe which the Greeks called *Dionyſia*, and *Dionyſiaca*. See DIONYSIA.

They took their name from *liber*, *i. e.* free; a title conferred on Bacchus, in memory of the liberty or freedom which he granted to the people of Bœotia; or perhaps becauſe wine, whereof he was the reputed deity, delivers men from care, and ſets their minds at eaſe and freedom.—Varro derives the name of this feaſt from *liber*, conſidered as a noun adjective, and ſignifying *free*; becauſe the prieſts were free from their function, and eaſed of all care during the time of the *liberalia*. For, in effect, it was the old women who officiated in the ceremonies and ſacrifices of theſe feaſts.

LIBERANDIS *Terris*. See the article TERRIS.

LIBERI *Tauri Libertas*. See the article TAURI.

LIBERIA, a feaſt held among the Romans on the day whereon their children laid aſide their juvenile habits, and aſſumed the robe called *toga libera*. See TOGA, and VIRILE.

The *liberia* were kept on the ſixteenth of the calends of April; that is, the ſeventeenth of March.

LIBERTATES *Angliæ Cuſtodes*. See CUSTODES.

LIBERTUS, or LIBERTINUS, among the Romans, a *freed man*; or a perſon ſet free from a legal ſervitude. See SLAVE, and MANUMISSION.

Theſe ſtill retained ſome mark of their antient ſtate: He who made a ſlave free, having a right of patronage over the *libertus*: ſo that if the latter failed of ſhewing due reſpect to his patron, he was reſtored to his ſervitude; and if the *libertus* died without children, his patron was his heir.

LIBERTINES, LIBERTINI, a religious ſect which aroſe in the year 1525; whoſe principal tenets were, That there is but one only ſpirit, which is that of God; who is diffuſed through all things; who is and lives in all creatures; that our ſouls are nothing but this ſpirit of God: That the ſoul dies with the body; that ſin is a mere chimæra, and only ſubſiſts in opinion, for that it is God that does all, both good and evil; that paradiſe is a dream, and hell a phantom invented by prieſts, and religion a ſtate-trick to keep men in awe; that ſpiritual regeneration only conſiſts in ſtifling the remorſe of conſcience; repentance, in avowing to have done no evil; and that it is lawful, and even expedient, to diſſemble in matters of religion. See FLORINIANS, PRISCILLIANISTS, &c.

To theſe they added horrible blaſphemies againſt Jeſus Chriſt; ſaying, he was nothing but a mere je ne ſcai quoi, compoſed of the ſpirit of God, and of the opinion of men.

Theſe maxims occaſioned their being called *Libertines*; and the word has been uſed in an ill ſenſe ever ſince.

The *Libertini* ſpread principally in Holland and Brabant. Their leaders were one Quintin, a Picard, and another called Chopin, who joined with him, and became his diſciple.

LIBERTY, LIBERTAS, is uſually underſtood of that ſtate wherein a man acts freely; or that power by which he determines himſelf voluntarily either to good or evil, to this thing or that.

In which ſenſe *liberty* amounts to the ſame with *freedom*, and ſtands oppoſed to *neceſſity*. See FREEDOM, and NECESSITY.

Liberty may be defined, an active indifference of the will, to will, or not to will any thing. See WILL.

Moſt of the ſchoolmen confound *liberty* and the will together, and make one definition ſerve for both. They diſtinguiſh *liberty* into a great many kinds; as,

LIBERTY *of Contrariety*, *Contrarietatis*, which is a freedom of doing two things not only different, but contrary to each other.

LIBERTY *of Contradiction*, a power either of doing a thing, or letting it alone.

Jeſus Chriſt had not the *liberty* of contrariety, with regard to good and evil, for he could not do evil; but he had a *liberty* of contradiction with regard to good.

Next LIBERTY, *Proxima*, is a full, abſolute freedom of doing any thing.

Remote LIBERTY, is a *liberty* that comprehends a natural power, though embaraſſed with obſtacles, which it is in our power to remove, and to attain to a next *liberty*.

Thus he who has not the actual grace neceſſary for fulfilling his duty, but has yet the actual grace of prayer, has a next *liberty* with regard to prayer, and a remote *liberty* with regard to his duty.

Cicero defines *liberty*, the power of living after a man's own wiſh, without any cauſe or impediment to oblige him to do one thing rather than another.

F. Malebranche gives us a ſtill more philoſophical definition: The will he defines to be that impreſſion, or natural motion, which inclines towards good in the general; and by *liberty* he underſtands, that power which the mind has of determining this general impreſſion towards ſuch objects as pleaſe us; and ſo of directing our general inclinations to ſome particular things. See NATURAL *Inclination*.

Whence it is eaſy to perceive, that though all natural inclinations be voluntary, yet they are not all free; not, we mean, with a *liberty* of indifference, which includes a power of willing, or not willing; or of willing quite the contrary to that which our natural inclinations lead us to.

For, though it is voluntarily and freely that we love good in general, it being abſurd to ſuppoſe we ſhould love any thing without the will, or that the will can ever be conſtrained; yet we do not love it freely (in the ſenſe juſt laid down) becauſe it is not in the power of the will not to deſire to be happy.

It muſt be obſerved, however, that the mind, conſidered as determined towards good in general, cannot divert its motion to any particular good, unleſs the ſame mind, conſidered as capable of ideas, have ſome knowledge of that particular good: That is, in plainer terms, the will is a blind power, that cannot direct itſelf to any thing but what the underſtanding repreſents to it: So that the power which the will has to determine its impreſſion towards general good, or its natural inclinations, variouſly, conſiſts in the power it has to command the underſtanding to repreſent ſome particular good.

Thus, a perſon, for inſtance, repreſents ſome dignity to himſelf as a good to be wiſhed for; immediately the will deſires this good; that is, the impreſſion which the mind continually receives towards good in general, determines it to this dignity. But as that dignity is not the univerſal good, nor is conceived clearly and diſtinctly as ſuch by the mind (for the mind cannot conceive a thing clearly which is not) the impreſſion we have towards good in general, is not entirely exhauſted by that particular good; the mind has an inclination to go further; it does not love that dignity neceſſarily or invincibly, and in this reſpect is free.

Now, its *liberty* conſiſts in this, that not being fully convinced that this good contains in it all the good it is capable of enjoying, it may ſuſpend its judgment and its deſire.

The caſe is nearly the ſame with regard to the knowledge of truth: we love this, as we do the enjoyment of good, by a natural impreſſion; which impreſſion is not invincible in the latter, excepting evidence be full, and our knowledge of the object compleat. We have the ſame *liberty* in our falſe judgments, that we have in our irregular appetites. See JUDGMENT, WILL, &c.

The doctrine of Pelagius, with regard to *liberty*, is built on philoſophy, which does not allow us to have loſt our original *liberty* of doing good. See PELAGIAN.

LIBERTY *of Conſcience*, a right or power of making profeſſion of any religion, or ſerving God in any manner that a man ſees fit.

This ſeems to be a natural right; it is vigorouſly oppoſed by the generality of the Romaniſts, and even by many of the Reformed, though it ſeems as if the reformation could ſcarce ſubſiſt without it. See TOLERATION, and PERSECUTION.

LIBRA, *Ballance*, one of the mechanical powers. See BALLANCE.

LIBRA, is alſo one of the twelve ſigns of the zodiac; exactly oppoſite to Aries; ſo called, becauſe when the ſun is in this ſign, at the autumnal equinox, the days and nights are equal, as if weighed in a ballance.

Stars in the conſtellation Libra.

Names and Situations of the Stars.	Sign.	Longitude			Latitude				Magnit.
		°	′	″	°	′	″		
	♏	10	52	46	9	1	22	S	6
		11	43	17	8	43	9	S	6
		4	10	50	17	7	21	N	4 5
Preced. in ſouth. ſcale		9	51	43	2	3	54	N	5
		10	42	55	0	24	26	N	6
5									
Bright ſtar of ſouth ſcale		10	46	40	0	22	51	N	2 3
		6	41	09	13	30	17	N	6
		14	2	47	7	37	33	S	6
Firſt north. of ſouth ſcale		10	22	31	4	34	38	N	6
Second		10	48	00	5	12	27	N	6
10									
		8	50	18	12	00	48	N	5 6
		11	3	19	5	33	48	N	7
		11	13	38	5	37	15	N	6
That preced. in north. ſcale		10	58	34	8	16	34	N	4 5
South.of inform.preced.below ſcales		16	22	31	7	35	56	S	3
15									
		8	17	42	18	34	16	N	6
Firſt ſouth. following ſcale		14	28	1	1	13	43	N	5
Second		14	34	16	1	1	32	N	6
North.of inform.preced.below ſcales		16	41	43	1	48	23	S	4
		16	54	30	1	35	58	S	6
20									
		16	42	5	0	17	30	N	7
In north. foot of Lupus		20	40	13	11	27	1	S	4
Northern ſcale		15	2	40	8	31	45	N	2
Second following ſouth. ſcale		17	36	48	2	49	46	N	7
Another		17	58	36	3	22	18	N	6
25									
Next after north. ſcale		17	1	43	8	5	44	N	4
		19	35	30	2	8	17	N	6
		20	2	23	1	40	27	N	7
		20	7	46	2	23	22	N	7
Third following ſouth. ſcale		20	42	5	2	16	39	N	4
30									
		23	44	54	8	30	16	S	6
Following in north. ſcale		19	19	41	8	56	50	N	6 5
Preced. under north. ſcale		19	12	14	9	48	13	N	6 5
		20	48	53	4	25	27	N	3 4
Nor.of 2 inform.follow.below ſcales, ♏ [or before feet of ſouth.		24	16	22	8	28	9	S	4
35									
		25	1	17	9	58	50	S	4
		22	39	00	0	14	7	N	6
		24	1	00	4	5	57	S	7
Fourth of follow. ſouth. ſcale		23	27	00	0	1	54	N	4
Second below north. ſcale		23	2	38	4	2	52	N	4
40									
Laſt follow. ſouth. ſcale		26	9	40	0	7	50	N	4
Follow. below north. ſcale		25	33	4	3	30	4	N	4
South. of follow. north. ſcale		26	4	4	6	7	48	N	4
		27	4	53	4	4	20	N	7
		25	32	29	12	00	9	N	6
45									
Midd. of thoſe follow. north. ſcale		26	58	43	9	16	29	N	4 5
North. of the ſame	♏	28	35	7	10	54	30	N	5

LIBRA, alſo denotes the antient Roman pound, borrowed from the Sicilians, who called it *litra*, λιτρα. See POUND.

The *libra* was divided into twelve unciæ, or ounces, equal to about ten ounces and a half of our weight.

The diviſions of the *libra* were, the *uncia*, one twelfth; the *ſextans*, one ſixth; the *quadrans*, one fourth; the *triens*, one third; the *quincunx*, five ounces; the *ſemis*, ſix; the *ſeptunx*, ſeven; the *bcs*, eight; the *dodrans*, nine; the *dextans*, ten; the *deunx*, eleven; laſtly, the *as* weighed twelve ounces, or one *libra*. See AS.

The Roman *libra* was uſed in France for the proportions of their coin, till the time of Charlemagne, or perhaps till that of Philip I. in 1093; their ſols being ſo proportioned, as that twenty of them were equal to the *libra*.

By degrees, it became a term of account, and every thing of the value of twenty ſols, was called a *livre*. See LIVRE.

The Romans had alſo a coin called *libra*, equal to twenty denarii: though Scaliger will have it, that *libra* was, even among them, a term of account, not a coin. See POUND.

Libra *Penſa*, in our law books, denotes a pound of money in weight. See Pound, and Money.

It was uſual, in former days, not only to tell the money, but to weigh it; in regard many cities, lords, and biſhops, having their mints, coined money, and often very bad too: for which reaſon, though the pound conſiſted of twenty ſhillings, they always weighed it. See Pensa.

LIBRARII, among the antients, were a ſort of copiſts, who tranſcribed in beautiful, or, at leaſt, legible characters, what had been wrote by the notarii in notes, and abbreviatures. See Note, Notary, Calligraphus, &c.

LIBRARY, an edifice, or apartment deſtined for the placing of books; or the books themſelves lodged therein. See Book.

Some authors refer the origin of *libraries* to the Hebrews; and obſerve, that the care theſe took for the preſervation of their ſacred books, and the memory of what concerned the actions of their anceſtors, became an example to other nations, particularly the Egyptians. Oſmanduas, king of Egypt, is ſaid to have taken the hint firſt; who, according to Diodorus, had a *library* built in his palace, with this inſcription over the door, Ψυχης Ιατρειον. Nor were the Ptolemys, who reigned in the ſame country, leſs curious, and magnificent in books.

The ſcripture alſo ſpeaks of a *library* of the kings of Perſia, Eſdras v. 17. vi. 1. which ſome imagine to have conſiſted of the hiſtorians of that nation, and of memoirs of the affairs of ſtate; but, in effect, it appears rather to have been a depoſitory of laws, charters, and ordinances of the kings. — The Hebrew text calls it the *houſe of treaſures*, and afterwards the *houſe of the rolls*, where the treaſures were laid up. — We may, with more juſtice, call that a *library*, mentioned in the ſecond of Eſdras to have been built by Nehemiah, and in which were preſerved the books of the prophets, and of David, and the letters of their kings.

The firſt who erected a *library* at Athens, was the tyrant Piſiſtratus; and yet Strabo refers the honour of it to Ariſtotle. That of Piſiſtratus was tranſported by Xerxes into Perſia, and afterwards brought back by Seleucus Nicanor to Athens. Long after, it was plundered by Sylla, and re-eſtabliſhed by Hadrian. — Plutarch ſays, that, under Eumenes, there was a *library* at Pergamus, containing 200,000 books. — Tyrannian, a celebrated grammarian, cotemporary with Pompey, had a *library* of 3000 volumes. — That of Ptolemy Philadelphus, according to A. Gellius, contained 700,000, all in rolls, burnt by Cæſar's ſoldiers. — Conſtantine, and his ſucceſſors, erected a magnificent one at Conſtantinople; which, in the eighth century, contained 300,000 volumes, all burnt by order of Leo Iſaurus: and, among the reſt, one wherein the *Iliad*, and *Odyſſee* were written in letters of gold, on the guts of a ſerpent.

The moſt celebrated *libraries* of antient Rome, were the Ulpian, and the Palatin. They alſo boaſt much of the *libraries* of Paulus Æmilius, who conquered Perſius; of Lucilius Lucullus, of Aſinius Pollio, Atticus, Julius Severus, Domitian, Serenus, Pamphilus Martyr, and the emperors Gordian and Trajan.

Antiently, every large church had its *library*; as appears by the writings of S. Jerom, Anaſtaſius, and others. Pope Nicholas laid the firſt foundation of that of the Vatican, in 1450. It was deſtroyed by the conſtable Bourbon, in the ſacking of Rome, and reſtored by pope Sixtus V. and has been conſiderably enriched with the ruins of that of Heidelberg, plundered by count Tilly in 1622.

One of the moſt compleat *libraries* in Europe, is ſaid to be that erected at Florence by Coſmo de Medicis; over the gate whereof is wrote, *labor abſque labore.* Though it is now exceeded by that of the French king; begun by Francis I. augmented by cardinal Richelieu, and compleated by M. Colbert.

The emperor's *library* at Vienna, according to Lambecius, conſiſts of 80000 volumes, and 15940 curious medals.

The *Bodleian library* at Oxford, built on the foundation of that of duke Humphry, exceeds that of any univerſity in Europe, and even thoſe of all the ſovereigns of Europe, except the emperor's and French king's, which are each of them older by a hundred years. — It was firſt opened in 1602, and has ſince found a great number of benefactors; particularly Sir Rob. Cotton, Sir H. Savil, archbiſhop Laud, Sir Kenelm Digby, Mr. Allen, Dr. Pocock, Mr. Selden, and others. The Vatican, the Medicean, that of Beſſarion at Venice, and thoſe juſt mentioned, exceed the Bodleian in Greek manuſcripts; which yet out-does them all in oriental manuſcripts.

As to printed books, the Ambroſian at Milan, and that of Wolfembuttle, are two of the moſt famous, and yet both inferior to the Bodleian.

The *Cotton library* conſiſts wholly of manuſcripts, particularly of ſuch as relate to the hiſtory and antiquities of England; which, as they are now bound, make about 1000 volumes.

LIBRATA *Terræ*, a portion of ground containing four oxgangs, and every oxgang thirteen acres.

With us, it is ſo much land as is yearly worth 20*s.* In Henry the third's time, he that had *quindecim libratas terræ*, was to receive the order of knighthood. See Knight, and Knights-Fee.

Some ſay, that as money is divided into pounds, ſhillings, pence, and farthings, the ſame degrees are to be obſerved in the diviſion of lands; and therefore, as *quadrans* ſignifies a farthing, ſo *quadrantata* is the fourth part of an acre; *obolata* an half; *denariata*, a whole acre; *ſolidata*, 12 acres; and *librata*, 20 times 12 acres; *i. e.* 240 acres. See Farthingdeal.

LIBRATION, in aſtronomy, an apparent irregularity in the motion of the moon, by which ſhe ſeems to *librate*, or waver about her own axis; ſometimes, from the eaſt to the weſt; and ſometimes, from the weſt to the eaſt. See Moon.

Hence it is, that ſome parts in the moon's weſtern limb, or margin, at one time, recede from the centre of the diſk; and at another, move towards it: by which means, ſome of thoſe parts, which were before viſible, ſet and hide themſelves in the inviſible ſide of the moon, and afterwards become again conſpicuous.

This *libration* of the moon, is owing to her equitable rotation round her own axis, and her unequal motion in the perimeter of her orbit. For if the moon moved in a circle, whoſe centre coincided with the centre of the earth, and turned round its axis in the preciſe time of its period round the earth; the plane of the ſame lunar meridian would always paſs through the earth, and the ſame face of the moon would be conſtantly and exactly turned towards us. But ſince the real motion of the moon is in an ellipſis, in whoſe focus is the earth, and the motion of the moon about the earth is equable; or, which is the ſame thing, every meridian of the moon, by the rotation, deſcribes angles proportional to the times: the plane of no one meridian will conſtantly paſs through the earth.

Libration *of the Earth*, is that motion, whereby the earth is ſo retained in its orbit, as that its axis continues conſtantly parallel to the axis of the world.

This, Copernicus calls the *motion of libration*; and may be illuſtrated thus: Suppoſe a globe, with its axis parallel to that of the earth, painted on the flag of a maſt, moveable on its axis, and conſtantly driven by an eaſt wind, while it ſails round an iſland; it is evident, the painted globe will be ſo *librated*, as that its axis will be parallel to that of the world, in every ſituation of the ſhip.

LICENCE, **Licentia**, in law, a power, or authority given to another to do ſome lawful act. See Licenciate.

A *licence* is a perſonal power, and cannot be transferred to another: though a *licence* may be granted to a man and his aſſigns.

Licence is alſo uſed, in the civil law, for a permiſſion, or leave granted by a ſuperior.

Juſtinian appointed four years to be ſpent in the ſtudy of the law; after which, thoſe who had diſcharged this obligation, were ſaid to have *licence*, or permiſſion to retire from ſtudy.

Licence is alſo applied to the letters, or certificates taken out in univerſities, whether in law, phyſic, or divinity. See Degree.

Licence, in the Sorbonne, denotes a period of two years, which the batchelors are obliged to paſs in aſſiſting at acts, and diſputing in them, to qualify themſelves for being admitted doctors.

Letter of **Licence**. See the article Letter.

Licence *to ariſe*, in law, **Licentia** *ſurgendi*, is a liberty, or ſpace of time given by the court to a tenant, who is eſſoined *de malo lecti* in a real action, to riſe out of his bed and go about his buſineſs. See Essoin.

Licences, in painting, are the liberties which the painter takes in diſpenſing with the rules of perſpective, and the other laws of his art.

Poetical **Licence**, is the liberty which poets claim of diſpenſing with the ordinary rules of grammar.

Antiently, poets had much greater *licences* than are now allowed. — The Greeks, by having recourſe to the ſeveral dialects of their tongue, could lengthen out a word if it were too ſhort, or retrench ſomething from it if it were too long. — The old poets did what they pleaſed with their language, and ſubjected it not only to all their neceſſities, but their caprices too.

Et data Romanis venia eſt indigna poetis.

But theſe became ridiculous in courſe of time; and the poets are now deſpoiled of moſt of their antient privileges.

LICENCIATE, or **Licentiate**, he who has obtained the degree of a *licence*. See Licence, and Degree.

Moſt of the officers of judicature in Spain, are known by no other name than that of *licenciates*. — To paſs *licenciate* in the common law, civil law, or phyſic, they muſt have ſtudied ſeven years; in divinity, ten.

Licentiate, among us, is uſually underſtood of a phyſician, who has a *licence* to practice, granted him by the college of phyſicians, or biſhop of the dioceſe. See College.

A perſon practiſing phyſic without ſuch *licence*, in caſe his patient dies under his hands, is guilty of felony in the eye of the law.

LICHEN, ΛΕΙΧΗΝ, a cutaneous diſtemper, otherwiſe called *impetigo*. See Impetigo.

LIE, or **Lye** *under the Sea*.—The ſailors ſay, a ſhip *lies under the ſea*, when, her helm being made faſt a-lee, ſhe lies ſo a-hull, that the ſea breaks upon her bow, or broad-ſide.

LIEGE *, Ligius, properly ſignifies a *vaſſal*, who holds a kind of fee, that binds him in a cloſer obligation to his lord than other people. See Vassal.

* The term ſeems to be derived from the French *lier*, to bind; in regard of a ceremony uſed in rendering faith, or homage, which was by locking the vaſſal's thumb, or his hand, in that of the lord, to ſhew that he was faſt bound by his oath of fidelity. — Cujas, Vigenere, and Bignon, chuſe rather to derive the word from the ſame ſource with *leudis*, or *leodi*, loyal, faithful.—But Du Cange falls in with the opinion of thoſe who derive it from *liti*, a kind of vaſſals, ſo firmly attached to their lord, on account of lands or fees held of him, that they were obliged to do him all manner of ſervice, as if they were his domeſtics. He adds, this was formerly called *litgium ſervitium*, and the perſon *litge*. — In this ſenſe, the word is uſed *leg. Edw. cap.* 29. *Judæi ſub tutela regis ligea debent eſſe*; that is, wholly under his protection.

By *liege homage*, the vaſſal was obliged to ſerve his lord towards all, and againſt all, excepting his father. — In which ſenſe, the word was uſed in oppoſition to *ſimple homage*; which laſt, only obliged the vaſſal to pay the rights, and accuſtomed dues to his lord; and not to bear arms againſt the emperor, prince, or other ſuperior lord: ſo that a *liege man* was a perſon wholly devoted to his lord, and entirely under his command *.

* *Omnibus, &c. Reginaldus rex Inſularum, ſalutem. Sciatis quod deveni homo* ligeus *domini regis Angliæ Johannis, contra omnes mortales quamdiu vixero, & inde ei fidelitatem & ſacramentum præſtiti, &c.* M. S. *penes* W. Dugdale.

But it muſt be obſerved, there were formerly two kinds of *liege homage:* the one, by which the vaſſal was obliged to ſerve his lord, againſt all, without exception, even his ſovereign; the other, by which he was to ſerve him againſt all, except ſuch other lords as he had formerly owed *liege homage* to. See Homage.

In our old ſtatutes, *lieges*, and *liege people*, are terms peculiarly appropriated to the king's ſubjects; as being *liges*, *ligi*, or *ligati*, obliged to pay allegiance to him; 8 Hen. VI. 14 Hen. VIII. *&c.* though private perſons had their *lieges* too *.

* *Reinaldus Dei gratia abbas Rameſiæ, præpoſito & hominibus de Branceſtre, & omnibus vicinis Francis & Anglis, ſalutem. Sciatis me dediſſe terram Ulfe, in depedene (hodie depedalé) huic Boſelino & uxori ejus Alfniæ—ea conditione quod effecti ſint homines* liges. *Lib. Rameſ*

Liege *Vaſſalage*. See the article Vassalage.

LIENTERY*, ΛΕΙΝΤΕΡΙΑ, in phyſic, a kind of looſeneſs, wherein the food paſſes ſo ſuddenly through the ſtomach and guts, as to be thrown out by ſtool, with little or no alteration.

* The antients were of opinion, the *lientery* was owing to the too great ſmoothneſs, and ſlipperineſs of the inſide of the inteſtines, by which they let the food ſlip off before it was digeſted: and hence they gave it this name, which is formed from λειος, ſmooth, poliſhed, and εντερον, inteſtine.

The *lientery* is generally owing either to a defect in the ferment of the ſtomach, or to a relaxation of the pylorus, attended with ſo briſk an irritation of the fibres of the ſtomach, that inſtead of retaining the aliment, it lets it paſs.—Exceſs of drinking ſometimes occaſions this diſeaſe, by relaxing the ſtomach, and eſpecially the pylorus, too immoderately.

LIEUTENANT, *locum tenens*, a deputy, or officer, who holds the place of a ſuperior, and diſcharges that function in his abſence, which he ought to exerciſe in perſon.

Of theſe, ſome are civil; as lords *lieutenants* of kingdoms, who are the king's viceroys, and govern in his ſtead; and lords *lieutenants* of counties. See Lord, and County.

But the term is moſt frequent among military men, among whom there is a variety of *lieutenants*.—As,

Lieutenant-*General*, a great officer, the next in rank to the general of an army; who, in battle, commands one of the lines, or wings; a detachment in a march, or a flying camp.—Alſo, a quarter at a ſiege, or one of the attacks—when it is his day of duty. See General.

In France, they have alſo *lieutenant-generals* of their naval forces, who command immediately under the admirals.

In Holland they have a *lieutenant-admiral*, which is the ſame with what we call a *vice-admiral*. See Admiral.

Lieutenant-*General of the Ordnance*, is he who has the charge of the artillery, batteries, *&c.* under the maſter-general, or in his abſence. See Ordnance, *&c.*

Lieutenant-*Colonel of Foot*, is the ſecond officer in a regiment; he commands in the abſence of the colonel, and in battle takes poſt at his colonel's left.

The dragoons have alſo a *lieutenant-colonel*; but the horſe have not, properly, any; the firſt captain of the regiment ſupplies the office. See Colonel.

Lieutenant-*Colonel of Horſe*, being only the firſt captain of the regiment; who commands in the abſence of the colonel, taking place of all the other captains.

Captain Lieutenant. See the article Captain.

LIFE, *Vita*, is a very ambiguous term.—For both God, and man, and a ſoul, and an animal, and a plant, are ſaid *to live:* yet there is not any thing common to all theſe, beſide a kind of active exiſtence; which, however, is of very different kinds. See Animal, Vegetable, *&c.*

Life, then, in the general, expreſſes a kind of active, operative exiſtence; and is therefore conceived to conſiſt in motion.—But, particularly,

Life *of Body*, *Vita Corporis*, conſiſts in an uninterrupted motion therein. — A body, therefore, ſaid to be *living*, muſt conſiſt of various parts or members, both internal and external, ſo framed, and put together, as to conſtitute one whole. And theſe members muſt be moved, and warmed by ſome fluid ſubſtance, permeating the whole frame; by which heat and motion, the vital functions are to be performed. — Such are nutrition, generation, local motion, *&c.* See Blood, Circulation, *&c.*

Life *of Mind*, *Vita Mentis*, is held by the Carteſians, to conſiſt in a perpetual cogitation, or uninterrupted courſe of thinking; which ſeems likewiſe to have been Ariſtotle's meaning, when he calls the ſoul εντελεχεια; which his interpreters call *actus:* thinking being the only proper act of the mind. See Entelechia.

But Mr. Locke endeavours to refute this principle. See Thinking, Soul, *&c.*

Life *of Man*, *Vita Hominis*, conſiſts in a continued communication of body and mind; or in operations, to which both the motions of the body, and ideas of the mind contribute.

Thus, *e. gr.* the mind now thinking of ſomething, on occaſion of that thought, there ariſes a certain motion in the body.—And now, again, the body moves firſt, which motion is followed by ſome thought of the mind. See Soul.

In ſuch alternate or reciprocal operation, does the *life* of man conſiſt; conſidered as he is a compound of body and mind. See Sensation, Motion, *&c.*

Life, is more particularly uſed for the duration of an animal's being; or, the ſpace of time that paſſes between its birth and death. See Death, *&c.*

Life, is alſo uſed for the conſtitution; or, that principle of heat, and motion, which animates bodies, and makes them perceive, act, and grow.

In which ſenſe, *life*, is divided into *animal*, *ſenſitive*, and *vegetative*. See Animal, Sensitive, *&c.*

Life, in a medical ſenſe, is defined, the circulation of the blood. See Circulation.

Prolongation of Life, is made by lord Bacon one of the three branches of medicine; the other two relating to the preſervation of health, and the cure of diſeaſes. See Medicine.

The theory of prolonging *life* he numbers among the deſiderata.—Some means, or indications that ſeem to lead to it, he lays down as follows.

Things are preſerved in two manners; either in their *identity*, or by *reparation*. In their *identity*, as a fly or ant in amber, a flower, or fruit, or wood, in a conſervatory of ſnow; a dead carcaſs in balſams. — By *reparation*, as a flame, or a mechanical engine, *&c.* — To attain to the prolongation of *life*, both theſe methods muſt be uſed; and the human body muſt be preſerved both as inanimates, as flame, and as mechanical inſtruments are preſerved.

Hence ariſe three intentions for the prolongation of *life: retardation* of conſumption, proper *reparation*, and *renovation* of what begins to grow old. — Conſumption is occaſioned by two kinds of depredation; a depredation of the innate ſpirit, and a depredation of the ambient air. — Theſe may be each prevented two ways; either by rendering thoſe agents leſs predatory, or by rendering the paſſive parts (*viz.* the juices of the body) leſs liable to be preyed on.—The ſpirit will be rendered leſs predatory, if either its ſubſtance be condenſed, as by the uſe of opiates, grief, *&c.* or its quantity diminiſhed, as in ſpare and monaſtic diets; or its motion calmed, as in idleneſs and tranquillity. — The ambient air becomes leſs predatory, if it be either leſs heated by the rays of the ſun, as in cold climates, in caves, mountains, and anchorets cells; or be kept off from the body, as by a denſe ſkin, the feathers of birds, and the uſe of oils and unguents, without aromatics. The juices of the body are rendered leſs liable to be preyed on, either by making them harder, or more moiſt and oily: harder, as by a coarſe ſharp diet, living in the cold, robuſt exerciſes, and ſome mineral baths: moiſter, as by the uſe of ſweet foods, *&c.* abſtaining from ſalts and acids; and eſpecially by ſuch a mixture of drink, as conſiſts wholly of fine ſubtile particles, without any acrimony or acidity.

Reparation is performed by means of aliment: alimentation is promoted four ways; by the concoction of the viſcera, ſo as to extrude the aliment, by exciting the exterior parts to the attraction of the aliment, as in proper exerciſes and frications, and ſome unctions and baths; by the preparation of the food itſelf, ſo as it may more eaſily inſinuate itſelf, and, in ſome meaſure, anticipate the digeſtion; as in various ways of dreſſing meats, mixing drinks, fermenting breads, and reducing the virtues of theſe three into one; by promoting the act of aſſimilation itſelf, as in ſeaſonable ſleep, ſome external application, *&c.* — The renovation of what begins to grow old, is performed two ways; by the inteneration of the habit of the body, as in the uſe of emollients, emplaſters, unctions, *&c.* of ſuch a nature, as do not extract, but impreſs;

or by purging off the old juices, and ſubſtituting freſh ones; as in ſeaſonable evacuations, attenuating diets, *&c.*

The ſame author adds theſe three axioms: that the prolongation of *life* is to be expected rather from ſome ſtated diets, than either from any ordinary regimen, or any extraordinary medicines; more for operating on the ſpirits, and mollifying the parts, than from the manner of feeding: and this mollifying of the parts without, is to be performed by conſubſtantials, impriments, and occludents. See LONGÆVITY.

LIGAMENT, in its general ſenſe, denotes any thing that ties or binds one part to another.

In which ſenſe the antients applied the word to membranes, skin, fleſh, veins, and arteries; as being common *ligaments.*

LIGAMENT, in its more proper ſignification, denotes a white, tough, ſolid, inflexible part, ſerving to incloſe, and keep together the junctures of the body.

It has no conſpicuous cavities; nor has it any ſenſe, leſt it ſhould ſuffer on the moving of the bones. It is found very different, according to the different parts where it is uſed. It is harder than a membrane, yet ſofter than a cartilage: its principal uſe is to gird and ſtrengthen the junctures, to prevent the diſlocation of the bones, and even to faſten them together, when they have no articulation.—It alſo ſerves as a covering to the tendons, to ſeparate them from the muſcles, and to hold up the ſuſpended entrails, leſt their weight ſhould throw them down—ſuch are the *ligaments* of the liver, the bladder, and matrix.

Ligaments are of different ſubſtances; ſome hard, others ſoft, membranous, nervous, and cartilaginous; as alſo of different figures, and ſituations: ſome ariſe from bones, others from cartilages, and others from membranes.

The *ligament* is held the moſt terreſtrial of all the parts of the body, after the bone and cartilage; being cold, dry, hard, and inſenſible, like them. See CARTILAGE, and BONE.

The principal *ligaments* of the body, are the cartilaginous *ligaments*, which bind the four bones of the metacarpus with the carpus. See CARPUS, and METACARPUS.

The *ligaments* of the ſpine are very ſtrong, being fitted to the articulations of the vertebræ, to prevent their luxation in violent motions.—They are of two kinds; the one thick and fibrous, in form of a creſcent, which bind them both at top and bottom; and the others membranous, ſerving to faſten them the more ſecurely. See SPINE, and VERTEBRA.

The *ligaments* of the liver are two in number; the firſt, called *ligamentum ſuſpenſorium*, holds it ſuſpended to the diaphragm, penetrating into the ſubſtance of the liver, to hold it the more firmly: the latter is larger, but more lax; it comes from the external coat of the liver, and is faſtened to the cartilago xiphoides. — Some add a third, which is formed out of the umbilical veſſels; which, in adults, dry up, and become a *ligament.*

There are two *ligaments* belonging to the tongue; one which faſtens it, by its root, to the os hyoides; and another larger, inſerted into the middle and inferior part: this laſt is called the *frenum*, or bridle of the tongue. — There are alſo *ligaments* belonging to the ſpleen. See TONGUE, and SPLEEN.

The penis has a ſtrong *ligament*, called *ſuſpenſorium penis*, from its office in holding up the penis to the oſſa pubis; it ariſes from the fore-parts of thoſe bones, and is faſtened to the upper part of the corpora cavernoſa penis: it has another *ligament*, which faſtens the prepuce to the glans. See PENIS, PREPUCE, *&c.*

The uterus has four *ligaments*, two of them called *lata*, or *broad*; and two *rotunda*, or *round*, from their figure: the broad *ligaments* are membranous, ariſe from the proceſſes of the peritonæum, and are faſtened to the lateral parts of the bottom of the uterus, and ſerve to prevent it from falling down upon the neck, as ſometimes happens, when theſe *ligaments* are too much relaxed. See MATRIX.

The round *ligaments* ariſe from the ſides of the womb, at the place where the tubæ fallopianæ are joined to it. At their firſt riſe they are broad; but, by degrees, as they recede farther from the womb, grow round and ſmooth; and, as the ſpermatic veſſels do in men, paſs betwixt the duplicature of the peritonæum, and ſo out of the abdomen, through the foramina of the oblique and tranſverſe muſcles of the abdomen, and running obliquely on the os pubis, terminate under the fat of the clitoris.—By the paſſages of theſe *ligaments*, women, and girls eſpecially, are expoſed to inguinal ruptures, as men are by the paſſages of the ſpermatic veſſels.

The ſubſtance of the broad *ligaments* is membranous, looſe, and ſoft; whence ſome have compared them to the wings of a batt, and called them *alæ veſpertilionum.* — The round *ligaments* are of a firmer texture, and conſiſt of a double membrane, wrapping up in it veins, arteries, nerves, and lymphæducts, and both theſe and the former have been ſometimes taken for muſcles.—By theſe *ligaments* the uterus is kept ſo tight, that no violence of internal flatus, or humours, can raiſe it above its place. — See *Tab. Anat. (Splanch.) fig.* 9. *lit. b. b. fig.* 11. *lit. i. i.* &c.

LIGAMENTUM *Annulare.* See ANNULAR, and WRIST.

LIGAMENTUM *Ciliare.* See CILIARE *Ligamentum.*

LIGATURE, in chirurgery, any thing tied about a part of the body: more eſpecially a bandage, or fillet of cloth, or linnen, ſerving to bind the arm, and facilitate the operation of bleeding.

LIGATURE, **LIGATURA**, or **LIGATIO**, denotes alſo the art, or manner of diſpoſing, and applying bandages for the cloſing of wounds, and performing many of the operations of chirurgery.

LIGATURE, among myſtic divines, ſignifies a total ſuſpenſion of the ſuperior faculties, or intellectual powers of the ſoul.— They pretend, that when the ſoul is arrived at a perfect contemplation, ſhe remains deprived of all her operations, and ceaſes to act, in order to be more ready, and prepared to receive the impulſe and communications of divine grace. — This paſſive ſtate of theſe contemplative people they call their *ligature.*

LIGATURE, is alſo uſed to ſignify a kind of bandage, or fillet, tied round the neck, arm, leg, or other part of the bodies of men or beaſts, to divert, or drive off ſome diſeaſe, accident, &c. See AMULET, &c.

LIGATURE, is alſo uſed for a ſtate of impotency, in reſpect to venery, cauſed by ſome charm, or witchcraft.

Kempfer tells us of an uncommon kind of *ligature*, or knotting, in uſe among the people of Maſſacar, Java, Malaja, Siam, *&c.*—By this charm, or ſpell, a man binds up a woman, and a woman a man, ſo as to put it out of their power to have to do with any other perſon; the man being thereby rendered impotent to any other woman, and all other men impotent with reſpect to the woman.

Some of their philoſophers pretend, that this *ligature* may be effected by the ſhutting of a lock, the drawing of a knot, the ſticking of a knife in the wall, at the point of time wherein the prieſt is joining a couple together; and that a *ligature*, thus effected, may be diſſolved, by the ſpouſe's urining through a ring.—This piece of ſuperſtition is ſaid to obtain alſo among the Chriſtians of the Eaſt.

The ſame author tells us, that during the ceremony of marriage in Ruſſia, he obſerved an old fellow lurking behind the church-door, and mumbling over a ſtring of words, and at the ſame time cutting a long rod, which he held under his arm, into pieces; which, it ſeems, is a common practice at the marriages of great perſons, and done with deſign to elude and counterwork any other perſon, that might poſſibly be inducing the *ligature.*

The ſecret of inducing a *ligature*, is delivered by the ſame author, as he was taught it on the ſpot, by one of their adepts; which, being a curioſity, we ſhall not ſcruple to add in his own words; not daring to make it ſpeak Engliſh.— *Puella amaſium, vel conjux maritum* ligaturus, *abſterget a concubitus actu, priapum, induſio — ut ſeminis quantum poteſt excipiet. Hoc probe convolutum ſub limine domus ſuæ in terram ſepeliat. Ibi quamdiu ſepultum reliquerit, tamdiu ejus haſta in nullius præterquam ſui (faſcinantis) ſervitium obediet, & prius ab noc nexu non liberabitur quam ex clauſtro liminis libereter ipſum linteum. Vice verſa, vir lecti ſociam* ligaturus, *menſtruatum ab eo linteum comburito; ex cineribus cum propria urina ſubactis, efformato figuram priapi, vel, ſi cineres icunculæ fingendæ non ſufficiant, eoſdem ſubigito cum parte terræ quam recens perminxerit. Formatam iconem cautè exſiccato, ſiccamque aſſervato loco ſicco, ne humorem contrahat. Quamdiu ſic ſervaveris, omnes arcus dum ad ſcopum ſociæ collimaverint, momento contabeſcent: Ipſe vero dominus — Abrunum hunc ſuum prius humectato, quamdiu ſic manebit, tamdiu ſuſpenſo nexu priapus ipſi parebit, quin & alios quotquot fœmina properantes admiſerit.*

M. Marſhal mentions another form of *ligature*, which he received from a bramin at Indoſtan: ‘If, *ſays he*, the little ‘worm in the wood lukerara kara, be cut into two, and ‘the one part ſtirs, and the other not; if the ſtirring part ‘be bruiſed, and given with half a beetle to a man, and the ‘other half to a woman, the charm will keep each from ever ‘having to do with any other perſon.’ *Philoſoph. Tranſact.* N°. 268.

LIGATURES, among printers, are types conſiſting of two letters, or characters joined together, as *ff*, *ſt*, *ſi*. See LETTER.

The old editions of Greek authors, are extremely full of *ligatures*; the *ligatures* of Stephens are, by much, the moſt beautiful.

Some editions have been lately printed without any *ligatures* at all; and there was a deſign to explode them quite out of printing. Had this ſucceeded, the fineſt antient editions would, in time, have grown uſeleſs; and the reading of old manuſcripts have been rendered almoſt impracticable to the learned themſelves.

LIGHT, that ſenſation occaſioned in the mind, by the view of luminous bodies; or that property in bodies, whereby they are fitted to excite thoſe ſenſations in us. See SENSATION.

LIGHT is alſo uſed to denote a certain action of the luminous body, on a medium between it and the eyes, by means whereof, ſome ſuppoſe the one to act on the other. This they call *ſecundary*, or *derivative light*; to diſtinguiſh it from that of luminous bodies; which is called *primary*, or *innate*.

Ariſtotle explains the nature of *light*, by ſuppoſing ſome bodies to be tranſparent, as air, water, ice, *&c.* but ſince, in the night-time, we do not ſee any thing through thoſe bodies, he ſays, they are only tranſparent potentially; whereas, in the day, they become really and actually tranſparent: and ſince it is *light* alone that can reduce that power into act, he defines *light* to be the act of a tranſparent body, conſidered as ſuch. — He adds, that *light* is not fire, nor is it any thing bodily, radiating from the luminous body, and tranſmitted through the tranſparent one; but the mere preſence of fire, or ſome other luminous body, at the tranſparent one.

This is Ariſtotle's doctrine of *light*, which his followers miſtaking, have foiſted on him another, very different; making *light* and colours, to be qualities of the luminous and coloured bodies themſelves, and, in all reſpects, like thoſe ſenſations which they occaſion in us: adding, that things lucid, or coloured, could not produce any ſenſations in us, unleſs they had ſomething ſimilar in themſelves, ſince *nihil dat quod in ſe non habet*. See QUALITY.

But the ſophiſm is apparent; for we find, that a needle, in pricking the fleſh, gives us pain, which no body ever imagined to exiſt in the needle. — But that it is not neceſſary there ſhould be any ſimilitude between the quality of the object, and the ſenſation it produces, appears ſtill more evident from a glaſs priſm, which is found to exhibit blue, yellow, red, and other colours extremely vivid; and yet no body will ſay there is any thing in the glaſs priſm like thoſe ſenſations. See PRISM, *&c.*

The Carteſians have refined conſiderably on this notion; and own, that *light*, as it exiſts in the luminous body, is nothing but a power or faculty of exciting in us a very clear and vivid ſenſation; adding, that what is required to the perception of *light*, is, that we be ſo formed, as to be capable of ſuch ſenſations; that in the hidden pores of tranſparent bodies, there be a certain ſubtile matter, which, by reaſon of its exceeding ſmallneſs, may penetrate even glaſs, and yet be ſtrong enough to ſhake certain capillaments at the bottom of the eye; and, laſtly, that this matter be impelled by the luminous body, ſo as to move the organ of ſight.

Primary *light*, therefore, they ſay, conſiſts in a certain motion of the particles of the luminous body, whereby they are enabled to propel, every way, the materia ſubtilis, lodged in the pores of tranſparent bodies; and ſecundary or derivative *light*, in a conatus to motion, or an inclination of that matter, to recede from the centre of the luminous body in right lines. See MATERIA *Subtilis*, and CARTESIAN.

Father Malebranche explains the nature of *light*, from a ſuppoſed analogy between it and ſound; the latter, it is allowed, is produced by the vibrations of the inſenſible parts of the ſonorous body: which vibrations, if they be greater or leſs, that is, if they run through greater or leſs arches of the ſame circle, are ſtill performed in the ſame time, and the ſounds produced by them, only differ in a greater or leſs degree of ſtrength; but if there be a greater number of vibrations, in the ſame time, in one ſonorous body, than in another, theſe being cloſer, become of a different kind: and thus their ſounds alſo differ, forming what we call different tones, or notes; the quick vibrations forming the acute, and the ſlower the grave notes. See SOUND, ACUTENESS, and GRAVITY.

Thus he ſuppoſes it to be with *light*, and colours: all the parts of a luminous body are in a rapid motion, which, by very quick pulſes, is conſtantly compreſſing the ſubtile matter between the luminous body, and the eye, and excites vibrations of preſſion.—As theſe vibrations are greater, the body appears more luminous; and as they are more quick, or more ſlow, the body is of this, or that colour.

This hypotheſis, how ingenious ſoever, is now deſervedly diſcarded, ſince the great diſcoveries made by Sir Iſaac Newton, on the nature of *light*. — The primary *light* they talk of, we now know, conſiſts wholly in a certain motion of the particles of the lucid body, whereby they do not propel any fictitious matter, ſuppoſed to be lodged in the hidden pores of tranſparent bodies; but throw off, from the luminous body, certain very ſmall particles, which are emitted every way with great force: and the ſecundary, or derivative *light* conſiſts, not in a conatus, but a real motion of theſe particles, receding every way from the luminous body, in right lines, and with an incredible velocity.

For if *light* conſiſted in a mere preſſion, or pulſe, it would be propagated to all diſtances, in the ſame inſtant of time; the contrary of which appears, from the phænomena of the eclipſes of Jupiter's ſatellites, whoſe immerſions, as the earth approaches towards Jupiter, are found to anticipate ſomewhat on the true time, and to commence ſooner; and again, as the earth retires from Jupiter, their emerſions, which alone in that caſe can be obſerved, happen later and later, or loſe time: deviating thus, very conſiderably on either ſide, from the true time marked by the tables.

This was firſt obſerved by M. Roemer, and ſince by other aſtronomers; the reaſon of which, is not owing to any eccentricity; but does apparently follow from this, that the *light* of the ſun, reflected from the ſatellites, has further to travel, ere it reaches the eye, in the one caſe, than in the other, by a ſpace equal to the diameter of the earth's annual orbit. See SATELLITES.

Light therefore, like other real bodies, does not move inſtantaneouſly, but in time. —Sir Iſaac Newton has ſhewn, paſt contradiction, that the *light* of the ſun is near ſeven minutes in its paſſage to the earth, which is the ſpace of 70,000,000 miles; a velocity 10,000,000 times greater than that, wherewith a ball flies out of the mouth of a cannon.

Further, if *light* were not a body, but conſiſted in a mere preſſion, or pulſion, it would never be propagated in right lines, but would be continually inflected ad umbram. Thus Sir Iſaac Newton, ‘A preſſure on a fluid medium (*i. e.* a motion propagated by ſuch a medium, beyond any obſtacle, which impedes any part of its motion, cannot be propagated in right lines, but will be always inflecting and diffuſing itſelf every way, to the quieſcent medium beyond that obſtacle. — The power of gravity tends downwards, but the preſſure of water riſing from it, tends every way with an equable force, and is propagated with equal eaſe, and equal ſtrength in curves, as in ſtraight lines.—Waves, on the ſurface of the water, gliding by the extremes of any very large obſtacle, inflect, and dilate themſelves, ſtill diffuſing, gradually, into the quieſcent water beyond that obſtacle. — The waves, pulſes, or vibrations of the air, wherein ſound conſiſts, are manifeſtly inflected, though not ſo conſiderably as the waves of water; and ſounds are propagated with equal eaſe, through crooked tubes, and through ſtraight lines; but *light* was never known to move in any curve, nor to inflect itſelf ad umbram.’ — The rays of *light*, therefore, are ſmall corpuſcles, emitted with exceeding celerity from the luminous body. — As to the force wherewith theſe corpuſcles are emitted, ſo as to enable them to move at the inconceivable rate of 10,000,000 miles in a minute; hear the ſame great author: ‘Among bodies of the ſame kind and virtue, by how much any one is ſmaller, by ſo much is its attractive power greater in proportion to its bulk. This power we find ſtronger in ſmall magnets, than in large ones, regard being had to the difference of their weights; and the reaſon is, that the particles of ſmall magnets being nearer each other, more eaſily unite their forces intimately together, and act conjunctly. — For the ſame reaſon the rays of *light*, being of all other bodies the moſt minute, it may be expected, that their attractive powers ſhould be, of all others, the ſtrongeſt; and how ſtrong in effect they are, may be gathered from the following rules: the attraction of a ray of *light*, according to the quantity of its matter, is, to the gravity which any projected body has, according, likewiſe, to the quantity of its matter, in a ratio, compounded of the velocity of the ray of *light*, to the velocity of that projected body, and of the bending, or curvature of the line, which the ray deſcribes in the place of refraction, to the bending of the curvature, deſcribed by that projected body; provided, however, the inclination of the ray to the refracting ſurface, be the ſame with that of the projected body to the horizon. From which proportion I gather, that the attraction of the rays of *light*, is above 1,000,000,000,000,000 times greater, than the gravity of bodies on the ſurface of the earth, in proportion to the quantity of matter in each, if the *light* paſs from the ſun to the earth in the ſpace of ſeven minutes. But now, as in algebra, where affirmative quantities ceaſe, there negative ones begin; ſo in mechanics, where attraction ceaſes, there the repelling power muſt ſucceed: Therefore a ray of *light*, as ſoon as it is caſt off from the luminous body, by the vibrating motion of its parts, and is got out of the ſphere of its attraction, is propelled with an immenſe velocity.’ See ATTRACTION, and REPULSION.

The wonderful diviſibility of the parts of matter, is no where more apparent, than in the minuteneſs of the particles of *light*: Dr. Niewentiit has computed, that an inch of candle, when converted to *light*, becomes divided into 269617040 parts, with 40, ciphers annexed; at which rate, there muſt iſſue out of it, when burning, 418,660, with 39 ciphers more, particles in the ſecond of a minute; vaſtly more than a thouſand times a thouſand million times the number of ſands the whole earth can contain; reckoning 10 inches to one foot, and that 100 ſands are equal to one inch. See *Relig. Philoſ.* Vol. III. p. 858.

The expanſion, or extenſion of any portion of *light*, is inconceivable; Dr. Hooke ſhews, it is as unlimited as the univerſe; proving it from the immenſe diſtance of ſome of the fixed ſtars, the *light* whereof becomes ſenſible to the eye, by means of a teleſcope; nor, adds he, is it only the great bodies of the ſun or ſtars, that are thus able to diſperſe their *light* through the vaſt expanſe of the univerſe; but the ſmalleſt ſpark of a lucid body muſt do the ſame, even the ſmalleſt globule, ſtruck from a ſteel by a flint.

Dr. s'Graveſand aſſerts, a lucid body to be that, which emits, or gives fire a motion in right lines; and makes the difference between *light* and heat, to conſiſt in this, That to produce the former, the fiery particles muſt enter the eye, in a rectilinear motion, which is not required in the latter: On the contrary, an irregular motion ſeems more proper for it, as appears from the rays coming directly from the ſun, to the tops of mountains, which have not near that effect with thoſe in the valley, agitated with an irregular motion, by ſeveral reflections. See FIRE.

Whether or no there be always *light*, where there is fire, is diſputed among authors; as alſo, whether or no there be any luminous body without heat; heat being a motion that may be infinitely diminiſhed, and *light* a matter that may be infinitely rare: to which we may add, that no heat is ſenſible to us, unleſs it be more intenſe than that of our organs of ſenſe. See HEAT.

Sir Iſaac Newton obſerves, that bodies, and *light*, act mutually on one another; bodies on *light*, in emitting, reflecting, refracting, and inflecting it; and *light* on bodies, by heating them, and putting their parts into a vibrating motion, wherein heat principally conſiſts. For all fixed bodies, he obſerves, when heated beyond a certain degree, do emit *light*, and ſhine; which ſhining, *&c.* appears to be owing to the vibrating motion of their parts; and all bodies, abounding in earthy and ſulphurous particles, if ſufficiently agitated, emit *light*, which way ſoever that agitation be effected.—Thus ſea-water ſhines in a ſtorm, quick-ſilver when ſhaken in vacuo, cats, or horſes, when rubbed in the dark; and wood, fiſh, and fleſh, when putrefied.

The late Mr. Hawksbee has furniſhed us with a great variety of inſtances of the artificial production of *light*, by the attrition of bodies naturally not luminous; as of amber rubbed on woollen cloth in vacuo, of glaſs on woollen, of glaſs on glaſs, of oyſter-ſhells on woollen, and of woollen on woollen, all in vacuo.

On the ſeveral experiments hereof, he makes the following reflections: That different ſorts of bodies afford remarkably different kinds of *light*, different both in colour and in force: That the effects of an attrition are various, according to the different preparations and managements of the bodies that are to endure it; and that bodies which have yielded a particular *light*, may be brought by friction to yield no more of that *light*.

M. Bernoulli found by experiment, that mercury amalgamated with tin, and rubbed on glaſs, produced a conſiderable *light* in the air; that gold rubbed on glaſs did it ſtill in a greater degree: but that, of all others, the moſt exquiſite *light* was that produced by the attrition of a diamond; being equally vivid with that of a burning coal briſkly agitated with the bellows. See ATTRITION, and FRICTION.

Mr. Boyle tells us of a piece of ſhining rotten wood, which upon exhauſting the air from it, was extinguiſhed; but upon its re-admiſſion, ſeemed to come to life again, and ſhone as before: being, no doubt, a real flame, and, like other flames, not to be preſerved without air. See PHOSPHORUS.

'That the particles of *light* are attracted by thoſe of other bodies,' is evident from innumerable experiments.—This phænomenon was firſt obſerved by Sir Iſaac Newton, who found by repeated trials, that the rays of *light* in their paſſage near the edges of bodies, whether opake or tranſparent, as pieces of metals, the edges of knives, broken glaſſes, *&c.* are diverted out of the right lines, and always inflected or bent towards thoſe bodies. See INFLECTION, and DEFLECTION.

This action of bodies on *light*, is found to exert itſelf at a ſenſible diſtance, though it always increaſes as the diſtance is diminiſhed; as appears very ſenſible in the paſſage of a ray between the edges of two thin planes at different apertures; in which there is ſomething very peculiar; the attraction of one edge being increaſed as the other is brought nearer it.—The rays of *light* in their paſſage out of glaſs into vacuum, are not only inflected towards the glaſs, but if they fall too obliquely, will revert back again to the glaſs, and be totally reflected.

The cauſe of which reflection cannot be attributed to any reſiſtance of the vacuum, but muſt be entirely owing to ſome force or power in the glaſs, which attracts or draws back the rays as they were paſſing into the vacuum.—And this appears farther from hence, that if you wet the poſterior ſurface of the glaſs with water, oil, honey, or a ſolution of quickſilver, then the rays which would otherwiſe have been reflected, will paſs into and through that liquor: which ſhews that the rays are not reflected till they come to that poſterior ſurface of the glaſs, nor even till they begin to go out of it; for if at their going out they fall into any of the foreſaid mediums, they will not then be reflected, but perſiſt in their former courſe, the attraction of the glaſs being in this caſe counterballanced by that of the liquor.

From this mutual attraction between the particles of *light* and other bodies, ariſe two other grand phænomena, which we call the *reflection* and *refraction* of *light*: We know that the determination of a body in motion is changed by the interpoſition of another body in its way: thus *light* impinging on the ſurface of ſolid bodies, ſhould be turned out of its courſe, and beaten back or reflected, ſo as like other falling bodies to make the angle of its reflections equal to that of incidence.—This it is found by experience *light* does; and yet the cauſe of this effect is different from that juſt now aſſigned: the rays of *light* are not reflected by ſtriking on the very parts of the reflecting bodies, but by ſome power equably diffuſed throughout the whole ſurface of the body, whereby it acts on the *light*, either attracting or repelling it without contact: by which ſame power, in other circumſtances, the rays are refracted; and by which alſo, the rays are firſt emitted from the luminous body; as is abundantly proved by great variety of arguments, by Sir Iſaac Newton. See REFLECTION.

That great author puts it paſt doubt, that all thoſe rays which are reflected, though they approach the body infinitely near, yet never touch it; and that thoſe which do really ſtrike on the ſolid parts of bodies, adhere to them, and are as it were extinguiſhed and loſt.

If it be aſked, how it happens, ſince we aſcribe the reflection of the rays to the action of the whole ſurface of the body without contact; how, I ſay, it happens that all the rays are not reflected from every ſurface, but while ſome are reflected, others paſs through and are refracted? The anſwer given by Sir Iſaac Newton is as follows:—Every ray of *light*, in its paſſage through any refracting ſurface, is put into a certain tranſient conſtitution or ſtate, which in the progreſs of the ray returns at equal intervals, and diſpoſes the ray at every return to be eaſily tranſmitted through the next refracting ſurface, and between the returns to be eaſily reflected by it: which alternation of reflection and tranſmiſſion appears to be propagated from every ſurface, and to all diſtances. What kind of action or diſpoſition this is, and whether it conſiſt in a circulating or vibrating motion of the ray or the medium, or ſomewhat elſe, he does not enquire; but allows thoſe who are fond of hypotheſes to ſuppoſe that the rays of *light*, by impinging on any reflecting or refracting ſurface, excite vibrations in the reflecting or refracting medium, and by that means agitate the ſolid parts of the body. Theſe vibrations, thus propagated in the medium, move faſter than the rays, ſo as to overtake them; and when any ray is in that part of the vibration which conſpires with its motion, its velocity is increaſed, ſo that it eaſily breaks through a refracting ſurface: but when it is in a contrary part of the vibration, which impedes its motion, it is eaſily reflected; and conſequently, that every ray is ſucceſſively diſpoſed to be eaſily reflected or tranſmitted by every vibration which overtakes it. The return of which diſpoſition of any ray to be reflected, he calls *fits of eaſy reflection*; and thoſe of its diſpoſition to be tranſmitted, he calls *fits of eaſy tranſmiſſion*; and the ſpace between the returns, *the interval of the fits*.—The reaſon, then, why the ſurface of all thick tranſparent bodies reflect part of the *light* incident on them, and refract the reſt, is, that ſome rays at their incidence are in fits of eaſy reflection, and others of eaſy tranſmiſſion.

For the Properties of Reflected LIGHT, ſee REFLECTION, MIRROR, *&c.*

Further, a ray of *light* paſſing out of one medium into another of different denſity, and in its paſſage making an oblique angle with the ſurface that ſeparates the mediums, will be refracted, or turned out of its right line; by reaſon the rays are more ſtrongly attracted by a denſer than a rarer medium. See REFRACTION.

That theſe rays are not refracted by ſtriking on the ſolid parts of bodies, but without any contact, by that ſame force wherewith they are emitted and reflected, exerting itſelf differently in different circumſtances, is proved in great meaſure by the ſame arguments which demonſtrate reflection to be performed without contact.

For the Properties, &c. *of Refracted* LIGHT, ſee REFRACTION, LENS, *&c.*

In iſland cryſtal is obſerved a kind of double refraction, very different from what we find in any other body: the rays that fall obliquely being not only diſperſed, with a double refraction in one and the ſame ſurface, but even the perpendicular rays themſelves are moſt of them divided into two beams, by means of the ſame double refraction; which beams are of the ſame colour with the incident beams, and are equal in degree of *light*, at leaſt nearly, to each other: whence the great philoſopher ſo often cited, takes occaſion to ſuſpect that there are in *light* ſome other original properties beſides thoſe hitherto deſcribed; and particularly, that the rays have different ſides, endued with ſeveral original properties.

For, of theſe refractions, the one is performed in the uſual manner, *i. e.* the ſine of incidence is to that of refraction as 5 is to 3; and the other in an unuſual manner: and yet the ſame ray is refracted ſometimes in the one manner, and ſometimes in the other, according to the various poſitions which its ſeveral ſides have, in reſpect of the cryſtal. Theſe diſpoſitions, he ſhews, muſt have exiſted originally in the rays, without having undergone any alterations in that reſpect, by the cryſtal. See *Iſland* CRYSTAL.

Every ray of *light* therefore has two oppoſite ſides, the one originally endued with a property whereon its unuſual refraction depends, and the other not endued with that property. See RAY.

Sir Iſaac Newton having obſerved the vividly coloured image projected on the wall of a darkned room, by the ſun-beams tranſmitted through a priſm, to be five times as long as broad; ſetting himſelf to enquire into the reaſon of this diſproportion, was led from other experiments to the experimentum crucis; whence he diſcovered the cauſe of the phænomenon to be, that ſome of the rays of *light* were more refracted than others, and therefore exhibited ſeveral images of the ſun under the appearance of one, extended lengthwiſe. See PRISM.

Thence he proceeded to conclude, that light itſelf is a heterogeneous mixture of rays differently refrangible: and hence he diſtinguiſhes *light* into two kinds, *viz.* that whoſe rays are equally refrangible, which he calls *homogeneal*, *ſimilar*, or *uniform light*; and that whoſe rays are unequally refrangible, which he calls *heterogeneal light*. See REFRANGIBILITY; ſee alſo HOMOGENEAL, and HETEROGENEOUS.

There are but three affections of *light*, wherein he obſerved its rays to differ, *viz.* refrangibility, reflexibility, and colour; and thoſe rays which agree in refrangibility, agree alſo in the other two: whence they may be well defined homogeneal, though in ſome other reſpects they may poſſibly be heterogeneal. See REFLEXIBILITY, and REFRANGIBILITY.

Again, the colours exhibited by homogeneal *light*, he calls *homogeneal* colours; and thoſe produced by heterogeneal *light*, *heterogeneal* colours. — Theſe definitions laid down, he advances ſeveral propoſitions.

As, firſt, That the ſun's *light* conſiſts of rays differing by indefinite degrees of refrangibility. Secondly, That rays, which differ in refrangibility, when parted from one another, do proportionably differ in the colours which they exhibit. Thirdly, That there are as many ſimple and homogeneal colours, as degrees of refrangibility, for to every degree of refrangibility belongs a different colour. Fourthly, Whiteneſs, in all reſpects like that of the ſun's immediate *light*, and of the uſual objects of our ſenſes, cannot be compounded of ſimple colours, without an indefinite variety of them; for to ſuch a compoſition there are required rays endued with all the indefinite degrees of refrangibility, which infer as many ſimple colours. Fifthly, the rays of *light* do not act on one another in paſſing through the ſame medium. Sixthly, The rays of *light* do not ſuffer any alteration of their qualities from refraction, nor from the adjacent quieſcent medium. Seventhly, There can no homogeneal colours be produced out of *light* by refraction, which are not commixed in it before; ſince refraction, as was before obſerved, changes not the qualities of the rays, but only ſeparates thoſe which have divers qualities, by means of their different refrangibility. Eighthly, The ſun's *light* is an aggregate of homogeneal colours; whence homogeneal colours may be called *primitive*, or *original*. See RAY, *&c.*

We have already obſerved that the rays of *light* are compoſed of diſſimilar or heterogeneous parts; ſome of them being in all probability greater, others leſs. Now the ſmaller the parts are, by ſo much the more refrangible they are, *i. e.* they are ſo much the more eaſily diverted out of their rectilinear courſe; and thoſe parts which differ in refrangibility, (conſequently in bulk) we have alſo obſerved, differ in colour.

Hence ariſes the whole theory of colours: Thoſe parts, *v. gr.* which are the moſt refrangible, conſtitute violet colour; that is, the moſt minute particles of *light*, when ſeparately impelled on the organ, do there excite the ſhorteſt vibrations in the retina, which are thence communicated by the ſolid part of the optic nerve in the brain, and excite in us the ſenſation of violet colour, the dimmeſt, and moſt languid of all colours: and thoſe particles, on the contrary, which are the leaſt refrangible, conſtitute a ray of a red colour; *i. e.* the greateſt particles of *light*, excite the longeſt vibrations in the retina, and ſo convey the ſenſation of a red colour, as being the moſt bright and vivid of all others.

The other particles being diſtinguiſhed into little rays, according to their reſpective magnitudes and degrees of refrangibility, excite intermediate vibrations, and ſo occaſion ſenſations of the intermediate colours; in like manner as the vibrations of the air, according to their different magnitudes, excite ſenſations of different ſounds. — The colours then of theſe little rays, not being any adventitious modifications of them, but connate, primitive, and neceſſary properties, reſulting, in all probability, from their different magnitudes, muſt be perpetual, and immutable, not to be altered by any reflection, refraction, or other ſubſequent modification.

For the doctrine of the colours of LIGHT, ſee COLOUR.

For the manner in which LIGHT *affects our ſenſes, and how it contributes to viſion*, ſee VISION.

LIGHT is alſo uſed, to ſignify the diſpoſition of objects, with regard to the receiving of *light*.

Thus we ſay, a painting is ſeen in its proper *light*, when its ſituation, with regard to the *light*, is the ſame with that for which it was painted.

LIGHTS *aboard Ships.* See the article SIGNALS.

LIGHTS, in architecture, denote doors, windows, and other places, through which the air, and *light* have a paſſage. See APERTION.

In the pantheon, all the *light* comes from on high; it has no *lights* but in the dome. See PANTHEON.

LIGHTS, in painting, are thoſe parts of a piece, which are illuminated, or, that lie open to the luminary by which the piece is ſuppoſed to be enlightened; and which, for this reaſon, are painted in bright vivid colours.

In which ſenſe, *light* is oppoſed to *ſhadow*. See SHADOW.

LIGHT is alſo uſed, for the luminous body that emits it. — There are various kinds of *lights*; *general lights*, as the air; *particular lights*, as a fire, a candle, and even the ſun.

Different *lights*, have very different effects on a picture, and occaſion a difference in the management of every part. — A great deal therefore depends on the painter's chuſing a proper *light* for his piece to be illuminated by, and a great deal more, in the conduct of the *lights* and ſhadows, when the luminary is pitched upon.

The ſtrength and relievo of a figure, as well as its gracefulneſs, depends entirely on the management of the *lights*, and the joining of thoſe to the ſhadows.

The *light* a figure receives, is either direct, or reflected, to each of which, ſpecial regard muſt be had. — The doctrine of *lights*, and ſhadows, makes that part of painting, called *clair-obſcure*. See CLAIR-OBSCURE.

LIGHT-*Houſe*. See the article PHAROS.

LIGHT-*Horſe*, an antient term in our Engliſh cuſtoms, ſignifying an ordinary cavalier, or horſeman lightly armed, and ſo as to enter a corps, or regiment; in oppoſition to the men at arms, who were heavily accoutred, and armed at all points. See GUARD, GENDARMES, *&c.*

LIGHT *Species.* See the article SPECIES.

LIGHTER, a large broad boat, or floating veſſel, which goes with ſails, and oars; common on the river Thames; where it is uſed for the carriage of timber, coals, ballaſt, *&c.*

Lighters are of ſeveral kinds; as,

A ballaſt gin,
A camel,
A cloſe *lighter*,
A hoy,
A kiele,
An open *lighter*.

LIGHTNESS. See the article LEVITY.

LIGNEA *Caſſia.* See the article CASSIA.

LIGNUM *Aloes*, or *wood of Aloes*.		ALOES,
LIGNUM *Balſami*.	See	BALSAM.
LIGNUM *Caſſiæ*.		CASSIA.

LIKE *Quantities*, in algebra, are thoſe which are expreſſed by the ſame letters, under the ſame power, or equally repeated in each quantity. See QUANTITY, and SIMILAR.

Thus $2b$, and $3b$; and $9ff$, and $3ff$, are *like quantities*; but $2b$, and $3bb$; and $9ff$, and $3fff$, are unlike ones, becauſe the quantities have not every where the ſame dimenſions, nor are the letters equally repeated.

LIKE *Signs*, or *Symbols*, in algebra, are when both are affirmative, or both negative. See CHARACTER.

If one be affirmative, and the other negative, they are unlike ſigns.

Thus $+64d$, and $+5d$, have *like* ſigns; but $+9f$, and $-7f$, have unlike ſigns.

LIKE *Figures*, in geometry, are ſuch as have their angles equal, and the ſides about thoſe equal angles proportional. See FIGURE.

LIKE *Arches*, in the projection of the ſphere in plano, are parts of leſſer circles, containing an equal number of degrees with the correſponding arches of greater ones. See ARCH.

LIKE *ſolid Figures*, in geometry, are ſuch as are contained under *like* planes, equal in number. See SIMILAR.

LIMB, LIMBUS, the outermoſt border, or graduated edge of an aſtrolabe, quadrant, or the like mathematical inſtrument. See ASTROLABE, QUADRANT, *&c.*

The word is alſo uſed for the primitive circle in any projection of the ſphere in plano.

LIMB, alſo ſignifies the outermoſt border, or edge of the ſun or moon, when the middle or diſc is hid in an eclipſe of either luminary. See DISC, ECLIPSE, *&c.*

Aſtronomers obſerve the lower and the upper *limb* of the ſun, in order to find its true heighth, which is that of its centre.

LIMB is alſo uſed among botaniſts for the outer edge, or border of plants, their leaves, and flowers.

LIMBECK. See the article ALEMBIC.

LIMBUS, or LIMB, is a term in the Romiſh theology, uſed for that place where the patriarchs are ſuppoſed to have waited for the redemption of mankind, and where they imagine our Saviour continued from the time of his death, to that of his reſurrection.

Du Cange ſays, the fathers called this place *limbus*, *eo quod ſit limbus inferorum*, as being the margin or frontier of the other world.

LIMBUS is alſo uſed by Catholics for the place deſtined to receive the ſouls of infants, who die without baptiſm; who have not deſerved hell, as dying in innocence; nor yet are worthy of heaven, becauſe of the imputation of original ſin. See HELL, PURGATORY, &c.

LIME, *calx of ſtone*, a white, ſoft, friable ſubſtance, prepared of ſtone, marble, free-ſtone, chalk, or other ſtony ſubſtance, by burning in a kiln. See CALX, STONE, CALCINATION, &c.

The great uſe of *lime* is in the compoſition of mortar for building; the fire taking away all its humidity, and opening its pores, ſo that it becomes eaſily reducible to powder, and miſcible with ſand. See MORTAR, and SAND.

Quick **LIME**, is that ſuch as it comes out of the kiln, or furnace.

Slaked **LIME**, is that diluted, or drenched in water, and reſerved for the making of mortar.

The beſt *lime*, is that made of the hardeſt, firmeſt, and whiteſt ſtones; and which is ſlaked at its coming out of the furnace.

Sir H. Wotton looks on it as a great error in the Engliſh, to make *lime* as they do, of refuſe, and ſtuff without any choice; whereas the Italians, at this day, and much more the antients, burnt their firmeſt ſtones, and even fragments of marble, where it was plentiful; which, in time, became almoſt marble again for its hardneſs, as appears in their ſtanding theatres, &c.

We have two kinds of *lime* in common uſe in England; the one made of hard ſtone, the other of a ſoft, calcarious, or chalky ſtone; whereof the former is much the ſtrongeſt. — That made of ſoft ſtone, or chalk, is fitteſt for plaiſtering of ceilings and walls within doors; and that made of hard ſtones, for buildings, and for plaiſterings without doors.

Good *lime* may alſo be made of mill-ſtone, not coarſe and ſandy, but fine and greaſy; as alſo of all kinds of flints; though it is hard to burn them, unleſs in a reverberatory furnace, as being apt to run to glaſs.

Dieuſſant recommends *lime* made of ſea-ſhells as the beſt; but Goldman finds fault with it, as being impatient of moiſture, and therefore eaſily peeling off from the outſides of walls: it is, however, the common *lime* uſed in the Indies.

Before the ſtones be thrown into the kiln, they are to be broke in pieces; otherwiſe the air contained in their cavities, too much expanded by the heat, makes them fly with ſo much violence, as to damage the kiln. — According to Alberti, and Palladio, *lime* will not be ſufficiently burnt in leſs than ſixty hours intenſe heat.

The marks of a well-burnt *lime*, according to Alberti, are, that its weight be to that of the ſtone in a ſeſquialterate proportion; that it be white, light, and ſonorous; that when ſlaked, it ſtick to the ſides of the veſſel. — To which Boeckler adds, that when ſlaked it ſend forth a copious thick ſmoke; and Dieuſſant, that it need a great deal of water to ſlake it.

To preſerve *lime* ſeveral years, ſlake, and work it up; dig a pit under ground, into which let it paſs through a hole open at the bottom of the veſſel. As ſoon as the pit is full, cover it up with ſand, to prevent its drying; thus keeping it moiſt till it be uſed. — Boeckler gives another method: Cover a ſtratum of *lime* two or three foot high with another of ſand of the like heighth; pour on water enough to ſlake the *lime*, but not to reduce it to duſt after ſlaking. If the ſand cleave into chinks, as the ſmoke aſcends, cover them up, ſo as no vent may be given thereto. — This *lime*, he adds, kept ten or twelve years, will be like glue; and will, further, be of particular uſe in painting walls, as being no way prejudicial to the colours. See MORTAR.

Lime is much uſed by tanners, ſkinners, &c. in the preparation of their leather. See TANNING, TAWING, &c.

It is alſo of ſome medicinal uſe; being applied externally in deſiccative, and epulotic medicines.

LIME-*Water* is ſaid to be an excellent remedy, taken internally: M. Burlet has an ample account of its effects, in the *French Memoirs*, chiefly from his own experience. But, he obſerves, it ſucceeded much better in Holland, &c. than in France. — It is a powerful alterant, and like a pure alkaline water, fitted to blunt and deſtroy acid ferments, which are the principles of all obſtructions, and the cauſe of moſt chronic diſeaſes. — Its principal uſe is, in cachexies, green-ſickneſs, dropſy, ſcurvy, obſtructions of the liver, ſpleen, &c. See WATER.

It is made, by pouring ſix pounds of hot water, on one of *quick-lime*, leaving them to ſoak, and macerate for the ſpace of twenty four hours.

LIME-*Stone*, *lapis calcarius*, is a ſoftiſh ſtone, of a coarſe grain, and, being burnt in a kiln, makes an ingredient in mortar, plaiſter, &c. See LIME, MORTAR, &c.

Bird-**LIME**. See the article BIRD-LIME.

LIMITATION *of aſſize*, in law, is a certain time ſet down by the ſtatute, wherein a man muſt alledge himſelf, or his anceſtors to have been ſeized of lands ſued for by writ of aſſize: otherwiſe he cannot maintain his action.

LIMITED *Problem*, is that which admits but of one ſolution, or which can only be ſolved one way: as, to make a circle paſs through three points given, not lying in a right line; to deſcribe an equilateral triangle on a line given, &c. See PROBLEM, and DETERMINATE.

LIMITROPHOUS *Column*. See the article COLUMN.

LIMITS *of a Planet*, its greateſt excurſions, or diſtances from the ecliptic. See PLANET.

LIMNING, the art of painting in water-colours. See PAINTING.

In which ſenſe, *limning* ſtands contradiſtinguiſhed from *painting*, properly ſo called, which is done in oil-colours.

Limning is much the more antient kind of painting. Till a Flemiſh painter, one John van Eyck, better known by the name of John of Bruges, found out the art of painting in oil, the painters all painted in water, and in freſco, both on their walls, on wooden boards, and elſewhere. — When they made uſe of boards, they uſually glued a fine linen cloth over them, to prevent their opening; then laid on a ground of white; laſtly, they mixed up their colours with water and ſize, or with water and yolks of eggs, well beaten with the branches of a fig-tree, the juice whereof, thus mixed with the eggs; and with this mixture they painted their pieces.

In *limning*, all the uſual colours are proper enough, excepting the white made of lime, which is only uſed in freſco. But the azure, and ultramarine, muſt always be mixed up with ſize, or with gum, in regard the yolks of eggs give yellow colours a greeniſh tincture. But there are always applied two lays of hot ſize ere the colours, mixed even with ſize, are laid on: the compoſition made with eggs, and the juice of the fig-tree, being only uſed for touching up and finiſhing, and to prevent the neceſſity of having a fire always at hand to keep the ſize hot; yet it is certain, that the ſize-colours hold the beſt, and are accordingly always uſed in cartoons, &c. — This ſize is made of ſhreds of thin leather, or of parchment.

To *limn* on linen, they chuſe that which is old, half worn, and cloſe. — This they ſtamp with white-lead, or a fine plaiſter beaten up with ſize; which, once dry, they go over it with a layer of the ſame ſize.

The colours are all ground in water, each by itſelf; and in proportion, as they are required in working, are diluted with ſize-water. — If the yolks of eggs are deſired, they dilute them with water made of equal quantities of common water and vinegar, with the yolk, white, and ſhell of an egg, and the ends of the little branches of a fig-tree cut ſmall, all well beaten together in an earthen pan.

If it be deſired to varniſh the piece when finiſhed, they go over it with the white of an egg well beaten, and then with varniſh. — This, however, is only to preſerve it from the wet: for the great advantage of *limning* conſiſts in its being without gloſs; in regard all its colours, thus void of luſtre, may be ſeen in all kinds of lights; which colours in oil, or covered with varniſh, cannot.

LINCOLNSHIRE *Plough*. See the article PLOUGH.

LINCTUS, a form of medicine, the ſame as *lambative*, *lohock*, and *eclegma*. See LAMBATIVE, LOHOCK, and ECLEGMA.

LINE, in geometry, a quantity extended in length only, without either breadth or thickneſs.

A *line* is ſuppoſed to be formed by the flux or motion of a point. See POINT.

There are two kinds of *lines*, viz. *right lines*, and *curve lines*. See RIGHT, and CURVE.

If the point A move towards B, (*Tab. Geometry*, *fig.* 1.) by its motion it deſcribes a *line*; and this, if the point go the neareſt way towards B, will be a right or ſtreight *line*, whoſe definition therefore is, the neareſt or ſhorteſt diſtance between any two points, or a *line* all whoſe points tend the ſame way. — If the point go any way about, as in one of the *lines* A C B, or A *c* B, it will trace out either a crooked *line*, as the upper A *c* B; or elſe two or more ſtreight ones, as in the lower A C B.

Right Lines are all of the ſame ſpecies; but curves are of an infinite number of different ſpecies. — We may conceive as many as there are different compound motions, or as many as there may be different ratio's between their ordinates and abſciſſes. See CURVE.

Curve Lines, are uſually divided into *geometrical*, and *mechanical*.

Geometrical **LINES**, are thoſe which may be found exactly, and ſecurely, in all their points. See GEOMETRICAL.

Mechanical **LINES** are thoſe, ſome or all of whoſe points are not to be found preciſely, but only tentatively, or nearly. See MECHANICAL.

Agreeably hereto, Des Cartes and his followers define *geometrical lines* thoſe which may be expreſſed by an algebraic equation of a determinate degree. — Which equation is alſo called *locus*. See LOCUS.

The ſame perſons define *mechanical lines*, thoſe which cannot be expreſſed by an equation of a determinate degree.

Others, conſidering that thoſe called by Des Cartes *mechanical lines*, notwithſtanding their not being of a determinate degree, are not leſs preciſe, and exact, and conſequently not leſs geometrical than the others; it being this preciſion which conſtitutes the geometricity of the *line*: For this reaſon, they chuſe rather to call thoſe *lines* which are reducible to a determinate degree, *algebraical lines*; and thoſe which are not, *tranſcendental lines*. See GEOMETRICAL, ALGEBRAICAL, MECHANICAL, and TRANSCENDENTAL.

Lines are alſo divided into thoſe of the *firſt order*, *ſecond order*, *third order*, &c. See CURVE.

Lines, conſidered as to their poſitions, are either *parallel*, *perpendicular*, or *oblique*: the conſtruction and properties of each whereof, ſee under PARALLEL, PERPENDICULAR, *&c.*

Euclid's ſecond book treats moſtly of *lines*, and of the effects of their being divided, and again multiplied into one another.

Circular LINES.	See the article	CIRCULAR.
Converging LINES.		CONVERGING.
Diverging LINES.		DIVERGING.
Generating LINE.		GENERATING.
Heliſpherical LINE.		HELISPHERICAL.
Hyperbolic LINE.		HYPERBOLIC.
Logiſtic LINE.		LOGISTIC.
Normal LINE.		NORMAL.

Proportional LINES, *the manner of conſtructing them, their properties*, &c. See PROPORTIONAL *Lines*.

Quadrature LINES.	See the article	QUADRATURE.
Reciprocal LINES.		RECIPROCAL.
Robervalian LINES.		ROBERVALIAN.
Vertical LINE.		VERTICAL.
Meaſure of a LINE.		MEASURE.

LINE, in geography, and navigation, is uſed by way of eminence for the equator, or equinoctial *line*. See EQUATOR.

The *line* in the heavens, is a circle deſcribed by the ſun in his courſe on the 21ſt day of March, and the 21ſt of September. — The *line* on the earth, is an imaginary circle, anſwering to that in the heavens. — It divides the earth, from eaſt to weſt, into two equal parts, and is at an equal diſtance from the two poles; ſo that thoſe who live under the *line*, have the poles always in their horizon. See POLE.

The latitudes commence from the *line*. See LATITUDE.

The ſeamen uſe to chriſten their freſh men, and paſſengers, the firſt time they cut the *line*. See BAPTISM.

LINE *of the Apſides*, in aſtronomy, is the *line* which joins the apſides; or it is the greater axis of the orbit of a planet. See APSIDES.

Fiducial LINE, the *line* or ruler which paſſes through the middle of an aſtrolabe, or the like inſtrument; and on which the ſights are fitted: otherwiſe called *alhidade*, *index*, *dioptra*, and *mediclinium*. See ALHIDADE, *&c.*

Horizontal LINE, a *line* parallel to the horizon. See HORIZON.

Iſochronal LINE.	See the article	ISOCHRONAL.
Meridian LINE.		MERIDIAN.

LINE *of the Nodes*, in aſtronomy, is the *line* which joins the nodes of the orbit of a planet; or the common ſection of the plane of the orbit with the plane of the ecliptic. See NODES.

Geometrical LINE, in perſpective, is a right *line* drawn in any manner on the geometrical plane.

Terreſtrial LINE, or *fundamental line*, in perſpective, is a right *line*, wherein the geometrical plane, and that of the picture, or draught, interſect one another.

Such is the *line* N I, (*Tab. Perſpective, fig.* 12.) formed by the interſection of the geometrical plane L M, and the perſpective plane, H L.

LINE *of the Front*, in perſpective, is any right *line* parallel to the terreſtrial *line*.

Vertical LINE, is the common ſection of the vertical, and of the draught.

Viſual LINE, is the *line*, or ray, imagined to paſs from the object to the eye.

LINE *of Station*, in perſpective, according to ſome writers, is the common ſection of the vertical and geometrical planes.

Others mean by it, the perpendicular heighth of the eye above the geometrical plane; others, a *line* drawn on that plane, and perpendicular to the *line* expreſſing the heighth of the eye.

Objective LINE, in perſpective, is any *line* drawn on the geometrical plane, whoſe repreſentation is ſought for in the draught, or picture.

LINE *of Diſtance*. See the article DISTANCE.

Horizontal LINE, in dialling, is the common ſection of the horizon, and the dial plane. See HORIZONTAL.

Horary LINES, or *Hour lines*, are the common interſections of the hour circles of the ſphere, with the plane of the dial. See HORARY, and HOUR *Lines*.

Subſtylar LINE, is that *line* on which the ſtyle or cock of a dial is erected, and is the repreſentation of ſuch an hour circle, as is perpendicular to the plane of that dial. See SUBSTYLAR.

Equinoctial LINE, in dialling, is the common interſection of the equinoctial, and the plane of the dial.

Contingent LINE. See the article CONTINGENT.

Dialling LINES.	See the article	DIALLING.
Meridian LINE.		MERIDIAN.
Vertical LINE.		VERTICAL.

LINE *of Meaſures*, is uſed by Oughtred to denote the diameter of the primitive circle in the projection of the ſphere in plano, or that *line* in which the diameter of any circle to be projected falls.

In the ſtereographic projection of the ſphere in plano, *line of meaſures* is that *line* in which the plane of a great circle, perpendicular to the plane of the projection, and that oblique circle, which is to be projected, interſects the plane of the projection; or it is the common ſection of a plane, paſſing through the eye-point, and the centre of the primitive; and at right angles to any oblique circle, which is to be projected, and in which the centre and pole of ſuch circle will be found.

LINE *of Direction*, in mechanics, is that wherein a body either actually moves, or would move, if it were not hindered. See DIRECTION.

The term is alſo uſed to ſignify the *line* that paſſes through the centre of gravity of the heavy body to the centre of the earth; which muſt alſo paſs through the fulcrum, or ſupport of the heavy body; without which it would fall.

LINE *of Gravitaton of an heavy Body*, is a *line* drawn through its centre of gravity, and according to which it tends downwards. See GRAVITATION.

LINE *of the ſwifteſt Deſcent of an heavy Body*, is a *line* wherein the body will fall the ſwifteſt from one point to another: or, it is that curve which a body would deſcribe in its deſcent, if it moved the ſwifteſt poſſible. See DESCENT.

LINE *of a Projectile*. See the article PROJECTILE.

LINES *on the plain Scale*, are the *line* of chords, *line* of ſines, *line* of tangents, *line* of ſecants, *line* of ſemi-tangents, *line* of leagues.—The conſtruction and application whereof, ſee under the word SCALE, SAILING, *&c.*

LINES *on Gunter's Scale*, are the *line* of numbers, *line* of artificial ſines, *line* of artificial tangents, *line* of artificial verſed ſines, *line* of artificial ſines of rhumbs, *line* of artificial tangents of the meridian *line*, and *line* of equal parts. The conſtruction and application whereof, ſee under the word GUNTER'*s Scale*.

LINES *of the Sector*, are the *line* of equal parts, or *line* of lines; *line* of chords, *line* of ſines, *line* of tangents, *line* of ſecants, *line* of polygons, *line* of numbers, *line* of hours, *line* of latitudes, *line* of meridians, *line* of metals, *line* of ſolids, *line* of planes. The conſtruction and uſe whereof, ſee under the word SECTOR.

LINE, in fortification, is ſometimes taken for a ditch, bordered with its parapet; and ſometimes for a row of gabions, or ſacks of earth, extended lengthwiſe on the ground, to ſerve as a ſhelter againſt the enemies fire. See TRENCH, GABION, *&c.*

When the trenches were carried on within thirty paces of the glacis, they drew two *lines*, one on the right, and the other on the left, for a place of arms.

Fundamental LINE, is the firſt *line* drawn for the plan of a place, and which ſhews its area.

Capital LINE, is that which is drawn from the point where the two demi-gorges meet, to the point of the baſtion. See CAPITAL.

Central LINE, is that drawn from the angle of the centre, to that of the baſtion.

LINE *of Defence*, is that which repreſents the courſe or flight of the bullet of any ſort of fire-arms, more eſpecially of a muſket-ball, from the place where the muſketeer muſt ſtand to ſcour, and defend the face of the baſtion.

LINE *of Defence fichant*, is that drawn from the angle of the curtin to that of the oppoſite baſtion; without touching the face of the baſtion.

This muſt never exceed 800 feet, which they reckon the diſtance at which a muſket-ball will do execution.

LINE *of Defence razant*, is that drawn from the point of the baſtion along the face, till it come to the curtin; and ſhews how much of the curtin will clear or ſcour the face.

This is alſo called the *line of defence ſtringent*, or *flanking*.

LINE *of Approach*, or *Attack*, ſignifies the work which the beſiegers carry on under covert, to gain the moat, and the body of the place. See APPROACH.

LINE *of Circumvallation*, is a *line* or trench cut by the beſiegers, within cannon-ſhot of the place, which ranges round their camp, and ſecures its quarters againſt any relief to be brought the beſieged. See CIRCUMVALLATION.

LINE *of Contravallation*, is a ditch bordered with a parapet, which ſerves to cover the beſiegers on the ſide of the place, and to ſtop the ſallies of the garriſon. See CONTRAVALLATION.

LINES *of Communication*, are thoſe which run from one work to another.—*See Tab. Fortif. fig.* 21. *n.* 2. 2. &c. ſee alſo COMMUNICATION.—But

The LINE *of Communication*, more eſpecially ſo called, is a continued trench, with which a circumvallation, or contravallation is ſurrounded; and which maintains a communication with all its forts, redoubts, and tenailles.

LINE *of the Baſe*, is a right *line*, which joins the points of the two neareſt baſtions.

To **LINE** *a work*, ſignifies to face it, chiefly with brick or ſtone: *e. gr.* to ſtrengthen a rampart with a firm wall, or to encompaſs a parapet or moat with good turf, *&c.*

LINE, in the art of war, is underſtood of the diſpoſition of an army, ranged in order of battle; with the front extended as far as may be, that it may not be flanked.

An army uſually conſiſts of three *lines*; the *firſt* is the front, van, or advance guard; the main body forms the *ſecond*, in which is the general's poſt; the *third* is a reſerved body, or rear guard. See GUARD.

It is a rule, to leave 150 paces diſtance between the firſt *line* and the ſecond, and twice as much between the ſecond and third, to give room for rallying.

LINE, or **LINE** *of Battle*, is alſo applied to the diſpoſition of a fleet on the day of engagement; on which occaſion, the veſſels are uſually drawn up, as much as poſſible, in a ſtraight *line*, as well to gain and keep the advantage of the wind, as to run the ſame board.

Ship of the **LINE**, is a veſſel large enough to be drawn up in the *line*, and to have a place in a ſea-fight. See SHIP.

LINE *of Demarcation*, or *Alexandrian Line*, is a meridian paſſing over the mouth of the river Maragnon, and by the capes of Houmas, and Malabrigo; ſo called from pope Alexander VI. who, to end the diſputes between the crowns of Caſtile and Portugal, about their boundaries, in 1493, drew an imaginary *line* on the globe, which was to terminate the pretenſions of each. By which partition, the Eaſt-Indies fell to the lot of the Portugueſe; and the Weſt-Indies, then newly diſcovered, to the Caſtilians.

Bowling-LINE.	See the article	BOWLING.
Bunt-LINE.		BUNT-*Lines*.
Crane-LINES.		CRANE-*Lines*.
Furling-LINES.		FURLING-*Line*.
Log-LINE.		LOG-*Line*.
Rat-LINES.		RAT-*Line*.
Rhumb-LINE.		RHUMB-*Line*.
Water-LINE.		WATER-*Line*.

LINE, in fencing, is that part of the body directly oppoſite to the enemy, wherein the ſhoulders, the right arm, and the ſword ought always to be found; and wherein are alſo to be placed the two feet, at the diſtance of 18 inches from each other.

In this ſenſe, a man is ſaid to be in his *line*, to go out of his *line*, &c.

LINE, in genealogy is a ſeries or ſucceſſion of relations, in various degrees, all deſcending from the ſame common father.

Direct **LINE**, is that which goes from father to ſon; which is the order of aſcendants and deſcendants. See DIRECT.

Collateral **LINE**, is the order of thoſe who deſcend from ſome common father related to the former, but out of the *line* of aſcendants, and deſcendants. — In this are placed uncles, aunts, couſins, nephews, *&c.* See COLLATERAL, ASCENDANT, and DESCENDANT.

LINE alſo denotes a ſmall French meaſure, containing the 12th part of an inch, or 144th part of a foot. See INCH, *&c.*

The geometricians, notwithſtanding its ſmallneſs, conceive the *line* ſubdivided into ſix points.

The French *line* anſwers to the Engliſh *barley-corn*. See MEASURE.

Angling LINE.	See the article	ANGLING, and FLOTE.
Gauge LINE.		GAUGE.
Plumb LINE.		PLUMB.
Rear LINE.		REAR.

White LINE, in printing.	See the article	WHITE.
LINE, *linum*, in agriculture, *&c.*		FLAX.

LINEA * *Alba*, in anatomy, the concourſe of the tendons of the oblique and tranſverſe muſcles of the abdomen; dividing the abdomen in two, in the middle. See ABDOMEN.

* It is called *linea*, line, as being ſtraight; and *alba*, from its colour, which is white.

The *linea alba* receives a twig of a nerve from the intercoſtals in each of its digitations or indentings, which are viſible to the eye, in lean perſons eſpecially.

LINEA *Mediana*. See the article MEDIANA.

LINEAL *Deſcent.*	See the article	DESCENT.
LINEAL *Exegeſis.*		EXEGESIS.

LINEAMENT, a fine ſtroke or line obſerved in the face, and forming the delicacy thereof; being that which preſerves the reſemblance, and occaſions the relation of likeneſs or unlikeneſs to any other face.

It is by theſe, that phyſiognomiſts pretend to judge of the temper and manners of people. See PHYSIOGNOMY, and FACE.

LINEAMENT is alſo uſed by the painters for the out-line of a face. See CONTOUR.

LINEANS *Punctum*. See the article PUNCTUM.

LINEAR *Problem*, in mathematics, is that which may be ſolved geometrically, by the interſection of two right lines.

E. gr. To meaſure an inacceſſible heighth by the means of two unequal ſticks, *&c.*

This is alſo called a *ſimple problem*, and is capable but of one ſolution. See PROBLEM.

LINEAR *Numbers*, are ſuch as have relation to length only. See NUMBER.

Such, *e. gr.* is a number which repreſents one ſide of a plane figure. If the plane figure be a ſquare, the *linear number* is called a *root*.

LINED *Moat*. See the article MOAT.

LINEN-*Mills.*	See the article	MILL.
White LINEN.		WHITE.
Bleaching of LINEN.		BLEACHING.

LINGOT, or INGOT. See the article INGOT.

LINGUA, in anatomy. See the article TONGUE.

LINGUÆ *Frænum.*	See the article	FRÆNUM.
LINGUÆ *Medietas*		MEDIETAS.

LINIMENT*, LINIMENTUM, a form of external medicine, made of unctuous ſubſtances, to rub on any part.

* The word comes from the Latin *linire*, to anoint gently.

The *liniment* is of a mean conſiſtence, between an oil and an unguent. See OIL, and UNGUENT.

The uſe of *liniments* is to ſoften aſperities of the ſkin, moiſten parts that need humectation, reſolve the humours that afflict the patient, and give him pain.—There are various kinds of *liniments* uſed, according to the various occaſions.

LINSEED, or LINE-SEED, a ſort of grain which enters the compoſition of ſeveral medicines, and yields, by expreſſion, an oil, that has moſt of the qualities of nut-oil, and is accordingly ſometimes uſed in lieu thereof in painting, and to burn.

That drawn without the aſſiſtance of fire, is of much eſteem in medicine, and ſuppoſed good in the cure of catarrhs, coughs, aſthma's, and other diſeaſes of the breaſt, *&c.*

LINSTOCK, a ſhort ſtaff of wood, about three foot long, having at one end a piece of iron divided into two branches, each of which has a notch to hold a piece of match, and a ſcrew to faſten it there; the other end being alſo ſhod with iron, and pointed, to ſtick into the ground.—It is uſed by the gunners in firing cannon.

LINTEL, in architecture, the piece of timber which lies horizontally over door-poſts, and window-jaums; as well to bear the thickneſs of the wall over it, as bind the ſides of the walls together. See DOOR, *&c.*

LINUM *Catharticum*, or *mountain-flax*, a medicinal plant, much uſed by common people; being a rough harſh purge, and powerful detergent, and evacuater of viſcid and watery humours from the moſt remote lodgments; which makes ſome fond of it in rheumatiſms: but it is only fit for robuſt conſtitutions.

LINUM *Vivum*, or *Incombuſtibile*, a foſſile, ſtony ſubſtance, of a whitiſh colour, and woolly texture, ſeparable into threads, or filaments, capable of being ſpun, and wove into a ſort of cloth, which will endure the fire without conſuming. See INCOMBUSTIBILE.

This is the ſame with what is otherwiſe called *lapis amianthus*, or *asbeſtos*; ſometimes, *ſalamander's wool*, alſo *linum foſſile*, *linum Indicum*, *Creticum*, *Cyprium*, &c. See ASBESTOS.

As to the art of managing this mineral, and of ſpinning and weaving it, *&c.* the accounts we have are various. — Signior Caſtagnata, ſuperintendant of ſome mines in Italy, gives us the art of reducing it either into a very white ſkin, or a very white paper, either of which reſiſts the moſt violent fire. See PAPER.

Marco Polo, the Venetian, gives us the manufacture of the *linum*, found in the province of Chinchinthelas in Tartary, from one Curſicar a Turk, ſuperintendant of the mines of that country, as follows. — The lanuginous mineral, being firſt dried in the ſun, is then pounded in a braſs mortar, and the earthy part ſeparated from the woolly, which is afterwards well waſhed from filth; being thus purged, it is ſpun into thread like other wool, and after wove into cloth, which, if foul or ſpotted, they cleanſe, he ſays, by throwing it into the fire for an hour's time, whence it comes out unhurt as white as ſnow: Which very method, according to the account given us by Strabo, ſeems to have been uſed, in ordering the Cretan amianthus; with this addition, that after it was pounded, and the earthy part ſeparated from the woolly, he ſays it was combed; and ſo does Agricola.

Signior Campani, after deſcribing four ſorts of the *linum*, whereof he had ſpecimens in his muſæum; the firſt ſent him from Corfu, the ſecond from Seſtri di Ponente, the third coarſer and darker than the reſt, and the fourth from the Pyreneans; and after obſerving, though he kept it three weeks in a glaſs-houſe fire, yet he found it unaltered, though it could not preſerve a ſtick, wrapped in it, from the fire: he proceeds to ſhew the manner of ſpinning it, and making it into cloth, which he effected thus: — He firſt laid the ſtone in water, if warm the better, for ſome time to ſoak; then opened and divided it with his hands, that the earthy parts might fall out of it, which are whitiſh like chalk, and ſerve to bind the thready parts together. This makes the water thick, and milky. That operation he repeated ſix or ſeven times, with freſh water, opening and ſqueezing it again, and again, till all the heterogeneous parts were waſhed out, and then the flax-like parts were collected, and laid in a ſieve to dry.

As to the ſpinning, he firſt ſhews a method diſcovered to him, which is thus. — Lay the *linum*, cleanſed as before, between two cards, ſuch as they card wool withal, where let it be gently carded, and then clapped in between the cards, ſo that ſome of it may hang out of the ſides; then lay the cards faſt on a table, or bench; take a ſmall reel, made with a little hook at the end, and a part to turn it by, ſo that it may be eaſily turned round. This reel muſt be wound over with white thread: then having a ſmall veſſel of oil ready, with which the fore-finger and thumb are conſtantly to be kept wet, both to preſerve the ſkin from the corroſive quality of the ſtone, and to render the filaments thereof more ſoft and pliant; by continuing to twiſt about the thread on the reel in the asbeſtos hanging out of the cards, ſome of the latter will be worked up together in it; and, by little and little, the thread may, with care, be woven into a coarſe ſort of cloth; and, by putting it into the fire, the thread and oil will be burnt away, and the incumbuſtible cloth remain.

But finding this way, of uniting the ſtone with the thread, very tedious, inſtead of the thread, he put ſome flax on a diſtaff, and, by taking three or four filaments of the asbeſtos, and mixing them with the flax, he found they might be eaſily twiſted together, and the thread thus made much more durable and ſtrong; ſo that there is no need of carding, which rather breaks the filaments, than does any good: only open and ſeparate the filaments after waſhing, on a table, and take them up with the flax, which is ſufficient.

As to the making of paper, he ſays, in the waſhing of the ſtone there will remain ſeveral ſhort pieces in the bottom of the water, of which paper may be made in the common method. See PAPER.

He concludes with the beſt way of preſerving the cloth, or any thing made of the linen, which, by reaſon of its exceſſive dryneſs, is very apt to break and twiſt; and it conſiſts in keeping it always well oiled, which is the only preſervative. — When the cloth is put in the fire, the oil burns off, and the cloth comes out white and purified.

LIONCELES, in heraldry, a term for lions, when there are more than two of them born in any coat of arms, and no ordinary between them.

LIPOTHYMIA*, or LIPOPSYCHIA, in medicine, a ſudden diminution, or failure of animal and vital actions; otherwiſe called a *ſwooning*, or *deliquium*. See DELIQUIUM, SWOONING, SYNCOPE, &c.

* The word *lipothymia* comes from the Greek λειπω, *deficio*, and θυμ☉-, *animus*; and *lipopſychia* from λειπω, and ψυχη, the ſoul.

In the *lipothymia* the pulſe is very faint; the ſenſes, both internal and external, and the animal motions, both voluntary and natural, extremely weakened, and the reſpiration ſcarce viſible.

The ordinary cauſes of the *lipothymia*, are great loſſes of blood, exceſſive evacuations, immoderate exerciſe, groſs hot air, ſuch as that in the midſt of crowds of people, &c.

LIPPITUDO, is uſed by Celſus, for a diſeaſe of the eyes, otherwiſe called *ophthalmia*. See OPHTHALMIA.

LIPPITUDO, is alſo uſed by modern writers, for a diſorder popularly called *blear-eyed*; ariſing from a decay of the natural moiſture of the eyes, which then feel dry, and appear red and angry. See SCLEROPHTHALMIA.

LIPS, *Labia*, the edge, or exterior part of the mouth; or that muſculous extremity, which ſhuts and covers the mouth, both above and below. See MOUTH.

The *lips*, beſides the common integuments, conſiſt of two parts, the exterior, hard, and muſculous; the interior, ſoft, ſpungy, and glandulous, covered with a fine membrane, the fore and protuberant parts of which are red, and called *prolabia*. — Authors generally content themſelves, with calling the ſubſtance of this part, ſpungy; but, in reality, it is glandulous, as appears by the ſcrophulous, and cancerous humours, to which it is ſubject. — The muſcles, of which the outer parts of the *lips* conſiſt, are either *common* to them with other parts, or *proper*; the common are the third pair of the noſe, the ſubcutaneous, and the buccinator.

The *lips* have ſix pair of muſcles peculiarly belonging to them, and an odd one; of theſe, three are peculiar to the upper and under *lip*, the other three, and the ſingle one, are common to both *lips*: the peculiar are, the *attollens labiorum ſuperius*, *deprimens labiorum inferius*, *attollens labiorum inferius*; the three common pair are, the *zygomaticus*, the *depreſſor labiorum*, the *attollens labiorum*; the odd one, *orbicularis*; which ſee.

All theſe parts are ſerved with blood, by ſome branches of the carotids, which the veins carry back to the external jugulars. — Their nerves come from the fifth, ſixth, and eighth pair of the head, and ſome from the par acceſſorium. The *lips* have a great ſhare in the action of ſpeech, and are of good uſe in taking in the food, &c.

LIPS, is alſo applied to the two extreme parts of the pudendum muliebre; between which is the rima, or fiſſure of the part.

Theſe are more peculiarly called *labia pudendi*; being ſoft, oblong bodies; of a peculiar ſubſtance, not found in any other part of the body.

LIPS are alſo uſed, to ſignify the two edges of a wound.

LIQUEFACTION, an operation, by which a ſolid body is reduced into a liquid; or the action of fire or heat, on fat, and other fuſible bodies, which puts their parts into a mutual inteſtine motion.

The *liquefaction* of wax, &c. is performed by a moderate heat; that of ſal tartari, by the mere moiſture of the air: all ſalts *liquify*; ſand, mixed with alkalies, becomes *liquified* by a reverberatory fire, in the making of glaſs. See GLASS.

In ſpeaking of metals, inſtead of *liquefaction*, we ordinarily uſe the word *fuſion*. See FUSION.

LIQUET. See the article NON LIQUET.

LIQUID, a body which has the property of fluidity; and beſides that, a peculiar quality of wetting other bodies immerged in it, ariſing from ſome configuration of its particles, which diſpoſes them to adhere to the ſurfaces of bodies contiguous to them. See FLUID.

Denſity of LIQUIDS.	See	DENSITY.
LIQUID *Amber*.		AMBER, and BALSAM.
LIQUID *Confects*.		CONFECTS.
LIQUID *Laudanam*.		LAUDANUM.
LIQUID *Meaſures*.		MEASURE.
LIQUID *Storax*.		STORAX.
LIQUID *Sulphur*.		SULPHUR.

LIQUID, among grammarians, is a name applied to certain conſonants, oppoſed to *mutes*. See CONSONANT, and MUTE.

L, m, n, and r, are *liquids*. See L, M, N, &c.

LIQUIDATE *an action*. See the article ACTION.

LIQUIDATION, the act of reducing, and aſcertaining, either ſome dubious diſputable ſum, or the reſpective pretenſions, which two perſons may have to the ſame ſum.

LIQUOR. See the article DRINK, FLUID, &c.

Stygian LIQUORS.	See the article	STYGIAN *Liquors*.
Clearing of LIQUORS.		CLEARING.

LIQUORICE, LIQUORITIA, called alſo *glycyrrhiza*, and *radix dulcis*, a ſweet taſted root, of conſiderable uſe in medicine, againſt coughs, and other diſorders of the breaſt and lungs.

The ſhrub which bears it, is cultivated in divers parts of England, particularly about Pontefract in Yorkſhire; in ſome provinces of France, Spain, Germany, and Muſcovy; and eſpecially in Perſia, where it thrives better than any where elſe; there being ſome on the banks of the Caraſu, Kenki, and Kerniarpa, whoſe roots are thicker than the arm; and whoſe juice, in reſpect of ſtrength, virtue, &c. are preferable to others.

The root of the *liquorice* plant runs, or ſpreads a great way in the ground, and emerging into air from place to place produces ſo many new ſtems, or plants, few of which riſe above five feet high. Its leaves are thick, green, ſhining, half-round, and glutinous: its flowers red, like the hyacinth; and its ſeed contained in roundiſh pods.

In the culture, care muſt be taken to have a warm, light, rich ſoil, or to amend it with manure: they plant it in trenches, three ſpits deep, in February, and March, uſually in rows, at a foot diſtance from each other.—The parts choſe for this purpoſe, are ſets from the top of the plant, or the very top of the root; or elſe the runners that ſpread from the maſter-root. — In moiſt weather the branches may alſo be ſlipped and planted.

They are taken about November, or December, after they have ſtood three ſummers in the ground; for then the *liquorice* weighs moſt, and will keep with leſs loſs: not but that there is a continual diminution in this reſpect, from the firſt taking it.

New, green *liquorice* ſhould be choſe ſmooth, and even, about the thickneſs of the middle finger, ruddy without, yellowiſh within, eaſy to cut, and of an agreeable ſmell.

This root being boiled a long time in water, till the fluid has got a deep, yellow tincture; and the water, at length evaporated over a moderate fire; there remains a black, ſolid ſediment, which we alſo call *liquorice*, or *liquorice juice*, or ſometimes *Spaniſh juice*.

Chuſe it black without ſide, and of a ſhining black within; eaſy to break, and of an agreeable taſte. — The whitiſh, and yellowiſh *liquorice* juices are good for nought; being uſually no other than compoſitions of ſugar, ſtarch, a little gum tragacanth, and *liquorice* powder.

The native *liquorice* juice, is very ſweet upon the palate, even more than ſugar, or honey; and is yet accounted a great quencher of thirſt; on which account Galen preſcribes it in dropſies. It is very balſamic, and detergent; inſomuch that there is ſcarce any medicinal compoſition for diſeaſes of the breaſt, but it is an ingredient in.

LIST*, in the manufactures, denotes the border of a ſtuff, or that which bounds its width on each ſide. See CLOTH, &c.

* Du Cange derives the word from *liciæ*, which, in the age of corrupt Latin, was uſed for the incloſures of fields, and cities, as being antiently made with cords interlaced; or from *liſtæ*, *quia campum claudebant inſtar liſtarum panni*; as incloſing the ground after the manner that a *liſt* does a piece of cloth.

All cloths, and ſtuffs of ſilk, wool, or cotton, have *liſts*: *liſts* contribute to the goodneſs of the ſtuff, and further ſerve to ſhew their quality; which has given occaſion to ſeveral regulations relating to their matter, colour, work, &c. See Dying.

List is alſo uſed, to ſignify the incloſed field, or ground wherein the antient knights held their juſts and combats.

It was ſo called, as being hemmed round with pales, barriers, or ſtakes, as with a liſt.

Some of theſe were double, one for each cavalier; which kept them apart, ſo that they could not come nearer each other, than a ſpear's length. See Just, Turnament, Duel, &c.

List, Listel, or Listello, in architecture, called alſo *cincture*, *fillet*, *ſquare*, and *reglet*; is a little ſquare moulding, ſerving to crown, or accompany larger mouldings; and, on occaſion, to ſeparate the flutings of columns. See Fillet, &c.

LISTENING, according to Rohault, conſiſts in extending, or bracing the tympanum of the ear, and putting it into ſuch a condition, as that it ſhall be the more affected by any tremulous motion of the external air. See Tympanum, Hearing, Attention, &c.

Listening *Trumpet*. See the article Trumpet.

LITANY*, an old church term, applied to the proceſſions, prayers, and ſupplications uſed for appeaſing the wrath of God, averting his judgments, or procuring his mercies.

* The word comes from the Greek λιτανεια, ſupplication; of λιτανευω, I beſeech. — Pezron would go further, and derive the λιτομαι, or λισσομαι, of the Greeks, from the Celtic *lit*, feaſt, ſolemnity.

Eccleſiaſtic authors, and the Roman order, by the word *litany*, uſually mean the people who compoſe the proceſſion, and aſſiſt at it; and Du Cange obſerves, that the word antiently ſignified *proceſſion*. See Procession.

Simeon of Theſſalonica mentions, that in the antient *litanies*, the people went out of the church, to denote the fall of Adam; and returned into it again, to ſhew the return of a pious ſoul to God, by repentance.

On occaſion of a plague that ravaged Rome, in the year 590, pope Gregory appointed a *litany*, or proceſſion, conſiſting of ſeven bands, or companies, who, marching from the ſeveral churches of the city, met at S. Mary Major. — The firſt company conſiſted of the clergy; the ſecond of abbots, with their monks; the third of abbeſſes, with their nuns; the fourth, of children; the fifth, of laymen; the ſixth, of widows; and the ſeventh, of married women. — And from this general proceſſion, that of S. Mark, called the *grand litany*, is judged to have taken its riſe.

Litany, in a modern ſenſe, denotes a form of prayer, ſung or ſaid in churches; conſiſting of ſeveral periods, or articles; at the end of each whereof, is an invocation in the ſame terms.

LITERAL *Algebra.* } See the article { Algebra.
Literal *Character.* } { Character.

LITERALIS *Calculus*. See the article Calculus.

LITERARY *Criticiſm*. See the article Criticism.

LITERATI, *Letrados*, lettered, an epithet given to ſuch perſons among the Chineſe, as are able to read, and write their language. See Chinese.

The *literati* alone, are capable of being made mandarins. See Mandarins.

Literati, is alſo the name of a particular ſect, either in religion, philoſophy, or politics; conſiſting principally of the learned men of that country: among whom it is called *Jukiao*, *i. e.* learned.

It had its riſe in the year of Chriſt 1400; when the emperor, to awaken the native affection of the people for knowledge, which had been quite baniſhed by the preceding civil wars among them, and to ſtir up emulation among the mandarins, choſe out forty two of the ableſt among their doctors, to whom he gave a commiſſion to compoſe a body of doctrine, agreeable to that of the antients, which was then become the rule or ſtandard of the learned. — The delegates applied themſelves to the buſineſs, with a world of attention; but ſome fancy them rather to have wreſted the doctrine of the antients, to make it conſiſt with theirs, than to have built up theirs on the model of the antients.

They ſpeak of the Deity, as if it were no more than mere nature, or the natural power or virtue that produces, diſpoſes, and preſerves the ſeveral parts of the univerſe. It is, ſay they, a pure, perfect principle, without beginning or end; it is the ſource of all things, the eſſence of every being; and that which determines it to be what it is. — They make God the ſoul of the world; ſay, he is diffuſed throughout all matter, and produces all the changes that happen there. In ſhort, it is not eaſy to determine, whether they reſolve God into nature, or lift up nature into God; for they aſcribe to it many of thoſe things which we attribute to God.

This doctrine, in lieu of the idolatry that prevailed before, introduced a refined kind of atheiſm. — The work being compoſed by ſo many perſons of learning and parts, and approved by the emperor himſelf, was received with infinite applauſe by all the people. — Many were pleaſed with it, in regard, it ſeemed to ſubvert all religion: others approved it, becauſe the little religion that it left them, could not give them much trouble. — And thus was formed the ſect of the *Literati*; which conſiſts of the maintainers, and adherents to this doctrine. The court, the mandarins, and the perſons of fortune and quality, &c. are generally retainers to it; but a great part of the common people ſtill hold to their worſhip of idols.

The *Literati* freely tolerate the Mahometans, becauſe they adore, with them, the King of heaven, and Author of nature; but they bear a perfect averſion to all ſects of idolaters among them; and it was once reſolved to extirpate them. But the diſorder this would have occaſioned in the empire, prevented it: they now content themſelves with condemning them, in general, as hereſies; which they do ſolemnly every year at Pekin.

LITHARGE*, a metalline ſubſtance, formed of the ſpume of ſilver, or other metals; uſed in the compoſition of plaiſters, to give them a due conſiſtence.

* The word is Greek, λιθαργυρος, compoſed of λιθος, and αργυρος, ſilver.

There are two kinds of *litharge*, the one *natural*, the other *artificial*.

Natural Litharge, is a mineral, ſometimes found in lead mines, reddiſh, ſcaly, brittle, and ſomewhat reſembling white lead. — This *litharge* is ſo exceeding rare, that the ſhops ſell none but the

Artificial Litharge; which is of two kinds, *viz.* that *of gold*, and that *of ſilver*; or rather it is the ſame, with this difference, that the one has undergone a greater degree of fire than the other.

Indeed naturaliſts are not over-well agreed what the *artificial litharge* is: ſome conſider it as a metallic ſcum, raiſed on the ſurface of lead, when melted; after having ſerved to purify gold, ſilver, or copper.

Others conſider it as a metallic ſoot, or ſmoke, ariſing from thoſe metals mixed with the lead uſed in purifying them; which ſticking to the top of the chimnies of furnaces, is there formed in a kind of ſcales.

Laſtly, others conſider it as the lead itſelf, uſed in refining of thoſe metals, and eſpecially copper; which laſt opinion appears the moſt credible; and the rather, on account of the great quantities of theſe *litharges* brought from Poland, Sweden, and Denmark; where copper-mines are much more frequent, than thoſe of gold and ſilver. — The droſſy or recrementitious parts, fixing to the ſides of the teſt, are the *litharge*; and according to the degree of calcination, become of divers ſhades of a red colour. The deep is called *litharge of gold*, and the paler, *litharge of ſilver*.

Litharges are deſiccative, deterſive, and cooling; they make the conſiſtence of ſeveral plaiſters. — The potters uſe them to give a beautiful gloſs to their ware; and they are alſo uſed by painters, dyers, ſkinners, and glaſiers. When mixed with wine, they give it a bright ſpritely colour, but render it extremely unwholeſome.

LITHIASIS, ΛΙΘΙΑΣΙΣ, in phyſic, the diſeaſe of the ſtone. See Stone, and Calculus.

LITHOCOLLA*, or Lithocollum, a cæment uſed by the lapidaries, to faſten their precious ſtones, in order for cutting them. See Cæment.

* The word comes from the Greek λιθος, ſtone, and κολλα, glue.

It is compoſed of reſin and brick-duſt. — For diamonds, they uſe melted lead, putting them into it before it be quite cold. For other cæments they mix marble-duſt with ſtrong glue; and to faſten their ſparks, add the white of an egg, and pitch.

LITHOMARGA. See the article Mineral Agaric.

LITHONTHRIPTICS*, medicines proper to diſſolve the ſtone in the bladder, and kidneys. See Calculus, and Stone.

* The word comes from the Greek λιθος, ſtone, and θρυπτω, I break.

LITHOTOMY, an operation in chirurgery, performed upon a human body, in order to extract the ſtone out of the bladder. See Stone, and Calculus.

This is performed three ſeveral ways, *viz.* by the *ſmall apparatus*, the *great apparatus*, and the *high apparatus*.

The firſt, is by cuting through the perinæum near the ſuture, on the left ſide, after the ſtone, by the fingers of the operator, has been brought to that part. — This is called *cutting upon the gripe*; but is almoſt diſuſed, by reaſon it ſubjects the patient to great hazards and inconveniencies.

In the *great apparatus*, which is that ordinarily practiſed, after the patient is conveniently placed and bound, the operator introduces a proper inſtrument, through the urinary paſſage into the bladder, in order to ſearch for the ſtone; which being found, that inſtrument is withdrawn, and another grooved one introduced the ſame way; which bulging in the perinæum, ſerves to direct the knife to the neck of the bladder. After the inciſion, a third inſtrument is thruſt into the aperture, till it join the former that was laſt introduced through the urinary paſſage, at which time that is withdrawn, whilſt this remains to guide the forceps directly into the bladder, to bring away the ſtone. — This way is called *cutting upon the ſtaff*.

The third method, called alſo the *high operation*, firſt practiſed by Pet. Franco, has been ſince deſcribed, and ſtrenuouſly pleaded for by a chirurgical writer, Roſſet, but it ſoon fell into oblivion; from which it was only recalled about the year 1719, by Mr. Douglas, a Surgeon of London, who collected what ſcattered hints he could find relating to it, and improving them with his own obſervations, paved the way for its being brought into regular uſe, which before it never had been.—He was ſoon followed by Mr. Cheſelden, and ſome others. Of 31 patients cut by them in this manner, in a few years, 25 recovered.—It is true, Mr. Cheſelden has ſince quitted this method for the lateral operation.—Of late years, the French have begun to adopt the high operation; and M. Morand, a Surgeon of Paris, has wrote a book on the ſubject, chiefly taken from the Engliſh writers. See *Hiſt. Acad. R. Scien. an* 1728. *p.* 36, ſeqq.

The manner of proceeding herein, is this: After the bladder is injected with a ſufficient quantity of warm water, and the patient conveniently placed, the operator ſlowly makes an inciſion above the os pubis, along the linea alba, till he gets ſight of the bladder, into which he directly plunges his knife, and afterwards draws out the ſtone.

The advantages attending this method, are, That it is performed in a very ſhort time; that the wound eaſily heals; that the dilaceration of parts, frequent in the other ways, is prevented; and that there is no danger of the incontinentia urinæ.—On the other hand, it is thought to be chiefly practicable upon young perſons, and ſuch as are lean; the wound in old and fat perſons being apt to mortify: moreover, if the operator be not very cautious, he may eaſily let out the inteſtines.

To theſe may be added the *lateral operation*, invented by Frere Jacques, a religious of the third order of S. Francis, towards the cloſe of the laſt century, and practiſed by him with great reputation in the Franche Comte. But this reputation it loſt again at Paris; which, however, did not hinder M. Rau, anatomy profeſſor at Leyden, from undertaking to rectify what was amiſs in it: in which he ſucceeded, inſomuch that the method is now known by his name, which has taken place of that of the firſt inventor. See *Hiſt. Acad. R. Scien. an* 1699, *p.* 34, item, *an* 1728, *p.* 38.

LITTER*, *Lectica*, a kind of vehicle born upon ſhafts; antiently eſteemed the moſt eaſy, and genteel way of carriage.

* Du Cange derives the word from the barbarous Latin *lecteria*, ſtraw or bedding for beaſts.—Others will rather have it come from *lectus*, bed, there being ordinarily a quilt and a pillow to a *litter*; in the ſame manner as to a bed.

Pliny calls the *litter* the traveller's chamber: it was much in uſe among the Romans, among whom it was born by ſlaves, kept for that purpoſe; as it ſtill continues to be in the Eaſt. The Roman *lectica*, made to be born by four men, was called *tetraphorum*; that born by ſix, *hexaphorum*; and that born by eight, *octaphorum*.

The invention of *litters*, according to Cicero, was owing to the kings of Bithynia: in the time of Tiberius they were grown very frequent at Rome; as appears from Seneca; and even ſlaves themſelves were born in them, though never by more than two perſons, whereas men of quality had ſix or eight.

LITTLE *Bairam.*	See the article	BAIRAM.
LITTLE *Capſtan.*		CAPSTAN.
LITTLE *Maſs.*		MASS.

LITTORAL *Shells*, among writers of natural hiſtory, are ſuch ſea-ſhells as are always found near the ſhores, and never far off in the deep. See SHELL.

Thoſe which are found in the bottom of the ſea, remote from the ſhore, are called *pelagiæ*. See PELAGIÆ.

LITURGY*, denotes all the ceremonies in general, belonging to divine ſervice.

* The word comes from the Greek λειτȣργια, ſervice, public miniſtry; formed of λειτος, public, and εργον, work.

In a more reſtrained ſignification, *liturgy* is uſed among the Romaniſts to ſignify the maſs; and among us the common-prayer. See MASS, *&c.*

All who have written on *liturgies* agree, that, in the primitive days, divine ſervice was exceedingly ſimple, only clogged with a very few ceremonies, and conſiſting of but a ſmall number of prayers; but, by degrees, they increaſed the number of external ceremonies, and added new prayers, to make the office look more awful and venerable to the people. At length things were carried to ſuch a pitch, that a regulation became neceſſary; and it was found proper to put the ſervice, and the manner of performing it, into writing; and this was what they called a *liturgy*.

Liturgies have been different at different times, and in different countries.—We have the *liturgy* of S. Chryſoſtom, that of S. Peter, of S. James, the *liturgy* of S. Baſil, the Armenian *liturgy*, the *liturgy* of the Maronites, of the Cophtæ, the Roman *liturgy*, the Gallican *liturgy*, the Engliſh *liturgy*, the Ambroſian *liturgy*, the Spaniſh and African *liturgies*, &c.

LITUS, in medicine, the ſame as *liniment*. See LINIMENT.

LITUUS, among medaliſts, the ſtaff uſed by the augurs, made in form of a crozier. See AUGUR.

We frequently ſee it on medals, along with other pontifical inſtruments.—Aulus Gellius ſays, it was bigger in the place where it was crooked, than elſewhere.

LIVER*, a large, glandulous viſcus, of a red ſanguine colour, ſituated immediately under the diaphragm, in the right hypochondrium, which it almoſt fills; and thence ſtretching itſelf over the right ſide of the ſtomach, towards the left hypochondrium, reaches behind the cartilago enſiformis, growing gradually thinner and narrower: It ſerves to purify the maſs of blood, by making a ſecretion of the bilious humour it contains.—See *Tab. Anat.* (*Splanch.*) *fig.* 1. *lit. a. b. fig.* 3. *lit. k.* (*Angeiol.*) *fig.* 4. *lit. a e e*, &c. *fig.* 5. See alſo BILE, and BLOOD.

* Plato, and other of the antients, fix the principle of love in the *liver*; whence the Latin proverb, *Cogit amare jecur*: and in this ſenſe Horace frequently uſes the word, as when he ſays, *Si torrere jecur quæris Idoneum.*—The Greeks, from its concave figure, called it ἧπαρ, vaulted, ſuſpended; the Latins call it *jecur*, q. d. *juxta cor*, as being near the heart. The French call it *foye*, from *foyer*, *focus*, or fire-place; agreeable to the doctrine of the antients, who believed the blood to be boiled and prepared in it.—Eraſiſtratus, at firſt, called it *parenchyma*, i. e. *effuſion*, or *maſs of blood*: and Hippocrates, by way of eminence, frequently calls it the *hypochondrium*.

The upper part of the *liver* is convex, and perfectly ſmooth; the under concave, and ſomewhat more uneven, having four large fiſſures; one, through which the umbilical ligament paſſes; a ſecond on the left ſide, receiving the pylorus, and the beginning of the duodenum; a third on the right ſide, near the margin, in which the gall-bladder is lodged; and the laſt in the upper part, affording a paſſage to the vena cava.

Its figure is ſomewhat approaching to round, with thin edges, not altogether even, but notched in ſome places. Its magnitude is various in different ſubjects, according to the proportion of the body; though in a fœtus, or very young animal, it is always larger, in proportion, than in adults.—In dogs and other animals of the quadruped kind, it is divided into ſeveral diſtinct lobes, but in men it is generally continued; having one ſmall protuberance, which ſome account a little lobe.—It is ſometimes, however, obſerved in men to have been divided into two or three lobes. See LOBE, *&c.*

The *liver* is connected to ſeveral parts, but eſpecially to the diaphragm, to which it is faſtened by a broad, thin, but ſtrong ſemicircular ligament, called the *ſuſpenſory ligament*, derived from the common capſula of the porta, and gall ducts.—The continuity of this ligament being interrupted by the perforation of the vena cava, has given occaſion to ſome anatomiſts to divide it into two.—It is likewiſe, by another ſtrong ligament, which has its origin from the external coat of the *liver*, or, which amounts to the ſame, from the peritonæum, tied to the cartilago xiphoides; and by a third, which is formed out of the umbilical veſſels, which in adults dry up, and become a ligament, it is connected to the tendons of the abdominal muſcles in the linea alba at the navel.—Theſe ſeveral ligaments ſerve to keep it in its due ſituation: beſides which, it has ſome other connections by the blood-veſſels.

The *liver* has a motion, though not proper to itſelf, but depending on that of the diaphragm; to which being very firmly connected, it muſt needs obey its motion; and in expiration be drawn up, and in inſpiration be let down again.—It is covered with a thin ſmooth membrane, derived from the peritonæum, which may be ſeparated from the ſubſtance of the *liver*, though not without ſome danger of laceration.—The ſubſtance of the *liver* is vaſcular and glandulous; which latter part is very ſoft and friable, and pretty eaſily ſcraped off from the veſſels, to which the glands every way adhere, as it were in bunches; which has made the anatomiſts call the conſiderable ones, the *internal lobes of the liver*.

The glands adhering thus to the veſſels, and conſtituting thoſe lobes, are wrapped up together in proper membranes; whence this appearance of diſtinct lobes.—Every one of theſe glands, according to Malpighi, is compoſed of ſix unequal ſides, or faces. They are all clothed with their proper membranes, and have each an excretory duct; ſeveral of which joining together, form little trunks, which run all along with the branches of the porta; and theſe again uniting, form longer trunks, which are always found full of bile, and conſtitute the porus bilarius; which being diſtributed all over the *liver*, receives, in the foregoing manner, the bile; which is ſeparated by theſe glands, and terminating in the meatus hepaticus, and in the ductus communis, at length diſcharges the bile into the duodenum. See BILE.

Beſides this diſcharge by the porus bilarius, which is ſuppoſed to be the great one, the *liver* alſo delivers part of its bile into the gall-bladder, by a duct, called the *cyſt-hepatic duct*, firſt diſcovered by Dr. Gliſſon; by means whereof, there is an immediate communication between the porus bilarius and the gall-bladder; a particular deſcription of which laſt part, ſee under the words GALL, CYST-HEPATIC, *&c.*

Beſides theſe gall-veſſels, which are peculiar to the *liver*, it abounds with blood-veſſels, eſpecially veins; whereof the porta and cava are diſſeminated through the whole ſubſtance of it. — And here it is particularly remarkable of the porta, that after the manner of arteries, it ſhoots itſelf from a trunk into branches ; and being at laſt loſt in capillaries, delivers the blood into the cava, by which it is immediately reconveyed to the heart.

The porta is formed out of the concurrence of divers veins, which, meeting together, make one of the moſt conſiderable venous trunks of the body, as to its bulk ; though contrary to the courſe of other veins, it runs not far in a trunk, but is ſoon diſtributed again by ramifications into the *liver*. See PORTA.

The blood conveyed into the *liver* by the porta, after the manner of the arteries, is received again, after having been purged of its bile in the glands of the *liver*, into innumerable veins, which empty themſelves into the cava, and are vulgarly, though improperly, called *branches* of the cava ; but ought to be eſteemed the proper blood-veſſels of the *liver* ; as the emulgents are of the kidneys ; and which, as all the reſt do, except the pulmonary vein, empty themſelves into the cava ; the common channel by which the blood returns to the heart. See CAVA.

The arteries, which are called the *hepatic*, come from the right branch of the cœliac. — Dr. Gliſſon thinks the porta does ſo much the office of an artery, that no more arteries are neceſſary, than thoſe which furniſh nouriſhment to the membranes and capſula ; but Dr. Drake judges, they ſerve for the nouriſhment of the whole part. — Theſe arteries are much bigger in men, than in other animals. — Mr. Cowper had ſeveral preparations, wherein the ſtem of each hepatic artery was as large as a gooſe-quill, and the branches in the *liver*, every where equal in magnitude to thoſe of the porus bilarius, which they accompany. — Dr. Drake conjectures, that in this viſcus in a human body, a larger ſtream, and directer impetus of arterious blood, is required to drive on the venous, becauſe of the erect poſture, than in animals of an horizontal poſition of body. For which reaſon horſes, *&c.* though of much larger ſize, and having much bigger *livers*, have theſe arteries much ſmaller than men ; and not only ſo, but curled like the tendrils of a vine, to break the impetus, which, in that poſture, is not ſo neceſſary as in the erect. See BILE.

The *liver* has its nerves from the hepatic plexus, formed on the right hypochondrium by the branches of the intercoſtal, which wrapping themſelves about the arteries, make a ſort of net-work ; and after ſpreading themſelves on the membrane and ſurface, diſappear. — The lymphæducts are numerous, though not eaſily diſcernible in human ſubjects, for want of live diſſections ; but in other animals that may be diſſected alive, become very conſpicuous, by applying a ligature to the porta and the bilary duct. — *For the uſe of the* LIVER *in the ſecretion of bile, ſee* BILE.

LIVER of antimony. See the article ANTIMONY.

LIVERY, properly ſignifies a colour, to which a perſon has ſome particular fancy, and by which he chuſes to diſtinguiſh himſelf and retainers, from others. See COLOUR.

Liveries are uſually taken from fancy, or continued in families by ſucceſſion. — The antient cavaliers, at their turnaments, diſtinguiſhed themſelves by wearing the *liveries* of their miſtreſſes : Thus people of quality make their domeſtics wear their *livery*.

Father Meneſtrier, in his treatiſe of *Carrouſals*, has given a very ample account of the mixtures of colours in *liveries*. Dion tells us, that Oenomaus was the firſt who invented green and blue colours for the troops which, in the circus, were to repreſent land and ſea-fights. See FACTION.

The Romiſh church has alſo her ſeveral colours and *liveries* ; white, for confeſſors and virgins, and in times of rejoicing ; black, for the dead ; red, for the apoſtles and martyrs ; blue or violet, for penitents ; and green, in times of hope.

Formerly great men gave *liveries* to ſeveral, who were not of their family or ſervants, to engage them in their quarrels for that year ; but this was prohibited by the ſtatute 1 Hen. IV. and no man, of whatever condition, was allowed to give any *livery*, but to his domeſtic officers, and council learned in the law.

LIVERY, in law, alſo denotes the delivery of poſſeſſion, to thoſe tenants which held of the king in capite, or by knights ſervice. See POSSESSION.

LIVERY is alſo uſed for the writ, which lies for an heir to obtain the poſſeſſion, or ſeiſin of his lands at the king's hands.

LIVERY *of Seiſin*, is a delivery of poſſeſſion of land or tenements, or things corporeal, to him who hath right, or probability of right to them. See SEISIN.

Livery of Seiſin, is a ceremony uſed in the common law, in conveyance of lands, tenements, *&c.* where an eſtate in fee-ſimple, fee-tail, or other freehold, ſhall paſs ; and is a teſtimonial of the willing departing of him who makes the *livery*, from the thing whereof *livery* is made, as well as of a willing acceptance by the other party, of all that whereof the firſt has diveſted himſelf.

Antiently, there were a pair of gloves, a ring, knife, ear of wheat, *&c.* delivered, in ſign of *livery* and *ſeiſin*. See INVESTITURE.

The uſual manner of *livery of ſeiſin* is thus. — If it be in the open field where is no houſe nor building, and if the eſtate paſs by deed, one openly reads it, or declares the effect of it ; and after that is ſealed, the vendor takes it in his hand, with a clod of earth, or a twig or bough, which he delivers to the vendee, in the name of poſſeſſion, or ſeiſin, according to the purport of the deed. — If there be a houſe or building on the land, the ceremony is to be done at the door of it, none being then left within ; and the ring of the door is delivered to the vendee, who enters alone, ſhuts the door, and preſently opens it again. — If it be a houſe without land or ground, the *livery* is made, and poſſeſſion given, by delivery of the ring of the door and deed only ; and where it is without deed, either of lands or tenements, there the party declares by word of mouth, before witneſſes, the eſtate he parts with, and then delivers ſeiſin, or poſſeſſion as aforeſaid : in which caſe the land paſſes as well as by deed, by virtue of the *livery of ſeiſin*.

LIVES. See ANNUITY, and POLICY *of Inſurance*.

LIVRE *, a French money of account, conſiſting of twenty ſols ; each ſol containing twelve deniers. See MONEY, SOL, *&c.*

* The origin of the word is fetched hence, that antiently the Roman *libra*, or pound, was the ſtandard by which the French money was regulated ; twenty ſols being made equal to the *libra*. — By degrees the *libra* became a term of account, ſo that any coin juſt worth twenty ſols was a *livre*, or *libra* ; and ſince the time of Charlemagne, all contracts have been made on the foot of this imaginary coin ; though the ſols have frequently changed their weight and alloy. See LIBRA.

The *livre* is of two kinds, *Tournois*, and *Pariſis*.

LIVRE *Tournois*, as above, contains twenty ſols Tournois, and each ſol twelve deniers Tournois.

LIVRE *Pariſis*, is twenty ſols Pariſis, each ſol Pariſis worth twelve deniers Pariſis, or fifteen deniers Tournois. So that a *livre Pariſis*, is equivalent to twenty five ſols Tournois : the word *Pariſis* being uſed in oppoſition to *Tournois*, by reaſon of the rate of money, which was one fourth higher at Paris, than at Tours.

One penny ſterling was equal to thirteen and a half deniers Tournois : ſo that the Engliſh pound ſterling, was equal to thirteen *livres*, ſix ſols, eight deniers of French money ; while the exchange was on the foot of fifty four pence ſterling, to a French crown of ſixty ſols Tournois ; which was the late par between England and France : — But at preſent, the French crown is but equal to 27 d. $\frac{1}{2}$ ſterling, on which footing the *livre* is but equivalent to 10 d. $\frac{1}{2}$ ſterling.

There have ſince been pieces of gold ſtruck, of twenty ſols value, and under Henry III. in 1575, ſpecies of ſilver of like value : Both the one and the other were called *francs*, and thus the imaginary coin became real. See FRANC.

It appears that the Romans alſo had a kind of money which they called *libra*, or *libella* ; which was the tenth part of their denarius ; ſo called, becauſe equivalent to an *as* ; which, at firſt, weighed a *libra*, or pound of copper. — Scaliger adds, that they uſed libra as a term of account, not as a coin : *Libra erat collectio nummorum, non nummus.* See DENARIUS, AS, and POUND.

LIXIVIOUS, LIXIVIAL, or LIXIVIATE, in chymiſtry, is underſtood of ſalts extracted from burnt vegetables, by lotion. See SALT.

Lixivious ſalts, are the fixed ſalts of plants, *&c.* extracted by calcining the plants, or reducing them to aſhes ; and afterwards making a lixivium of thoſe aſhes with water. See LIXIVIUM.

Mr. Boyle obſerves, that the difference between *lixivious* and urinous ſalts, conſiſts in this, that the former change the diſſolution of ſublimate in common water, into a yellow colour, which the latter do not. See URINOUS.

LIXIVIUM, *Lye*, a liquor made by the infuſion of wood-aſhes ; and which is more or leſs pungent and penetrating, as it is more or leſs impregnated with ſalts, and fiery particles abounding therein. See ASHES.

What is left after the evaporation of ſuch a liquor, is called a *lixivious ſalt* ; ſuch as all thoſe are, which are made by incineration. See LIXIVIOUS.

Lixiviums are of notable uſe, not only in medicine, but alſo in bleaching, ſugar-works, *&c.* See BLEACHING, SUGAR, POT-ASHES, *&c.*

LOAD *a Mortar.* } See the article { MORTAR.
Training a LOAD. } { TRAINING.

LOADSTONE. See MAGNET, and DIRECTION.

LOAM, or LOME, the common ſuperficial earth ; conſiſting of clay, with a ſmall admixture of ſand in it. See EARTH, and CLAY.

The word, it muſt be obſerved, is uſed with great uncertainty ; by ſome authors, for the black mother earth, called *mould* ; by others, for a reddiſh earth uſed in building, *&c.* See SOIL, MOULD, *&c.*

LOAM is alſo uſed for a ſort of mortar made of this laſt earth, by tempering it with mud-water, ſtraw, *&c.* See MOULD, EARTH, SOIL, MORTAR, *&c.*

LOBBY. See the article ANTICHAMBER.

LOBE, ΛΟΒΟΣ, amongſt anatomiſts, is applied to each of the two parts whereof the lungs conſiſt. See LUNGS.

This ſeparation into *lobes*, is of uſe in dilating the lungs, by cauſing them to receive more air, and preventing their being too much ſqueezed, when the back is bent. — For this reaſon it is, that beaſts, which are always inclining towards the earth, have more *lobes* in their lungs than men: even their liver is divided into *lobes*, whereas that of man is continued. See *Tab. Anat.* (*Splanch.*) *fig.* 14. *lit. dd*, &c. ſee alſo LIVER.

LOBE is alſo uſed for the tip of the ear; which is more fat and fleſhy than any other part thereof. See EAR.

Du Laurent ſays, that the word *lobe*, in this laſt ſenſe, comes from the Greek λωϐειν, to ſhame, or be aſhamed: this part of the ear being ſaid to bluſh, when the perſon is aſhamed.

LOBE is alſo uſed in ſpeaking of fruits and grains.

Thus the bean conſiſts of two equal parts, called *lobes*, which compoſe the body thereof, and are encompaſſed with the outer skin. — And all other grains, even the ſmalleſt, are divided, like the bean, into two *lobes*, or equal parts; as Dr. Grew has ſhewn in his *Anatomy of Plants*. See FRUIT.

LOBULE, LOBELLUS, in anatomy, a little *lobe*. See LOBE.

Each lobe of the lungs is divided into ſeveral leſſer lobes, or *lobules*, which are faſtened on each ſide, to the largeſt branches of the trachea. — Each *lobule* conſiſts of a great number of little round veſicles, which have all a communication with one another. — It is into theſe veſicles that the air enters, by the trachea in inſpiration; ſtill quitting them again in expiration. See *Tab. Anat.* (*Splanch.*) *fig.* 14. *lit. ff*, &c. ſee alſo LUNGS, ASPERA, *&c.*

LOCAL, ſomething ſuppoſed to be tied, or annexed to ſome particular place. See PLACE.

Thus, in law, a thing is ſaid to be *local*, i. e. annexed, or fixed to the freehold. — An action of treſpaſs for battery, *&c.* is tranſitory, not *local*; that is, it is not neceſſary, that the place where battery was committed, ſhould be ſet down as material in the declaration; or if it be ſet down, the defendant cannot traverſe it, by ſaying, he did not commit the battery in the place mentioned in the declaration, and ſo avoid the action. See BATTERY.

Choſe LOCAL. See the article CHOSE.

LOCAL *Cuſtoms*, are thoſe peculiar to ſome lordſhip, or other diſtrict, and not agreeable to the general cuſtoms of the country. See CUSTOM.

Treſpaſs LOCAL. See the article TRESPASS.

LOCAL *Problem*, in mathematics, is ſuch an one, as is capable of an infinite number of different ſolutions; by reaſon the point, that is to ſolve it, may be indifferently taken within a certain extent; *e. gr.* any where in ſuch a line, within ſuch a plane figure, *&c.* which is called a *geometrical locus*.

A *local problem* may be either *ſimple*, as when the point ſought is in a right line; *plane*, as when the point ſought is in the circumference of a circle; *ſolid*, as when the point required is in the circumference of a conic ſection; or *ſurſolid*, as when the point is in the perimeter of a line of a *higher kind*, as the geometers call it. See LOCUS.

LOCAL, or *artificial Memory*. See the article MEMORY.

LOCAL *Colours*, in painting, are ſuch as are natural and proper for each particular object in a picture. See COLOUR.

They are ſo called, to diſtinguiſh them from the clair obſcure, which conſiſts wholly of black and white. See CLAIR-OBSCURE.

LOCAL *Motion*. See the article MOTION.

LOCATION, in the civil law, an act by which any thing is let out, on rent. See RENT, LEASE, *&c.*

The ſecond title of the nineteenth book of the *Digeſt*, is on the ſubject of *location* and conduction. — *Location* and *conduction* are relative terms, and are uſed as well for the action of him that lets, as for that of him who takes on that letting.

Tacit LOCATION, is, when the perſon who takes, continues on the premiſes beyond the term of his leaſe; which, by the civil law he is allowed to do, at leaſt for the ſpace of a year; on the ſame terms.

LOCH *, or LOHOCK, in pharmacy, a compoſition of a middle conſiſtence between a ſyrup and a ſoft electuary; chiefly uſed for diſeaſes of the lungs.

* The word is originally Arabic; but continues ſtill in uſe among the apothecaries.

The Latins call it *linctus*, and the Greeks εκλειγμα, by reaſon the manner of taking it is by licking. See LINCTUS, and ECLEGMA.

LOCHIA, or LOCHES, ΛΟΧΙΑ, the evacuations conſequent on the delivery of a woman in child-bed.

As ſoon as the uterus is eaſed of its load, its fibres, as alſo thoſe of the peritonæum, muſcles of the abdomen, *&c.* which had been extremely diſtended during the laſt period of geſtation, begin to contract themſelves, and their veſſels; particularly the uterus, which by this means expels the blood amaſſed in it. — At firſt pure blood is evacuated, and in conſiderable quantities; afterwards it is diluted, and comes out more ſparingly; at length it becomes viſcid, pale, *&c.* — Theſe are called the *loches*.

LOCIS *Communibus*. See the article COMMUNIBUS.

LOCK, a little inſtrument uſed for the ſhutting and faſtening of doors, cheſts, *&c.* only to be opened by a key. See KEY.

The *lock* is reckoned the maſter-piece in ſmithery; a great deal of art and delicacy being required in contriving and varying the wards, ſprings, bolts, *&c.* and adjuſting them to the places where they are to be uſed, and the various occaſions of uſing them.

From the various ſtructure of *locks*, accommodated to their different intentions, they acquire various names. — Thoſe placed on outer doors are called *ſtock-locks*; thoſe on chamber doors, *ſpring-locks*; thoſe on trunks, *trunk-locks*, *padlocks*, &c.

Of theſe, the *ſpring-lock* is the moſt conſiderable, both for its frequency, and the curioſity of its ſtructure. — Its principal parts are, the main-plate, the cover-plate, and the pin-hole: to the main-plate belong the key-hole, top-hook, croſs-wards, bolt-toe or bolt-nab, drawback ſpring, tumbler, pin of the tumbler, and the ſtaples; to the cover-plate belong the pin, main-ward, croſs-ward, ſtep-ward, or dap-ward; to the pin-hole belong the hook-ward, main croſs-ward, ſhank, the pot or bread, bow-ward, and bit.

LOCULAMENTUM, in botany, denotes a cell, or partition in a ſeed-pod, for the ſeed of a plant. See SEED.

In ſome plants, we only find one *loculamentum* in a pod; in others two, three, or more.

LOCUS, *Place*, in a general ſenſe. See the article PLACE.

LOCUS *Geometricus*, denotes a line, by which a local or indeterminate problem is ſolved. See LOCAL *Problem*, and GEOMETRICAL.

A *locus* is a line, any point of which may equally ſolve an indeterminate problem.

This, if a right line ſuffice for the conſtruction of the equation, is called *locus ad rectam*; if a circle, *locus ad circulum*; if a parabola, *locus ad parabolam*; if an ellipſis, *locus ad ellipſin*; and ſo of the reſt of the conic ſections.

The *loci* of ſuch equations as are right lines, or circles, the antients called *plain loci*; and of thoſe that are parabolas, hyperbolas, *&c.* *ſolid loci*.

Wolfius, and other moderns, divide the *loci* more commodiouſly into orders, according to the number of dimenſions to which the indeterminate quantities riſe. — Thus, it will be a *locus of the firſt order*, if the equation $x=ay:c$. A *locus of the ſecond* or quadrate order, if $y^2=ax$, or $y^2=a^2-x^2$, *&c.* A *locus of the third* or cubic order, if $y^3=a^2x$, or $y^3=a\ x^2-x^3$, *&c.*

The better to conceive the nature of the *locus*, ſuppoſe two unknown and variable right lines A P, P M, (*Tab. Analyſis*, *fig.* 29, 30.) making any given angle A P M with each other; the one whereof, as A P, we call x, having a fixed origin in the point A, and extending itſelf indefinitely along a right line given in poſition; the other P M, which we call y, continually changing its poſition, but always parallel to itſelf. An equation only containing theſe two unknown quantities x and y, mixed with known ones, which expreſſes the relation of every variable quantity A P (x) to its correſpondent variable quantity P M (y): the line paſſing through the extremities of all the values of y, i. e. through all the points M, is called a *geometrical locus*, in general, and the *locus* of that equation in particular.

All equations, whoſe *loci* are of the *firſt order*, may be reduced to ſome one of the four following formula's:

1. $y=\frac{bx}{a}$. 2. $y=\frac{bx}{a}+c$. 3. $y=\frac{bx}{a}-c$. 4. $y=c-\frac{bx}{a}$.

Where the unknown quantity y is ſuppoſed always to be freed from fractions, and the fraction that multiplies the other unknown quantity x, to be reduced to this expreſſion $\frac{b}{a}$, and all the known terms to this c.

The *locus* of the firſt formula being already determined: To find that of the ſecond, $y=\frac{bx}{a}+c$; in the line AP, (*fig.* 31.) take AB $=a$, and draw BE $=b$, AD $=c$, parallel to PM. On the ſame ſide AP, draw the line AE of an indefinite length towards E, and the indefinite ſtraight line DM parallel to AE. I ſay the line DM is the *locus* of the aforeſaid equation, or formula; for if the line MP be drawn from any point M thereof parallel to AQ, the triangles ABE, APF, will be ſimilar: and therefore AB (a) : BE (b) : : AP (z) : PF $=\frac{bx}{a}$; and conſequently PM (y) $=$ PF $\left(\frac{bx}{a}\right)+$ FM (c).

To find the *locus* of the third form, $y=\frac{bx}{a}-c$, proceed thus: Aſſume AB $=a$, (*fig.* 32.) and draw the right lines BE $b=$, AD $=c$, parallel to PM, the one on one ſide AP, and the other on the other ſide; and through the points A, E, draw the right line AE of an indefinite length towards E, and through the point D, the line DM parallel to AE: I ſay, the indefinite right line G M ſhall be the *locus* ſought; for we ſhall have always P M $(y) = $ P F $\left(\frac{bx}{a}\right) -$ F M c.

Laſtly, to find the *locus* of the fourth formula, $y = c - \frac{bx}{a}$; in A P (*fig.* 33.) take A B $= a$, and draw B E $= b$, A D $= c$, parallel to P M, the one on one ſide A P, and the other on the other ſide; and through the points A, E, draw the line A E indefinitely towards E, and through the point D draw the line D M parallel to A E. I ſay, D G ſhall be the *locus* ſought; for if the line M P be drawn from any point M thereof, parallel to A Q, then we ſhall have always P M $(y) =$ F M $(c) -$ P F $\left(\frac{bx}{a}\right)$.

Hence it appears, that all the *loci* of the *firſt* degree are ſtraight lines, which may be eaſily found, becauſe all their equations may be reduced to ſome one of the foregoing formula's.

All *loci* of the *ſecond* degree are conic ſections, *viz.* either the parabola, the circle, ellipſis, or hyperbola; if an equation therefore be given, whoſe *locus* is of the ſecond degree, and it be required to draw the conic ſection, which is the *locus* thereof; firſt draw a parabola, ellipſis, and hyperbola; ſo, as that the equations expreſſing the natures thereof, may be as compound as poſſible: in order to get general equations, or formula's, by examining the peculiar properties whereof we may know which of theſe formula's the given equation ought to have regard to; that is, which of the conic ſections will be the *locus* of the propoſed equation. — This known, compare all the terms of the propoſed equation with the terms of the general formula of that conic ſection, which you have found will be the *locus* of the given equation; by which means you will find how to draw the ſection which is the *locus* of the equation given.

For example; let A P (x), P M (y), be unknown, and variable ſtraight lines, (*fig.* 34.) and let m, n, p, r, s, be given right lines: In the line A P take A B $= m$, and draw B E $= n$, A D $= r$, parallel to P M; and through the point A draw A E $= e$, and through the point D, the indefinite right line D G parallel to A E. In D G take D C $= s$, and with C G, as a diameter, having its ordinates parallel to P M, and the line C H $= p$, as the parameter, deſcribe a parabola C M: then the portion thereof, included in the angle P A D, will be the *locus* of the following general formula.

$$\begin{aligned} yy - \frac{2n}{m}xy + \frac{nn}{mm}xx - 2ry + \frac{2nr}{m}x + rr &= 0. \\ - \frac{ep}{m}x + ps. & \end{aligned}$$

For if from any point M of that portion there be drawn the right line M P, making any angle A P M with M P; the triangles A B E, A P F, ſhall be ſimilar; therefore A B (m) : A E (e) :: A P (x) : A F or D G $= \frac{ex}{m}$. And A B (m) : B E (n) :: A P (x) : P F $= \frac{nx}{m}$. And conſequently G M or P M — P F — F G $= y - \frac{nx}{m} - r$, and C G or D G — D C $= \frac{ex}{m} - s$. But from the nature of the parabola $\overline{GM}^2 = CG \times CH$; which equation will become that of the general formula, by putting the literal values of thoſe lines.

Again; if through the fixed point A you draw the indefinite right line A Q (*fig.* 35.) parallel to P M, and you take A B $= m$, and draw B E $= n$ parallel to A P, and through the determinate points A, E, the line A E $= e$; and if in A P you take A D $= r$, and draw the indefinite ſtraight line D G parallel to A E, and take D C $= s$: this being done, if with the diameter C G, whoſe ordinates are parallel to A P, and parameter the line C H $= p$, you deſcribe a parabola C M; the portion of this parabola contained in the angle B A P ſhall be the *locus* of this ſecond equation, or formula.

$$\begin{aligned} xx - \frac{2n}{m}yx + \frac{nn}{mm}yy - 2rx + \frac{2nr}{m}y + rr &= 0. \\ - \frac{ep}{m}y + ps. & \end{aligned}$$

For if the line M Q be drawn from any point M, therein, parallel to A P; then will A B (m) : A E :: A Q or P M (y) : A F or D G $= \frac{ey}{m}$. And A B (m) : B E (n) :: A Q (y) : Q F $= \frac{ny}{m}$. And therefore G M or Q M — Q F — F G $= x - \frac{ny}{m} - r$; and C G or D G — D C $= \frac{ey}{m} - s$. And ſo by the common property of the parabola, you will have the aforegoing ſecond equation, or formula.

So likewiſe may be found general equations, or formula's to the other conic ſections.

Now if it be required to draw the parabola, which we find to be the *locus* of this propoſed equation $yy - 2ay - bx + cc = 0$; compare every term of the firſt formula with the terms of the equation, becauſe yy in both is without fractions; and then will $\frac{2n}{m} = 0$, becauſe the rectangle xy not being in the propoſed equation, the ſaid rectangle may be eſteemed as multiplied by 0; whence $n = 0$, and $m = e$; becauſe the line A E falling in A B, that is, in A P in the conſtruction of the formula, the points B, E, do coincide. Therefore, deſtroying all the terms adſected with $\frac{n}{m}$ in the formula, and ſubſtituting m for e, we ſhall get $yy - 2ry - px + rr + ps = 0$. Again, by comparing the correſpondent terms $-2ry$, and $-2ay$, as alſo $-px$, and $-bx$, we have $r = a$, and $p = b$; and comparing the terms wherein are neither of the unknown quantities x, y, we get $rr + ps = cc$, and ſubſtituting a and b for r and p, then will $s = \frac{cc - aa}{b}$, which is a negative expreſſion when a is greater than c, as is here ſuppoſed. There is no need of comparing the firſt terms yy and yy, becauſe they are the very ſame. Now the values of n, r, p, s, being thus found, the ſought *locus* may be conſtructed by means of the conſtruction of the formula, and after the following manner.

Becauſe B E $(n) = 0$, (*fig.* 36.) the points B, E, do coincide, and the line A E falls in A P; therefore through the fixed point A draw the line A D $(r) = a$ parallel to P M, and draw D G parallel to A P, in which take D C $= \frac{aa - cc}{b} - s$; then with D C, as a diameter, whoſe ordinates are right lines parallel to P M, and parameter the line C H $(p) = b$, deſcribe a parabola: I ſay, the two portions O M M, R M S, thereof, contained in the angle P A O, formed by the line A P, and the line A O drawn parallel to P M, will be the *locus* of the given equation, as is eaſily proved. If in a given equation, whoſe *locus* is a parabola, xx is without a fraction; then the terms of the ſecond formula muſt be compared with thoſe of the given equation.

Thus much for the method of conſtructing the *loci* of equations which are conic ſections. If, now, an equation, whoſe *locus* is a conic ſection, be given; and the particular ſection whereof it is the *locus*, be required:

All the terms of the given equation being brought over to one ſide, ſo that the other be equal to 0, there will be two caſes.

Caſe 1. When the rectangle xy is not in the given equation. 1°. If either yy or xx be in the ſame equation, the *locus* will be a parabola. 2°. If both xx and yy are in the equation, with the ſame ſigns, the *locus* will be an ellipſis, or a circle. 3°. If xx and yy have different ſigns, the *locus* will be an hyperbola, or the oppoſite ſections regarding their diameters.

Caſe 2. When the rectangle xy is in the given equation. 1°. If neither of the ſquares xx or yy, or only one of them, be in the ſame, the *locus* of it will be an hyperbola between the aſymptotes. 2°. If yy and xx be therein, having different ſigns, the *locus* will be an hyperbola, regarding its diameters. 3°. If both the ſquares xx and yy are in the equation, having the ſame ſigns, you muſt free the ſquare yy from fractions; and then the *locus* will be a hyperbola, when the ſquare of $\frac{1}{2}$ the fraction multiplying xy, is equal to the fraction multiplying xx; an ellipſis, or circle, when the ſame is leſs; and an hyperbola, or the oppoſite ſections, regarding their diameters, when greater.

LOCUSTÆ, is uſed by botaniſts for the tender extremities of the branches of trees; ſuch as, it is ſuppoſed, John the baptiſt fed on in the wilderneſs. See ACRIDOPHAGI.

Some alſo uſe *locuſtæ* for beards, and pendulous ſeeds of oats, and of the gramina paniculata; to which the name is given on account of their figure, which ſomething reſembles that of a locuſt.

LODESMAN, or LOCMAN, a pilot eſtabliſhed for conducting veſſels in and out of harbours, or up and down navigable rivers. See PILOT.

LODGMENT, in military affairs, ſometimes denotes an incampment made by an army. See CAMP, and ARMY.

LODGMENT is more frequently uſed for a work caſt up by the beſiegers, during their approaches, in ſome dangerous poſt, which they have gained, and where it is abſolutely neceſſary to ſecure themſelves againſt the enemies fire; as in a covert-way, in a breach, the bottom of a moat, or any other part gained from the beſieged.

Lodgments are made by caſting up earth, or by gabions, or paliſades, wool-packs, faſcines, mantelets, or any thing capable of covering ſoldiers in the place they have gained, and are determined to keep.

LOG, a ſea term, ſignifying a ſmall piece of timber, of a triangular figure, on board a ſhip; into one end whereof, a convenient quantity of lead is caſt, to make it ſwim upright in the water: the other end being faſtened to the

LOG-*Line*, a little cord, or line faſtened to one end of the *log*, and wound round a reel, fixed for that purpoſe in the gallery of the ſhip.

This line, from the diſtance of about ten fathom off the *log*, has certain knots or diviſions, which ought to be at leaſt 50 foot from each other: though it is the common practice at ſea, not to have them above 42 feet aſunder. See KNOT.

The uſe of the *log* and *line*, is to keep account, and make an eſtimate of the ſhip's way, or diſtance run; which is done by obſerving the length of line unwound in half a minute's time, told by a half-minute glaſs; for ſo many knots as run out in that time, ſo many miles the ſhip ſails in an hour.

Thus, if there be four knots veered out in half a minute, the ſhip is computed to run four miles an hour.

To heave the Log, as they call it, they throw it into the water, letting it run till it comes without the eddy of the ſhip's wake; then one holding a half-minute glaſs, turns it up juſt as the firſt knot turns off the reel (though ſome turn the glaſs as ſoon as the *log* touches the water.) As ſoon as the glaſs is out, the reel is ſtopped, and the knots run off are told, and their parts eſtimated.

The *log* ought to be heaved every hour, or every two hours.

The *log* is a very precarious way of computing, and muſt always be corrected by experience and good ſenſe, there being a great deal of uncertainty, both in the heaving of it, in the courſe of the currents, and in the ſtrength of the wind, which ſeldom keeps the ſame tenor for two hours together; which is the interval, between the times of uſing the *log*, in ſhort voyages, though in longer ones they heave it every hour. Yet is this a much more exact way of computing, than any other in uſe; much preferable certainly to that of the Spaniards and Portugueſe, who gueſs at the ſhip's way, by the running of the froth, or water by the ſhip's ſide; or to that of the Dutch, who uſe to heave a chip over-board, and to number the paces they walk on the deck, while the ſhip ſwims between any two marks, or bulk-heads on the ſide.

Log-*Board*, is a table divided into four or five columns, whereon are marked the reckoning of every day; from whence they are entered into the *log-book*, or traverſe book, ruled and columned juſt as the *log-board* is: whence it may be tranſcribed into the journals, and how much the ſhip gains in her courſe, be eſtimated daily. See Journal, Reckoning, Traverse, *&c.*

In the firſt column of the *log-board* is entered the hour of the day, from 1 to 1: in the ſecond, the rhumb, or the direction of the veſſel, with regard to the points of the compaſs: in the third, the number of knots run off the reel each time of heaving the *log*: in the fourth, the wind that blows: and in the fifth, obſervations made of the weather, variation of the compaſs, *&c.*

LOGARITHMIC, or *Logarithmical*, relating to logarithms. See Logistic.

Thus we ſay, *logarithmic* arithmetic, curve, line, ſcale, ſpiral. See Arithmetic, *&c.*

LOGARITHMS*, the indices of the ratio's of numbers one to another; or, a ſeries of artificial numbers proceeding in arithmetical proportion, correſponding to as many others proceeding in geometrical proportion; contrived for the eaſing and expediting of calculation. See Number, Index, Proportion, *&c.* ſee alſo Mesologarithm.

* The word is formed from the Greek λογος, ratio, and αριθμος, number; *q. d.* ratio of numbers.

Logarithms have been uſually defined *numerorum proportionalium æquidifferentes comites*; but this definition Dr. Halley and Stifelius think deficient, and more accurately define them, *the indices or exponents of the ratio's of numbers*; ratio being conſidered as a quantity ſui generis, beginning from the ratio of equality, or 1 to 1=0; and being affirmative when the ratio is increaſing, and negative when it is decreaſing.

The nature and genius of *logarithms* will be eaſily conceived, from what follows:—A ſeries of quantities increaſing or decreaſing according to the ſame ratio, is called a *geometrical progreſſion*; e. gr. 1. 2. 4. 8. 16. 32. *&c.* A ſeries of quantities increaſing or decreaſing, according to the ſame difference, is called an *arithmetical progreſſion*; e. gr. 3. 6. 9. 12. 15. 18. 24. Now, if underneath the numbers proceeding in a geometrical ratio, be added as many of thoſe proceeding in the arithmetical one; theſe laſt are called the *logarithms* of the firſt.

Suppoſe, *e. gr.* two progreſſions:

Geomet.	1.	2.	4.	8.	16.	32.	64.	128.	256.	512.
Arithmet.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.

Logarithms.

0 will be the *logarithm* of the firſt term, *viz.* 1; 5, of the 6th, 32; 7 the *logarithm* of the 8th, 128, *&c.*

The doctrine and uſe of *logarithms*, may be conceived from the following propoſitions.

1°. *If the* logarithm *of unity be* 0, *the* logarithm *of the factum or product will be equal to the ſum of the* logarithms *of the factors.* — For as unity is to one of the factors, ſo is the other factor to the product. So that the *logarithm* of the product, is a fourth equidifferent term to the *logarithm* of unity, and thoſe of the factors: but the *logarithm* of unity being 0, the ſum of the *logarithms* of the factors muſt be the *logarithm* of the factum, or product. *q. e. d.*

Hence, ſince the factors of a ſquare are equal to each other, *i. e.* a ſquare is the factum or product of its root multiplied into itſelf; the *logarithm* of the ſquare will be double the *logarithm* of the root.

In the ſame manner it appears, that the *logarithm* of the cube is triple; of the biquadrate, quadruple; of the fifth power, quintuple; of the ſixth, ſextuple, *&c.* of the *logarithm* of the root.

Unity, therefore, is to the exponent of the power, as the *logarithm* of the root to the *logarithm* of the power.

So that the *logarithm* of the power is had, if the *logarithms* of the root be multiplied by its exponent; and the *logarithm* of the root is had, if the *logarithm* of the power be divided by its exponent.

And hence we derive one of the great uſes of *logarithms*, which is to expedite and facilitate the buſineſs of multiplication, and extraction of roots; the former of which is here performed by mere addition, and the latter by multiplication.—Thus 3, the ſum of the *logarithms* 1 and 2, is the *logarithm* of 8, the product of 2 and 4.—In like manner 7, the ſum of the *logarithms* 2 and 5, is the *logarithm* of 128, the product of 4 and 32. — Again, 3, the *logarithm* of the ſquare root 8, is half the *logarithm* of 6, the ſquare root of 64; and 2, the *logarithm* of the cube root 4, is ſubtriple the *logarithm* 6 of the cube root 64.

2°. *If the* logarithm *of unity be* 0, *the* logarithm *of the quotient will be equal to the difference of the* logarithms *of the diviſor and dividend.* — For as the diviſor is to the dividend, ſo is unity to the quotient; therefore the *logarithm* of the quotient is a fourth equidifferent number to the *logarithms* of the diviſor, the dividend, and the *logarithm* of unity. The *logarithm* of unity, therefore, being 0, the difference of the *logarithm* of the diviſor, and that of the dividend, is the *logarithm* of the quotient. *q. e. d.*

Hence appears another great advantage of *logarithms*, viz. their expediting the buſineſs of diviſion, and performing it by a bare ſubſtraction. *E. gr.* 2, the difference between 7 and 5, is the *logarithm* of the quotient 4, out of 128 by 32. In like manner, 5, the difference between 8 and 3, is the *logarithm* of the quotient 32, out of 256 by 8.

An example or two will render the uſe of *logarithms* in multiplication, diviſion, *&c.* obvious.

	Num.	*Log.*		*Num.*	*Log.*	
Multiply	68	1.83250	Divide	816	2.91168	9
by	12+	1.07918	by	12	1.07918	9
	816	2.91168		68	1.83250	*Sq.* 81
	9	0.95424		9	0.95424	
	9	0.95424		9	0.95424	
Sq.	81	2)1.90848(0.95424 *ſq.R.*		9	0.95424	
			Cube	729	3)2.86272(0.95424 *Cube R.*	

The properties of *logarithms* hitherto mentioned, and their various uſes, are taken notice of by Stifelius: but come all far ſhort of the uſe of *logarithms* in trigonometry, firſt diſcovered by the lord Napier.

To find the logarithm *of any number, and to conſtruct a canon of* logarithms *for natural numbers.* — 1°. Becauſe 1. 10. 100. 1000. 10000. *&c.* conſtitute a geometrical progreſſion, their *logarithms* may be taken at pleaſure: to be able, then, to expreſs the *logarithms* of the intermediate numbers by decimal fractions, take 0.00000000, 1.00000000, 2.00000000, 3.00000000, 4.00000000, &c. — 2°. It is manifeſt, that for thoſe numbers which are not contained in the ſcale of geometrical progreſſion, the juſt *logarithms* cannot be had: yet may they be had ſo near the truth, that, as to matters of uſe, they ſhall be altogether as good as if ſtrictly juſt. — To make this appear, ſuppoſe the *logarithm* of the number 9 were required: between 1.0000000 and 10.0000000, find a mean proportional, and between their *logarithms* 0.00000000 and 1.00000000 an equidifferent mean, which will be the *logarithm* thereof; that is, of a number exceeding three by $\frac{1622777}{10000000}$, and therefore far remote from nine. Between 3 and 10, therefore find another mean proportional, which may come ſomewhat nearer 9; and between 10 and this mean another ſtill; and ſo on between the numbers next above and next underneath 9, till at laſt you arrive at $9\frac{0000000}{10000000}$; which not being one millionth part from 9, its *logarithm* may, without any ſenſible error, be taken for that of 9 itſelf. Seeking then in each caſe for the *logarithms* of the mean proportionals, you will at laſt have 0.954251, which is exceedingly near the true *logarithm* of 9.—3°. If in like manner you find mean proportionals between 1.0000000 and 3.1622777, and aſſign convenient *logarithms* to each, you will at length have the *logarithm* of the number 2, and ſo of the reſt. — 4°. There needs not however, be ſo much pains taken in inveſtigating the *logarithms* of all numbers; ſince thoſe that conſiſt of aliquot parts being divided, and others mutually multiplying each other, their *logarithms* are eaſily found. — Thus if the *logarithm* of the number 9 be biſſected, we ſhall have the *logarithm* 0.47712125 of the number 3.

The indices, or characteriſtics of *logarithms*, correſpond to the denominative part of the natural numbers, as the other member of the *logarithm* does, to the denominative part of the number: *i. e.* the index ſhews the denomination, or place of the laſt (or left hand) figure of the number, and conſequently of all the reſt. — Thus 0, affixed to a *logarithm*, denotes the laſt figure of the number, to which the *logarithm* anſwers, to be nothing diſtant (*i. e.* is in) the place of units. The index 1 ſhews the laſt figure of its number to be diſtant 1 place from the place of units, *i. e.* to be in the place of tens, and conſequently the number itſelf to be either 10, or ſome number between that and 100, and ſo of the other indices.—Hence all numbers, which have the ſame denominative, but not the ſame numerative parts, as all numbers from 1 to 10, from 10 to 100, *&c.* will have *logarithms*, whoſe indices are the ſame, but the other members different. Again, all numbers which have the ſame numerative, but not denominative part, will have different indices; but the reſt of the *logarithms* the ſame.—If a number be purely decimal, to its *logarithm* is affixed a negative index, ſhewing the diſtance of its firſt ſignificative figure, from the place of units.—Thus the *logarithm* of the decimal, 256 is $\bar{1}.40824$, of the decimal ,0256 is $\bar{2}.40824$, *&c.*

The firſt canon of *logarithms* for natural numbers, from 1 to 20000, and from 90000 to 100000, was conſtructed by Hen. Briggs, with the approbation of the inventor, the lord Napier, and the manner of conſtructing them ſhewn. — The chaſm between 20000 and 90000, was filled up by Adrian Ulach.—In the common tables we have only a canon from 1 to 10000. — There are various other methods of conſtructing *logarithms*, by Dr. Halley, Mr. Cotes, Dr. Brook Taylor, *&c.* which the reader may find in the *Philoſophical Tranſactions*.

To find the logarithm *for a number greater than any in the common canon, but leſs than* 10000000. — Cut off four figures on the left of the given number, and ſeek the *logarithm* in the table; add as many units to the index, as there are figures remaining on the right; ſubſtract the *logarithm* found from that next following it, in the table: then, as the difference of numbers in the canon, is to the tabular diſtance of the *logarithms* anſwering to them, ſo are the remaining figures of the given number to the logarithmic difference; which, if it be added to the *logarithm* before found, the ſum will be the *logarithm* required. Suppoſe, *v. gr.* the *logarithm* of the number 92375 required. Cut off the four figures 9237, and to the characteriſtic of the *logarithm* correſponding to them, add an unit; then,

From the *logarith.* of the numb. 9238=3.9655780
Subſtract. *logarith.* numb. ————9237=3.9655309

Remains tabular difference 471

10—471—5
5) 2 —— 1
235

Now to the *logarithm* ——————————4.9655309
Add the difference found ——————————235
The ſum is the *logarithm* required————4.9655544

To find the logarithm *of a fraction* —Subſtract the *logarithm* of the numerator, from that of the denominator, and to the remainder prefix the ſign of ſubſtraction. —Thus ſuppoſe it required to find the *logarithm* of the fraction $\frac{3}{7}$,

Logarithm of 7=0.8450980
Logarithm of 3=0.4771213

Logarithm of $\frac{3}{7}$=0.3679767

The reaſon of the rule is, That a fraction being the quotient of the denominator divided by the numerator; its *logarithm* muſt be the difference of the *logarithms* of thoſe two; ſo that the numerator being ſubſtracted from the denominator, the difference becomes negative. — Stifelius obſerved, that the *logarithms* of a proper fraction, muſt always be negative, if that of unity be 0; which is evident, a fraction being leſs than one.

For an improper fraction, *v. gr.* $\frac{9}{5}$, its numerator being greater than its denominator, its *logarithm* is had, by ſubſtracting the *logarithm* of the latter, from that of the former.

The *logarithm* of 9=0.9542425
Logarithm of 5=0.6989700

Logarithm $\frac{9}{5}$=0.2552725

In the ſame manner may a *logarithm* of a mixt number, as $3\frac{2}{7}$ be found, it being firſt reduced into an improper fraction o$\frac{23}{7}$.

To find the number correſponding to a logarithm *greater than any in the table.* — Firſt from the given *logarithm*, ſubſtract the *logarithm* of 10, or 100, or 1000, or 10000, till you have a *logarithm* that will come within the compaſs of the table; find the number correſponding to this, and multiply it by 10, or 100, or 1000, or 10000, the product is the number required. Suppoſe, for inſtance, the number correſponding to the *logarithm* 7.7589982 be required; ſubſtract the *logarithm* of the number 10000, which is 4.0000000, from 7.589982; the remainder is 3.7589982, the number correſponding to which is 5741$\frac{11}{100}$, this multiplied by 10000, the product is 57411100, the number required.

To find the number correſponding to a negative logarithm. —To the given negative *logarithm*, add the laſt *logarithm* of the table, or that of the number 10000; *i. e.* ſubſtract the firſt from the ſecond, and find the number correſponding to the remainder; this will be the numerator of the fraction, whoſe denominator will be 10000; *v. gr.* ſuppoſe it be required to find the fraction correſponding to the negative *logarithm*——————————0.3679767, ſubſtract this from 4.0000000

The remainder is———— 3.6320233, the number correſponding to which is 4285$\frac{71}{100}$, the fraction ſought therefore is $\frac{428571}{1000000}$.—The reaſon of the rule is, that as a fraction is the quotient, ariſing on the diviſion of the numerator by the denominator, unity will be to the fraction, as the denominator to the numerator; but as unity is to the fraction correſponding to the given negative *logarithm*, ſo is 10000 to the number correſponding to the remainder; therefore if 10000 be taken for the denominator, the number will be the numerator of the fraction required.

To find a fourth proportional to three given numbers. — Add the *logarithm* of the ſecond to that of the third, and from the ſum ſubſtract the *logarithm* of the firſt; the remainder is the *logarithm* of the fourth required. *E. gr.* let the given numbers be 4. 68. and 3.

Logarithm 68=1.8325089
Logarithm 3=0.4771213
Sum=2.3096302
Logarithm 4=0.6020600
Logarithm required 1.7075702

The number in the tables correſponding to which is 51. — This problem is of the utmoſt uſe in trigonometry. See TRIANGLE, and TRIGONOMETRY.

LOGIC*, the art of thinking juſtly; or of making a right uſe of our rational faculties, in defining, dividing, and reaſoning. See THINKING, REASONING, *&c.*

* The word is Greek, λογικη, derived from λογ𝔬ς, *ſermo*, diſcourſe; in regard, thinking is only an inward, mental diſcourſe, wherein the mind converſes with itſelf.

Logic is alſo ſometimes called *dialectica*; and ſometimes the *canonical art*, as being a canon, or rule, for directing us in our reaſonings. See DIALECTICA.

As, in order to think aright, it is neceſſary that we apprehend, judge, diſcourſe, and diſpoſe or methodize rightly: hence apprehenſion, judgment, diſcourſe, and method, become the four fundamental articles of this art; and it is from our reflections on thoſe operations of the mind, that *logic* is, or ought to be wholly drawn. See PERCEPTION, JUDGMENT, DISCOURSE, *&c.*

Lord Bacon divides *logic* into four branches, according to the ends propoſed in each: for a man reaſons, either to find what he ſeeks, or to judge of what he finds, or to retain what he judges, or to teach what he retains; whence ariſe ſo many arts of reaſoning, *viz.* the art of *inquiſition*, or invention; the art of *examining*, or judgment; the art of *preſerving*, or of memory; and the art of *elocution*, or delivering. See MEMORY, ELOCUTION, *&c.*

Logic having been extremely abuſed, is now in ſome diſrepute. The ſchools have ſo clogged it with barbarous terms and phraſes, and have run it out ſo much into dry, uſeleſs ſubtilties, that it ſeems rather intended to exerciſe the mind in wrangling and diſputation, than to aſſiſt it in thinking juſtly. It is true, in its original, it was rather intended as the art of cavilling, than of reaſoning; the Greeks, among whom it had its riſe, being a people who piqued themſelves mightily upon their being able to talk ex tempore, and to argue, by turns, on either ſide the queſtion. — Hence their dialectici, to be always furniſhed with arms for ſuch rencounters, invented a ſet of words and terms, rather than rules and reaſons, fitted for the uſes of contention and diſpute. See SOPHIST, DISPUTATION, SYLLOGISM, *&c.*

Logic, then, was only an art of words, which frequently had no meaning, but ſerved well to hide ignorance, inſtead of improving knowledge; to baffle reaſon inſtead of aſſiſting it; and to confound the truth, inſtead of clearing it.—Much of that heap of words, and rules, which we have borrowed from the old *logic*, is of little uſe in life; and is ſo far out of the common uſage, that the mind does not attend to them without trouble; and finding nothing in them to reward its attention, ſoon diſcharges itſelf, and loſes all ideas it had conceived of them.

But *logic* diſengaged from the jargon of the ſchools, and reduced into a clear and intelligible method, is the art of conducting the underſtanding in the knowledge of things, and the diſcovery of truth. See TRUTH, KNOWLEDGE, *&c.*

From its proper uſe we gain ſeveral very conſiderable advantages; for 1°. The conſideration of rules, incites the mind to a cloſer attention and application in thinking; ſo that we hereby become aſſured that we make the beſt uſe of our faculties. 2°. We hereby, more eaſily, and accurately diſcover, and point out the errors and defects in our reaſoning; for the common light of reaſon, unaſſiſted by *logic*, frequently obſerves an argumentation to be faulty, without being able to determine wherein the preciſe failure conſiſts. — 3°. By theſe reflections on the order and manner of the operations of the mind, we are brought to a more juſt and complete knowledge of the nature of our own underſtanding. See SOUL, UNDERSTANDING, *&c.*

LOGICAL *Concrete.* } See the article { CONCRETE.
LOGICAL *Part.* } { PART.

LOGISTA, the title of an officer at Athens, whoſe buſineſs was to receive, and paſs the accounts of magiſtrates, when they came out of their office.

The *logiſtæ* were in number ten: they were elected by lot; and had ten euthyni, or auditors of accounts, under them.

LOGISTIC, or *Logarithmic line*, a curve ſo called, from its properties and uſes, in conſtructing and explaining the nature of logarithms.

If the right line AX, (*Tab. Analyſis, fig.* 37.) be divided into any number of equal parts, and to the points of thoſe diviſions A, P, p, &c. be drawn lines continually proportional, the points N, M, m, &c. form the *logiſtic*, or *logarithmic line*, or *curve*.

Here the abſciſſes AP, Ap, &c. are the logarithms of the ſemiordinates PM, pm, &c.

Hence, if $AP = x$, $Ap = v$, $PM = y$, $pm = z$, and their logarithms y and $z = ly$ and lz; x will be $= ly$, and $v = lz$, conſequently $x : v = ly : lz$, that is, the denominators of the ratio's $AN : PM$, and $AN : pm$, are to one another, as the abſciſſes AP and Ap.

Hence it follows, that there may be infinite other *logiſtic* lines invented, provided $xm : vm :: ly : lz$, that any of the roots or powers, may be the logarithms of the ſemiordinates.

The *logiſtic* will never concur with the axis, except at an infinite diſtance, ſo that AX is its aſymptote.

Quadrature of the LOGISTIC. See the article QUADRATURE.

LOGISTIC, or *logarithmic Spiral*, a line whoſe conſtruction is as follows. — Divide the quadrant of a circle into any number of equal parts, in the points P, p, p, &c. (*Tab. Analyſis, fig.* 22.) and from the radii CP, Cp, Cp, &c. cutting off CM, Cm, Cm, &c. continually proportional, the points M, m, m, &c. form the *logiſtic ſpiral*.

The arches therefore AP, Ap, &c. are the logarithms of the ordinates CM, Cm, &c. whence alſo it follows, that there may be infinite *logiſtic* ſpirals.

LOGISTICA, or LOGISTICAL *Arithmetic*, a denomination ſometimes given to the arithmetic of ſexageſimal fractions, uſed by aſtronomers in their calculations. See SEXAGESIMAL.

It was ſo called from a Greek treatiſe of one Barlaamus Monachus, who wrote about ſexageſimal multiplication very accurately, and entitled his book Λογιςικη. This author Voſſius places about the year 1350, but miſtakes the work for a treatiſe of algebra.

Shakerly, in his *Tabulæ Britannicæ*, has a table of logarithms adapted to ſexageſimal fractions, which therefore he calls *logiſtical logarithms*; and the expeditious arithmetic of them, which is by this means obtained, and by which all the trouble of multiplication and diviſion is ſaved, he calls *logiſtical arithmetic*. See ARITHMETIC.

LOGOGRIPHUS *, a kind of ſymbol, or riddle, propoſed to ſtudents for their ſolution, in order to exerciſe and improve the mind. See ÆNIGMA.

* The word comes from the Greek λογος, diſcourſe, and γϱιφος, or γϱιπος, net.

The *logogriphus* uſually conſiſts in ſome equivocal alluſion, or mutilation of words, which, literally taken, ſignify ſomething different from the thing intended by it; ſo that it is a kind of medium, between a rebus, and proper ænigma. See REBUS, *&c.*

According to Kircher, *logogriphi* are a kind of canting arms: Thus a perſon called Leonard, who bore in his arms a lion, and nard, or ſpikenard; according to that father, made a *logogriphe*. *Oedip. Egypt.*

In another place, the ſame author defines *logogriphus* to be an ænigma, which, under one name or word, will bear various meanings, by adding or retrenching ſome part of it. — This kind of ænigmas is well known to the Arabs, among whom are authors who treat expreſly of it.

LOHOCH. See the article LOCH.

LOINS, *Lumbi*, in anatomy, that part of the body about the reins; properly the lower part of the ſpine of the back, compoſed of five vertebræ, larger than thoſe of the back, and ſerving them as a baſe; having their articulations pretty looſe, that the motion of the *loins* may be more free. — See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 14. *fig.* 7. *n.* 16. *fig.* 9. * *fig.* 11. ſee alſo SPINE, and VERTEBRA.

LOLLARDS *, a religious ſect which aroſe in Germany, about the beginning of the fourteenth century; ſo called from its author Walter Lollard, who began to dogmatize in 1315.

* The monk of Canterbury derives the origin of the word *lollard* among us from *lolium*, a tare, as if the *Lollards* were the tares ſown in Chriſt's vineyard. — Abelly ſays, that the word *lollard* ſignifies *praiſing God*, from the German *loben*, to praiſe, and *Herr*, Lord; becauſe the *Lollards* imployed themſelves in travelling about from place to place, ſinging pſalms and hymns.

Lollard, and his followers, rejected the ſacrifice of the maſs, extreme unction, and penances for ſin; arguing that Chriſt's ſufferings were ſufficient. He is likewiſe ſaid to have ſet aſide baptiſm, as a thing of no effect; and repentance, as not abſolutely neceſſary, *&c.* — Lollard was burnt alive at Cologne, in 1322.

In England the followers of Wickliff were called, by way of reproach, *Lollards*, from ſome affinity there was between ſome of their tenets; though others are of opinion, that the Engliſh *Lollards* came from Germany. See WICKLIFFITE.

They were ſolemnly condemned by the archbiſhop of Canterbury, and the council of Oxford.

LONG *Accent*, in grammar, *&c.* a mark which ſhews that the voice is to ſtay ſome time on the vowel which it is placed over. See ACCENT.

Its figure is thus (-).

LONG *Boat*, is the largeſt and ſtrongeſt boat belonging to a ſhip, that can be hoiſted a-board of her. See BOAT.

Its uſe is to bring any goods, proviſions, *&c.* to, or from the ſhip; or, on occaſion, to land men any where, and particularly to weigh the anchor.

LONG *Hand.* } See { *Long* HAND.
LONG *Meaſure.* } See { MEASURE.
LONG *Muſcles*, in anatomy. } See { LONGUS.

LONGÆVITY, length of life. See LIFE, and AGE.

From the different *longævities* of men in the beginning of the world, after the flood, and in theſe ages, Mr. Derham draws a good argument, for the interpoſition of a divine providence.

Immediately after the creation, when the world was to be peopled by one man and woman, the ordinary age was 900 and upwards. — Immediately after the flood, when there were three perſons to ſtock the world, their age was cut ſhorter, and none of thoſe patriarchs, but Shem, arrived at 500. — In the ſecond century we find none that reached 240: in the third, none but Terah that came to 200 years: the world, at leaſt a part of it, by that time being ſo well peopled, that they had built cities, and were cantoned out into diſtant nations. — By degrees, as the number of people increaſed, their *longævity* dwindled; till it came down at length to 70 or 80 years: and there it ſtood, and has continued to ſtand ever ſince the time of Moſes. — This is found a good medium, and by means hereof the world is neither overſtocked, nor kept too thin; but life and death keep a pretty equal pace. See MORTALITY, MARRIAGE, ANNUITY, *&c.*

That the common duration of man's life has been the ſame in all ages ſince the world was peopled, is plain both from ſacred, and profane hiſtory. To paſs by others, Plato lived to 81, and was accounted an old man; and the inſtances of *longævity* produced by Pliny, L. 7. c. 48. as very extraordinary, may moſt of them be matched in modern hiſtories; particularly in Dr. Plott's *Nat. Hiſt. of Oxf. and Staff.* — Among others, he tells of twelve tenants to the ſame perſon, who made up 1000 years; to ſay nothing of old Parr, who lived 152 years, 9 months; or of H. Jenkins of Yorkſhire, who lived 169 years; or of the counteſs of Deſmond, or Mr. Eckleſtone, both of Ireland, who each exceeded 140 years.

LONGIMETRY, the art of meaſuring lengths; both acceſſible, as roads, *&c.* and inacceſſible, as arms of the ſea, *&c.* See MEASURING.

Longimetry is a part of trigonometry, and a dependant on geometry, in the ſame manner as altimetry, planimetry, ſtereometry, *&c.*

The art of *longimetry*, ſee under the names of the inſtruments uſed in it, particularly THEODOLITE, CHAIN, *&c.*

LONGISSIMUS *Dorſi*, is a muſcle of the back, which, at its beginning, is not to be diſtinguiſhed from the ſacro-lumbaris; ariſing with it from the hinder part of the os ilium, and os ſacrum, and the firſt vertebra of the loins.

It runs upwards along the whole tract of the back, and is connected by tendons to each tranſverſe proceſs in its way, and ends ſometimes in the firſt vertebra of the back, and ſometimes in the firſt of the neck; and, as ſome authors ſay, reaches now and then to the proceſſus mammillaris of the os petroſum.

In conjunction with ſome others, this helps to keep the body erect.

LONGISSIMUS *Oculi.* See OBLIQUUS *Superior*.

LONGITUDE *of the Earth*, is ſometimes uſed to denote its extent from weſt to eaſt; according to the direction of the equator. See EARTH.

By which it ſtands contradiſtinguiſhed from *latitude of the earth*, which denotes its extent from one pole to the other. See LATITUDE.

LONGITUDE *of a Star*, in aſtronomy, is an arch of the ecliptic, counted from the beginning of Aries, to the place where a ſtar's circle of *longitude* cuts the ecliptic.

The *longitude* of a ſtar, as S, (*Tab. Aſtronomy*, *fig.* 14. *n.* 2.) is an arch of the ecliptic E L, comprehended between the beginning of Aries, and the circle of longitude T M, drawn through the centre of the ſtar *S*.

Longitude ſtands in the ſame relation to the ecliptic, that *right aſcenſion* does to the equator. See ASCENSION.

In which ſenſe, the *longitude* of a ſtar amounts to much the ſame as the ſtar's place in the ecliptic, reckoned from the beginning of Aries; which to find, ſee PLACE *of the Sun, or Star*.

LONGITUDE *of the Sun*, or *a Star*, from the next equinoctial point, is the number of degrees and minutes they are from the beginning of Aries or Libra, either before or after them; which can never be more than an 180 degrees.

LONGITUDE *of a place*, in geography, is its diſtance from ſome firſt meridian; or an arch of the equator, intercepted between the meridian of the place, and the firſt meridian. See MERIDIAN.

LONGITUDE, in navigation, is the diſtance of a ſhip or place, eaſt or weſt, from another, counted in degrees of the equator.

If this diſtance be counted in leagues or miles, or in degrees of the meridian, and not in thoſe proper to the parallel of latitude, it is uſually called *departure*. See DEPARTURE.

To diſcover an exact method of finding the *longitude* at ſea, is a problem that has extremely preplexed the mathematicians of theſe two laſt ages; and for the ſolution whereof, great rewards have been publickly offered by the Engliſh, French, Dutch, and other nations: this being the only thing wanting to render navigation perfect. Various are the attempts that authors have made for this purpoſe, and various the methods they have propoſed; but ſtill without ſucceſs; all their ſchemes being found either falſe, precarious, impracticable, or in ſome way or other defective: ſo that the palm is ſtill unaſcertained.

What moſt of them aim at, is a method of determining the difference of time between any two points on the earth: for, every 15 degrees of the equator anſwering to an hour, *i. e.* one degree to 4 minutes of time, and one minute of a degree to 15 ſeconds of time; the difference of time being known, and turned into degrees, will give the *longitude*, and vice verſa. See TIME.

This, ſome have pretended to effect by clocks, watches, and other automata; but always in vain; no time-keeper, excepting a pendulum (which cannot be applied at ſea) being ſufficiently ſure and exact for the purpoſe. See PENDULUM.

Others, with more probability, and to better purpoſe, ſearch for a means to find the *longitude* in the heavens: for, if the exact times of any celeſtial appearance be known for two places, the difference of thoſe times gives that of the *longitude* of thoſe places. — Now in the ephemerides, we have the motions of the planets, and the times of all the celeſtial phænomena, as the beginning and ending of eclipſes, conjunctions of the moon with other planets, its entrance into the ecliptic, *&c.* accurately calculated for ſome one place. Therefore if the hour and minute be known, wherein any of the ſame phænomena are obſerved in an unknown place, the difference between the hour and minute, of that place, and that other to which the tables are calculated, and conſequently the difference of their meridians, and their *longitude* from each other, are known alſo.

Now the difficulty, here, does not conſiſt in the exact finding of the time, which is eaſily had from the ſun's altitude or azimuth; but the defect lies in the paucity of proper appearances, capable of being thus obſerved: for all ſlow motions (*v. gr.* that of Saturn) are at once excluded; as ſhewing but little difference in a conſiderable ſpace of time; and it being here required, that the phænomenon be ſenſibly varied in two minutes time, an error of two minutes in time producing another of thirty miles in the *longitude*. — Now there are no phænomena in the heavens that have theſe requiſites, excepting the ſeveral ſtages of an eclipſe of the moon; her *longitude*, or place in the zodiac; her diſtance from the fixed ſtars, or appulſe to them; her ingreſs into the ecliptic, or the points of her orbit, where that cuts the ecliptic; and the conjunction, diſtance, and eclipſes of Jupiter's ſatellites. — Of each of which in their order.

1°. The method by the eclipſes of the moon, is very eaſy, and ſufficiently accurate, were there but eclipſes every night. — At the moment wherein we ſee the beginning or middle of a lunar eclipſe by a teleſcope, we have nothing to do but take the altitude or azimuth of ſome fixed ſtar, from which the hour and minute are eaſily found; or without the altitude, if the ſtar be in the meridian. — This hour and minute, therefore, thus found, and compared with that expreſſed in the tables, gives the *longitude*. See ECLIPSE.

2°. The moon's place in the zodiac, is a phænomenon more frequent than that of her eclipſes; but then the obſervation thereof is difficult, the calculus intricate and perplexed, by reaſon of two parallaxes; ſo that it is ſcarce practicable to any tolerable degree of accuracy. — Indeed, by waiting till the moon comes into the meridian of the place, and then taking the altitude of ſome remarkable ſtar, (the altitude being ſuppoſed to be firſt known) from this altitude, and the latitude, we ſhall be able to find the time pretty accurately; though it will be better to do it by ſome ſtar in the meridian. — Now, the time being found, it will be eaſy to find what point of the ecliptic is then in the meridian, or mid-heaven. — Thus we ſhall have the moon's place in the zodiac, correſponding to the time of our place. — Then, in the ephemeris, we find what hour it is in the meridian of the ephemeris, when the moon is in that part of the zodiac: thus we ſhall have the hour and minute of the two places for the ſame time; the difference of which, will give the difference of *longitude*.

3°. In regard there are many times when the moon cannot be obſerved in the meridian, there is therefore another ſtill more frequent phænomenon, from which the *longitude* is ſought, *viz.* the moon's appulſe, and receſs from the fixed ſtars: for from thence the moon's true place may be inveſtigated for the given time of obſervation. — But this method, by reaſon of the parallaxes, and the ſolution of oblique ſpherical triangles, and the various caſes, is ſo very difficult and perplexed, that mariners will ſcarce be able to make uſe of it; nor does it ſeem neceſſary here to give the praxis thereof. Thoſe, however, who are diſpoſed to uſe it, will find very great help in it from a ſtarry zodiac, publiſhed under the direction of Dr. Halley, containing all the ſtars to which the moon's appulſe can be obſerved.

4°. To find the *longitude* by the moon's ingreſs into the ecliptic, obſerve the moment of that ingreſs: then, in the ephemeris, ſee what hour it is in the meridian of the ephemeris, when that ingreſs happens. — The difference between theſe times, gives the difference of *longitude*. See MOON.

5°. The phænomena of Jupiter's ſatellites are generally preferred to thoſe of the moon, for finding the *longitude*; by reaſon the former are leſs liable to parallaxes, and do, further, afford a very commodious obſervation, in every ſituation of that planet above the horizon. — Their motion is very ſwift, and muſt be calculated for every hour; and for that reaſon are not found in the common ephemerides, but are had elſewhere.

Now, to find the *longitude* by means of theſe ſatellites; with a good teleſcope, obſerve a conjunction of two of them, or of one of them with Jupiter, or any other the like appearance; and, at the ſame time, find the hour and minute from the meridian altitude of ſome ſtar; then conſulting tables of the ſatellites, obſerve the hour and minute wherein ſuch appearance happens in the meridian of the place to which the tables are calculated. — The difference of time, as before, will give the *longitude*. See SATELLITES.

All methods which depend on the phænomena of the heavens having this one defect, that they cannot be obſerved at all times; and being, beſides, difficult of application at ſea, by reaſon of the motion of the ſhip; there are ſome, who, leaving the moon, and the ſatellites, have recourſe to clocks, and other automata: which, could they be made perfectly juſt and regular, ſo as to move with the ſun, without either gaining or loſing, and without being affected with the change of air, and of climates, the *longitude* would be had with all the eaſe and accuracy imaginable; nothing more being required but to ſet the machine by the ſun at the time of departure; and when the *longitude* of any place is deſired, to find the hour and minute from the heavens, (which is done at night by the ſtars, and in the day by the ſun;) for the difference between the time, thus obſerved, and that of the machine, gives the *longitude*. — But no ſuch machine has been yet diſcovered: wherefore recourſe has been ſtill further had to other methods.

Mr. Whiſton and Mr. Ditton have propoſed a method of determining the *longitude*, by the flaſh and report of great guns. — Sounds, it is known, move pretty equably in all their ſtages, whatever the ſonorous body be that occaſions them, or whatever the medium that conveys them. If then a mortar or great gun be exploded at a place whoſe *longitude* is known, the difference between the time wherein the flaſh (which moves, as it were, inſtantaneouſly) is ſeen, and the ſound, which moves at the rate of four ſeconds in a mile, is heard, will give the diſtance of thoſe places from each other; whence, if their latitudes be known, the difference of *longitude* will be likewiſe known. See SOUND, *&c.*

Again, if the hour and minute of the exploſion be known, (for the place where it is made) by obſerving the hour and minute from the ſun or ſtars, at the place whoſe *longitude* is required; the difference between thoſe times, will give the difference of *longitude*.

Again, if the ſaid mortar be loaden with an iron ſhell full of combuſtible matter, and poſited perpendicularly, it will carry the ſame a mile high, which will be ſeen near a hundred miles; if therefore neither the ſound ſhould be heard, nor the flaſh ſeen, the diſtance of any remote place from the place of the mortar, may be determined from the altitude of the ſhell above the horizon of the place unknown: and the diſtance and latitudes known, the *longitude* is eaſily found.

According to this ſcheme, it was propoſed to have ſuch mortars fixed at proper diſtances, and at known ſtations, on all the frequented coaſts, iſlands, capes, &c. and to be exploded at certain hours, for the obſervation of mariners.

This method, though good in the theory, yet is found uſeleſs in the practice; as being extremely troubleſome, and yet precarious.—It ſuppoſes that ſounds may be heard forty, fifty, or ſixty miles; of which, it is true, we have inſtances, but they are very rare; and, ordinarily, the report of a cannon is not heard above half ſo far; and ſometimes much leſs.—It ſuppoſes, again, ſound to move always with equal velocity; whereas, in fact, its velocity is increaſed or diminiſhed as it moves with or againſt the wind.—It ſuppoſes, again, the ſtrength of powder uniform; and that the ſame quantity carries the ſame range; the contrary whereof is known to every gunner.—We ſay nothing of thick cloudy nights, when no lights can be ſeen; nor of ſtormy nights, when no ſound can be heard; even at inconſiderable diſtances.

8°. We have another method of finding the *longitude*, propoſed by the ſame Mr. Whiſton, *viz.* by the inclinatory, or dipping-needle: which ſee under the article DIPPING-*Needle*.

Angle of LONGITUDE.	See	ANGLE.
Argument of LONGITUDE.		ARGUMENT.
Circles of LONGITUDE.		CIRCLE.
Degree of LONGITUDE.		DEGREE.
Parallax of LONGITUDE.		PARALLAX.
Refraction of LONGITUDE.		REFRACTION.

LONGITUDE *of Motion*, is uſed by Dr. Wallis for the meaſure of motion, eſtimated according to the line of direction; on which principle, *longitude* of motion is the diſtance, or length, which the centre of any moving body runs through, as it moves on in a right line. See MOTION.

The ſame author calls the meaſure of any motion, eſtimated according to the line of direction of the vis motrix, the *altitude* of it.

Bellini alſo uſes the terms *longitude*, and *altitude* in the ſame ſenſe, in many places of his writings, which an ordinary reader finds hard to underſtand, for want of this interpretation. By *altitude* alſo, in his nineteenth propoſition *de febribus*, he means the thickneſs of the viſcid matter in the blood-veſſels; or the greateſt length a viſcid particle is extended into, from the ſide of the canal to its axis.

LONGITUDINAL, in anatomy, is uſed to ſignify ſome part, or member extended in length, or poſited lengthwiſe.

The membranes which compoſe the veſſels, are woven out of two kinds of fibres, the one *longitudinal*, the other *circular*, cutting the *longitudinal* at right angles. See MEMBRANE.

The *longitudinal* fibres are tendinous and elaſtic; the *circular*, muſculous and motrices, like ſphincters. See FIBRE.

LONGUS, LONG, an epithet given by anatomiſts to a great number of muſcles, hereby contradiſtinguiſhed from *breves*. See BREVIS.

The ſecond extenſor of the carpus is called *longus*, in compariſon of the third extenſor, which is called *brevis*, ſhort.

The *longus* has its origin in the bottom of the humerus, and lying along the radius, paſſes underneath the ligamentum annulare, and is inſerted into the carpus.

The ſecond of the flexors of the neck is alſo called the *longus*, or *longus colli*, and ſometimes *rectus*.—It has its origin in the lateral part of the body of the four upper vertebræ of the back, and is inſerted into the body of the four vertebræ of the neck, and ſometimes into the occiput: this, in conjunction with the ſcalenum, bends the neck.

The third of the ſix muſcles of the elbow, or arm, which is the firſt of its extenſors, is alſo called *longus*, as being the longeſt of the extenſors.—It has its origin on the upper ſide of the omoplate, near the neck, and deſcending by the hind part of the arm, is inſerted into the olecranum by a ſtrong aponeuroſis, which is common to it and the ſecond and third extenſor of the arm.

The ſecond muſcle of the thumb, which is the firſt of its extenſors, is alſo called *longus*, as being longer than another extenſor of the ſame thumb, called *brevis*.—The *longus* proceeds from the upper and external part of the bone of the elbow, and, riſing over the radius, is inſerted, by a forked tendon, into the ſecond bone of the thumb, which it extends.

One of the four muſcles of the radius is alſo called the *longus*.—This is the firſt of the two ſupinators, and has its origin three or four fingers breadth above the outer apophyſis of the humerus, whence running along the radius, it is inſerted into the inner parts of its lower apophyſis.—It is called *longus* with regard to the other ſupinator, which is called *brevis*.—Theſe two muſcles ſerve to turn the radius, ſo as the palm of the hand looks upwards; which makes the ſupination.

The firſt of the abductors of the leg is alſo called the *longus*, or *longus tibiæ*, and bears this title more juſtly than any of the others, as being the longeſt muſcle in the whole body.—It is alſo denominated *faſcialis*, on account of its bearing ſome reſemblance to a (*faſcia*) ſwathe; and *ſartorius*, or taylor's muſcle, becauſe it ſerves to bend the legs inward, as the taylors uſe to have them when at work. See *Tab. Anat. (Myol.) fig. 1. n. 40. fig. 2. n. 38.*

LONGUS *Cubiti*, is a muſcle, which, with others, extends the cubitus.—It ariſes from the inferior coſta of the ſcapula, nigh its neck, and paſſing betwixt the two round muſcles, deſcends on the back ſide of the humerus; where it joins with the brevis, and brachiæus externus.

LOOF, or, as it is uſually pronounced, LUFF, a term uſed in conding of a ſhip.—Thus,

LOOF *up*, is to bid the ſteerſman keep nearer to the wind.

LOOF *into an Harbour*, is to ſail into it cloſe by the wind.

To ſpring the LOOF, or *Luff*, is when a ſhip, that was going large before the wind, is brought cloſe by the wind.

When a ſhip ſails on a wind, that is, on a quarter-wind, they ſay to the ſteerſman, *keep your luff! veer no more! keep her to! touch the wind! have a care of the lee-latch!* All which words ſignify much the ſame thing, and bid the man at helm to keep the ſhip near the wind.

LOOF *of a Ship*, denotes that part of her aloft, which lies juſt before the cheſs-trees.

Hence, the guns which lie here are called *loof-pieces*.

LOOKING-*Glaſs*, a plain glaſs ſpeculum, or mirror, which being impervious to the light, reflects its rays, and ſo exhibits the images of objects placed before it. See GLASS, SPECULUM, REFLECTION, &c.

The theory of *looking-glaſſes* and the laws whereby they give the appearances of bodies, ſee under MIRROUR.

The manner of grinding and preparing LOOKING-*glaſſes*, is as follows:—A plate of glaſs is fixed to a horizontal table, and to another leſſer table is fixed another plate, over the hind part of which is added a box loaded with ſtones, and other weights.—Over the firſt plate is ſprinkled fine ſand and water, in a ſufficient quantity, for the grinding, and the ſecond or leſs plate is laid on it, and thus worked this and that way, till each has planed the other's ſurface.—As they begin to grow ſmoother, finer ſand is uſed, and at laſt powder of ſmalt.—Being thus fitted for poliſhing, a wooden parallelepiped, lined with tripoli earth, or burnt tin, tempered with water, is laid on the plate, and worked to and again, till the glaſs have got a perfect politure.

It is found extremely difficult to bring the glaſs to an exact plainneſs. Hevelius judges more art required to bring glaſs to a perfect plane, than to a ſphere.—For poliſhing large plates of glaſs, they have a machine for the purpoſe.

The plates being poliſhed, a thin blotting paper is ſpread on a table, and ſprinkled with fine chalk; and this done, over the paper is laid a thin lamina, or leaf of tin, on which is poured mercury, which is to be equally diſtributed over the leaf, with a hare's foot, or cotton. Over the leaf is laid a clean paper, and over that the glaſs plate.—With the left hand the glaſs-plate is preſſed down, and with the right the paper is gently drawn out; which done, the plate is covered with a thicker paper, and loaden with a greater weight, that the ſuperfluous mercury may be driven out, and the tin adhere more cloſely to the glaſs. When it is dried, the weight is removed, and the *looking-glaſs* is complete.

Some add an ounce of mercury, to half an ounce of marcaſite, melted by the fire; and let the mercury evaporate in ſmoke, pour it into cold water; and when cold, ſqueeze it through a cloth or leather. Some alſo add a quarter of an ounce of lead and tin to the marcaſite, that the glaſs may dry the ſooner. See FOLIATING.

LOOM, the weaver's frame; a machine whereby ſeveral diſtinct threads are wove into one piece. See WEAVING, and SHUTTLE.

Looms are of various ſtructures, accommodated to the various kinds of materials to be wove, and the various manner of weaving them; *viz.* for woollens, ſilks, linens cottons, cloths of gold; and other works, as tapeſtry, ribbands, ſtockings, &c. divers of which will be found under their proper heads.

Heir-LOOM, in law. See the article HEIR-*Loom*.

LOOP-*Holes*, in the ſea language, are *holes* made in the coamings of the hatches of a ſhip, to fire muſkets through in a cloſe fight.

LOOSE *Style*. See the article STYLE.

LOOSENED. See the article HOOF-*looſened*.

LORD*, a title of honour attributed to thoſe who are noble, either by birth, or creation; and veſted with the dignity of a baron. See NOBILITY, and BARON.

* The word is of Saxon origin, and primarily denotes a bread-giver, alluding to the hoſpitality of our antient nobles: It is formed, according to Camden, from hlaꝼoꞃꝺ, afterwards written loꝼeꞃꝺ; a compound of hlaꝼ, bread, and ꝼoꞃꝺ, to ſupply, afford.

In this ſenſe, *lord* amounts to the ſame with *peer* of the realm, *lord* of parliament. See PEER, and PARLIAMENT.

LORD is alſo applied to thoſe ſo called by the courteſy of England; as, all ſons of a duke, or marquis; and the eldeſt ſon of an earl.

Lord is alſo an appellation given to divers perſons honourable by office; as *lord* chief juſtice, *lord* chancellor, *lord* of the treaſury, admiralty, *&c.* See JUSTICE, CHANCELLOR, TREASURY, ADMIRAL, *&c.*

Lord is alſo a title ſometimes given to an inferior perſon who has a fee, and conſequently the homage of tenants within his manor. See FEE, and MANOR.

For by his tenants he is called *lord*, and in ſome places, for diſtinction ſake, *land-lord*.

It is in this laſt ſignification that the word *lord* is principally uſed in our law-books; where it is divided into *lord paramount*, and *lord meſn*.

Lord **Mesn**, is he that is owner of a manor, and by virtue thereof, hath tenants holding of him in fee, and by copy of court-roll; and yet holds himſelf of a ſuperior *lord*, called *lord paramount*. See PARAMOUNT.

We alſo read of *very lord*, and *very tenant*. See VERY.

Very **Lord**, is he who is immediate *lord* to his tenant; and *very tenant*, he who holds immediately of that *lord*.

So that where there is *lord* paramount, *lord* meſn, and tenant; the *lord* paramount is not very *lord* to the tenant.

Lord *High-admiral* of England, is one of the great officers of the crown, whoſe truſt and honour is ſo great, that it has ſeldom been given, excepting to ſome of the king's younger ſons, or near kinſmen. See ADMIRAL.

To him is, by the king, intruſted the management of all maritime affairs, as well in reſpect of juriſdiction, as protection; with the government of the Britiſh navy; and a power to decide all controverſies, and cauſes maritime, as well civil as criminal; ſuch as happen either on our own coaſts, or beyond ſea, amongſt his majeſty's ſubjects.

To him alſo belongs ſuch wrecks and prizes, as are called *lagon*, *jetſon*, and *flotſon*; that is, goods lying in the ſea floating, or caſt on ſhoar, excepting in ſuch royalties as are granted to other *lords* of manors, *&c.* with all great fiſhes, called *royal fiſh*, except whales and ſturgeon; a ſhare of prizes in time of war, and the goods of pirates and felons condemned. See FLOTSON, *&c.*

The *lord high admiral* has under him many officers of high and low condition; ſome at ſea, others at land; ſome of a military, others of a civil capacity: ſome judicial, others miniſterial.

In his court, called the *court of admiralty*, all proceſſes iſſue in his name, not the king's, as they do in all other courts; ſo that the dominion and juriſdiction of the ſea, may juſtly be ſtiled another commonwealth, or kingdom apart, and the *lord high-admiral*, viceroy of the maritime kingdom.

He hath under him a lieutenant, who is judge of the admiralty, commonly a doctor of the civil law; the proceedings in this court, in all civil matters, being according to the civil law: but in criminal matters, they proceed by a ſpecial commiſſion from the ſecretary, according to the laws of England. See ADMIRALTY.

Lord *Privy Seal*, has his office by patent: before the thirtieth of Henry VIII. he was, generally, an eccleſiaſtic; ſince which, the office has been uſually conferred on temporal peers, above the degree of barons. See PRIVY *Seal*.

The *lord privy-ſeal* receiving a warrant from the ſignet office, iſſues the privy-ſeal, which is an authority to the lord chancellor to paſs the great ſeal, where the nature of the grant requires the great ſeal.—But privy-ſeals for money begin in the treaſury, from whence the firſt warrant iſſues, counterſigned by the lord treaſurer.—On the *lord privy ſeal* are attendant four clerks, who have two deputies to act for them.

Lord *Steward of the King's Houſhold*, is the principal officer for the civil government of the king's ſervants below ſtairs; over the officers of which he has juriſdiction. See STEWARD, and HOUSHOLD.

He is conſtituted by the delivery of the white ſtaff, which is eſteemed his commiſſion. — By virtue of his office, without any other commiſſion, he judges of all offences committed within the court, or the verge thereof, and gives judgment according to their ſeveral deſerts.

At the death of the ſovereign, he breaks his ſtaff over the grave in which the royal corps is depoſited, and thereby diſcharges all the officers under his power.

Lord *Advocate.*	See the article	ADVOCATE.
Lord *High Treaſurer.*		TREASURER.
Lord *Chamberlain of the Houſhold.*	See CHAMBERLAIN.	
Lord *Great Chamberlain of England.*		
Lord *High Chancellor of England.*	See	CHANCELLOR.
Lords *of the Bed-chamber.*		BED-CHAMBER.
Lords *of the Treaſury.*		TREASURY.

Lords-*Lieutenants of Counties*, are officers of great diſtinction, appointed by the king for the managing the ſtanding militia of the county, and all military matters therein. See COUNTY.

They are generally of the principal nobility, and of the beſt intereſt of the county: they are to form the militia in caſe of a rebellion, *&c.* and march at the head of them, as the king ſhall direct. See MILITIA.

They have the power of commiſſioning colonels, majors, captains, and ſubaltern officers; alſo to preſent the king with the names of deputy-lieutenants; who are to be ſelected from the beſt gentry in the county, and act in the abſence of the *lords-lieutenants*.

Subſervient to the *lords-lieutenants*, and deputy-lieutenants, are the juſtices of peace; who, according to the order they receive from them, are to iſſue out warrants to the high and petty-conſtables, *&c.* for military ſervice, *&c.*

LOT, in a law ſenſe. See the article SCOT.

LOTION, **Lotio**, popularly called *waſh*; denotes a form of medicine made up of liquid matters, chiefly uſed for beautifying the ſkin, and cleanſing it from thoſe deformities which a diſtempered blood ſometimes throws on it; or rather, are occaſioned by a preternatural ſecretion. For, generally ſpeaking, thoſe diſtempers of the ſkin, which are accounted ſigns of a foul blood, proceed from the natural ſalts thrown off by the cutaneous glands, which ought to be waſhed away through the kidneys; ſo that inſtead of ſweetners, which are uſually preſcribed on theſe occaſions, Dr. Quincy thinks the urinary diſcharge ſhould be promoted, or that of the ſkin rectified by proper *lotions*, or ointments and frictions.

Lotion alſo denotes a remedy, holding a medium between a fomentation and a bath.

There are refreſhing and ſomniferous *lotions* for feveriſh perſons, made of leaves, flowers and roots boiled, wherewith the feet and hands of the patient are waſhed; and after waſhing, wrapped up in linen ſteeped in the ſame decoction till dry.

There are *lotions* alſo for the head and hair, made of the aſhes of vine-twigs.

Lotion *of the Philoſophers*, in chymiſtry, is a cohobation which nature makes of what is raiſed up, and afterwards falls back again to the bottom of the veſſel.

Lotion, in pharmacy, denotes a preparation of medicines, by waſhing them in ſome liquid, either made very light, ſo as to take away only the dregs; or ſharp, ſo as to penetrate them, in order to clear them of ſome ſalt, or corroſive ſpirit, as is done to antimony, precipitates, magiſteries, *&c.* or intended to take away ſome foulneſs, or other ill quality; or to communicate ſome good one. See ABLUTION.

LOTTERY, a kind of game at hazard, wherein ſeveral lots of merchandize, or ſums of money, are depoſited as prizes, for the benefit of the fortunate.

The deſign of *lotteries*, and the manner of drawing them, are too well known among us to need a deſcription: they are very frequent in England and Holland, where they cannot be ſet on foot without the permiſſion of the magiſtrate. —In France too, there have been ſeveral *lotteries* in favour of their hoſpitals.

M. le Clerk has compoſed a treatiſe of *lotteries*, wherein is ſhewn what is laudable, and what blameable in them. — Gregorio Leti has alſo a book on the ſubject of *lotteries*. — Father Meneſtrier has a treatiſe on the ſame, publiſhed in 1700; where he ſhews their origin, and uſe among the Romans.—He diſtinguiſhes ſeveral kind of *lotteries*, and takes occaſion to ſpeak of chances, and reſolves ſeveral caſes of conſcience relating thereto.

LOVE.	See the article	PLEASURE, and PAIN.
Platonic **Love.**		PLATONIC.

LOUIS, **Lewis**, **Louis d'or**, or **Lewidore**, a French coin, firſt ſtruck in 1640, under the reign of Louis XIII. and which has now a conſiderable currency. See COIN.

Louis d'ors, at firſt, were valued at ten livres, afterwards at eleven, and at length at twelve and fourteen. In the latter end of the reign of Louis XIV. they were riſen to twenty, and in the beginning of that of Louis XV. to thirty and thirty ſix, nay, forty and upwards; with this difference, however, that in the laſt coinings the weight was augmented in ſome proportion to the price, which in the former reign, was never regarded.

On one ſide of the coin is the king's head ſeen, with his name; and on the other, a croſs compoſed of eight L's cantoned with crowns. The legend is, *Chriſtus regnat, vincit, imperat.*—The reverſe has been frequently changed; at preſent, it bears a hand of juſtice croſſed in a ſaltier, with a ſcepter.

There are alſo *white* Louis's, or Louis *d'argent*; ſome of 120, others of ſixty ſols apiece, called alſo *ecus*; and among us, *French crowns*, *half crowns*, &c.

On the one ſide whereof is the king's head, and on the other the French arms, with this legend, *Sit nomen Domini benedictum.* See CROWN.

Knights of S. Louis, is the name of a military order, inſtituted by Louis XIV. in 1693.

Their collar is of a flame colour, and paſſes from left to right. — The king is their grand maſter. — There are in it eight great croſſes, and twenty four commanders. — The number of knights is not limited. At the time of their inſtitution, the king charged his revenue with a fund of three hundred thouſand livres, for the penſions of the commanders and knights.

LOW *Airs*, in horſemanſhip. See the article AIRS.

LOW *Flank*, in fortification.	See	FLANK.
LOW *Hemiſphere*.		HEMISPHERE.
LOW *Maſs*.		MASS.
LOW *Style*.		STYLE.

LOW-*Bellers*, in our ſtatute-books, are perſons who go in the night-time with a light and a bell; by the ſight and noiſe whereof, birds ſitting on the ground become ſtupefied, and ſo are covered with a net and taken.

LOWER *Exchequer*.	See the article	EXCHEQUER.
LOWER *Ocean*.		OCEAN.
LOWER *polar Dial*.		DIAL.
LOWERING *the Flag*.		FLAG.
LOWEST *Region*.		REGION.

LOXODROMIC *Table*. See the article TABLE.

LOXODROMICS, the art or method of oblique ſailing, by the loxodromy, or rhumb. See SAILING, and RHUMB.

LOXODROMY *, LOXODROMIA, the line which a ſhip deſcribes in ſailing on the ſame collateral rhumb. See RHUMB.

* The word is Greek, formed of λοξος, oblique, and δρομος, courſe.

The *loxodromy*, called alſo the *loxodromic line*, cuts all the meridians in the ſame angle, called the *loxodromic angle*. See ANGLE.

LOZENGE *, or LOZANGE, a kind of parallelogram, or quadrilateral figure, conſiſting of four equal and parallel lines, or ſides, whoſe angles are not right, but whereof two oppoſite ones are acute, and the other two obtuſe; the diſtance between the two obtuſe ones being always equal to the length of one ſide. See PARALLELOGRAM.

* Scaliger derives the word *lozenge* from *laurengia*; this figure reſembling, in ſome reſpects, that of a laurel-leaf.

In geometry, it is ordinarily called *rhombus*; and when the ſides are unequal, *rhomboides*. See RHOMBUS, and RHOMBOIDES.

LOZENGE, in heraldry, is a rhombus, or figure of equal ſides, but unequal angles: reſembling a quarry of glaſs in our old windows; placed erect, point-ways.—See *Tab. Herald. fig.* 69.

It is in this figure that all unmarried gentlewomen and widows bear their coats of arms; becauſe, as ſome ſay, it was the figure of the Amazonian ſhield; or, as others, becauſe it is the antient figure of the ſpindle.

The *lozenge* differs from the *fuſil*, in that the latter is narrower in the middle, and not ſo ſharp at the ends. See FUSIL.

LOZENGE is alſo a form of medicine, made into ſmall pieces, to be held or chewed in the mouth, till they are melted or waſted: the ſame with what are otherwiſe called *trochiſci*, *troches*. See TROCHE.

LUCARIA *, an antient feaſt celebrated by the Romans. — Sext. Pompeius obſerves, that the *Lucaria* were ſolemnized in the wood, where the Romans, defeated and purſued by the Gauls, retired and concealed themſelves.

* The word, according to Feſtus, and Sext. Pompeius, comes from *lucus*, a grove, or wood.—Varro derives it from *luce*, the ablative of the word *lux*, light, and liberty.—But the former etymology ſeems the more natural.

It was held in the month of July, in memory of the aſylum they found in that wood, which was between the Tyber and the road called Via ſalaria.

LUCIANISTS, or LUCANISTS, a religious ſect, ſo called from Lucianus, or Lucanus, a heretic of the ſecond century; being a diſciple of Marcion, whoſe errors he followed; adding ſome new ones to them.

Epiphanius ſays, he abandoned Marcion; teaching that people ought not to marry, for fear of enriching the Creator: and yet other authors mention, that he held this error in common with Maricon, and other Gnoſtics. — He denied the immortality of the ſoul; aſſerting it to be material. See MARCIONITES.

There was another ſect of *Lucianiſts*, who appeared ſome time after the Arians. — They taught, that the Father had been a Father always, and that he had the name even before he begot the Son; as having in him the power, or faculty of generation: and in this manner they accounted for the eternity of the Son.

LUCID *Intervals*, the fits of lunatics, or maniacs, wherein the phrenzy leaves them in poſſeſſion of their reaſon. See MADNESS, and PHRENZY.

It is ſaid, lunatics are capable of making a will in their *lucid intervals*. See TESTAMENT.

LUCIDA *Coronæ*, a fixed ſtar, of the ſecond magnitude, in the northern crown. See CORONA *Borealis*.

LUCIDA *Lyræ*, a bright ſtar, of the firſt magnitude, in the conſtellation Lyra. See LYRA.

LUCIDUM *Septum*. See the article SEPTUM.

LUCIFERIANS, a religious ſect, who adhered to the ſchiſm of Lucifer biſhop of Cagliari, in the fourth century.

S. Auguſtine ſeems to intimate, that they believed the ſoul tranſmitted to the children from their fathers. — Theodoret ſays, that Lucifer was the author of a new error. — The *Luciferians* increaſed mightily in Gaul, Spain, Egypt, &c. — The occaſion of the ſchiſm was, that Lucifer would not allow any acts he had done to be aboliſhed. — There were but two *Luciferian* biſhops, but a great number of prieſts and deacons. — The *Luciferians* bore a peculiar averſion to the Arians.

LUDI *Circenſes*.	See the article	CIRCENSES.
LUDI *Florales*.		FLORALES.

LUDICROUS *Games*. See the article GAMES.

LUES, in a general ſenſe, is uſed for a diſeaſe of any kind. See DISEASE.

LUES, in a more particular ſenſe, is reſtrained to contagious and peſtilential diſeaſes. See PLAGUE, &c.

LUES, in the more common and modern uſe of the word, eſpecially when joined with *gallica*, or *venerea*, is reſtrained only to the French pox. See VENEREAL *Diſeaſe*.

LUFF, a ſea term, the ſame with *loof*. See LOOF.

LULLY's *Art*. See the article ART.

LUMBAGO, pains about the loins, and the ſmall of the back; ſuch as precede ague-fits, and fevers.

They ariſe commonly from fullneſs, and acrimony; in common with a diſpoſition to yawning, ſhuddering, and erratic pains in other parts; and go off with evacuation, generally by ſweat, and other critical diſcharges of fevers.

LUMBAL *Glands*.	See the article	GLAND.
LUMBAL *Nerves*.		NERVE.

LUMBARIS, an epithet given to thoſe branches of the aorta, which carry the blood to the muſcles of the loins. See AORTA, and ARTERY.

LUMBARIS, is alſo applied to certain veins, which bring back the blood from the loins into the trunk of the vena cava. See VEIN.

There is alſo a muſcle of the thigh which bears this name. See PSOAS.

LUMBRICAL *, LUMBRICALIS, an appellation given to four muſcles of the hand, and as many of the feet, which act as adducents of the fingers, and toes.

* The word is formed from *lumbricus*, worm; on account of their figure, and ſmallneſs, which gives them a reſemblance to worms. — On which account, they are alſo called *vermiculares*.

LUMBRICALES *Manus*, are muſcles of the hands, commonly ſuppoſed to be nothing but branches of the tendons of the perforans, which go to the inſide of the firſt bone on each finger, and are ſuppoſed to contribute to the variety of motions with the fingers, by giving a diverſion to the direct actions of the other muſcles; but ſimply, they only ſerve to draw the fingers towards the thumb. — Though Mr. Cowper obſerves, that ſome of them have diſtinct origins; and ſuſpects that the reſt may have ſo too, and therefore makes them diſtinct muſcles.

LUMBRICALES *Pedis*, are muſcles of the foot, which ariſe, as in the hand, one from each tendon of the perforans, or profundus, and go to the inſide of each of the leſſer toes.

LUMINOSA *Semita*. See the article SEMITA.

LUMINOUS *Column*.	See the article	COLUMN.
LUMINOUS *Fire*.		FIRE.

LUNA, in aſtronomy, the moon. See the article MOON.

LUNA, in the jargon of the chymiſts, ſignifies *ſilver*; ſo called from the ſuppoſed influence of the moon thereupon.

The medicinal virtues of this metal, Dr. Quincy ſays, are none at all, until it have undergone very elaborate preparations. See SILVER.

Cryſtals of LUNA.	See the article	CRYSTAL.
Vitriol of LUNA.		VITRIOL.

LUNALE *Bezoardicum*. See the article BEZOARDICUM.

LUNAR, ſomething belonging to the moon. See MOON.

LUNAR *periodical Months*, conſiſt of twenty ſeven days, ſeven hours, and a few minutes.

LUNAR *ſynodical Months*, conſiſt of twenty nine days, twelve hours, and three quarters of an hour. See LUNATION.

LUNAR *Years*, conſiſt of three hundred and fifty four days, or twelve ſynodical months. See YEAR.

In the firſt ages, the year uſed by all nations was *lunar*; the variety of courſe being more frequent in this planet, and of conſequence more conſpicuous, and better known to men, than thoſe of any others. — The Romans regulated their year, in part, by the moon, even till the time of Cæſar. See YEAR.

The Jews too had their *lunar* months. — Some rabbins pretend, that the *lunar* month did not commence till the moment the moon began to appear; and that there was a law, which obliged the perſon who diſcovered her firſt, to go and inform the ſanhedrin thereof. — Upon which the preſident ſolemnly pronounced the month begun, and notice was given of it to the people by fires lighted on the tops of mountains. But this looks ſomewhat chimerical.

LUNAR *Dial*.	See the article	DIAL.
LUNAR *Eclipſe*.		ECLIPSE.
LUNAR *Horoſcope*.		HOROSCOPE.
LUNAR *Rainbow*.		RAINBOW.

LUNATIC, LUNATICUS, a perſon affected, or governed by the moon. — Hence, epileptics were antiently called *lunatici*, in regard the paroxyſms of that diſeaſe ſeem to be regulated by the changes of the moon. See EPILEPSY.

Mad people are ſtill called *lunatics*, from an antient opinion, that they are much influenced by that planet. — A much ſounder philoſophy hath taught us, that there is ſomething in it; but not in the manner the antients imagined; nor otherwiſe than what the moon has in common with other heavenly bodies, occaſioning various alterations in the gravity of our atmoſphere, and thereby affecting human bodies. See COMET, PLANET, &c. ſee alſo TIDES.

LUNATION, the period or ſpace of time between one new moon, and another. See MOON.

Lunation is alſo called *ſynodical month*; conſiſting of 29 days, 12 hours, and three quarters of an hour. See MONTH, &c.

At the end of 19 years the ſame *lunations* always return, on the ſame day; but not at the ſame preciſe time of the day; there being a difference of one hour, 27 minutes, and 33 ſeconds: wherein the antients were miſtaken, taking the uſe of the golden number to be more ſure and infallible than it is. See GOLDEN *Number*.

It has been found ſince, that in 312 years and an half, the *lunations* gain a day on the beginning of the month; ſo that when they came to reform the calendar, the *lunations* happened in the heavens, four or five days ſooner than was ſhewn by the golden number. — To remedy which, we now make uſe of the perpetual cycle of epacts.

We take 19 epacts, which anſwer to a cycle of 19 years; and when at the end of 300 years the moon has gained a day, we take 19 other epacts: which is alſo done, when, by the omiſſion of an intercalary day, which happens three times in 400 years, the calendar is adjuſted to the ſun.

Care is taken that the index of the epacts muſt never be changed, excepting at the concluſion of a century, when there is occaſion for it, on account of the metemptoſis, or proemptoſis; that is, of the lunar or ſolar equation. — When the biſſextile or intercalary day is ſuppreſſed without a lunar equation, the next following, or lower index is taken, as was done in 1700. — When there is a lunar equation, without ſuppreſſing the biſſextile, the next preceeding, or higher index is taken; as will be done in 2400. — When there is both an equation, and a ſuppreſſion, as in 1800; or neither the one nor the other, as in 2000; the ſame index is retained. See EPACT.

LUNE, LUNULA, in geometry, a plane in form of a creſſant, or half-moon; terminated by the circumference of two circles, that interſect each other within.

Though the quadrature of the entire circle was never yet effected, yet geometricians have found out the ſquares of many of its parts. — The firſt partial quadrature was that of the *lunula*, given by Hippocrates of Scio, who, of a ſhipwrecked merchant, commenced geometrician. See CIRCLE, and QUADRATURE.

Let AEB (*Tab. Geometry*, *fig.* 8.) be a ſemicircle, and $GC = GB$; with the radius BC deſcribe a quadrant AFB; then will AEBFA be Hippocrates's *lune*.

And ſince $BC^2 = 2\,GB^2$, the quadrant AGBC will be equal to the ſemicircle AEB; taking away therefore from each the common ſegment AFBGA; $AEBFA =$ to the triangle $ACB = GB^2$.

LUNE, in fortification. See the article DEMI-*Lune*.

LUNETTE, in fortification, an enveloped counterguard, or elevation of earth, made in the middle of the foſs, before the curtin, about five fathom in breadth.

Lunettes are uſually made in ditches full of water, and ſerve to the ſame purpoſe as fauſſebrays, to diſpute the paſſage of the ditch. See FAUSSEBRAY.

The *lunette* conſiſts of two faces, which form a re-entering angle; and its terreplein being only twelve feet wide, is a little raiſed above the level of the water; having a parapet three fathom thick.

LUNGS, a part of the human body, compoſed of veſſels, and membranous veſicles; ſerving for reſpiration. See RESPIRATION.

The *lungs* are connected, above, to the fauces, by means of the trachea; and below, to the vertebræ of the thorax; and to the ſternum and diaphragma, by means of the pleura. — They are divided into two great lobes, by the mediaſtinum, and thoſe again into others leſſer; the right ſometimes into three or four, by means of ſome fiſſures running from the fore to the back edge. — The great lobes, when inflated, reſemble each of them a horſe's hoof in figure, but together they are liker an ox's inverted. — See *Tab. Anat. (Splanch.) fig.* 12. *lit. tt. fig.* 14. ſee alſo LOBE, and LOBULE.

The ſubſtance of the *lungs* is membranous, conſiſting chiefly of innumerable cells or veſicles; which ſeem to be nothing but expanſions of the membranes of the bronchia, to which they hang like grapes in cluſters; ſo that by blowing into one of the branches of the bronchia, thoſe cells or veſicles belonging to it, are blown up; the reſt, which do not, remaining ſtill flaccid and unaltered. See BRONCHIA.

Theſe cluſters of veſicles, or cells, are called the *internal lobules*; by which name they are diſtinguiſhed from the leſſer lobes ſpoken of. — They are ſeparated from one another by interſtices, which receive the veſſels; and are filled up with membranes propagated from the lobules, and lying ſome parallel, ſome angular. — Theſe lobules diſcover and diſplay themſelves very exactly, if the larger trunks of the bronchia be laid open, and the leſſer blown into; by which means every lobule belonging to that branch will be inflated, and riſe very diſtinctly, and ſhew its extent.

The whole ſubſtance of the *lungs* is covered with a common membrane, which is diviſible into two coats; the outer thin, ſmooth, and nervous; the inner ſomewhat thicker and rougher, conſiſting moſtly of the extremities of veſſels and veſicles, through the impreſſion of which it is pitted, and reſembles, in ſome meaſure, a honey-comb. — Some affirm, that in this coat are abundance of perforations or pores, ſo diſpoſed, that they readily imbibe any humidity from the cavity of the thorax, but ſuffer nothing to eſcape into it: but this ſeems little more than fancy.

The veſſels of the *lungs* are the bronchia, the pulmonary and bronchial arteries and veins, nerves and lymphatics. — Of theſe veſſels ſome are *proper*, and ſome *common*, in reſpect of the ſervice they are of to the reſt of the body. — The *common* are the bronchia, the pulmonary artery and vein, the nerves and lymphatics; the *proper* are the bronchial artery and vein. See BRONCHIA, BRONCHIAL, PULMONARY, &c.

Dr. Willis, contrary to the common opinion, aſcribes to the *lungs* a great number of nerves, which come from the trunk of the par vagum; and which, being diſtributed through the ſubſtance of the *lungs*, embrace the aerious and ſanguiferous veſſels. He alſo aſſerts, that the veſiculæ have muſculous fibres, to enable them to exert a greater contractive force in expiration; though others deny any ſuch fibres. — Diemerbroeck obſerves, that the veſicles admit not only of air, but alſo of other groſſer matters; and inſtances two aſthmatic perſons which he opened; the one a ſtone-cutter, the veſiculæ of whoſe *lungs* were ſo ſtuffed with duſt, that, in cutting, his knife went as if through a heap of ſand; and the other a feather-driver, in whom the veſicles were full of the fine duſt, or down of feathers. See ASTHMA.

Polypus of the LUNGS. See the article POLYPUS.

LUNISOLAR, in aſtronomy and chronology, denotes ſomething compoſed of the revolution of the ſun, and of that of the moon. See REVOLUTION, PERIOD, &c.

LUNISOLAR *Year*, is a period of years made by multiplying the cycle of the moon, which is nineteen, by that of the ſun, which is twenty eight; the product of which is five hundred thirty two; in which ſpace of time, thoſe two luminaries return to the ſame points. See YEAR.

LUNULAR *Angles*. See the article ANGLE.

LUPERCALIA *, feaſts inſtituted in antient Rome, in honour of the god Pan. See FAUNS.

* The word comes from Lupercal, the name of a place under the Palatine mountain, where the ſacrifices were performed.

The *lupercalia* were celebrated on the fifteenth of the calends of March, that is, on the fifteenth of February, or, as Ovid obſerves, on the third day after the ides. They are ſuppoſed to have been eſtabliſhed by Evander.

On the morning of this feaſt, the luperci, or prieſts of Pan, ran naked through the ſtreets of Rome, ſtriking the married women they met on the hands and belly, with a thong, or ſtrap of goat's leather, which was held an omen promiſing them fecundity, and happy deliveries. See LUPERCI.

The reaſon of this indecent cuſtom, in celebrating the *lupercalia*, took its riſe from Romulus and Remus; for while they were aſſiſting at this feaſt, a body of robbers, taking hold of the occaſion, plundered them of their flocks. Upon this the two brothers, and all the youth that were with them, throwing off their clothes, to be the more expedite, purſued the thieves, and recovered their prey. — This ſucceeded ſo well, that thenceforward this ceremony became a part of the *lupercalia*.

This feaſt was aboliſhed in the time of Auguſtus, but afterwards reſtored, and continued to the time of the emperor Anaſtaſius. — Baronius ſays, it was aboliſhed by the pope, in 496.

LUPERCI, a name given to the prieſts of the god Pan. See LUPERCALIA.

The *luperci* were the moſt antient order of prieſts in Rome; they were divided into two colleges, or companies, the one called *Fabii*, and the other *Quintilii*. To theſe Cæſar added a third, which he called *Julii*.

Suetonius mentions the inſtitution of this new college of *luperci*, as a thing that rendered Cæſar more odious than he was; however, it appears from the ſame paſſage of Suetonius, that this new company was not inſtituted by Cæſar, nor in honour of Pan, but by ſome friends of Cæſar, and in honour of himſelf.

LUPI *Crepitus*. See the article CREPITUS.

Centaurus cum **LUPO**. See the article CENTAURUS.

LUPUS, *Wolf*, in aſtronomy, a ſouthern conſtellation, conſiſting of nineteen ſtars. See STAR, and CONSTELLATION.

LURE *, in falconry, a piece of red leather cut in form of a bird, with two wings, ſtuck with feathers; and ſometimes baited with a piece of fleſh: wherewith to reclaim, or call back a hawk. See RECLAIMING, HAWK, and FALCONRY.

* The word comes from the French *leurre*, which ſignifies the ſame; formed, according to Skinner, from the Anglo-Saxon, *læura*, traitor; according to Tripaud, from *leora*, craftineſs.

LUSTER, or LUSTRE, gloſs, or brightneſs appearing on any thing; particularly manufactures of ſilk, wool, or ſtuff.

LUSTRE is alſo uſed for a certain compoſition, or manner of giving that gloſs, or brilliant.

The *luſtre* of ſilks, in which their chief beauty conſiſts, is given them by waſhing in ſoap, then clear water, and dipping them in alum-water cold. See SILK.

The *luſtre* of black taffaty is given by double-brewed beer, boiled with orange or lemon juice; that of coloured taffaties with water of gourds, diſtilled in an alembic.

Curriers give a *luſtre*, or gloſs to their leather, ſeveral ways, according to the colour to be illuſtrated. — For blacks, the firſt *luſtre* is with juice of barberries; the ſecond with gum arabic, ale, vinegar, and Flanders glue boiled together: for coloured leathers, they uſe the white of an egg beaten in water: Morocco's have their *luſtre* from juice of barberries, and lemon or orange.

For hats, the *luſtre* is frequently given with common water, ſometimes a little black dye is added. — The ſame *luſtre* ſerves ſkinners, except that in white furs they never uſe any black dye. — For very black furs, they ſometimes prepare a *luſtre* of galls, copperas, Roman alum, ox's marrow, and other ingredients.

The *luſtre* is given to cloths and mohairs, by preſſing them under the calender. See CALENDER, and PRESSING.

LUSTRAL, an epithet applied by the antients, to the water uſed in their ceremonies, to ſprinkle and purify the people.

From them the Romaniſts have borrowed the holy water uſed in their churches. See *Holy* WATER.

LUSTRAL *Day*, *Dies* LUSTRICUS, that whereon the illuſtrations were performed for a child, and its name given; which was uſually the ninth day from the birth of a boy, and the eighth from that of a girl. Though others performed the ceremony on the laſt day of that week wherein the child was born, and others on the fifth day from its birth.

Over this feaſt-day the goddeſs Nundina was ſuppoſed to preſide, the midwives, nurſes, and domeſtics handed the child backwards and forwards, around a fire burning on the altars of the gods, after which they ſprinkled it with water. The old women mixed ſaliva and duſt with the water. — The whole ended with a ſumptuous entertainment.

LUSTRATION, *Expiation*; ſacrifices, or ceremonies, by which the Romans purified their cities, fields, armies, or people, defiled by any crime, or impurity. See LUSTRUM, EXPIATION, PURIFICATION, &c.

Some of their *luſtrations* were public, others private.

There were three ſpecies, or manners of performing *luſtration*; viz. by fire and ſulphur; by water; and by air; which laſt was done by fanning and agitating the air round the thing to be purified. See ABLUTION.

There was alſo a peculiar kind of *luſtration* for young children. See LUSTRAL *Day*.

Lomeir has a volume expreſs on the *luſtrations* of the antients: Joh. Lomeieri Zutphanenſis *Epimenides, ſive de veterum gentilium Luſtrationibus*; firſt printed at Utrecht in 1681, and ſince, with additions, in 1702. 4°.

All perſons, ſlaves only excepted, he ſhews, were miniſters of ſome ſort of *luſtration*. — When any one died, the houſe was to be ſwept after a particular manner, by way of purification: the prieſt threw water on new married people, with the like intention. — To purify themſelves, people would even ſometimes run naked through the ſtreets; ſuch was their extravagance. And, as if fancy was not fertile enough in inventing modes of *luſtration*, they even uſed enchantments to raiſe the dead, in order to get inſtructions what they muſt do to purge themſelves of their ſins. Add, that they frequently raiſed the opinion of the ſanctity of their expiations by fictitious miracles.

The birds, ſay they, practiſe *luſtration*, both by waſhing themſelves, and throwing water on their neſt. The hen takes ſtraw, and uſes it to purify her chickens. — There was ſcarce any action, at the beginning and end of which the gentiles did not perform ſome ceremony to cleanſe themſelves, and appeaſe the gods. When they had no animals to ſacrifice, they made the figure of the beaſt they would offer in dough, metal, or other matter; and thus ſacrificed in effigy.

Some expiations were performed in the water; for which reaſon, certain fountains and rivers were in great reputation: others were performed in the air. — A certain heathen cauſed himſelf to be ſeriouſly ſifted in a ſieve, as we now ſift corn: another hung himſelf by a cord, and was toſſed backwards and forwards: another ſhut his eyes, and ſet himſelf blindfold to find out a noſegay tied to a cord: others played at ſee-ſaw, as a more efficacious way of appeaſing the gods.

Fire was much uſed for expiation: Sometimes the penitents were caſt into the fire; at others, only brought to the flame, or ſmoke.

It was common, on theſe occaſions, to ſhed human blood: The prieſts of Cybele, Bellona, and Baal, made cruel inciſions on themſelves. — Erectheus, king of Attica, ſacrificed his daughter to Proſerpina. Several had their throats cut at Rome, to obtain the emperor's health from the gods. Thoſe who commanded armies, offered one of their ſoldiers to appeaſe the anger of the gods; that he alone might ſuffer all the wrath the army deſerved.

All ſorts of perfumes, and odoriferous herbs, had place in *luſtration*. — The egg was much uſed among them, as being the ſymbol of the four elements: its ſhell, they ſay, repreſents the earth; the yolk, a globe of fire; the white, reſembles the water; and beſides it has a ſpirit, which repreſents the air. For this reaſon it is, that the bonza's, or Indian prieſts, believe to this day that the world came out of an egg. — There is ſcarce any pot-herb, pulſe, tree, mineral, or metal, which they did not offer the gods by way of expiation: Nor did they forget milk, bread, wine, or honey: what is more, they made uſe of the very ſpittle, and urine.

The poets had feigned that the gods purified themſelves, and they did not omit to purify their ſtatues. — They made a *luſtration* for children, the eighth day after their birth. — When a man who had been falſely reputed dead, returned home, he was not to enter his houſe by the door. — It was a ſettled cuſtom to offer no expiation for thoſe who were hanged by order of juſtice; or that were killed by thunder. Neither did they offer any for thoſe who were drowned in the ſea; it being the common opinion, that their ſouls periſhed with their bodies. And hence it was, that perſons in danger of ſhipwreck ſometimes thruſt their ſwords through their bodies, that they might not die in the ſea; where they thought their ſoul, which they ſuppoſed to be a flame, would be totally extinguiſhed.

The moſt celebrated expiatory ſacrifice was the hecatomb, when they offered an hundred beaſts; though they commonly did not offer ſo many, but contented themſelves with killing twenty five; but thoſe being quadrupeds, their feet came to an hundred. See HECATOMB.

Luſtrations, and luſtratory ſacrifices were not only performed for men, but alſo for temples, altars, theatres, trees, fountains, rivers, ſheep, fields and villages. When the Arval brothers offered a victim for the fields, their ſacrifice was called *ambarvalia*. See AMBERVALIA.

Cities were all to be purified, from time to time: Some walked the victim round their walls, and then ſlew him. — The Athenians ſacrificed two men, one for the men of their city, and the other for the women. The Corinthians ſacrificed the children of Medea ſo; though the poets ſay, Medea killed them herſelf. The Romans performed the ceremony of purifying their city every fifth year; whence the name of *luſtrum*, given to the ſpace of five years. See LUSTRUM.

Divers of the expiations were auſtere: ſome faſted; others abſtained from all ſenſual pleaſures: ſome, as the prieſts of Cybele, caſtrated themſelves; others, that they might live chaſte, eat rue, or lay under the branches of a ſhrub called *agnus caſtus*. See AGNUS *Caſtus*.

The poſtures of the penitents were different, according to the different ſacrifices: They ſometimes joined prayers to the ſolemnity; at other times, a public confeſſion of ſins was made. — The Indians, when they ſacrifice to Hercules, call him a thouſand reproachful names; and think they incur his anger, if any reſpectful term come out of their mouth.

The prieſts changed their habits, according to the ceremonies to be performed: white, purple, and black, were the moſt uſual colours. They had their heads always covered, and long hair, except in the ſacrifices of Saturn, Hercules, Honour, and a few others: only the prieſts of Iſis were ſhaven, becauſe that goddeſs underwent the ſame operation, after the death of her huſband Oſiris. — In ſome ceremonies the prieſts were ſhod, in others barefoot: the poets expreſs the former by the word *vincula*. They had no girdles; nay, they durſt not pronounce the word *ivy*, becauſe ivy cleaves to every thing. — In the ſacrifices of Venus, and the Moon, every one took the habit of the contrary ſex. — Every thing was to be done by odd numbers; becauſe they looked on an even number, which may be equally divided, as the ſymbol of mortality and deſtruction. The odd number was with them holy: hence Neptune's trident, Cerberus's three heads, and Jupiter's thunder-dart, with three points.

They caſt into the river, or at leaſt out of the city, the animals, or other things that had ſerved for a *luſtration*, or ſacrifice of atonement; and thought themſelves threatened with ſome great misfortune, when by chance they trod upon them. — At Marſeilles, they took care to feed a poor man for ſome time; after which, they charged him with all the ſins of the country, and drove him away: Thoſe of Leucade faſtened a number of birds to a man charged with their ſins, and in that condition caſt him headlong from a high tower; and if the birds hindered his being killed, they drove him out of the country.

Part of theſe ceremonies were aboliſhed by the emperor Conſtantine, and his ſucceſſors; the reſt ſubſiſted till the Gothic kings were maſters of Rome, under whom they expired; except that ſeveral of them were adopted by the popes, and brought into the church, where they make a figure to this day: witneſs the numerous conſecrations, benedictions, exorciſms, ablutions, ſprinklings, proceſſions, feaſts, *&c.* ſtill in uſe in the Romiſh church. See CONSECRATION, *&c.*

LUSTRUM *, a term uſed by the Romans, to ſignify a ſpace of five years.

* Varro derives the word from *luo*, to pay; becauſe at the beginning of every fifth year, they paid the cenſus, or tribute impoſed by the cenſors; whoſe authority, at their firſt inſtitution, was continued them for five years; though afterwards it was abridged to one. — Others rather derive the word from *luſtrare*, to make a review; becauſe once in five years, the cenſors reviewed the army. See CENSUS, and CENSOR.

LUSTRUM was alſo a ceremony, or ſacrifice uſed by the Romans, after numbering their people once in five years. See LUSTRATION.

LUTE, **LUTUM**, in chymiſtry, a compoſition of certain tenacious ſubſtances, wherewith to cloſe the apertures, and junctures of veſſels in diſtillation, *&c.*

Under *lute* is comprehended any ſort of cement, or plaiſter, uſed either in the conſtruction of furnaces, or in fitting to them veſſels of glaſs, or earth, that are to reſiſt a very violent fire. — *Lutes* are made of flower and water; others, of quick-lime and whites of eggs; others of iron filings, brick-duſt, and linſeed oil; others, of potter's earth, river ſand, horſes dung, powder of broken pots, caput mortuum of vitriol, droſs of iron, beaten glaſs, flocks of wool mixed with ſalt water, or bullock's blood.

The *lute* uſed by Lemery, was only two parts of ſand, and one of clay, tempered together in water; which does very well for joining the noſes of retorts, and their receivers in diſtilling of volatile ſpirits, *&c.*

In diſtilling by the alembic, or veſica, or copper body, with its head or ſerpentine, a wet bladder ſerves very well to *lute* the junctures of the veſſels: but for the diſtillation of corroſive ſpirits, as alſo to ſtop the cracks of glaſſes, *&c.* the following compoſition is recommended, *viz.* ſtarch boiled, or fiſh-glue diſſolved in ſpirit of wine, with flower of ſulphur, maſtic, and lime ſlacked in milk.

LUTE *, a muſical inſtrument of the ſtring-kind; which had antiently but five rows of ſtrings; though in courſe of time four, five, or ſix more have been added.

* Some derive the word from the German *laute*, which ſignifies the ſame; or from *lauten ſonare*. — Scaliger and Bochart derive it from the Arabic, *allaud*.

The *lute* conſiſts of four principal parts: the table; the body or belly, which has nine or ten ſides; the neck, which has nine or ten ſtops or diviſions marked with ſtrings; and the head or croſs, wherein are ſcrews, for raiſing or lowering the ſtrings to the proper tone. — In the middle of the table is a roſe, or paſſage for the ſound. There is alſo a bridge that the ſtrings are faſtened to, and a piece of ivory between the head and the neck, to which the other extremity of the ſtrings are fitted.

In playing, the ſtrings are ſtruck with the right hand, and with the left the ſtops are preſſed.

The *lutes* of Bologna are eſteemed the beſt; on account of the wood, which is ſaid to have an uncommon diſpoſition for producing a ſweet ſound. — The theorbo is an improvement on the *lute*.

Temperament of the **LUTE**, denotes the alteration requiſite to be made in the intervals, both with regard to concords, and diſcords, in order to render them more juſt on that inſtrument.

Archi-**LUTE**. See the article ARCILEUTO.

Theorbo-**LUTE**. See the article THEORBO.

LUTHERANISM, the ſentiments of Dr. Martin Luther, and his followers, with regard to religion.

Lutheraniſm had its riſe in the 16th century: its author was born at Eiſleben in Thuringia, in 1483. — After his ſtudies, he entered himſelf among the Auguſtines; and in 1512, took the cap of a doctor in theology, in the univerſity of Wirtemberg.

In 1516, he attacked the ſchool-divinity in ſeveral theſes. — In 1517, Leo X. having ordered indulgences to be diſpenſed to thoſe who ſhould contribute towards the building of S. Peter's church at Rome, he gave a commiſſion thereof to the Dominicans. — The Auguſtines thinking they had a title to it before any body elſe, John Staupitz, their commiſſary-general, appointed Luther to preach againſt thoſe diſpenſers of indulgences. See INDULGENCE.

Luther acquitted himſelf, in a manner, that perhaps the commiſſary had not imagined: from the preachers of indulgences he proceeded to indulgences themſelves, and inveighed very warmly, both againſt the one and the other.

At firſt he only advanced ambiguous propoſitions; but being engaged in diſpute about them, he maintained them openly, and without reſerve; inſomuch, that in 1520 he was ſolemnly condemned, and excommunicated by the pope. — But neither the pope's thunder, nor the condemnation of ſeveral univerſities, could make any impreſſion of terror upon him; but he continued preaching, writing and diſputing, not againſt indulgences only, but ſeveral other corruptions which then prevailed in the church.

The character of the man, the ſtrength of his arguments, and the weakneſs of his adverſaries cauſe, ſoon procured him a number of followers. — And thus it was that *Lutheraniſm* was formed; the adherents whereto were called *Lutherans*, from *Lutherus*, a name which has a Greek turn, and which he aſſumed in lieu of his family name, *Lotter*, or *Lauther*; it being the cuſtom of thoſe days, for men of learning to give themſelves Greek names: witneſs Eraſmus, Melanchthon, Bucer, *&c.* See NAME.

In 1523, Luther quitted the habit of a religious, and in 1524, married; after having been a happy inſtrument of reforming a great part of Germany, under the protection of George duke of Saxony. — He died at his native place, in 1546. See REFORMATION.

The firſt who received *Lutheraniſm*, were the people of Mansfeld, and the Saxons: it was preached at Kreichſaw, in 1521. — It was received at Goſlar, Roſtock, Riga in Livonia, Rentling, and at Hall in Suabia, at Augsburg, Hamburg, and Treptow in Pomerania, in 1522. — In Pruſſia, in 1523; at Einbech in the dutchy of Lunenburg, at Nuremberg, and Breſlaw, in 1525. — In Heſſe, in 1526; at Aldenburg, Straſburg, and Brunſwick, in 1528; at Gottingen, Lemgou, and Lunenburg, in 1530; at Munſter, and Paderborn in Weſtphalia, in 1532; at Ethlingen, and Ulm, in 1533; in the dutchy of Grubenhagen, at Hanover, and in Pomerania, in 1534; in the dutchy of Wirtemberg, in 1535; at Cothus, in the lower Luſace, in 1537; in the county of Lippe, in 1538; in the electorate of Brandenburg, at Bremen, Hall in Saxony, Leipſic in Miſnia, and at Quedlenburg, in 1539; at Embden in Eaſt-Friſeland, Hailbron, Halberſtadt, and Magdeburg, in 1540; in the palatinate of the dutchy of Newburg, at Regensburg, and Wiſmar, in 1542; at Buxtende, Hildeſheim, and at Oſnaburg, in 1543; in the lower Palatinate, in 1546; in Mecklemburg, in 1552; in the Marquiſate of Durlach, and that of Hochberg, in 1556; in the county of Bentheim, in 1564; at Haguenaw, and in the lower marquiſate of Baden, in 1568; and in the dutchy of Magdeburg, in 1570. *Jovet*, T. I. p. 460, ſeq.

Lutheraniſm has undergone ſome alterations ſince the time of its founder. — Luther rejected the epiſtle of S. James, as inconſiſtent with the doctrine of S. Paul, in relation to juſtification; he alſo ſet aſide the Apocalypſe: both which are now received as canonical, in the Lutheran church.

Luther reduced the number of ſacraments to two, *viz.* baptiſm, and the euchariſt; but he believed the impanation, or conſubſtantiation: that is, that the matter of the bread and wine, remain with the body and blood of Chriſt; and it is in this article, that the main difference between the Lutheran and Engliſh churches conſiſts. See CONSUBSTANTIATION.

Luther maintained the maſs to be no ſacrifice; exploded the adoration of the hoſt, auricular confeſſion, meritorious works, indulgences, purgatory, the worſhip of images, *&c.* which had been introduced in the corrupt times of the Romiſh church.

He alſo oppoſed the doctrine of free will; maintained predeſtination, aſſerted that we are neceſſiated in all we do, that all our actions done in a ſtate of ſin, and even the virtues themſelves, of heathens, are crimes; that we are only juſtified by the imputation of the merits and ſatisfaction of Chriſt.

He alſo oppoſed the faſtings in the Romiſh church, monaſtical vows, the celibate of the clergy, *&c.*

Some authors reckon thirty nine different ſects, which at different times have ſprung up among the Lutherans, *viz.* the *Confeſſioniſts*, *Antinomians*, *Samoſatenſes*, *Inferani*, *Antidiaphoriſts*, *Antiſwenkfeldians*, *Antioſiandrians*, *Anticalviniſts*, *Layers on of hands*, *Biſſacramentales*, *Triſſacramentales*, *Majorites*, *Adiaphoriſts*, *Quadriſacramentales*, *Luthero-calviniſts*, *Anmetes*, *Medioſiandrians*, *Confeſſioniſts firm and wavering*, *Swenkfeldians*, *Onandrians*, *Stanoanrians*, *Antiſtancarians*, *Zuinglians ſimple*, *Zuinglians ſignificative*, *Carloſtadians*, *Evargic Tropiſts*, *Arrabonarii ſpiritual*, *Sucefeldians*, *Serveriſts*, *Davidics*, or *Davidi-Georgians*, *Mennonites*, &c. *Jovet.* T. I. p. 475.

LUTHERANS, a ſect of proteſtants who profeſs *Lutheraniſm*, or adhere to the doctrine and tenets of Luther. See LUTHERANISM.

The *Lutherans*, of all Proteſtants, are thoſe who differ leaſt from the Romiſh church. — They are divided into ſeveral ſects; the principal whereof are recited in the following articles, and in their proper places in the courſe of this book.

Moderate **LUTHERAN**, one who ſoftens or mitigates Luther's doctrine; or follows the doctrine of Luther thus mitigated. —Melanchthon was the firſt of this ſect.

Lax LUTHERAN, is an appellation given to thoſe who complied with the Interim, and who formed three different parties; that of Melanchthon, Pacius, or Pfeffinger, and that of the univerſity of Leipſic, and the divines of Franconia. See INTERIM, and ADIAPHORIST.

Rigid LUTHERAN, one who ſtill maintains the antient Lutheraniſm of Luther, and the firſt *Lutherans.*

As to the articles of predeſtination, and grace, the *Lutherans* are no longer rigid.—The head of the *rigid Lutherans* was Flaccius Illyricus, the chief of the four authors of the *Eccleſiaſtical Hiſtory divided into Centuries*; known under the name of *Magdeburg Centuries*, or *Centuriators.* — This man could not bear the leaſt alteration to be made in Luther's doctrine.

LUTHERO-CALVINIST, one who holds the opinions of *Calvin*, together with thoſe of *Luther*; ſo far as they are capable of ſubſiſting together.

LUTHERO-OSIANDRIAN, one who blends together the doctrine of *Luther*, and that of *Lucas Oſiander.*

LUTHERO-PAPIST, an appellation given to thoſe *Lutherans* who excommunicated the Sacramentarians.

LUTHERO-ZUINGLIAN, one who jumbles together the opinions of *Luther* and *Zuinglius.*

Martin Bucer, of Scheleſtadt in Alſace, who, from a dominican, by a twofold apoſtaſy, as the Romaniſts call it, became a *Lutheran*, was the head of the *Luthero-Zuinglians*; whoſe tenets were not ſo much a mixture of *Lutheraniſm* and *Zuingliani ſm*: —But what rather entitled them to the appellation was, that they formed a ſociety, who agreed to tolerate and bear with each others opinions.

LUTHERN*, a kind of window over the cornice, in the roof of a building; ſtanding perpendicularly over the naked of the wall; and ſerving to illuminate the upper ſtory. See WINDOW.

* The word comes from the French, *lucarne*, of the Latin, *lucerna*, light, or lantern.

The French architects diſtinguiſh theſe into various kinds, according to their various forms; as *ſquare*, *ſemicircular*, *bulls eyes*, *flat arches*, *Flemiſh lutherns*, *&c.*

LUTUM *Sapientiæ*, is the hermetical ſeal; made by melting the end of a glaſs veſſel by a lamp, and twiſting it up with a pair of pliers. See HERMETICAL *Seal.*

LUXATION*, LUXATIO, in medicine and ſurgery, the ſlipping of the head of a bone from its proper receptacle into another place; whereby the natural motion of the joint is deſtroyed. See BONE, and ARTICULATION.

* The word is Latin, formed from *luxare*, to looſen.

Luxation is the ſame with what is otherwiſe called *diſlocation*; being the diſplacing of a bone, or rather the disjointing of two bones, articulated together for the motion of the part.

Luxations are either *violent*, proceeding from ſome external cauſe; as falls, ſtrains, blows, leaps, extenſions, *&c.* — Or *gentle*, ariſing from internal cauſes; as a natural laxity of the ligaments, a fluxion of humours, or gradual collection thereof between the joints, *&c.*

Luxation, properly, has place only amongſt bones whoſe ſtructure determines them to a manifeſt motion, as are all thoſe united by diarthroſis; thoſe articulated by ſynarthroſis, where there is no manifeſt motion, are indeed ſubject to fracture, caries, exoſtoſis, *&c.* but not to *luxation.* See DIARTHROSIS, *&c.*

Luxations, again, are either *perfect*, or *imperfect.*

Perfect, or *compleat* LUXATION, ΕΞΑΡΘΡΗΜΑ, is that where the head of a bone is actually ſtarted out of the cavity of another.—It is known by a tumour, or protuberance, formed by the head of the ſeparated bone, which raiſes up the ſkin, and muſcular fleſh above its natural level in the part not deſtined to receive it; and a hollowneſs or ſinking in the place from whence it is ſtarted, perceivable by the touch. — It is alſo attended with great pain, a total abolition of motion, and a ſhortening of the limb.

Imperfect, or *partial* LUXATION, ΠΑΡΑΡΘΡΗΜΑ, called alſo *ſubluxation*, is where the motion is only much impaired, the joint weakened, and a deformity perceivable in it, when compared with the oppoſite part, which is ſound.—This is otherwiſe called a *ſtrain*, when it proceeds from an external cauſe; or, ſimply, a *relaxation*, when from an internal one.

A *luxation* is ſaid to be *ſimple*, when it has no other accident or injury accompanying it—*complicated*, when it is attended with a wound, inflammation, fracture, or the like.

The cure of a *luxation*, is by a ſpeedy reduction of the diſlocated member to its natural place. — To this are neceſſary, 1°. *Extenſion*, ανλιζασις, which a luxated as well as fractured member requires; as well on account of the contraction of the tendons, as that the head of the bone may more directly be intruded into its ſeat.—This extenſion is made either by the hands alone, which is called *modus palæſtricus*, becauſe, among wreſtlers, diſlocated members uſe to be reduced after this manner; or by ligatures, or towels; or by inſtruments, or great machines, when the *luxation* is difficult, and inveterate.

2°. After extenſion, follows the intruding of the joint into the natural cavity; which, likewiſe, may either be effected by the hands only, or by the heel, (as when the head of the os humeri is fallen into the arm-pit) or by means of ladders, doors, peſtles, or Hippocrates's inſtrument, called *ambe.* — This way is termed *methodical*, by way of diſtinction from the third, which is called *organical*, becauſe performed by large inſtruments, and machines, but now altogether out of uſe.

Gourmelinus to theſe adds αποθεσις, the very act of reducing the member into its own place, which is to be known by the ſound uſually heard, and from the uſe and motion of the reduced joint.

Laſtly, becauſe on account of the laxity of the tendons, *&c.* the reduced bone cannot remain in its natural poſition, it is neceſſary yet further to apply compreſſes and bandage; by whoſe means the articulation is preſerved ſafe, till the ligaments may acquire their uſual ſtrength of elaſticity and aſtriction.

LYCANTHROPY*, ΛΥΚΑΝΘΡΩΠΙΑ, a ſpecies of madneſs, wherein thoſe affected run, in the night time, howling about the fields like wolves; and ſome bite and ſnarl like dogs: whence the diſeaſe is alſo called by the antients, *cynanthropy.*

* The word is formed of the Greek λυκος, wolf, and ανθρωπος, man: *q. d.* man-wolf.

Lycanthropy is alſo uſed for an imaginary metamorphoſis of a man into a wolf, by magic power; wherein the perſons affected ſeem not only to themſelves in the form of wolves, but to others. See METAMORPHOSIS.

LYCEUM, ΛΥΚΕΙΟΝ, the name of a celebrated ſchool, or academy at Athens, where Ariſtotle explained his philoſophy. See ARISTOTELIAN.

The place was compoſed of portico's, and trees planted in the quincunx form, where the philoſophers diſputed walking. See PERIPATETIC.

Hence, *philoſophy of the lyceum* is uſed, to ſignify the philoſophy of Ariſtotle, or the peripatetic philoſophy.

Suidas obſerves, that the *lyceum* took its name from its having been originally a temple of Apollo *Lyceus*; or rather, a portico, or gallery built by Lycus, ſon of Apollo: but others mention it to have been built by Piſiſtratus, or Pericles.

LYCOCTONON. See the article ACONITE.

LYDIAN *Mode.* See the article MODE.

LYGMOS, ΛΥΓΜΟΣ. See the article HICCUP.

LYMPH, LYMPHA, in anatomy, a thin tranſparent humour, ſomething like water; ſecreted from the ſerum of the blood in all parts of the body, and returned to the blood again, by proper ducts of its own, called *lymphatics*; and ſuppoſed, by ſome, to be the immediate matter of nutrition. See LYMPHATICS, HUMOUR, NUTRITION, *&c.*

If the *lymph* be chymically examined, it will be found to contain a great deal of volatile, but no fixed ſalt, ſome phlegm, ſome ſulphur, and a little earth.

The uſe of the *lymph* may be gathered from the conſideration of the parts into which it diſcharges itſelf.—That which comes from the head, neck, and arms, is thrown into the jugular and ſubclavian veins.—All the lymphatics, which the parts in the cavity of the thorax ſend out, empty themſelves into the thoracic duct; and the *lympha*, from all the reſt of the body, flows to the common receptacle: ſo that there can be no doubt, but that its chief uſe is to dilute, and perfect the chyle, before it mixes with the blood. See CHYLE, CHYLIFICATION, and SANGUIFICATION.

LYMPHATICS, or LYMPHÆDUCTS, a ſort of fine, ſmall, tranſparent veſſels, generally ariſing from the glands, and conveying back to the blood a tranſparent liquor, called *lymph* or *lympha.* See LYMPH.

Theſe, though not ſo viſible as the other veſſels, becauſe of their minuteneſs, and tranſparency, are, however, exiſtent in all parts of the body; but the difficulty of finding them, has prevented their being deſcribed in many parts.

The *lymphatics* are contracted at ſmall and unequal diſtances by two oppoſite ſemi-lunar valves, which permit the lymph to paſs through them towards the heart; but ſhut, like flood-gates, upon its returning.

They ariſe in all parts of the body, but after what manner, needs no great diſpute; for, without doubt, all the liquors in the body, excepting the chyle, are ſeparated from the blood in the fine capillary veſſels, by a different pipe from the common channel in which the reſt of the blood moves: but whether this pipe be long or ſhort, whether it be viſible or inviſible, it is ſtill a gland, whilſt it ſuffers ſome part of the blood to paſs through it; denying a paſſage to the reſt. See GLAND.

Now, the glands which ſeparate the lymph muſt be of the ſmalleſt kind, for they are inviſible to the fineſt microſcope; but their excretory ducts, the *lymphatic* veſſels, unite with one another, and grow larger, as they approach the heart: yet, they do not open into one common channel, as the veins do; for ſometimes we find two, or three, or more *lymphatics*, running by one another; which only communicate by ſhort intermediate ducts, and which unite, and immediately divide again.—In their progreſs, they always touch at one or two conglobate or veſicular glands, into which they diſcharge themſelves of their lympha. — Sometimes the whole *lymphatic* opens, at ſeveral places, into the gland; and ſometimes it ſends in only two or three branches, whilſt the main trunk paſſes over, and joins the *lymphatics* which ariſe from the oppoſite ſides of the gland, exporting again their lympha to their common receptacle.

The glands of the abdomen, which receive the *lymphatics* from all its parts, as likewiſe from the lower extremities, are the glandulæ inguinales, ſacræ, iliacæ, lumbares, meſentericæ, and hepaticæ; all which ſend out new *lymphatics*, which pour their contents into the receptaculum chyli; as thoſe of the cheſt, head, and arms do into the ductus thoracicus, jugular and ſubclavian veins.

Theſe glands are round and ſmooth bodies, about the bigneſs of a hazle nut, bigger or leſſer, according to the number of *lymphatics* they receive. — Their ſubſtance is membranous, and their whole bulk divided into little cells, which receive the lymph from the *lymphatics*; and are therefore improperly called *glands*, becauſe they ſeparate no liquor from the blood.

It is true, that their exporting *lymphatics*, communicating with their arteries, do receive a lymph from them; but this is done without the help of conglobate glands; as the lacteal veins do with the capillary arteries of the guts: the chief uſe of their veſicular bodies ſeems to be, that the ſlow-moving lympha may receive a greater velocity from the elaſtic contraction of their membranous cells, as well as from the new lymph immediately derived from the arteries. See GLAND.

LYRA, a conſtellation in the nothern hemiſphere. See STAR, and CONSTELLATION.

The number of its ſtars in Ptolemy's and Tycho's catalogues are 10, in the Britannic catalogue 19; the names, places, longitudes, latitudes, and magnitudes whereof, are as follow:

Stars in the conſtellation Lyra, *or* Vultur Cadens.

Names and Situations of the Stars.	Sign.	Longitude			Latitude North.			Magnit.
		°	′	″	°	′	″	
South. in the preced. wing of the Vult.	♑	3	35	39	59	24	42	5
North. of the ſame		5	55	19	62	46	40	6
Lucida in the ſhell called *Lyra*		10	57	18	61	45	31	1
Bright ſtar the moſt nor. of the adjacent		14	17	42	62	26	05	5
Another contiguous		14	17	17	62	22	31	6
5								
South. of theſe		13	46	55	60	23	13	5
Contiguous alſo to this		13	47	29	60	22	16	7
		14	19	42	55	29	48	6
Sou. of the preced. in the jugum of the lyre		14	17	58	55	13	58	6 5
North. of the preced. in the jugum		14	35	30	56	01	48	3
10								
Preced. in the root of either horn		17	03	51	59	26	39	3 4
Subſeq. of the ſame		17	21	39	59	21	54	4
North. of thoſe that foll. in the jugum		17	37	00	55	03	28	3
South. of the ſame		17	50	36	54	28	15	6
		20	35	18	54	33	02	6
15								
In the middle of the body		21	54	08	58	03	44	6
		21	43	39	53	09	02	6
In the eaſtern part of the ſhell		25	46	19	60	42	55	5
South. of the ſame	♑	26	14	11	59	36	20	5

LYRÆ *Lucida*. See the article LUCIDA.

LYRE, LYRA, a ſtringed inſtrument much uſed among the antients; ſaid to have been invented by Mercury, on occaſion of his finding a dead ſhell-fiſh, called by the Greeks, *chelone*, and Latins, *teſtudo*, left on an inundation of the Nile; of the ſhell whereof he formed his *lyre*; mounting it with ſeven ſtrings, according to Lucian, and adding a kind of jugum to it, to ſtretch or looſen the ſtrings.

Boethius relates the opinion of ſome, who ſay, that Mercury's *lyre* had but four ſtrings, in imitation of the mundane muſic of the four elements.—Diodorus Siculus ſays it had but three ſtrings, in imitation of the three ſeaſons of the year; which were all the Greeks counted, *viz.* ſpring, ſummer, and winter. — Nicomachus, Horace, Lucian, and others, make it have ſeven ſtrings, in imitation of the ſeven planets.

This three, four, or ſeven ſtringed inſtrument, Mercury gave to Orpheus; who being torn to pieces by the Bacchantes, the *lyre*, was hung up by the Leſbians in Apollo's temple.—Others ſay, Pythagoras found it in ſome temple in Egypt, and added an eighth ſtring.—Nicomachus ſays, that when Orpheus was killed, this *lyre* was caſt into the ſea, and thrown up at Antiſſa, a city of Leſbos; where the fiſhermen finding it, gave it to Terpander; who carried it into Egypt, and called himſelf the inventor.—The ſeven ſtrings were diatonically diſpoſed, by tones, and ſemi-tones; and Pythagoras's eighth ſtring made up the octave.

Mr. Barnes, in the prolegomena to his edition of *Anacreon*, has an enquiry into the antiquity and ſtructure of the *lyre*; of which he makes Jubal the firſt inventor. For the ſeveral changes this inſtrument underwent, by the addition of new ſtrings, he obſerves, that according to Diodorus, it had originally only three; whence it was called τριχορδος. Afterwards, it had ſeven ſtrings; as appears from Homer, Pindar, Horace, Virgil, &c. Feſtus Avienus gives the *lyre* of Orpheus nine ſtrings. David mentions an inſtrument of that ſort ſtrung with ten, *in pſalterio decachordo*. Timotheus of Miletus added four to the old ſeven, which made eleven. Joſephus, in his *Jewiſh Antiquities*, makes mention of one with twelve ſtrings; to which were afterwards added ſix others, which made eighteen in all. — Anacreon himſelf ſays, p. 253. of Mr. Barnes's edition, *canto viginti totis chordis.*— For the modern *lyre*, or Welſh harp, conſiſting of forty ſtrings, it is ſufficiently known.

From the *lyre*, which all agree to be the firſt inſtrument of the ſtringed kind in Greece, aroſe an infinite number of others, differing in ſhape, and number of ſtrings; as the pſalterium, trigon, ſambucus, pectis, magadis, barbiton, teſtudo, (the two laſt uſed promiſcuouſly, by Horace, with the *lyre* and *cithara*) epigonium, ſimmicium, and pandura; which were all ſtruck with the hand, or a plectrum. See PSALTERY, SAMBUCA, MAGADIS, BARBITON, CITHARA, &c.

LYRE, among painters, ſtatuaries, &c. is an attribute of Apollo, and the muſes. See ATTRIBUTE.

LYRIC, ſomething ſung, or played on the lyre or harp. See LYRE.

LYRIC is more particularly applied to the antient odes, and ſtanza's; which anſwer to our *airs*, or *ſongs*, and may be played on inſtruments. See ODE.

The antients were great admirers of *lyric verſes*; which name, Mr. Barnes obſerves, they gave to ſuch verſes as were ſung to the lyre. See VERSE.

This ſpecies of poetry was originally employed in celebrating the praiſes of gods and heroes; though it was afterwards introduced into feaſts, and public diverſions: it is a miſtake to imagine Anacreon, as the Greeks do, the author of it; ſince it appears from ſcripture to have been in uſe above a thouſand years before that poet. — Mr. Barnes ſhows how unjuſt it is to exclude heroic ſubjects and actions from this ſort of verſe, *lyric poetry* being capable of all the elevation and ſublimity ſuch ſubjects require; which he confirms by the example of Alcæus, Steſichorus, Anacreon, and Horace, and by his own eſſay, *A Triumphal Ode, inſcribed to the duke of Marlborough*, at the head of this edition: he concludes with the hiſtory of *lyric poeſy*, and of thoſe antients who excelled in it.

The characteriſtic of *lyric* poetry, which diſtinguiſhes it from all others, is *ſweetneſs*. — As *gravity* rules in heroic verſe; *ſimplicity*, in paſtoral; *tenderneſs*, and *ſoftneſs*, in elegy; *ſharpneſs*, and *poignancy*, in ſatyr; *mirth*, in comedy; the *pathetic*, in tragedy; and the *point*, in epigram; ſo in the *lyric*, the poet applies himſelf wholly to ſooth the minds of men, by the ſweetneſs and variety of the verſe, and the delicacy of the words, and thoughts; the agreeableneſs of the numbers, and the deſcription of things moſt pleaſing in their own nature. See ODE, SONG, &c.

LYSIARCHA, an antient kind of magiſtrate, being the pontiff of Lycia, or ſuperintendant of the ſacred games of that province.

Strabo oberves, that the *lyſiarcha* was created in a council, conſiſting of the deputies of twenty three cities; that is, of all the cities in the province: ſome of which cities had three voices, others two, and others but one.

Cardinal Noris ſays, that the *lyſiarcha* preſided in matters of religion; in effect, the *lyſiarcha* was nearly the ſame with the *aſiarcha*, and *ſyriarcha*; who though they were, all the heads of the councils, or ſtates of thoſe provinces, yet were they eſtabliſhed principally to take care of the games and feaſts celebrated in honour of the gods, whoſe prieſts they were inaugurated at the ſame time that they were created *lyſiarcha*, *ſyriarcha*, or *aſiarcha*.

M.

M, A liquid conſonant, and the twelfth letter in the alphabet. See Letter, and Alphabet.

It is pronounced by ſtriking the upper lip againſt the lower; in which the pronunciation of this letter agrees with that of *b:* the only difference between the two conſiſting of a little motion made in the noſe in pronouncing *M*, and not in *b:* whence it happens that thoſe who have taken cold, for *M* ordinarily pronounce *b*; the noſe in that caſe being diſabled from making the neceſſary motion. See B.

Quintilian obſerves, that the *M* ſometimes ends Latin words, but never Greek; the Greeks always changing it in that caſe into *n*, for the ſake of the better ſound. See N.

M is alſo a numeral letter, and among the ancients was uſed for a thouſand; according to the verſe,

> M *caput eſt numeri quem ſcimus mille tenere.*

When a daſh is added a top of it, as $\overline{\text{M}}$; it ſignifies a thouſand times a thouſand.

M, in aſtronomical tables, and other things of that kind, is uſed for *Meridional* or ſouthern; ſometimes for *Meridies*, or midday.

M, in medicinal preſcription, is frequently uſed to ſignify a manipule, or handful. See Manipule.

M is ſometimes alſo put at the end of a recipe, for *miſce*, mingle; or *mixtura*, a mixture. Thus, *m. f. julapium* ſignifies, mix and make a julep.

M, in law, the brand or ſtigma of a perſon convicted of manſlaughter, and admitted to the benefit of his clergy.——It is to be burnt on the brawn of his left thumb.

MACARONIC, or Macaronian*, a kind of burleſque poetry; conſiſting of a jumble of words of different languages, with words of the vulgar tongue latinized, and Latin words modernized. See Burlesque, *&c.*

* *Maccarone*, among the Italians, as has been obſerved by Cælius Rhodiginus, ſignifies a coarſe clowniſh man; and becauſe this kind of poetry, being patch'd out of ſeveral languages, and full of extravagant words, is not ſo polite and ſmooth as thoſe of Virgil, *&c.* the Italians, among whom it had its riſe, gave it the name of *Maccaronian Maccaronic* poetry. Others chuſe to derive it *à Macaronibus*, from *Macaroons*, a kind of confection made of meal not boulted, ſweet-almonds, ſugar, and the whites of eggs; accounted a great dainty among the country people in Italy; which, from their being compoſed of various ingredients occaſion'd this kind of poetry, which conſiſts of Latin, Italian, Spaniſh, French, Engliſh, *&c.* to be called by their name.

For an inſtance; a bold fellow in the *Macaronic* ſtile, ſays;

> *Enfilavi omnes Scadrones & Regimandos*, &c.

Another example:

> *Archeros piſtoliferos furiamque manantum,*
> *Et grandem eſmeutam quæ inopinum facta ruellæ eſt:*
> *Toxinumque alto troublantem corda clochero*, &c.

Theoph. Folingius, a Benedictin monk of Mantua, was the firſt who invented, or at leaſt cultivated, this kind of verſe: For tho' we have a *Macaronea Ariminenſis* in a very old letter, beginning, *Eſt Author Typhis Leonicus atque Paranſus*; yet it ſeems to have been the work of Guarinus Capellus Sarſinas, who in the year 1526 printed ſix books of *Macaronic* poetry, *in Cabrinum Gagamogæ Regem:* but as both theſe came out after the firſt edition of Folingius, which was publiſhed under the name of Merlinus Coccajus in 1520; ſo were they likewiſe much inferior to him both in the ſtyle, invention and epiſodes wherewith he has enriched the hiſtory of Baldus; which make the ſubject of his poem.——The famous Rabelais firſt transferred the *Macaronic* ſtile out of the Italian verſe into French proſe, and on the model thereof form'd ſome of the beſt things in his *Pantagruel.*

Merlin Coccajus met with ſo much ſucceſs in his new way, that he compoſed another book partly in *Macaronic* ſtile, call'd *Il Chars del tri per uno*; but with very different ſucceſs. After this, appear'd in Italy, *Macaronica de ſyndicatu, & condemnatione doctoris Samſonis Lembi*, a low performance; and *Macaronis Forza*, an excellent one, by Steſonio a jeſuit. In 1620, Bajani publiſhed a *Carnavale Tabula Macaronea.* The laſt Italian who wrote in this way, was Cæſar Urſinius, to whom we owe *Capricia Macaronica magiſtri Stopini poetæ Pouzanenſis*, printed in 1636.

The firſt who ſucceeded in the *Macaronic* ſtile among the French was *Antonius de Arena Provenſalis de Bragardiſſima Villa de Soleriis*, in two poems, which he has left us, *de Arte Danſandi, & de Guerra Neapolitana Romana & Genuenſi.* He was followed by another lawyer, who wrote *Hiſtoria braviſſima Caroli V. Imperat. a Provincialibus payſanis triumphanter fugati.* Some time after, Remi Belleau, among his other French poeſies, printed *Dictamen metrificum de bello Hugonotico, & ruſticorum pigliamine ad ſodales*; a piece much valued. This was ſucceeded by *Cacaſanga Reiſtro Suiſſo Lanſquenetorum per M. J. B. Lichiardum Recatolicatum Spaliporcinum poetam*; to which Stephen Tabouret return'd an anſwer in the ſame ſtrain. Laſtly, John Edward de Monin entered the liſts, and left us *inter teretiſmata ſua carmen arenaicum de quorundam nugigerulorum piaſſa inſupportabili.* The *Recitus veritabilis ſuper terribili eſmeuta paiſanorum de Ruellio*, is one of the beſt pieces of this kind.

We have little in Engliſh in the *Macaronian* way; nothing ſcarce, but ſome little looſe pieces collected in Cambden's remains: which is no diſcredit to our authors: for one may ſay of ſuch pieces in general,

> *Turpes eſt difficiles habere nugas,*
> *Et ſtultus labor eſt ineptiarum.*

But the Germans and Netherlanders have had their *Macaronic* poets; witneſs the *Certamen catholicum cum Calviniſtis*, of one Martinius Hamconius Friſius, which contains about twelve hundred verſes, all the words whereof begin with the letter *C.*

MACE, Macis, a medicinal bark, or rind; the ſecond of the three which cover the nutmeg. See Nutmeg.

It is of an aſtringent and drying nature, and is uſed as a corrector in cardiac and cathartic compoſitions. See Bark.

MACEDONIANS. See the article Semiarian.

MACERATION, in pharmacy, the operation of diſſolving a ſolid body by means of water. See Dissolution.

In which ſenſe, the word amounts to much the ſame with liquefaction or liquation. See Liquefaction

Maceration is alſo uſed for the infuſing a body in any menſtruous fluid, in order to a ſolution of its principles, whether with or without fire.

In which ſenſe *Maceration* amounts to much the ſame with *Digeſtion.* See Digestion.

Others reſtrain *Maceration* to that particular kind of digeſtion, which is performed in thick ſubſtances, as when, having mix'd roſes with fat to make Unguent. Roſatum, the mixture is expoſed for ſome days to the ſun, that the virtue of the roſes may be the better communicated to the fat.

MACHINE, Machina*, in the general, ſignifies any thing that ſerves to augment, or to regulate moving powers: or it is any body deſtined to produce motion, ſo as to ſave either time or force. See Motion, and Power.

* The word comes from the Greek, μηχανὴ, *Machine, Invention Art.*——And hence, in ſtrictneſs, a *Machine* is ſomething that conſiſts more in art and invention, that in the ſtrength and ſolidity of the materials; and for this reaſon it is that the inventors of *Machines* are call'd *Ingenieurs* or *Ingeneers.* See Engine.

Machines are divided into *ſimple* and *compound.*

Simple Machines are thoſe otherwiſe called mechanical powers; See Mechanical Power.

There are ſix ſimple *Machines*, to which all others may be reduced; *viz.* the balance, lever, wheel, pulley, wedge, and ſcrew.——For the doctrine of which, ſee Balance, Lever, *&c.*

Compound Machine is that which is compoſed of ſeveral ſimple ones combined together.

The number of compound *Machines* is now almoſt infinite; and yet the antients ſeem to have out-done the moderns in this reſpect. Their *Machines* of war, architecture, *&c.* being deſcribed as vaſtly ſuperiour to ours.

Architectonical Machine, is an aſſemblage of pieces of wood ſo diſpoſed, as that by means of ropes and pulleys, a ſmall number of men may raiſe vaſt loads, and lay them in their places. Such are cranes, *&c.*

'Tis hard to conceive what *Machines* the antients muſt have uſed to raiſe thoſe immenſe ſtones found in ſome of the antique buildings.

Hydraulic, or *Water*-Machine, is either uſed to ſignifie a ſimple *Machine*, ſerving to conduct or raiſe water; as a ſluice, pump, *&c.* or ſeveral of theſe acting together, to produce ſome extraordinary effect; as the

Machine of *Marly*, the primum mobile whereof, is an Arm of the river Seine, which by its ſtream turns ſeveral large wheels, which work the handles, and theſe with piſtons raiſe the water into the pumps, and with other piſtons force it up in pipes againſt the aſcent of a hill to a reſervoir in a ſtone tower, 62 fathom higher than the river; ſufficient to ſupply Verſailles with a conſtant ſtream of 200 inches.

Military Machines, among the antients were of three kinds; the firſt ſerving to launch arrows, as the ſcorpion; javelins, as the catapulta; ſtones, as the baliſta; or fiery darts, as the pyraboli: the ſecond ſerving to beat down walls, as the battering ram and terebra: and the third to ſhelter thoſe who approach'd the enemies wall; as the tortoiſe or teſtudo, the vinea, and the towers of wood. See Scorpion, Aries, *&c.*

The *Machines of War* now in uſe, conſiſt in artillery, bombs, petards, *&c.* See Artillery, Gun, Cannon, *&c.*

Machine, in dramatic poetry, is when the poet brings ſome divinity or ſupernatural being upon the ſtage; to perform ſome exploit, or ſolve ſome difficulty out of the reach of human power.

The *Machines* of the drama are gods, angels, ghoſts, *&c.* which are ſo called from the *Machines* or contrivances by which they are repreſented upon the ſtage, and afterwards removed again.

Hence, the uſe of the word *Machine* has alſo paſſed into the epic poem; though the Reaſon of its Name be there wanting: it denotes in both Caſes, the Intervention, or Miniſtry of ſome divinity: but as the occaſion of *Machines*, in the one and the other, are ſomewhat different, the rules and laws of managing them are different likewiſe.

The antient dramatic poets never brought any *Machine* on the ſtage, but where there was an abſolute neceſſity for the preſence of a god; and were generally laughed at for ſuffering themſelves to be reduced to ſuch a neceſſity. Accordingly *Ariſtotle* lays it down as an expreſs Law, that the unravelling of the piece ſhould ariſe from the fable itſelf; and not from any foreign *Machine*, as in the Medea. Horace is ſomething leſs ſevere; and contents himſelf with ſaying, that the gods ſhould never appear, unleſs where the *Nodus*, or knot, is worthy of their preſence; *Nec Deus interſit, niſi dignus Vindice Nodus,——Inciderit.* See INTREAGUE, CATASTROPHE, *&c.*

But 'tis quite otherwiſe with the Epopea; there muſt be *Machines* every where, and in every part. Homer and Virgil do nothing without them. Petronius, with his uſual fire, maintains, that the poet ſhould deal more with the Gods than with men; that he ſhould every where leave marks of his prophetic raptures, and of the divine fury that poſſeſſes him; that his thoughts be all full of fables, that is, of allegories and figures: In fine, he will have a poem diſtinguiſhed from an hiſtory in all its parts; not ſo much by the verſes, as by that poetical fury which it expreſſes itſelf wholy by allegories, and does nothing but by *Machines*, or the miniſtry of the gods.

A poet, therefore, muſt leave it to the hiſtorians to ſay, that a fleet was diſperſed by a ſtorm, and driven to foreign ſhores; and muſt himſelf ſay with Virgil, that Juno went to ſeek Æolus, and that this god, at her requeſt, turned the winds looſe againſt the Trojans.——He muſt leave the hiſtorian to write, that a young prince behaved himſelf with a great deal of prudence and diſcretion on all occaſions; and muſt ſay with Homer that Minerva led him by the hand in all his enterprizes.——Let an hiſtorian ſay, that Agamemnon, quarelling with Achilles, hath a mind to ſhew him, though miſtakenly, that he can take Troy without his aſſiſtance. The poet muſt ſay that Thetis, piqued at the affront her ſon had received, flies up to heaven to demand vengeance of Jupiter; and that this god, to ſatisfy her, ſends the god Somnus, or Sleep, to Agamemnon, to deceive him, and make him believe that he ſhall take Troy that day.

It is thus that the epic poets uſed *Machines* in all parts of their works; In the Iliad, Odyſſee, and Æneid, the propoſition mentions them; the invocation is addreſſed to them; and the narration is full of them: they are the cauſes of actions; they make the knots; and at laſt they unravel them.——This laſt circumſtance is what Ariſtotle forbids in the drama; but 'tis what Homer and Virgil have both practiſed in the Epopea. Thus Minerva fights for Ulyſſes againſt Penelope's lovers, helps him to deſtroy them; and the next day, herſelf makes the Peace between Ulyſſes and the Ithacans, which cloſes the Odyſſee.

The uſe of *Machines*, in the epic poem, is, on ſome accounts, entirely oppoſite to what Horace preſcribes for the theatre. In tragedy that critic will never have them uſed without an abſolute neceſſity; whereas in the Epopea they ſhould never be uſed but where they may be as well let alone; and where the action appears as if it did not neceſſarily require them. How many Gods and *Machines* does Virgil implore to raiſe the Storm that drives Æneas into Carthage? which yet might eaſily have happened in the ordinary courſe of nature!

Machines, in the epic poem, therefore, are not contrivances of the poet to recover himſelf after he has made a falſe ſtep; nor to ſolve any difficulty peculiar to ſome part of the poem; but 'tis the preſence of a divinity, and ſome ſupernatural and extraordinary action which the poet inſerts in moſt of the incidents of his work, to render it more majeſtic and admirable; and to train his readers to piety and virtue. This mixture ſhould be ſo managed, as that the *Machines* may be retrenched, without retrenching any thing from the action.

As to the manner in which the *Machines* are to act; it may be obſerved, that in the old Mythology there are Gods both good, bad, and indifferent; and that our paſſions may be converted into ſo many allegorical divinities: ſo that every thing, both good and bad in a poem, may be attributed to theſe *Machines*, and may be tranſacted by them.——They don't however always act in the ſame manner; ſometimes they act without appearing, and by ſimple inſpirations, which have nothing in them extraordinary or miraculous; as when we ſay the devil ſuggeſted ſuch a thought, *&c.* The ſecond manner of acting is entirely miraculous; as when a divinity preſents itſelf viſible before men, ſo as to be known by them; or when they diſguiſe themſelves under ſome human form without diſcovering themſelves. The third manner partakes of each of the two, and conſiſts in oracles, dreams, and extraordinary inſpirations; which Boſſu calls *Demi Machines.*

All theſe manners ought to be ſo managed, as to carry a veriſimilitude; and tho' veriſimilitude be of a vaſt extent in *Machines*, as being founded on the divine power; yet it has its bounds. See PROBABILITY.

Horace propoſes three kinds of *Machines* for the ſtage; the firſt is a god viſibly preſent among the actors, which, he ſays, ſhould never be introduc'd but on a great occaſion. The ſecond contains more incredible and extraordinary *Machines*; as the metamorphoſis of Progne into a ſwallow, or of Cadmus into a ſerpent: and even theſe *Machines* he does not abſolutely condemn, or exclude them out of the poem, but only out of the ſcene and the ſight of the ſpectators: they are not to be repreſented, but may be recited. The third kind of *Machines* is abſolutely abſurd; and he rejects it entirely: the inſtance he gives, is that of a child taken alive out of the belly of a monſter that had devoured it. The other two manners are allowed indifferently in the Epopea; and without that diſtinction of Horace, which only ſuits the ſtage; it being in the drama alone, that a difference may be made between what paſſes in the ſcene, or the ſight of the ſpectators, and what behind the curtain.

MACROCEPHALUS*, ΜΑΚΡΟΚΕΦΑΛΟΣ, denotes a perſon with a head larger or longer than the natural ſize. See HEAD.

* The word is compounded of the Greek μακρος, long, large, and κεφαλη head.

MACROCOSM*, ΜΑΚΡΟΚΟΣΜΟΣ, denotes the great world; that is, the univerſe. See WORLD, and UNIVERSE.

* The word is compounded of the Greek μακρος, great, and κοσμος, world.

In which ſenſe it ſtands contra-diſtinguiſhed from *microcoſm.* See MICROCOSM.

MACULÆ, in aſtronomy, dark ſpots appearing on the luminous faces of the ſun, moon, and even ſome of the planets. See SPOT, MOON, PLANET, PHASES, *&c.*

In which ſenſe *Maculæ* ſtands contra-diſtinguiſhed from *Faculæ.* See FACULÆ,

Solar MACULÆ are dark ſpots, of an irregular, changeable figure, obſerved in the face of the ſun; firſt taken notice of by Scheiner 1611, and afterwards accurately obſerved by Galileus, Hevelius, Mr. Flamſtead, Caſſini, Kirch, *&c.* See SUN.

Many of theſe *Maculæ* appear to conſiſt of heterogenous parts; whereof the darker and more denſe are called by Hevelius, nuclei, and are incompaſſed, as it were, with atmoſpheres, ſomewhat rarer and leſs obſcure; but the figure both of the nuclei and entire *Maculæ* are variable.——In 1644, Hevelius obſerved a ſmall thin *Macula*, which in two days time grew to ten times its bulk; appearing withal much darker, and with a larger nucleus; and ſuch ſudden mutations are frequent. The nucleus, he obſerved, began to fail ſenſibly ere the ſpot diſappeared, and that ere it quite vanquiſhed, broke into four, which in two days reunited. Some *Maculæ* have laſted 2, 3, 10, 15, 20, 30, ſeldom 40 days, tho' Kirchius obſerved one in 1681, from April 26 to the 17th of July.——The ſpots move over the ſun's disk. with a motion ſomewhat ſlacker near the limb than near the centre; that obſerved by Kirch was twelve days viſible on the ſun's disk; for fifteen days more it lay behind it; it being the uſual rule to return to the limb whence they departed in 27, ſometimes in 28 days.

Laſtly, it muſt be obſerved, that the *Maculæ* contract themſelves near the limb, and in the middle of the disk appear much larger; thoſe often running into one in the disk, which in the limb were ſeperate: that many of them ariſe in the middle of the disk, and many diſappear in the ſame: and that none of them are obſerved to deviate from their path near the horizon; whereas Hevelius obſerving Mercury in the ſun, near the Horrizon, found him too low, being thruſt 27 ſeconds beneath his former path.

From theſe phænomena we collect, 1°. that ſince Mercury's depreſſion below his path ariſes from his parallax, the *Maculæ* having no parallax from the ſun, are nearer him than the planet:——but ſince they are hid behind the ſun three days longer than they are in the Hemiſphere viſible to us, it follows alſo, that they do not adhere to the ſurface of the ſun, but are at ſome diſtance from it.

2°. That ſince they ariſe and diſappear in the middle of the ſun's diſk, and undergo various alterations with regard both to bulk, figure and denſity, they muſt be formed *de novo*, and again diſſolved about the ſun; and are therefore, in all probability, a kind of ſolar clouds formed out of its exhalations.

3°. Since then the ſolar exhalations riſe over his body, and are ſuſpended at a certain height from it; it appears, from the laws of hydroſtatics, that the ſun muſt be incompaſſed with ſome fluid to drive thoſe exhalations upwards; which fluid muſt be denſer, as it is lower; and rarer, as higher, like our atmoſphere: And ſince the *Maculæ* diſſolve and diſappear in the very middle of the Sun's diſk, the matter thereof, *i. e.* the ſolar exhalations, muſt fall back again to the ſun; whence there muſt ariſe changes in the ſun's atmoſphere, and conſequently in the ſun itſelf.

4°. Since the revolution of the *Maculæ* round the ſun is very regular; and ſince their diſtance from the ſun is very ſmall, it is not properly the *Maculæ* that move round the ſun: But 'tis himſelf, together with his atmoſphere wherein the *Maculæ* ſwim, that in the ſpace of 27 days, moves round his own axis; and hence it is that the *Maculæ*, being viewed obliquely near the limb, appear narrow and oblong.

5°. Since the ſun appears with a circular diſk in every ſituation; his figure, as to ſenſe, muſt be ſpherical. See SUN.

MADDER, a red, bitter, aſtringent root of a plant, call'd by botaniſts, *Rubia Tinctorum*; much uſed by dyers to give a ſtrong and rich red colour. See RED.

It has its uſes too in medicine, being found of ſervice in obſtructions of the viſcera, and cachectic conſtitutions; and is generally made up in form of decoctions, diet-drinks, and medicated ales.

MADNESS, MANIA, in medicine. See MANIA.

MADRIER, in the military art, a thick plank, ſometimes armed with iron plates, having a cavity ſufficient to receive the mouth of a petard when charged; with which it is applied againſt a gate, or other body deſigned to be broke down. See PETARD.

MADRIER alſo denotes a long and broad plank, uſed for ſupporting the earth in mining, carrying on ſaps, making caponiers, galleries, and the like.

There are alſo *Madriers* lined with tin, and covered with earth; ſerving as defences againſt artificial fires, in lodgments, *&c.* where there is need of being covered over head.

MADRIGAL*, in the modern Italian, Spaniſh, and French poetry, denotes a little amorous piece, containing a certain number of free unequal verſes, not tied either to the ſcrupulous regularity of a ſonnet, or the ſubtlety of an epigram; but conſiſting of ſome tender, delicate, yet ſimple thought, ſuitably expreſſed.

* Menage derives the word from *Mandra*, which, in Latin and Greek, ſignifies a ſheepfold; imagining it to have been originally a kind of paſtoral or ſhepherd's ſong; whence the Italians formed their *Madrigale*, and we *Madrigal*. Others rather choſe to derive the word from *Madrugar*, which, in the Spaniſh ſignifies to riſe in the morning; the *Madrigals* being formerly ſung early in the morning, by thoſe who had a mind to ſerenade their miſtreſſes. See SERENADE.

The *Madrigal*, according to M. le Brun, is an epigram without any thing very briſk and ſprightly in its fall or cloſe: ſomething very tender and gallant is uſually the ſubject of it; and a certain beautiful, noble, yet chaſte, ſimplicity, forms its character.

The *Madrigal* is uſually looked on as the ſhorteſt of all the leſſer kinds of poems, and may conſiſt of fewer verſes than either the ſonnet or roundelay. There is no other rule regarded in mingling the rimes, and verſes of different kinds, but the fancy and convenience of the author. This poem, however, really allows of leſs licence than any other; whether we regard the rime, the meaſures, or the purity of expreſſion.

MAGAS, MAGADIS, the name of a muſical inſtrument in uſe among the antients. See MUSIC.

There were two kinds of *Magades*; the one a ſtring inſtrument, the invention whereof is aſcribed by ſome to Sappho, by others to the Lydians, and by others to Timotheus of Miletus.

The other was a kind of flute, which at the ſame time yielded very high and very low notes.——The former kind was much improved by Timotheus of Miletus, who is ſaid to have been impeached of a crime; for that by increaſing the number of chords, he ſpoiled and diſcredited the antient muſic.

MAGAZINE, in the military art, a place in fortified towns, where all ſorts of ſtores are kept, and where carpenters, wheelwrights, ſmiths, *&c.* are employ'd in making things needful to furniſh out the train of artillery. See ARSENAL.

MAGDALEN.——*Religious of St.* MAGDALEN, is a denomination given to divers communities of nuns, conſiſting generally of penitent courtezans; ſometimes alſo call'd *Magdalanettes.*

Such are thoſe at Metz, eſtabliſhed in 1452; thoſe at Paris in 1492; thoſe at Naples, firſt eſtabliſhed in 1324, and endowed by queen Sancha, to ſerve as a retreat for publick courtezans, who ſhould quit the trade, and betake themſelves to repentance; and thoſe of Rouen and Bourdeux, which had their original among thoſe of Paris.

In each of theſe monaſteries there are three kinds of perſons and congregations; the firſt conſiſts of thoſe who are admitted to make vows; and theſe bear the name of St. *Magdalen*: the congregation of St. Martha is the ſecond, and is compoſed of thoſe whom it is not judged proper to admit to vows: the congregation of St. Lazarus is compoſed of ſuch as are detained there by force.

The Religious of St. Magdalen at Rome, were eſtabliſhed by Pope Leo X. Clement VIII. ſettled a revenue on them, and further appointed, that the effects of all public proſtitutes, dying inteſtate, ſhould fall to them; and that the teſtaments of the reſt ſhould be invalid, unleſs they bequeathed a portion of their effects, which was to be at leaſt a fifth part, to them.

MAGI, or MAGIANS*, a title which the antient Perſians gave to their wiſe-men, or philoſophers. See PHILOSOPHER.

* The learned are in great perplexity about the original of the word *Magus*, Μαγος. Plato, Xenophon, Herodotus, Strabo, *&c.* fetch it from the Perſian language, in which it ſignified a *Prieſt*, or perſon appointed to officiate in holy things, as *Druid* among the Gauls, *Gymnoſophiſt* among the Indians, and *Levite* among the Hebrews. Others derive it from the Greek μεγας, great, which being borrowed of the Greeks by the Perſians, was returned in the form of μαγος; but Voſſius, with more probability, brings it from the Hebrew הגה, *haga*, to meditate: whence מהגים, *maaghim*, in Latin *Meditabundi*, q. d. *People addicted to meditation.*

Magi, among the Perſians, anſwered to σοφοι, or φιλοσοφοι, among the Greeks, *Sapientes* among the Latins, *Druids* and *Brachmans* among the Gauls, *Gymnoſophiſts*, among the Indians, and *Prophets* or *Prieſts* among the Egyptians. See DRUID, BRACHMAN, *&c.*

The antient *Magi*, according to Ariſtotle and Laertius, were the authors and conſervators of the Perſian philoſophy: and the philoſophy principally cultivated among them was theology, and politics; they being always eſteem'd as the interpreters of all laws both divine and human, on which account they were wonderfully revered by the people.——Hence Cicero obſerves, that none were admitted to the crown of Perſia, but ſuch as were well inſtructed in the diſcipline of the *Magi*, who taught the τα βασιλικα, and ſhew'd princes how to govern.

Plato, Apuleius, Laertius, and others, agree, that the philoſophy of the *Magi* related principally to the worſhip of the gods: they were the perſons who were to offer prayers, ſupplications, and ſacrifices, as if the gods would be heard by them alone.

According to Lucian, Suidas, *&c.* the theology, or worſhip of the gods, about which the *Magi* were employ'd, was little more than the diabolical Art of divination. So that μαγεια, ſtrictly taken, ſignifies divination. See MAGIC.

Porphyry defines the *Magi* well, *Cicero divina ſapientes & in iiſdem miniſtrantes*; adding, that the word *Magus* implied as much in the Perſian tongue.——Theſe people, ſays he, are held in ſuch veneration among the Perſians, that Darius the ſon of Hyſtaſpes, among other things, had it engraven on his monument, that he was the maſter of the *Magi*.

Philo-Judæus deſcribes the *Magi* to be diligent inquirers into nature, out of the love they bear to truth; and who ſetting themſelves apart for thoſe things, contemplate the divine virtues the more clearly, and initiate others in the ſame myſteries.

Their deſcendants, the modern *Magi*, or fire-worſhippers, are divided into three claſſes; whereof the firſt, and moſt learned neither eat, nor kill animals, but adhere to the old inſtitution of abſtaining from living creatures. The *Magi* of the ſecond claſs refrain only from tame animals: nor do the laſt kill all indifferently; it being the firm and diſtinguiſhing dogma of them all, την μετεμψυχωσιν ειναι, *that there is a tranſmigration of Souls.* See METEMPSYCHOSIS.

To intimate the ſimilitude between animals and men, they uſe to call the latter by the name of the former; thus their fellow-prieſts they call'd lions, the prieſteſſes lioneſſes, the ſervants crows, *&c.*

MAGIC, MAGIA, ΜΑΓΕΙΑ, in its antient ſenſe, the ſcience, or diſcipline and doctrine of the *Magi*, or wiſe-men of Perſia. See MAGI.

The origin of *Magic* and the *Magi* is aſcribed to Zoroaſter: Salmaſius derives the very name from Zoroaſter, who, he ſays, was ſurnam'd *Mog*, whence *Magus*. Others, inſtead of making him the author of the Perſian philoſophy, make him only the reſtorer and improver therefore; alledging, that many of the Perſian rites, in uſe among the *Magi*, were borrowed from the Zabii among the Chaldeans, who agreed in many things with the *Magi* of the Perſians; whence ſome make the name *Magus* common both to the Chaldeans and Perſians. Thus Plutarch mentions, that Zoroaſter inſtituted *Magi* among the Chaldeans; in imitation whereof the Perſians had theirs too.

MAGIC, in a more modern ſenſe, is a ſcience which teaches to perform wonderful and ſurprizing effects.

The word *Magic* originally carried with it a very innocent, nay laudable, meaning; being uſed purely to ſignify the ſtudy of wiſdom, and the more ſublime parts of knowledge: but in regard the antient *Magi* engaged themſelves in aſtrology, divination, ſorcery, *&c.* the term *Magic* in time became odious, and was only uſed to ſignify an unlawful and diabolical kind of ſcience, depending on the aſſiſtance of the devil, and departed ſouls. See NECROMANCY, WITCHCRAFT, FASCINATION, *&c.*

If any wonder how ſo vain and deceitful a ſcience ſhould gain ſo much credit and authority over mens minds, Pliny gives the reaſon of it. 'Tis, ſays he, becauſe it has poſſeſſed itſelf of three ſciences of the moſt eſteem among men; taking from each, all that is great and marvellous in it. Nobody doubts but it had its firſt origin in medicine, and that it inſinuated itſelf into the minds of the people, under pretence of affording extraordinary remedies. To theſe fine promiſes it added every thing in religion that is pompous and ſplendid, and that appears calculated to blind and captivate mankind. Laſtly, it mingled judiciary aſtrology with the reſt; perſuading people, curious of futurity, that it ſaw every thing to come in the heavens. See Magic, Astrology, *&c.* Agrippa divides *Magic* into three kinds; *Natural*, *Celeſtial*, and *Ceremonial* or *Superſtitious*.

Natural Magic is no more than the application of natural active cauſes to paſſive cauſes or ſubjects; by means whereof many ſurprizing, but yet natural, effects are produced. See Physicks, and Philosophy.

Baptiſta Porta has a treatiſe of natural *Magic*, or of ſecrets for performing very extraordinary things by natural cauſes. The natural *Magic* of the Chaldeans was nothing but the knowledge of the powers of ſimples, and minerals. The *Magic*, which they called *Theurgia*, conſiſted wholly in the knowledge of the ceremonies, to be obſerved in the worſhip of the Gods, in order to be acceptable. By virtue of theſe ceremonies they believed they could converſe with ſpiritual beings, and cure diſeaſes. See Theurgy.

Celeſtial Magic borders nearly on judiciary aſtrology: It attributes to ſpirits a kind of rule or dominion over the planets; and to the planets a dominion over men; and on thoſe principles builds a ridiculous kind of ſyſtem. See Astrology.

Superſtitious or *Goetic* Magic conſiſts in the invocation of devils. Its effects are uſually evil and wicked, tho' very ſtrange and ſeemingly ſurpaſſing the powers of nature; ſuppoſed to be produced, by virtue of ſome compact, either tacit or expreſs, with evil ſpirits: but the truth is, theſe have not all the power that is uſually imagined, nor do they produce half thoſe effects ordinarily aſcribed to them.

Naude has publiſhed an apology for all the great men ſuſpected of *Magic.*——Agrippa ſays, that the words uſed by thoſe in compact with the devil, to invoke him, and to ſucceed in what they undertake, are *Dies*, *mies*, *jeſquet*, *benedoefet*, *dou vima*, *enitemaus*. There are an hundred other ſuperſtitious formulas of words compoſed at pleaſure, or gathered from ſeveral different languages, or patch'd from the Hebrew, or form'd in imitation of it.

MAGIC *Lantern*, an optic machine, by means whereof little painted images are repreſented on an oppoſite wall of a dark room, magnified to any bigneſs at pleaſure. See Lantern.

Conſtruction of the Magic *Lantern.*—— Suppoſe A B C D (*Tab. Opticks*, *Fig.* 10.) a common tin lantern, to which is added a tube to draw out, F G. In H is fixed a metallic concave ſpeculum of a foot diameter at moſt, or four inches at leaſt; or, in lieu thereof, near the extremity of the tube is placed a convex lens, conſiſting of a ſegment of a ſmall ſphere, its diameter not exceeding a few inches. In the focus of the concave ſpeculum, or lens, is placed a lamp L; within the tube, where it is ſoldered to the ſide of the lantern, is placed a ſmall lens, convex on both ſides, being a portion of a ſmall ſphere, having its focus about the diſtance of three inches. The extreme part of the tube F M is ſquare, and has an aperture quite thro'; ſo as to receive an oblong frame N O, paſſed thro' it; in this frame are round holes an inch or two in diameter. According to the bigneſs of theſe holes, are drawn circles on a plain thin glaſs; and in theſe circles are painted any figures or images at pleaſure, with tranſparent water-colours. Theſe images fitted into the frame, and placed invertedly, at a little diſtance from the focus of the lens I; will be projected on an oppoſite white wall of a dark room, prodigiouſly magnified in all their colours, and an erect ſituation.

Or thus:——Every thing being managed as in the former; into the ſliding tube F G, inſert another convex-lens K, the ſegment of a ſphere ſomewhat larger than I; now if the picture be brought nearer to I than the diſtance of the focus, diverging rays will be propagated as if they proceeded from P: wherefore if the lens K be ſo placed, as that P is very near its focus, the image will be exhibited on the wall exceedingly magnified.

Theory of the Magic *Lantern.*—— The lamp being placed in the focus of the concave ſpeculum, or any convex glaſs, the rays will be propagated parallel to each other, and the image will be ſtrongly illumined, and will therefore emit a great number of rays upon the lens I. But being ſuppoſed to be placed near the lens I, the inverted image of the picture inverted muſt be form'd on the oppoſite wall, exceedingly magnified after its refraction thro' the lens; and it will be ſtill the more magnified as the lens is a ſegment of a leſs ſphere, and as the picture is placed nearer the focus of the lens; in a dark place therefore the picture will be repreſented prodigiouſly large and extremely vivid. See Lens.

To heighten the light, ſpecula are preferred to lens's; the focus of a ſpeculum being nearer than that of a lens.

De Chales orders the diameter of the lens I to be two, four, or five digits, and in a ſubduple proportion to the other K; *i. e.* if I be five digits, K muſt be 10; and the diameter of the ſpeculum, according to the ſame, is to be two digits. Zahnius chuſes to have the diameter of I $\frac{9}{10}$ of a foot, and that of K one foot and $\frac{5}{1}$, *&c.*

Little animals being included in the *Magic Lantern*, in the manner obſerved in ſpeaking of the microſcope; or any little tranſparent objects faſtened to a ſlice of talk or glaſs, and ſubſtituted inſtead of images; the *Magic Lantern* will become a microſcope. See Microscope.

MAGIC *Square*, a ſquare figure formed of a ſeries of numbers in arithmetical proportion, ſo diſpoſed in parallel and equal ranks, as that the ſums of each row, taken either perpendicularly, horizontally, or diagonally, are equal.

The ſeveral numbers which compoſe any ſquare number; (for inſtance, 1, 2, 3, 4, 5, *&c.* to 25 incluſive, which compoſe the ſquare number 25) being diſpoſed after each other in a ſquare figure of 25 cells, each in its cell: if then you change the order of theſe numbers, and diſpoſe them in the cells, in ſuch manner, as that the five numbers, which fill an horizontal rank of cells, being added together, ſhall make the ſame ſum with the five numbers in any other rank of cells, whether horizontal or vertical; and even the ſame number with the five in each of the two diagonal ranks; this diſpoſition of numbers is called a *Magic Square*, in oppoſition to the former diſpoſition, which is called a *Natural Square.* See the figures following.

Natural Square.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Magic Square.

16	14	8	2	25
3	22	20	11	9
15	6	4	23	17
24	18	12	10	1
7	5	21	19	13

One would imagine that *Magic Squares* had that name given them in regard this property of all their ranks, which, taken any way, make always the ſame ſum, appeared extremely ſurprizing, eſpecially in certain ignorant ages, when mathematicks paſſed for *Magic:* But there is a great deal of reaſon to ſuſpect, that theſe ſquares merited their name ſtill further by the ſuperſtitious operations they were imployed in, as the conſtruction of taliſmans, *&c.* for according to the childiſh philoſophy of thoſe days, which attributed virtues to numbers, what virtues might not be expected from numbers ſo wonderful? See Number, Talisman, *&c.*

However, what was at firſt the vain practice of makers of taliſmans and conjurers, has ſince become the ſubject of a ſerious reſearch among mathematicians; not that they imagine it will lead them to any thing of ſolid uſe, or advantage. *Magic Squares* ſavour too much of their original to be of much uſe. But only as 'tis a kind of play, where the difficulty makes the merit; and as it may chance to produce ſome new views of numbers which mathematicians will not loſe the occaſion of.

Eman. Moſchopulus, a Greek author of no great antiquity, is the firſt that appears to have ſpoke of *Magic Squares*; and by the age wherein he lived, there is reaſon to imagine he did not look on them merely as a mathematician. However, he has left us ſome rules for their conſtruction.——In the treatiſe of Cor. Agrippa ſo much accuſed of *Magic*, we find the ſquares of ſeven numbers, *viz.* from three to nine incluſive, diſpoſed *magically*; and it muſt not be ſuppoſed that thoſe ſeven numbers were preferred to all the others without a very good reaſon. In effect, 'tis becauſe their ſquares, according to the ſyſtem of Agrippa and his followers, are planetary. The ſquare of 3, for inſtance, belongs to Saturn, that of 4 to Jupiter, that of 5 to Mars, that of 6 to the Sun, that of 7 to Venus, that of 8 to Mercury, and that of 9 to the Moon. M. Bachet applied himſelf to the ſtudy of *Magic Squares*, on the hint he had taken from the planetary ſquares of Agrippa; as being unacquainted with the work of Moſchopulus, which, is only in manuſcript in the French king's library; and without the aſſiſtance of any other author, found out a new method for thoſe ſquares whoſe root is uneven, for inſtance 25, 49, *&c.* but could not make any thing of thoſe whoſe root is even.

After him came M. Frenicle, who took the ſame ſubject in hand. A great algebraiſt was of opinion, that whereas the ſixteen numbers, which compoſe the ſquare, might be diſpoſed 20922789888000 different ways in a natural ſquare (as from the rules of combination 'tis certain they may) they could not be diſpoſed in a *Magic Square* above ſixteen different ways. But M. Frenicle ſhewed, that they might be diſpoſed 878 different ways; whence it appears how much his method exceeds the former, which only yielded the 55th part of *Magic Squares* of that of M. Frenicle.

To this enquiry he thought fit to add a difficulty, that had not yet been conſidered: The *Magic Square* of 7, for inſtance, being conſtructed, and its 49 cells filled, if the two horizontal ranks of cells, and at the ſame time the two vertical ones, the moſt remote from the middle, be retrenched, that is, if the whole border or circumference of the ſquare be taken away; there will remain a ſquare, whoſe root will be 5, and which will only conſiſt of twenty five cells.——Now it is not at all ſurprizing that the ſquare ſhould be no longer *magical,* in regard the ranks of the large one were not intended to make the ſame ſum, excepting when taken entire with all the ſeven numbers that fill their ſeven cells; ſo that being mutilated each of two cells, and having loſt two of their numbers, it may be well expected, that their remainders will not any longer make the ſame ſum. But M. Frenicle would not be ſatisfied, unleſs when the circumference or border of the *Magic Square* was taken away, and even any circumference at pleaſure, or in fine, ſeveral circumferences at once, the remaining ſquare were ſtill *magical:* which laſt condition, no doubt, made theſe *Squares* vaſtly more *magical* than ever.

Again, he inverted that condition, and required that any circumference taken at pleaſure, or even ſeveral circumferences ſhould be inſeparable from the ſquare; that is, it ſhould ceaſe to be *magical* when they were removed, and yet continue *magical* after the removal of any of the reſt. M. Frenicle, however, gives no general demonſtration of his methods, and frequently ſeems to have no other guide but his groping. 'Tis true, his book was not publiſhed by himſelf, nor did it appear till after his death, *viz.* in 1693.

In 1703, M. Poignard, Canon of Bruſſels, publiſhed a treatiſe of ſublime *Magic Squares.* Before him there had been no *Magic Squares* made but for ſeries's of natural numbers that formed a ſquare; but M. Poignard made two very conſiderable improvements; 1°. Inſtead of taking all the numbers that fill a ſquare, for inſtance, the thirty ſix ſucceſſive numbers, which would fill all the cells of a natural ſquare whoſe ſide is 6, he only takes as many ſucceſſive numbers as there are units in the ſide of the ſquare, which in this caſe are ſix; and theſe ſix numbers alone he diſpoſes in ſuch manner, in the thirty ſix cells, that none of them are repeated twice in the ſame rank, whether it be horizontal, vertical or diagonal: whence it follows, that all the ranks, taken all the ways poſſible, muſt always make the ſame ſum, which M. Poignard calls repeated progreſſion. 2°. Inſtead of being confined to take theſe numbers according to the ſeries and ſucceſſion of the natural numbers, that is, in an arithmetical progreſſion, he takes them likewiſe in a geometrical progreſſion, and even an harmonical progreſſion.——But with theſe two laſt progreſſions the *Magic* muſt neceſſarily be different from what it was: In the ſquares, filled with numbers in geometrical progreſſion, it conſiſts in this, that the products of all the ranks are equal, and in the harmonical progreſſion, the numbers of all the ranks continually follow that progreſſion: he makes ſquares of each of theſe three progreſſions repeated.

This book of M. Poignard gave occaſion to M. de la Hire to turn his thoughts the ſame way, which he did with ſuch ſucceſs, that he ſeems to have well-nigh compleated the theory of *Magic Squares*——He firſt conſiders uneven *Squares:* all his predeceſſors on the ſubject having found the conſtruction of even ones by much the moſt difficult; for which reaſon M. de la Hire reſerves thoſe for the laſt. This exceſs of difficulty may ariſe partly from hence, that the numbers are taken in arithmetical progreſſion. Now in that progreſſion, if the number of terms be uneven, that in the middle has ſome properties, which may be of ſervice; for inſtance, being multiplied by the number of terms in the progreſſion, the product is equal to the ſum of all the terms.

M. de la Hire propoſes a general method for uneven ſquares, which has ſome ſimilitude with the theory of compound motions, ſo uſeful and fertile in mechanics. As that conſiſts in decompounding motions, and reſolving them into others more ſimple, ſo does M. de la Hire's method conſiſt in reſolving the ſquare that is to be conſtructed, into two ſimple and primitive ſquares. It muſt be owned, however, it is not quite ſo eaſy to conceive thoſe two ſimple and primitive ſquares in the compound or perfect ſquare, as in an oblique motion to imagine a parallel and perpendicular one.

Suppoſe a ſquare of cells, whoſe root is uneven; for inſtance 7, and that its forty nine cells are to be filled magically with numbers, for inſtance, the firſt 7. M. de la Hire, on the one ſide, takes the firſt ſeven numbers, beginning with unity, and ending with the root 7; and on the other, 7, and all its multiples to 49 excluſively; and as theſe only make ſix numbers, he adds 0, which makes this an arithmetical progreſſion of ſeven terms as well as the other. 0. 7. 14. 21. 28. 35. 42.

This done, with the firſt progreſſion repeated, he fills the ſquare of the root 7 magically. In order to this, he writes in the firſt ſeven cells of the firſt horizontal rank, the ſeven numbers propoſed, in what order he pleaſes, for that is abſolutely indifferent; and it is proper to obſerve here, that thoſe ſeven numbers may be ranged in 5040 different manners in the ſame rank. The order in which they are placed in the firſt horizontal rank, be it what it will, is that which determines their order in all the reſt. For the ſecond horizontal rank, he places in its firſt cell, either the third, the fourth, the fifth, or the ſixth number, from the firſt number of the firſt rank, and after that writes the ſix others in the order as they follow. For the third horizontal rank, he obſerves the ſame method with regard to the ſecond, that he obſerved in the ſecond with regard to the firſt, and ſo of the reſt. For inſtance, ſuppoſe the firſt horizontal rank filled with the ſeven numbers in their natural order, 1. 2. 3. 4. 5. 6. 7. the ſecond horizontal rank may either commence with 3, with 4, with 5, or with 6; but in this inſtance it commences with 3, the third rank therefore muſt commence with 5, the fourth with 7, the fifth with 2, the ſixth with 4, and the ſeventh with 6. The commencement of the ranks which follow the firſt being thus determined, the other numbers, as we have already obſerved, muſt be written down in the order wherein they ſtand in the firſt, going on to 5, 6, and 7, and returning to 1, 2, &c. till every number in the firſt rank be found in every rank underneath, according to the order arbitrarily pitched upon at firſt. By this means, it is evident, no number whatever can be repeated twice in the ſame rank, and by conſequence that the ſeven numbers 1. 2. 3. 4. 5. 6. 7. being in each rank, they muſt of neceſſity make the ſame ſum.

1	2	3	4	5	6	7
3	4	5	6	7	1	2
5	6	7	1	2	3	4
7	1	2	3	4	5	6
2	3	4	5	6	7	1
4	5	6	7	1	2	3
6	7	1	2	3	4	5

It appears, from this example, that the arrangement of the numbers in the firſt rank being choſen at pleaſure, the other ranks may be continued in four different manners; and ſince the firſt rank may have 5040 different arrangements, there are no leſs than 20160 different manners of conſtructing the *Magic Square* of ſeven numbers repeated.

1	2	3	4	5	6	7
2	3	4	5	6	7	1
3	4	5	6	7	1	2
4	5	6	7	1	2	3
5	6	7	1	2	3	4
6	7	1	2	3	4	5
7	1	2	3	4	5	6

1	2	3	4	5	6	7
7	1	2	3	4	5	6
6	7	1	2	3	4	5
5	6	7	1	2	3	4
4	5	6	7	1	2	3
3	4	5	6	7	1	2
2	3	4	5	6	7	1

The order of the numbers in the firſt rank being determined; if in beginning with the ſecond rank, the ſecond number 2, or the laſt number 7 ſhould be pitched upon; in one of thoſe caſes one of the diagonal ranks would have the ſame number conſtantly repeated; and, in the other caſe, the other diagonal would have it repeated; of conſequence therefore, either the one or the other diagonal would be falſe, unleſs the number repeated ſeven times ſhould happen to be 4, for four times ſeven is equal to the ſum of 1. 2. 3. 4. 5. 6. 7. and, in general, in every ſquare conſiſting of an uneven number of terms, in arithmetical progreſſion, one of the diagonals would be falſe according to thoſe two conſtructions, unleſs the term, always repeated in that diagonal, were the middle term of the progreſſion.

It is not however at all neceſſary to take the terms in an arithmetical progreſſion; for, according to this method, one may conſtruct a *Magic Square* of any numbers at pleaſure, whether they be according to any certain progreſſion or not. If they be in an arithmetical progreſſion, it will be proper, out of the general method, to except thoſe two conſtructions, which produce a continual repetition of the ſame term, in one of the two diagonals; and only take in the caſe, wherein that repetition would prevent the diagonal from being juſt. Which caſe being abſolutely diſregarded, when we computed that the ſquare of 7 might have 20160 different conſtructions; it is evident, that by taking that caſe in, it muſt have vaſtly more.

To begin the ſecond rank with any other number beſides the ſecond and the laſt, muſt not however be looked on as an univerſal rule. It holds good for the ſquare of 7, but if the ſquare of 9, for inſtance, were to be conſtructed, and the fourth figure of the firſt horizontal rank were pitched on for the firſt of the ſecond, the conſequence would be, that the fifth and eighth horizontal ranks would likewiſe commence with the ſame number, which would therefore be repeated three times in the ſame vertical rank, and occaſion other repetitions in all the reſt. The general rule therefore muſt be conceived thus: Let the number in the firſt rank pitched on, for the commencement of the ſecond, have ſuch an exponent of its quota, that is, let the order of its place be ſuch, as that if an unit be taken from it, the remainder will not be any juſt quota part of the root of the ſquare; that is, cannot divide it equally. If, for example, in the ſquare of 7, the third number of the firſt horizontal rank be pitched on for the firſt of the ſecond, ſuch conſtruction will be juſt; becauſe the exponent of the place of that number, *viz.* 3, ſubſtracting 1, that is 2, cannot divide 7. Thus alſo might the fourth number of the ſame firſt rank be choſen, becauſe 4—1, *viz.* 3, cannot divide 7, and for the ſame reaſon the fifth or ſixth number might be taken: But in the ſquare of 9, the fourth number of the firſt rank muſt not be taken, becauſe 4—1, *viz.* 3, does divide 9. The reaſon of this rule will appear very evidently, by conſidering in what manner the returns of the ſame numbers do or do not happen, taking them always in the ſame manner in any given ſeries. And hence it follows, that the fewer diviſions the root of any ſquare to be conſtructed has, the more different manners of conſtructing it there are; and that the prime numbers, that is, thoſe which have no diviſions, as 5. 7. 11. 13. *&c.* are thoſe whoſe ſquares will admit of the moſt variations in proportion to their quantities.

The ſquares conſtructed, according to this method, have ſome particular properties not required in the problem: For the numbers that compoſe any rank parallel to one of the two diagonals, are ranged in the ſame order with the numbers that compoſe the diagonal, to which they are parallel. And as any rank parallel to a diagonal muſt neceſſarily be ſhorter, and have fewer cells than the diagonal itſelf, by adding to it the correſponding parallel which has the number of cells the other falls ſhort of the diagonal; the numbers of thoſe two parallels, placed, as it were, end to end, ſtill follow the ſame order with thoſe of the diagonal: beſides, that their ſums are likewiſe equal; ſo that they are magical on another account.

Firſt Primitive.

1	2	3	4	5	6	7
3	4	5	6	7	1	2
5	6	7	1	2	3	4
7	1	2	3	4	5	6
2	3	4	5	6	7	1
4	5	6	7	1	2	3
6	7	1	2	3	4	5

Inſtead of the ſquares, which we have hitherto formed by horizontal ranks, one might alſo form them by vertical ones; the caſe is the ſame in both.

Second Primitive.

0	7	14	21	28	35	42
21	28	35	42	0	7	14
42	0	7	14	21	28	35
14	21	28	35	42	0	7
35	42	0	7	14	21	28
7	14	21	28	35	42	0
28	35	42	0	7	14	21

All we have hitherto ſaid regards only the firſt primitive ſquare, whoſe numbers, in the propoſed example, were 1. 2. 3. 4. 5. 6. 7; here ſtill remains the ſecond primitive, whoſe numbers are 0. 7. 14. 21. 28. 35. 42. M. de la Hire proceeds in the ſame manner here as in the former; and this may likewiſe be conſtructed in 20160 different manners, as containing the ſame number of terms with the firſt. Its conſtruction being made, and of conſequence all its ranks making the ſame ſum, it is evident, that if we bring the two into one, by adding together the numbers of the two correſponding cells of the two ſquares, that is, the two numbers of the firſt of each, the two numbers of the ſecond, of the third, *&c.* and diſpoſe them in the forty nine correſponding cells of a third ſquare; it will likewiſe be *magical*, in regard its ranks, formed by the addition of equal ſums to equal ſums muſt of neceſſity be equal among themſelves. All that remains in doubt is, whether or no, by the addition of the correſponding cells of the two firſt ſquares, all the cells of the third will be filled in ſuch manner, as that each not only contain one of the numbers of the progreſſion from 1 to 49, but alſo that this number be different from that of any of the reſt, which is the end and deſign of the whole operation.

As to this, it muſt be obſerved, that if in the conſtruction of the ſecond *Primitive Square*, care have been taken in the commencement of the ſecond horizontal rank, to obſerve an order with regard to the firſt, different from what was obſerved in the conſtruction of the firſt ſquare; for inſtance, if the ſecond rank of the firſt ſquare begun with the third term of the firſt rank, and the ſecond rank of the ſecond ſquare commence with the fourth of the firſt rank, as in the example it actually does; each number of the firſt ſquare may be combined once, and only once, by addition with all the numbers of the ſecond. And as the numbers of the firſt are here 1. 2. 3. 4. 5. 6. 7. and thoſe of the ſecond 0. 7. 14. 21. 28. 35. 42. by combining them in this manner, we have all the numbers in the progreſſion from 1 to 49, without having any of them repeated; which is the *Perfect Magic Square* propoſed.

Perfect Square.

1	9	17	25	33	41	49
24	32	40	48	7	8	16
47	6	14	15	23	31	39
21	22	31	38	46	5	13
37	47	4	12	20	28	29
11	19	27	35	36	46	3
34	42	43	2	10	18	26

The neceſſity of conſtructing the two *Primitive Squares* in a different manner, does not at all hinder but that each of the 20160 conſtructions of the one may be combined with all the 20160 conſtructions of the other: of conſequence therefore 20160 multiplied by itſelf, which makes 406425600, is the number of different conſtructions that may be made of the *Perfect Square*, which here conſiſts of the 49 numbers of the natural progreſſion. But as we have already obſerved, that a *Primitive Square* of ſeven numbers repeated may have above 20160 ſeveral conſtructions, the number 406425600 muſt come vaſtly ſhort of expreſſing all the poſſible conſtructions of a perfect *Magic Square* of the forty nine firſt numbers.

As to the *Even Squares*, he conſtructs them like the *Uneven* ones, by two *Primitive Squares*; but the conſtruction of *Primitives* is different in the general, and may be ſo a great number of ways: and thoſe general differences admit of a great number of particular variations, which give as many different conſtructions for the ſame even ſquare. It ſcarce ſeems poſſible to determine exactly, either how many general differences there may be between the conſtruction of the primitive ſquares of an even ſquare and an uneven one; nor how many particular variations each general difference may admit of: and of conſequence we are ſtill far from being able to determine the number of different conſtructions of all thoſe that may be made by the primitive ſquares.

MAGISTER, MASTER, a title frequently found in old Writings; noting the perſon who bore it to have attained ſome degree of eminency *in ſcientia aliqua præſertim literaria.*

In old times, thoſe we now call *Doctors*, were called *Magiſtri.* See DOCTOR, DEGREE, and MASTER.

MAGISTERY, MAGISTERIUM, in Chymiſtry, a very fine powder made by ſolution and precipitation; or, a precipitate of ſome ſolution made by a ſalt, or other body, which breaks the force of the diſſolvent. See PRECIPITATE.

MAGISTERY *of Biſmuth* is a fine powder, made by diſſolving biſmuth in ſpirit of nitre, and pouring on it ſalt water, which precipitates the *Magiſtery* to the bottom. See BISMUTH.

MAGISTERY *of Lead* is a fine powder, made by diſſolving ſaccharum ſaturni in diſtilled vinegar, and then precipitating it with oil of tartar *per deliquium.* See LEAD.

MAGISTERY is alſo uſed in ſpeaking of reſins, or reſinous extracts of ſcammony, jalap, turbith, *&c.* which are made by diſſolving the matter in ſpirit of wine, and precipitating it with water. See RESIN.

Mr. Boyle takes the proper notion of a *Magiſtery* to conſiſt in a preparation of a body, whereby it is wholly, or at leaſt in great meaſure, by means of ſome extraneous additament, converted into a body of a different kind: as when iron or copper is turned into cryſtals of Mars and Venus.

MAGMA, ΜΑΓΜΑ, among Chymiſts, *&c.* the dregs or recrement of an unguent, remaining after all the more fluid parts are expreſs'd.

MAGNA *Arteria*, the ſame with Aorta. See AORTA.

MAGNA *Charta* *, the *Great Charter* of liberties, granted in the ninth year of Henry the third, and confirmed by Edward the firſt. See CHARTER.

* The reaſon of its being termed *magna* or great, is either becauſe of the excellency of the laws and liberties therein contained; or becauſe there was another charter, called *Charta de foreſta*, eſtabliſhed with it, which was the leſſer of the two; or becauſe it contained more than any other charters; or in regard of the wars and troubles in the obtaining of it; or of the great and remarkable ſolemnity in the denouncing excommunications againſt the infringers of it.

Magna Charta may be ſaid to derive its origin from king Edward the confeſſor, who granted divers liberties and privileges both civil and eccleſiaſtical by charter: The ſame with ſome others were alſo granted and confirmed by king Henry I, by a celebrated great charter now loſt. And his ſucceſſors king Stephen, king Henry II. and king John, confirmed or reenacted the ſame; but that laſt prince violating his charter, the barons took up arms, and his reign ended in blood. Henry III. who ſucceeded him, after having procured an inquiſition to be made by twelve men in each county, what the liberties of England were in the time of Henry I, granted a new charter, being the preſent *Magna Charta*; which he ſeveral times confirmed, and as often broke again: till, in the thirty ſeventh year of his reign, he came to Weſtminſter-hall; where, in the preſence of the nobility and biſhops, with lighted candles in their hands, *Magna Charta* was read, the king all the while laying his hand on his breaſt, and at laſt ſolemnly ſwearing faithfully and inviolably to obſerve all the things therein contained, as he was a man, a chriſtian, a ſoldier, and a king. Then the biſhops extinguiſhed their candles, throwing them on the ground, crying, thus let him be extinguiſhed and ſtink in hell who violates this charter.

Magna Charta is the baſis of the Engliſh laws and liberties. See LAW, and STATUTE. It was thought to be ſo beneficial to the ſubject, and a law of ſo great equity in compariſon of thoſe which were formerly in uſe, that king Henry, for the granting it, had the fifteenth penny of all the moveable goods both temporal and ſpiritual.——Sir Edward Coke obſerves, *Magna Charta* has been above thirty times confirmed.

MAGNET, MAGNES *, the *Loadſtone*; a ſort of ferruginous ſtone, in weight and colour reſembling iron ore, though ſomewhat harder and more heavy; endued with divers extraordinary properties, attractive, directive, inclinatory, *&c.* See MAGNETISM.

* The *Magnet* is alſo called *Lapis Heracleus*, from Heraclea, a city of Magneſia, a port of the antient Lydia, where it is ſaid to have been firſt found, and from which it is uſually ſuppoſed to have taken its name. Though others derive the word from a ſhepherd named *Magnes*, who firſt diſcovered it with the iron of his crook on mount Ida. It is alſo called *lapis nauticus*, by reaſon of its uſe in navigation; and *ſiderites*, from its attracting iron, which the Greeks call σιδηρος.

The *Magnet* is uſually found in iron mines, and ſometimes in very large pieces, half *Magnet*, half iron. Its colour is different, according to the different countries it is brought from. Norman obſerves, that the beſt are thoſe brought from China and Bengal, which are an irony or ſanguine colour; thoſe of Arabia are reddiſh, thoſe of Macedonia blackiſh; and thoſe of Hungary, Germany, England, &c. the colour of unwrought iron. Neither its figure nor bulk are determined, but it is found of all forms and ſizes.

The antients reckoned five kinds of *Magnets*, different in colour and virtue: the Ethiopic, Magneſian, Bœotic, Alexandrian, and Natolian. They alſo took it to be male and female: but the chief uſe they made of it was in medicine; eſpecially for the cure of burns, and defluxions on the eyes. ——The moderns, more happy, take it to conduct them in their voyages. See NAVIGATION.

The moſt diſtinguiſhing properties of the *Magnet*, are, That it attracts iron, and that it points to the poles of the world; and in other circumſtances alſo dips or inclines to a point beneath the horizon, directly under the pole; and that it communicates theſe properties by touch, to iron.——On which foundation are built the mariners needles; both horizontal, and inclinatory, or dipping needles. See NEEDLE, DIPPING, &c.

The attractive power of the MAGNET was known to the antients, and is mentioned even by Plato and Euripides, who call it the *Herculean Stone*; becauſe it commands iron, which ſubdues every thing elſe: But the knowledge of its directive power, whereby it diſpoſes its poles along the meridian of every place, and occaſions needles, pieces of iron, &c. touched with it, to point nearly north and ſouth, is of a much later date: though the exact time of its diſcovery, and the diſcoverer himſelf, are yet in the dark. The firſt tidings we hear of it, is in 1260, when Marco Polo the Venetian is ſaid by ſome to have introduced the mariners compaſs; though not as an invention of his own, but as derived from the Chineſe, who are ſaid to had the uſe of it long before: though ſome imagine that the Chineſe rather borrowed it from the Europeans.

Flavio de Gioia a Neapolitan, who lived in the thirteenth century, is the perſon uſually ſuppoſed to have the beſt title to the diſcovery: And yet Sir. G. Wheeler mentions, that he had ſeen a book of aſtronomy much older, which ſuppoſed the uſe of the needle; though not as applied to the uſes of navigation, but of aſtronomy. And in Guyot de Provins, an old French poet, who wrote about the year 1180, there is expreſs mention made of the *Loadſtone* and the compaſs; and their uſe in navigation obliquely hinted at. See COMPASS.

The variation of the MAGNET, or its declination from the pole, was firſt diſcovered by Seb. Cabot, a Venetian, in 1500; and the variation of that variation by Mr. Gellibrand, an Engliſhman, about the year 1625. See VARIATION.

Laſtly, The dip or inclination of the needle, when at liberty to play vertically, to a point beneath the horizon, was firſt diſcovered by another of our countrymen, Mr. R. Norman, about the year 1576. See the article DIPPING *Needle*.

Phenomena of the MAGNET. 1°. In every *Magnet* there are two poles, one whereof points northward, the other ſouthward; and if the *Magnet* be divided into ever ſo many pieces, the two poles will be found in each piece. 2°. Theſe poles in different parts of the globe, are differently inclined towards a point under the horizon. 3°. Theſe poles, though contrary to one another, do help mutually towards the *Magnet's* attraction and ſuſpenſion of iron. 4°. If two *Magnets* be ſpherical, one will turn or conform itſelf to the other, ſo as either of them would do to the earth; and after they have ſo conformed or turned themſelves, they endeavour to approach or join each other; but if placed in a contrary poſition, they avoid each other. 5°. If a *Magnet* be cut through the axis, the parts or ſegments of the ſtone, which before were joined, will now avoid and fly each other. 6°. If the *Magnet* be cut by a ſection perpendicular to its axis, the two points, which before were conjoined, will become contrary poles; one in one, the other in the other ſegment. 7°. Iron receives virtue from the *Magnet* by application to it, or barely from an approach near it, though it do not touch it; and the iron receives this virtue variouſly, according to the parts of the ſtone it is made to touch, or even approach to. 8°. If an oblong piece of iron be any how applied to the ſtone, it receives virtue from it, only as to its length. 9°. The *Magnet* loſes none of its own virtue by communicating any to the iron; and this virtue it can communicate to the iron very ſpeedily; though the longer the iron touches or joins the ſtone, the longer will its communicated virtue hold; and a better *Magnet* will communicate more of it, and ſooner, than one not ſo good. 10°. Steel receives virtue from the *Magnet* better than iron. 11°. A needle touched by a *Magnet* will turn its ends the ſame way towards the poles of the world, as the *Magnet* itſelf does. 12°. Neither *Loadſtone* nor needles touched by it do conform their poles exactly to thoſe of the world, but have uſually ſome variation from them: and this variation is different in divers places, and at divers times in the ſame place. 13°. A *Loadſtone* will take up much more iron when armed or capp'd than it can alone. And though an iron ring or key be ſuſpended by the *Loadſtone*, yet the *magnetical* particles do not hinder that ring or key from turning round any way, either to the right or left. 14°. The force of a *Loadſtone* may be variouſly increaſed or leſſened by the various application of iron, or another *Loadſtone* to it. 15°. A ſtrong *Magnet* at the leaſt diſtance from a leſſer or a weaker, cannot draw to it a piece of iron adhering actually to ſuch leſſer or weaker ſtone; but if it come to touch it, it can draw it from the other: But a weaker *Magnet*, or even a little piece of iron, can draw away or ſeparate a piece of iron contiguous to a greater or ſtronger *Loadſtone*. 16°. In theſe northern parts of the world, the ſouth pole of a *Loadſtone* will raiſe up more iron than the north pole. 17°. A plate of iron only, but no other body interpoſed, can impede the operation of the *Loadſtone*, either as to its attractive or directive quality. Mr. Boyle found it true in glaſſes ſealed hermetically; and glaſs is a body, as impervious as moſt are, to any effluvia. 18°. The power or virtue of a *Loadſtone* may be impaired by lying long in a wrong poſition, as alſo by ruſt, wet, &c. and may be quite deſtroyed by fire. 19°. A piece of iron wire well touched, will, upon being bent round in a ring, or coyled round on a ſtick, &c. generally, quite loſe its directive virtue; but always have it much diminiſhed: and yet if the whole length of the wire were not entirely bent, ſo that the ends of it, though but for the length of one tenth of an inch, were left ſtrait, the virtue will not be deſtroyed in thoſe parts; though it will in all the reſt. This was firſt obſerved by Grimaldi and de la Hire; and is confirmed by the experiments of Mr. Derham; who adds further, that though coyling or bending the wire as above, would always deſtroy its virtue by day, yet it would not do it in the evening. 20°. The ſphere of the activity of *Magnets* is greater and leſs at different times: in particular, that reſerved in the repoſitory of the Royal Society will keep a key or other body ſuſpended to another, ſometimes, at the height of eight or ten feet; and at others, not above four feet. To which we may add, that the variation of the *magnetical* needle from the meridian, varies at various times of the day; as appears from ſome new experiments of Mr. Graham. See VARIATION. 21°. By twiſting a piece of wire touched with a *Magnet*, its virtue is exceedingly diminiſhed, and ſometimes ſo diſordered and confuſed, that in ſome parts it will attract, and in others repel; and even in ſome places, one ſide of the wire ſeems to be attracted, and the other ſide repell'd by one and the ſame pole of the ſtone. 22°. A piece of wire that has been touched, being ſplit or cleft in two; the poles are ſometimes changed; as in a cleft *Magnet*; the north becoming the ſouth, and the ſouth the north: And yet ſometimes one half of the wire will retain its former poles, and the other half have them changed. To which it may be added, that laying one or other ſide of the half uppermoſt, cauſes a great alteration in its tendency or averſion to the poles of the *Magnet*. 23°. A wire being touched from end to end with the ſame pole of the *Magnet*, the end whereat you begin will always turn contrary to the pole which touched it: If it be again touched the ſame way with the other pole of the *Magnet*, it will then be turned the contrary way. 24°. If a piece of wire be touched in the middle with only one pole of the *Magnet*, without moving it backwards or forwards; in that place will be the pole of the wire, and the two ends will be the other pole. 25. If a *Magnet* be heated red hot; and again cooled either with its ſouth pole towards the north in a horizontal poſition, or with its ſouth pole downwards in a perpendicular poſition; its poles will be changed. 26°. Mr. Boyle (to whom we are indebted for the following *magnetical* phænomena) found he could preſently change the poles of a ſmall fragment of a *Loadſtone*, by applying them to the oppoſite vigorous ones of a large *Magnet*. 27°. Hard iron tools well tempered, when heated by a briſk attrition, as filing, turning, &c. will, while warm, attract thin filings or chips of iron, ſteel, &c. but not when cold; though there are not wanting ſome inſtances of their retaining the virtue when quite cold. 28°. The iron bars of windows, &c. which have a long time ſtood in an erect poſition, grow permanently *magnetical*; the lower ends of ſuch bars being the north pole, and the upper the ſouthern. 29°. A bar of iron that has not ſtood long in an erect poſture, if it be only held perpendicularly, will become *magnetical*; and its lower end the north pole; as appears from its attracting the ſouth pole of a needle: but then this virtue is tranſient, and by inverting the bar, the poles will ſhift their places. In order therefore to render the quality permanent in an iron bar, it muſt continue a long time in a proper poſition. But the fire will produce the effect in a ſhort time: for as it will immediately deprive a *Loadſtone* of its attractive virtue; ſo, it ſoon gives a verticity to a bar of iron, if being heated red hot, it be cooled in an erect poſture, or directly north and ſouth. Nay, tongs and fire-forks, by being often heated and ſet to cool again in a poſture nearly erect, have gained this *magnetical* property. 30°. Mr. Boyle found, that by heating a piece of Engliſh oker red hot, and placing it to cool in a proper poſture, it manifeſtly acquired a *magnetic* virtue. And an excellent *Magnet* of the ſame ingenious Gentleman's man's having lain near a year in an inconvenient poſture, had its virtue ſurprizingly impaired; as if it had been by fire. 31°. A needle well touched, it is known, will point north and ſouth: if it have one contrary touch of the ſame ſtone, it will be deprived of its faculty; and by another ſuch touch will have its poles quite changed. 32°. If a bar of iron have gained a verticity by being heated red hot and cooled again, north and ſouth, and then hammered at the two ends; its virtue will be deſtroyed by two or three ſmart blows on the middle. 33°. By drawing the back of a knife, or long piece of ſteel wire, &c. leiſurely over the pole of a *Loadſtone*; carrying the motion from the middle of the ſtone to the pole; the knife or wire will accordingly attract one end of a needle: but if the knife or wire be paſſed from the ſaid pole to the middle of the ſtone, it will repel that end of the needle which in the other caſe it attracts. 34°. Either a *Magnet* or a piece of iron being laid on a piece of cork, ſo as to ſwim freely in water; it will be found, that which ſoever of the two is held in the hand, the other will be drawn to it: ſo that iron attracts the *Magnet* as much as it is attracted by it; action and re-action being always equal. In this experiment, if the *Magnet* be ſet afloat, it will direct its two poles to the poles of the world. 35°. A knife, &c. touch'd with a *Magnet*, acquires a greater or leſs degree of virtue, according to the part it is touched on. It receives the ſtrongeſt touch, when it is drawn leiſurely from the handle towards the point over one of the poles: And if the ſame knife thus touched, and thus in poſſeſſion of a ſtrong attractive power, be retouched in a contrary direction, *viz.* by drawing it from the point towards the handle over the ſame pole, it immediately loſes all its virtue. Laſtly, a *Magnet* acts with equal force *in vacuo*, and in the open air.——See farther under the article MAGNETISM.

MAGNET, in chymiſtry. MAGNES *Arſenicalis*, denotes a mixture of equal parts of arſenic, ſulphur, and antimony, melted together over the fire, and condenſed in manner of a ſtone.

It is a very gentle cauſtic, and was firſt invented by Angelus Sala.——It has its name *Magnet*, becauſe being wore during malignant diſeaſes, it is ſuppoſed to preſerve the wearer from infection, by a *magnetical* power.

MAGNETISM, MAGNETISMUS, the quality, or conſtitution of a body, and its pores, whereby it is rendered *magnetical*, or a *Magnet*. See MAGNET.

Magnetiſm is found to be a tranſient power, capable of being produced and deſtroyed again. See POLE.

The *laws of* MAGNETISM are laid down by Mr. Whiſton in the following propoſitions.——1°. The *Loadſtone* has both an attractive and a directive power united together; whereas iron touched by it has only the former; *i. e.* the *Magnet* not only attracts needles or filings of ſteel, but directs them to certain different angles, with reſpect to its own ſurface and axis: whereas iron touched with it, does little or nothing more than attract them; ſtill ſuffering them to lie along or ſtand perpendicular to its ſurface and edges in all places; without any ſuch ſpecial direction.

2°. Neither the ſtrongeſt nor the large *Magnets* give a better directive touch to needles, than thoſe of a leſs ſize or virtue: to which it may be added, that whereas there are two qualities in all *Magnets*, an attractive and a directive one; neither of them depend on, or are any argument of the ſtrength of the other.

3°. The attractive power of *Magnets* and of iron, will greatly increaſe or diminiſh the weight of needles on the balance: nay, will overcome that weight, and ſuſtain other additional weights too: while the directive power has much ſmaller effect. Gaſſendus indeed, as well as Merſennus and Dr. Gilbert, maintain it has none at all; but by miſtake; for Mr. Whiſton found from repeated trials on large needles, that after the touch they weighed leſs than before. One of 4584 ¾ grains loſt 2 ½ grains by the touch; and another of 65726 grains weight, no leſs than 14 grains.

4°. It is probable that iron conſiſts almoſt wholly of the attractive particles; and the *Magnet* of the attractive and directive together; mixed probably with other heterogeneous matter; as having never been purged by the fire, which iron has: And hence may ariſe the reaſon why iron, after it has been touched, will lift up much greater weights than the *Loadſtone* that touched it.

5°. The quantity and direction of *magnetic* powers, communicated to needles, is not properly, after ſuch communication, owing to the *Magnet* which gave the touch; but to the goodneſs of the ſteel that receives it, and to the ſtrength and poſition of the terreſtrial *Loadſtone*, whoſe influence alone thoſe needles are afterwards ſubject to, and directed by: ſo that all ſuch needles, if good, move with the ſame ſtrength and point to the ſame angle; what *Loadſtone* ſoever (provided it be good) they were excited by. Nor does the touch ſeem to do much more in *magnetical*, than attrition in electrical caſes; *i. e.* it ſerves to rub off ſome obſtructing particles, that adhere to the ſurface of the ſteel, and open the pores of the bodies touched, and ſo make way for the entrance and exit of ſuch effluvia as occaſion or aſſiſt the powers we are ſpeaking of. Hence Mr. Whiſton takes occaſion to obſerve, that the directive power of the *Loadſtone* ſeems to be mechanical; and to be derived from *magnetic* effluvia, circulating continually round it.

6°. The abſolute attractive power of different armed *Loadſtones*, is, *cæteris paribus*, according to the quantity, not of their diameters or ſolidities, but of the ſurfaces of the *Loadſtones*; or in a duplicate proportion of their diameters.

7°. The power of good *Magnets* unarmed, not ſenſibly different in ſtrength, ſimilar in figure and poſition, but unequal in magnitude, is ſometimes a little greater, ſometimes a little leſs than in the proportion of their ſimilar diameters.

8°. The *Loadſtone* attracts needles that have been touched, and others that have not been touched with equal force, at diſtances unequal, *viz.* where the diſtances are to one another as 5 to 2.

9°. Both poles of a *Loadſtone* equally attract needles, till they be, tho' roughly, touched; then it is, and then only, that one pole begins to attract one end, and repel the other: though the repelling pole will ſtill attract upon contact, nay at very ſmall diſtances, notwithſtanding.

10°. The attractive power of *Loadſtones*, in their ſimilar poſition to, but different diſtances from *magnetic* needles, is in the ſeſquiduplicate proportion of the diſtances of their ſurfaces from their needles reciprocally; or as the mean proportionals between the ſquares and the cubes of thoſe diſtances reciprocally; or as the ſquare roots of the fifth powers of thoſe diſtances reciprocally. Thus the *magnetic* power of attraction, at twice the diſtance from the ſurface of the *Loadſtone*, is between a fifth and ſixth part of that power at the firſt diſtance. At thrice the diſtance the power is between the fifteenth and ſixteenth part, at four times the diſtance the power is thirty two times as ſmall, and at ſix times the diſtance eighty eight times as ſmall. Where it is to be noted, that the diſtances are not taken, as in the law of gravity, from the center; but from the ſurface: all experience aſſuring us, that the *magnetic* power reſides chiefly, if not wholly, in the ſurfaces of the *Loadſtones* and iron; without any particular relation to any center at all. The proportion here laid down was determined by Mr. Whiſton, from a great number of experiments of Mr. Hauksbee, Dr. Brook Taylor, and himſelf. The force they meaſured by the chords of thoſe arcs, by which the *Magnet*, at ſeveral diſtances, draws the needle out of its natural direction, to which chords (as he has demonſtrated) it is ever proportional. The numbers in ſome of their moſt accurate trials he gives us in the following table, ſetting down half the chords, or the ſines of half thoſe arches of declination, as the true meaſures of the power of *Magnetiſm*.

Diſtances in inches.	*Degrees of inclination.*	*Sines of ½ arcs.*	*Rat. ſeſquidulp.*
20	2	175	466
14 8/9	4	349	216
13 5/8	6	523	170
12 3/8	8	697	138
11 1/8	10	871	105
10 1/4	12	1045	87
9 1/4	14	1219	70

11°. An inclinatory, or dipping-needle, of ſix inches radius, and of a priſmatic or cylindric figure, when it oſcillates along the *magnetic* meridian, performs here, every mean vibration in about 6″ or 360‴; and every ſmall oſcillation in about 5″ ½, or 330‴; and the ſame kind of needle, four foot long, makes every mean oſcillation in about 24″, and every ſmall one in about 22″.

12°. The entire power of *Magnetiſm* in this country, as it affects needles a foot long, is to that of gravity nearly as 1 to 300; and as it affects needles four foot long, as 1 to 600.

13°. The quantity of *magnetic* power accelerating the ſame dipping-needle, as it oſcillates in different vertical planes, is ever as the co-ſines of the angles made by thoſe planes, and the *magnetic* meridian, taken on the horizon.

Thus if we would eſtimate the quantity of forces in the horizontal and vertical ſituations of needles at London; we ſhall find that the latter in needles a foot long, is, to the entire force along the *magnetic* meridian, as 96 to 100; and in needleſs four foot long, as 9667 to 10000: whereas in the former, the entire force in needles a foot long, is as 28 to 100; and in thoſe four foot long, as 2560 to 10000. Whence it follows, that the power by which horizontal needles are governed in theſe parts of the world, is but one quarter of the power by which the dipping needle is moved.

Hence alſo, ſince the horizontal needle is moved only by a part of the power which moves the dipping needle; and that it only points to a certain place in the horizon, becauſe that place is the neareſt its original tendency of any its ſituation will allow it to tend to: Whenever the dipping-needle ſtands exactly perpendicular to the horizon, the horizontal needle will not reſpect one point of the compaſs more than another, but will wheel about every way uncertainly.

14°. The time of oſcillation and vibration, both in dipping and horizontal needles equally good, is as their length directly; and the actual velocity of their points along their arcs always equal.

Hence *magnetic* needles are, *cæteris paribus*, ſtill better the longer they are; and that in the ſame proportion with their length. See NEEDLE.

15°. The earth, on which we live, includes within it a vaſt ſpherical *Magnet*, concentrical thereto, having its own poles, meridians, equator, and parallels; and all much of the ſame general nature with thoſe of ſmall *terrellæ*, or ſpherical *Loadſtones*, in the poſſeſſion of the curious among us.

16°. The power of a good *terrella*, or a ſpherical *Loadſtone*, as it affects a needle a foot long, is equal to the *magnetic* power of that internal *Loadſtone* about two and an half, or three diameters off ſuch *Loadſtone*. From which conſideration, the quantity of *magnetic* attraction, at all diſtances from the internal *Loadſtone*, for needles a foot long, may be determined; and from the ſame conſideration it appears, that the diameter of this internal *Loadſtone* is about eleven hundred and fifty miles. To which we may add, that, in regard Sir Iſaac Newton has demonſtrated, that the power of gravity diminiſhes within the earth, and is leſſer there than at its ſurface nearly, in the proportion of its greater nearneſs to the center; the *magnetic* power at two thouſand nine hundred miles diſtance from us, and nearly one thouſand and ſixty from the earth's center, which is $\frac{10}{24}$ of the power of gravity here, will be ſomewhat greater than the power of gravity there: Which limit is worth our attention, gravity being ſtronger than *Magnetiſm* on the one ſide of it, and weaker on the other; we mean as it affects needles of one foot diameter. At that limit therefore, at leaſt near the *magnetic* poles, iron, a foot long, will be twice as heavy, and fall twice as faſt as any other natural body, *viz.* by the union of thoſe two equal powers, gravity and *Magnetiſm*; and of conſequence, above that limit, ſuch an iron will be leſs than twice as heavy; below it, more than twice as heavy as any other natural body. See GRAVITY, WEIGHT, *&c.*

17°. The earth's internal *Loadſtone* is not fixed to our upper parts, but is moveable with reſpect thereto, and actually revolves on the earth's axis from eaſt to weſt in a certain long period of time; as appears, beyond contradiction, from the conſtant variation of the horizontal needle weſtward; as well as the regular increaſe of inclination of the dipping needle.

The only way to render this motion, *i. e.* the variation poſſible and intelligible (to uſe Dr. Halley's words) is to ſuppoſe it to turn about the center of the globe, having its center of gravity fixed and immoveable in the ſame common center of the earth. This moveable internal ſurface muſt likewiſe be looſe, and detached from the external parts of the globe, which may be reckoned the ſhell, and the other the nucleus, or inner globe, included within it, with a fluid medium between. Now from the variation's moving weſtwards, it is plain, that the foreſaid nucleus has not preciſely attained the ſame degree of velocity with the exterior parts in their diurnal revolution; but ſo nearly equals it, that in three hundred and ſixty-five revolves, the difference is ſcarce ſenſible; and muſt probably have ariſen from hence, that the impulſe, whereby the diurnal motion was impreſſed on the earth, was given to the external parts, and thence communicated to the internal.

18°. This internal *Magnet* has one central pole northwards, in the nature of the poles of our common *Loadſtones*; but its ſouthern pole appears not to be central, but rather circular; and that at a great diſtance from the ſouthern pole of the earth.

19°. The northern *magnetic* pole is now ſituate about the latitude of 76 degrees ½; *i. e.* 13 degrees ½ from the north pole of the earth, and about 30 degrees eaſtward from the meridian of London.

20°. The ſouthern *magnetic* circular pole has its center, or central pole, nearly in the parallel of 60 degrees; and in a meridian paſſing along the eaſt coaſt of Borneo, about 117 degrees eaſtward of London: its radius is alſo an arc of a great circle of about 44 degrees.

21°. The reſpective motion of the internal *Magnet*, or the velocity, *v. g.* of its north-pole, appears to be 27 deg. 0 min. in 144 years, *i. e.* upwards of one degree in five years; ſo that it makes an entire revolution in 1920 years.

Hence as the number of degrees in the upper earth's diurnal revolution, is to the number of days in the revolution of the internal *Magnet*, *i. e.* as 1 is to 700000, ſo is the reſpective motion of this *Magnet* from eaſt to weſt to the real motion of the upper earth from weſt to eaſt; or to ſpeak ſtrictly, ſo is the difference of their motions from weſt to eaſt, to the entire motion of the upper earth the ſame way. This external fixed earth has therefore communicated almoſt all its motion already to the internal *Magnet*, and can communicate no more than this difference of their motion, and that only in an infinite term of years; or, in other words, this real internal motion can never be the ſeven hundred thouſandth part ſwifter than it is at preſent. This internal motion therefore began with the commencement of the diurnal motion of the upper earth; and has gone on ſtill faſter and faſter by the communication of that motion through the intermediate fluid. Since therefore action and re-action are equal, and tend to contrary parts, this internal *Loadſtone*, thus accelerated by the upper part, muſt have all along retarded that upper earth, and made the diurnal rotation ſtill ſlower and ſlower. This acceleration on one ſide, and retardation on the other, muſt have been very great at the firſt beginning of the diurnal motion, when the difference of their motion was equal to the entire motion itſelf, and muſt have been diminiſhing ever ſince. To which cauſe is probably owing that acceleration of the moon's motion with reſpect to that of the earth, ſince the time of the old aſtronomers, firſt taken notice of by Dr. Halley, and embraced by Sir Iſaac Newton. And the ſame conſideration ſeems to ſuggeſt a method for determining the age of the world; for were the proportions of the quantity of matter in the upper earth to the internal *Magnet*, with the tenacity of the intermediate fluid, *&c.* known, one might go back from the known difference of their velocity now, and find thoſe differences and quantities of motion themſelves, *à priori*, in all paſt ages; or were the velocity of the firſt diurnal rotation of the upper earth known, we might geometrically determine, *à priori*, how long ago that rotation began, or how antient our earth is. See EARTH, WORLD, *&c.*

22°. The variation of *magnetic* needles from the azimuth of the meridians of the internal *Magnet*; is derived from the difference of the ſtrength of the ſeveral parts of the internal *Magnet's* ſurface; which as it is only to be known by experience, that variation cannot be determined beforehand, unleſs where there are good accounts how much it had formerly been; it being probable that it returns round, and will be the ſame in any year of the next revolution of the internal *Magnet*, that it has been in the like year of any former revolution, or will itſelf have a revolution in about 1920 years.

23°. The two fixed *magnetic* poles, in our upper earth, firſt introduced by Dr. Halley, as neceſſary to ſolve the irregularity of the variation of the horizontal needle from the meridians of the moveable internal *Magnet*, ſeem not to have any juſt foundation in nature; the like irregularities being found in the common *terrellæ* or ſpherical *Loadſtones*; and being beſt accounted for from the compoſition of the *Magnets*, which are found to have parts of different degrees of purity, ſtrength, and perfection; ſo that where the parts are weaker than ordinary, the ſtronger neighbouring parts prevail, and draw the needle that way: not but Dr. Gilbert's notion of prominent and depreſſed parts on *Magnets* may have ſome room, and be allowed to contribute ſomewhat to ſuch variations. See VARIATION.

For the cauſes of MAGNETISM, or the manner in which theſe phænomena of the *Magnet* are produced, we have yet no hypotheſis that will ſatisfactorily account for them.——Plutarch tells us, the *Magnet* attracts iron, by emitting ſome ſpiritual effluvia, whereby the contiguous air being opened and driven on either ſide, does again drive that contiguous to it; and thus the action being communicated round, the iron is thereby protruded: but this is contradicted by the equally vigorous action of the *Loadſtone* in vacuo, and in the open air.——Others of the antients aſcribe the action of the *Magnet* to a ſoul that animates it; and others to I know not what ſympathy between the effluvia of the iron and thoſe of the *Magnet*.

The opinion that principally prevails among the moderns, is that of Des Cartes, maintained by Malebranche, Rohault, Regis, *&c.* and even admitted, and confirmed by Mr. Boyle, *&c.* In this it is ſuppoſed there is continually flowing, from the poles of the world, a ſubtle, impalpable, and inviſible matter, channelled or ſtriated: which matter circulating round the earth, in the plains of the meridians, re-enters at the pole oppoſite to that from which it iſſued, and paſſes again through the poles parallel to its axis: That the *Magnet* has two poles anſwerable to thoſe of the earth, and that out of theſe there iſſues a matter like that juſt mentioned: That this matter, entering in at one of the poles, gives the impulſe whereby iron tends to the *Magnet*, and produces what we call *attraction*.——Now beſides the *magnetical* matter re-entering the poles of the *Magnet*, there is always a certain quantity thereof circulating round the *Magnet*; compoſing a kind of vortex about it. The ſpace wherein this matter moves, is the ſphere of activity of the *Magnet*, within which its attractive faculty is confined.

As to its directive faculty, or the inclination of a needle touched with it to the poles of the world, and its dip to a point beneath the horizon, they follow from the ſame principle; ſince were the *Magnet* or needle to have any other ſituation, the *magnetic* matter would ſtrike on its other ſurface in vain; and not being able to get admiſſion, would, by degrees, change its ſituation, till ſuch time as its pores correſponded to the courſe of the *magnetical* matter; which ſituation having once acquired, it would ceaſe to move; the *magnetical* matter then ceaſing to diſturb it.

The form or eſſence of a *Magnet* therefore is ſuppoſed to conſiſt in its being perforated by an infinite number of parallel pores; ſome whereof are diſpoſed to admit the ſtriated matter from the north pole of the world, others that of the ſouth; hence the north and ſouth poles of the *Magnet*. See POLE.

M. Hartſoeker maintains, that the *Magnet* is no more than a common ſtone, full of an infinite number of hollow priſms, which, by the diurnal motion of the earth, are ranged parallel to each other, and nearly parallel to the axis of the earth. Theſe priſms have their cavities filled with an extremely ſubtle matter, which, by the diurnal motion of the earth, is paſſed from priſm to priſm: thus making a circulation, and returning into the priſms where it firſt began: from theſe principles he deduces all the phænomena of the *Magnet*; and M. Andry does the ſame, from the doctrine of alkali and acid.

For the directive power of the *Magnet*, Mr. Whiſton, from the firſt, ſecond, third, *&c.* laws of *Magnetiſm*, inclines to think it mechanical; and aſcribes it to *magnetic* effluvia circulating continually round the *Loadſtone*; of which circulations he thinks there are evident indications in *magnetic* experiments; as Mr. Boyle thinks there are of the *Magnetiſm* or *magnetic* effluvia of the earth; though thoſe effluvia were never yet rendered ſenſible, as electric effluvia begin to be.——But the attractive power, Mr. Whiſton thinks entirely immechanical, as the power of gravity is; not being able to deviſe any ſuch motion of a ſubtle fluid belonging to the *Loadſtone*, as will account for the attractive power in the ſeſquiduplicate proportion of the diſtances reciprocally; though if he could, yet would that be no more than to remove the immediate power of the ſupreme being one ſtep further; the laſt reſort of all mechanical principles whatever, being into the immechanical power and efficiency of the Deity. See CAUSE, *&c.*

MAGNETISM, is alſo uſed by ſome chymiſts, to ſignify a certain virtue, whereby one thing becomes affected at the ſame time with another, either in the ſame or a different manner. This amounts to the ſame with what they otherwiſe call *ſympathy*. See SYMPATHY.

MAGNETICAL *Amplitude*, an arch of the horizon, contained between the ſun, at his riſing and ſetting, and the eaſt or weſt point of the compaſs. See AMPLITUDE, and COMPASS.

MAGNETICAL *Azimuth*. See the article AZIMUTH.

MAGNIFYING, among philoſophers, is chiefly uſed in ſpeaking of microſcopes, which are ſaid to *magnify* objects, that is, make them appear bigger than they really are: though in reality, they do not, nor cannot, *magnify* any object, but only ſhew it nearer, and more of its parts, than before were taken notice of. See MICROSCOPE, VISION, *&c.*

Magnifying GLASS, in optics, denotes a little ſperical convex lens; which, in tranſmitting the rays of light, inflects them ſo, as that the parallel ones become converging, and thoſe which were diverging become parallel; by means whereof, objects viewed through them appear larger than when viewed by the naked eye. See LENS, MICROSCOPE, REFRACTION, *&c.*

MAGNITUDE, any thing that has parts without (or *extra* to) parts, connected together by ſome common term. See PART.

Magnitude is any thing locally extended, or continued; or that has ſeveral dimenſions. See EXTENSION, DIMENSION, *&c.*

The origin of all *Magnitude* is a point, which, though void of parts itſelf, yet its flux forms a line, the flux of that a ſurface, and of that a body. See POINT, LINE, *&c.*

Magnitude amounts to much the ſame with what is otherwiſe called *quantity*. See QUANTITY.

Literal MAGNITUDE, denotes a *Magnitude* expreſſed by letters. See SPECIOUS.

Numerical MAGNITUDE is that expreſſed by numbers.

Broken MAGNITUDE denotes a fraction. See FRACTION.

Complex MAGNITUDE is that formed by Multiplication.

Incommenſurable MAGNITUDE is that which has no proportion to unity. See INCOMMENSURABLE.

Apparent MAGNITUDE of a body, in optics, is that meaſured by the optic or viſual angle, intercepted between rays drawn from its extremes to the center of the pupil of the eye.

It is one of the fundamental maxims in this ſcience, that whatever things are ſeen under the ſame or equal angles, appear equal; and on the contrary. See VISION.

The *apparent Magnitudes* of an object at different diſtances, are in a ratio leſs than that of their diſtances reciprocally. See DISTANCE.

The *Apparent Magnitudes* of the two great luminaries, the ſun and moon, at riſing and ſetting, is a phænomena that has extremely embarraſſed the modern philoſophers. According to the ordinary laws of viſion, they ſhould appear the leaſt when neareſt the horizon, as being then furtheſt diſtant from the eye; and yet we find the contrary true in fact.—Ptolemy in his Almgeſt. l. 1. c. 3. aſcribed this appearance to a refraction of the rays by vapours, which actually enlarge the angle under which the moon appears, juſt as the angle is enlarged by which an object is ſeen from under water: And his Commentator Theon explains diſtinctly how the dilation of the angle in the object immerſed in water is cauſed.—But it was afterwards diſcovered, that there is no alteration in the angle: upon which another ſolution was ſtarted by the Arab Alhazen; and followed and improved by Vitellio, Kepler, Peckham. Rog. Bacon, and others. According to Alhazen, the ſight apprehends the ſurface of the heavens as flat, and judges of the ſtars as it would of ordinary viſible objects extended upon a wide plain; that the eye ſees them under equal angles, but withal perceives a difference in their diſtances, and (on account of the ſemidiameter of the earth which is interpoſed in one caſe and not in the other) that it is hence induced to judge thoſe which appear more remote to be greater. See *Robin's Remarks on Smith's Optics.*

Des Cartes, and from him Dr. Wallis, and moſt other authors, account for the appearance of a different diſtance under the ſame angle from the long ſeries of objects interpoſed between the eye and the extremity of the ſenſible horizon, which make us imagine it more remote than when in the meridian, where the eye ſees nothing in the way between the object and itſelf. This idea of a great diſtance, makes us imagine the luminary the bigger: For any object being ſeen under any certain angle, and believed, at the ſame time, very remote, we naturally judge it muſt be very large, to appear under ſuch an angle at ſuch a diſtance. And thus a pure judgment of the mind makes us ſee the ſun or the moon bigger in the horizon, than in the meridian; notwithſtanding their images painted on the retina are leſs in the former ſituation than the latter.

This hypotheſis, F. Gouye deſtroys, by obſerving that the narrower and more confined the ſenſible horizon is, the greater does the ſun or moon appear; the contrary of which ſhould happen on the principle laid down.

Gaſſendus is of opinion, that the pupil of the eye, which is always more open as the place is more dark; being more ſo in the morning and evening than at other times, by reaſon the earth is covered with groſs vapours; and beſides, being obliged to paſs through a longer column or ſeries of vapours, to reach the horizon; the image of the luminary enters the eye at a greater angle, and is really painted there larger at the former times, than the latter. See PUPIL, and VISION.

In anſwer to which, it may be ſaid, that notwithſtanding this dilatation of the pupil, occaſioned by the obſcurity; if the moon be viewed through a little pin-hole made in a paper, ſhe appears leſs when in the horizon, than in the meridian.

F. Gouye finding both the conjectures falſe, advances a third; which is, that when the luminaries are in the horizon, the neighbourhood of the earth, and the groſs vapours wherewith they then appear inveloped, have the ſame effect with regard to us, as a wall, or other denſe body placed behind a column; which in that caſe appears bigger than when inſulate, and incompaſſed on all ſides with an illumined air.—Further, it is obſerved that a column when fluted, appears bigger than before, when it was plain; the flutes being ſo many particular objects, which by their multitude occaſion the mind to imagine the whole object whereof they are compoſed of a larger extent.—The ſame thing may be ſaid of the ſeveral objects ſeen towards the horizon, to which the ſun or moon correſpond at their riſing and ſetting.—And hence it is that they appear larger ſtill, when they riſe or ſet between trees; the narrow, yet diſtinct intervals whereof have the ſame effect with regard to the apparent diameter of the luminary, as a greater number of flutes with regard to the ſhaft of a column.

MAGOPHONIA *, the name of a feaſt among the antient Perſians, held in memory of the expulſion of the magians.

* The word is formed from Μαγος, magus, and φονος, ſlaughter.

The magus Smerdis having uſurped the throne of Perſia, upon the death of Cambyſes, 521 years before Jeſus Chriſt, ſeven of the principal lords of the court conſpired to drive him out of it. Their deſign was executed with good ſucceſs; Smerdis and his brother, another magus, called Pitizithes, were killed. Upon which, the people alſo roſe, and put all the magi to the ſword; inſomuch that there would not one have eſcaped, had not night come upon them. Darius, ſon of Hyſtaſpes, was then elected king. In memory of this maſſacre of the magi, a feaſt was inſtituted, ſays Herodotus, called *Magophonia*. See MAGI.

MAHIM, MAHEM, MAIHEM, or MAYHEM *, in law, a *Maim*, or corporal hurt, whereby a man loſeth the uſe of any member, that is, or may be, of defence to him in battle; as the eye, hand, foot, ſcalp of the head, fore-tooth, or, as ſome ſay, a finger or toe. See MEMBER, and MUTILATION.

* The word comes from the French, *Mehain*, of *Mehaigner*, to mutilate: The canoniſts call it *membri mutilatio*; and all agree, it conſiſts in the loſs of a member, or the uſe thereof.

If any one ſhall of malice, or forethought, cut or diſable any limb or member of another perſon, with intention in ſo doing, to *maim*, or disfigure him; it is felony without benefit of clergy: and when the caſe is difficult to judge, whether it be a *Mahin* or not, the judges commonly view the party wounded, and ſometimes take the opinion of chirurgeons.

MAHOMETANISM, or MAHOMETISM, the ſyſtem of religion broached by *Mahomet*, and ſtill adhered to by his followers.

Mahometaniſm is embraced by the Turks, Perſians, and ſeveral nations among the Africans, and many among the Eaſt-Indians.

The ſyſtem of *Mahometaniſm*, is contained in the Koran, commonly called the Alcoran. See ALCORAN.

The firſt and chief article of the *Mahometan* creed, is, that *there is no other god but God*; which they have from the alcoran, where theſe words are repeated inceſſantly: *There is no other god but him. Your God is the only God. I am God,* and *there is no other God but me.*——This grand axiom of their theology ſeems to have been taken from the Jews, who were continually rehearſing thoſe words of Deuteronomy, *Hear, O Iſrael, the Lord our God is One.* See GOD.

For this reaſon, the *Mahometans* account all ſuch as own any thing of number in the divinity, to be infidels or idolaters: And accordingly, one of the firſt leſſons they teach their children, is, That God is neither male nor female, and conſequently can have no children. See SON, GENERATION, TRINITY, &c.

The ſecond article of *Mahometaniſm* conſiſts in this, *That Mahomet was ſent from God.* By which they exclude all other religions; under pretence that their prophet was the laſt and greateſt of all the prophets that God would ever ſend; and that as the Jewiſh religion ceaſed with the coming of the Meſſiah, ſo likewiſe the Chriſtian religion was to be abrogated with the coming of *Mahomet.* Not but that they own Moſes and Jeſus Chriſt to have been great prophets; but *Mahomet* they hold to be *The Prophet*, by way of excellence; and the paraclet or comforter promiſed in ſcripture. See JUDAISM, &c.

Theſe are the two fundamentals of *Mahometaniſm*; ſo that when any is to make profeſſion of that faith, they content themſelves with his rehearſing theſe words, *There is no other god but God, and Mahomet is his envoy, or prophet.*

To theſe articles the *Mahometans* have added that of bathing or purification, in imitation of the Jews. And ſuch an opinion have they of theſe purifications, that it is purely on that account they ſeem to have retained the practice of circumciſion. For they pretend, with the Jews, that if the leaſt part of the body remained unwaſhed, the bathing is of no effect. Hence they find themſelves under a neceſſity of being circumciſed; that the part covered by the prepuce may alſo have its ſhare in the lotion. See ABLUTION, CIRCUMCISION, &c.

Prayer is alſo one of the things to which the *Mahometans* are obliged; and they perform it five times a day, to diſtinguiſh themſelves from the Jews, who only do it thrice. Some of their periods or hours of prayer they hold to be neceſſary, and of divine obligation; others they eſteem convenient and prudential. That at nine a-clock in the morning, they do not eſteem neceſſary; but thoſe at noon and in the afternoon are held to be *jure divino.* They are obliged to obſerve an infinity of things in order to be heard: If they ſpeak or ſmile in praying, their prayers are vain: and it is the ſame thing if they weep, unleſs it be with the thought of paradiſe or hell. In many of their prayers they uſe beads.

The *Mahometans* believe with the Chriſtian and Jews, a reſurrection of the dead: They hold, that ere that time, an *Anti-Mahomet* will come; and that Jeſus Chriſt will deſcend from heaven to kill him, and eſtabliſh *Mahometaniſm.* To which they add a great many more chimæras, relating to Gog and Magog; and the beaſt that is to come out of Mecca. The mountains are to fly in the air like birds, and at laſt the heavens will melt and drop down upon the earth. They add however, that ſome time after, God will renew and re-eſtabliſh the earth; that then the dead will be raiſed, &c. See further under ALCORAN.

MAIDEN, an edged inſtrument uſed in ſome countries, particularly Scotland, for the beheading of criminals.

The *Maiden* is a broad piece of iron, a foot ſquare, ſharp on the lower part, and loaded above with lead, ſo as ſcarce to be lifted: At the time of execution, it is pulled up to the top of a narrow wooden frame ten foot high, with a groove on each ſide for the *Maiden* to ſlide in.——The priſoner's neck being faſtened to a bar underneath, on a ſign given, the *Maiden* is let looſe, and the head in an inſtant ſeparated from the body.

MAJESTY, MAJESTAS *, a title or quality given to kings; and which frequently ſerves as an appellation to diſtinguiſh them by. See TITLE, QUALITY, KING, &c.

* The word ſeems compoſed of the two Latin words, *major*, greater, and *ſtatus*, ſtate.

The emperor is called, His Cæſarian or Imperial *Majeſty*; the king of Spain, his Catholic *Majeſty*; the king of France, his moſt Chriſtian *Majeſty*; the king of Great-Britain, his Britannic *Majeſty*, &c. Some have alſo extended this title to the popes. See POPE.

Paſquier obſerves, that our fore-fathers uſed this quality exceeding ſparingly; and that the frequent uſe of the word which now obtains, had not its beginning before the reign of their Henry II. He inſtances ſeveral letters of St. Gregory, who writing to King Theodebert and Theodoric, only compliments them with Excellency. See EXCELLENCY.

Till the time of Charles V. the king of Spain had no title but that of Highneſs: And before our king Henry VIII. the kings of England were only addreſſed under the titles of Grace, and Highneſs. See GRACE, and HIGHNESS.

At the peace of Munſter, there was a great conteſt between the miniſters of the emperor and thoſe of France: The firſt would not allow the title of ſerenity to the king of France, and the latter would not give that of *Majeſty* to the emperor. At laſt it was agreed, that whenever the French king ſhould write with his own hand to the emperor, he ſhould give him the title of Imperial *Majeſty*; and reciprocally, when the emperor ſhould write to the king, he ſhould give him that of Royal *Majeſty*.

Under the Roman republick, the title *Majeſty*, *Majeſtas*, belonged to the whole body of the people, and to the principal magiſtrates; ſo that to diminiſh or wound the *Majeſty* of the commonwealth, was to be wanting in reſpect to the ſtate, or its miniſters.——But the power paſſing into the hands of a ſingle perſon, the appellation of *Majeſty* was transferred to the emperor, and the imperial family. Pliny complements Trajan on his being contented with the title of Greatneſs; and ſpeaks very invidiouſly on thoſe who affected that of *Majeſty*. And yet *Majeſty* ſeems to be the modeſteſt and juſteſt title that can be attributed to ſovereigns, ſince it ſignifies no more at bottom, than the royalty or ſovereign power.

MAIL, MAILLE, is primarily applied to the maſhes or holes in net-work.

Coat of MAIL, a piece of defenſive armour, made of iron wire interwoven net-wiſe: called alſo *habergeon.* See HABERGEON. Antiently they alſo wore ſhirts of *Mail* under the doublet, to ſerve as a defence againſt ſwords and poniards. We alſo read of gloves of *Mail.*

MAIL, or MALL, alſo ſignifies a round ring of iron; whence the play of pall-mall, from *palla*, a ball, and *maille*, the round ring through which it is to paſs.

MAILED implies a thing ſpeckled, or full of ſpecks; as the feathers of hawks, partridges, &c. or the furs of ſome wild beaſts.

MAIN-MORTE, a term in ſome antient cuſtoms, ſtill obtaining in Burgundy, ſignifying a right which the lord has, on the death of the chief of a family that is *Mainmortable*, of taking the beſt moveable in the houſe; or in default of that, the right hand of the deceaſed was offered him, in token that he could ſerve him no longer. See MORT-MAIN.

MAINOUR, MANOUR, or MEINOR, in law, ſignifies the thing that a thief takes away, or ſteals.

Thus, to be taken with *Mainour*, is to be taken with the thing ſtolen about him.——If the defendant were taken with the *Mainour*, and ſo carried to court, in antient times they would arraign him on the *Mainour*, without any appeal or indictment.

MAINPRISE *, in law, the taking or receiving a man into friendly cuſtody, who otherwiſe might be committed to priſon; upon ſecurity given for his forth-coming at a day aſſigned.

* The word is compounded of the French *Maen*, hand, and *pris*, or *prins*, taken.

They who thus undertake for any, are called *Mainpernors*, becauſe they receive him into their hands; whence alſo comes the word *Mainpernable*, denoting the perſon who may be thus bailed.

Manwood makes a great difference between bail and *Mainpriſe*: he that is *mainpriſed* is already ſaid to be at large after the day he is ſet to *Mainpriſe* till the day of his appearance; but it is quite otherwiſe where a man is let to bail to four or two men, by the lord juſtice in eyre of the foreſt, or any other judge, until a certain day; for there he is always accounted by the law to be in their ward and cuſtody for the time; and they may, if they pleaſe, keep him in priſon all that time. So that he who is bailed, is not ſuppoſed to be at large, or at his own liberty: whereas under *Mainpriſe*, a man is ſuppoſed to go at large, and is not liable to be confined by his ſureties or *Mainpernors.* See BAIL.

The author of the *Mirror of Juſtice* ſays, that pledges are thoſe who bail, or redeem any thing but the body of a man; and *Mainpernors* thoſe who free the body: on which footing, pledges belong properly to real and mixed actions, and *Mainpernors* to perſonal. See PLEDGE.

MAINTENANCE, MANUTENENTIA *, in law, an unlawful maintaining, or upholding a cauſe, or ſuit between others; either by word, writing, countenance or deed.

* The word is metaphorically taken from the ſuccouring a young child, that learns to go by one's hand; and is uſed in the evil part in ſome of our ſtatutes.

When a man's act in this kind is eſteemed *Maintenance*, and when not, ſee Brooks and Kitchin. See alſo BARRATOR.

There lies a writ againſt a *Maintainer*, called a Writ of *Maintenance.*

MAJOR, in the art of war, a name given to ſeveral officers of different qualities, and functions.——Thus,

MAJOR-*General* is a general officer who receives the general's orders, and delivers them out to the *Majors* of brigades, with whom he concerts what troops are to mount the guard, what to go on parties, what to form detachments, or to be ſent on convoys, &c.

It is his buſineſs alſo to view the ground to incamp on, and do other ſervices; being ſubordinate to the general, and lieutenant-general, and the next commanding officer to them. See GENERAL.

MAJOR *of a brigade*, either horſe or foot, is he who receives orders, and the word, from the major-general, and gives them to the particular majors of each regiment. See BRIGADE.

MAJOR *of a regiment*, is an officer, whoſe buſineſs is, to convey all orders to the regiment, to draw it up, and exerciſe it; to ſee it march in good order, to look to its quarters, and to rally it, if it happen to be broke in an engagement, *&c.*

The *Major* is the only officer of a regiment of foot, who is allowed to be on horſeback in time of ſervice; but he rides that he may ſpeedily get from place to place, as occaſion ſerves. See REGIMENT.

Major of a regiment of horſe, is the firſt captain of the regiment; and commands in the abſence of the colonel.

Town-MAJOR, is the third officer in order in a garriſon, being next to the deputy-governour.

He ought to underſtand fortification, and hath charge of the guards, rounds, patrols, and centinels.

There are alſo *Aids-Major*, *Drums-Major*, and other officers; ſo called by reaſon of ſome ſeniority or prerogative that they have over the reſt. See AID, DRUM, *&c.*

MAJOR, in law, a perſon who is of age to manage his own affairs. See AGE.

By the civil law, a man is not a *Major* till the age of twenty-five years; in England, he is *Major* at twenty-one, and in Normandy at twenty. See MINOR.

MAJOR, in logic, is underſtood of the firſt propoſition of a regular ſyllogiſm. See SYLLOGISM.

It is called *Major*, becauſe it has a more extenſive ſenſe than the *minor* propoſition, as containing the principal term. See PROPOSITION, TERM, PREMISES, *&c.*

MAJOR *and Minor*, in muſic, are applied to concords which differ from each other by a ſemi-tone. See CONCORD.

There are *Major* and *minor* thirds, *&c.* See THIRD, *&c.*

Major tone is the difference between the fifth and fourth; and *Major* ſemi-tone the difference between the *Major* fourth and the third. The *Major* tone ſurpaſſes the *minor* by a comma. See TONE, and SEMI-TONE.

MAJOR-DOMO, an Italian term, frequently uſed to ſignify a ſteward, or maſter of the houſhold. See STEWARD.

The title *Major-Domo* was formerly given in the courts of princes to three different kinds of officers. 1°. To him who took care of what related to the prince's table, or eating, otherwiſe called *eleater*, *præfectus menſæ*, *architriclinus*, *dapifer*, and *princeps coquorum*. 2°. *Major-Domo* was alſo applied to the ſteward of the houſhold. 3°. The title *Major-Domo* was alſo given to the chief-miniſter, or him to whom the prince deputed the adminiſtration of his affairs, foreign and domeſtic, relating to war as well as peace.——Inſtances of *Major-Domos* in the two firſt ſenſes are frequent; both in the Engliſh, French, and Norman affairs. See SENESCHAL.

MAKE, in law, ſignifies to perform, and execute.

Thus, to *make* his law, is to perform that law to which a man had formerly bound himſelf; *v. gr.* to clear himſelf of action commenced againſt him by his own oath, and the oath of his neighbours. See LAW.

So, to *make* ſervices, or cuſtoms, is nothing elſe but to perform what belongs to them. See SERVICE, *&c.*

MALACIA, ΜΑΛΑΚΙΑ *, a diſeaſe conſiſting in a depraved appetite, wherein the patient, covets and longs for ſome particular kind of food with extraordinary earneſtneſs, and eats it to exceſs. See APPETITE.

* The word ſeems derived from the Greek *μαλακος*, ſoft; too lax a tone of the ſtomach being generally the occaſion of indigeſtion, and unuſual cravings.

Many authors confound this affection with another called *pica*, which conſiſts in a depravation of appetite leading the patient to covet things unnatural and abſurd, as lime, coals, *&c.* See PICA.

The *Malacia* ſeems to ariſe from an ill diſpoſition of the menſtruum in the ſtomach; or from ſome defect in the imagination, which determines it to ſome one thing rather than another.

MALANDERS, MALANDRIA, a diſeaſe in horſes, ſo called from the Italian, *Malandare*, to go ill.

It conſiſts in certain ulcerous chops, or chinks, appearing on the inſide of the fore-legs, juſt againſt the bending of the knee, which void a red, ſharp, and pungent humour.

MALE, the ſex which has the parts of generation without-ſide, and which has ordinarily the preheminence over the other. See SEX, GENITALS, GENERATION, MASCULINE, *&c.*

In which ſenſe *Male* ſtands oppoſed to *female*. See FEMALE.

For the proportion of *Males* to *females*, ſee MARRIAGE.

MALEBRANCHISM, the doctrine or ſentiments of father *Malebranche*, a prieſt of the oratory of France.

Malebranchiſm is in a great meaſure the ſame with Carteſianiſm. It muſt be owned however, that though F. *Malebranche* thought the ſame with Des Cartes, yet he does not ſo properly ſeem to have followed him, as to have met with him. See CARTESIANISM.

Malebranchiſm is contained in the *Recherche de la verite*; and to give a general notion of it, we need only repeat what M. Fontenelle ſays of that work. The *Enquiry after truth*, ſays he, is full of God: God is the only agent, and that too, in the ſtricteſt ſenſe. All power of acting, all actions belong immediately to him. Second cauſes are no cauſes. They are only occaſions that determine the action of God; occaſional cauſes. See CAUSE, and OCCASIONAL.

F. *Malebranche*, however, does not here lay down his ſyſtem entire, with regard to religion, or rather the manner in which he would reconcile religion to his ſyſtem of philoſophy: That he reſerved for his *Entretiens chretiennes*, printed in 1677, where he proves the exiſtence of a God, the corruption of human nature by original ſin, the neceſſity of a mediator, and of grace.

Malebranchiſm, notwithſtanding, appears to many perſons not only ill grounded, but even dangerous and deſtructive to religion: and has accordingly been vigorouſly oppoſed by many zealous French authors. The firſt was M. Foucher. After him came M. Arnaud; and in 1715, (the year F. *Malebranche* died) F. du Tertre, a Jeſuit, publiſhed an ample confutation (as he imagines) of his whole ſyſtem.——That part which relates to our ſeeing all things in God, has been anſwered by Mr. Locke.

MALEDICTION, MALEDICTIO, in law, a curſe uſually annexed to donations of lands, *&c.* to churches, and religious houſes; imprecating the moſt direful puniſhments on thoſe who ſhould infringe them. See IMPRECATION.

MALIGNANT, in medicine, that quality in a diſeaſe which renders it more than ordinarily dangerous, and difficult of cure. See DISEASE.

Malignant is generally applied to ſuch fevers as are epidemical, or infectious, and are attended with ſpots and eruptions of various kinds. See FEVER, PLAGUE, *&c.*

MALLEABLE, ſomething hard and ductile, and that may be beaten, forged, and extended under the hammer without breaking. See DUCTILITY.

All metals are *Malleable*, excepting quick-ſilver; but gold in the greateſt degree of all. The chymiſts have long ſought the fixation of Mercury, to render it *Malleable*. See MERCURY.

It is a popular error, that ever the art of making glaſs *Malleable*, was known; its nature is incapable of it. For if it were ductile, its pores would not be oppoſite to each other, and of conſequence it would not be tranſparent; ſo that its principal criterion would be loſt. See GLASS, and TRANSPARENCY.

MALLEOLUS, a proceſs in the lower part of the leg juſt above the foot. See PROCESS, FOOT, *&c.*

There is one *internal*, and another *external Malleolus*.

The *internal Malleolus* is an eminence of the tibia; ſee TIBIA, FIBULA, *&c.* the *external* of the fibula: the two together form the ancle.—See Tab. anat. (oſteol.) fig. 3. n. 23.

MALLET, a large kind of hammer, made of wood; much uſed by artificers who work with a chiſſel, as ſculptors, maſons, and ſtone-cutters, whoſe *Mallet* is ordinarily round; and by carpenters, joiners, *&c.* who uſe it ſquare. See HAMMER.

MALLEUS, in anatomy, denotes one of the bones of the ear; ſo called from its reſemblance to a hammer, or mallet; firſt diſcovered, as ſome aſſert, by Alexander Achillinus: though others have miſtakenly attributed it to Jac. Carpenſis. Vid. Douglas Bibl. Anat. p. 48. See alſo EAR.

MALMSEY, or MALVASY, a rich luſcious kind of wine brought from Greece or Candia; ſo called from Malvaſia, a city in Peloponneſus, the antient Epidaurus, whence this celebrated liquor was firſt brought.

That brought from Candia is now eſteemed the beſt. See WINE.

MALMSEY, or MALVOISY, is alſo the name of a kind of muſcadine wine brought from Provence. See WINE.

MALT, denotes barley cured, or prepared to fit it for making a potable liquor, under the denomination of beer or ale. See BEER, and ALE.

The manner of making *Malt*, Sir Robert Murray deſcribes as follows.——Take good barley newly threſhed, *&c.* put about ſix Engliſh quarters in a ſtone trough full of water, where let it ſteep till the water be of a bright reddiſh colour; which will be in about three days, more or leſs, according to the moiſture or dryneſs, ſmallneſs or bigneſs of the grain, the ſeaſon of the year, or the temperature of the weather.——In ſummer, *Malt* never makes well; in winter, it requires longer ſteeping than in ſpring or autumn. It may be known when it is ſteeped enough, by other marks beſides the colour of the water; as by the exceſſive ſwelling of the grain if it be over-ſteeped, and by too much ſoftneſs: being, when it is in a right temper, like the barley prepared to make broth of.

When it is ſufficiently ſteeped, take it out of the trough, and lay it on heaps, to let the water drain from it; then after two or three hours turn it over with a ſcoop, and lay it in a new heap, about twenty or twenty-four inches deep.

This is called the *coming heap*, in the right management whereof lies the principal ſkill. In this heap it may lie forty hours, more or leſs, according to the forementioned qualities of the grain, *&c.* before it come to the right temper of *Malt*; which that it may do equally, is mainly deſired.

While it lies in this heap, it muſt be carefully looked to, after the firſt fifteen or ſixteen hours; for about that time the grains begin to put forth roots: which when they have equally and fully done, the *Malt* muſt within an hour after be turned over with a ſcoop; otherwiſe the grains will begin to put forth the blade or ſpire alſo, which muſt by all means be prevented.——If all the *Malt* do not come equally, but that which lies in the middle, being warmeſt, come the ſooneſt: turn it, ſo as the outmoſt may lie inmoſt, and thus manage it till it be all alike.

As ſoon as the *Malt* is ſufficiently come, turn it over, and ſpread it to a depth not exceeding five or ſix inches; and by that time it is all ſpread out, begin and turn it over and over again three or four times. Afterwards, turn it over in like manner once in four or five hours, making the heap deeper by degrees: and continue ſo to do for the ſpace of forty eight hours at leaſt.——

This frequent turning it over, cools, dries, and deadens the grain, whereby it becomes mellow, melts eaſily in brewing, and ſeparates entirely from the huſk.

Then throw up the *Malt* into a heap, as high as you can; where let it lie till it grow as hot as your hand can endure it, which uſually comes to paſs in about thirty hours ſpace.——

This perfects the ſweetneſs and mellowneſs of the *Malt*.

After it is ſufficiently heated, throw it abroad to cool, and turn it over again about ſix or eight hours after, and then lay it on a kiln with hair-cloth or wire ſpread under it; where after one fire, which muſt laſt for twenty four hours, give it another more ſlow, and afterwards, if need be, a third: for if the *Malt* be not thoroughly dried, it cannot be well ground, neither will it diſſolve well in the brewing; but the ale it makes will be red, bitter, and unfit to keep.

The beſt fewel is peat or turf; the next charcoal. If there be not enough of one kind, burn the beſt firſt, for that gives the ſtrongeſt impreſſion.——Indeed the beſt and moſt natural method of drying it, is in the ſun in the months of April and May. This yields the paleſt, the moſt wholeſome, and the fineſt liquor. However this be, take care the *Malt* be not ſmoaked in the drying.——As to the complexion or colour of *Malt*, white is accounted the beſt, becauſe the moſt natural.

For *the manner of preparing liquors of* Malt, ſee Brewing.

Malt *Liquors* have different names, as well as different virtues, properties and uſes, both from the different manners of preparing the *Malt*, whence they are diſtinguiſhed into *pale* and *brown*; and from the different manners of preparing or brewing the *Liquors* themſelves; whence they are divided into *beer* and *ale*, *ſtrong* and *ſmall*, *new* and *old*. See Drink, Ale, and Beer.

Malt drinks are either pale or brown, as the *Malt* is more or leſs dried on the kiln; that which is the ſlendereſt dried tinging the liquor leaſt in brewing, and therefore called *pale*; whereas that higher dried, and as it were roaſted, makes it of a higher colour.——A mixture of both theſe makes an amber colour, whence ſeveral of theſe *Liquors* take their name.

Now it is certain the pale *Malt* has moſt of the natural grain in it, and is therefore the moſt nouriſhing; but for the ſame reaſon, it requires a ſtronger conſtitution to digeſt it. Thoſe who drink much of it, are uſually fat and ſleek in their bloom; but are often cut off with ſudden fevers; or if they avoid this, fall early into a diſtempered old age.

The brown *Malt* makes a drink much leſs viſcid, and fitter to paſs the ſeveral ſtrainers of the body; but if very ſtrong, may lead on to the ſame inconveniencies with the pale; though a ſingle debauch wears off much more eaſily in the brown.

Dr. Quincy obſerves, that the beſt pale *Malt Liquors* are thoſe brewed with hard waters, as thoſe of ſprings and wells: in regard the mineral particles wherewith theſe waters are impregnated, help to prevent the coheſions of thoſe drawn from the grain, and enable them to paſs the proper ſecretions the better; as the viſcid particles of the grain do likewiſe defend theſe from doing the miſchief they might otherwiſe occaſion. ——But ſofter waters, as rain and river waters, ſeem beſt ſuited to draw out the ſubſtance of high-dried *Malts*, which retain many fiery particles in their contexture, and are therefore beſt loſt in a ſmooth vehicle.

For the differences in the preparations of *Malt Liquors*, they conſiſt chiefly in the uſe of hops, as in beer; or in their omiſſion, as in ale. See Hops.

The difference made by hops, is beſt diſcovered from the nature and qualities of the hops themſelves: Theſe are known to be a ſubtile grateful bitter; in their compoſition therefore with this *Liquor*, they add ſomewhat of an alkaline nature, *i. e.* particles that are ſublime, active, and rigid.——By which means the ropy, viſcid parts of the *Malt* are more divided and ſubtillized, and are therefore not only rendered more eaſy of digeſtion and ſecretion in the body; but alſo, while in the *Liquor*, prevent it from running into ſuch coheſions as would make it ropy, vappid, and ſour.

For want of this, in unhopped drinks, that clammy ſweetneſs which they retain after working, ſoon turns them acid, and unfit for uſe; which happens ſooner or later, in proportion to the ſtrength they receive from the *Malt*, and the comminution it has undergone by fermentation.

It is a common opinion, that ale is more diuretic than beer, that is, unhopped liquor more than that with hops in it. Which may hold in ſome conſtitutions, in regard ale being more ſmooth, ſoftening, and relaxing, where urine is to be promoted by enlarging the paſſage, as in thin dry conſtitutions, this is the moſt likely to effect it.——But where the promoting of urine is to be done by attenuating and breaking the juices, and rendering them more fluid, it is certainly beſt anſwered by thoſe drinks which are well hopped.

As to the diſpute, whether or no hops tend to breed the ſtone? it is too long to enter upon here. Dr. Quincy is of opinion, there is but little reaſon for the affirmative ſide of the queſtion; and in the general makes no ſcruple to ſay, that for one conſtitution damaged by beer, there are numbers ſpoiled by ale.——

For this laſt manifeſtly fouls the glands, ſtuffs the veſſels with ſlime and viſcidity, makes the body unweildy and corpulent, and paves the way for cachexies, jaundice, aſthmas, and at laſt incurable dropſies.——The urinary paſſages, alſo, which it is ſuppoſed to clear, will in time be filled with ſlough and matter of as ill conſequence as gravel.

The different ſtrengths of *Malt Liquors* alſo make their effects different——The ſtronger they are, the more viſcid parts they carry into the blood; and though the ſpirituous parts make theſe imperceptible at firſt, yet when theſe are evaporated, which will be in a few hours, the other will be ſenſibly felt by pains in the head, nauſeouſneſs at the ſtomach, and laſſitude or liſtleſſneſs to motion.——This, thoſe are the moſt ſenſible of, who have experienced the extremes of drinking theſe *Liquors* and wines; for a debauch of wine they find much ſooner wore off, and they are much more lively and briſk afterwards, than after fuddling *Malt Liquors*, whoſe viſcid remains will be long ere they are ſhook off.

Malt Liquors therefore are more wholeſome for being ſmall; *i. e.* of ſuch a ſtrength as is able to carry a ſmall degree of warmth into the ſtomach, but not ſo great as to prevent their being proper diluters of the neceſſary food. Indeed in robuſt people, or thoſe who labour hard, the viſcidities of the drink may be broke into convenient nouriſhment; but in perſons of another habit and way of living, they ſerve rather to promote obſtruction and ill humours.

The age of *Malt Liquors* is the laſt thing by which they are rendered more or leſs wholeſome.——Age ſeems to do nearly the ſame thing as hops; for thoſe *Liquors* which are longeſt kept, are certainly leaſt viſcid: age breaking the viſcid parts, and by degrees rendering them ſmaller and fitter for ſecretion.

But this is alway determined according to their ſtrength; in proportion to which they will ſooner or later come to their full perfection as well as decay: For when ale or beer is kept till its particles are broke and comminuted as far as they are capable; then it is they are beſt; and beyond this they will be continually on the decay, till the finer ſpirits are entirely eſcaped, and the remainder becomes vappid and ſour.

MALTA.——*Knights of* Malta, an order of military religious, who have bore various names; as, Hoſpitalers of St. John of Jeruſalem, Knights of St. John, Knights of Rhodes, order of Malta, religion of Malta, &c. See Knights, Hoſpitaler, &c.

About the year 1048, ſome Neopolitan merchants founded a church after the Latin rite at Jeruſalem, giving it the name of *Santa Maria della Latina*. They alſo founded a monaſtery of religious, after the order of St. Bennet, for the reception of pilgrims; and afterwards an hoſpital near the monaſtery, to take care of the diſeaſed, under the direction of a maſter or rector, to be nominated by the abbot of ſanta Maria della Latina. Beſides which, they alſo built a chappel in honour of St. John Baptiſt.

In 1099, Godfrey of Bulloign having taken Jeruſalem, endowed this hoſpital with ſome demeſnes he had in France; and others imitating his liberality, the revenues of the hoſpital became conſiderably augmented. Upon this, Gerhard Torn their rector, in concert with the Hoſpitalers, reſolved to ſeparate from the abbot and religious of *ſanta Maria*, and to form a diſtinct congregation, under the name and protection of St. John Baptiſt: And hence it was, that they had the name of *Hoſpitalers*, or *brothers of St. John of Jeruſalem.*

Pope Paſchal II. by a bull in the year 1113, confirmed the donations made to this hoſpital, which he ſettled under the protection of the holy ſee; ordering that the rectors, after Gerhard's death, ſhould be choſen by the Hoſpitalers. Raymond de Puy, Gerhard's ſucceſſor, took the title of *Maſter:* he gave a rule to the Hoſpitalers, which was approved by Calixtus II. in 1120.——Such was the firſt riſe of the order of *Malta*.

Their firſt grand maſter finding the revenues of the hoſpital vaſtly to exceed what was neceſſary for the entertainment of poor pilgrims and diſeaſed perſons, reſolved to employ the ſurplus againſt the infidels; and with this view offered himſelf to the king of Jeruſalem.——

He divided his Hoſpitalers into three claſſes: the firſt conſiſted of nobles, whom be deſtined to the profeſſion of arms, for the defence of the faith, and the protection of pilgrims; the ſecond conſiſted of prieſts or chaplains, who were to ſay maſs; and the third of ſervitors, who were not noble, but were alſo appointed for the war.——He alſo regulated the manner of admitting knights brothers; and had the whole confirmed by pope Innocent; who gave them for arms a white croſs in a field argent, which continues ſtill the ſtandard of this order.

After the loſs of Jeruſalem, they retired firſt to Margath, then to Acre, which they defended very vigorouſly in 1290. After the entire loſs of the Holy Land, they withdrew to Cyprus,

prus, where king Henry of Luſignan, whom they had followed thither, gave them the city of Limiſſon.——Here they continued 18 years; when taking the iſland of Rhodes from the Saracens in 1308, they ſettled there. And now it was that they firſt took the name of Knights, *viz.* *Knights of Rhodes*.

Andronicus, emperor of Conſtantinople, granted to their grand maſter, Fulk de Villaret, the inveſtiture of this order; and the donation was confirmed by pope Clement. The year following, with the aſſiſtance of Amadeus IV. Duke of Savoy, they defended themſelves and their iſland againſt an army of Sarazens. In 1480, their grand maſter d' Aubuſſon made a vigorous defence againſt Mahomet II. and preſerved the iſland, in ſpight of a formidable army which beſieged it for the ſpace of three months.——But in 1522, it was attacked by Soliman with an army of three hundred thouſand men, and taken by him, after having been in the poſſeſſion of the Knights 213 years.

After this loſs, the grand maſter and knights retired firſt into the iſle of Candia: Some time after, pope Clement VII. gave them Viterbo: Laſtly, Charles V. in 1530, gave them the iſland of Malta, which they ſtill hold; and hence they come by the appellation of *Knights of Malta*; though their proper name is that of *Knights of the order of St. John of Jeruſalem*; and their grand maſter, among his other titles, ſtill retains that of *maſter of the hoſpital of St. John, and guardian of the poor of our Saviour Jeſus Chriſt*.

The order of *Malta* have no other denomination beſides their iſland, and ſome other little places in the neighbourhood, the chief whereof are Goza and Comino.

The government is both monarchical and ariſtocratical, the grand maſter being the ſovereign, and the chapter the ſenate.——It is monarchical with regard to the inhabitants of *Malta*, and the iſles adjacent, and even with regard to the Knights in every thing relating to the ſtatutes and rule of their order; and ariſtocratical, with regard to the deciſion of any important affairs, which are not to be diſpatched but by the grand maſter and the chapter.

There are two councils; the one ordinary, compoſed of the grand maſter, as chief, and the grand croſſes; the other compleat, conſiſting of the grand maſter, the grand croſſes, and the two ſenior Knights of each language.

By the languages of *Malta* are meant the ſeveral nations whereof the order is compoſed.——Of theſe there are eight, *viz.* Provence, Auvergne, France, Italy, Arragon, Germany, Caſtile, and England. See LANGUAGE.

The pillar (as he is called) of the language of Provence is the grand commander of the order; he of Auvergne the grand marſhall; he of France the grand Hoſpitaler; he of Italy grand admiral; he of Arragon grand conſervator, or draper, as he was antiently called; the pillar of the language of Germany is grand bayliff, and he of Caſtile grand chancellor: the language of England, which has been extinct ſince the time of the reformation under king Henry VIII. had for its pillar or chief, the grand turcopolier, or colonel of the cavalry. The language of Provence is the firſt, on account of Raimond de Puy, their firſt grand maſter, who was a Provencial.

In each language there are ſeveral grand priories and capital bailiages. To each language belongs a hall, where the Knights eat, and hold their ordinary aſſemblies. Each grand prior has a number of commanderies.

The commanderies are either magiſterial, by right, or by favour; the magiſterial are thoſe annexed to the grand maſterſhip, whereof there is one in each grand priory: Commandries by right are thoſe which come by right of ſeniority; their ſeniority is computed from the time of their admiſſion, but they muſt firſt have lived five years at *Malta*, and have made four caravannes, or cruiſing voyages on the Turks and Corſairs: Commandries by favour, are thoſe which the grand maſter, or the grand priors have a right of conferring; one of theſe they confer every five years on whom they pleaſe.

The noble Knights are called Knights by right; excepting whom, none can be bailiffs, grand priors, or grand maſters.——Knights by favour are thoſe who, not being noble of themſelves, are raiſed on account of ſome great exploit, or notable ſervice, into the rank of nobles.

The ſervitors, or ſerving-brothers, are of two kinds; 1°. The ſervitors of war, whoſe functions are the ſame with thoſe of the Knights. 2°. Servitors of religion, whoſe whole buſineſs is to ſing the praiſes of God in the conventual church, and to officiate each in his turn as chaplain on board the veſſels and gallies of the order.

The brothers of obedience are prieſts, who, without being obliged to go to *Malta*, take the habit of the order, make the vows, and attach themſelves to the ſervice of ſome of the churches of the order, under the command of a grand prior, or commander, to whom they pay obedience.

The Knights of majority are thoſe who, according to the ſtatutes, are admitted at ſixteen years of age.——The Knights of minority are thoſe who are admitted from the time of their birth; which, however, cannot be done without a diſpenſation from the pope.

The chaplains can only be admitted regularly from ten to fifteen years of age; after fifteen they muſt have a brief from the pope; till fifteen the grand maſter's letter is ſufficient. Theſe are called *diacos*, and muſt give proof of their being born of creditable families.

For the proofs of nobility to be made, ere the admiſſion of Knights, in the language of Germany, they go back ſix generations; in the reſt it is ſufficient to go back to the great grandfather on the father's or mother's ſide.

All the Knights, after their profeſſion, are obliged to wear a white croſs, or ſtar with eight points over the cloak or coat on the left ſide, which is the proper habit of the order; the golden croſs being only an ornament.

There are alſo female Hoſpitalers of the order of St. John of Jeruſalem, ſometimes alſo called *Chevaliereſſes*, or *She-Knights*, of equal antiquity with the Knights themſelves; whoſe buſineſs was to take care of the women-pilgrims, in an hoſpital apart from that of the men.

MALTHA, ΜΑΛΘΗ, in antiquity, denotes any cæment or glutinous body, which has the faculty of binding things together. See CÆMENT, LUTE, GLUE, *&c.*

Antient writers make mention of divers ſorts of *Maltha*, native and factitious: One of the latter much in uſe was compoſed of pitch, wax, plaiſter, and greaſe.

Another kind, wherewith the Romans plaiſtered and whitened the inſides of their aquæducts, was made of lime ſlaked in wine, incorporated with melted pitch and freſh figs.

Natural *Maltha* is a kind of bitumen, wherewith the Aſiaticks plaiſter their walls.——When this is once ſet on fire, water will not quench it, but ſerves rather to make it burn more fiercely.

MAMALUKES, MAMMELUKES, or MAMMALUCKS*, the name of a dynaſty which reigned a conſiderable time in Egypt.

* The word comes from מלך, *regere, imperare*, the Arabic participle paſſive whereof is ממלוך, *Mamluc*, which ſignifies *ſubject*, or one under the dominion of another. Scaliger holds, that the word is Arabic, but that it properly ſignifies ſomething bought with money; but others will have it ſignify any thing acquired, either as prize or purchaſe.

The *Mamalukes* were originally Turkiſh and Circaſſian ſlaves, bought of the Tartars by Melicſaleh, to the number of a thouſand; whom he bred up to Arms, and raiſed ſome to the principal offices of the empire.——They killed ſultan Moadam in 1250; being affronted at his concluding a treaty with his priſoner St. Louis without their privity. This Moadam was the laſt ſultan of the Ajoubites; to whom ſucceeded the *Mamalukes*, the firſt of whom was ſultan Azeddin, or Mouz Ibec, the Turcoman.

Others ſay, that the *Mamalukes* were ordinarily choſen from among the chriſtian ſlaves, and that they were the ſame thing, in great meaſure, with the janizaries among the Turks. They never married. The firſt are ſaid to have been brought from Circaſſia; and ſome add, that they firſt began to be talked of about the year 869.

MAMMÆ. See the article BREASTS.

MAMMÆANÆ. Vid. ALIMENTARY.

MAMMIFORM, MAMMIFORMIS, in anatomy, a name given to two apophyſes of the bone in the back part of the ſkull; ſo called from their reſembling a breaſt. See MASTOIDES.

MAMMILLARY, MAMMILLARIS, in anatomy, an epithet given to two little protuberances, ſomewhat reſembling the nipples of the breaſt, found under the fore-ventricles of the brain, and ſuppoſed to be the organs of ſmelling.——See Tab. Anat. (oſteol.) fig. 7. n. 3. fig. 13. let. d. See alſo SMELL.

Theſe are called *apophyſes Mammillares*. See APOPHYSES.

There is alſo a muſcle called *Mammillaris*, or *Maſtoides*, ſerving to ſtoop the head. See MUSCLE.

MANAGE, or MANEGE*, an academy, or place for learning to ride the great horſe; as well as for breaking horſes to the proper motions, and actions. See HORSE, and HORSEMANSHIP.

* The word is borrowed from the French *Manage*, and that from the Italian *Maneggio*, or, as ſome will have it, *à manu agendo*, acting with the hand.

In a *Manage* is a centre, or a place deſtined for vaulting round a pillar; a courſe or career for running the ring; and on the ſide are pillars, between which are placed the horſes intended for high airs. See CAREER, PILLAR, *&c.*

MANAGE is alſo uſed for the exerciſe itſelf, either of the horſe, or the rider. See AIR, *&c.*

MANCIPLE, MANCEPS, in old authors, denotes a caterer.

There was antiently an officer in the Temple called by this name, now called the ſteward; and both name and office is ſtill retained in the colleges in both univerſities.

MANDAMUS, a writ iſſuing out of the court of king's bench; ſent by the king to the head of ſome corporation, commanding them to admit or reſtore a perſon into his place or office.

MANDAMUS was alſo a charge to the ſheriff, to take into the king's hands all the lands and tenements of the king's widow, who, againſt her oath formerly given, married without the king's conſent.

MANDARIN *, a name given by the Portugueſe to the nobility and magiſtracy of the eaſtern countries, eſpecally thoſe of China.

* The word *Mandarin* is unknown in this ſenſe among the Chineſe, who in lieu thereof call their grandees and magiſtrates *Quan*, or *Quan-fu*, q. d. ſervant, or miniſter of a prince.

There are in China nine orders of *Mandarins*; or nine degrees of nobility; which have as many different animals for their characteriſticks.——The firſt is diſtinguiſhed by a crane, the ſecond by a lion, the third by an eagle, the fourth by a peacock, &c.

There are in all thirty two or thirty three thouſand *Mandarins* in China. There are *Mandarins* of letters, and *Mandarins* of arms; both the one and the other of which paſs ſeveral examinations: beſides civil *Mandarins*, or of juſtice.

Since the time that the Tartars have rendered themſelves maſters of China, moſt of the tribunals, or courts of juſtice, &c. inſtead of one *Mandarin* for a preſident, have two; the one a Tartar, the other a Chineſe.

The *Mandarinate* is not hereditary, nor are any raiſed to it but men of letters. See LITERATI.

MANDARIN is alſo a name which the Chineſe give to the learned language of the country. See LANGUAGE.

Beſides the proper and peculiar language of each nation and province, they have one common to all the learned men in the empire; and which is that in China which the Latin is in Europe.——This they call the *Mandarin* tongue, or the language of the court.——Their publick officers, as notaries, lawyers, judges, and chief magiſtrates, write and ſpeak the *Mandarin*. See CHINESE.

MANDATE, MANDATUM, in the canon law, denotes a reſcript of the pope, by which he commands ſome ordinary, collator, or preſenter, to put the perſon there nominated in poſſeſſion of the firſt benefice vacant in his collation.

An Apoſtolical *Mandate* for the proviſion of benefices, is a monitorial and comminatory letter from the pope to a biſhop, by which he is enjoined to provide a ſubſiſtence for thoſe who have been ordained by him, or his predeceſſors, from the tonſure to ſacred orders incluſively; and to allow them this ſubſiſtence till they be provided of a benefice; which practice was occaſioned by the biſhop's laying hands on great numbers, and afterwards abandoning them to miſery and want.

At firſt the popes only gave monitory *Mandates*, which were no more than ſimple prayers and requeſts, that did not bind the ordinary; afterwards they gave preceptory *Mandates*, which did not annul the proviſions of the ordinary; at laſt they ſet up executory *Mandates*, by which the proviſions made by the ordinary, in prejudice of the *Mandate*, were declared null; and the executor of the *Mandate*, in default of the ordinary, conferred the benefice on the mandatory: but the pope's power in iſſuing theſe *Mandates* is now very much reſtrained.

MANDIBULA, the jaw. See MAXILIA. Hence

MANDIBULARES, or *manducatorii muſculi*. See MASSETERS.

MANDIL, the name of a kind of cap, or turban wore by the Perſians. See CAP, and TURBAN.

The *Mandil* is formed, by firſt wrapping round the head a piece of fine white linnen five or ſix ells long; over this they wrap, in the ſame manner, a piece of ſilk of the ſame length, and oftentimes of great value.——To make the *Mandil* genteel, care muſt be taken, that in wrapping the ſilk, it be ſo managed, as that the ſeveral colours found in the ſeveral folds, make a kind of waves, ſomewhat like what we ſee in marbled paper.

This dreſs is extremely majeſtic, but at the ſame time very heavy: It ſerves either as a ſhelter to the head from cold, or as a ſkreen from the exceſſive heat of the ſun; it is ſaid the cutlaſs will not penetrate it.——In rainy weather they cover it up with a kind of caſe or hood, made of red cloth.

The mode of the *Mandil* has been altered of late: during the time of Schah-Abbas II. it was round at top; in the time of Schah-Soliman, they brought one end of the ſilk out of the middle of the *Mandil* over the head; and, laſtly, in the reign of Schah-Huſſein, the end of the ſilk, in lieu of its being gathered as before, was plaited in manner of a roſe; and this the Perſians account extremely graceful, and uſe it to this day.

MANDRAGORA, or MANDRAGORAS, MANDRAKE, a medicinal plant, which makes a principal ingredient in the unguentum populneum. See POPULNEUM.

There are two kinds of *Mandragora*: *male* and *female*; each bearing a kind of apples: thoſe of the male, as well as the leaves, roots, &c. being twice as large as thoſe of the female; but the juice of each is a narcotic poiſon, equally violent.

Naturaliſts tell ſtrange ſtories of this plant; but, ſetting aſide its ſoporiferous virtue, the modern botaniſts will ſcarce warrant any of them, not even that human figure ordinarily aſcribed to its roots, eſpecially ſince the diſcovery of the artifice of Charletan's in faſhioning it, to ſurprize the credulity of the people.

Chineſe MANDRAGORAS is the plant ginſeng. See GINSENG.

MANDREL, a kind of wooden pulley, making a member of the turner's lathe.

Of theſe there are ſeveral kinds; as

Flat MANDRELS, which have three or more little pegs or points near the verge, and are uſed for turning flat boards on.

Pin MANDRELS, which have a long wooden ſhank to fit into a round hole made in the work to be turned.

Hollow MANDRELS, which are hollow of themſelves, and uſed for turning hollow work.

Screw MANDRELS, for turning ſcrews, &c. See TURNING, and LATHE.

MANDUCATION, the action of *chewing*, otherwiſe called *Maſtication*. See MASTICATION.

Manducation is a term ſeldom uſed but in ſpeaking of the euchariſt.——The Catholics maintain a real *Manducation* of the body of Chriſt; the Reformed, on the contrary, take this *Manducation* to be only figurative and by faith.——St. Auguſtine calls it *ſpiritual Manducation*.

MANEQUIN, among painters. See LAYMAN.

MANES, a poetical term, ſignifying the ſhades, or ſouls of the deceaſed. See SOUL.

The heathens uſed a world of ceremonies and ſacrifices to appeaſe the *Manes* of thoſe who died without burial. See LEMURES and LEMURIA.

Dii MANES were the ſame with *Inferi*, or the infernal gods who tormented men; and to theſe the heathens offered ſacrifices to aſſuage their indignation. See GOD.

The heathen theology is a little obſcure with regard to theſe Gods *Manes*: Some hold that they were the ſouls of the dead, others that they were the genii of men; which laſt opinion ſuits beſt with the etymology of the word. See GENIUS.

The heathens, 'tis pretty evident, uſed the word *Manes* in both theſe ſenſes; ſo that it ſometimes ſignified the ghoſts of the departed, and ſometimes the infernal or ſubterraneous deities, and in general all divinities that preſided over tombs.

The evocation of the *Manes* of the dead ſeems to have been very frequent among the Theſſalians, but was expreſsly prohibited by the Romans. See NECROMANCY.

MANIA, in medicine, MADNESS; a vehement kind of delirium without a fever. See DELIRIUM.

The cauſe of the *Mania* is thus accounted for by Dr. Quincy.——As often as the ſpecies of things, wherewith we have been acquainted, are hurried together, we may be ſaid to dream; and thence in ſleep theſe ſpecies are added with other things, and variouſly compounded, from the manifold repercuſſions of the animal ſpirit which ariſe from the cauſe producing ſleep, and preſſing the nerves, ſo as to revert the fluctuation of their juice. A delirium is therefore the dreams of waking perſons, wherein ideas are excited without order or coherence, and the animal ſpirits are drove into irregular fluctuations. See DELIRIUM.

If then the cauſe inducing a delirium be of that nature, that it can excite ideas or motions of a conſiderable impetus, without any regularity or order, ſuch a delirium will be attended with boldneſs or rage, and violent motions of the body; that is, a *Mania* will be produced. See PASSION.

Now it is plain, that all the known cauſes of this diſtemper give a greater dipoſition to the blood for motion, and render it fluxile, but not conſiſtent, and uniformly thick enough; and therefore that they diſpoſe perſons likewiſe to continued fevers, ſince they occaſion the blood to be thrown out of the heart with an increaſed force, unleſs ſome other cauſe intervenes, whereby the efficacies of theſe are interrupted in diſpoſing the blood into febrile motions; and the blood is ſo diſpoſed, as often as it can be rarefied into its minuteſt parts; that is, ſo uniformly rarefied, that it can eaſily, with any force by the motion received from the heart, go into parts diviſible at the occurſions of thoſe orifices, into which it ought to be diſtributed: for then the coheſion of the parts, which can be but very ſmall, will not be any obſtruction to the increaſe and propagation of the blood's velocity. But if it happen that the efficient cauſe, or the heart, throws the blood with a greater force, or that the blood can be more eaſily propelled in any given time, it will occaſion, at the ſame time, that ſome parts of the blood will be more nearly united, ſo as to form moleculæ, conſiſting of cohering particles; which moleculæ will cohere to one another, and not ſo eaſily obey the direction of the heart's propelling force. The blood hereupon cannot be uniformly rarefied, nor enter ſo eaſily into the ſmall orifices of the veſſels, and ſo ſoon travel through them, and therefore there will no fever ariſe, but a delirium without a fever, wherein the heat of the blood will be greater, and the preſſure in the brain uncertain: whence uncertain recurſions of the ſpirits, inordinate undulations, confuſed vibrations of the nerves, and a remarkable energy of imagination; whence will proceed audacity and paſſion beyond meaſure.——It is a diſeaſe very hard to cure, and is generally found to baffle the phyſician.

MANICHEES, or MANICHEANS, MANICHÆI, a ſect of antient heretics, who aſſerted two principles; ſo called from their author *Manes*, or *Manicheus*, a Perſian by nation. See PRINCIPLE.

This hereſy had its firſt riſe about the year 277, and ſpread itſelf principally in Arabia, Egypt, and Africa. St. Epiphanius, who treats of it at large, obſerves, that the true name of this hereſiarch was Cubricus; and that he changed it for *Manes*, which in the Perſian or babyloniſh language ſignifies veſſel. A rich widow, whoſe ſervant he had been, dying without iſſue, left him ſtore of wealth; after which he aſſumed the title of apoſtle or envoy of Jeſus Chriſt.

He eſtabliſhed two principles, *viz.* a good and an evil one: The firſt, which he called *Light*, did nothing but good; and the ſecond, which he called *Darkneſs*, nothing but evil.——This philoſophy is very antient; and Plutarch treats of it at large in his Iſis and Oſiris. See GOOD and EVIL.

Our ſouls, according to *Manes*, were made by the good principle, and our bodies by the evil one; thoſe two principles being co-eternal and independent of each other. He borrowed many things from the antient Gnoſtics; on which account many authors conſider the *Manicheans* as a branch of the Gnoſtics. See GNOSTIC.

In truth, the *Manichean* doctrine was a ſyſtem of philoſophy, rather than of religion. They made uſe of amulets, in imitation of the Baſilidians; and are ſaid to have made profeſſion of aſtronomy and aſtrology. See BASILIDIAN. They denied that Jeſus Chriſt aſſumed a true human body, and maintained it was only imaginary. They pretended that the law of Moſes did not come from God, or the good principle, but from the evil one; and that for this reaſon it was abrogated. They abſtained entirely from eating the fleſh of any animal; following herein the doctrine of the antient Pythagoreans.——The reſt of their errors may be ſeen in St. Epiphanius and St. Auguſtine; which laſt, having been of their ſect, may be preſumed to have been thoroughly acquainted with them.

Though the *Manichees* profeſſed to receive the books of the new teſtament, yet, in effect, they only took ſo much of them as ſuited with their opinions. The firſt formed to themſelves a certain idea or ſcheme of Chriſtianity; and to this adjuſted the writings of the apoſtles; pretending that whatever was inconſiſtent with this, had been foiſted into the new teſtament by latter writers, who were half Jews.——On the other hand, they made fables and apocryphal books paſs for apoſtolical writings; and even are ſuſpected to have forged ſeveral others, the better to maintain their errors. St. Epiphanius gives a catalogue of ſeveral pieces publiſhed by *Manes*, and adds extracts of ſome of them.

Manes was not contented with the quality of Apoſtle of Jeſus Chriſt, but alſo aſſumed that of the Paraclet, whom Chriſt had promiſed to ſend. He left ſeveral diſciples, and among others, Addas, Thomas, and Hermas. Theſe he ſent, in his life-time, into ſeveral provinces to preach his doctrine.——*Manes* having undertaken to cure the king of Perſia's ſon, and not ſucceeding, was clapt into priſon upon the young prince's death; whence he made his eſcape, but was apprehended ſoon after, and burnt alive.

Towards the middle of the twelfth century the ſect of *Manichees* took a new face, on occaſion of one Conſtantine, an Armenian and adherer to it; who took upon him to ſuppreſs the reading of all other books beſides the evangeliſts and the epiſtles of St. Paul, which he explained in ſuch manner, as to make them contain a new ſyſtem of *Manicheiſm*. He entirely diſcarded all the writings of his predeceſſors, rejected the chimæra's of the Valentinians and their thirty Æons; the fable of *Manes*, with regard to the origin of rain, which he made to be the ſweat of a young man in hot purſuit after a maid; and other dreams; but ſtill retained the impurities of Baſilides. In this manner he reformed *Manicheiſm*, inſomuch that his followers made no ſcruple of anathematizing Scythian, Buddas, and even *Manes* himſelf; Conſtantine being now their great apoſtle. After he had ſeduced an infinite number of people, he was at laſt ſtoned by order of the emperor.

MANICORDION *, a muſical inſtrument, in form of a ſpinett. See SPINETT.

> * Du Cange derives the word from *Monochord*, on a ſuppoſition this inſtrument has but one cord; but he is miſtaken, it has fifty, or more. See MONOCHORD.

Its ſtrings are covered with pieces of ſcarlet cloth, to deaden, as well as ſoften, the ſound; whence it is alſo called the *dumb Spinett*, and is much uſed in nunneries for the religious to learn to play on; ſo as not to diſturb the ſilence of the dormitory.——Scaliger makes the *Manicord* more antient than the ſpinett or harpſicord.

MANIFESTO, an apology, or public declaration in writing, made by a prince, ſhewing his intentions in any enterprize, the motives that induced him to it, and the reaſons on which his right, and pretenſions are founded.

MANILLE, or MENILLE, in commerce, one of the principal commodities carried by the Europeans to the coaſts of Africa, to traffic with the negroes in exchange for ſlaves; conſiſting of a large braſs ring, in form of a bracelet, either flat or round, plain or engraven; which the natives uſed to deck themſelves withal, putting them on the ſmall of the leg, and the thick of the arm above the elbow.

The better ſort among the negroes wear ſilver and gold *Manilles*; but theſe are of their own manufacture; moſt of the money they receive for their other merchandizes being melted into *Manilles*.

MANIPULATION, a term uſed in the mines, to ſignify the manner of digging the ſilver, *&c.* out of the earth. See SILVER.

MANIPULUS, MANIPULE *, among the Romans, was a little body of infantry, which, in the time of Romulus, conſiſted of an hundred men; and in the time of the conſuls and firſt Cæſars, of two hundred.

> * The word properly ſignifies a handful; and according to ſome authors, was firſt given to the handful of hay which they bore at the end of a pole, to diſtinguiſh themſelves by, ere the cuſtom was introduced of bearing an eagle for their enſign; and hence alſo the phraſe, an handful of men. But Vegetius, Modeſtus, and Varro, give other etymologies of the word: The laſt derives it from *manus*, a little body of men following the ſame ſtandard. According to the former, this corps was called *Manipulus*, becauſe they fought hand in hand, or all together: *Contubernium autem Manipulus vocabatur ab eo quod conjunctis manibus pariter dimicabant.*

Each *Manipule* had two centurions, or captains, called *manipularii*, to command it; one whereof was lieutenant to the other.——Each cohort was divided into three *Manipules*, and each *Manipule* into two centuries. See COHORT, and CENTURY.

Aulus Gellius quotes an old author, one Cincius, who lived in the time of Hannibal, (whoſe priſoner he was) and who, writing on the art of war, obſerves, that then each legion conſiſted of ſixty centuries, of thirty *Manipules*, and of ten cohorts.——And again, Varro and Vegetius mention it as the leaſt diviſion in the army, only conſiſting of the tenth part of a century; and Spartian adds, that it contained no more than ten men: which ſhews, that the *Manipulus* was not always the ſame thing. See LEGION, *&c.*

MANIPULUS is alſo an eccleſiaſtical ornament, wore by the prieſts, deacons, and ſub-deacons in the Romiſh church. It conſiſts of a little fillet in form of a ſtole, three or four inches broad, and made of the ſame ſtuff with the chaſuble; ſignifying and repreſenting an handkerchief, which the prieſts in the primitive church wore on the arm, to wipe off the tears they were continually ſhedding for the ſins of the people.——There ſtill remains a mark of this uſage in a prayer rehearſed by thoſe who wear it; *Merear, Domine, portare Manipulum fletus & doloris.*

The Greeks and Maronites wear two *Manipules*, one on each arm.

MANIPULUS, in phyſic, denotes a meaſure, or fixed quantity of herbs, or leaves, *viz.* an handful; or ſo much as the whole hand can graſp: generally marked in preſcription with *M.*

MANNA, in pharmacy, a medicinal drug, of great uſe in the modern practice, as a gentle purgative, and cleanſer of the firſt paſſages. See PURGATIVE, *&c.*

Manna is a white ſweet juice oozing from the branches and leaves of the aſh-tree, chiefly in Calabria, during the heats of ſummer.

Manna has been commonly held a kind of *mel aerium*, or honey-dew, which falling in the night, gathers on certain trees, and even on rocks, and the earth itſelf; where it hardens with the ſun. But what refutes this opinion, is that ſuch dews melt in the ſun; whereas *Manna* whitens and hardens in it. Add, that ſuch dews are only found on the tops and extremes of the leaves; whereas *Manna* is chiefly found to lodge near the trunks of the branches: and that the honey-dew falls only on trees open to the air; whereas *Manna* is found on trees which are under cover: as was experienced by Dr. Cornelius, who gathered *Manna* from branches covered on purpoſe with cloth; and Lobelius aſſures, that *Manna* had been gathered from branches of the aſh which had been thrown the day before into a cellar. See HONEY-DEW.

It is much more rational to rank *Manna* amongſt the number of gums, which exuding from the juice of the tree, and mixing with ſome ſaline particles of the air, is condenſed into thoſe flakes in which we ſee it. See GUM.

The Italians gather three kinds of *Manna*:——*Manna di corpo*, which oozes ſpontaneouſly from the branches of the tree in the month of July.——*Manna forzata*, or *forzatella*, which is not gathered till Auguſt, after an inciſion of the tree, when the flux of the firſt has ceaſed.——*Manna di fronda*, which iſſues of itſelf, in little drops, like a kind of ſweat from the nervous part of the leaves of the aſh, and gathers into grains about the bigneſs of thoſe of wheat, which are hardened by the ſun in Auguſt. The leaves are frequently found ſo loaden with theſe grains, that they ſeem covered with ſnow.

Manna is a gentle, and ſafe purge; and is alſo uſed in broths: Altimarus, a phyſician of Naples, has written a treatiſe expreſly upon it; and Donzelli another.——*Manna*, though accounted a kind of honey, purges the bile; whereas common honey increaſes it. Formerly the Syrian was in the moſt repute, but now it gives way to the Calabrian. Fuchſius obſerves, that the peaſants of mount Libanus eat *Manna* ordinarily as others do honey. At Mexico they are ſaid to have a *Manna* which they eat as we do cheeſe.

The *Manna* moſt eſteemed, is that in tears; which many take to be factitious, and the work of the Jews at Leghorn; but it is certainly natural: And what gives it this figure is, that they put ſtraws and ſlips of wood in the inciſions, along which the *Manna* gliding, is condenſed as it comes out, and aſſumes this form.

Manna, is alſo a ſcripture-term, ſignifying a miraculous kind of food which fell from heaven for the ſupport of the Iſraelites in their paſſage through the wilderneſs: being in form of coriander-ſeeds; its colour like that of Bdellium, and its taſte like honey.

They called it *Manna*, either from the Hebrew word *manah*, a gift, to intimate its being a gift from heaven; or from *minnah*, which ſignifies to prepare, becauſe the *Manna* came to them ready for eating, and needed no preparation but gathering; or from the Egyptian word, *Man*, what is it? which laſt etymology ſeems the more probable, in regard the ſcripture takes notice of the ſurprize they were under when they firſt ſaw this new food deſcend.

Salmaſius, however, prefers another: According to him, the Arabs and Chaldeans uſed the word *Man* to ſignify a kind of dew or honey that fell on the trees, and was gathered in great abundance on mount Libanus. On which footing the Iſraelites did not uſe the term *Manna* out of ſurprize, but becauſe they found this food fall with the dew, in the ſame manner as the honey ſo well known to them under the name of *Man*.

Salmaſius adds, that the *Manna* of the Iſraelites was in reality no other than that honey, or dew condenſed; and that the one and the other were the ſame with the wild honey wherewith St. John was fed in the wilderneſs. So that the miracle did not conſiſt in the formation of any new ſubſtance in favour of the Iſraelites; but in the punctual manner in which it was diſpenſed by providence for the ſuſtenance of ſo vaſt a multitude.

MANNER, in painting, *&c.* expreſſes that particular character obſervable in the works of painters, poets, and other artiſts, by which their pencil, hand, or ſtyle, are diſtinguiſhed.

The curious in pictures know the *Manners* of the painters; and diſtinguiſh readily between the *Manners* of Rubens, Titian, or Da Vinci; between the antient, and the new *Manner* of the ſame painter; the Flemiſh, and the Italian *Manner*.

Manner is uſed with reſpect both to the invention, the deſign, and the colouring. The *Manner* of Michael Angelo, or Raphael, may alſo be known in their ſcholars. Thus we ſay, ſuch a piece is of Raphael's ſchool, *&c.*

MANNERS, in poetry, denote the inclinations, genius, and humour, which the poet gives to his perſons, and whereby he diſtinguiſhes his characters. See CHARACTER.

Ariſtotle defines *Manners*, to be that which diſcovers the inclination of him who ſpeaks, and ſhews what he will reſolve upon, or what reject, before he has actually determined: whence he he concludes, that *Manners* are not always, and in all kinds of diſcourſes: *Non quælibet oratio eſt morata.*

One inſtance will make this definition clear. In the firſt book of Virgil, Æneas is repreſented extremely pious, and determined to execute the will of the gods at all adventures. In the fourth book, he has a difficult choice propoſed; being engaged on the one hand, out of a principle of love, gratitude, and honour, not to quit Dido; and having, on the other hand, an expreſs order from the gods to depart for Italy.——Now, before it appears on which ſide he has determined, what he has before ſaid, ſhould ſhew his will and inclinations, and which party he will take.——And thoſe preceding diſcourſes, which diſcover his future reſolution, make what we call the poetical *Manners*.

Thoſe make it paſt doubt he will abandon Dido, to obey the gods: This he does in effect; the *Manners* therefore are good, and well conducted.——Had he diſobeyed the orders of Jupiter, to ſtay with Dido, the *Manners* had been ill; in regard they would have foretold a reſolution contrary to what he was really to take.——But had there been nothing to make us foreſee any reſolution of Æneas at all, neither that which he actually took, nor the contrary, in that caſe there had been no *Manners* at all.

It is the *Manners*, as before obſerved, that diſtinguiſh the characters: and, unleſs the *Manners* be well expreſſed, we ſhall never be acquainted with the perſons at all; nor, conſequently, ſhall we be either terrified with foreſeeing their dangers, nor melted into pity by ſeeing their ſufferings. See CHARACTER.

The *Manners* ſhould have four qualities; they ſhould be *good*, *like*, *ſuitable*, and *equal*.

The *Manners* are *good* when they are well marked or expreſſed; that is, when the diſcourſe of the perſons makes us clearly and diſtinctly ſee their inclinations, and what good or evil reſolutions they will take.——*Likeneſs* of *Manners* only relates to known and public perſons, whoſe characters are in hiſtory, with which the poetic characters muſt agree; that is, the poet muſt not give a perſon any quality contrary to any of thoſe which hiſtory has given him. And here it may be obſerved, that the evil qualities given to princes and great men, ought to be omitted by the poets, if they be contrary to the character of a prince, *&c.* but the virtues oppoſite to thoſe known vices ought not to be impoſed, by making him generous and liberal in the poem, who was avaritious in the hiſtory.

The *Manners* muſt likewiſe be *ſuitable*; that is, they muſt be agreeable to the age, ſex, rank, climate, and condition of the perſon that has them. Horace obſerves, *Intererit multum Davuſne loquatur an heros.*—Again, the *Manners* muſt be *equal*; that is, they muſt be conſtant, or conſiſtent through the whole character; or the variety or inequality of the *Manners*, as in nature, ſo in the drama, muſt be equal. The fearful muſt never be brave, nor the brave timorous; the avaritious muſt never be liberal, nor *vice verſa*. In this part, Shakeſpear's *Manners* are admirable.

Beſides theſe four qualities above-mentioned, there is a fifth eſſential to their beauty; which is, that they be neceſſary; that is, that no vicious quality, or inclination, be given to any poetic perſon, unleſs it appear to be abſolutely neceſſary, or requiſite to the carrying on of the action.

MANOMETER, or **MANOSCOPE** *, an inſtrument to ſhew, or meaſure, the alterations in the rarity, or denſity of the air. See AIR, RARE, and DENSITY.

* The word is formed from the Greek μανος, rarus, and μετρον, menſura, *&c.*

The *Manometer* differs from the barometer, in that the latter only meaſures the weight of the atmoſphere, or of the column of air over it; but the former the denſity of the air in which it is found: which denſity depends not only on the weight of the atmoſphere, but on the action of heat and cold, *&c.*——Authors, however, generally confound the two together; and Mr. Boyle himſelf gives us a very good *Manometer* of his contrivance, under the title of a *ſtatical barometer*; the ſtructure whereof ſee under the word BAROMETER.

MANOR, or **MANNOR** *, an antient lordſhip, or royalty; conſiſting of demeſnes and ſervices, and of a court-baron, as incident thereto. See LORD, and DEMAIN.

* The word is formed from the French *Manoir*, a manſion-houſe; and that from the Latin, *Manere*, to remain, or dwell, as being the lord's uſual place of reſidence. See MANSION.

Manor is the ſame with what was formerly called *baronia*, *barony*. See BARONY.

A *Manor* is a kind of noble fee granted out partly to tenants for certain ſervices to be performed, and partly reſerved to the uſe of the lord's family, with juriſdiction over his tenant for the lands or eſtates held of him. See FEE.

For the original of *Manors*,——we are told there was antiently a certain compaſs of ground, granted by the king to ſome man of worth, for him and his heirs to dwell upon, and to exerciſe ſome juriſdiction, more or leſs, within that circuit, ſuch as he thought good to grant; but performing, withal, ſuch ſervices, and paying ſuch yearly rent, as by this grant was required. Now, the lord afterwards, parcelling the ſame to other meaner men, received rent and ſervices from them, and by that means, as he became tenant to the king, the inferiors became tenants to him.

But at this time a *Manor* rather ſignifies a juriſdiction, and royalty incorporeal, than the land and ſuit: For a man may have a *Manor* in groſs, *i. e.* the right and intereſt of a court-baron, with the perquiſites, and another enjoy every foot of land belonging to it.

A *Manor* may be compounded of divers things, as of an houſe, arable land, paſture, meadow, wood, rent, advowſon, court-baron, *&c.* And this ought to be, by long continuance of time, beyond man's memory.

It is held by ſome, that a *Manor* cannot now be made, ſince a court-baron cannot be made; and without a court-baron, and at leaſt two ſuitors, there can be no *Manor*. See COURT.

MANSE, **MANSUS**, **MANSA**, or **MANSUM** *, in antient law-books, denotes an houſe, or habitation; either with or without land. See HOUSE, and MANSION.

* The word is formed *à Manendo*, abiding; as being the place of dwelling or reſidence.

Capital **MANSE**, *Manſum capitale*, denotes the manor-houſe, or lord's court. See MANOR, and COURT.

MANSUS *Preſbyteri*, is a parſonage, or vicarage-houſe, for the incumbent to reſide in.

This was originally, and ſtill remains, an eſſential part of the endowment of a pariſh-church, together with the glebe and tythes.——It is ſometimes called *Preſbyterium*. See PRESBYTERY.

MANSION, **MANSIO**, a dwelling-houſe or habitation, eſpecially in the country. See MANSE.

MANSION is more particularly uſed for the lord's chief dwelling-houſe within his fee, otherwiſe called the *capital meſſuage*, or chief *manor* place. See MANOR.

MANSIO, or **MANSUS**, was ſometimes alſo uſed in the ſame ſenſe with *hide*; that is, for as much land as one plow could till in a year. See HIDE.

MAN-SLAUGHTER, **HOMICIDE**; the unlawful killing a man, without any prepenſed malice. See HOMICIDE.

As, when two perſons who before meant no harm to one another, falling out on ſome ſudden occaſion, the one kills the other.

Man-ſlaughter differs from murder, as not being done with foregoing malice; and from chance-medley, becauſe it hath a preſent intent to kill.——It is eſteemed felony, but admitted to the benefit of the clergy, for the firſt time. See MURDER, CHANCE-MEDLEY, and SE-DEFENDENDO.

By a law of king Canutus, if a man is killed openly and premeditatedly,

meditatedly, the murderer ſhall be committed to the relations of the deceaſed: but if, on his trial, the fact be proved, but not wilful, the biſhop is to judge him.

MANSORII *Muſculi*, the ſame with *maſſeters*. See MASSETER.

MANTELETS, in war, a kind of moveable parapets made of planks, about three inches thick, nailed one over another, to the height of almoſt ſix feet, generally caſed with tin, and ſet upon little wheels; ſo that in a ſiege, they may be driven before the pioneers, and ſerve as blinds, to ſhelter them from the enemy's ſmall ſhot. See BLINDS.

There are other ſorts of *Mantelets*, covered on the top, whereof the miners make uſe, to approach the walls of a town, or caſtle.——See *Tab. Fortif. fig.* 17.

It appears from Vegetius, that theſe were in uſe among the antients, under the name of vineæ; but they were built ſlighter, and yet larger than ours, being eight or nine feet high, as many broad, and ſixteen long: They were defended by a double covering, the one of boards, the other of faggots, with the ribs of oſiers, and caſed without with ſkins ſteeped in water, to prevent fire.

MANTLE, or MANTLE-*tree*, in architecture, is the lower part of a chimney; or that piece of timber which is laid acroſs the jaumbs, and ſuſtains the compartiment of the chimney-piece. See CHIMNEY.

MANTLE, or MANTLING, in heraldry, that appearance of folding of cloth, flouriſhing, or drapery, that is in any atchievement, drawn about the coat of arms.

It is ſuppoſed originally to have been the repreſentation of a *Mantle*, or military habit worn by antient cavaliers over their armour to preſerve it from ruſt; or as others hold, a ſhort covering only worn over the helmet; which in after-times was lengthened, and made to hang from the helmet below the whole ſhield. See *Tab. Herald. fig.* 29.

The *Mantle* is always ſaid in blazon to be doubled, that is, lined throughout with one of the furs, as ermin, pean, vairy, &c. See COAT.

MANTLE is likewiſe a term uſed in falconry.——They ſay, the hawk *mantles*, that is, ſpreads her wings after her legs.

MANUCAPTIO, in law, a writ which lies for a man, who, being taken on ſuſpicion of felony, and offering ſufficient bail for his appearance, is refuſed to be admitted thereto by the ſheriff, or other having power to let to mainpriſe.

MANUDUCTOR *, a name given to an antient officer in the church, who, from the middle of the choir where he was placed, gave the ſignal for the choriſters to ſing, marked the meaſure, beat time, and regulated the muſic. See CHOIR, &c.

* The Greeks called him *Meſochoros*, becauſe ſeated in the middle of the choir: But in the Latin church, he was called *Manuductor*, from *manus* and *duco*, I lead; becauſe he led and guided the choir by the motions and geſture of the hand.

MANUFACTURE *, a place where ſeveral artiſts and workmen are employed in the ſame kind of work; or make a commodity of the ſame kind. See COMMERCE, &c.

* The word comes from the Latin, *Manufactus*, q. d. made with hands.

MANUFACTURE is alſo popularly uſed to ſignify the work itſelf; and by extenſion, the like work carried on independently in different parts of a country.

In this ſenſe, we ſay the woollen *Manufacture*, ſilk *Manufacture*, velvet *Manufacture*, tapeſtry *Manufacture*, muſlin *Manufacture*, &c. *Manufacture* of hats, ſtockings, &c. See WOOL, SILK, VELVET, TAPESTRY, MUSLIN, &c.

MANUMISSION, MANUMISSIO *, an act whereby a ſlave, or villain, is ſet at liberty, or out of bondage. See SLAVE, &c.

* The word comes from the Latin *manus*, hand, and *mittere*, to ſend; *quia ſervus mittebatur extra manum, ſeu poteſtatem domini ſui.*

Some authors define *Manumiſſion* an act by which a lord enfranchiſes his tenants, who till that time had been his vaſſals, and in a ſtate of ſlavery, inconſiſtent with the ſanctity of the chriſtian faith. See VILLAIN, VASSAL, &c.

Among the Romans, the *Manumiſſion* of ſlaves was performed three ſeveral ways. 1°. When, with his maſter's conſent, a ſlave had his name entered in the cenſus, or public regiſter of the citizens. 2°. When the ſlave was led before the prætor, and that magiſtrate laid his wand, called *Vindicta*, on his head. 3°. When the maſter gave the ſlave his freedom by his teſtament.——Servius Tullus is ſaid to have firſt ſet on foot the firſt manner; and P. Valerius Publicola the ſecond: A particular account is given of the third in the *Inſtitutes* of Juſtinian.

It was not neceſſary, that the prætor ſhould be on his tribunal to perform the ceremony of *Manumiſſion*: he did it any where indifferently, in his houſe, in the ſtreet, going to bathe, &c. He laid the rod on the ſlave's head, pronouncing theſe words, *Dico eum liberum eſſe more Quiritum*; I declare him a freeman after the manner of the Romans. This done, he gave the rod to the lictor, who ſtruck the ſlave with it on the head, and afterwards with his fiſt on his face and back: And the notary, or ſcribe, entered the name of the new-freed man in the regiſter, with the reaſons of his *Manumiſſion*. See LIBERTIN.

The ſlave had likewiſe his head ſhaved, and a cup given him by his maſter, as a token of freedom. Tertullian adds, that he had then alſo a third name given him: If this were ſo, three names were not a token of nobility, but of freedom. See NAME.

The emperor Conſtantine ordered the *Manumiſſions* at Rome to be performed in the churches.

Of *Manumiſſion* there have alſo been various forms in England: In the time of the conqueror, villains were *manumitted* by the maſter's delivering them by the right hand to the vicount in full court, ſhewing them the door, giving them a launce, and a ſword, and proclaiming them free.

Others were *manumitted* by charter.——There was alſo an implicit *Manumiſſion*; as when the lord made an obligation for payment of money to the bondman at a certain day; or ſued him, where he might enter without ſuit; and the like.

MANURING *of ground*, the application of a matter proper for meliorating the ſoil, and rendering it more fertile. See COMPOST, VEGETATION, &c.

The matters uſed for *Manure* are various in various countries: The moſt ordinary are dung, lime, and marl. See LIME, and MARL.

In ſome parts of Ireland they uſe ſea-ſhells, as thoſe of cockles, periwinkles, &c. which are found to agree well with boggy, heathy, clayey, wet or ſtiff land; as they ſeem to give it a kind of ferment, as barm does to bread, opening and looſening the clods, and by that means making way for the roots to penetrate, and the moiſture to enter into the fibres of the roots. ——This kind of *Manure* continues a long time ere its effects are exhauſted; whereas lime, &c. ſpend themſelves at once. The ſhells being hard, melt away very ſlowly, ſo that the operation needs not be repeated for twenty or thirty years.

In the weſt of England, they *manure* their land with a brackiſh ſea-ſand; which Dr. Bury obſerves, quickens dead land: ſo that what would otherwiſe be the barreneſt part of that country, is now the richeſt. The ſea-ſalt, he obſerves, is too luſty and active of itſelf, and that it does beſt when mingled with lime. Glauber orders the mixture to be made up and burnt like bricks, and then applied.

In ſome countries they burn the ſurface of their heathy ground, inſtead of *manuring* it; which others think but ill huſbandry, inaſmuch as it impoveriſhes it; and by deſtroying the ſap of the earth, and roots of the graſs, and other vegetables, renders it uſeleſs for ſeveral years after the third, when it is plowed. See DENSHIRING, and ASHES.

Dr. Jackſon obſerves, that all the ground about Nantwich, where ſalt or brine is ſplit, is, when dug up, an excellent *Manure* for grazing ground; and even bricks, thoroughly tinged with it, diſſolve and fertilize land very conſiderably. See SALT.

Dr. Beal ſays, it is a common obſervation of gardeners and ſkilful huſbandmen, that froſt and ſnow improve and fertilize the land both more ſpeedily and more effectually than the influence and warmth of the ſun. See SNOW, &c.

Dr. Liſter tells us, that in ſome parts of the north-riding of Yorkſhire the ſoil is ſandy, and the people *manure* it with clay. The ſoil, with any other *Manure*, bears nothing but rye; but with clay, bears oats, barley, &c. This clay *Manuring* will, by certain experience, laſt forty-five years in the ground ere it need be repeated.——The bogs in Ireland are ſaid to be beſt improved by ſandy, or other gravelly *Manures*.

MANUSCRIPT, a book, or paper, written with the hand. See WRITING.

By which it ſtands oppoſed to a printed book, or paper. See PRINTING.

A *Manuſcript* is uſually denoted by the two letters MS, and in the plural by MSS, or MMSS.——What makes public libraries valuable, is the number of antient *Manuſcripts* repoſited in them. See LIBRARY.

MANWORTH, in old law-books, denotes the price, or value of a man's head. See GELD, and WERGELD.

In antient times, every man, according to his degree, was rated at a certain price; according to which, ſatisfaction was made to his lord, if any one killed him. See ÆSTIMATIO.

MANZEL. See the article CARAVANSERA.

MAP, a plain figure, repreſenting the ſurface of the earth, or a part thereof, according to the laws of perſpective. See EARTH, and PERSPECTIVE.

A *Map* is a projection of the ſurface of the globe, or a part thereof, on a plane ſurface; repreſenting the forms and dimenſions of the ſeveral countries and rivers; with the ſituations of cities, mountains, and other places. See PROJECTION.

Maps are either *univerſal*, or *particular*.

Univerſal MAPS are thoſe which exhibit the whole ſurface of the earth; or the two hemiſpheres.

Particular MAPS are thoſe which exhibit ſome particular region, or part thereof.

Each kind are frequently called *Geographical*, or *Land-Maps*, in contra-diſtinction to *Hydrographical*, or *Sea-Maps*, repreſenting only the ſeas and ſea-coaſts; properly called *Charts*. See CHART.

There are three qualifications required in a *Map*. 1°. That all places have their juſt ſituation with regard to the chief circles of the earth, as the equator, parallels, meridians, &c. becauſe on theſe depend many properties of regions, as well as celeſtial phænomena. 2°. That the magnitudes of the ſeveral countries have the ſame proportion as on the ſurface of the earth. 3°. That the ſeveral places have the ſame diſtance and ſituation with regard to each other, as on the earth itſelf.

For the foundation of Maps, and the laws of projection, ſee PERSPECTIVE, and PROJECTION *of the Sphere.*——*The application thereof, in the conſtruction of* Maps, is as follows.

Conſtruction of a Map, *the eye being placed in the axis.*——Suppoſe, *v. g.* the northern hemiſphere to be repreſented with the eye in a point of the axis, *v. g.* the ſouth pole: For the plane, whereon the repreſentation is to be made, we take the plane of the equator, and from all the points of the ſurface of the northern hemiſphere, conceive lines paſſing through the plane to the eye; which points connected together, conſtitute the *Map* required.

Here the equator will be the limit of the projection; the pole, the centre. The meridians will be right lines paſſing from the pole to the equator: the parallels of latitude, *&c.* circles concentric with the equator; and all the other circles, and arches of circles, as the horizon, vertical circles, *&c.* ecliptic, *&c.* conceived in that hemiſphere, will be ellipſes, or arches of ellipſes.

The better to apprehend the projection of the circles on the plane, conceive a radiant cone, whoſe vertex is the eye, its baſe the circle to be repreſented, and its ſides the rays paſſing between the circle and the eye. Suppoſe this cone cut by the plane. It is obvious, that, according to the various poſition of the cone, there will be a different ſection, and conſequently a different line of repreſentation.

For the application of this doctrine in practice:——In a plane, *v. g.* a paper, take the middle point *P* (*Tab. geography, fig.* 2.) for the pole; and from this, as a centre, deſcribe a circle, of the intended bigneſs of your *Map*, to repreſent the equator. Theſe two may be pitched on at pleaſure, and from theſe all the other points and circles are to be determined. Divide the equator into 360°, and drawing right lines from the centre to the beginning of each degree, theſe will be meridians; whereof that drawn to the beginning of the firſt degree, we ſuppoſe the firſt meridian. See MERIDIAN.

For the parallels.—There are four quadrants of the equator; the firſt, 0,90; the ſecond, 90,180; the third, 180,270; the fourth, 270,0; which, for the better diſtinction, we will note with the letters AB, BC, CD, DE. Taking one of theſe, *v. g.* BC, from the ſeveral degrees thereof, as alſo from 23°, 30′, and 66″, 30′ thereof, draw occult right lines to the point *D*, marking where theſe lines cut the ſemidiameter *BPC*; and from *P*, as a centre, deſcribe arches paſſing through the ſeveral points in *PC*.——Theſe arches will be parallels of latitude. The parallel at 23° 30′, will be the tropic of Cancer, and that at 66° 30′, the arctic circle. See PARALLEL, and TROPIC.

The meridians and parallels thus deſcribed, from a table of longitudes and latitudes, lay down the places; reckoning the longitude of each place on the equator, commencing at the firſt meridian, and proceeding to the meridian of the place; and for the latitude of the place, chuſing a parallel of the ſame latitude: the point where this meridian and parallel interſect, repreſents the place: And in the ſame manner all the other places may be determined, till the *Map* be compleat.

For the ecliptic, half of which comes in this hemiſphere; we have obſerved, that it makes an ellipſis; ſo that the points through which it paſſes are to be found. The firſt point, or that wherein the ecliptic cuts the equator, is the ſame with that wherein the firſt meridian cuts the equator, which is therefore diſtinguiſhed by the ſign of Aries: the laſt point of this half ellipſis, or the other interſection of the equator and ecliptic, *viz.* the end of Virgo, will be in the oppoſite point of the equator, *viz.* at 180°. The middle point of the ellipſis is that wherein the meridian 90 cuts the tropic of Cancer. Thus we have three points of the ecliptic determined: for the reſt, *viz.* for 1° and 15° of Taurus, 1° and 15° of Gemini, 1° of Leo, 1° of Virgo, the declinations of thoſe points from the equator muſt be taken from a table, and ſet off in the *Map*. See DECLINATION, *&c.*

Thus where the meridian of 13° cuts the parallel of 5°, that point will be 15° degrees of Aries. Where the meridian 27° cuts the parallel, 11½ will be the firſt degree of Taurus; and ſo of the reſt. Theſe points being all joined by a curve line, will be a portion of an ellipſis repreſenting the ecliptic.

Maps of this projection have the firſt qualification above required; but are defective in the ſecond: the ſurface being ſtretched further, as it approaches nearer the equator. For the third, they are ſtill further out.

By this method may almoſt the whole earth be repreſented in one *Map*, placing the eye, *v. g.* in the antarctic pole, and aſſuming for the plane of projection that of ſome circle near it, *v. g.* the antarctic circle.——Nothing is here required beſides the former projection, but to continue the meridian, draw parallels on the other ſide of the equator, and compleat the ecliptic; but this diſtorts too much for practice.

This projection is of all others the eaſieſt; but that, where the eye is placed in the plane of the equator, is preferred for uſe. It is, in effect, of the latter kind that *Maps* are ordinarily made. The former are added to them, in ſmall, by way of ſupplement, to repreſent the intermediate ſpaces left between the two hemiſpheres.——Further, as the ſituation of the ecliptic, with regard to the earth, is continually changing; ſtrictly ſpeaking, it has no place on the earth's ſurface; but is uſed to be repreſented according to its ſituation ſome certain moment; *viz.* ſo as the beginning of Aries and Libra may be in the interſections of the firſt meridian and equator.

Conſtruction of Maps, *with the eye in the plane of the equator.*——This method of projection, though more difficult, is yet much juſter, more natural and commodious, than the former. To conceive it, we ſuppoſe the ſurface of the earth cut into two hemiſpheres by the entire periphery of the firſt meridian, each of which hemiſpheres we repreſent in a diſtinct *Map*. The eye is placed in the point of the equator 90° diſtant from the firſt meridian; and for the tranſparent plane, wherein the repreſentation is to be, we take the plane of the firſt meridian. In this projection, the equator is a right line, and the meridian 90° diſtant from the firſt, is alſo a right line; but the other meridians, and all the parallels of the equator, are arches of circles, and the ecliptic an ellipſis.

The method is thus. From a point *E*, as a centre, (fig. 3.) deſcribe a circle according to the intended bigneſs of the *Map*. This repreſents the firſt meridian, and is oppoſite; for, drawing the diameter *BD*, there ariſe two ſemi-circles, the one whereof *BAD* is the firſt meridian, the other *BCD* its oppoſite, or the meridian of 180°. This diameter *BD* repreſents the meridian of 90 degrees, whereof the point *B* is the arctic pole, and the point *D* the antarctic. The diameter *AC*, perpendicular to that *BD*, is the equator. Divide the quadrants *AB*, *BC*, *CD*, *DA*, each into 90 degrees; and to find the arches of the meridians and parallels, proceed thus. Divide the equator into its degrees, *viz.* 180. (as being indeed only half the equator;) through theſe ſeveral diviſions, and the two poles, deſcribe arches of circles, repreſenting meridians, as *B* 1 *D*, *B* 2 *D*, &c.——How to find centres for deſcribing thoſe arches ſee under the word CIRCLE. Indeed, the operation will be both more eaſy and accurate, if performed by a canon of tangents.

To deſcribe the parallels, the meridian *BD* muſt be in like manner divided into 180 degrees; then through each of theſe diviſions, and the correſponding diviſions of the quadrants *AB*, *CB*, deſcribe arches of circles. Thus ſhall we have parallels of all degrees, with tropics, polars, and meridians.

The ecliptic may be deſigned two ways: For its ſituation over the earth may either be ſuch, as that its interſection with the equator may be over the place *A*; in which caſe, the projection of its ſemi-circles, from the firſt degree of Cancer, to the firſt of Capricorn, will be a ſtrait line, to be determined by numbering 23° 30′ from *A* towards *B*, and from the extreme of that numeration drawing a diameter through *E*; which line will be half the ecliptic in this ſituation, and may be divided, as before, into degrees, to which the numbers, ſigns, *&c.* are to be affixed.——But if the ecliptic be ſo placed, as that its interſection with the equator is over the place *A*, in the firſt meridian, its projection in that caſe will be a ſegment of an ellipſis; whereof two of the points are *A*, *C*; a third that wherein the meridian 90 cuts the tropic of Cancer.——The other points muſt be determined in the manner laid down above, *viz.* by taking the declinations and right aſcenſions of 15° of Aries, 1° of Taurus, 15° of Gemini, *&c.* For where the parallels, according to their ſeveral degrees of declination, cut the meridians, taken according to the ſeveral right aſcenſions; thoſe points of interſection are the points of the 15° of Aries, *&c.* A curve line therefore being drawn, theſe will give the projection of the ecliptic.

Nothing remains to compleat the *Map*, but to take the longitudes and latitudes of places from a table; and to ſet them off on the *Map*, as was directed under the former method.

In this projection the whole ſurface of the earth may be repreſented in one *Map*; if inſtead of the plane of the firſt meridian, ſome other plane parallel to it, but very near the eye, be taken; for by this means the entire parallels and meridians will be deſcribed.——But as this diſtorts the face of the earth too much, it is ſeldom uſed; and we rather make the two hemiſpheres in two diſtinct tables.

One great advantage in this projection is, that it repreſents the longitudes and latitudes of places, their diſtance from the pole and from the equator, almoſt the ſame as they are on the earth.——Its inconveniences are, that it makes the degrees of the equator unequal; being the greater as they are nearer the firſt meridian DAB, or its oppoſite BCD; and for this reaſon equal tracts of the earth are repreſented unequal; which defect may be in ſome meaſure remedied by removing the eye far from the earth. Laſtly, the diſtances of places, and ſituation with regard to each other, cannot be well determined in *Maps* of this projection.

Conſtruction of Maps *on the plane of the horizon,* or wherein any given place ſhall be the centre, or middle.——Suppoſe, for inſtance,

ſtance, it is deſired to have London the centre of the *Map.* Its latitude we will ſuppoſe to be 51 degrees, 32 minutes. The eye is placed in the nadir. The tranſparent table is the plane of the horizon, or ſome other plane, if it is deſired to repreſent more than an hemiſphere.——Take then the point E (fig. 4.) for London; and from this, as a centre, deſcribe the circle A B C D to repreſent the horizon, which you are then to divide into four quadrants, and each of theſe into 90 degrees. Let the diameter B D be the meridian, B the northern quarter, D the ſouthern; the line of equinoctial eaſt and weſt ſhews the firſt vertical, A the weſt, C the eaſt, or a place 90 degrees from the zenith in the firſt vertical. All the verticals are repreſented by right lines drawn from the centre E to the ſeveral degrees of the horizon. Divide BD into 180 degrees, as in the former methods; the point in E B repreſenting 51 deg. 32 min. of the arch B C, will be the projection of the north pole, which note with the letter P. The point in E D repreſenting 51 deg. 32 min. of the arch DC, (reckoning from C towards D) will be the projection of the interſection of the equator and meridian of London, which note with the letter Q; and from this, towards P, write the numbers of the degrees, 1, 2, 3, *&c.* As alſo from Q towards D, and from B towards P, *viz.* 51, 52, 53, *&c.*

Then taking the correſponding points of equal degrees, *viz.* 99 and 99, 88 and 88, *&c.* about thoſe, as diameters, deſcribe circles, which will repreſent parallels, or circles of latitude, with the equator, tropics, and polar circles. For the meridians, firſt deſcribe a circle through the three points A, P, C. This will repreſent the meridian 90 degrees from London. Let its centre be M in BD, (continued to the point N, which repreſents the ſouth pole) P N being the diameter, through M draw a parallel to A C, *viz.* F H, continued each way to K and L. Divide the circle P H N F into 360 degrees, and from the point P draw right lines to the ſeveral degrees, cutting K F H L; through the ſeveral points of interſection, and the two poles P, N, as through three given points, deſcribe circles repreſenting all the meridians. The centres for deſcribing the arches will be in the ſame K L, as being the ſame that are found by the former interſection; but are to be taken with this caution, that for the meridian next B D N towards A, the moſt remote centre towards L; be taken for the ſecond, the ſecond from this, *&c.*——The circles of longitude and latitude thus drawn, inſert the places from a table as before directed.

Conſtruction of MAPS *on the plane of the meridian.*——This projection is taught by Ptolemy, and recommended by him as proper for that part of the earth then known. In this, the equator and parallels are arches of circles, and the meridians arches of ellipſes; the eye hanging over the plane of that meridian which paſſes over the middle of the inhabited world.—But in regard the deſcription of theſe ellipſes is ſomewhat perplexing, and becauſe this method ſeems calculated only for a part of the earth, it is not now uſed.

There is a ſecond method ſomething a-kin to it, which repreſents the circles of latitude by right lines, and the meridians by arches of ellipſes; as muſt be the caſe, if lines be conceived to fall from the ſeveral points of each hemiſphere, perpendicularly on the plane of the firſt meridian, and the eye be ſuppoſed at an infinite diſtance from the earth; ſo that all the rays emitted from the places of the earth to it, may be accounted parallels, as well as perpendiculars to the plane of the firſt meridian.

Rectilinear MAPS are thoſe wherein both the meridians and parallels are repreſented by right lines, which by the laws of perſpective is impoſſible; in regard there can no ſuch poſition be aſſigned the eye and the plane, as that the circles both of longitude and latitude ſhall be right lines.

In the firſt method above laid down, the meridians are right lines, but the parallels are circles: in the fifth, the parallels are right lines, and the meridians ellipſes. In all other perſpective methods, both kinds of circles are curve: one method indeed muſt be excepted, wherein the meridians are right lines, and the parallels hyperbola's; as when the eye is placed in the centre of the earth, and the plane, through which it is viewed, is parallel to the firſt meridian: but this method is rather pretty than uſeful.

Rectilinear Maps are chiefly uſed in navigation, to facilitate the eſtimation of the ſhip's way. See CHART.

Conſtruction of particular MAPS.——*Particular Maps of large tracts,* as Europe, Aſia, Africa, and America, are projected after the ſame manner as general ones; only let it be obſerved, that for different parts, different methods may be choſen. Africa and America, for inſtance, in regard the equator paſſes through them, cannot be conveniently projected by the firſt method, but much better by the ſecond. Europe and Aſia are moſt conveniently repreſented by the third; and the polar parts, or the frigid zones, by the firſt.

To begin then, draw a right line on your plane or paper, for the meridian of the place over which the eye is conceived to hang, and divide it into degrees, as before, which will be degrees of latitude. Then from the tables take the latitude of the two parallels, which terminate each extreme. The degrees of theſe latitudes are to be noted in the meridian; and through them draw perpendiculars, bounding the *Map* towards north and ſouth. This done, meridians and parallels are to be drawn to the ſeveral degrees, and the places to be inſerted, till the *Map* is compleat.

For particular MAPS *of leſs extent.*——In *Maps* of ſmaller portions of the earth, the geographers take another method. Firſt, a tranſverſe line is drawn at the bottom of the plane, to repreſent the latitude, wherein the ſouthermoſt part of the country to be exhibited, terminates. In this line, ſo many equal parts are taken, as that country is extended in longitude. On the middle of this ſame line erect a perpendicular, having ſo many parts as there are degrees of latitude between the northern and ſouthern limits of the country. How big theſe parts are to be, may be determined by the proportion of a degree of a great circle to a degree of the parallel repreſented by the tranſverſe line at bottom. Through the other extreme of this perpendicular, draw another perpendicular, or a parallel to the line at bottom, in which are to be ſeen as many degrees of longitude, as in the lower line, and theſe too, equal to thoſe other, unleſs the latitudes happen to be remote from each other, or from the equator. But if the loweſt parallel be at a conſiderable diſtance from the equinoctial, or if the latitude of the northern limit go much beyond that of the ſouthern; the parts or degrees of the upper line muſt not be equal to thoſe of the lower, but leſs, according to the proportion which a degree of the more northern parallel, has to a degree of the more ſouthern.

After parts have been thus determined, both on the upper and lower line, for the degrees of longitude; right lines muſt be drawn through the beginning and end of the ſame number, which lines repreſent meridians: then, through the ſeveral degrees of the perpendicular erected on the middle of the firſt tranſverſe line, draw lines parallel to that tranſverſe line. Theſe will repreſent parallels of latitude. Laſtly, at the points wherein the meridians of longitude and the parallels of latitude concur, inſert the places from a table, as before directed.

For MAPS *of provinces,* or ſmall tracts, as pariſhes, mannors, *&c.* we uſe another method, more ſure and accurate than any of the former. In this, the angles of poſition, or the bearings of the ſeveral places, with regard to one another, are determined by proper inſtruments, and transferred to paper.—This conſtitutes an art apart, called *ſurveying.* See SURVEYING.

The uſe of MAPS is obvious from their conſtruction. The degrees of the meridians and parallels ſhew the longitudes and latitudes of places, and the ſcale of miles annexed, their diſtances; the ſituation of places, with regard to each other, as well as to the cardinal points, appears by inſpection, the top of the *Map* being always the north, the bottom the ſouth, the right-hand the eaſt, and the left the weſt; unleſs the compaſs, uſually annexed, ſhew the contrary.

MAPPARIUS, an officer among the Romans, who in the public games, as thoſe of the circus and the gladiators, gave the ſignal for their beginning, by throwing an handkerchief (*Mappa*) which he had before received from the emperor, conſul, prætor, or other ſupreme officer then preſent. See ACACIA.

MARASMUS, ΜΑΡΑΣΜΟΣ*, in medicine; an extreme waſting, or conſumption of the whole body. See CONSUMPTION.

* The word is Greek, being derived from the verb μαραινειν, to waſte.

A *Maraſmus* is an extreme degree of atrophy; as a hectic fever is an extreme degree of *Maraſmus.* See ATROPHY, and HECTIC.

MARAVEDI*, a little Spaniſh copper coin, worth ſomewhat more than a French denier, or half a farthing Engliſh.

* The word is Arabic, and took its riſe from the *Almoravides,* a dynaſty of Moors, who paſſing out of Africa into Spain, impoſed their own name on this coin, which by corruption was afterwards changed into *Maravedi.*——Mention is made of it in the decretals, as well as other Latin writers, under the name of *Marabitini.*

The Spaniards always count by *Maravedis,* both in commerce, their finances, *&c.* though the coin itſelf is no longer current among them.——Sixty-three *Maravedis* are equivalent to a rial of ſilver: ſo that the piaſter, or piece of eight rials, contains five hundred and four; and the piſtole of four pieces of eight, two thouſand and ſixteen *Maravedis.* See COIN, and MONEY.

This ſmallneſs of the coin produces vaſt numbers in the Spaniſh accounts and calculation; inſomuch that a ſtranger or correſpondent would think himſelf indebted ſeveral millions for a commodity that coſts but a few pounds.

In the laws of Spain, we meet with ſeveral kinds of *Maravedis;* Alphonſine *Maravedis,* white *Maravedis, Maravedis* of good money, *Maravedis* Combrenos, black *Maravedis,* old *Maravedis.*——When we find *Maravedis* alone, and without any addition, it is to be underſtood of thoſe mentioned above. The reſt were different in value, fineneſs of metal, time, *&c.* Mariana aſſerts, that this coin is older than the Moors; that it came from the Goths; that it was antiently equal to a third part of the rial, and conſequently twelve times the value of the preſent *Maravedi.* Under Alphonſus XI. the *Maravedi* was ſeventeen times, under Henry II. ten times, and under Henry III. five times, and under John II. two times and a half the value of the preſent *Maravedi.*

MARBLE, Marmor *, a precious kind of ſtone found in great maſſes, dug out of pits or quarries; being of a conſtitution ſo hard and compact, and again ſo fine as readily to take a beautiful poliſh: much uſed in ornaments of buildings, as columns, ſtatues, altars, tombs, chimney-pieces, tables, and the like. See Stone.

* The word comes from the French *Marbre*, and that from the Latin *Marmor*, of the Greek μαρμαιρειν, to ſhine, or glitter.

There are an infinite number of different kinds of *Marble*, uſually denominated either from their colour, their age, their country, their grain, their degree of hardneſs, their weight, or their defects: ſome are of one ſimple colour, as white or black, others ſtreaked or variegated with ſtains, clouds, waves, veins, *&c.* but all opake, excepting the white, which, when cut into thin ſlices, becomes tranſparent.

Some, under the genus of *Marble*, comprehend alſo porphyry ſerpentine, granite, alabaſter, *&c.* See Porphyry, Serpentine, Granite, Alabaster, *&c.*

Antient Marbles are thoſe, whoſe quarries are loſt, or inacceſſible to us, and whereof we have only ſome pieces remaining.

Modern Marbles are thoſe, whoſe quarries are ſtill open, and out of which blocks continue to be dug.

African Marble is either of a reddiſh brown, ſtreaked with veins of white; or of a carnation, with veins of green.

Engliſh white Marble is veined with red.

Derbyſhire Marble is variouſly clouded and diverſified with brown, red, yellow, *&c.*

Marble of *Auvergne* in France, is of a pale red, mingled with violet, green, and yellow.

Marble of *Brabançon* in Hainault, is black, veined with white.

Marble of *Breſſe* in Italy, is yellow, with ſpots of white.

Brocatella Marble is mingled with little ſhades of Iſabella, yellow, pale, and grey. It comes from Tortoſa in Spain, where it is dug out of an antient quarry: There is alſo another kind of antient *Brocatella* dug near Adrinople.

Marble of *Carrara*, on the coaſts of Genoa, is very white, and the fitteſt of all others for works of ſculpture.

Marble of *Champagne*, reſembles the Brocatella, being mixed with blue, in round ſtains like partridges eyes.

Cipollino, or *Cipollin* Marble, is of a ſea-green colour, mixed with large waves or clouds of white or pale green.——Scamozzi takes this to be the ſame with that which the antients called *Auguſtum & Tiberium marmor*; becauſe diſcovered in Egypt in the times of Auguſtus and Tiberius.

Marble of *Dinan*, near Liege, is of a pure black, very beautiful, and very common.

Marble of *Guachenet*, near Dinan, is of a reddiſh brown, with white ſpots and veins.

Marble of *Languedoc*, is of a vivid red, with large white veins or ſtains, and is very common; there is ſome, whoſe white borders pretty much on the blue, but this is of leſs value.

Lumachello Marble, is ſo called, becauſe mingled with ſpots, brown, black, and white, wreathed ſomewhat like periwinkle-ſhells.——This is antient, and its quarry is loſt.

Marble of *Margoſſa*, in the Milaneze, has a white ground with browniſh veins, reſembling the colour of iron-ruſt. This is very common, and extremely hard.

Marble of *Lavee*, in Maine, has a black ground, with little narrow veins of white; there is another kind of it red, with veins of a dirty white.

Marble of *Namur* is black, like that of Dinan, but leſs beautiful, as inclining a little to the blue, and traverſed with little ſtreaks of grey.——This is very common, and is frequently uſed in paving.

Parian Marble is antique, and much celebrated in authors; it is of a beautiful white: The greateſt part of the Grecian ſtatues were made of it. Varro calls it *Lychnites* becauſe the workmen dug it out of the quarry by lamp-light.

Marble of *Porta Santa*, at Rome called *Serna*, is mingled with large clouds and veins of red, yellow, and grey.

Portor Marble has a black ground, with clouds and veins of yellow. It is dug out of the foot of the Alps towards Carrara.

Marble of *Rance*, in Hainault, is of a dirty red, mixed with blue and white clouds and veins: this is pretty common, but is different in degree of beauty.

Marble of *Savoy*, is a deep red mixed with other colours; each piece whereof ſeems cemented on to the reſt.

Marble of *Sicily*, is a browniſh red, ſtained with oblong ſquares of white and Iſabella, like ſtriped taffaty. The antient has very vivid colours, and the modern comes pretty near it.

Marble of *Signam*, in the Pyreneans, is ordinarily of a greeniſh brown, with red ſtains; though this is ſomewhat various in its colours.

Marble of *Theu*, near Namur in Liege, is a pure black, ſoft and eaſy to work, and receives a more beautiful poliſh than thoſe of Namur and Dinan.

Marble *Bigio Nero*, or black-grey, is antique.

White veined Marble has large veins, with grey and blue ſtains on a white ground. It comes from Carrara.

White Marble, that dug out of the Pyreneans on the ſide of Bayonne, is inferior to that of Carrara, its grain being coarſer, and ſhining, like a kind of ſalt. It is ſomething like the antient white Greek *Marble*, whereof their ſtatues were made, but is not ſo hard or beautiful.

Antient black and white Marble is now very rare, its quarries being entirely loſt; it is divided between a pure white and a bright black in laminæ.

Blue Turquin Marble, is mixed with a dirty kind of white, and comes from the coaſt of Genoa.

Marble *Fior di perſica*, comes from Italy, conſiſts of red and white ſtains, ſomewhat yellowiſh.

Yellow Marble, is a kind of yellow Iſabella without veins; it is antique, and now very rare.

Black Antique Marble, is of a pure black, without ſtains, and ſofter than the modern black. There was ſome of it brought from Greece, called *Marmor Luculleum*; but this was not ſo much prized as that which the Egyptians brought from Æthiopia, approaching to an iron colour, and called *Baſaltes*, or touch-ſtone, becauſed it ſerved them for the trial of metals. See Basaltes.

White and black Marble, has a pure black ground, with ſome very white veins.

Marble *Occhio di pavone*, or peacock's eye, is mingled with red, white, and blueiſh clouds, ſomewhat reſembling the eyes at the end of a peacock's tail.

Green Marble *antique*, is a mixture of graſs-green, and black, in clouds of unequal forms and bigneſſes, and is very rare, the quarries being loſt.

Modern Green Marble, improperly called Egyptian, is brought from Carrara, on the coaſt of Genoa; it is a deep green ſpotted with grey.

Rigid Marble, is that which, being too hard, works with difficulty, and is liable to ſplinter, as the black of Namur.

Fibrous Marble, is that full of threads or filaments.

Brittle Marble, is that which crumbles under the inſtrument, as the white Greek *Marble*, that of the Pyreneans, *&c.*

Terracy Marble, that with ſoft places in it, which muſt be filled up with cement, as that of Languedoc.

There are two defects frequent in *Marbles*, which augment the difficulty in cutting and poliſhing them. The one, what they ſometimes call *nails*, anſwering to the knots in wood; the other, called *emeril*, is a mixture of copper or other metals, forming black ſtains in the *Marble*. The knots are common to all *Marbles*: the emeril peculiar to the white.

Artificial Marbles.——The ſtucco whereof they make ſtatues, buſts, baſſo-relievos, and other ornaments of architecture, is only *Marble* pulverized, mixed in a certain proportion with plaiſter; the whole well ſifted, worked up with water, and uſed like common plaiſter. See Stucco.

There is alſo a kind of artificial *Marble* made of gypſum, or a tranſparent ſtone, reſembling plaiſter; which becomes very hard, receives a tolerable poliſh, and may deceive the eye. See Gypsum.

There is another ſort of artificial *Marble* formed by corroſive tinctures, which penetrating into white *Marble*, to the depth of a line, imitates the various colours of other *Marbles*.

Poliſhed Marble, is that which, being well rubbed with freſtone, and afterwards with pumice-ſtone, is at laſt poliſhed with emery, if the *Marble* be of ſeveral colours, and with calcined tin, if it be white. In Italy they poliſh with a piece of lead and emery.

There are various ways of poliſhing *Marble*. Some lay three or four blocks in a row, and with another, fixed to a broad beetle, and an handle fixed at oblique angles, with ſand and water between, work the upper ſtone backwards and forwards on the lower ones, till the ſtrokes of the ax are wore off; after which, they poliſh them with emery and putty.

Father Kircher ſhews the manner of applying colours on *Marble*, ſo as to make them penetrate its whole ſubſtance; inſomuch that if the *Marble* be ſlit into ſeveral parallel tables or ſlabs, the ſame figure will be found on each, that was painted on the firſt.

Spots of oil ſtain white *Marble*, ſo as they cannot be taken out.

Arundel Marbles, Marmora *Arundeliana*, or the *Oxford* Marbles, are antient ſtones, whereon is inſcribed a chronicle of the city of Athens, engraven in capital letters in the iſland of Paros one of the Cyclades, 263 years before Jeſus Chriſt.

They take the name from Thomas earl of Arundel, who procured them out of the eaſt, or from Henry his grandſon, who preſented them to the univerſity of Oxford.——An account of all their inſcriptions were publiſhed in 1676, by Dr. Prideaux.

MARBLED, ſomething veined, or clouded, reſembling marble.

Marbled paper, is a paper ſtained with various clouds and ſhades, reſembling, in ſome meaſure, the divers veins of marble; the method of making which, ſee under Paper.

MARBLING, the art or act of painting or diſpoſing colours in ſuch a manner, as that they may repreſent *Marble*.——Thus we *marble* books, paper, wood, *&c.* See Paper.

Marbling *of books*, among binders, denotes the ſprinkling over the cover of a book with black, by means of a black pencil ſtruck gently againſt the finger, or on a ſtick held for that purpoſe.

Marbling is not uſed, except for books bound in calf; after it is finiſhed, the cover is glazed over with beaten whites of eggs, then ſmoothed with a poliſhing iron.

They alſo *marble* books on the edges; but in this *Marbling* there is no black uſed; in lieu thereof red, blue, &c. See BOOK-BINDING.

MARCASITE, MARCASITA, a ſort of metallic mineral, making, as it were, the ſeed or firſt matter of metals. See MINERAL, and METAL.

On this principle, there ſhould be as many different *Marcaſites* as metals, which is true in effect; the name being applied to every mineral body that has metallic particles in its compoſition; though not enough to make it worth working: in which caſe it would be called *oar*. See OAR.

There are only three kinds in the ſhops, *viz.* *Marcaſite* of gold, of ſilver, and of copper; though ſome repute the loadſtone, *Marcaſite* of iron; biſmuth, *Marcaſite* of tin; and zink, or ſpelter, *Marcaſite* of lead: but this we leave to the chymiſts. See MAGNET, BISMUTH, and ZINK.

Marcaſite of gold is in little balls or nodules about the bigneſs of nuts, nearly round, heavy, of a brown colour without. *Marcaſite* of ſilver is like that of gold, only paler coloured: within the colour differs much, the one having a gold colour, and the other a ſilver colour, both ſhining and brilliant. The *Marcaſite* of copper is about the bigneſs of a ſmall apple, round or oblong, brown without, yellow and cryſtalline within, brilliant and ſhining.

Marcaſites are found in mines of metals; they all contain ſulphur and a vitriolic ſalt, eſpecially that of copper: ſome of them alſo contain antimony and biſmuth.

MARCELLIANISM, the doctrine and opinions of the *Marcellians*, a ſect of antient heretics; ſo called from *Marcellus* of Ancyra, their leader, who was accuſed of reviving the errors of Sabellius. See SABELLIANS.

Some, however, are of opinion, that *Marcellus* was orthodox, and that it was his enemies the Arians, who fathered their errors upon him.——St. Epiphanius obſerves, that there was a great deal of diſpute with regard to the real tenets of *Marcellus*; but that as to his followers, it is evident they did not own the three hypoſtaſes: ſo that *Marcellianiſm* is no imaginary hereſy.

MARCGRAVE, or MARGRAVE *, a kind of dignity in Germany, anſwering to our marquis. See MARQUIS.

* The word is derived from the German *Marche*, or *Marcke*, which ſignifies a frontier; and *Graffe*, count, governor; *Marcgraves* being originally governors of cities lying on the frontiers of a country or ſtate. See FRONTIER.

MARCH, MARTIUS, the third month of the year, according to the common way of computing. See MONTH, and YEAR.

Among the Romans, *March* was the firſt month; and in ſome eccleſiaſtical computations, that order is ſtill preſerved; as particularly in reckoning the number of years from the incarnation of our Saviour; that is, from the 25th of *March*.

In England, *March*, properly ſpeaking, is the firſt month in order; the new year commencing from the 25th; though, in complaiſance to the cuſtoms of our neighbours, we uſually rank it as the third; but in this reſpect, we ſpeak one way, and write another. See INCARNATION.

Till the year 1564, the French reckoned the beginning of their year from Eaſter; ſo that there were two months of *March* in one year, one of which they called *March before Eaſter*, and the other *March after Eaſter*. When *Eaſter* fell within the month of *March*, the beginning of the month was in one year, and the end in another.

It was Romulus who divided the year into months; to the firſt of which he gave the name of his ſuppoſed father *Mars*. Ovid, however, obſerves, that the people of Italy had the month of *March* before Romulus's time; but that they placed it very differently, ſome making it the third, ſome the fourth, ſome the fifth, and others the tenth month of the year.

In this month it was that the Romans ſacrificed to Anna Perenna, that they begun their comitia, that they adjudged their public farms and leaſes; that the miſtreſſes ſerved the ſlaves and ſervants at table, as the maſters did in the Saturnalia; and that the veſtals renewed the ſacred fire.

The month of *March* was always under the protection of Minerva, and always conſiſted of thirty one days.——The antients held it an unhappy month for marriage, as well as the month of May.

MARCHET, or MARCHETTA, a pecuniary fine antiently paid by the tenant to his lord, for the marriage of one of the tenant's daughters.

This cuſtom obtained, with ſome difference, throughout all England and Wales, as alſo in Scotland, and ſtill continues to obtain in ſome places.——According to the cuſtom of the mannor of Dinover in Carmarthenſhire, every tenant, at the marriage of his daughter, pays ten ſhillings to the lord; which, in the Britiſh language, is called *Gwabr-Merched*, i. e. *Maid's-Fee*. See AMABYR.

In Scotland, and the north parts of England, the cuſtom was, for the lord to lie the firſt night with the bride of his tenant: but this uſage was abrogated by king Malcolm III. at the inſtance of his queen; and inſtead thereof, a mark was paid by the bridegroom to the lord. Whence it is called *Marcheta mulieris*. See DEFLOWERING.

MARCIONITES, or MARCIONISTS, MARCIONISTÆ, a very antient and popular ſect of hereticks, who in the time of St. Epiphanius, were ſpread over Italy, Egypt, Paleſtine, Syria, Arabia, Perſia, and other countries; denominated from their author *Marcion*.

Marcion was of Pontus, the ſon of a biſhop, and at firſt made profeſſion of the monaſtical life; but having had a criminal affair with a maid, was excommunicated by his own father, who would never admit him again into the communion of the church, not even on his repentance. On this he abandoned his own country, and retired to Rome, where he began to broach his doctrines.

He laid down two principles, the one good, the other evil: he denied the real birth, incarnation and paſſion of Jeſus Chriſt, and held them to be all apparent only. He taught two Chriſts: one who had been ſent by an unknown God for the ſalvation of all the world; another, whom the creator would one day ſend to re-eſtabliſh the Jews. He denied the reſurrection of the body, and allowed none to be baptized, but thoſe who preſerved their continence; but theſe he granted might be baptized three times.

In many things he followed the ſentiments of the heretic Cerdon, and rejected the law and the prophets. He pretended the goſpel had been corrupted by falſe prophets, and allowed none of the Evangeliſts but St. Luke, whom he altered in many places, as well as the epiſtles of St. Paul, a great many things in which he threw out. In his own copy of St. Luke, he threw out the two firſt chapters entire.

MARCITES, MARCITÆ, a ſect of heretics in the ſecond century, who alſo called themſelves the *Perfecti*, and made profeſſion of doing every thing with a great deal of liberty, and without any fear.

This doctrine they borrowed from Simon Magus, who, however, was not their chief; for they were called *Marcites* from one *Marcus*, who conferred the prieſthood, and the adminiſtration of the ſacraments, on women.

MARCOSIANS, an antient ſect in the church; making a branch of the Gnoſtics. See GNOSTIC.

St. Irenæus ſpeaks at large of the leader of this ſect, *Marcus*, who, it ſeems was reputed a great magician: He relates ſeveral things touching the prayers and invocation of the antient Gnoſtics and *Marcoſians*, wherein we find the traces of the antient Jewiſh cabbala on the letters of the alphabet, and their properties, as well as on the myſteries of numbers, which the Jews and Gnoſtics had borrowed from the philoſophy of Plato and Pythagoras.

Marcus was an Egyptian, and there it was he became acquainted with magic: To impoſe more eaſily on his followers, he made uſe of certain Hebrew, or rather Chaldee words, much uſed by the enchanters of thoſe times.

The *Marcoſians* had a great number of apocryphal books, which they held for canonical, and of the ſame authority with ours. Out of theſe they picked ſeveral idle fables, touching the infantry of Jeſus Chriſt, which they put off for true hiſtories. Many of theſe fables are ſtill in uſe and credit among the Greek monks.

MARGARITÆ. See the article PEARLS.

MARK, in matters of commerce and manufacture, a certain character ſtruck, or impreſſed on various kinds of commodities, either to ſhew the place where they were made, and the perſons who made them; or to witneſs they have been viewed, and examined by the officers or magiſtrates charged with the inſpection of that manufacture; or laſtly, to ſhew the duties impoſed thereon have been regularly acquitted.

Thus are cloths, leathers, cutlery-ware, paper, plate, weights, meaſures, &c. to be *marked*.

MARK, in horſemanſhip. See AGE.

MARK, is alſo a particular ſign or character, known only to the trader who pitches on it; whereby, being fixed to any commodity, he recollects the price it coſt him.

Theſe *Marks*, otherwiſe called *numeros*, are taken according to the fancy of thoſe who uſe them; but ordinarily, are choſen from among the letters of the alphabet, each having a relation to ſome particular number of figures.——They are of ſo much uſe in trade, that the reader will not take it amiſs, if we inſert a little table, to ſerve as a model for their conſtruction.

A	B	C	D	E	F	G	H	I	K	L	M
0	1	2	3	4	5	6	7	8	9	10	20

One example will give the whole uſe of this table. Suppoſe, *v. g.* I would put on a piece of ſtuff, that it coſt 37 *s.* 6 *d. per* ell. I put an M for 20 *s.* an L for 10 *s.* an H for 7 *s.* and a G for 6 *d.* So that the ſeveral letters wrote after each other (obſerving always to ſeparate ſhillings from pounds and from pence by points) will make this *Mark* M. LH. G. equal to 37 *s.* 6 *d.*

Note, the *Mark* may be diverſified infinitely, by adding other figures to the letters in lieu of theſe.

Letters of **MARK.** See the article MARQUE.

MARK, in a monaſtic ſenſe.——*Canons of St.* MARK, a congregation of regular canons, founded at Mantua by Albert Spinola, a prieſt, towards the end of the twelfth century. See CANON.

Spinola made a rule for them, which was approved, corrected, and confirmed by ſeveral ſucceeding popes. About the year 1450, they were reformed, and followed only the rule of St. Auguſtin.

This congregation, which at firſt conſiſted of eighteen or twenty houſes of men, and of ſome for women, ſituate in Lombardy and the ſtate of Venice; having flouriſhed for the ſpace of four hundred years, declined by little and little, and was at length reduced to two converts; and in 1584, that of St. *Mark* at Mantua, which was the chief, was given with the conſent of pope Gregory XIII. to the Camaldulians, and ſo the congregation became extinct. See CAMALDULIAN.

Knights of St. **MARK,** an order of knighthood in the republick of Venice, under the protection of St. *Mark* the evangeliſt.

The arms of the order are, a lion winged gules, with this device, *Pax tibi, Marce evangeliſta.* This order is never conferred but on thoſe who have done ſignal ſervices to the commonwealth.

MARK, or **MARC,** alſo denotes a weight uſed in ſeveral ſtates of Europe, and for ſeveral commodities, eſpecially gold and ſilver in France. See WEIGHT.

The *Mark* is divided into eight ounces, or ſixty four drachms, or an hundred and ninety two deniers or penny-weights, or an hundred and ſixty eſterlins, or three hundred mailles, or ſix hundred and forty felins, or four thouſand ſix hundred and eight grains. See OUNCE, DRACHM, &c.

In Holland, the *Marc* weight is alſo called troy-weight, and is equal to that of France.——When gold and ſilver are ſold by the *Marc*, it is divided into twenty four carats, the carat into eight penny-weights, the penny-weight into twenty four grains, and the grain into twenty four primes. See CARACT.

MARK is alſo uſed among us for a money of account; and in ſome other countries for a coin. See MONEY, &c.

The Engliſh *Mark* is two thirds of a pound ſterling, or 13 *s.* 4 *d.* and Matthew Paris obſerves, it was of the ſame value in 1194. The antient Saxons called the *Mark*, *Mancus*, or *Mancuſa*, and *Mearc*; among them it was equivalent to thirty pence, *i. e.* to ſeven ſhillings and ſix-pence of our money.

The *Mark-Lubs*, or *Lubec Mark*, uſed at Hambourg, is alſo a money of account, equal to one third of the rixdollar, or to the French livre.——Each *Mark* is divided into ſixteen ſols-lubs.

Mark-Lubs, or *danſch*, is alſo a Daniſh coin, equal to ſixteen ſols-lubs, or twenty French ſols.

Laſtly, *Mark* is a copper-coin in Sweden, equal to two pence farthing ſterling; it is divided into eight rouſtiqs, and each rouſtiq into two alleveures. See COIN.

The Swediſh ſilver *Mark* is a money of account, equal to three copper *Marks*; though ſome make it a real coin.

MARKET *, a publick place in a city or town where proviſions are expoſed to ſale. See BUTCHER, and FORUM.

* The word is formed from the French *Marché*, which ſignifies the ſame.

MARKET is alſo uſed for a liberty or privilege either by grant or preſcription, whereby a town is enabled to keep a *Market*.

Bracton obſerves, that one *Market* ought to be diſtant from all others at leaſt ſix miles and a half, and a third of a half.

In former times it was cuſtomary to have moſt fairs and *Markets* kept on ſundays, and in the church-yard; ſo that matters of buſineſs and devotion were tranſacted under one. Which cuſtom, though prohibited by ſeveral kings, was yet held up till the reign of king Henry the ſixth, when it was effectually ſuppreſſed.——In many places they are ſtill kept in the church-yard.

MARLE*, **MARGA,** a kind of dry, ſoft, foſſile earth, harſh to the touch; uſed to be caſt on land, to make it more fruitful. See MANURING.

* The word comes from the antient Celtic *Marga*, mentioned by Pliny: it was afterwards called *Margila*.

There are ſeveral ſorts of *Marle*, of different colours, and qualities; the principal are *white* and *red*. Too much *Marle* thrown on the earth, is found to burn it. *Marle* is alſo of uſe in making lime, and is burnt like other ſtone. See LIME.

MARMALADE, a confection made of the juice or pulp of ſome fruit, as plumbs, apricocks, quinces, &c. boiled with ſugar into a conſiſtence. See CONFECTION.

The *Marmalade* of quinces is ſub-aſtringent, and grateful to the ſtomach.

MARONITES, a ſect of eaſtern Chriſtians, who follow the Syrian rite, and are ſubject to the pope; their principal habitation being on mount Libanus.

The learned are divided about their origin and founder. Morin and cardinal Bona take *Maronite* for the name of a ſect, as well as Neſtorian and Jacobite. But the *Maronites* themſelves pretend, they are deſcended from one *Maron*, who lived in the beginning of the fifth century, and whoſe life is written by Theodoret. And the Jeſuit Sacchini is of the ſame opinion: he thinks, that they never ſeparated from the catholic church; and adds, that what has given occaſion to their being judged in a ſchiſm, is their re-union with the Romiſh church, which ſome take for a return to the catholic faith.

The former opinion is founded on the teſtimonies of Eutychius, James de Vitri, and ſeveral others, who expreſsly aſſert the *Maronites* to have been formerly a part of the Monothelite Jacobites: According to their account, *Maron*, whom the *Maronites* qualify a ſaint, was in truth a heretic. Towards the year 1182, Aimeri, third Latin patriarch of Antioch, united the *Maronites* to that church. From that time they have uſed the mitre, ring, croſier, and other of the Latin epiſcopalia; but their ſervice is ſtill performed in the Chaldee language.

Fauſtus Nairon, a *Maronite* ſettled at Rome, has publiſhed an apology for *Maron* and the reſt of his nation. His tenet is, that they really took their name from the *Maron* who lived about the year 400, and whereof mention is made in Chryſoſtom, Theodoret, and the Menologium of the Greeks. He adds, that the diſciples of this *Maron* ſpread themſelves throughout all Syria; that they built ſeveral monaſteries, and among others, one that bore the name of their leader; that all the Syrians who were not tainted with hereſy, took refuge among them: and that, for this reaſon, the heretics of thoſe times called them *Maronites*.

The *Maronites* have a patriarch who reſides in the monaſtery of Cannubin on mount Libanus, and aſſumes the title of patriarch of Antioch. He is elected by the clergy and the people, according to the antient cuſtom; but ſince their re-union with the church of Rome, he is obliged to have a bull of confirmation from the pope.——He keeps a perpetual celibate, as well as the reſt of the biſhops his ſuffragans: For the reſt of the eccleſiaſtics, they are allowed to marry before ordination; and yet the monaſtic life is in great eſteem among them.——Their monks are of the order of St. Anthony, and live in the moſt obſcure places in mountains, far from the commerce of the world.

As to their faith, they agree in the main with the reſt of the eaſtern church. Their prieſts do not ſay maſs ſingly; but all ſay it together, ſtanding round the altar. They communicate in unleavened bread; and the laity have hitherto partook in both kinds, though the practice of communicating in one has of late been getting footing, introduced by little and little——In Lent they eat nothing, unleſs it be two or three hours before ſun-riſing: Their other faſtings are very numerous. See LENT, and FAST.

MAROTIC *Style*, in the French poetry, denotes a peculiarly gay, pleaſant, yet ſimple and natural manner of writing, introduced by Clement *Marot*, and ſince imitated by other authors, but with moſt ſucceſs by Voiture, and De la Fontaine.

The difference between the *Marotic* and the burleſque ſtyle is thus aſſigned: The *Marotic* makes a choice, the burleſque admits of all. The firſt is the moſt ſimple, but its ſimplicity has its nobleneſs; and where its own age will not furniſh natural expreſſions, it borrows them from former times.——The latter is low and groveling, and borrows falſe and fulſome ornaments from the crowd, which people of taſte deſpiſe. The one reſigns itſelf to nature, but examines firſt of all whether the objects ſhe preſents be fit for its paintings, and takes nothing but what carries with it ſomewhat of delicacy and mirth; the other runs headlong into buffoonery, and affects every thing that is extravagant and grotteſque. See BURLESQUE.

MARQUE.——*Letters of* MARQUE *, are letters of repriſal, granted by a king or parliament, whereby the ſubjects of one country are licenſed to make repriſals on thoſe of another; by reaſon application has been made for redreſs to the government whereto the aggreſſor belongs, three times without effect. See LAW, and LETTER.

* They are ſo called from the German *Marcke*, limit, frontier; as being *jus conceſſum in alterius principis marchas ſeu limites tranſeundi, ſibique jus faciendi*; as being a right of paſſing the limits or frontiers of another prince, and doing one's ſelf juſtice. See REPRISALS.

MARQUETRY, *In-laid work*; a curious kind of work compoſed of pieces of hard fine wood of different colours, faſtened, in thin ſlices, on a ground, and ſometimes enriched with other matters, as tortoiſe-ſhell, ivory, tin, and braſs.

There is another kind of *Marquetry* made, inſtead of wood, of glaſſes of various colours; and a third, where nothing but precious ſtones, and the richeſt marbles, are uſed: but theſe are more properly called *Moſaic* work. See MOSAIC.

The art of inlaying is very antient, and is ſuppoſed to have paſſed from the eaſt to the weſt, as one of the ſpoils brought by the Romans from Aſia. Indeed it was then but a ſimple thing; nor did it arrive at any tolerable perfection, till the fifteenth century, among the Italians: it ſeems however to have arrived at its height in the ſeventeenth century, among the French.

Till John of Verona, a cotemporary with Raphael, the fineſt works of this kind were only black and white, which are what we now call *Moreſco's*; but that religious, who had a genius for painting, ſtained his woods with dyes or boiled oils, which penetrated them. But he went no further, than the repreſenting buildings and perſpectives, which require no great variety of colours. Thoſe who ſucceeded him, not only improved on the invention of dying the woods, by a ſecret which they found of burning them without conſuming, which ſerved exceedingly well for the ſhadows; but had alſo the advantage of a number of fine new woods of naturally bright colours, by the diſcovery of America.——With theſe aſſiſtances the art is now capable of imitating any thing; whence ſome call it the *art of painting in wood*. See PAINTING.

The ground whereon the pieces are to be arranged and glued, is ordinarily of oak or fir well dried; and to prevent warping, is compoſed of ſeveral pieces glued together. The wood to be uſed being reduced into leaves, of the thickneſs of a line, is either ſtained with ſome colour, or made black for ſhadow; which ſome effect by putting it in ſand extremely heated over the fire, others by ſteeping it in lime-water and ſublimate, and others in oil of ſulphur.——Thus coloured, the contours of the pieces are formed, according to the parts of the deſign they are to repreſent.

The laſt is the moſt difficult part of *Marquetry*, and that wherein moſt patience and attention are required. The two chief inſtruments uſed herein, are the ſaw and the vice; the one, to hold the matters to be formed; the other, to take off from the extremes, according to occaſion.——The vice is of wood, having one of its chaps fixed, the other moveable, and is opened and ſhut by the foot, by means of a cord faſtened to a treadle. Its ſtructure is very ingenious, yet ſimple enough, and will be eaſily conceived from the figure. *Tab. Miſcellany, fig.* 1.

The leaves to be formed (for there are frequently three or four of the ſame kind formed together) are put within the chaps of the vice, after being glued on the outermoſt part of the deſign whoſe profile they are to follow; then the workman preſſing the treadle, and thus holding faſt the piece, with his ſaw runs over all the out-lines of the deſign.——By thus joining and forming three or four pieces together, they not only gain time, but the matter is likewiſe the better enabled to ſuſtain the effort of the ſaw; which, how delicate ſoever it may be, and how lightly ſoever the workman may conduct it, without ſuch a precaution, would be apt to raiſe ſplinters, to the ruin of the beauty of the work.

When the work is to conſiſt of one ſingle kind of wood, or of tortoiſe-ſhell, on a copper or tin ground, or *vice verſa*; they only form two leaves on one another, *i. e.* a leaf of metal, and a leaf of wood or ſhell: This they call ſawing in counterparts; for by filling the vacuities of one of the leaves by the pieces coming out of the other, the metal may ſerve as a ground to the wood, and the wood to the metal.

All the pieces thus formed with the ſaw, and marked, to know them again, and the ſhadow given in the manner already mentioned; they vaneer or faſten each in its place on the common ground; uſing for that purpoſe the beſt Engliſh glue.

The whole is put in a preſs to dry, planed over, and poliſhed with the ſkin of the ſea-dog, wax, and ſhave-graſs, as in ſimple *Vaneering*; with this difference, however, that in *Marquetry* the fine branches, and ſeveral of the more delicate parts of the figures, are touched up and finiſhed with a graver. See VENEERING.

It is the cabinet-makers, joiners, and toy-men, among us, who work in *Marquetry*; it is the enamellers and ſtone-cutters, who deal in Moſaic work: The inſtruments uſed in the former are moſtly the ſame with thoſe uſed by the eboniſts. See EBONY, See alſo MOSAIC.

MARQUIS, or MARQUESS*, MARCHIO, a title given to a perſon in poſſeſſion of a conſiderable demeſne erected into a *Marquiſate* by letters patent; holding a middle place between the dignity of a duke, and that of an earl or count. See NOBILITY, PEER, &c.

Marqueſſes were antiently governors of frontier cities or provinces, called *Marches*.——In Germany they are called *Marcgraves*. See MARCGRAVE.

Marquis is originally a French title: the Romans were unacquainted with it: In the Notitia Imperii they are called *Comites limitanei*. The firſt time we hear of *Marquiſſes*, *Marchiones*, is under Charlemaign, who created governors in Gaſcony under this denomination.

Alciat has ſtarted a queſtion, Whether a *Marquis* or count ſhould have the precedence? To decide it, he goes back to the antient function of counts, and obſerves, that counts who are governors of provinces, are above *Marqueſſes* who are only governors of frontiers; and that *Marqueſſes* who are governors of frontier-cities, are above counts who are governors of ſmall towns. He adds, that in conſequence of this diſtinction, the book of fiefs ſometimes places *Marqueſſes* above counts, and ſometimes counts above *Marqueſſes*.

Froiſſart obſerves, that the *Marquiſate* of Juliers was erected into a county: But now-a-days, neither *Marqueſſes* nor counts are any longer governors; and as they are mere titles of honour, the counts make no ſcruple of reſigning the precedency.

King Richard the ſecond was the firſt who introduced the dignity of *Marquis* among us; by creating Robert de Vere earl of Oxford, *Marqueſs* of Dublin: But this was a title without office; the frontiers being governed by lords marchers. See COUNT, DUKE, &c.

MARRIAGE, a civil and religious contract, whereby a man is joined and united to a woman, for the ends of procreation.

The eſſence of *Marriage* conſiſts in the mutual conſent of the parties. *Marriage* is part of the law of nations, and is in uſe among all people. The Romaniſts account it a ſacrament.

The woman, with all her moveable goods, immediately upon *Marriage*, paſſes wholly *in poteſtatem viri*, into the power and diſpoſal of the huſband. See WIFE, AFFINITY, DEGREE, &c.

In Germany they have a kind of *Marriage* called *morganatic*, wherein a man of quality contracting with a woman of inferior rank, he gives her the left hand in lieu of the right, and ſtipulates in the contract, that the wife ſhall continue in her former rank or condition, and that the children born of them ſhall be of the ſame; ſo that they become baſtards as to matters of inheritance, though legitimate in effect: They cannot bear the name, or arms of the family.

None but princes, and great lords of Germany, are allowed this kind of *Marriage*.——The univerſities of Leipſic and Jena have declared againſt the validity of ſuch contracts; maintaining, that they cannot prejudice the children, eſpecially when the emperor's conſent intervenes in the *Marriage*.

The Turks have three kinds of *Marriages*, and three ſorts of wives; *legitimate*, *wives in kebin*, and *ſlaves*. They marry the firſt, hire the ſecond, and buy the third. See CONCUBINE, and CONCUBINAGE.

The Roman laws ſpeak of ſecond *Marriages* in very hard and odious terms. *Matre jam ſecundis nuptiis funeſtata*, L. 3. C. de ſec. nuptiis. By theſe laws it was enacted, that the effects of the huſband or wife deceaſed ſhould paſs over to the children, if the ſurvivor ſhould *marry* a ſecond time. By the law *Hac edictali*, Cod. de ſec. nupt. the ſurvivor, upon *marrying* a ſecond time, could not give the perſon he *married*, a portion more than equal to that of each of the children. In the primitive church, the reſpect to chaſtity was carried ſo high, that a ſecond *Marriage* was accounted no other than a lawful whoredom, or a ſpecies of bigamy. There are ſome antient canons which forbid the eccleſiaſtics from being preſent at ſecond *Marriages*. See BIGAMY.

For the proportions which *Marriages* bear to births, and births to burials, in ſeveral parts of *Europe*, Mr. Derham gives us the following table.

Names of Places.	*Marriages to Births, as*	*Births to Burials, as*
England in general	1 to 4.63	1.12 to 1
London	1 to 4.	1 to 1.1
Hantſhire, from 1569 to 1658	1 to 4.	1.2. to 1
Tiverton in Devon. from 1656 to 1664	1 to 3.7.	1.26. to 1
Cranbrook in Kent, 1560 to 1649	1 to 3.9.	1.6 to 1
Aynho in Northamp for 118 years	1 to 6	1.6 to 1
Upminſter in Eſſex, for 100 years	1 to 4.6	1.8 to 1
Frankfort on the Maine in 1695	1 to 3.7	1.2 to 1
Old, Middle, and Lower Marck, in 1698	1 to 3.7	1.9 to 1
Dominions of Elect. of Branden, 1698	1 to 3.7	1.5 to 1
Breſlaw in Sileſia, from 1687 to 91		1.6 to 1
Paris in 1670, 1671, 1672.	1 to 4.7	1.6 to 1

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* The word, according to ſome authors, comes from the *Marcomanni*, an antient people who inhabited the marches of Brandenbourg: Others derive it from the German *Marcke*, limit; and others from *Marciſia*, which in the Celtic language ſignified a wing of cavalry: Nicod derives it from the corrupt Greek νομαρχία, province: Alciat and Fauchet bring it from *Mark*, horſe, taking a *Marquis* to be properly an officer of horſe: Menage derives it from *Marca*, frontier; and Selden, Krantzius, and Hottoman do the ſame: Laſtly, Paſquier fetches *Marquis* from the old French *Marche*, limit, or from *marchir*, to confine; the guard of the frontiers being committed to them.

From which table it appears, that *Marriages*, one with another, do each produce about four births, both in England and other parts of Europe. And by Mr. King's computation, about one in a hundred and four perſons *marry*; the number of people in England being eſtimated at five millions and a half, whereof about forty-one thouſand annually *marry*.

Major Graunt and Mr. King diſagree in the proportions between males and females, the latter making ten males to thirteen females in London; in other cities and towns, and in the villages and hamlets, a hundred males to ninety-nine females. But major Graunt, both from the London and country bills, computes that there are in England fourteen males to thirteen females; whence he juſtly infers, that the Chriſtian religion, prohibiting polygamy, is more agreeable to the law of nature than Mahometaniſm, and others that allow it. See POLYGAMY.

This proportion of males to females Mr. *Derham* thinks pretty juſt, being agreeable to what he had obſerved himſelf.——In the hundred years, for inſtance, of his own pariſh regiſter of Upminſter, though the burials of males and females were nearly equal, being ſix hundred and thirty-three males, and ſix hundred and twenty-three females in all that time; yet there were baptized ſeven hundred and nine males, and but ſix hundred and ſeventy-five females, which is 13 females to 13.7 males. From which inequality it appears, that one man ought to have but one wife, and yet that every woman, without polygamy, may have a huſband; this ſurpluſage of males above females being ſpent in the ſupplies of war, the ſeas, &c. from which the women are exempt.

That this is a work of providence, and not of chance, is well made out by the very laws of chance, by Dr. Arbuthnot: who ſuppoſes Thomas to lay againſt John, that for eighty-two years running, more males ſhall be born than females; and giving all allowances in the computation to Thomas's ſide, he makes the odds againſt Thomas, that it does not ſo happen, to be near five millions of millions of millions of millions to one; but for ages of ages, according to the world's age, to be near an infinite number to one.

MARRIAGE, MARITAGIUM, in law, ſignifies not only the lawful joining of man and wife, but alſo the right of beſtowing a ward, or a widow in *Marriage*; as well as the land given in *Marriage*. See WARD, and WIDOW.

Duty of MARRIAGE, is a term uſed in ſome antient cuſtoms, ſignifying an obligation on women to *marry*.

To underſtand this, it muſt be obſerved, that old maids, and widows about ſixty, who held fees in body, or were charged with any perſonal or military ſervices, were antiently obliged to *marry*, to render thoſe ſervices to the lord by their huſbands; or to indemnify the lord, for what they could not do in perſon.——And this was called *Duty* or *Service of Marriage*.

MARROQUIN, vulgarly MOROCCO-*Leather*. See MOROCCO.

MARROW, a ſoft oleaginous ſubſtance contained in the cavities of the bones. See BONE.

All the bones of the body, which have any conſiderable thickneſs, have either a large cavity, or are ſpongeous, and full of little cells; in both the one and the other, is an oleaginous ſubſtance, called *Marrow*, contained in proper veſicles or membranes, which open into one another.

In the larger bones, this fine oil, by the gentle heat of the body, is exhaled through the pores of its ſmall bladders, and enters ſome narrow paſſages, which lead to certain fine canals excavated in the ſubſtance of the bone, according to its length; and from theſe, other croſs paſſages (not directly oppoſite to the former, leſt they ſhould weaken the bone too much in one place) carry the *Marrow* ſtill farther into more longitudinal canals placed nearer the ſurface of the bone: All this contrivance is, that the *Marrow* may ſupple the fibres of the bones, and render them leſs apt to break.

The antients imagined, that *Marrow* ſerved for nouriſhment to the bones: but later obſervations have found blood-veſſels in the bones; ſo that it appears the bones are nouriſhed in the ſame manner as the other parts of the body. Beſides, we find many bones which grow, and yet have no *Marrow* in them; witneſs the horns of deer, lobſters claws, &c. See MEDULLA.

MARS, in aſtronomy, one of the five planets, and of the three ſuperior ones; its place being between the Sun and Jupiter. See PLANET, and SYSTEM.

Its character is ♂. Its mean diſtance from the ſun is 1524 of thoſe parts, whereof the diſtance of the ſun from the earth is 1000. Its excentricity 141. The inclination of its orbit, that is, the angle formed by the plane of its orbit with the plane of the ecliptic, 1 degree .52 minutes. The periodical time, in which it make its revolution round the ſun, 686 days, 23 hours. Its revolution about its own axis, is performed in 24 hours, 40 minutes.

For the diameter of *Mars*, ſee DIAMETER, and SEMI-DIAMETER.——For its denſity, ſee DENSITY.——For the force of gravity on its ſurface, ſee GRAVITY.

Its parallax, according to Dr. Hook and Mr. Flamſtead, is ſcarce 30 ſeconds. See PARALLAX.

In the acronycal riſing of this planet, that is, when it is in oppoſition to the ſun, it is found twice as near the earth as the ſun; which is a phænomenon that has extremely diſcredited the Ptolemaic hypotheſis. See ACRONYCAL.

Dr. Hook, in 1665, obſerved ſeveral ſpots in *Mars*, which having a motion, he concluded the planet to turn round its centre. In 1666, M. Caſſini obſerved ſeveral ſpots in the two faces or hemiſpheres of *Mars*, which, by continuing his different obſervations very diligently, he found to move by little and little from eaſt to weſt, and to return in the ſpace of 24 hours 40 minutes to their former ſituation.——Whence both the motion and period, or natural day of that planet, was determined. See MACULÆ, and SPOTS.

Mars always appears with a ruddy, troubled light; whence we conclude it is encompaſſed with a thick, cloudy atmoſphere, which, by diſturbing the rays of light in their paſſage and repaſſage through it, occaſion that appearance.

Mars having his light from the ſun, and revolving round it, has an increaſe and decreaſe like the moon. It may alſo be obſerved, almoſt biſſected, when in its quadratures with the ſun, or in his perigæon, but never corniculated or falcated, as the inferior planets. See PHASES.

This planet's diſtance from the ſun, is to the diſtance of the earth and ſun, as 1½ to 1. So that a man placed in *Mars*, would ſee the ſun's diameter leſs by one third than it appears to us, and conſequently the degree of light and heat, which *Mars* receives from the ſun, is leſs by one third than that received by the earth.——This proportion, however, will admit of a ſenſible variation, on account of the great excentricity of this planet.

Though the period or year of this planet, as has been already obſerved, is nearly twice as long as ours, and his natural day, or the time in which the ſun appears above his horizon (ſetting aſide the conſideration of twilight) is almoſt every where equal to his night; yet it appears, that in one and the ſame place on his ſurface, there will be but very little variety of ſeaſons, ſcarce any difference of ſummer and winter. And the reaſon is, that the axis of his diurnal rotation is nearly at right angles with the plane of his orbit. It will be found, notwithſtanding that places ſituate in different latitudes, that is, at different diſtances from his equator, will have very different degrees of heat, on account of the different inclination of the ſun's rays to the horizon; as it is with us, when the ſun is in the equinoxes.

From this conſideration, Dr. Gregory endeavours to account for the appearance of the Faſciæ in *Mars*; which are certain ſwathes or fillets ſeen in this planet, and poſited parallel to his equator. For, as among us, the ſame climate has at different ſeaſons very unequal degrees of heat; but in *Mars* it is otherwiſe, the ſame parallel having always a pretty equable degree of heat: it follows, that theſe ſpots may probably be formed in *Mars*, or his atmoſphere, as ſnow and clouds are in ours; *viz.* by the conſtant different intenſions of heat and cold in the different parallels; and ſo come to be extended in circles or belts parallel to his equator, or the circle of his diurnal revolution. And this ſame principle may, perhaps, ſolve the phænomenon of Jupiter's belts; that planet, like *Mars*, having a perpetual equinox. See JUPITER.

Beſides the ruddy colour of *Mars*, we have another argument of his being incompaſſed with an atmoſphere, and it is this; that when any of the fixed ſtars are ſeen near his body, they appear extremely obſcured, and almoſt extinct. If this be the caſe, an eye placed in *Mars* would ſcarce ever ſee Mercury, unleſs perhaps in the ſun at the time of conjunction, when Mercury paſſes over his diſk, as he ſometimes appears to us in form of a ſpot. A ſpectator in *Mars* will ſee Venus about the ſame diſtance from the ſun as Mercury appears to us; and the earth about the ſame diſtance from the ſun, that to us Venus appears. And when the earth is found in conjunction with, and very near the ſun, he will ſee in *Mars* what Caſſini ſaw on the earth, *viz.* the earth appear horned or falcated, and its attendant the moon of the ſame figure, and at its utmoſt diſtance from the earth, not above 15 minutes of a degree.

MARS, among chymiſts, ſignifies iron; becauſe imagined under the influence of that planet. See IRON.

Phyſical writers hold iron preferable for all medicinal purpoſes to ſteel, which is only a more hardened, compact iron, made ſo by art; whereby it is rendered more unfit to yield thoſe principles or parts in preparation, which the phyſician requires to be drawn out. See STEEL, and CHALYBEAT.

Crocus MARTIS, ruſt of iron. See CROCUS *Martis*.

Cryſtals of MARS. See the article CRYSTAL.

Tree of MARS, *arbor Martis*. See ARBOR.

Games of MARS, were combats inſtituted at Rome in honour of the god *Mars*.

They were held twice in the year; once in the Circus, on the 4th of the ides of May; and a ſecond time on the 1ſt of Auguſt. Theſe latter were eſtabliſhed ſome time after the other; in memory of the dedication of the temple of *Mars* on that day. Theſe games conſiſted in courſes of horſes, and combats with wild beaſts. Germanicus is ſaid to have killed two hundred lions in the Circus on theſe occaſions. See FIELD *of Mars*.

MARSHAL *, or **Mareschal**, **Marescallus**, primarily denotes an officer who has the care, or the command of horſes.

* Nicod derives the word from *Polemarchus*, maſter of the camp: Matthew Paris from *Martis Seneſcallus*. In the old Gauliſh language, *March* ſignified horſe, whence *Marechal* might ſignify him who commanded the cavalry. Spelman, Skinner, and Menage derive it from the German *Maer*, *Marre*, a mare, or even a horſe, and *Schalk*, ſervant: which makes ſome imagine, the title was firſt given to farriers, or thoſe who ſhoed and bled horſes; and that in ſucceſſion of time, it paſſed to thoſe who commanded them. Paſquier makes four ſeveral derivations for the four ſeveral kinds of *Marſhals* in uſe among the French, *viz.* *Marſhals* of France, *Marſhals de camp*, *Marſhals de logis* or quarter maſters, and farriers, who are called by the name of *Marſhals*. The third he derives from *Marche* or *Marchir*, to mark, limit; and the laſt from *Maire*, maſter, and *Chal*, horſe.

Earl-**Marshal** *of England*, one of the great officers of the crown, who takes cognizance of all matters touching honour and arms, determines contracts relating to deeds of arms out of the realm upon land, and matters concerning war within the realm, which cannot be determined by common law, in which he uſually proceeds according to the civil law. This office is hereditary, having been for many ages in the houſe of Norfolk. It is diſcharged by deputy on account of the religion of the duke of Norfolk, hereditary *Earl-Marſhal*, which renders him incapable of adminiſtrating it in perſon. See Earl.

The *Earl-Marſhal* had antiently ſeveral courts under him, but hath now only the *Marſhalſea*, where he may ſit in judgment againſt criminals offending within the verge of the court.

Knight-**Marshal**, or **Marshal** *of the king's houſe*, is an officer whoſe buſineſs, according to Fleta, is to execute the commands and decrees of the lord-ſteward, and to have the cuſtody of priſoners committed by the court of verge.——Under him are ſix *Marſhal*'s men, who are properly the king's bayliffs, and arreſt in the verge of the court, when a warrant is backed by the board of green-cloth. The court where cauſes of this kind, between man and man, are tried, is called the *Marſhalſea*, and is under the *Knight-Marſhal*. See Knight.

There are ſome other inferior officers of this name; as

Marshal of the juſtices in eyre;

Marshal of the king's bench, who has cuſtody of the priſon called the *king's bench*, in Southwark.

In Fleta mention is alſo made of a *Marſhal of the exchequer*; to whom the court commits the cuſtody of the king's debtors, &c.

Marshal, or **Mareschal**, of France, is the higheſt dignity, or preferment in the French armies. The dignity of *Marſhal* is now for life, though at its firſt inſtitution it was otherwiſe. They were then only the king's firſt ecuyers under the conſtable, but in time they became the conſtables lieutenants in the command of the army, the conſtable himſelf being then become captain-general. At firſt they were but two in number, and their allowance was but 500 livres *per annum* in time of war, and nothing in time of peace. In the reign of Francis the firſt, their number was increaſed to five; ſince him it has been various: the late king increaſed it at pleaſure; and it is now eleven. Their office at firſt was to *marſhal* the army under the conſtable, and to command in his abſence.

They did then what the *Marſhals de camp* do now; to which laſt they have given their title, and the leaſt conſiderable part of their authority.

The firſt *Marſhal* does the office of conſtable in an aſſembly of the *Marſhals*.

Arch-**Marshal**. } See the article { Arch.
Clerk-**Marshal**. } See the article { Clerk.
Provoſt-**Marshal**. } See the article { Provost.

MARSHALLING, a coat, in heraldry, ſignifies the due and proper joining of ſeveral coats of arms belonging to diſtinct families in one and the ſame ſhield or eſcutcheon; together with their ornaments, parts, and appurtenances. See Arms.

MART.——Letters of Mart. See Letters.

MARTIAL, is ſometimes uſed to expreſs preparation of iron, or ſuch as are impregnated therewith; as the *Martial* regulus of antimony, &c. See Iron, Regulus, and Antimony.

Martiale *Bezoardicum*. See Bezoardicum.

Martial *Law*, is the law of war, depending upon the arbitrary but juſt power and pleaſure of the king or his lieutenants. The king, though in times of peace he make no laws, but by common conſent in parliament; yet in war he uſes abſolute power over the ſoldiery:——though even this power hath been veſted of late years in the king, or his generals of the army, by act of parliament, and under particular reſtrictions too. See Law.

Martii *Campus*. See the articles Campus, and Field.

MARTINGALE, a thong of leather faſtened at one end to the girths under the belly of a horſe, and at the other end to the noſeband, to hinder him from rearing, or toſſing up his head.

MARTINS,——*St. Martin's cope*. See Cope.

MARTLET, in heraldry, a little bird repreſented without feet, and properly alſo without beak.

It is uſed as a difference or mark of diſtinction of a younger brother; ſome ſay, more peculiarly of the fourth brother, or family. See Difference.

MARTYR *, a perſon who ſuffers torments, and even death, in defence of the truth of the goſpel.

* The word is Greek, μαρτυς, and properly ſignifies a witneſs. It is applied, by way of eminence, to thoſe who ſuffer in witneſs of the truth of the goſpel.

Antiently thoſe who were baniſhed for the faith, were called *Martyrs*, as well as thoſe who periſhed in the holy wars. In the time of St. Auguſtin, the title of *Martyr* was given to confeſſors, or thoſe who were tortured for the faith without loſing their lives.—It is Tertullian's thought, in his apologetic; *Plures efficimur, quoties metimur*; *ſemen eſt ſanguis chriſtianus*. St. Stephen is called the *Proto-Martyr*, or firſt *Martyr*.——Nineteen thouſand ſeven hundred are computed to have ſuffered *Martyrdom* with St. Irenæus at Lions, under the empire of Severus. Six thouſand ſix hundred and ſixty ſix ſoldiers of the Theban legion are ſaid to have been *martyred* in Gaul. Father Papebroch reckons ſixteen thouſand Abyſſinian *Martyrs*, and an hundred and fifty thouſand others under Diocleſian alone.

Mr. Dodwell endeavours to prove, in a diſſertation expreſs, that the number of *Martyrs* who ſuffered under the Roman emperors, was very moderate; alledging, that thoſe we have accounts of in the fathers, come within a very ſmall compaſs; and that, excepting Nero and Domitian, the reſt of the emperors made ſcarce any.—F. Ruinart, on the contrary, endeavours to prove, that the catalogue of *Martyrs* is not at all ſwelled; that the carnage was immenſe under the firſt emperors, and eſpecially in that of Diocleſian.——F. Papebroch, in his *Acta ſanctorum*, makes the number of *Martyrs* infinite.

Scarce any faith or religion but pretends to its *Martyrs*. Mahometans, heathens, idolaters, &c. See Saints.

In the antient church, the acts, ſufferings, and deaths of the *Martyrs* were preſerved with a world of care; and yet, maugre all this diligence, we have but very little left of them. Euſebius indeed compoſed a martyrology, but it never reached down to us; and thoſe ſince compiled, are extremely ſuſpected. See Martyrology.

Æra of **Martyrs**, is an æra followed in Egypt, and Abyſſinia; and which even the Mahometans, ſince their becoming maſters of Egypt, frequently obſerve. It is fixed to the beginning of the perſecution of Diocleſian, *A. D.* 302 or 303.

The æra of *Martyrs* is alſo called the æra of Diocleſian. See Epocha.

MARTYROLOGY *, a regiſter or catalogue of martyrs. See Martyr.

* The word comes from the Greek μαρτυς, witneſs, and λεγω, *dico*, I ſpeak, or λεγω, *colligo*, I gather.

A *Martyrology*, properly ſpeaking, ſhould contain no more than the name, place, and day of martyrdom of each ſaint; but the term is frequently extended to the hiſtories of martyrs.

The cuſtom of collecting *Martyrologies*, is borrowed from the heathens, who inſerted the names of their heroes into their *Faſti*, to preſerve to poſterity the memory and example of their noble actions. Baronius gives pope Clement the credit of being the firſt who introduced the cuſtom of collecting the acts of the martyrs. See Acts.

The *Martyrology* of Euſebius of Cæſaria was the moſt celebrated in the antient church: it was tranſlated into Latin by St. Jerom; but the learned agree, that it is not now extant.——That attributed to Beda in the eighth century, is of very doubtful authority; the names of ſeveral ſaints being there found, who did not live till after the time of Beda.——The ninth century was very fertile in *Martyrologies*. Then appeared that of Florus, ſub-deacon of the church at Lions, who, however, only filled up the chaſms in Beda. This was publiſhed about the year 830; and was followed by that of Waldenbertus, monk of the dioceſe of Treves, written in verſe about the year 848: That of Uſuard, a French monk, and wrote by command of Charles the Bald, in 875; which laſt is the *Martyrology* now ordinarily uſed in the Romiſh church: That of Rabanus Maurus, which is an improvement on Beda and Florus, written about the year 845: That of Notker, monk of St. Gal, written about the year 894.

The *Martyrology* of Ado, monk of Ferrieres in the dioceſe of Treves, afterwards archbiſhop of Vienne, is a deſcendant of the *Roman*, if we may ſo call it; for Du Sollier gives its genealogy thus: The *Martyrology* of St. Jerom is the great Roman *Martyrology*; from this was made the little Roman, printed by Roſweyd. Of this little Roman *Martyrology*, was that of Beda, augmented by Florus, Ado compiled his in the year 858. The *Martyrology* of Nevelon, monk of Corbie, written about the year 1089, is little more than an abridgment of that of Ado. Father Kircher makes mention of a Coptic *Martyrology*, preſerved by the Maronites at Rome.

We have alſo ſeveral proteſtant *Martyrologies*, containing the ſufferings of the reformed under the papiſts; *viz.* an Engliſh *Martyrology*, by J. Fox; with others by Clark, Bray, &c.

Martyrology, is alſo uſed in the Romiſh church for a roll or regiſter kept in the veſtry of each church, containing the names of all the ſaints and martyrs, both of the univerſal church, and of the particular ones of that city, or monaſtery.

MARTYROLOGY, is alſo applied to the painted or written catalogues in churches, containing the foundations, obits, prayers, and maſſes, to be ſaid each day.

MARY.——*Knights of St.* MARY, is a name by which ſeveral orders of knighthood are diſtinguiſhed.——As, *St. Mary of the thiſtle.* See THISTLE. *St. Mary of the conception.* See CONCEPTION. *St. Mary of the elephant.* See ELEPHANT. *St. Mary and Jeſus.* *St. Mary of Loretto.* *St. Mary of mount Carmel.* See CARMEL. *St. Mary of the Teutonics.* See TEUTONIC, *&c.*

MASBOTHÆI *, or MESBOTHÆI, the name of a ſect, or rather of two ſects; for Euſebius, or rather Hegeſippus, whom he cites, makes mention of two different ſects of *Masbothæans.* The firſt are one of the ſeven ſects that aroſe out of Judaiſm, and proved very troubleſome to the church: The others were one of the ſeven Jewiſh ſects before the coming of Jeſus Chriſt.

> * The word is derived from the Hebrew שבת *Schabat,* to reſt or repoſe, and ſignifies idle, eaſy, indolent people. Euſebius ſpeaks of them, as if they had been ſo called from one *Maſbotheus,* their chief; but it is much more probable, that their name is Hebrew, or at leaſt Chaldaic, ſignifying the ſame thing with a Sabbatarian in our language, that is, one who makes profeſſion of keeping ſabbath.

Valeſius will not allow the two ſects to be confounded together: the laſt being a ſect of Jews before, or at leaſt cotemporary with Chriſt; and the former a ſect of heretics deſcended from them. Rufinus diſtinguiſhes them in their names: The Jewiſh ſect he calls *Masbuthæi,* and the heretics *Masbuthæani.*——The *Masbuthæans* were a branch of the Simonians.

MASCLE, or MACLE, in heraldry, a bearing in form of a lozenge, and voided of the field, that is, its inner part being cut out.——See *Tab. Herald. fig.* 34.

He bears gules a chevron ermin between three *Maſcles* argent, by the name of *Bellgrave.*

According to Guillim, the *Maſcle* repreſents the maſh of a net, and is an honourable bearing. It only differs from a lozenge, by being voided. See LOZENGE.

MASCULINE, ſomething belonging to the male, or the ſtronger of the two ſexes. See MALE.

MASCULINE, is more ordinarily uſed in grammar to ſignify the firſt and worthieſt of the genders of nouns. See GENDER.

The *Maſculine* gender is that which belongs to the male kind, or ſomething analogous to it.

Moſt ſubſtantives are ranged under the heads of *Maſculine* or feminine.——This, in ſome caſes, is done with a ſhew of reaſon, but in others is merely arbitrary; and for that reaſon, is found to vary according to the languages, and even according to the words introduced from one language into another.——Thus the names of trees are generally femine in Latin, and *Maſculine* in the French.

Farther, the genders of the ſame word are ſometimes varied in the ſame language. Thus *alvus,* according to Priſcian, was antiently *Maſculine,* but is now become feminine. And *navire,* a ſhip, in French, was antiently feminine, but is now *Maſculine.*

MASCULINE *rime,* in the French poetry, is that made with a word which has a ſtrong, open, and accented pronunciation; as all words have, excepting thoſe which have an *e* feminine in their laſt ſyllable. See RIME.

For inſtance, *amour* and *jour, mort* and *ſort,* are *Maſculine* rimes;——and *pere* and *mere, gloire* and *memoire,* are feminine. Hence alſo verſes ending with a *Maſculine* rime, are called *Maſculine* verſes, and thoſe ending with a feminine rime, feminine verſes. See VERSE.

It is now a rule eſtabliſhed among the French poets, never to uſe above two *Maſculine,* or two feminine verſes ſucceſſively, except in the looſer kinds of poetry.

Marot was the firſt who introduced this mixture of *Maſculine* and feminine verſes, and Ronſard was the firſt who practiſed it with ſucceſs. The *Maſculine* verſes ſhould always have a ſyllable leſs than the feminine ones.

MASCULINE *Signs.*——Aſtrologers divide the ſigns into *Maſculine* and feminine; by reaſon of their qualities, which are either active, and hot, or cold, accounted *Maſculine*; or paſſive, dry, and moiſt, which are feminine.

On this principle they call the Sun, Jupiter, Saturn, and Mars, *Maſculine*: and the Moon and Venus, feminine. Mercury, they ſuppoſe, partakes of the two. Among the ſigns, Aries, Libra, Gemini, Leo, Sagittarius, Aquarius, are *Maſculine*; Cancer, Capricornus, Taurus, Virgo, Scorpio, and Piſces, are feminine.

MASK, or MASQUE. See the article MASQUE.

MASON *, a perſon employed uſually under the direction of an architect, in the raiſing of a ſtone-building. See MASONRY.

> * The word comes from the French *Maçon,* which ſignifies the ſame. Some derive this further from the barbarous Latin *Machio,* a machiniſt, in regard theſe artificers are obliged to uſe machines for raiſing walls. Du Cange derives it from *Maceria,* a name given to the long fence-walls which incloſe vineyards, *&c.* in which *Maſons* are ſuppoſed to have been firſt employed: *Maſon eſt Maceriarum conſtructor.* M. Huet derives it from *Mas,* an old word, ſignifying houſe; hence *Maſon* is a perſon who makes *Mas's,* that is, houſes. In the corrupt Latin, a *Maſon* was called *magiſter comacinus,* which Lindenbroeck derives from Comacina, an iſland in Romania, where, in the time of the Lombards, the beſt architects were found.

The chief buſineſs of a *Maſon,* is to prepare the mortar, raiſe the walls from the foundation to the top, with the neceſſary retreats and perpendiculars, form the vaults, and employ the ſtones as delivered to him.

When the ſtones are large, the buſineſs of hewing or cutting them belong, to the ſtone-cutters; though theſe are frequently confounded with the *Maſons.*——The ornaments of ſculpture are performed by carvers in ſtone, or ſculptors.——The tools or implements principally uſed by *Maſons* are, the ſquare, level, plumb-line, bevel, compaſs, hammer, chiſſel, mallet, ſaw, trowel, *&c.* See SQUARE, LEVEL, *&c.*

Beſides the common inſtruments uſed in the hand, they have likewiſe machines for the raiſing of great burdens, the conducting of large ſtones, *&c.* The principal of theſe are the lever, wheel, pully, *&c.* See WHEEL, *&c.*

Free, or *Accepted* MASONS, a very antient ſociety, or body of men, ſo called either from ſome extraordinary knowledge of maſonry or building, which they are ſuppoſed to be maſters of, or becauſe the firſt founders of the ſociety were perſons of that profeſſions.

They are now very conſiderable both for numbers and character; being found in every country in Europe, and conſiſting principally of perſons of merit and conſideration. As to antiquity, they lay claim to a ſtanding of ſome thouſand years; and, it is ſaid, can trace up their original as early as the building of Solomon's temple.

What the end of their inſtitution is, ſeems ſtill, in ſome meaſure, a ſecret; though ſo much of it as is known, appears laudable enough, as it tends to promote friendſhip, ſociety, mutual aſſiſtance, and good fellowſhip.

The brothers of this family are ſaid to be poſſeſſed of a great number of ſecrets, which have been religiouſly obſerved from age to age.——Be their other virtues therefore what they will, it is plain they are maſters of one in a very great degree, *viz.* ſecrecy.

MASONRY, a branch of architecture, conſiſting in the art of hewing, or ſquaring ſtones, and cutting them level, and perpendicular, for the uſes of building. See ARCHITECTURE.

MASONRY, in a more limited ſenſe of the word, is the art of aſſembling and joining ſtones together with mortar. See COLUMN.

Hence there ariſe as many different kinds of *Maſonry,* as there are different forms and manners of laying, or joining the ſtones. Vitruvius makes mention of ſeven kinds of *Maſonry* among the antients; three of hewed ſtone, *viz.* that in form of a *net,* that in *binding,* and that called the *Greek Maſonry:* and three of unhewed ſtones, *viz.* that of an *equal courſe,* that of an *unequal courſe,* and that *filled up in the middle.* The ſeventh was a compoſition of all the reſt.——See *Tab. Architect. fig.* 13. *to* 19.

Net MASONRY, called by Vitruvius, *reticulatum,* from its reſemblance of the maſhes of a *net,* conſiſts of ſtones ſquared in their courſes, and ſo diſpoſed, as that their joints go obliquely, and the diagonals are, the one perpendicular, and the other level. This is the moſt agreeable *Maſonry* to the eye, but is apt to crack.——See *fig.* 13.

Bound MASONRY, *Inſerta,* is that wherein the ſtones were placed one over another, like tiles; the joints of the beds being level, and the mounters perpendicular. So that the joint that mounts and ſeparates two ſtones, falls directly over the middle of the ſtone below.——This is leſs beautiful than the net-work, but more ſolid and durable.——See *fig.* 15.

Greek MASONRY, according to Vitruvius, is that where, after we have laid two ſtones, each of which makes a courſe, another is laid at the end, which makes two courſes; and the ſame order obſerved throughout the building.——This may be called *double binding,* in regard the binding is not only of ſtones of the ſame courſe with one another, but likewiſe of one courſe with another courſe.——See *fig.* 14.

MASONRY *by equal courſes,* by the antients called *iſodomum,* differs in nothing from the bound *Maſonry,* but only in this, that its ſtones are not hewn.——See *Fig.* 16.

MASONRY *by unequal courſes,* called *pſeudiſodomum,* is alſo made of unhewed ſtones, and laid in bound work: but then they are not of the ſame thickneſs, nor is there any equality obſerved, excepting in the ſeveral courſes; the courſes themſelves being unequal to each other.—See *Fig.* 17.

MASONRY *filled up in the middle,* called by the antients *emplecton,* is likewiſe made of unhewed ſtone, and by courſes; but the ſtones are only ſet in order as to the courſes, the middle being filled up with ſtones thrown in at random among the mortar.——See *Fig.* 18.

Compound MASONRY, is of Vitruvius's propoſing; ſo called, as being formed of all the reſt. In this, the courſes are of hewed ſtone, and the middle being left void, is filled up with mortar and pebbles thrown in together. After this the ſtones of one courſe are bound to thoſe of another courſe, with cramp-irons faſtened with melted lead.——See *Fig.* 19.

All the kinds of *Maſonry* now in uſe may be reduced to theſe five, *viz.* *Bound Maſonry*; that of *Brick-work*, where the bodies and projectures of the ſtones incloſe ſquare ſpaces or pannels, *&c.* ſet with bricks: That *de moilon*, or ſmall work, where the courſes are equal, well ſquared, and their edges or beds ruſticated: That where the *courſes* are *unequal*; and that *filled up in the middle* with little ſtones and mortar.

MASONRY, is ſometimes alſo uſed in a more general and unlimited ſenſe; ſo as, beſides proper *Maſonry*, to include the hewing or ſawing of larger ſtones to fit them for building, properly called *Stone-cutting*; and the carving of the ornaments on the members and mouldings, properly called *ſculpture.* See SCULPTURE.

MASQUE, or MASK, a cover for the face, contrived with apertures for the eyes and mouth; worn chiefly by women of condition, either to preſerve their complection from the weather, or out of modeſty, to prevent their being known.

Poppæa, wife of Nero, is ſaid to be the firſt inventer of the *Maſque*; which ſhe did to guard her complection from the ſun and weather, as being the moſt delicate woman, with regard to her perſon, that has been known.——Brantome obſerves, that the common uſe of *Maſques* was not introduced till towards the end of the ſixteenth century.

MASQUE, is alſo uſed to ſignify any thing uſed to cover the eyes, and prevent a perſon's being known.

The penitents of Lyons and Avignon hide their faces with large white veils, which ſerve them for *Maſques.* See VEIL.

MASQUE, in architecture, is applied to certain pieces of ſculpture, repreſenting ſome hideous forms, grotteſque, or ſatyr's faces, *&c.* uſed to fill up and adorn vacant places, as in freezes, the pannels of doors, keys of arches, *&c.* but particularly in grottos.

MASQUERADE *, or MASCARADE, an aſſembly of perſons maſked, or diſguiſed; meeting to dance, and divert themſelves. This is a very common practice abroad, eſpecially in carnival time. See CARNIVAL.

* The word comes from the Italian *Maſcarata*, and that from the Arabic *Maſcâra*, which ſignifies raillery, buffoonery.

MASS, MASSA, in mechanics, the matter of any body cohering with it, *i. e.* moving and gravitating along with it. See BODY. In which ſenſe, *Maſs* is diſtinguiſhed from bulk, or volume, which is the expanſion of a body in length, breadth, and thickneſs. See MATTER.

The *Maſs* of any body is rightly eſtimated by its weight. And the *Maſſes* of two bodies of the ſame weight are in a reciprocal ratio of their bulks. See MOTION, WEIGHT, MOMENT, and MEASURE.

MASS *, or MESSE, MISSA, in a religious ſenſe, denotes the office, or public prayers made in the Romiſh church, at the celebration of the euchariſt. See EUCHARIST.

* Nicod, after Baronius, obſerves that the word comes from the Hebrew, *Miſſach, oblatum*; or from the Latin *Miſſa, Miſſorum*; becauſe in the former times, the catechumens and excommunicated were ſent out of the church, when the deacon ſaid, *Ite, miſſa eſt*, after ſermon, and the reading of the epiſtle and goſpel; they not being allowed to aſſiſt at the conſecration. See CATECHUMEN. Menage derives the word from *Miſſio*, diſmiſſing: Others from *Miſſa*, miſſion, ſending; becauſe in the *Maſs*, the prayers of men on earth are ſent up to heaven.

Romiſh divines define the *Maſs*, an oblation made to God, wherein, by the change of a ſenſible object by virtue of a divine inſtitution, the ſovereign dominion of God over all things is acknowledged.

This they eſteem the greateſt and moſt auguſt ceremony in uſe in the church; as being the ſacrifice of the new law, wherein the body and blood of Jeſus Chriſt are offered up to God.

They are divided about the queſtion, Whether or no it be proper or allowable for the ſame perſon to celebrate *Maſs* ſeveral times in one day? having the authority of pope Leo in his letter to Dioſcorus for the affirmative ſide of the queſtion, and that of ſeveral of the councils for the negative.

There are a great variety of *Maſſes* in the Romiſh church; the thing acquiring new titles, and appellations, according to the different rites, intentions, and manners, in which it is performed, as well as other circumſtances.—Thus they have an

Ambroſian MASS, celebrated according to the rite of St. *Ambroſe*; particularly uſed in Milan.

Engliſh MASS, was the form which antiently obtained in *England.*

Gallican MASS, is the rite that formerly obtained in the churches of *France.*

Greek MASS, is that rehearſed according to the *Greek* rites, in the *Greek* language, and by *Greek* prieſts.

Latin MASS, is that uſed in the *Latin* church, in the *Latin* tongue, and according to the rites of the *Latin* church.

High MASS, called alſo *Grand* MASS, is that ſung by the choriſters, and celebrated with the aſſiſtance of a deacon and ſubdeacon.

Low MASS, is that wherein the prayers are all barely rehearſed without any ſinging, and performed without much ceremony, or the aſſiſtance of any deacon and ſubdeacon.

MASS *of the Beata*, or *our lady*, is that offered to God by the means, and through the interceſſion of the *virgin.*

Beau MASS, is a *Maſs* rehearſed every day, at which the ladies and *Beau-monde* of the place attend.——This is alſo called the *perfumed Maſs.*

Common MASS, or MASS *of the community*, in a monaſtery, is that celebrated at certain hours, whereat the whole body aſſiſts.

MASS *of the Holy Ghoſt*, is that celebrated at the beginning of any ſolemnity or church-aſſembly, commencing with an invocation of the *Holy Ghoſt.*

Holy-day MASS, is that wherein certain prayers, or leſſons are read ſuitable to the day.

MASS *of Judgment*, was that wherein a perſon cleared himſelf of any calumny by ſome proof agreed upon. See JUDGMENT.

MASS *for the death of our enemies*, was a form that obtained a long time in Spain, but was at length aboliſhed as inconſiſtent with Chriſtian charity.

MASS *of the dead*, or *requiem*, is that performed at the requeſt of the deceaſed: the introit whereof begins with *requiem.*——In the thirteenth century, it was the cuſtom, ere criminals were carried out to execution, to make them attend at a *Maſs of the dead*, rehearſed for the repoſe of their ſouls.

Pariſh MASS, or *Great* MASS, is that which the parſon is obliged to rehearſe to his pariſhoners on ſundays and holydays.

Little MASS is that ſaid at private altars with leſs ceremony.

The firſt *Maſs* is that ſaid at break of day.

MASS *of a ſaint*, is that wherein God is invoked by the interceſſion of ſome ſaint.

Thus there are alſo *Maſſes* of apoſtles, martyrs, pontiffs, virgins, *&c.*

MASS *of ſcrutiny*, was formerly rehearſed at the examination of catechumens, when enquiry was made as to their diſpoſition for baptiſm.

Dry MASS, is that where there is no conſecration; as that, according to Durandus, where the prieſt cannot conſecrate, by reaſon of his having ſaid *Maſs* before on the ſame day: or that uſed by the candidates of the prieſthood, in order to their becoming acquainted with the ceremonies; as Eckius will have it.

Votive MASS, is an extraordinary *Maſs* beſides that of the day, rehearſed on ſome extraordinary occaſion.

Candle-MASS. *Childer*-MASS. *Chriſt*-MASS.	} See the article {	CANDLE-*maſs.* CHILDER-*maſs.* CHRIST-*maſs.*

MASSES, in painting, denote thoſe parts of a picture which contain great lights or great ſhadows. See CLAIROBSCURE.

When it is almoſt dark, we only ſee the *Maſſes* of a picture; *i. e.* the places of the greateſt lights and ſhadows.

MASSALIANS, MASSALIANI, certain ſectaries, ſo called from a Hebrew word, ſignifying prayer; it being their diſtinguiſhing tenet, that a man is to be continually in prayer.

The Greeks call them *Euchitæ*, ευχιται, which in their language ſignified the ſame thing. See EUCHITE.

St. Epiphanius diſtinguiſhes two kinds of *Maſſalians*, the *antient* and the *new.*

The *antient*, according to him, are neither Jews, Chriſtians, nor Samaritans, but pure Gentiles; who owning ſeveral gods, adore only one, whom they call Almighty. They had oratories like our churches, where they uſed to meet, to pray and ſing hymns in honour of God; their oratories being finely illuminated with lamps and flambeaux.——This deſcription of St. Epiphanius comes ſo near the practice of the Eſſeni, that Scaliger thinks the two ſects ought not by any means to be diſtinguiſhed. See ESSENI.

For the *New Maſſalians*, who were by profeſſion Chriſtians, their riſe was not till about the time of St. Epiphanius. Their doctrine was, that prayer alone was ſufficient to ſalvation.——Many monks, who loved a life of lazineſs, and were averſe to labour, joined the *Maſſalians.*

MASSETER, in anatomy, a triangular two-headed muſcle, which ſurrounds the lower jaw, and helps to pull it upwards in eating. See MAXILIA.

The *Maſſeter* is thick and ſhort, ariſing from the Zygoma, and from the firſt bone of the upper jaw, and is inſerted into the lower edge of the lower jaw, from its external angle to its middle. Its fibres run in three directions; thoſe from the Zygoma obliquely to the middle of the jaw, and thoſe from the upper bone of the firſt jaw croſs the former, and run to the angle of the lower jaw; and the fibres that are in its middle, run perpendicularly from their origin to their inſertion.——See *Tab. anat.* (*myol.*) *fig.* 1. *n.* 11. *fig.* 6. *n.* 6. *fig.* 7. *n.* 3.

MASSIVE, ſomething heavy and ſolid; in oppoſition to tenderneſs, and delicacy. See SOLIDITY.

Thus we ſay, a building is too *maſſive*, that is, its walls are two thick; a wall is *maſſive*, that is, the lights and openings are too ſmall in proportion.

Maſſive column, is that which is too ſhort for the order whoſe capital it bears. See COLUMN.

MASSORA, a term in the Jewiſh theology, ſignifying a work on the bible performed by ſeveral learned rabins, to ſecure it from any alterations which might otherwiſe happen; and to ſerve, according to their expreſſion, as a *Hedge to the law.* See BIBLE.

Buxtorf defines the *Maſſora* a critique on the Hebrew text, contrived by the antient Jewiſh doctors, in which they have numbered the verſes, words, and letters of the text, and marked all the variations of it.

The text of the ſacred books, it is to be obſerved, was originally written without any breaks, or diviſions into chapters, or verſes, or even into words: ſo that a whole book, in the antient manner, was but one continued word; of which kind we have ſtill ſeveral antient manuſcripts both Greek and Latin. In regard therefore the ſacred writings had undergone an infinite number of alterations, whence various readings had ariſen; and the original was become much mangled, and diſguiſed; the Jews had recourſe to a canon, which they judge infallible, to fix and aſcertain the reading of the Hebrew text: and this rule they call *Maſſora*, tradition; as if this critique were nothing but a tradition, which they had received from their forefathers.

According to Elias Levita, it was the Jews of a famous ſchool at Tiberias, who compoſed, or at leaſt begun the *Maſſora*, whence they are called *Maſſoretes*, and *Maſſoretic doctors*. Aben Eſra makes them the authors of the points and accents in the Hebrew text, as we now find it, and which ſerve for vowels. See POINT, and ACCENT.

The Arabs have done the ſame thing by their alcoran, that the *Maſſoretes* have done to the bible: Nor do the Jews deny their having borrowed this expedient from the Arabs, who firſt put it in practice in the ſeventh century. See ALCORAN.

There is a *great*, and a *little Maſſora*, printed at Venice, and at Baſil, with the Hebrew text in a different character.——Buxtorf has written a *Maſſoretic* commentary, which he calls *Tiberias*.

MASSORETES, Jewiſh doctors, authors of the Maſſora. See MASSORA.

MAST *of a foreſt*, the fruit of a ſpecies of trees, called *Glandiferous*, or *Maſt-bearing*; as beech, oak, cheſnut, *&c.* See GLANDIFEROUS.

MAST *, in navigation, a large pole, or long piece of round wood, raiſed in veſſels, for the yards and ſails to be faſtened to, in order to their receiving the wind neceſſary for navigation. See SHIP, SAIL, YARD, NAVIGATION, *&c.*

* The word *Maſt* ſignifies the ſame thing in French, High-Dutch, Flemiſh, and Engliſh: The Italians ſay *albero*, and the Spaniards *Maſtil*.

In large veſſels, the number of *Maſts* is four: Their names are, the *Main-Maſt*, the *Fore-Maſt*, the *Mizen-Maſt*, and the *Boltſprit*. To which ſome add a fifth, *viz.* a *Counter-Mizen*.

Main-Maſt, is the chief *Maſt*, ſtanding upright in the middle, or waſte of the veſſel; it bears the main-yard and main-ſail.

Fore-Maſt is between the *Main-Maſt* and the head. See FORE-MAST.

Mizen-Maſt is between the *Main-Maſt* and the ſtern. See MISSEN.

The *Boltſprit* lies upon the beak, in the prow, or head of the ſhip. See BOLTSPRIT.

The *Counter-Mizen*, in large veſſels and gallions, is in the ſtern.——See *Tab. Ship*, *fig.* 1. *n.* 1, 19, 38, 81.

We alſo uſe the word *Maſt* to ſignify thoſe diviſions, or additional pieces in the *Maſts*, placed over one another. The *Main-Maſt*, and *Fore-Maſt*, have each of them two, *viz.* the *Main-Maſt*, *Main-Top-Maſt*, *Main-Gallant Maſt*; the *Fore-Maſt*, *Fore-Top-Maſt*, *Fore-Top-Gallant-Maſt*. The *Mizen-Maſt* has one, *viz.* the *Mizen-Top-Maſt*.

For the proportion of *Maſts*, Sir H. Manwaring gives theſe rules: Whatever the breadth of a ſhip be in feet, multiply $\frac{4}{5}$ of that breadth by 3, the product is the length of her main-*Maſt* in feet. Thus if a ſhip be 30 feet at the midſhip-beam, $\frac{4}{5}$ of 30 is 24; therefore that ſhip's *Main-Maſt* muſt be 24 yards, or 72 feet in length. Then for its bigneſs, he allows an inch to every yard in length, and therefore this *Maſt* muſt be 24 inches through, or thick. The *Fore-Maſt* of a ſhip muſt be $\frac{4}{5}$ of the length of the *Main-Maſt*, that is, in this caſe, 19 yards $\frac{1}{5}$, and thick or through it muſt be near 20 inches. The *Boltſprit* is always the ſame length and bigneſs with the *Fore-Maſt*; and the *Mizen-Maſt* muſt be juſt half the length of the *Main-Maſt*, and half as thick.

Heel of a MAST.	See the article	HEEL.
Jury-MAST.		JURY.
Spring a MAST.		SPRING.

MASTER, a title given to ſeveral officers, and perſons of authority, and command: particularly, to the chiefs of the orders of knighthood, *&c.*

Thus we ſay, the grand *Maſter* of Malta, of St. Lazarus, of the golden fleece, of the free maſons, *&c.* See MALTA, LAZARUS, *&c.*

MASTER, MAGISTER, was a title frequent among the Romans: They had their *Maſter* of the people, *Magiſter populi*, who was the dictator.——*Maſter* of the cavalry, *Magiſter equitum*, who held the ſecond poſt in an army after the dictator.——Under the later emperors, there were alſo *Maſters* of the infantry, *Magiſtri peditum*.——A *Maſter* of the cenſus, *Magiſter cenſus*, who had nothing of the charge of a cenſor, or ſub-cenſor, as the name ſeems to intimate; but was the ſame with the *Præpoſitus frumentariorum*.

MASTER *of the militia*, *Magiſter militiæ*, was an officer in the lower empire, created, as it is urged, by Diocleſian, who had the inſpection and government of all the forces, with power to puniſh, *&c.* ſomewhat like a conſtable of France.

At firſt there were two of theſe officers inſtituted; the one for the infantry, and the other for the cavalry: but the two were united into one under Conſtantine. Afterwards, as their power was increaſed, ſo was their number too; and there was one appointed for the court, another for Thrace, another for the Eaſt, and another for Illyria. They were afterwards called *Comites*, counts, and *Clariſſimi*. Their power was only a branch of that of the *Præfectus prætorii*, who by that means became a civil officer.

MASTER *of arms*, *Magiſter armorum*, was an officer or comptroller under the *Maſter* of the militia.

MASTER *of the offices*, *Magiſter officiorum*, had the ſuperintendance of all the Officers of the court. He was alſo called *Magiſter officii palatini*, ſimply *Magiſter*, and his poſt *Magiſteria*.——This officer was the ſame in the weſtern empire with the Curopalates in the eaſtern.

MASTER, in fine, in the Roman hiſtory and laws, is uſed for every officer, who is the chief of his kind; and has others of the ſame ſpecies, or that have the ſame functions, under him.——In Latin, *Magiſter*, and oftentimes *Proximus*, or *Primicerius*. See PRIMICERIUS.

MASTER *of the Armory*, is an officer who has the care and overſight of his majeſty's arms, and armory. See ARMS, and ARMORY.

MASTER *of Arts*, the firſt degree taken up in foreign univerſities, but the ſecond in ours; candidates not being admitted to it till they have ſtudied in the univerſity ſeven years. See DEGREE, BATCHELOR, DOCTOR, *&c.*

MASTER *of the Ceremonies*, is an officer inſtituted by king James the firſt, for the more ſolemn and honourable reception of ambaſſadors, and ſtrangers of quality, whom he introduces into the preſence.

The badge of his office is a gold chain and medal, having on one ſide an emblem of peace, with king James's motto; and on the reverſe the emblem of war, with *Dieu & mon droit.* He is always ſuppoſed to be a perſon of good addreſs, and maſter of languages: He is conſtantly attending at court, and hath under him an aſſiſtant *Maſter*, or deputy, who holds his place during the king's pleaſure.

There is alſo a third officer, called *Marſhal of the Ceremonies*, whoſe buſineſs is to receive and diſtribute the *Maſter*'s orders, or the deputy's, for the ſervice; but without their order he can do nothing.——This is in the king's gift. See MARSHAL.

MASTERS *of Chancery*, are uſually choſen out of the barriſters of the common law, and ſit in chancery, or at the rolls, as aſſiſtants to the lord chancellor, and maſter of the rolls.

To them is alſo committed interlocutory reports, ſtating of accounts, taxing coſts, *&c.* And ſometimes, by way of reference, they are empowered to make a final determination of cauſes.

They have, time out of mind, had the honour to ſit in the lords houſe, though they have neither writs, nor patent to empower them; but as aſſiſtants to the lord chancellor, and maſter of the rolls. They had antiently the care of inſpecting all writs of ſummons, which is now performed by the clerk of the petty-bag. When any meſſage is ſent from the lords to the commons, it is carried by the *Maſters of Chancery*. Before them affidavits are made, and deeds and recognizances acknowledged. See CHANCERY.

Beſides theſe, who may be called *Maſters of Chancery ordinary*, (being twelve in number, whereof the maſter of the rolls is reputed the chief) there are alſo *Maſters of Chancery extraordinary*, appointed to act in the ſeveral counties of England beyond ten miles diſtance from London, by taking affidavits, recognizances, *&c.* for the eaſe of the ſuitors of the court.

MASTER *of the court of Wards and Liveries*, was the chief officer, and judge of that court, who kept the ſeal of it, and was named and aſſigned by the king.

But this court, and all its officers, members, power, and appurtenances, is taken away by a ſtatute made 12 Car. II. c. 24. See WARD.

MASTER *of the Faculties*, an officer under the archbiſhop of Canterbury, who grants licences and diſpenſations: he is mentioned in the ſtatute 22, 23 Car. II. See the article FACULTY.

MASTER-*Gunner of* England. See the article GUNNER.

MASTER *of the Horſe*, a great officer of the crown, to whom is committed the charge of ordering and diſpoſing all matters relating to the king's ſtables, races, and breed of horſes, as he had antiently of all the poſts in England.

He hath a power of commanding the equerries, and all the other officers and tradeſmen employed in the king's ſtables; to all which he gives, by his warrant to the avener, the oath of allegiance, *&c.* for the faithful diſcharge of their duty. He has the peculiar privilege of making uſe of any horſes, pages, or footmen, belonging to the king's ſtables; ſo that his coaches, horſes, and attendants, are the king's, and have the king's arms and liveries.

MASTER *of the Houſhold*, is an officer under the lord-ſteward of the houſhold, and in the king's gift: His buſineſs is to ſurvey the accounts of the houſhold. See Houshold.

Antiently the lord-ſteward himſelf was called *Grand Maſter of the Houſhold*. See Steward.

Master *of the Jewel-houſe*, is an officer of the king's houſhold, who has charge of all the gold and ſilver plate uſed at the king's table, or at that of any officer attending the court; and of all plate remaining in the tower of London; as alſo of chains and looſe jewels, not fixed to any garment. See Jewel.

Master *of the Mint*, was antiently the title of him who is now called *Warden of the Mint*; whoſe office is to receive the ſilver and bullion, which comes to the mint to be coined, and to take care thereof. See Mint.

Master *of the Ordnance*, a great office, to whoſe care all the king's ordnance and artillery is committed. See Ordnance.

Master *of the Revels*, an officer, whoſe buſineſs is to order all things relating to the performance of plays, maſks, balls, *&c.* at court. Formerly he had alſo a juriſdiction of granting licences to all who travel to act plays, puppet-ſhews, or the like diverſions: neither could any new play be acted at either of the two houſes, till it had paſſed his peruſal and licence. But theſe powers are much abridged, not to ſay annihilated, by a late ſtatute for regulating play-houſes.

Master *of the Robes*. See the article Robes.

Master *of the Rolls*, a patent officer for life; who has the cuſtody of the rolls and patents which paſs the great ſeal, and of the records of the chancery. See Chancery.

In the abſence of the lord-chancellor, or keeper, he alſo ſits as judge in the court of chancery; and is, by Sir Edward Coke, called his *aſſiſtant*. See Chancellor.

At other times he hears cauſes in the rolls chapel, and makes orders and decrees.---He is alſo the firſt of the maſters of chancery, and hath their aſſiſtance at the rolls: but all hearings before him are appealable to the lord-chancellor.

He hath alſo his writ of ſummons to parliament, and ſits next to the lord chief juſtice of England, on the ſecond woolpack.

He hath the keeping of the parliament rolls, and the rolls houſe for his habitation; as alſo the cuſtody of all charters, patents, commiſſions, deeds, recognizances, which being made of rolls of parchment, gave riſe to the name. Antiently he was called *Clerk of the Rolls*.

In his gift are the ſix clerks in chancery, the examiners, three clerks of the petty-bag, and the ſix clerks of the rolls chapel, where the rolls are kept. See Rolls, Clerk, *&c.*

Master *of a Ship*, an officer, to whom is committed the direction of a merchant-veſſel; who commands it in chief, and is charged with the merchandizes aboard.

In the Mediterranean, the *Maſter* is frequently called *Patron*, and in long voyages *Captain*. See Captain.

It is the proprietor of the veſſel that appoints the *Maſter*; and it is the *Maſter* provides the equipage, hires the pilots, ſailors, *&c.*---The maſter is obliged to keep a regiſter of the ſeamen and officers, the terms of their contract, the receipts and payments, and in general, every thing relating to his commiſſion. See Ship.

Master *of the Temple*.—The founder of the order of the Templars, and all his ſucceſſors, were called *Magni Templi Magiſtri*; and ever ſince the diſſolution of the order, the ſpiritual guide and director of the houſe is called by that name. See Temple, Templar.

Master *of the Wardrobe*, an office in the lord-chamberlain's diſtrict, who has the direction of all the royal robes; as thoſe of the coronation, St. George's feaſt, the parliament-robes: as well as of the wearing apparel, collar of SS's, George and garter, *&c.*

He has alſo the charge and cuſtody of all former kings and queens robes, remaining in the Tower; all hangings, bedding, *&c.* for the king's houſe; the charge and delivery of velvet and ſcarlet allowed for liveries.

He has under him a clerk of the robes, and wardrobe-keeper, a yeoman, *&c.* See Wardrobe.

Burgher-Master.	See the article	Burgher.
Fire-Master.		Fire.
Quarter-Master.		Quarter.

Master-*Arch*. See the article Arch.

Master-*Vault*. See the article Vault.

MASTER-PIECE, an exquiſite, or extraordinary work or performance, in any art or ſcience.

Master-piece, *Chef d'œuvre*, is particularly uſed among the French, for a work, which thoſe who aſpire to be admitted maſter in any art or trade, are to perform in preſence of the maſters or jurands of that company, by way of ſpecimen of their capacity.

The *Maſter-Piece* of a carpenter, is a rampant curve of a ſtaircaſe, the ſpiral well adjuſted with the deſcent: That of a joiner, a flat-bottom cheſt, or a door-caſe, or a mantle-tree: That of a tiler, a luthern well conducted in the fourchette, with a ridge: That of a plumber, a little ciſtern *a cul de lampe*: That of a glazier, a pair of compartiments of glaſſes of ſeveral colours, hollowed, incaſtrated: That of paviors, a roſe in a free-ſtone or flint-pavement: That of a cordwainer, a turn-up ſhoe, *&c.*

MASTIC*, or Mastick, ΜΑΣΤΙΧΗ, a clear and ſweet reſinous gum, iſſuing from the trunk and large branches of the *Maſtic-tree*, or lentiſcus, either without, or with, inciſion. See Lentiscus.

* It has its name *Maſtic* from *maſticare*, to chew, by reaſon of its being continually chewed by the Turks, eſpecially the women.

Maſtic is temperate in heat, and of a dry, binding quality; ſo that it ſtrengthens the ſtomach, ſtays vomiting, ſtops iſſues of blood, and tickling coughs and catarrhs. It ſtrengthens the reins, and is a good cleanſer, and is for that reaſon preſcribed in ſeminal weakneſſes.

The jewellers mix *Maſtic* with turpentine and black ivory, and lay it under their diamonds, to give them a luſtre.

Maſtic is chiefly the product of Chio: The trees that yield it are cultivated with as much care as the vines. It brings in a revenue of eighty thouſand ducats *per annum* to the grand ſignior.—There is alſo a kind of black *Maſtic* brought from Egypt, which ſerves to ſophiſticate camphor. The gum *Maſtic* is in ſmall granules, and white if good; though age makes it turn yellowiſh.

MASTICATION, Masticatio, in medicine, the action of chewing; or of agitating the ſolid parts of our food between the teeth, by means of the motion of the jaws, the tongue, and the lips; whereby it is broke into ſmall pieces, impregnated with ſaliva, and ſo fitted for deglutition, and a more eaſy digeſtion in the ſtomach. See Digestion, Chylification, Deglutition, *&c.*

The mixture of ſaliva with the food, is of abſolute neceſſity; for the ſaliva imbibed within the parts, diſſolves the ſalts hid in them; and by ſo doing, prepares the food for fermentation in the ſtomach: The food therefore has the beginning of its digeſtion from the ſaliva, and its concluſion from the ferment in the ſtomach. See Saliva, Fermentation, *&c.*

MASTICATORIES, Masticatoria, in medicine, are ſuch remedies as are taken in at the mouth, and chewed; in order to promote the evacuation of the ſalival humour: as tobacco, ginger, pepper, ſage, roſemary, thyme, maſtic, *&c.*

MASTOIDES*, ΜΑΣΤΟΕΙΔΗΣ, in anatomy, the ſame with *Mammillaris*. See Mammillaris.

* The word comes from the Greek *μαστος*, nipple, dug, and *ειδος*, *imago*, figure.

Mastoides is applied to ſuch proceſſes in the body, as have the appearance of breaſts or dugs; ariſing from a broad baſis, and terminating in an obtuſe top.

Mastoides is ſometimes alſo applied to thoſe muſcles which ſtoop the head; proceeding from the neck-bone, and breaſt-bone, and terminating in the proceſs mammiformis.

MATCH, a kind of rope ſlightly twiſted, and prepared to retain fire, for the uſes of artillery, mines, fire-works, *&c.*

It is made of hempen tow, ſpun on the wheel like cord, but very ſlack; and is compoſed of three twiſts, which are afterwards again covered with tow; ſo that the twiſts do not appear: laſtly, it is boiled in lees of old wines; whence its colour.—This, when once lighted at the end, burns on gradually and regularly, without ever going out, till the whole be conſumed.

Since fuſees have been introduced in lieu of *Match*-lock muſkets, the conſumption of *Match* has been much leſs conſiderable than before.

MATER *Tenuis*, or *Pia* Mater. See Meninges, and Pia.

Mater *Dura*. See alſo Meninges, and Dura.

MATERIA, Matter. See the article Matter.

Materia *ſubtilis*, denotes a fine ſubtile matter, which the Carteſians ſuppoſe to pervade and penetrate, freely, the pores of all bodies, and to fill up all their pores, ſo as not to leave the leaſt vacuity or interſtice between them. See Cartesianism.

This machine they have recourſe to, to ſupport the doctrine of an abſolute plenum, and to make it conſiſtent with the phænomena of motion, *&c.* and accordingly make it act and move at pleaſure; but in vain: for were there any ſuch matter, in order for it to be able to fill up the vacuities of other bodies, it muſt, itſelf, be entirely void of any, *i. e.* be perfectly ſolid, (See Solidity) vaſtly more ſolid than gold, and therefore more ponderous, and reſiſt vaſtly more: (See Resistance) which is inconſiſtent with phænomena. See Vacuum and Plenum. Yet Sir Iſaac Newton allows of the exiſtence of a *ſubtile Matter*, or medium, vaſtly finer than air, penetrating the cloſeſt bodies, and contributing to the production of many of the phænomena of nature.—The exiſtence of ſuch a matter he argues from the experiment of two thermometers, which being incloſed in glaſs veſſels, 'one of them exhauſted of its 'air, and both carried from a cold to a warm place, the ther'mometer *in vacuo* grows warm, and riſes, almoſt as ſoon as 'that in the air; and if returned into the cold place, both 'cool and fall about the ſame.—Hence, ſays he, is not the 'heat of the warm room conveyed through the vacuum by the 'vibrations of a much ſubtiler medium than air, which re'mained *in vacuo*, after the exhauſtion of the air? And is not 'this medium the ſame with that whereby light is refracted, 'reflected, *&c.*?' See Medium.

MATERIAL, denotes ſomething compoſed of matter. See Matter.

In which ſenſe the word ſtands oppoſed to immaterial. See IMMATERIAL.

The Epicureans, Spinoſiſts, *&c.* own no other but *material* ſubſtances: See SUBSTANCE. Among cauſes, ſome are *material*, others formal: See CAUSE.

Material cauſes, having no underſtanding or liberty, muſt always act in the ſame manner, when under the ſame circumſtances. Philoſophers and divines diſpute, whether or no there be any *material* forms really diſtinct from matter? See FORM.

The Valentinians formerly applied the term *material* to all people but thoſe of their own ſect; aſſerting, that their ſouls periſhed with their bodies.—Thus alſo the Stoics maintained, that none but the ſoul of their wiſe men ſurvived the body. See GNOSTICS, STOICS, SOUL, IMMORTAL, *&c.*

MATERIAL *Circle.* See the article CIRCLE.

MATERIAL *Object.* See the article OBJECT.

MATERIALISTS, a ſect in the antient church, compoſed of perſons, who, being prepoſſeſſed with that maxim in the antient philoſophy, *Ex nihilo nihil fit, Out of nothing nothing can ariſe*, had recourſe to an eternal matter, on which they ſuppoſed God wrought in the creation; inſtead of admitting God alone as the ſole cauſe of the exiſtence of all things. See WORLD, and MATTER.

Tertullian vigorouſly oppoſes the docttine of the *Materialiſts*, in his treatiſe againſt Hermogenes, one of their number.

MATHEMATICAL *Points.* See the article POINT.

MATHEMATICS *, the ſcience of quantity; or a ſcience that conſiders magnitudes either as computable, or meaſurable. See QUANTITY, and MAGNITUDE.

* The word in its original μαθησις, ſignifies *diſcipline*, or *ſcience* in the general; and ſeems to have been applied to the doctrine of quantity, either by way of eminence, or by reaſon this having the ſtart of all other ſciences, the reſt took their common name therefrom. See SCIENCE.

For the origin of the *Mathematics*, Joſephus dates it before the flood, and makes the ſons of Seth obſervers of the courſe and order of the heavenly bodies: he adds, that to perpetuate their diſcoveries, and ſecure them from the injuries either of a deluge or a conflagration, they had them engraven on two pillars, the one of ſtone, the other of brick; the former of which, he ſays, was ſtanding in Syria in his days. See ASTRONOMY.

The firſt who cultivated *Mathematics* after the flood, were the Aſſyrians and Chaldeans; from whom, the ſame Joſephus adds, they were carried by Abraham to the Egyptians; who proved ſuch notable proficients, that Ariſtotle makes no ſcruple to fix the firſt riſe of *Mathematics* among them. From Egypt, five hundred eighty-four years before Chriſt, they paſſed into Greece through the hands of Thales, who having learnt geometry of the Egyptian prieſts, taught it in his own country. After Thales, comes Pythagoras; who among other mathematical arts, paid a peculiar regard to arithmetic; fetching the greateſt part of his philoſophy from numbers: He was the firſt, as Laertius tells us, who abſtracted geometry from matter; and to him we owe the doctrine of incommenſurable magnitude, and the five regular bodies, beſides the firſt principles of muſic and aſtronomy. Pythagoras was ſucceeded by Anaxagoras, Oenopides, Briſo, Antipho, and Hippocrates of Scio; who all applied themſelves particularly to the quadrature of the circle, the duplicature of the cube, *&c.* but the laſt with moſt ſucceſs: This laſt is alſo mentioned by Proclus, as the firſt who compiled elements of *Mathematics.*

Democritus excelled in *Mathematics* as well as phyſics; though none of his works in either kind are extant: the deſtruction of which, ſome authors lay at Ariſtotle's door. The next in order is Plato, who not only improved geometry, but introduced it into phyſics, and ſo laid the foundation of a ſolid philoſophy.—Out of his ſchool proceeded a crowd of *Mathematicians.* Proclus mentions thirteen of note; among whom was Leodamus, who improved the analyſis firſt invented by Plato; Theætetus, who wrote elements; and Archytas, who has the credit of being the firſt who applied *Mathematics* to uſe in life. Theſe were ſucceeded by Neocles and Theon, the laſt of whom contributed to the elements. Eudoxus excelled in arithmetic and geometry, and was the firſt founder of a ſyſtem of aſtronomy. Menechmus invented the conic ſections, and Theudius and Hermotimus improved the elements.

For Ariſtotle, his works are ſo ſtored with *Mathematics*, that Blancanus compiled a whole book of them: Out of his ſchool came Eudemus and Theophraſtus; the firſt of whom wrote of numbers, geometry, and inviſible lines; the latter a mathematical hiſtory. To Ariſteus, Iſidorus, and Hypſicles, we owe the books of ſolids; which, with the other books of elements, were improved, collected and methodized by Euclid, who died 284 years before Chriſt.

An hundred years after Euclid, came Eratoſthenes and Archimedes. Cotemporary with the latter was Conon, a geometrician and aſtronomer. Soon after came Apollonius Pergæus; whoſe conics are ſtill extant. To him are likewiſe aſcribed the fourteenth and fifteenth books of Euclid, which are ſaid to have been contracted by Hypſicles. Hipparchus and Menelaus wrote on the ſubtenſes in a circle, the latter alſo on ſpherical triangles: Theodoſius's three books of ſphericks are ſtill extant. And all theſe, Menelaus excepted, lived before Chriſt.

A. D. 70. Ptolemy of Alexandria was born; the prince of aſtronomers, and no mean geometrician: He was ſucceeded by the philoſopher Plutarch, of whom we have ſtill extant ſome mathematical problems. After him came Eutocius, who commented on Archimedes, and occaſionally mentions the inventions of Philo, Diocles, Nicomedes, Sporus, and Heron, on the duplicature of the cube. To Cteſebes of Alexandria, we owe our pumps; and Geminus, who came ſoon after, is preferred by Proclus to Euclid himſelf.

Diophantus of Alexandria was a great maſter of numbers, and the firſt inventor of algebra: Among others of the antients, Nicomachus is celebrated for his arithmetical, geometrical, and muſical works, Serenus for his books on the ſection of the cylinder; Proclus, for his comments on Euclid; and Theon has the credit among ſome, of being author of the books of *Elements* aſcribed to Euclid. The laſt to be named among the antients, is Pappus of Alexandria, who flouriſhed *A. D.* 400, and is celebrated for his books of *mathematical* collections ſtill extant.

See the progreſs of each branch of *Mathematics*, with the authors who have wrote on it, under the reſpective heads; as GEOMETRY, ALGEBRA, ASTRONOMY, *&c.*

Mathematics are diſtinguiſhed with regard to their end, into

Speculative MATHEMATICS, which reſt in the bare contemplation of the properties of things; and

Practical MATHEMATICS, which apply the knowledge of thoſe properties to ſome uſes in life.

With regard to their object, *Mathematics* are divided into *pure* or *abſtract*; and *mixed.*

Pure MATHEMATICS, conſider quantity, abſtractedly; and without any relation to matter or bodies.

Mixed MATHEMATICS, conſider quantity as ſubſiſting in material being: —*e. gr.* length in a road, breadth in a river, height in a ſtar, or the like.

Pure Mathematics again, either conſider quantity as diſcrete, and ſo computable, as arithmetic; or as concrete, or continued, and ſo meaſurable, as geometry and trigonometry. See ARITHMETIC, GEOMETRY, *&c.*

Mixed Mathematics are very extenſive, and are diſtinguiſhd by various names, as the ſubjects they conſider, and the views wherein they take them, vary: it being ſufficient to determine an art to be a branch of *mixed Mathematics*, that pure *Mathematics* are applicable thereto, *i. e.* that it may be explained and demonſtrated from the principles of arithmetic and geometry. Such are

Mechanics, which conſider motion, or the laws of moving bodies. See MOTION.—Hydroſtatics, which conſider the laws of fluids, or of bodies gravitating in fluids. See FLUID.—Pneumatics, the air, with regard to the laws and menſuration thereof. See AIR.—Hydraulics, the motion of fluids. See FLUIDS.—Optic, direct light or viſion. See VISION.—Catoptrics, reflected viſion. See REFLECTION.—Dioptrics, refracted viſion. See REFRACTION.—Perſpective, the images of objects, in order to delineate or repreſent them. See PERSPECTIVE.—Aſtronomy, the univerſe, and the phænomena of the heavens. See SPHERE, and STAR.—Geography, the earth, both as in itſelf, and in its affections. See EARTH.—Hydrography, the ſea, principally as navigable. See NAVIGATION.—Chronology, time, with regard to the meaſuring and diſtinguiſhing thereof. See TIME, YEAR, EPOCHA, *&c.*—Gnomonics, or Dialling, ſhadows, in order for determining the hour of the day. See DIAL, and SHADOW.—Pyrotechny, artificial fires, with regard both to diverſion, and to the uſes of war. See FIRE, ROCKETS, *&c.*—Military architecture, the ſtrength of places, with regard to their defence againſt an enemy. See FORTIFICATION.—Civil architecture (now become a branch of *Mathematics*) buildings. See BUILDING.—Muſic, ſounds, and their effects on the ear. See SOUND, TUNE, *&c.*

For the elements of each, ſee the reſpective heads: For an accurate ſyſtem of all the parts above-mentioned (Muſic alone excepted) orderly digeſted, and clearly demonſtrated, ſee the excellent Wolfius's *Elementa matheſeos univerſæ.*

MATHURINS. See the article TRINITARIANS.

MATRASS, MATRACIUM, or BOLT-HEAD, a glaſs veſſel, uſed by chymiſts in diſtillation and other operations.

The *Matraſs* is made in form of a bottle, ſomewhat bellied in the middle, with a long narrow neck: It is luted with earth, when it is to be placed on a very hot fire. When it is required it ſhould be ſtopped very cloſe, they ſeal it hermetically. See BOLT-HEAD.

MATRICE, or MATRIX. See the article MATRIX.

MATRICE, or MATRIX, in dying, is applied to the five ſimple colours, whence all the reſt are derived or compoſed. Theſe are, the black, white, blue, red, and fallow or root colour. See COLOURS, and DYING.

MATRICES, or MATRIX'S, uſed by the letter-founders, are thoſe little pieces of copper or braſs, at one end whereof are engraven, dent-wiſe, or *en creux*, the ſeveral characters uſed in the compoſing of books.

Each character, virgula, and even point, in diſcourſe, has its ſeveral *Matrix*, and of conſequence its ſeveral puncheon to ſtrike it. It is the engravers on metal that cut or grave the *Matrices*. See ENGRAVING.

When types are to be caſt, the *Matrice* is faſtened to the end of a mould, ſo diſpoſed, as that when the metal is poured on it, it may fall into the creux or cavity of the *Matrice*, and take the figure and impreſſion thereof. See *Letter*-FOUNDERY, and PRINTING.

MATRICES uſed in coining, are pieces of ſteel in form of dyes: whereon are engraven the ſeveral figures, arms, characters, legends, &c. wherewith the ſpecies are to be ſtamped.

The engraving is performed with ſeveral puncheons, which being formed in relievo, or prominent, when ſtruck on the metal, make an indented impreſſion, which the French call *en creux*. See the manner hereof under ENGRAVING *on ſteel*. See alſo COINING.

MATRICULA, a regiſter kept of the admiſſion of officers, and perſons entered into any body, or ſociety, whereof a liſt is made. See REGISTER.

Among eccleſiaſtical authors, we find mention made of two kinds of *Matricula's*: the one containing a liſt of the eccleſiaſtics, called *Matricula clericorum*: the other of the poor ſubſiſted at the expence of the church, called *Matricula pauperum*.

MATRICULA was alſo applied to a kind of alms-houſe, where the poor were provided for. It had certain revenues appropriated to it, and was uſually built near the church; whence the name was alſo frequently given to the church itſelf.

MATRIX *, in anatomy, the *womb*; or that part of the female of any kind, wherein the fœtus is conceived, and nouriſhed till the time of its delivery. See FOETUS, CONCEPTION, GENERATION, &c.

* The antient Greeks called the *Matrix*, μητρη, from μητηρ, mother: whence, diſorders of the womb are frequently called *Fits of the mother*. They alſo called it ὑϛηρα, as being the laſt of the entrails, by its ſituation. Sometimes they alſo called it φυσις, or *natura*; and *vulva*, from *volvo*, to fold or envelop, or *valvæ*, doors.

Plato and Pythagoras took the *Matrix* for a diſtinct animal within another. P. Ægineta obſerves, that the *Matrix* may be taken away from a woman, without her death; and there have been inſtances of people, who have lived a long time after the loſs of the *Matrix*. Rhaſis and Paræus obſerve, that ſome perſons have been cured of diſeaſes, by having the *Matrix* extirpated. In 1669, a child was produced at the French academy, which had been conceived out of the *Matrix*, and which nevertheleſs had grown to the length of ſix inches. See EMBRYO, FOETUS, &c.

The *Matrix* in women is ſituate in the pelvis, or capacity of the hypogaſtrium, between the urinary bladder and the inteſtinum rectum, and reaches as far as the flanks: It is ſurrounded and defended by mighty bones; before, by the os pubis; behind, by the ſacrum; on each ſide, by the ilium and iſchium. It is in figure ſomewhat like a flat flaſk, or dried pear. In women with child, it expands and receives different forms, according to the different times and circumſtances of geſtation. It has ſeveral coats, arteries, veins, nerves and ligaments, and is interwoven with ſeveral different kinds of fibres.

Anatomiſts divide the *Matrix* into the *fundus*, and *cervix*; a broad part, and a neck. It is in extent, from the extremity of the one to that of the other, about three inches in length; its breadth at the fundus is about two and a half, and its thickneſs two. It has but one cavity, unleſs we diſtinguiſh between the cavity of the uterus, and that of its neck. That of the cervix is very ſmall, ſcarce ſufficient to contain a garden-bean. At the bottom or neck, towards the fundus, it grows very narrow in virgins; the extremity of it is called the *oſculum internum*: In pregnant women it opens, more eſpecially towards the time of delivery. The other and lower orifice of the neck, towards the vagina, called *oſculum externum*, is a little prominent, reſembling, in ſome meaſure, the glands of the virile organ.—See *Tab. anat.* (*ſplanc.*) *fig.* 9.

The ſubſtance of the *Matrix* is membranous and carnous: It conſiſts of three tunics; or according to ſome, who deny that name to the middle ſubſtance, of two only. The external tunic, called alſo *communis*, is derived from the peritonæum, and conſiſts of two lamellæ; the exterior of which is pretty ſmooth, the interior rugged and uneven: This membrane inveſts the whole *Matrix*, and connects it to the inteſtinum rectum, bladder, &c. The middle tunic is very thick, and compoſed of ſtrong fibres variouſly diſpoſed: Some think it contributes to the excluſion of the fœtus; though others imagine, it ſerves only to recover the tone, after any violent diſtenſion. The inner tunic is nervous.

The *Matrix* is connected by its neck to the vagina; behind, by its outward common membrane, and before by the ſame to the bladder: Its ſides are tied to other parts; but the fundus is left looſe, that it may expand and dilate more freely. Its ligaments are four, two of which are called *broad*, and two *round*, from their figure. The broad ligaments are membranous, looſe, and ſoft; whence they have been compared by ſome to the wings of bats, and called *alæ veſpertilionum*. The round ligaments are of a firmer texture, and conſiſt of a double membrane, wrapped up in its arteries, veins, nerves, and lymphæducts. The blood-veſſels, both in theſe and the round ligaments, make a great part of what is called their *ſubſtance*: Theſe, as well as the others, ſerve to keep the womb in a right poſition; and are very liable to be injured by unſkilful midwives. See LIGAMENT.

On each ſide of the fundus of the womb, ariſes a duct, which opens into the womb with a ſmall orifice, but in its progreſs enlarges, and towards the end is contracted again: At the end next the ovaria, which is at liberty, it expands again into a kind of foliage fringed round; which expanſion Fallopius, the firſt diſcoverer, imagined like the end of a trumpet; whence he called the whole duct, *tuba*. It conſiſts of a double membrane. Both veins and arteries are very numerous here, eſpecially the latter, which, by various ramifications and contorſions, make the main ſubſtance of them. Dr. Wharton gives them valves, but the other anatomiſts diſallow it. See FALLOPIAN *Tube*.

Suffocation of the MATRIX. See SUFFOCATION.

Speculum MATRICIS. See the article SPECULUM.

MATRIX is alſo applied to places proper for the generation of vegetables, minerals, and metals.

Thus the earth is the *Matrix* wherein ſeeds ſprout; marcaſites are conſidered as the *Matrixes* of metals. See FOSSIL, MINERAL, MARCASITE, &c.

MATRIX, is alſo applied figuratively, to ſeveral things, wherein there appears a kind of generation; and where certain things ſeem to acquire a new being, or at leaſt a new manner of being. Of which kind are the moulds wherein the printer's types or letters are caſt, and thoſe uſed in ſtriking money and medals, called alſo *coin*. See COIN, and COINING.

MATRON, MATRONA, among the Romans, ſignified a married woman, and ſometimes alſo the mother of a family.

There was, however, ſome difference between *Matrona*, and *mater-familias*. Servius ſays, that ſome imagined the difference to lie in this, that *Matrona* was a woman who had one child, and *mater-familias*, ſhe that had ſeveral. But others, particularly Aulus Gellius, take the name *Matrona* to belong to a married woman, whether ſhe had any children or no; the hope and expectation of having them, being enough to warrant the title of mother, *Matrona*: and for which reaſon it is, that marriage is called *matrimony*. This opinion is ſupported by Nonius.

MATRONALIA, feaſts of the Roman ladies, or rather *matrons*, celebrated on the calends of March, in honour of the god Mars.

No men living in celibate, were allowed to aſſiſt at the feaſt.

MATROSSES, ſoldiers in the train of artillery, next below the gunners; their duty is to aſſiſt the gunners in traverſing, ſpunging, loading, and firing of guns, &c. See ARTILLERY, &c.

They carry fire-locks, and march along with the ſtore-waggons, both as a guard, and to help in caſe a waggon ſhould break down.

MATTADORE. See the article OMBRE.

MATTER, MATERIA, *Body*; or an extended, ſolid, diviſible, moveable, and paſſive ſubſtance, the firſt principle of all natural things, from the various arrangements and combinations whereof, all bodies are formed. See BODY.

Ariſtotle makes three principles, *Matter*, form, and privation: Which laſt the Carteſians throw out of the number; and others, the two laſt. See PRINCIPLE.

The properties of *Matter* we are pretty well acquainted with, and can reaſon about its diviſibility, ſolidity, &c. (See DIVISIBILITY, &c.) But the eſſence thereof, or the ſubject wherein theſe properties reſide, or their ſubſtratum, is ſtill a myſtery.

Ariſtotle ſpeaks very darkly on the ſubject, defining *Matter* to be *nec quid*, *nec quantum*, *nec quale*, nor any certain determinate thing at all; which many of his followers interpret ſo, as to believe, that *Matter* does not at all exiſt. See BODY.

The Carteſians make the eſſence of *Matter* to conſiſt in extenſion; arguing, that ſince the properties abovementioned are all that are eſſential to *Matter*, ſome of them muſt conſtitute its eſſence: and ſince extenſion is conceived prior to all the reſt, and is that, without which none of the reſt can be conceived, extenſion is that which conſtitutes the eſſence of *Matter*.—But the concluſion, here, is unjuſt; for on this principle, the exiſtence of *Matter*, according to Dr. Clarke, would have the faireſt title to conſtitute its eſſence, the *τὸ exiſtere* being conceived prior to all properties, and even to extenſion.

Since then the word extenſion appears to go further, and to be more general than *Matter*; that impenetrable ſolidity, which is eſſential to all *Matter*, and to *Matter* alone, and from which all its properties manifeſtly flow, may, with more propriety, be called the *eſſence of Matter*. See ESSENCE.

Again, if extenſion were the eſſence of *Matter*, and ſo *Matter* and ſpace the ſame thing; it would follow, that *Matter* is infinite and eternal, that it is a neceſſary being, and could neither be created nor annihilated; which is abſurd. Beſides, it appears both from the nature of gravity, the motions of comets, the vibrations of pendulums, &c. that ſpace is not *Matter*: and therefore it is not extenſive, but ſolid, impenetrable extenſion which has a power of reſiſting, that conſtitutes *Matter*. See VACUUM, and EXTENSION.

Many among the old philoſophers maintained the eternity of *Matter*, out of which they ſuppoſed all things to be formed by the hands of nature; as being unable to conceive how any thing ſhould be formed out of nothing. Plato maintained, that *Matter* had exiſted eternally, and concurred with God in the production of all things, as a paſſive principle, or a kind of collatural cauſe. See ETERNITY.

Matter and form, the two ſimple and original principles of all things, according to the antients, compoſed ſome ſimple natures, which they called *elements*; out of the various combinations whereof, all natural things were compoſed. See ELEMENT.

Dr. Woodward ſeems of an opinion, not very unlike it; *viz.* That *Matter* is originally and really very different, being at its firſt creation divided into ſeveral ranks, ſets or kinds of corpuſcles, differing in ſubſtance, gravity, hardneſs, flexibility, figure, ſize, *&c.* from the various compoſures and combinations of which, ariſe all the varieties in bodies, as to colour, hardneſs, gravity, taſtes, *&c.*—But Sir Iſaac Newton takes all thoſe differences to reſult from the various arrangements of the ſame *Matter*; which he judges to be homogeneous and uniform in all bodies. See CORPUSCLE, and PARTICLE.

Beſides the properties of *Matter* hitherto known, Sir Iſaac Newton has diſcovered a new one, *viz.* ‘That of attraction, or that every particle of *Matter* has an attractive power, or a tendency towards every other particle: which power is ſtrongeſt in the point of contact, and ſuddenly decreaſes, inſomuch that it acts no more at the leaſt ſenſible diſtance, and at a greater diſtance is converted into a repellant force, whereby the parts fly from each other. On this principle of attraction, he accounts for the coheſion of the particles of bodies, otherwiſe inexplicable.’ See COHESION.

For he takes occaſion to obſerve, ‘That all bodies ſeem to be compounded of hard particles. Even light itſelf, and all other the moſt volatile of fluids; inſomuch as hardneſs may be eſteemed a property of all incompounded *Matter*: at leaſt the hardneſs of *Matter* ſtands on as good a footing as that of its impenetrability; all the bodies we know of, being either hard themſelves, or capable of being hardened. Now if compound bodies be ſo hard, as we find ſome of them, and yet are very porous, and conſiſt of parts which are only laid together; the ſimple particles, which are void of pores, and were never yet divided, muſt be much harder. Now ſuch hard particles being heaped together, can ſcarce touch one another in more than a few points, and therefore muſt be ſeparable with much leſs force than is requiſite to break a ſolid particle, whoſe parts touch in all the ſpace, without any pores or interſtices to weaken their coheſion: How then ſhould ſuch very hard particles, only laid together, and touching only in a few points, ſtick together, and that ſo firmly as they do, without the aſſiſtance of ſomething that cauſes them to be attracted or preſſed towards each other?’

The ſame great author obſerves further, ‘That the ſmalleſt particles may cohere by the ſtrongeſt attractions, and compoſe bigger particles of weaker virtue; and many of theſe may cohere, and compoſe bigger particles, whoſe virtue is ſtill weaker, and ſo on for divers ſucceſſions, until the progreſſion end in the biggeſt particles; on which the operations in chymiſtry, and the colours of natural bodies, depend; and which, by cohering, compoſe bodies of a ſenſible magnitude. If the body is compact, and bends or yields inward to preſſion; without any ſliding of its parts; it is *hard*, and *elaſtic*; returning to its figure with a force ariſing from the mutual attraction of its parts. If the parts ſlide from one another, the body is *malleable* or *ſoft*. If they ſlip eaſily, and are of a fit ſize to be agitated by heat, and the heat is big enough to keep them in agitation, the body is *fluid*; and if it be apt to ſtick to things, it is *humid*. And the drops of every fluid affect a round figure by the mutual attraction of their parts, as the globe of the earth and ſea affects a round figure, by the mutual attraction of gravity of its parts.’ See ATTRACTION.

Again, ‘Since metals diſſolved in acids, attracts but a ſmall quantity of the acid, their attractive force reaches but to a ſmall diſtance. Now, as in algebra, where affirmative quantities ceaſe, there negative ones begin; ſo in mechanics, where attraction ceaſes, there a repulſive virtue muſt ſucceed. That there really is ſuch a virtue, ſeems to follow, from the reflections and inflections of the rays of light; the rays being repelled by bodies in both theſe caſes, without the immediate contact of the reflecting or inflecting body. The ſame thing ſeems alſo to follow from the emiſſion of light; a ray, as ſoon as ſhaken off from a ſhining body by the vibrating motion of the parts of the body, and got beyond the reach of attraction, being driven away with exceeding great velocity: for that force, which is ſufficient to turn it back in reflection, may be ſufficient to emit it. It ſeems alſo to follow from the production of air and vapour; the particles, when they are ſhaken off from the body by heat or fermentation, ſo ſoon as they are beyond the reach of the attraction of the body, receding from it, and alſo from one another, with great ſtrength, and keeping at a diſtance, ſo as ſometimes to take up above a million of times more ſpace than they did before in the form of a denſe body. Which vaſt contraction and expanſion ſeems unintelligible, by feigning the particles of air to be ſpringy, and ramous, or rolled up like hoops, or by any other means than a repulſive power. The particles of fluids, which do not cohere too ſtrongly, and are of ſuch a ſmallneſs, as renders them moſt ſuſceptible of thoſe agitations which keep liquors in a fluor, are more eaſily ſeparated and rarefied into vapour, *i. e.* in the language of the chymiſts, they are *volatile*; rarefying with an eaſy heat, and condenſing with cold. But thoſe which are groſſer, and ſo leſs ſuſceptible of agitation, or cohere by a ſtronger attraction, are not ſeparated without a ſtronger heat, or perhaps not without fermentation. And theſe laſt are the bodies, which chymiſts call *fixed*, and being rarefied by fermentation, become true permanent air; thoſe particles receding with the greateſt force, and being moſt difficultly brought together, which upon contact cohere moſt ſtrongly. And becauſe the particles of permanent air are groſſer, and ariſe from denſer ſubſtances, than thoſe of vapours; thence it is that true air is more ponderous than vapour; and that a moiſt atmoſphere is lighter than a dry one, quantity for quantity. From the ſame repelling power it ſeems to be, that flies walk upon the water without wetting their feet; and that the object-glaſſes of long teleſcopes lie upon one another without touching; and that dry powders are difficultly made to touch one another ſo as to ſtick together, unleſs by melting them, or wetting them with water, which by exhaling may bring them together; and that two poliſhed marbles, which by immediate contact ſtick together, are difficultly brought ſo cloſe together, as to ſtick.’ See REPELLING, and REPULSION.

He further obſerves, ‘That all things conſidered, it ſeems probable, God, in the beginning, formed *Matter* in ſolid, maſſy, hard, impenetrable, moveable particles, of ſuch ſizes, figures, and with ſuch other properties, and in ſuch proportion to ſpace, as moſt conduced to the end for which he formed them; and that theſe primitive particles being ſolid, are incomparably harder than any porous bodies compounded of them; even ſo very hard, as never to wear, and break in pieces: no ordinary power being able to divide, what God himſelf made one in the firſt creation. While the particles continue entire, they may compoſe bodies of one and the ſame nature and texture in all ages; but ſhould they wear away, or break in pieces, the nature of things depending on them, would be changed. Water and earth, compoſed of old worn particles and fragments of particles, would not be of the ſame nature and texture now, with water and earth compoſed of entire particles in the beginning. And therefore that nature may be laſting, the changes of corporeal things are to be placed only in the various ſeparations, and new aſſociations and motions of theſe permanent particles; compound bodies being apt to break, not in the midſt of ſolid particles, but where thoſe particles are laid together, and touch in a few points.’

It ſeems farther, ‘That theſe particles have not only a *vis inertiæ*, accompanied with ſuch paſſive laws of motion, as naturally reſult from that force, but alſo that they are moved by certain active principles, ſuch as is that of gravity, and that which cauſeth fermentation, and the coheſion of bodies. Theſe principles are to be conſidered not as occult qualities, ſuppoſed to reſult from the ſpecific forms of things, but as general laws of nature, by which the things themſelves are formed; their truth appearing to us by phænomena, though their cauſes are not yet diſcovered.’ See PARTICLE; ſee alſo FERMENTATION, FIRMNESS, GRAVITATION, ELASTICITY, HARDNESS, FLUIDITY, SALT, ACID, *&c.*

Hobbes, Spinoſa, *&c.* maintain all the beings in the univerſe to be *material*, and their differences to ariſe from their different modifications, motions, *&c.* Thus, *Matter* extremely ſubtile, and in a briſk motion, they conceive, may think; and ſo exclude all ſpirits out of the world. See SPIRIT.

Dr. Berkeley, on the contrary, argues againſt the exiſtence of *Matter*; and endeavours to prove, that it is a mere ens rationis; and has no exiſtence out of the mind: ‘Thus, ſays he, that neither our thoughts, paſſions, nor ideas, formed by the imagination, exiſt without the mind, is evident; nor is it leſs evident, that the various ſenſations or ideas imprinted on the ſenſe, however blended or combined together (that is, whatever objects they compoſe) cannot exiſt otherwiſe, than as in a mind perceiving them. This no man can doubt of, that attends to what is meant by the term *exiſt*, when applied to ſenſible things. Thus I ſay, the table I write on exiſts, *i. e.* I ſee and feel it, and if I were out of my ſtudy, I ſhould ſay it exiſted; meaning thereby, that if I were in my former ſituation, I ſhould ſee and feel it as before. Again, I ſay there was odour, *i. e.* I ſmelt it; a ſound, *i. e.* it was heard; a colour or touch, *i. e.* it was perceived by ſight or touch. This is the utmoſt that can be meant by ſuch expreſſions; for as to the abſolute exiſtence of any unthinking being, diſtinct from its being perceived, it is a chimæra. Their *eſſe* is *percipi*; nor is it poſſible they ſhould have any exiſtence out of the minds that perceive them. Again, what are hills and 'trees, &c. but things perceived by ſenſe; and what do we 'perceive, but our own ideas or ſenſations: and can any one of 'theſe, or any combination of them, exiſt unperceived? What 'are light and colours, heat and cold, extenſion and figure, 'but ſo many ſenſations, ideas, or impreſſions on the ſenſe? 'And is it poſſible, even in thought, to ſeparate theſe from 'perception? It is next to ſelf-evident therefore, that all the 'choir of heaven, and furniture of the earth; in a word, all 'the bodies that compoſe the ſyſtem of the world, have not 'any ſubſiſtence out of a mind; their *eſſe* is nothing more 'than their being perceived: and therefore as long as they do 'not exiſt in me, *i. e.* are not perceived by me, nor any other 'created ſpirit; they have no ſhadow of exiſtence at all, un'leſs perhaps in the mind of ſome eternal ſpirit. It appears 'therefore with the light of an axiom, that there is not any 'other ſubſtance but ſpirit, &c.' See *Inquiry into principles of human knowledge*. See alſo EXTERNAL *World*.

Ætherial MATTER.
Subtile MATTER.
Quantity of MATTER.
See the article
ÆTHERIAL.
MATERIA *Subtilis*.
QUANTITY.

MATTER *of Deed*, ſignifies a truth to be proved, though not by any record: by which it ſtands contra-diſtinguiſhed from

MATTER *of record*, which is that which may be proved by ſome *record*. See PRISONER.

If a man be ſued to an exigent, during the time he was in the king's wars; this is *Matter in deed*, and not *Matter of record*: and therefore he that will alledge this for himſelf, muſt come before the ſcire facias, or execution be awarded againſt him: for after that, nothing will ſerve but *Matter of record*; that is, ſome error upon the proceſs appearing upon record.

Foreign MATTER. See the article FOREIGN.

MATTINS*, the firſt part of the daily ſervice in the Romiſh church. See HOURS.

* The word comes from the Italian *Mattina*, or the French *Matin*, morning.

Mattins is ſometimes held early in the morning, ſometimes at midnight, and ſometimes the even before. And infirm people, even in monaſteries, are diſpenſed from attending *Mattins*.

MATULAM.—*Hydrops ad* MATULAM. See the article HYDROPS.

MATURANTIA, in medicine, &c. *ripeners*; or ſuch things as promote maturation. See RIPENERS, and SUPPURATION.

MATURATION, in pharmacy, a preparation of fruits, or other ſimples, gathered before their *Maturity*; to fit them to be eaten. See FRUIT, &c.

MAUNCH, the figure of an antient ſleeve of a coat, ſo called by the heralds; and is born in many gentlemen's eſcutcheons: as in the earl of Huntingdon's.—See *Tab. Herald. fig.* 40.

MAUNDY, or MAUNDEY *Thurſday*, *Dies* MANDATI, the *Thurſday* before Eaſter; ſo called from the French *Mande*, i. e. *ſportula*; it being a cuſtom on that day to give a largeſſe or bounty to certain poor men, whoſe feet the king formerly waſhed, as a mark of humility, and in obedience to the command of Chriſt.

MAUSOLEUM*, a magnificent tomb, or funeral monument decorated with architecture and ſculpture, and inſcribed with an epitaph; erected in honour of ſome emperor, prince, or other illuſtrious perſon. See TOMB.

* The word comes from *Mauſolus*, the name of a king of Caria, to whom Artemiſia, his widow, erected a moſt ſtately monument, that has ſince been numbered among the wonders of the world; calling it from his name, *Mauſoleum*. See MONUMENT.

MAUSOLEUM, is alſo uſed to ſignify the decoration of a fictitious tomb, or catafalcha, in a funeral pomp.

MAW: See ABOMASUS.

MAXILLÆ, in anatomy, the *jaws*; or thoſe parts of an animal wherein the teeth are ſet, and which ſerve for maſticating the food. See MASTICATION, and TOOTH.

The *Maxilliæ* are two in number, denominated from their ſituation, *ſuperior*, and *inferior*.

MAXILLA *ſuperior*, or the upper jaw, is immoveable in man, and all other animals we know of; excepting parrots, crocodiles, and the acus vulgaris, or gar-fiſh.—Vid. *Ray Synopſ. Piſc.* p. 109.

It conſiſts of eleven bones, joined to each other per harmoniam; five diſpoſed on each ſide, and one in the middle. Their names are the zygoma, os maxillare, os unguis, os naſi, os palati, and vomer: See ZYGOMA, &c. In this jaw are alveoli or ſockets for ſixteen teeth—See *Tab. anat.* (*oſteol.*) *fig.* 1. *lit. d.*

MAXILLA *inferior*, or the lower jaw, only conſiſts of two bones, which unite in the middle of the chin, by the intervention of a cartilage, which hardens as the child grows; and at length, about the age of ſeven years, becoming bony, joins the two bones into a continued one, reſembling the Greek υ,—See *Tab. anat.* (*oſteol.*) *fig.* 1. *lit. e.*

It conſiſts of two tables, betwixt which is a ſpongy ſubſtance, in children medullary. The fore-part is ſhallow, juſt ſufficient to afford ſockets for ſixteen teeth. It has two proceſſes, the corone and condyloides, (which ſee) four holes or foramina for the paſſage of veſſels, and five pair of proper muſcles, *viz.* the crotaphytes or temporal, the maſſeter, biventer or digaſtraicus, pterygoideus internus, and pterygoideus externus. See each its place. CROTAPHYTES, MASSETER, &c.

MAXILLARY *Gland*, MAXILLARIS, *Glandula*, a conſiderable gland of the conglomerate kind, ſituate on the inſide, under the lower jaw-bone, near the muſculus digaſtricus.

It diſcharges itſelf by ſeveral branches of ducts, which form one trunk that paſſes under mylohyoideus, and meets with the *Maxillary gland* of the other ſide within the fore teeth of the lower jaw, having diſtinct orifices, with a papilla on each ſide the frænum linguæ. See GLAND, and MOUTH.

MAXIM, denotes an eſtabliſhed propoſition or principle.

In which ſenſe it amounts to much the ſame with axiom. See AXIOM.

Maxims, are a kind of propoſitions, which have paſſed for principles of ſcience; and which being ſelf-evident, have been ſuppoſed innate. See INNATE.

MAXIMUM, in mathematics, denotes the greateſt quantity attainable in any given caſe.

By which it ſtands oppoſed to *minimum*. See MINIMUM.

Methodus de MAXIMIS & *Minimis*, a method ſo called, in uſe among mathematicians, whereby they arrive at the greateſt or leaſt poſſible quantity attainable in any caſe.

If the ſemi-ordinates of any curve continually increaſe or decreaſe to ſome certain term, which once paſſed, they begin again to increaſe or decreaſe, the method whereby their *Maxima & minima*, i. e. their greateſt and leaſt ſtates is determined, is called the method *de Maximis & minimis*; which, it is true, may be uſed to determine other quantities that increaſe or decreaſe to any certain term; but then they muſt always be repreſented by the ſemi-ordinates of curves.

If a flowing quantity in an equation be propoſed to be determined to any extreme value.—The rule is: Having put the equation into fluxions, let the fluxion of that quantity (whoſe extreme value is ſought) be ſuppoſed $=0$; by this means all thoſe members of the equation, in which it is found, will vaniſh, and the remaining ones will give the determination of the *Maximum* or *minimum* deſired.

The reaſon of the rule is, that every *Maximum* or *minimum* is in its own nature a ſtable quantity: To determine therefore any flowing quantity to a *Maximum* or *minimum*, is to make it (inſtead of a flowing) a permanent one; but the fluxion of a permanent quantity is equal to nothing.—This we ſhall illuſtrate by an example or two.

To determine the greateſt or leaſt applicate in an algebraic curve. Since in curves that have a *Maximum* and a *minimum* the tangent TM (*Tab. analyſis fig.* 4, and *fig.* 26.) degenerates at length into DE, and becomes parallel to the axis, and ſo the perpendicular MH coincides with the greateſt or leaſt applicate CG; in the caſe of *Maximum* and *minimum*, the ſub-tangent TP becomes infinite, and the ſub-normal PH equal to nothing, but $PH = ydy : dx$. If then $ydy : dx = 0$; we ſhall find $dy = 0$, and becauſe of $PT = ydx : dy = \infty$ (the note of infinity) $dx = \infty$.

It is poſſible for the tangent HG (*fig.* 5.) to lie directly againſt the ſemi-ordinate GC; in which caſe the ſub-tangent PT is equal to nothing, and the ſub-normal PH infinite. But $PT = ydx : dy = 0$; therefore if $ydx : dy = 0$, we ſhall have $dx = 0$; or becauſe of $PH = ydy : dx = \infty$, we find $dy = \infty$. Both dx and y being, in reſpect of dy, infiniteſimals. From the equation of the curve therefore we are to find the value of dy, which is to be made equal either to nothing, or to infinity, that we may have the value of the abſciſſe, to which the greateſt applicate is co-ordinate.

To cut a right line AB (*fig.* 6.) in ſuch a manner in D, that the rectangle AD and DB ſhall be the greateſt that can poſſibly be thus conſtructed. Let $AB = a$, $AD = x$, then will $DB = a - x$; conſequently $AD.\ DB = ax - xx$ ſome *Maximum*; and hence its differential will be equal to nothing, as being conceived at a circle, to which

$$ax - xx = yy.$$

Wherefore $adx - 2xdx = 2ydy = 0$

$$a - 2x = 0$$

$$\tfrac{1}{2}a = x.$$

The line AB therefore is to be cut into two equal parts; and the ſquare is the greateſt of all rectangles, whoſe altitudes and baſes, taken together, are equal to each other.

MAY*, MAIUS, the fifth month in the year, reckoning from the firſt of January; and the third, counting the year to begin with March, as the Romans antiently did. See MONTH, and YEAR.

* It was called *Maius* by Romulus, in reſpect to the ſenators and nobles of his city, who were named *Majores*; as the following month was called *Junius*, in honour of the youth of Rome, *in honorem Juniorum*, who ſerved him in the war: though others will have it to have been thus called from *Maia*, the mother of Mercury, to whom they offered ſacrifice on that day; and Papias derives it from *Madius*, *eo quod tunc terra madeat*.

In this month the ſun enters Gemini, and the plants of the earth begin to flower.

The month of *May* was under the protection of Apollo; and alſo they kept the feſtival of Bona Dea, that of goblins, called *Lemuria*; and the ceremony of Regifugium, or the expulſion of the kings. See LEMURIA, *&c.*

The vulgar have a great opinion of the virtues of *May*-dew, and *May*-butter. See DEW.

The month of *May* has ever been eſteemed favourable to love; and yet the antients, as well as many of the moderns, look on it as an unhappy month for marriage: The reaſon may perhaps be referred to the feaſt of the Lemures, which was held in it. Ovid alludes to this in the fifth of his Faſti, when he ſays,

Nec viduæ tædis eadem, nec virginis apta
Tempora; quæ nupſit, non diuturna fuit:
Hac quoque de cauſa, ſi te proverbia tangunt,
Menſe malas Maio *nubere vulgus erit.*

MAYHEM. See the article MAHIM.

Appeal of MAYHEM. See the article APPEAL.

MAYL, in falconry, ſignifies to pinion the wings of a hawk. See HAWK, and FALCON.

MAYOR*, or MAIOR, the chief magiſtrate, or governor in the cities, and moſt corporation-towns of England; choſen annually by his peers out of the number of the aldermen. See ALDERMAN.

* The word, according to Verſtegan, comes from the antient Engliſh, *maier*, able, potent, of the verb *may*, or can.

The *Mayor* of the place is the king's lieutenant, and with the aldermen and common-council, can make laws, called *Bi laws*, for the government of the place. See BILAWS. He has alſo the authority of a kind of judge, to determine matters, and to mitigate the rigour of the law.

King Richard I, *A. D.* 1189, firſt changed the bailiffs of London into *Mayors*; by whoſe example others were afterwards appointed. See PORTREVE, BAILIFF, *&c.*

MAYOR's *Court*. See the article COURT.

MEAD, a wholeſome, agreeable liquor, prepared of honey and water. See DRINK, HONEY, *&c.*

One of the beſt methods of preparing *Mead*, is as follows.—Into twelve gallons of water, ſlip the whites of ſix eggs; mixing theſe well together, and to the mixture adding twenty pounds of honey. Let the liquor boil an hour, and when boiled, add cinamon, ginger, cloves, mace, and a little roſemary. As ſoon as it is cold, put a ſpoonful of yeaſt to it, and turn it up, keeping the veſſel filled as it works; when it has done working, ſtop it up cloſe, and when fine, bottle it off for uſe.

MEAN, the *Middle* between two extremes. See MEDIUM, and EXTREME.

Thus we ſay, *Mean* motion of a planet; its *mean* diſtance, *&c.* meaning a motion or diſtance, which as far exceeds the leaſt diſtance, or motion, as it is exceeded by the greateſt. See MOTION, DISTANCE, ANOMALY, and APOGEE.

MEAN, in logic. See the article MEDIUM.

MEAN *proportion*. See EXTREME *Proportion*.

MEAN time. See the article TIME.

MEAN *axis*, in optics. See the article AXIS.

MEAN *diameter* in gauging. See DIAMETER.

MEAN, in law, refers either to time, or dignity.—Thus, in the firſt ſenſe, we ſay, his action was *mean* betwixt the diſſeiſin made to him and his recovery, *i. e.* in the interim.

In the ſecond ſenſe, we ſay, there is Lord *Mean*, or *Meſne*, that is, a lord of a manor, who has tenants that hold of him, yet himſelf holds of the king. See LORD, and MESNE.

MEASLES, *Morbilli*, in medicine, a cutaneous diſeaſe, conſiſting in a general appearance of eruptions, not tending to ſuppuration; accompanied with a fever.

This diſtemper ſeems to bear a great affinity to the ſmall-pox; the ſymptoms being in many reſpects the ſame, the cauſe nearly the ſame, and the regimen and cure not much different. See *Small*-POX.

The eruptions uſually appear about the fourth day, like flea-bites, over the whole body; but thicker and redder, and with greater inflammation, than thoſe of the ſmall-pox, and vaniſh in four or ſix days after appearance; being, when at the height, not larger than pins heads.

The *Meaſles* is more ſickly than dangerous; though it often inclines to conſumptions by a cough which it leaves behind.

MEASNE. See the article MESNE.

MEASURE, MENSURA, in geometry, denotes any certain quantity aſſumed as one, or unity, to which the ratio of other homogeneous, or ſimilar quantities, is expreſſed. See MEASURING.

This definition is ſomewhat more agreeable to practice than that of Euclid, who defines *Meaſure* a quantity, which being repeated any number of times, becomes equal to another.—Which only anſwers to the idea of an arithmetical *Meaſure*, or quota-part. See ALIQUOT-PART.

MEASURE *of an angle*, is an arch, deſcribed from the vertex *a*, (*Tab. Geomet. fig.* 10.) in any place between its legs; as at *df*. Hence, angles are diſtinguiſhed by the ratio of the arches, deſcribed from the vertex, between the legs, to the peripheries.

Angles then are diſtinguiſhed by thoſe arches; and the arches are diſtinguiſhed by their ratio to the periphery.—Thus the angle *lac* is ſaid to be of ſo many degrees, as in the arch *fd*. See ANGLE.

MEASURE *of a figure*, or plane-ſurface, is a ſquare, whoſe ſide is one inch, foot, yard, or other determinate length.

Among geometricians, it is uſually a rod, called a *ſquare rod*, divided into ten ſquare feet, and the ſquare feet into ſquare digits.—Hence ſquare *Meaſures*. See SQUARE.

MEASURE *of a line*, is any right line taken at pleaſure, and conſidered as unity. See LINE.

The modern geometricians uſe a decempeda, or rod, divided into ten equal parts, called *feet*. The feet they ſubdivide into ten digits, the digit into ten lines, *&c.*

This decimal diviſion of the *Meaſure* was firſt introduced by Stevinus, probably from the example of Regiomontanus: The index or character of the decempedæ he made 0, that of feet 1, of digits 2, of lines 3, *&c.* which, in regard the *Meaſure* was ſubdivided in a decuple ratio, were the logarithms of the diviſion. Bayer, in lieu of theſe, expreſſed the logarithms by the Roman characters; *v. gr.* 5 perches, 4 feet, 3 digits, and 2 lines, he expreſſed thus; 5°, $4'$, $3''$, $2'''$. It is frequently moſt commodious to ſeparate the integers, or rods, from the fractions by a point; thus inſtead of 5°, $4'$, $3''$, $2'''$; to write 5.432. F. Noel obſerves, that among the Chineſe, the decimal diviſion obtains in their common *Meaſures*, and even in their weights. See DECIMAL, DEGREE, *&c.*

Line of MEASURES. See the article LINE.

MEASURE *of the maſs*, or *quantity of matter*, in mechanics, is its weight; it being apparent, that all the matter which coheres and moves with a body, gravitates with it: and it being found by experiment, that the gravities of homogeneal bodies are in proportion to their bulks; hence, while the maſs continues the ſame, the weight will be the ſame, whatever figure it put on: its abſolute weight, we mean; for as to its ſpecific weight, it varies as the quantity of ſurface varies. See WEIGHT, GRAVITY, *&c.*

MEASURE *of a number*, in arithmetic, is ſuch a number as divides another, without leaving any fraction; thus 9 is a *Meaſure* of 27. See NUMBER.

MEASURE *of a ſolid*, is a cube, whoſe ſide is one inch, foot, yard, or other determined length.

Among geometricians, it is ſometimes a rod or perch, called a *cubic perch*; divided into cubic feet, digits, *&c.*—Hence cubic *Meaſures*, or *Meaſures* of capacity. See CUBE, and TIMBER.

MEASURE *of velocity*, in mechanics, is the ſpace paſſed over by a moving body in any given time. See MOTION.

To *meaſure* a velocity, therefore, the ſpace muſt be divided into as many equal parts, as the time is conceived to be divided into. The quantity of ſpace anſwering to ſuch an article of time, is the *Meaſure* of the velocity. See VELOCITY.

MEASURE, in a legal, commercial, and popular ſenſe, denotes a certain quantity or proportion of any thing bought, ſold, valued, or the like.

Meaſures, then, are various, according to the various kinds, and dimenſions of the things *meaſured*. Hence ariſe

Lineal or *longitudinal* MEASURES for lines, or lengths:
Square MEASURES for areas, or ſuperficies: and
Solid or *cubic* MEASURES for bodies, and their capacities.

All which again are very different in different countries, and in different ages, and even many of them for different commodities. Whence ariſe other diviſions of *domeſtic*, and *foreign Meaſures*, *antient* and *modern* ones, *dry* and *liquid Meaſures*, &c. The buſineſs of *Meaſures* has been ſo confuſedly, and imperfectly delivered by Engliſh writers, that the reader will not be diſpleaſed with the pains we have here taken to diſembroil, and ſupply it.—Under this head he will find enumerated the various, general, ſtanding *Meaſures*, long, ſquare, and cubic, now or heretofore in uſe, with their proportions and reductions: for particulars, he muſt be contented to be referred to the particular heads; as FOOT, DIGIT, ELL, TUN, GALLON, BUSHEL, PERCH, LEAGUE, FURLONG, *&c.*

Long MEASURES, or MEASURES *of application.*—*The Engliſh Standard Long* MEASURE, for commerce, or that whereby the quantities of things are ordinarily eſtimated in the way of trade, is the yard; containing three Engliſh feet: equal to three Paris feet, 1 inch $\frac{1}{12}$ of an inch; or $\frac{7}{9}$ of a Paris ell.—Its diviſions are the foot, ſpan, palm, inch, and barley-corn, which ſee under their reſpective heads: FOOT, INCH, *&c.*—Its multiples are the pace, fathom, pole, furlong, and mile. See MILE, FURLONG, POLE, *&c.*—The proportions theſe ſeverally bear to each other, will be expreſſed in a table for the purpoſe.—*Aſſay of Meaſures.* See ASSAY.

The French Standard, MEASURE, for commerce, is the aune or ell, containing 3 Paris feet, 7 inches, 8 lines; or 1 yard, $\frac{2}{7}$ Engliſh; the Paris foot royal exceeding the Engliſh by $\frac{68}{1000}$ parts, as in one of the following tables. This ell is divided two ways; *viz.* into halves, thirds, ſixths, and twelfths; and into quarters, half-quarters, and ſixteenths.

This ell holds throughout the greateſt part of France; excepting at Troyes in Champagne; at Arc in the Barrois; in ſome parts of Picardy and Burgundy, where the ell only contains two feet, five inches, one line; in Bretagne, where it contains four feet, two inches, eleven lines; and at St. Genoux in Berry, where it exceeds the Paris ell by eight lines. See ELL.

But in Languedoc, particularly at Marſeilles, Montpellier, Toulouſe, in Provence, Guienne, they meaſure by the canna, which at Toulouſe and in Guienne contains five Paris feet, five inches, and ſix lines; or one Paris ell and a half. At Montpellier, and throughout the lower Languedoc, as alſo in Provence and Avignon, and even Dauphine, the canna is ſix feet and nine lines; or one Paris ell, two thirds. See CANNA.

The Standard MEASURE *in Holland*, *Flanders*, *Sweden*, a good part of *Germany*, many of the hans-towns, at *Dantzick* and *Hambourg*; and at *Geneva*, *Francfort*, &c. is likewiſe the ell: But the ell in all theſe places differs from the Paris ell. In Holland, it contains one Paris foot, eleven lines, or four ſevenths of the Paris ell. The Flanders ell contains two feet, one inch, five lines, and half a line, or ſeven twelfths of the Paris ell. The ell of Germany, Brabant, *&c.* is equal to that of Flanders. See ELL.

The Italian MEASURE is the bracchio, brace, or fathom; which obtains in the ſtates of Modena, Venice, Florence, Lucca, Milan, Mantua, Bologna, *&c.* but of different lengths. At Venice it contains one Paris foot, eleven inches, three lines, or eight fifteenths of the Paris ell. At Bologna, Modena, and Mantua, the brace is the ſame as at Venice. At Lucca, it contains one Paris foot, nine inches, ten lines, or half a Paris ell. At Florence, it contains one foot, nine inches, four lines; or forty nine hundredths of a Paris ell. At Milan, the brace for meaſuring of ſilks is one Paris foot, ſeven inches, four lines, or four ninths of a Paris ell: That for woollen cloths, is the ſame with the ell of Holland. Laſtly, at Bergama, the brace is one foot, ſeven inches, ſix lines, or five ninths of a Paris ell. The uſual *Meaſure* at Naples, however, is the canna, containing ſix feet, ten inches, and two lines, or one Paris ell, and fifteen ſeventeenths. See FATHOM, CANNA, *&c.*

The Spaniſh MEASURE, is the vara, or yard, in ſome places called the barra; containing ſeventeen twenty-fourths of the Paris ell.—But the *Meaſure* in Caſtile and Valencia is the pan, ſpan, or palm; which is uſed, together with the canna, at Genoa.—In Arragon, the vara is equal to a Paris ell and a half, or five feet, five inches, ſix lines.

The Portugueze MEASURE is the cavedos, containing two feet, eleven lines, or four ſevenths of the Paris ell; and the vara, an hundred and ſix whereof make an hundred Paris ells.

The Piedmonteſe MEASURE is the ras, containing one Paris foot, nine inches, ten lines, or half a Paris ell.

In Sicily, their *Meaſure* is the canna; the ſame with that of Naples.

The Muſcovite MEASURES are the cubit, equal to one Paris foot, four inches, two lines; and the arcin, two whereof are equal to three cubits.

The Turkiſh, and *Levant* MEASURE, are the picq, containing two feet, two inches, and two lines; or three fifths of the Paris ell.—The Chineſe *Meaſure*, the cobre; ten whereof are equal to three Paris ells.—In Perſia, and ſome parts of the Indies, the gueze, whereof there are two kinds; the royal gueze, called alſo the *gueze monkelſer*, containing two Paris feet, ten inches, eleven lines, or four fifths of the Paris ell; and the ſhorter gueze, called ſimply *gueze*, only two thirds of the former.—At Goa and Ormus, the *Meaſure* is the vara, the ſame with that of the Portugueze, having been introduced by them.—In Pegu, and ſome other parts of the Indies, the cando or candi, equal to the ell of Venice.—At Goa and other parts, they uſe a larger cando, equal to ſeventeen Dutch ells; exceeding that of Babel and Balſora by ⅞ *per centum*, and the varra by 6½.—In Siam, they uſe the ken, ſhort of three Paris feet by one inch. The ken contains two ſoks, the ſok two keubs, the keub twelve nious, or inches; the niou to be equal to eight grains of rice, *i. e.* to about nine lines.—At Camboia, the haſter; in Japan, the tatam; and the ſpan on ſome of the coaſts of Guinea.

English Long MEASURES, or MEASURES *of Application.*

Inch										
3	Palm									
9	3	Span								
12	4	$1\frac{1}{3}$	Foot							
18	6	2	$1\frac{1}{2}$	Cubit						
36	12	4	3	2	Yard					
60	20	$6\frac{2}{3}$	5	$3\frac{1}{3}$	$1\frac{2}{3}$	Pace				
72	24	8	6	4	2	$1\frac{1}{5}$	Fathom			
198	66	22	$16\frac{1}{2}$	11	$5\frac{1}{2}$	$3\frac{3}{10}$	$2\frac{3}{4}$	Pole		
7920	2640	880	660	440	220	132	110	40	Furlong	
63360	21120	7040	5280	3520	1760	1056	880	320	8	Mile

Scripture Long MEASURES.

								Engl. Feet.	Inch. Dec.
Digit								0	0,912
4	Palm							0	3,648
12	3	Span						0	10,944
24	6	2	Cubit					1	9,888
96	24	8	4	Fathom				7	3,552
144	36	12	6	$1\frac{1}{2}$	Ezekiel's reed			10	11,328
192	48	16	8	2	$1\frac{1}{3}$	Arabian pole		14	7,104
1920	480	160	80	20	$13\frac{1}{3}$	10	Schœnus, meaſuring-line	145	11,04

Grecian Long MEASURES *reduced to Engliſh.*

												Engl. Paces.	Feet.	Inch. Dec.
Dactylus, digit												0	0	$0{,}7554\frac{11}{16}$
4	Doron, dochme											0	0	$3{,}0218\frac{3}{4}$
10	$2\frac{1}{2}$	Lichas										0	0	$7{,}5546\frac{7}{8}$
11	$2\frac{3}{4}$	$1\frac{1}{10}$	Orthodoron									0	0	$8{,}3101\frac{9}{16}$
12	3	$1\frac{1}{5}$	$1\frac{1}{11}$	Spithame								0	0	$9{,}0656\frac{1}{4}$
16	4	$1\frac{6}{10}$	$1\frac{5}{11}$	$1\frac{1}{3}$	Pous, foot							0	1	0,0875
18	$4\frac{1}{2}$	$1\frac{4}{5}$	$1\frac{7}{11}$	$1\frac{1}{2}$	$1\frac{1}{8}$	Pygme, cubit						0	1	$1{,}5984\frac{3}{8}$
20	5	2	$1\frac{9}{11}$	$1\frac{2}{3}$	$1\frac{1}{4}$	$1\frac{1}{9}$	Pygon					0	1	$3{,}109\frac{3}{8}$
24	6	$2\frac{2}{5}$	$2\frac{2}{11}$	2	$1\frac{1}{2}$	$1\frac{1}{3}$	$1\frac{1}{5}$	Pecus, cubit larger				0	1	6,13125
96	24	$9\frac{3}{5}$	$8\frac{8}{11}$	8	6	$5\frac{1}{3}$	$4\frac{4}{5}$	4	Orgya, pace			0	6	0,525
9600	2400	960	$872\frac{8}{11}$	800	600	$533\frac{1}{3}$	480	400	100	Stadius Aulus > furlong		100	4	4,5
76800	19200	7680	$6981\frac{9}{11}$	6400	4800	$4266\frac{2}{3}$	3840	3200	800	8	Milion, mile	805	5	0

Jewiſh Long or *Itinerary* MEASURES.

						Eng. Miles.	Paces.	Feet. Dec.
Cubit						0	0	1,824
400	Stadium					0	145	4,6
2000	5	Sab. day's journey				0	729	3,0
4000	10	2	Eaſtern mile			1	403	1,0
12000	30	6	3	Paraſang.		4	153	3,0
96000	240	48	24	8	a day's journey	33	172	4,0

Roman Long MEASURES *reduced to Engliſh.*

										Engl. Paces.	Feet.	Inch. Dec.
Digitus tranſverſus										0	0	0,725$\frac{1}{4}$
1$\frac{1}{3}$	Uncia									0	0	0,967
4	3	Palmus minor								0	0	2,901
16	12	4	Pes							0	0	11,604
20	15	5	1$\frac{1}{4}$	Palmipes						0	1	2,505
24	18	6	1$\frac{1}{2}$	1$\frac{1}{5}$	Cubitus					0	1	5,406
40	30	10	2$\frac{1}{2}$	2	1$\frac{2}{3}$	Gradus				0	2	5,01
80	60	20	5	4	3$\frac{1}{3}$	2	Paſſus			0	4	10,02
10000	7500	2500	625	500	416$\frac{2}{3}$	250	125	Stadium		120	4	4,5
80000	60000	20000	5000	4000	3333$\frac{1}{3}$	2000	1000	8	Miliare	967	0	0

*Proportions of the Long-*MEASURES *of ſeveral Nations to the Engliſh foot, by Mr. Greaves.*

The Engliſh ſtandard foot being divided into 1000 equal parts, the other *Meaſures* will have the proportions to it, which follow.

The Engliſh foot, from the ſtandard in Guildhall	1000
The Paris royal foot, in the Châtelet	1068
The Rhinland foot, of Snellius	1033
The Greek foot	1007$\frac{29}{100}$
The Roman foot, on the monument of Coſſutius	967
The Roman foot, on the monument of Statilius	972
The Roman foot, of Villalpandus, taken from the Congius of Veſpaſian	986
The Venetian foot	1162
The ell of Antwerp	2283
The ell of Amſterdam	2268
The ell of Leyden	2260
The canna of Naples	6880
The vara of Almeria, and Gibraltar in Spain	2760
The braccio of Florence	1913
The palm of Genoa	815
The common braccio of Sienna	1242
The braccio of Sienna, for linnen	1974
The palm of the architects at Rome, whereof X make the canna of the ſame architects	732
The palm of the braccio of the merchants and weavers at Rome; from a marble in the capitol, with this inſcription, CVRANTE LV POETO	695$\frac{1}{2}$
The large pique of the Turks at Conſtantinople	2200
The ſmall pique of the Turks at Conſtantinople is to the larger as 31 to 32	
The ariſh of Perſia	3197
The derah or cubit of the Egyptians	1824

*Proportions of ſeveral Long-*MEASURES *to each other, by M. Picard.*

The Rhinland or Leyden foot (12 whereof make the Rhinland perch) ſuppoſed	696
The Engliſh foot	675$\frac{1}{2}$
The Paris foot	720
The Amſterdam foot, from that of Leyden, by Snellius	629
The Daniſh foot (two whereof make the Daniſh ell)	701$\frac{8}{10}$
The Swediſh foot	658$\frac{1}{4}$
The Bruſſels foot	609$\frac{3}{5}$
The Dantzic foot, from Hevelius's Selenographia	636
The Lyons foot, by M. Auzout	757$\frac{2}{3}$
The Bologna foot, by the ſame	843
The braccio of Florence, by the ſame, and father Merſenne	1290
The palm of the architects at Rome, according to the obſervations of Meſſ. Picard and Auzout	494$\frac{1}{4}$
The Roman foot in the capitol, examined by Meſſ. Picard and Auzout	653 or 653$\frac{1}{2}$
The ſame from the Greek foot	652
From the vineyard Mattei	657$\frac{1}{2}$
From the palm	658$\frac{3}{4}$
From the pavement of the Pantheon, ſuppoſed to contain 10 Roman feet	653
From a ſlip of marble in the ſame pavement, ſuppoſed to contain 3 Roman feet	650
From the pyramid of Ceſtius, ſuppoſed to contain 95 Roman feet	653$\frac{1}{2}$
From the diameters of the columns in the arch of Septimius Severus	653$\frac{1}{3}$
From a ſlip of Porphyry in the pavement of the Pantheon	653$\frac{1}{3}$

Square or *ſuperficial* MEASURES.—*Engliſh ſquare or ſuperficial Meaſures*, are raiſed from the yard of 36 inches, multiplied into itſelf; and this producing 1296 ſquare inches in the ſquare yard, the diviſions of this are ſquare feet, and inches; and the multiples, poles, roods, and acres; as in the table.

French ſquare Meaſures, are regulated by 12 ſquare lines in the inch ſquare; 12 inches in the foot, 22 feet in the perch, and 100 perches in the arpent or acre.

*Engliſh Square-*MEASURES.

Inches						
144	Feet					
1296	9	Yards				
3600	25	2$\frac{7}{9}$	Paces			
39204	272$\frac{1}{4}$	30$\frac{1}{4}$	10,89	Poles		
1568160	10890	1210	435,6	40	Rood	
6272640	43560	4840	1743,6	160	4	acre

Grecian ſquare Meaſures, were the plethron, or acre, by ſome ſaid to contain 1444, by others 10000 ſquare feet: and aroura, the half of the plethron. The aroura of the Egyptians was the ſquare of an 100 cubits.

*Roman Square-*MEASURES *reduced to Engliſh.*

The integer was a jugerum or acre, which they divided like the libra, or as: Thus

	Jugerum contained Square Feet.	Scruples.	Engl. Roods.	Sq. Poles.	Sq. Feet.
As——	28800	288	2	18	250,05
Deunx——	26400	264	2	10	183,85
Dextans——	24000	240	2	2	117,64
Dodrans——	21600	216	1	34	51,42
Bes——	19200	192	1	25	257,46
Septunx——	16800	168	1	17	191,25
Semis——	14400	144	1	09	125,03
Quincunx——	12000	120	1	01	58,82
Triens——	9600	96	0	32	264,85
Quadrans——	7200	72	0	24	198,64
Sextans——	4800	48	0	16	132,43
Uncia——	2400	24	0	08	66,21

Cubical MEASURES, or MEASURES *of capacity for liquids.—Engliſh liquid Meaſures,* were originally raiſed from troy-weight; it being enacted by ſeveral ſtatutes, that eight pounds troy of wheat, gathered from the middle of the ear, and well dried, ſhould weigh a gallon of wine-*Meaſure*; the diviſions and multiples whereof were to form the other *Meaſures*: At the ſame time it was ordered, that there ſhould be but one *liquid Meaſure* in the kingdom: yet cuſtom has prevailed, and there having been introduced a new weight, *viz.* the avoirdupois, we have now a ſecond ſtandard gallon adjuſted thereto, and therefore exceeding the former in the proportion of the avoirdupois weight to troy-weight.—From this latter ſtandard are raiſed two ſeveral *Meaſures*, the one for ale, the other for beer.

The ſealed gallon at Guildhall, which is the ſtandard for wines, ſpirits, oils, &c. is ſuppoſed to contain 231 cubic inches; on which ſuppoſition, the other *Meaſures* raiſed therefrom, will contain as in the following tables; yet, by actual experiment made in 1688, before the lord mayor and the commiſſioners of exciſe, it was only found to contain 224 cubic inches: It was however agreed to continue the common ſuppoſed contents of 231 cubic inches; ſo that all computations ſtand on their old footing.—Hence, as 12 is to 231, ſo is 14$\frac{12}{20}$ to 281$\frac{1}{2}$, the cubic inches in the ale gallon: but in effect the ale quart contains 70$\frac{1}{2}$ cubic inches; on which principle, the ale and beer gallon will be 282 cubic inches.

The ſeveral diviſions and multiples of theſe *Meaſures*, and their proportions, are exhibited in the tables underneath.

French Liquid MEASURES. At Paris, and in a great part of the kingdom, the *Meaſures*, to begin with the ſmalleſt, are, the poſſon, which contains ſic cubic inches; two poſſons make the demi-ſeptier; two demi-ſeptiers, the ſeptier or chopine; two chopines, a pint; two pints, the quart or pot; four quarts, the gallon, or ſeptier of eſtimation; and thirty-ſix ſeptiers, the muid, which is ſubdivided into two demi-muids, four quarter-muids, and eight half-quarter-muids. See MUID, SEPTIER, QUART, CHOPINE, &c. From the quart are likewiſe raiſed the *Meaſures* uſed in other parts, as the queue uſed in Orleans, Blois, &c. containing a Paris muid and a half, or four hundred and twenty pints; the tun uſed at Bayonne and Bourdeaux, conſiſting of four bariques, and equal to three Paris muids; at Orleans, to two: ſo that the firſt tun contains eight hundred and ſixty-four pints, and the ſecond five hundred and ſeventy-ſix. See TUN. The demi-queue, uſed in Champagne, ninety-ſix quarts; the pipe, uſed in Anjou and Poictou, containing two buſſards, equal to two demi-queues of Orleans. &c. or a muid and a half of Paris, or four hundred and thirty-two pints. See PIPE. The millerolle uſed in Provence, containing ſixty-ſix Paris pints; and the poincon uſed at Nantes, in Touraine and the Bleſſois, equal to half the Orleans tun. The poincon uſed at Paris, is the ſame with the demi-queue.

Dutch liquid MEASURES. At Amſterdam, their *Meaſures*, to begin with the diminutions, are, mengles, or bottles, equal to French pots, and containing two pounds, four ounces, marc, of an ordinary liquor. The mengle is divided into two pints, four half-pints, eight muſſies, ſixteen half-muſſies, &c. Seven hundred and ſeventy mengles make their tun. The viertel, or quarter, conſiſts of five mengles, and one ſixth of a mengle. The wine viertel is juſt ſix mengles. The ſtekan, or ſtekaimen, contains ſixteen mengles. The anker contains two ſtekans; and four ankers, the awn. For oils they uſe the tun, which contains ſix awms, or ahms; equal to ſixteen hundred Paris pints. See TUN.

Spaniſh liquid MEASURES, are the bota, containing between thirty-ſix and thirty-ſeven Dutch ſtekans, holding about a thouſand weight. The bota conſiſts of thirty arrobas, each weighing twenty-eight pounds. Each arroba is again divided into eight azumbres, and the azumbre into four quarts. The pipe conſiſts of eighteen arrobas.

Portugueſe liquid MEASURES, are botas, almudes, cavadas, quartas; and for oil, alqueirs or cantars. The Portugueſe bota is ſomewhat ſmaller than the Spaniſh; the latter being equal to thirty-ſix or thirty-ſeven ſtekans, and the former only to twenty-five or twenty-ſix. The quartas is one fourth of the cavadas. The cavadas, or cavado, is the ſame with the Dutch mengle. Six cavadas make an alquier, and two alquiers one almude, or almoud; twenty-ſix almudes, a bota.

Italian liquid MEASURE; at Rome, are the boccale, or pot, containing a little more than a Paris pint. Seven boccales and a half make the rubbo, and thirteen rubbos and a half, the brenta; ſo that the brenta contains ninety-ſix boccales.—At Florence, the ſtaro or ſtaio, containing three bariles, and the barile twenty fiaſcos or flaſks, nearly equal to Paris pints.—At Verona, they uſe the baſſa, fixteen whereof make a brenta; the brenta contains ninety-ſix boccales, or thirteen rubbos and a half.—At Venice, the amphora, containing two bottes; the botte, four bigoncios; the bigoncio, four quarts; the quart, four tiſchaufferas. The Venetian botte is again divided into moſtachios, ſeventy-ſix whereof make the amphora.—At Ferrara, the maſtilly, containing eight ſechios.—In Iſtria, ſechios; ſix whereof make the urna. In Calabria, and Apulia, pignatolis, equal to French pints; thirty-two pignatolis make the ſtaro or ſtaio; and ten ſtaros, the ſalma.

German liquid MEASURES. The fuder is uſed almoſt throughout all Germany, but with ſome difference in its length, as well as its ſub-diviſions. The fuder is ſuppoſed the load of a cart with two horſes. Two fuders and a half make the roeder; ſix awns, the fuder; twenty fertels, the awm; and four maſſems, or maaſſes, the fertel: ſo that the roeder contains one thouſand two hundred maaſſes, the fuder four hundred and eighty, the awm eighty, and the fertel forty-one.—At Nuremberg, the diviſion of the fuder, is into twelve heemers, and the heemer into ſixty four maaſſes.—At Vienna, they divide the fuder into thirty-two heemers, the heemer into thirty-two achtelings, and the achteling into four ſelitins. The awm, there, is eighty maaſſes; the fertel, called alſo *ſchrewe*, four maaſſes; and the driclinck twenty-four heemers.—At Auſbourg, the fuder is divided into eight jez; the jez into two muids, or twelve beſons; the beſon into eight maaſſes, which makes ſeven hundred ſixty-eight maaſſes in the fuder, as in that of Nuremberg.—At Heidelberg, the fuder is divided into ten awms; the awn into twelve vertels; and the vertel into four maaſſes.—In Wirtemberg, the fuder is divided into ſix awms; the awm into ſixteen yunes; the yune into ten maaſſes.

Liquid MEASURES *on the coaſts of Barbary.* At Tripoli, &c. they uſe the rotolo, or rotoli; thirty-two whereof make the matuli.—At Tunis, forty-two of the rotoli of Tripoli, make a matara, or mataro; and the other places on the ſame coaſt uſe nearly the ſame meaſures.—It may be here obſerved, that moſt, if not all the eaſtern nations, with whom the Europeans traffic, have not any ſuch thing as *Meaſures* of capacity, whether for things liquid or dry; but that they ſell every thing, even liquors, by the weight. We may, however, rank among the number of *liquid Meaſures*, the cocos and canan of Siam. The firſt are the cocos-ſhells cleared of their kernel. And ſince theſe are not all of the ſame capacity, they meaſure them with cauris, or little ſhells found in the Maldives; which alſo ſerve for money in ſome ſtates of the Indies. Some cocos hold a thouſand cauris, and ſome only five hundred. Above the cocos is the canan, a little *Meaſure* uſed in the ſame country, and called by the Portugueſe, *choup*; holding about a Paris quart.

Engliſh MEASURES *of capacity for liquids.*

Wine-MEASURE.

Solid inches									
28⅞	Pint								
231	8	Gallon							
4158	144	18	Rundlet						
7276½	252	31½	1¾	Barrel					
9702	336	42	2⅓	1⅓	Tierce				
14553	504	63	3½	2	1½	Hogſhead			
19279	672	84	4⅔	2⅔	2	1⅓	Punchion		
29106	1008	126	7	4	3	2	1½	Butt	
58212	2016	252	14	8	6	4	3	2	Tun

Ale-MEASURE.

Pints					
8	Gall.				
64	8	Firk.			
128	16	2	Kild.		
256	32	4	2	Barrel	
512	64	8	4	2	Hogſh.

Beer-MEASURE.

Pints					
8	Gall.				
72	9	Firk.			
144	18	2	Kild.		
288	36	4	2	Barrel	
576	72	8	4	2	Hogſh.

Attic MEASURES *of capacity for liquids, reduced to Engliſh wine*-Meaſure.

										Gall.	Pints.	Sol. Inch. Dec.
Cochilarion										0	1/120	0,0356 5/12
2	Cheme									0	1/60	0,0712 5/6
2½	1¼	Myſtron								0	1/48	0,089 5/48
5	2½	2	Concha							0	1/24	0,178 5/24
10	5	4	2	Cyathus						0	1/12	0,356 5/12
15	7½	6	3	1½	Oxubaphon					0	⅛	0,535 3/8
60	30	24	12	6	4	Cotyle				0	½	2,141½
120	60	48	24	12	8	2	Xeſtes, ſextary			0	1	4,283
720	360	288	144	72	48	12	6	Chos, congius		0	6	25,698
8640	4320	3456	1728	864	576	144	72	12	Metretes, amphora	10	2	19,626

Roman MEASURES *of capacity for liquids, reduced to Engliſh wine*-Meaſure.

										Gall.	Pints.	Sol. Inch. Dec.
Ligula										0	0 1/48	0,117 5/12
4	Cyathus									0	0 1/12	0,469⅔
6	1½	Acetabulum								0	0⅛	0,704½
12	3	2	Quartarius							0	0¼	1,409
24	6	4	2	Hemina						0	0½	2,818
48	12	8	4	2	Sextarius					0	1	5,636
288	72	48	24	12	6	Congius				0	7	4,942
1152	288	192	96	48	24	4	Urna			3	4½	5,33
2304	576	384	192	96	48	8	2	Amphora		7	1	10,66
46080	11520	7680	3840	1920	960	160	40	20	Culeus	143	3	11,095

Jewiſh MEASURES *of capacity for liquids, reduced to Engliſh wine*-Meaſure.

							Gall.	Pints.	Sol. Inch.
Caph							0	0⅝	0,177
1⅓	Log						0	0⅚	0,211
5⅓	4	Cab					0	3⅓	0,844
16	12	3	Hin				1	2	2,533
32	24	6	2	Seah			2	4	5,067
96	72	18	6	3	Bath, epha		7	4	15,2
960	720	180	60	30	10	Coron, chomer	75	5	7,625

Cubical MEASURES *of capacity for things dry.*—*Engliſh dry or corn* MEASURES, are raiſed from the Wincheſter gallon; which contains $272\frac{1}{4}$ ſolid inches, to hold of pure running or rain-water, nine pound, thirteen ounces. This ſeems to ſtand on the foot of the old wine gallon, of 224 cubic inches; 12 being to $14\frac{12}{20}$, as 224 to $272\frac{1}{4}$. Yet by an act of parliament, made 1697, it is decreed, that a round buſhel, eighteen inches and a half wide, and eight deep, is a legal Wincheſter buſhel. But ſuch a veſſel will only hold 2150.42 cubic inches; conſequently the gallon will contain $268\frac{4}{5}$ cubic inches. The diviſions and multiples are as in the table following.

French dry MEASURES, are the litron, buſhel, minot, mine, ſeptier, muid, and tun. The litron is divided into two demi-litrons, and four quarter litrons, and contains thirty-ſix cubic inches of Paris. By ordonnance, the litron is to be three inches and a half high; and three inches, ten lines broad. The litron for ſalt is larger, and is divided into two halves, four quarters, eight demi-quarters, and ſixteen meſurettes.—The buſhel is different in different juriſdictions. At Paris, it is divided into demi-buſhels; each demi-buſhel into two quarts; the quart into two half-quarts; and the half-quart into two litrons: ſo that the buſhel contains ſixteen litrons. By ordonnance, the Paris buſhel is to be eight inches, two lines and a half high; and ten inches broad, or in diameter, within-ſide. The minot conſiſts of three buſhels; the mine of two minots, or ſix buſhels; the ſeptier of two mines, or twelve buſhels; and the muid of twelve ſeptiers, or a hundred forty-four buſhels. *The buſhel for oats* is eſtimated double that of any other grain; ſo that there go twenty-four buſhels to make the ſeptier, and two hundred eighty eight to make the muid. It is divided into four picotins; the picotin containing two quarts, or four litrons. *The buſhel for ſalt* is divided into two half-buſhels, four quarters, eight half-quarters, and ſixteen litrons; four buſhels make a minot, ſixteen a ſeptier, and a hundred ninety-two a muid. *The buſhel for wood* is divided into halves, quarters, and half-quarters. Eight buſhels make the minot, ſixteen a mine, twenty mines, or three hundred and twenty buſhels, the muid. For *plaiſter*, twelve buſhels make a ſac, and thirty-ſix ſacs a muid. For *lime*, three buſhels make a minot, and forty-eight minots a muid. See BUSHEL.—The minot is, by ordonnance, to be eleven inches, nine lines high; and fourteen inches eight lines in diameter. The minot is compoſed of three buſhels, or ſixteen litrons; four minots make a ſeptier, and forty-eight a muid.—The mine is no real veſſel, but an eſtimation of ſeveral others. At Paris, the mine contains ſix buſhels, and twenty-four make the muid. At Rouen, the mine is four buſhels; and at Dieppe, eighteen mines make a Paris muid. See MUID.—The ſeptior differs in different places: At Paris it contains two mines, or eight buſhels; and twelve ſeptiers the muid. At Rouen, the ſeptier contains two mines, or twelve buſhels. Twelve ſeptiers make a muid at Rouen, as well as Paris; but twelve of the latter are equal to fourteen of the former. At Toulon, the ſeptier contains a mine and a half; three of which mines make the ſeptier of Paris. See SEPTIER.—The muid, or muy, of Paris, conſiſts of twelve ſeptiers; and is divided into mines, minots, buſhels, *&c.* That for oats is double that for other grain; *i. e.* contains twice the number of buſhels. At Orleans, the muid is divided into mines; but thoſe mines only contain two Paris ſeptiers and a half. See MUID. In ſome places they uſe the tun in lieu of the muid; particularly at Nantes, where it contains ten ſeptiers of ſixteen buſhels each, and weighs about three thouſand three hundred pounds. Three of theſe tuns make twenty-eight Paris ſeptiers. At Rochel, *&c.* the tun contains forty-two buſhels, and weighs two *per cent.* leſs than that of Nantes. At Breſt, it contains twenty buſhels, is equal to ten Paris ſeptiers, and weighs about two thouſand two hundred and forty pounds. See TUN.

Dutch, *Swediſh*, *Poliſh*, *Pruſſian*, and *Muſcovite dry* MEASURES. In theſe places they eſtimate their dry things on the foot of the *laſt*, *leſt*, *leth*, or *lecht*; ſo called, according to the various pronounciations of the people who uſe it.—In Holland, the laſt is equal to nineteen Paris ſeptiers, or thirty-eight Bourdeaux buſhels, and weighs about four thouſand five hundred ſixty pounds; the laſt they divide into twenty-ſeven mudes, and the mude into four ſchepels.—In Poland, the laſt is forty Bourdeaux buſhels, and weighs about four thouſand eight hundred Paris pounds.—In Pruſſia, the laſt is a hundred thirty-three Paris ſeptiers.—In Sweden and Muſcovy, they meaſure by the great and little laſt; the firſt containing twelve barrels, and the ſecond half as many. See LAST.—In Muſcovy, they likewiſe uſe the chefford, which is different in various places: That of Archangel is equal to three Rouen buſhels.

Italian dry MEASURES. At Venice, Leghorn, and Lucca, they eſtimate their dry things on the foot of the ſtaro or ſtaio; the ſtaro of Leghorn weighs fifty-four pounds: an hundred and twelve ſtaros, and ſeven eighths, are equal to the Amſterdam laſt—At Lucca, a hundred and nineteen ſtaros make the laſt of Amſterdam.—The Venetian ſtaro weighs a hundred twenty-eight Paris pounds; the ſtaro is divided into four quarters. Thirty-five ſtaros, and one fifth, or a hundred and forty quarters, and four fifths, make the laſt of Amſterdam.—At Naples, and other parts, they uſe the tomolo, or tomalo, equal to one third of the Paris ſeptier. Thirty-ſix tomoli and a half, make the carro; and a carro and a half, or fifty-four tomoli, make the laſt of Amſterdam.—At Palermo, ſixteen tomoli make the ſalma; and four mondili, the tomolo. Ten ſalmas, and three ſevenths, or a hundred and ſeventy one tomoli, and three ſevenths, make the laſt of Amſterdam.

Flemiſh dry MEASURES. At Antwerp, *&c.* they meaſure by the viertel; thirty-two and a half whereof, make nineteen Paris ſeptiers.—At Hambourg, the ſcheffel; ninety whereof make nineteen Paris ſeptiers.

Spaniſh and Portugueſe dry MEASURES. At Cadiz, Bilboa, and St. Sebaſtian, they uſe the fanega, twenty-three whereof make the Nantes, or Rochel tun, or nine Paris ſeptiers and a half: though the Bilboa fanega is ſomewhat larger, inſomuch that twenty-one fanegas make a Nantes tun.—At Seville, *&c.* they uſe the anagoras, containing a little more than the Paris mine; thirty-ſix anagros make nineteen Paris ſeptiers.—At Bayonne, *&c.* the concha; thirty whereof are equal to nine Paris ſeptiers and a half.—At Liſbon, the alqueir, a very ſmall *Meaſure*, two hundred and forty whereof make nineteen Paris ſeptiers, ſixty the Liſbon muid.

Engliſh dry or corn MEASURES.

Solid inches	Pint	Gallon	Peck	Buſhel	Strike	Carnock or coom	Seam or quarter	Way	
$34\frac{1}{32}$									
$272\frac{1}{4}$	8								
$544\frac{1}{2}$	16	2							
2178	64	8	4						
17424	128	16	8	2					
	256	32	16	4	2				
	512	64	32	8	4	2			
	3072	384	192	48	24	12	6		
	5120	640	320	80	40	20	10	12	Laſt

Jewiſh dry MEASURES *reduced to Engliſh.*

Gachal	Cab	Gomor	Seah	Epha	Letteeh		Pecks.	Gall.	Pints.	Sol. Inc. Dec.
							0	0	$0\frac{17}{120}$	0,031
20							0	0	$2\frac{5}{6}$	0,073
36	$1\frac{4}{5}$						0	0	$5\frac{1}{10}$	1,211
120	6	$3\frac{1}{3}$					1	0	1	4,036
360	18	10	3				3	0	3	12,107
1800	90	50	15	5			16	0	0	26,500
3600	180	100	30	10	2	Chomer, coron	32	0	1	18,969

Attic dry MEASURES *reduced to Engliſh.*

							Pecks.	Gall.	Pints.	Sol. Inch.
Cochliarion							0	0	$\frac{1}{120}$	0,276$\frac{7}{12}$
10	Cyathus						0	0	$\frac{1}{12}$	2,763½
15	1½	Oxubaphon					0	0	⅛	4,144¾
16	6	4	Cotyle				0	0	½	16,579
120	12	8	2	Xeſtes, ſextary,			0	0	1	33,158
180	18	12	3	1½	Choinix		0	0	1½	15,705¾
8640	864	576	144	72	48	Medimnus	4	0	1	3,501

Roman dry MEASURES *reduced to Engliſh.*

							Pecks.	Gall.	Pints.	Sol. Inch. Dec.
Ligula							0	0	0$\frac{1}{48}$	0,01
4	Cyathus						0	0	0$\frac{1}{12}$	0,04
6	1½	Acetabulum					0	0	0⅛	0,06
24	6	4	Hemina				0	0	0½	0,24
48	12	8	2	Sextarius			0	0	1	0,48
384	96	64	16	8	Semimod.		0	1	0	3,84
768	192	128	32	16	2	Modius	1	0	0	7,68

The uſual MEASURE *of wood for firing*, is the cord; four feet high, as many broad, and eight long; divided into two half cords, called *ways*, and by the French, *membrures*, from the pieces ſtuck upright to bound them; or *voyes*, as being ſuppoſed half a waggon load. See CORD.

The MEASURE *for horſes*, is the hand, or handful; which by the ſtatute contains four inches. See HAND, and HORSE.

MEASURE, is alſo uſed to ſignify the cadence, and time obſerved in poetry, dancing, and muſic, to render them regular, and agreeable. See CADENCE, *&c.*

The different *Meaſures* or metres, in poetry, are the different manners of ordering and combining the quantities, or the long and ſhort ſyllables. Thus hexameter, pentameter, iambic, ſapphic verſes, *&c.* conſiſt of different *Meaſures.* See METRE, QUANTITY, VERSE, *&c.*

In Engliſh verſes, the *Meaſures* are extremely various and arbitrary, every poet being at liberty to introduce any new form he pleaſes.—The moſt uſual are, the heroic, generally conſiſting of five long, and five ſhort ſyllables; verſes of four feet; and of three feet, and a cæſura or ſingle ſyllable.

The antients, by variouſly combining and tranſpoſing their quantities, made a vaſt variety of different *Meaſures.* Of words, or rather feet of two ſyllables, they formed a ſpondee, conſiſting of two long ſyllables; a pyrrhic, of two ſhort ſyllables; a trochee, of a long and a ſhort ſyllable; an iambic, of a ſhort and a long ſyllable. See SPONDEE, PYRRHICHIUS, TROCHEE, *&c.*

Of their feet of three ſyllables, they formed a moloſſus, conſiſting of three long ſyllables; a tribrach, of three ſhort ſyllables; a dactyl, of one long, and two ſhort ſyllables; an anapæſt, of two ſhort and one long ſyllable. See DACTYL, ANAPÆST, *&c.*

The Greek poets contrived a hundred and twenty-four different combinations or *Meaſures*, under as many different names, from feet of two ſyllables to thoſe of ſix. See RHYTHM, and FOOT.

MEASURE, in muſic, the interval, or ſpace of time, which the perſon who beats time takes between the raiſing and falling of his hand or foot, in order to conduct the movement, ſometimes quicker, and ſometimes ſlower, according to the kind of muſic, or the ſubject that is ſung or played. See TIME.

The *Meaſure* is that which regulates the time we are to dwell on each note. See NOTE.

The ordinary or common *Meaſure*, is one ſecond, or ſixtieth part of a minute, which is nearly the ſpace between the beats of the pulſe or heart; the ſyſtole, or contraction of the heart, anſwering to the elevation of the hand; and its diaſtole, or dilatation, to the letting it fall. The *Meaſure* uſually takes up the ſpace that a pendulum, of two feet and a half long, employs in making a ſwing or vibration. See VIBRATION.

The *Meaſure* is regulated according to the different quality or value of the notes in the piece; by which the time that each note is to take up, is expreſs'd. The ſemi-breve, for inſtance, holds one riſe, and one fall; and this is called the *Meaſure*, or *whole Meaſure*; ſometimes the *Meaſure-note* or *time-note*; the minim, one riſe, or one fall; and the crotchet, half a riſe, or half a fall, there being four crotchets in a full *Meaſure.* See NOTE.

Binary, or *double* MEASURE, is that wherein the riſe and fall of the hand are equal. See BINARY.

Ternary, or *triple* MEASURE, is that wherein the fall is double to the riſe; or where two minims are played during a fall, and but one in a riſe: To this purpoſe, the number 3 is placed at the beginning of the lines, when the *Meaſure* is intended to be triple; and a *C*, when the *Meaſure* is to be common or double. This riſing and falling of the hands, was called by the Greeks αρσις and θεσις. St. Auguſtin calls it *plauſus*, and the Spaniard, *compas.* See ARSIS and THESIS.

MEASURING, MENSURATION, defined geometrically, is the aſſuming any certain quantity, and expreſſing the proportion of other ſimilar quantities to the ſame.

MEASURING, defined popularly, is the uſing a certain known meaſure, and determining thereby, the preciſe extent, quantity or capacity of any thing. See MEASURE.

Meaſuring in the general, makes the practical part of geometry; ſee GEOMETRY. From the various ſubjects whereon it is employed, it acquires various names, and conſtitutes various arts. Thus

MEASURING *of lines*, or quantities of one dimenſion, we call *Longimetry.* See LONGIMETRY.—And when thoſe lines are not extended parallel to the horizon, *altimetry.* (See ALTIMETRY.)—When the different altitudes of the two extremes of the line are alone regarded, *levelling.* See LEVELLING.

MEASURING *of ſuperficies*, or quantities of two dimenſions, is variouſly denominated, according to its ſubjects; when converſant about lands, it is called *geodæſia*, or *ſurveying*: in other caſes, ſimply *Meaſuring.* See GEODÆSIA and SURVEYING. The inſtruments uſed are the ten-foot rod, chain, compaſs, circumferentor, *&c.* See AREA, CHAIN, COMPASS, *&c.*

MEASURING *of ſolids*, or quantities of three dimenſions, we call *ſtereometry*; ſee STEREOMETRY: where it is converſant about the capacities of veſſels, or the liquors they contain particularly, *gauging.* See GAUGING. The inſtruments are the gauging-rod, ſliding-rule, *&c.* See SOLID, GAUGING-ROD, SLIDING-RULE, *&c.*

From the definition of *Meaſuring*, where the *Meaſure* is expreſs'd to be ſimilar or homogeneous to, *i. e.* of the ſame kind with the thing meaſured; it is evident that in the firſt caſe, or in quantities of one dimenſion, the *Meaſure* muſt be a line; in the ſecond, a ſuperficies; and in the third, a ſolid.—For a line, *v. gr.* cannot *meaſure* a ſurface; to *meaſure*, being no more than to apply the known quantity to the unknown, till the two become equal. Now a ſurface has breadth, and a line has none: And if one line have no breadth, two or a hundred have none: A line, therefore, can never be applied ſo often to a ſurface, as to be equal to it, *i. e.* to *meaſure* it.—And from the like reaſoning it is evident, a ſuperficies, which has no depth, cannot become equal to, *i. e.* cannot *meaſure* a ſolid, which has.

While a line continues ſuch, it may be meaſured by any part of itſelf: but when the line begins to flow, and to generate a new dimenſion, the *Meaſure* muſt keep pace, and flow too; *i. e.* as the one commences ſuperficies, the other muſt do ſo too: Thus we come to have *ſquare Meaſures*, and *cubic Meaſures.* See SQUARE and CUBE.

Hence we ſee why the *Meaſure of a circle* is an arch, or part of the circle; for a right line can only touch a circle in one point, but the periphery of a circle conſiſts of infinite points: The right line therefore to meaſure the circle, muſt be applied infinite times, which is impoſſible.—Again, the right line only touches the circle in a mathematical point; which has no parts or dimenſions, conſequently no magnitude; but a thing that has no magnitude or dimenſions, bears no proportion to another that has; and cannot therefore meaſure it.—Hence we ſee the reaſon of the diviſion of circles into 560 parts or arches, called *degrees.* See ARCH, CIRCLE, and DEGREE.

MEASURING *of triangles*, or from three given ſides or angles, to determine all the reſt, is called *trigonometry.* See TRIGONOMETRY.

MEASURING *of the air*, its preſſure, ſpring, *&c.* is called *aerometry* or *pneumatics*. See AEROMETRY, *&c.*

MEAT, *Cibus*.	See the articles	FOOD.
Dreſſing of MEATS.		DRESSING.
Dry MEATS.		XEROPHAGIA.
White MEATS.		WHITE.

MEATUS *auditorius*, the entrance of the ear; a cartilaginous ſubſtance, irregularly divided with fleſhy membranous interpoſitions in ſeveral parts of it, not unlike the broncha in the lungs, only its fleſhy fibres are here thicker. The inner part, or that next the brain, is bony. It is lined throughout with a thin membrane, derived from the ſkin, which is continued on the membrana tympani, where it becomes thinner.—See *Tab. Anat.* (*oſteol.*) *fig.* 13. *lit. f.* See alſo EAR, AQUÆDUCT.

From the beginning of the *Meatus*, almoſt half-way, ariſe a great number of ſmall hairs, at whoſe roots iſſue the ear-wax, which is intangled in thoſe hairs, the better to break the impetus of the external air, and prevent its too ſuddenly ruſhing in on the membrana tympani. See CERUMEN.

MEATUS *cyſticus*, a bilary duct, about the bigneſs of a gooſe-quill, which at about two inches diſtance from the gall-bladder, is joined to the meatus hepaticus; and theſe together from the ductus communis. See BILE, DUCT, and CYSTICUS.

MEATUS *urinarius*, or *urinary paſſage*, in women, is very ſhort, lined internally with a very thin membrane; next to which is a coat of a white ſubſtance. Through this coat, from ſome lacunæ in it, paſs ſeveral ducts, which convey a limpid glutinous matter, ſerving to anoint the extremity of the urethra.—See *Tab. Anat.* (*ſplanch.*) *fig.* 9. *lit. r. fig.* 11. *lit. k.* See alſo URINARY.

MECHANICS, MECHANICA, ΜΗΧΑΝΙΚΗ, a mixed mathematical ſcience, which conſiders motion and moving powers, their nature and laws, with the effects thereof, in machines, *&c.* See MOTION and POWER.

That part of *Mechanics* which conſiders the motion of bodies ariſing from gravity, is by ſome called *ſtatics*. See GRAVITY, STATICS, RESISTENCE, *&c.*—In diſtinction from that part which conſiders the *mechanical* powers, and their application, properly called *Mechanics*. See MECHANIC POWERS, MACHINE, ENGINE, FRICTION, EQUILIBRIUM, *&c.*

MECHANICAL, ſomething that relates to *Mechanics*, or is regulated by the nature and laws of motion. See MECHANICS, and MOTION.

In which ſenſe we ſay, mechanical powers, mechanical properties or affections, mechanical principles, reaſoning, knowledge, *&c.*

MECHANICAL *affections*, are ſuch properties in matter, as reſult from their figure, bulk, and motion. See AFFECTION and BODY.

MECHANICAL *cauſes* are thoſe founded on ſuch affections. See CAUSE.

MECHANICAL *ſolutions* are accounts of things on the ſame principles. See SOLUTION.

MECHANICAL *Philoſophy*, is the ſame with what we otherwiſe call the *corpuſcular philoſophy*; viz. that which explains the phænomena of nature, and the operations of corporeal things, on the principles of *Mechanics*, viz. the motion, gravity, figure, arrangement, diſpoſition, greatneſs or ſmallneſs of the parts which compoſe natural bodies. See CORPUSCLE, CORPUSCULAR, ATOM, PARTICLE, ATTRACTION, GRAVITY, *&c.*

MECHANICAL *powers*, denote the ſix ſimple machines; to which all others, how complex ſoever, are reducible, and of the aſſemblage whereof they are all compounded. See POWER and MACHINE.

The *Mechanical powers*, are the balance, lever, wheel, pully, wedge, and ſcrew; which ſee under their proper heads: BALANCE, LEVER, *&c.*

They may, however, be all reduced to one, *viz.* the *Lever*.

The principle whereon they depend, is the ſame in all, and may be conceived from what follows.

The momentum, impetus, or quantity of motion of any body, is the factum of its velocity, (or the ſpace it moves in a given time,) multiplied into its maſs. Hence it follows, that two unequal bodies will have equal moments, if the lines they deſcribe be in a reciprocal ratio of their maſſes.—Thus, if two bodies, faſtened to the extremities of a balance or lever, be in a reciprocal ratio of their diſtances from the fixed point; when they move, the lines they deſcribe will be in a reciprocal ratio of their maſſes.

E. gr. If the body A (*Tab. Mechanics*, *fig.* 6.) be triple the body B, and each of them be ſo fixed to the extremities of a lever A B, whoſe fulcrum, or fixed point is C, as that the diſtance of B C be triple the diſtance C A; the lever cannot be inclined on either ſide, but the ſpace B E, paſſed over by the leſs body, will be triple the ſpace A D, paſſed over by the great one. So that their motions or moments will be equal, and the two bodies in equilibrio. See MOTION.

Hence that noble challenge of Archimedes, *datis viribus, datum pondus movere*; for as the diſtance C B may be increaſed infinitely, the power or moment of A may be increaſed infinitely.—So that the whole of *Mechanics* is reduced to the following problem.

Any body, as A, *with its velocity* C, *and alſo any other body, as* B, *being given; to find the velocity neceſſary to make the moment, or quantity of motion in* B, *equal to the moment of* A, *the given body.*—Here, ſince the moment of any body is equal to the rectangle under the velocity, and the quantity of matter; as B : A : : C : to a fourth term, which will be *c*, the celerity proper to B, to make its moment equal to that of A. Wherefore in any machine or engine, if the velocity of the power be made to the velocity of the weight, reciprocally as the weight is to the power; ſuch power will always ſuſtain, or if the power be a little increaſed, move the weight.

Let, for inſtance, A B be a lever, whoſe fulcrum is at C, and let it be moved into the poſition *a C b*—Here, the velocity of any point in the lever, is as the diſtance from the centre. For let the point A deſcribe the arch A *a*, and the point B the arch B*b*; then theſe arches will be the ſpaces deſcribed by the two motions: but ſince the motions are both made in the ſame time, the ſpaces will be as the velocities. But it is plain, the arches A *a* and B *b* will be to one another, as their radii A C and A B, becauſe the ſectors A C *a*, and B C *b*, are ſimilar: wherefore the velocities of the points A and B, are as their diſtances from the centre C.

Now, if any powers be applied to the ends of the lever A and B, in order to raiſe its arms up and down; their force will be expounded by the perpendiculars S *a*, and *b* N; which being as the right ſines of the former arches, *b B* and *a* A, will be to one another alſo as the radii A C and C B; wherefore the velocities of the powers, are alſo as their diſtances from the centre. And ſince the moment of any body is as its weight, or gravitating force, and its velocity conjunctly; if different powers or weights be applied to the lever, their moments will always be as the weights and the diſtances from the centre conjunctly.—Wherefore, if to the ſame lever, there be two powers or weights applied reciprocally proportional to their diſtances from the centre, their moments will be equal; and if they act contrarily, as in the caſe of a ſtilliard, the lever will remain in an horizontal poſition, or the balance will be in equilibrio.—And thus it is eaſy to conceive how the weight of one pound may be made to equi-balance a thouſand, *&c.*

Hence alſo it is plain, that the force of the power is not at all increaſed by engines; only the velocity of the weight in either lifting or drawing, is ſo diminiſhed by the application of the inſtrument, as that the moment of the weight is not greater than the force of the power.—Thus, for inſtance; if any force can raiſe a pound weight with a given velocity, it is impoſſible by any engine to effect, that the ſame power ſhall raiſe two pound weight, with the ſame velocity: But by an engine it may be made to raiſe two pound weight, with half the velocity; or 10000 times the weight with $\frac{1}{10000}$ of the former velocity. See PERPETUAL MOTION.

MECHANICAL is alſo applied to a kind of *reaſoning*, which of late has got great ground both in phyſics, and medicine; thus denominated, as being conformable to what is uſed in the contrivance, and accounting for the properties and operations of machines. See PHYSICS.

This manner of thinking and arguing, Dr. Quincy inſiſts, is the reſult of rightly ſtudying the powers of a human mind, and the ways by which it is only fitted to get acquaintaince with material beings: For conſidering an animal body as a compoſition out of the ſame matter, from which all other bodies are formed, and to have all thoſe properties which concern a phyſician's regard, only by virtue of its peculiar make and conſtructure; it naturally leads a perſon to conſider the ſeveral parts, according to their figures, contexture, and uſe; either as wheels, pullies, wedges, levers, ſkrews, chords, canals, ciſterns, ſtrainers, or the like; and throughout the whole of ſuch enquiries, to keep the mind cloſe in view of the figures, magnitudes, and mechanical powers of every part or movement; juſt in the ſame manner, as is uſed, in enquiring into the motions and properties of any other machine. For which purpoſe it is frequently found helpful to deſign, or picture out in diagrams, whatſoever is under conſideration, as it is cuſtomary in common geometrical demonſtrations.

The knowledge obtained by this procedure is called *Mechanical knowledge*. See KNOWLEDGE.

MECHANICAL is alſo uſed in mathematics, to ſignify a conſtruction or proof of ſome problem, not done in an accurate and geometrical manner, but coarſely and unartfully, or by the aſſiſtance of inſtruments; as are moſt problems relating to the duplicature of the cube, and the quadrature of the circle. See CONSTRUCTION, QUADRATURE, DUPLICATION, DEMONSTRATION, and LINES.

MECHANICAL *arts*. See the article ARTS.

MECHANICAL *curve*, a term uſed by Des Cartes for a curve, which cannot be defined by any algebraic equation.—By which it ſtands contradiſtinguiſhed from algebraic or geometrical curves. See ALGEBRAICAL, and GEOMETRICAL.

M. Leibnitz and ſome others in lieu of mechanical curves, call them *tranſcendental curves*, and diſſent from Cartes, in excluding

TAB: MECHANICKS.

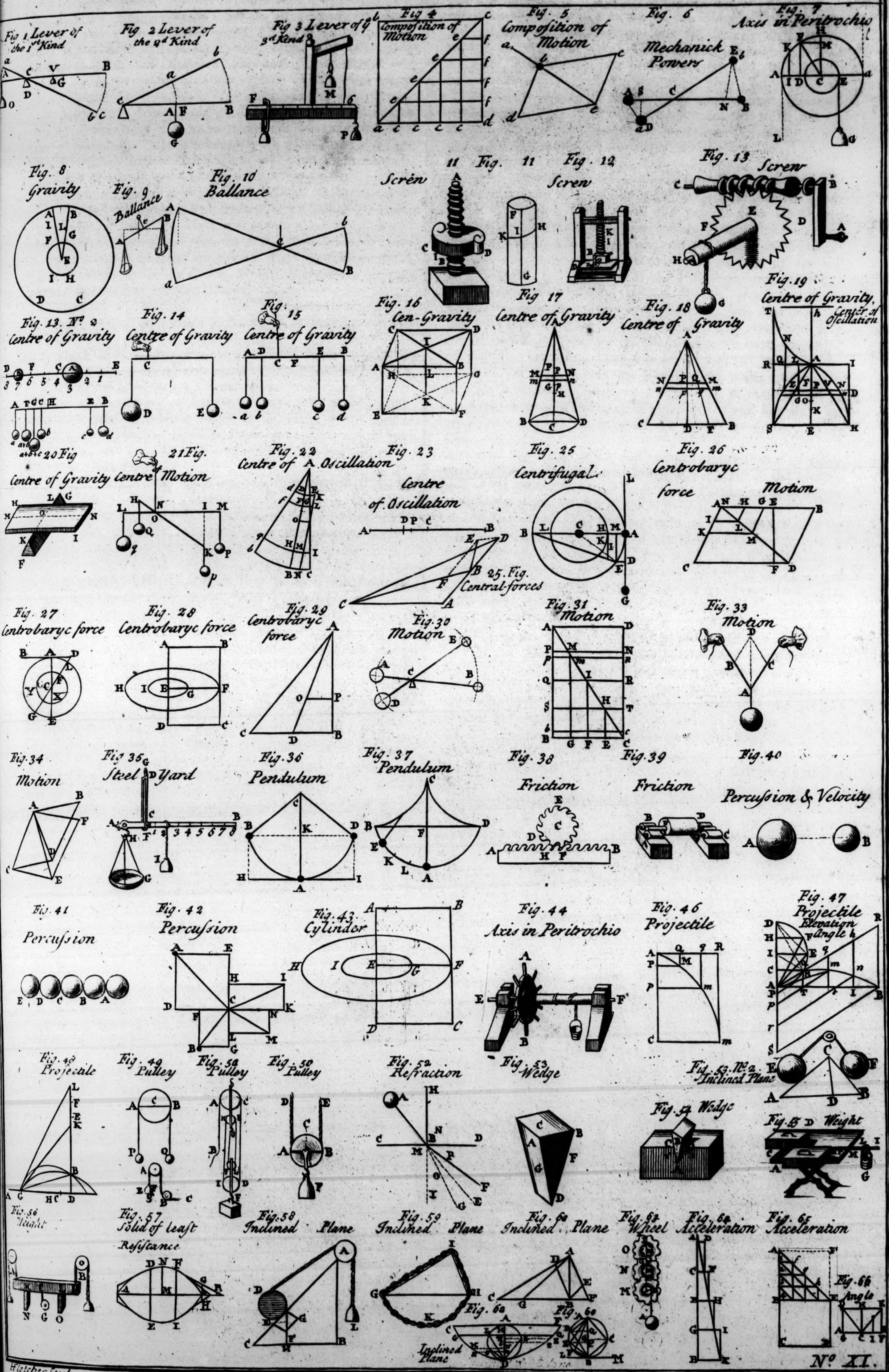
Fig 1 Lever of the 1st Kind
Fig 2 Lever of the 2d Kind
Fig 3 Lever of ye 3d Kind
Fig 4 Composition of Motion
Fig. 5 Composition of Motion
Fig. 6 Mechanick Powers
Fig. 7 Axis in Peritrochio
Fig. 8 Gravity
Fig. 9 Ballance
Fig. 10 Ballance
11 Fig. 11 Screw
Fig. 12 Screw
Fig. 13 Screw
Fig. 13. No. 2 Centre of Gravity
Fig. 14 Centre of Gravity
Fig. 15 Centre of Gravity
Fig. 16 Cen-Gravity
Fig 17 Centre of Gravity
Fig. 18 Centre of Gravity
Fig. 19 Centre of Gravity, Center of Oscillation
20 Fig Centre of Gravity
21 Fig. Centre Motion
Fig. 22 Centre of Oscillation
Fig. 23 Centre of Oscillation
25. Fig. Central-forces
Fig. 25 Centrifugal
Fig. 26 Centrobaryc force Motion
Fig. 27 Centrobaryc force
Fig. 28 Centrobaryc force
Fig. 29 Centrobaryc force
Fig. 30 Motion
Fig. 31 Motion
Fig. 33 Motion
Fig. 34 Motion
Fig. 35 Steel Yard
Fig. 36 Pendulum
Fig. 37 Pendulum
Fig. 38 Friction
Fig. 39 Friction
Fig. 40 Percussion & Velocity
Fig. 41 Percussion
Fig. 42 Percussion
Fig. 43 Cylinder
Fig. 44 Axis in Peritrochio
Fig. 46 Projectile
Fig. 47 Projectile Elevation Angle
Fig. 48 Projectile
Fig. 49 Pulley
Fig. 51 Pulley
Fig. 50 Pulley
Fig. 52 Refraction
Fig. 53 Wedge
Fig. 53. No. 2 Inclined Plane
Fig. 54 Wedge
Fig. 55 Weight
Fig. 56 Weight
Fig. 57 Solid of least Resistance
Fig. 58 Inclined Plane
Fig. 59 Inclined Plane
Fig. 60 Inclined Plane
Fig. 60 Inclined Plane
Fig. 60
Fig. 63 Wheel
Fig. 64 Acceleration
Fig. 65 Acceleration
Fig. 66 Angle

Fletcher sculp

No. XI.

cluding them out of geometry: Leibnitz has even found a new kind of tranſcendental equations, whereby theſe curves are defined: They are of an indefinite nature; that is, do not continue conſtantly the ſame in all points of the curve; in oppoſition to algebraic curves which do. See TRANSCENDENTAL, and CURVE.

MECHANISM *of the barometer.* See the article BAROMETER.

MECHANISM *of the double microſcope*, &c. See MICROSCOPE.

MECHOACAN, MECHOACANNA, called alſo *white jalap*, *white rhubarb*, and *american ſcammony*; a medicinal root, taking its name from a province of New Spain, from whence it is brought.

Mechoacan was known and uſed as a purgative before jalap, though the latter is now in more general uſe, as being found more efficacious. Yet *Mechoacan* is the ſweeter and more gentle of the two, and on that account preferable. See JALAP.

The ſeat of its action is chiefly in the extreme parts, for which reaſon it is accounted good in arthritic pains. It has the advantage of needing no preparation or corrective; and of purging in its own proper ſubſtance, ſuch as it grows.

M. Boulduc found by analyſing it, that it contains twelve times as much ſalt as reſin; but neither the ſaline nor reſinous extract purge ſo freely as the ſubſtance, even though taken in larger doſes; nor do they yet purge ſo gently.

In the choice of *Mechoacan*, prefer thoſe pieces which are the browneſt within, and whoſe ſubſtance is the cloſeſt, and moſt compact.

MECONIUM *, ΜΗΚΩΝΙΟΝ, in pharmacy, is the juice of the poppy, drawn by expreſſion, and dried. See POPPY.

* The word comes from the Greek *μηκων*, poppy.

Meconium differs from opium, in that this laſt ouzes out ſpontaneouſly after an inciſion made in the heads of the poppies, whereas the former is drawn by violence both from the heads and leaves, and even from the whole plant bruiſed and preſſed together. See OPIUM.

MECONIUM is alſo a black thick excrement, gathered in the inteſtines of a child during the time of geſtation.

In colour and conſiſtence, it reſembles pulp of caſſia. It is alſo found to reſemble *meconium*, or juice of poppy, whence it takes its name.

MEDAL *, MEDALIA, a ſmall figure, or piece of metal, in form of a coin, deſtined to preſerve to poſterity the portrait of ſome great man, or the memory of ſome illuſtrious action.

* Scaliger derives the word from the Arabic, *Methalia*, a coin whereon is impreſs'd the figure of a human head. Menage and Voſſius rather derive it from *Metallum*. Du Cange obſerves, that the obolus was antiently called *Medalia, quaſi Medietas nummi*, as being half of another coin.

The parts of a MEDAL, are the two ſides; one whereof is called the *face*, or *head*; the other the *reverſe*. See REVERSE.

On each ſide is the area or field, which makes the middle of the *Medal*; the rim or border; and the exergum, which is beneath the ground whereon the figures repreſented are placed. See EXERGUM. On the two ſides are diſtinguiſhed the type, and the inſcription or legend. The type or deviſe is the figures repreſented; the legend is the writing, eſpecially that around the *Medal*; though in the Greek *Medals*, the inſcription is frequently in the area. What we find in the exergum, is frequently no more than ſome initial letters, whoſe meaning we are unacquainted withal; though, ſometimes too, they contain epochas, or words that may be accounted an inſcription. See LEGEND.

Some authors imagine, that the antient *Medals* were uſed for money. M. Patin has a chapter expreſs to prove, that they had all a fixed regular price in payments; not excepting even medallions. F. Joubert is of the ſame opinion. Others, on the contrary, maintain, that we have no real monies of the antients; and that the *Medals* we now have, never had any courſe as coins. Between theſe two extremes, there is a medium, which appears by much more reaſonable than either of them. See MONEY.

MEDALS are divided into *antient* and *modern*.

Antient MEDALS are either of the higher or lower antiquity.—The former claſs conſiſts of ſuch as were ſtruck before the end of the third century. The latter of ſuch as were ſtruck between the third and ninth centuries.

Modern MEDALS are thoſe ſtruck within theſe three hundred years. See COIN.

Among the antient *Medals* ſome are Greek, others Roman.—The Greek *Medals* are the moſt antient. That people ſtruck *Medals* in all the three metals with ſuch exquiſite art, as the Romans could never come up to. The Greek *Medals* have a deſign, accuracy, force, and a delicacy that expreſſes even the muſcles and veins, and it muſt be own'd, goes infinitely beyond any thing of the Romans.

There are alſo Hebrew *Medals*, Punic, Gothic, and Arabic *Medals*; which make new claſſes in the antient and modern ones.

Conſular MEDALS are ſo called, to diſtinguiſh them from the imperial; not that they were ſtruck by order of the conſuls, but becauſe in thoſe times the republic was governed by conſuls.

Of theſe, father Joubert reckons about fifty or ſixty of gold; two hundred and fifty of copper; and near a thouſand of ſilver.—Goltzius has deſcribed them in a chronological order, according to the Faſti conſulares. Urſinus has diſpoſed them genealogically, according to the order of the Roman families.

M. Patin has collected an entire ſeries of them, in the ſame order with Urſinus; and only computes one thouſand thirty-ſeven conſulars, which relate to one hundred ſeventy-eight Roman families. M. Vaillant, and M. Morel, each promiſed a new edition of the conſular *Medals*; M. Vaillant kept his word, and his book was printed ere he died, in three volumes, folio.

The conſular *Medals* are certainly the moſt antient *Medals* of the Romans: And yet thoſe of copper and ſilver do not go beyond the four hundred eighty fourth year of Rome; nor thoſe of gold beyond the year five hundred forty ſix. If any are produced of an older date, they are ſpurious.

Among the *Imperial* MEDALS, we diſtinguiſh between the *upper* and the *lower empire*: The upper empire commenced under Julius Cæſar, and ended about the year of Jeſus Chriſt two hundred and ſixty: The lower empire comprehends near one thouſand two hundred years, *viz.* till the taking of Conſtantinople.—It is the cuſtom, however, to account all the imperial *Medals*, till the time of the Palæologi, among the antique; and yet we have no imperial *Medals*, of any conſiderable beauty, later than the time of Heraclius, who died in 641.

After the time of Phocas and Heraclius, Italy became a prey to the Barbarians; ſo that the monuments we have remaining of thoſe two emperors, finiſh the ſet or ſeries of imperial *Medals*.—To theſe are added the *Medals* of the lower empire, and the Greek emperors; whereof a ſeries may be made as low as our time, taking in the modern ones.—M. Patin has made an ample collection of the imperial *Medals* till the time of Heraclius.

The *Gothic* MEDALS make part of the imperial ones: They are ſo called, as having been ſtruck in the times of the Goths, and in the declenſion of the empire; and ſavouring of the ignorance, and barbarity of the age.

As to *Modern* MEDALS they are ſuch as have been ſtruck in Europe, ſince the uſurpation of the Goths has been extinct; and ſculpture and engraving have begun to re-flouriſh.—The firſt was that of the famous reformer John Huſs in 1415; if any pretend to be more antient, they are ſpurious.—In France, there were none ſtruck with the king's effigy before the reign of Charles VII.

The ſtudy of modern *Medals* is ſo much the more uſeful, as they afford more light than the antient, and mark the times and conſequences of events more preciſely; whereas the inſcriptions of the antient *Medals* are very ſhort, and ſimple, and generally without any date.—Add to this, that the antient *Medals* are extremely liable to be counterfeited, by reaſon of the exceſſive price they bear. But in the modern, there is not near that danger of being impoſed upon.

There are no true Hebrew *Medals*; thoſe which we ſee of the heads of Moſes, and Jeſus Chriſt, are ſpurious and modern. We have a few ſhekels of copper and ſilver, with Hebrew or Samaritan legends; but none of gold; though there is mention made of one in the king of Denmark's cabinet.—F. Souciet has a diſſertation on the Hebrew Medals, commonly called *Samaritan Medals*, where he diſtinguiſhes accurately between the genuine and ſpurious, and ſhews, that they are true Hebrew coins ſtruck by the Jews, but on the model of the antients; and that they were current before the Babyloniſh captivity. See SAMARITAN.

Singular MEDALS, in the popular ſenſe, are ſuch as are not found in the cabinets of the curious, and are only met with by chance; but in the ſtricter ſenſe are ſuch, whereof there is not above one of a kind extant.—The Otho in large copper is a ſingular *Medal*. When a *Medal* exceeds the value of ten or twelve piſtols, it is worth what the owner pleaſes. The Peſcennius Niger, and Pertinax, are very rare in all metals. The Didius Julianus is hardly found any where, but in large copper. Carteron, a Dutchman, and ſome others, have made mills on purpoſe to ſtrike *Medals* that never were, as thoſe of Cicero, Virgil, Priam, *&c.*

Greek MEDALS are ſuch as have either the heads of Greek emperors, or Greek inſcriptions.

Falſe or *Spurious* MEDALS, are thoſe counterfeited, and put off for antique, when they are not.

Mutilated MEDALS, are thoſe that are not entire, or are defaced.

Redintegrated MEDALS, are thoſe wherein we find the letters *Reſt.* which ſhew that they have been reſtored by the emperors.

Dipt MEDALS, are ſtruck of pure copper, and afterwards ſilver'd.—This is a contrivance that the curious have frequent recourſe to, in order to compleat their ſilver ſets.

Covered or *plaited* MEDALS, are thoſe which have only a thin ſilver leaf over the copper, but which are ſtruck ſo artfully, that the cheat does not appear, without cutting them: theſe are the leaſt ſuſpected.

Grained or *indented* MEDALS, are thoſe, whoſe edges are cut or notched like teeth, which is a ſign of purity and antiquity. They are common among the conſulars, but we have none later than

Auguſtus. There are ſeveral of them, however, among thoſe of the kings of Syria.

MEDALS *countermarked*, are thoſe which have marks cut either on the ſide of the head, or of the reverſe: —Theſe countermarks ſerve to denote the change of their value; and this kind is much enquired for by the curious. There are alſo

Caſt MEDALS, which are not ſtruck, but caſt in a mould; and

MEDALS without Reverſe. See the article REVERSE.

Medals have been ſtruck in three kinds of metals, which make three ſeveral ſets, or ſeries's in the cabinets of the curious. That of gold is the leaſt numerous, as not conſiſting of above one thouſand, or twelve hundred of the imperial; that of ſilver may contain about three thouſand imperial; and that of braſs or copper, of the three ſeveral ſizes, *viz.* the great, the middle, and the ſmall, conſiſts of ſix or ſeven thouſand, all imperial. See SERIES.

It is not either the metal, or the ſize, which makes a *Medal* valuable; but the ſcarcity of the head, or of the reverſe, or the legend.—Some *Medals* are common in gold, which yet are very rare in copper; and others very rare in ſilver, which in copper and gold are very common. The reverſe is ſometimes common, where the head is ſingular; and ſome heads are common, whoſe reverſe are very ſcarce.

There are alſo *Medals* very ſcarce in ſome ſets, and yet very common in others: For inſtance, there is no Antonia in the ſets of large copper, and the middle copper is forced to ſupply its place. The Otho is very rare in all the copper ſets, and yet common in the ſilver ones. Otho's, of the large copper, are held at an immenſe price; and thoſe of the middle copper at forty or fifty piſtoles. And the Gordians Afric, are rated near as high. Singular *Medals* are invaluable.

M. Vaillant has collected all the *Medals* ſtruck by the Roman colonies; F. Hardouin thoſe of the Greek and Latin cities. F. Noris thoſe of Syria.—M. Moral has undertaken an univerſal hiſtory of *Medals*, and promiſed cuts of twenty-five thouſand. He ranges them under four claſſes: The firſt contains the *Medals* of kings, cities, and people, which have neither the name nor image of the Roman emperors. The ſecond contains the conſular *Medals*; the third the imperial *Medals*; and the fourth, the Hebrew, Punic, Parthian, French, Spaniſh, Gothic, and Arabic.—He begins with the imperial, and brings them down as low as Heraclius. He places the Latin, in order, before the Greek.

Ad. Occo, a German phyſician, and count Mezzabarba, have endeavoured to range the *Medals* in a chronological order; but that is impracticable. For in many of the imperial *Medals* there is no mark either of the conſulate, or of the year of the reign; and ſince Gallienus, there are few of the Roman imperial *Medals* that bear the leaſt footſteps of chronology.

The moſt noted *Medaliſts*, or authors on *Medals*, are, Antonius Auguſtinus, Wolf. Lazius, Ful. Urſinus, a learned antiquary, Æneas Vicus, Hubert Goltzius, a famous graver, Oiſelius, Seguin, Occo, Triſtan, Sirmond, Vaillant, Patin, Noris, Spanheim, Hardouin, Morel, Joubert, Mezzabarba, Beger, *&c.*

For the manner of ſtriking *Medals*, ſee the article COINING.

Academy of MEDALS. See the article ACADEMY.

Repairing a MEDAL. See the article REPAIR.

Reſtitution of MEDALS. See the article RESTITUTION.

Votive MEDALS. See the article VOTIVE.

MEDALLION *, or MEDALION, a *Medal* of extraordinary bigneſs. See MEDALS.

* The word is formed from the French *Medallion*, or Italian *Medaglion* which ſignify the ſame, and which were originally formed from *Metalliones*, a name by which theſe pieces are frequently called in antient Latin writers.

Medallions are ordinarily a kind of *Medals* which princes uſe to preſent, as a token of honour or eſteem; for which reaſon the Romans called them *Miſſilia*.

Medallions were never any current coins, as medals probably were: There were ſtruck purely to ſerve as public monuments, or to make preſents of.

There cannot be any ſet made of them, even though the metals and ſizes ſhould be joined promiſcuouſly: The beſt cabinets do not contain above four or five hundred; though M. Morel promiſes us figures of above a thouſand.

Authors vary about the time when they firſt began to be ſtruck: Some antiquaries will have it under the empire of Theodoſius: but this muſt be a miſtake; for there were ſome ſtruck even in the upper empire: witneſs a Nero, a Trajan, and an Alexander Severus, ſtill extant.—*Medallions* of gold are very rare, as alſo thoſe of a large copper.

Medallions are diſtinguiſhed from medals by the volume, that is, by the thickneſs, and compaſs; as well as by the largeneſs, and relievo of the head.

MEDIAL *alligation*. See ALLIGATION.

MEDIANA, the name of a vein, or little veſſel, made by the union of the cephalic and baſilic, in the bend of the elbow.

It is not a particular vein, or a third vein of the arm, as ſome authors imagine; but merely a branch of the baſilica; which running into the inner part of the elbow, unites with the cephalica, and forms a common vein, called *Mediana*; and by the Arabs, the *black vein*.—See *Tab. Anat.* (*angeiol.*) *fig.* 6. *lit. p.*

MEDIANA *linea*, a line or ſeam running down the middle of the tongue, and dividing it into two equal parts; though not ſo effectually, but that the blood-veſſels of the one ſide communicate with thoſe of the other. See TONGUE.

Columnæ MEDIANÆ, in Vitruvius, are the columns in the middle of a portico; whoſe intercolumnation is to be larger than thoſe of the angular columns. See COLUMN.

MEDIASTINA, the name of a vein of the mediaſtinum. See VEIN, and MEDIASTINUM.

MEDIASTINUM, in anatomy, a double membrane, formed by a duplicature of the pleura; ſerving to divide the thorax, and the lungs into two parts; and to ſuſtain the viſcera, and prevent their falling from one ſide of the thorax to the other. See THORAX, *&c.*

It proceeds from the ſternum, and paſſing ſtrait down through the middle of the thorax to the vertebræ, divides its cavity into two. It contains the heart between its two lamellæ, and it affords a paſſage to the vena cava, the oeſophagus, and the ſtomachic nerves. The membranes of the *Mediaſtinum* are finer and thinner than the pleura, and have a little fat. It receives branches of veins and nerves from the mammillary, and diaphrágmatic, particularly, one called *Mediaſtina*; its nerves come from the ſtomachic: it has alſo ſome lymphatics, which open into the thoracic duct.

The *Mediaſtinum* divides the thorax longitudinally into two parts; to the end that one lobe of the lungs may officiate, if the other be hindered by a wound on the other ſide. Sometimes there is a matter contained betwixt its membranes, immediately under the ſternum, which may occaſion the tapping of this place.

MEDIASTINUM *cerebri*, the ſame with *ſeptum tranſverſum*. See SEPTUM, *&c.*

MEDIATE, or INTERMEDIATE, a term of relation to two extremes, applied to a third, which is in the middle between them. See MEAN, and MEDIUM.

Subſtance is a genus with regard to man; but between the two there are other *mediate* genus's, as body and animal.

Mediate ſtands oppoſed to *immediate*. Thus when we ſay, that God and man concur to the production of man; God is the *Mediate* cauſe, man the *immediate*.—It is a popular queſtion in theology, whether the holy ghoſt convert a ſinner *mediately* or *immediately*? See IMMEDIATE, and INTERMEDIATE.

MEDIATE *modes*.	See the article	MODES.
MEDICAMENTOSUS *lapis*		LAPIS.

MEDICINAL *hours*, are thoſe parts of the day ſuppoſed proper to take medicines in. See MEDICINE.

Of which there are uſually reckoned four, *viz.* in the morning faſting, about an hour before dinner, about four hours after dinner, and going to bed: but in acute caſes, the times are to be governed by the ſymptoms and aggravation of the diſtemper; without regard to any *Medicinal hours*.

MEDICINAL *waters*. See the article WATER.

MEDICINALIS *ſacculus*. See the article SACCULUS.

MEDICINE, MEDICINA, the art of healing. See HEALING.

Medicine, popularly called *phyſic*, conſiſts, according to Boerhave, in the knowledge of thoſe things, by whoſe application, life is either preſerved ſound and healthy, or when diſordered, again reſtored to its priſtine healthineſs. See HEALTH, and DISEASE.

Galen defines *Medicine*, the art of preſerving preſent health, and of retrieving it when paſt: Hippocrates, the addition of what is wanting, and the retrenchment of what is redundant: Herophilus, the knowledge of things good, indifferent, and ill, with regard to health.

Medicine muſt have been nearly coeval with the world. The injuries and viciſſitudes of the air, the nature and qualities of foods, the violence of external bodies, the actions of life, and laſtly, the fabrick of human compages, muſt have rendered diſeaſes almoſt as old as mankind: And the preſence of a diſeaſe, as it brings with it a painful ſenſation, or the loſs perhaps of the uſe of a limb, does, by a neceſſary mechanical impulſe, both in brutes and men, compel the diſeaſed to ſeek for help, and to apply remedies, either by mere experiment, or by inſtinct, and ſpontaneous appetite.—Hence aroſe the art of *Medicine*; which, in this ſenſe, has been always, every where, among mankind.

Antient hiſtories and fables tell us, that in a little time, from the flood, it was ſo well cultivated by the Aſſyrians, Babylonians, Chaldeans, and Magi, that they were able to remove preſent diſeaſes, and prevent future ones.—Hence it paſſed into Egypt, Lybia Cyrenaica, and Crotona; and thence into Greece, where it flouriſhed, principally in the iſlands of Cnidus, Rhodes, Cos, and in Epidaurus.

The firſt foundations of the art were laid by chance, natural inſtinct, and events unforeſeen: Theſe were improved by the memory of the ſucceſs of former experiments; by writing down diſeaſes, their remedies, and events, on columns, paintings, and the walls of their temples; by expoſing the ſick in the markets and publick ways, that thoſe who paſſed by, might enquire into the diſeaſe, and communicate a remedy, if they knew any: and laſtly, by analogy, or reaſoning, from a compariſon of things already obſerved, with things preſent and to come.

The art at length received a much greater degree of perfection, by the appointing of phyſicians; ſome for the cure of particular diſeaſes, and others for diſeaſes in general; by an accurate obſervation of the diſeaſe, and its ſymptoms; and by an exact deſcription of the remedy, and its uſe: immediately, upon which, it got among the prieſts, and at length was confined to particular families; deſcending, by way of inheritance, from father to ſon: which, again, proved a great bar to its progreſs. The extiſpicy or inſpecting the entrails of beaſts, uſed by the prieſts; the cuſtom of embalming dead carcaſes, and even butchery itſelf, promoted the knowledge of the human fabrick, and of the cauſes both of health, diſeaſes, and death.

Laſtly, the diſſecting of live animals for philoſophical purpoſes, diſtinct narratives of the cauſe, riſe, increaſe, criſis, declenſion, end, and effect of diſeaſes, and the knowledge of *Medicines*, their choice, preparation, application, powers, and events, ſeemed to have almoſt brought the art to its perfection.

Hippocrates, who was cotemporary with Democritus, and perfectly acquainted with every thing then diſcovered, and beſides, furniſhed with a great number of obſervations of his own; collecting into one all that was valuable and uſeful; compiled a body of Greek *Medicine*; and was the firſt who deſerved the title of a true *phyſician*: for being a maſter of the ἐμπειρία, experience, as well as of analogy and reaſon, and withal well verſed in a pure philoſophy; he, firſt, made phyſic rational; and laid the foundation of the dogmatical *Medicine*. which has ever ſince obtained. See DOGMATICAL, THEORETICS, &c.

What Hippocrates had done, continued a long time ſacred and unaltered, and was the ſtanding practice of many ages; at length Aretæus the Cappadocian digeſted it into a more orderly body: whence, in various places, at various times, and by various hands, particularly the Alexandrian ſchool, it was further altered and improved, till at length it came into the hands of Claud. Galen; who, collecting the ſcattered parts, digeſting thoſe which were confuſed, and explaining every thing by the rigid doctrines of the peripatetics, did both a great deal of ſervice, and a great deal of miſchief, to the noble art; he being the firſt who introduced the doctrine of the elements, the cardinal qualities, and their degrees, the four humours, &c. into *Medicine*: and on theſe he made the whole art to depend. See GALENIC, TEMPERAMENT, HUMOUR, QUALITY, &c.

After the ſixth century, the arts were not only extinguiſhed, but almoſt all memory of them loſt, till the ninth; from which, to the thirteenth, *Medicine* was vigorouſly cultivated by the Arabs in Aſia, Africa, and Spain: who applying themſelves particularly to the ſtudy of the materia medica, and its preparations, and to the operations of chirurgery, rendered both more juſt and more copious at the ſame time. And yet Galen's errors became now more predominant than ever.

At length, however, they were purged out and exploded by two different means; principally indeed by the reſtoration of the pure diſcipline of Hippocrates in France; and then alſo by the experiments and diſcoveries of chymiſts and anatomiſts: till at length the immortal Harvey overturning, by his demonſtrations, the whole theory of the antients, laid a new and certain baſis of the ſcience. Since his time, *Medicine* is become free from the tyranny of any ſect, and is improved by ſure diſcoveries in anatomy, chymiſtry, phyſics, botany, mechanics, &c. See MECHANICAL.

Hence it appears, that the art originally conſiſted ſolely in the faithful collecting of obſervations; and that a long time after, they began to enquire, and diſpute, and form theories: the firſt part has ever continued the ſame; but the latter always mutable. See HYPOTHESIS, &c.

For the ſeveral ſects that have aroſe in *Medicine*, ſee EMPIRIC, DOGMATIC, GALENIST, CHYMIST, PARACELSIST, HERMETICAL, &c.

Medicine is divided into five principal branches. The firſt conſiders the human body, its parts and fabric, life and health, and the effects following from them: this is called *phyſiology*, the *doctrine of the animal œconomy*, or *of the uſe of the parts*: and its objects, now enumerated, are called *res naturales*, or things according to nature. See PHYSIOLOGY, OECONOMY, NATURAL *Things*, &c.

The ſecond branch conſiders the diſeaſes of the human body, their differences, cauſes, and effects; and is called *Pathology*, as it conſiders the diſeaſes; *Ætiology*, as it enquires in their cauſes; *Noſology*, when it examines their differences; and laſtly, *Symptomatology*, when it explains their effects.—The objects of this part are called *Res præternaturales*, or beyond nature. See PATHOLOGY, ÆTIOLOGY, &c.

The third branch conſiders the ſigns or ſymptoms, and how to apply them to uſe; ſo as to judge both in a ſound, and a diſeaſed body, what, which, is, will be, the degree, order, effect, of the health, or the diſeaſe: This is called *Semeiotica*.—Its objects are things both natural, non-natural, and præternatural. See SEMEIOTICA.

The fourth branch conſiders the remedies, and their uſe, whereby life may be preſerved; whence it is called *Hygieine*. Its objects are what we ſtrictly call *Non-natural*. See HYGIEINE and NON-NATURALS.

Laſtly, The fifth furniſhes the materia medica, its preparation, and manner of exhibition, ſo as to reſtore health, and remove diſeaſes; and is called *Therapeutica*, comprehending the *Diætetica*, *Pharmaceutica*, *Chirurgica*, and *Jatrica*. See DIÆTETIC, PHARMACEUTIC, CHIRURGERY, and THERAPEUTIC.

Clinical MEDICINE, *Medicina clinica*. See CLINICA.

Characters in MEDICINE. } See the article { CHARACTERS.
Pandects of MEDICINE. } { PANDECT.

MEDICINES, or MEDICAMENTS, denote any natural ſubſtances, applied to a human body, in order to anſwer ſome intention of cure. See REMEDY.

Medicines are diſtinguiſhed, with regard to the manner of application, into *internal* and *external*.

Internal MEDICINES, are thoſe taken in at the mouth.

External, or *topical* MEDICINES, are thoſe applied outwardly to any particular part. See TOPIC, &c.

With regard to the different manner of their operation, *Medicines* are diſtinguiſhed into *agglutinants*, *alterants*, *anaſtomatics*, *aſtringents*, *evacuants*, *incarnatives*, *ſpecifics*. See EVACUANT.

A general idea of the manner wherein *Medicines* operate on a human body, as explained by the ſect of mechanical phyſicians, may be conceived from what follows.

A few different ſorts of particles, variouſly combined, will produce great variety of fluids; ſome may have one ſort, ſome two, ſome three or more. If we ſuppoſe only five different ſorts of particles in the blood, and call them *a*, *b*, *c*, *d*, *e*; their ſeveral combinations, without varying the proportions in which they are mixed, will be theſe following: but whether more or leſs, need not be determined.

ab : *ac* : *ad* : *ae* :
bc : *bd* : *be* : *cd* :
ce : *de* : *abc* : *adc* :
abd : *abe* : *ace* : *ade* :
bdc : *bde* : *bec* : *dec* :
abcd : *abce* : *acde* : *abde* : *bcde* : *abcde*.

No theory of ſecretion has hitherto been able to give any tolerable account of the operation of ſuch *Medicines*, as promote an evacuation. For if the humours be equally mixed with the blood, that is, if the blood be in every part of the body the ſame, and its particles be not more apt to form certain humours, in ſome certain parts of the body, than in others; or if they be not forced, by the power of ſome *Medicine*, to form ſuch humours; then the quantities of humour, ſeparated in equal times, will always be as the velocity of the blood; but the velocity of the blood is ſeldom doubled by any *Medicine*, and never tripled by the moſt acute fever. The quantity of humour, however, drawn off by evacuating *Medicines*, is often twenty times greater than the natural quantity; and therefore, upon ſuppoſition that the humours are every where equally mixed with the blood, the operation of evacuating *Medicines* can never be accounted for. See PURGATIVE.

Though this argument have the ſtrength of a demonſtration, yet there are ſome who explain the operation of purgative, and other evacuating *Medicines*, by a ſtimulating faculty; whereby the ſluggiſh juices are not only forced out, but the obſtructed canals opened, and the motion of the blood quickened. But though ſuch a power be allowed, it would remain to be explained, why certain *Medicines* do only ſtimulate certain glands? For it is evident, that evacuating *Medicines* have ſome other power, beſides the ſqueezing out ſtagnant juices; becauſe when they are all ſqueezed out, they ſtill evacuate as much, if they be repeated, as they did before: as is plain, by continuing a ſalivation for many days. 2°. We cannot ſuppoſe, that all bodies have every where, and at all times, juices ſtagnating; but theſe *Medicines* conſtantly produce their effects, more or leſs, at all times. 3°. If the veſſels be ſuppoſed to be obſtructed, an evacuating *Medicine* could but double the quantity that was evacuated, before it was taken. 4°. If theſe *Medicines* operate only theſe ways, then in a healthful body, where there were no obſtructions, they would have no effect at all. 5°. If the removing obſtructions were the cauſe of a greater quantity evacuated, then the evacuation ſhould ſtill continue in a greater degree than before the obſtruction was removed; whereas, in fact, we conſtantly find it leſs, as the *Medicine* works off. 6°. Though a *Medicine*, by ſtimulating a veſſel, may quicken the motion of the fluid in that veſſel; yet it can never increaſe the quantity of fluid running through it, in equal ſpaces of time; becauſe it quickens the motion of the fluid, only by contracting the veſſel: and therefore the faſter the fluid is made to run through the veſſel, the leſs fluid does the orifice of the veſſel admit; and conſequently, after the veſſel is contracted by the ſtimulating *Medicine*, the ſecretion will be leſs, inſtead of being greater.

That a ſtimulus cauſes the part on which it acts, to contract, is matter of fact; and that purgative *Medicines* do ſtimulate the bowels; but it may perhaps be likewiſe ſaid, they ſtimulate the heart and arteries, and increaſe their force, becauſe they not only quicken, but raiſe the pulſe: ſo that a greater quantity of blood is ſent to the glands of the guts. This may be granted; but not that it is the principal action of purgative *Medicines*; becauſe that, by the ſame force, a greater quantity of blood is ſent to all the other glands of the body, whoſe fluids are not, however, ſenſibly increaſed; and the glands of the inteſtines receive a leſs quantity, in proportion, than any others, becauſe they cannot be ſo much dilated by the greater force of the blood, as others, which are not ſo much ſtimulated by the *Medicine*.

There are others, who will have evacuating *Medicines* endued with an attenuating quality, by which they diſſolve all the coheſions of the particles of the blood, and ſo ſet the ſeveral humours at liberty, to paſs through their proper glands: but if theſe *Medicines* have a power univerſally to diſſolve all the coheſions of the blood, then every evacuating *Medicine* would equally and indifferently increaſe the quantity of every ſecretion. Mercury would as conſtantly purge as ſalivate, and nitre promote perſpiration, as well as urine; but this is repugnant to experience. If they have a power to diſſolve certain coheſions, and not others; this is but ſetting certain particles at liberty to paſs through their proper glands, which were not ſo before; and is a preparing the humours, in order to increaſe the quantity of ſecretion. Evacuating *Medicines* muſt therefore have a power to affect ſome particles, and not others; that is, to repel ſome, and attract, retain, and alter others; and this is what may be affirmed to be in all *Medicines*, and is what a thouſand chymical experiments demonſtrate.

The ſeveral humours then being formed, by the different coheſion of the particles of blood, the quantity of humour ſecerned by any gland, muſt be in a proportion compounded of the proportion that the number of the particles cohering in ſuch a manner as is proper to conſtitute the humour which paſſes through the gland, bears to the maſs of blood; and of the proportion of the quantity of blood that arrives at the gland. And hence it follows, that where there is a determinate quantity of a certain humour to be ſeparated, the number of particles that are proper to compoſe the ſecerned liquor, muſt be reciprocally proportional to the quantity of the blood that arrives at the gland: and therefore, if the quantity of the ſecretion is to be increaſed, the number of particles muſt be increaſed; if the ſecretion is to be leſſened, the number of particles, proper for ſuch a ſecretion, muſt be leſſened in the ſame proportion.

Medicines, therefore, which can alter the coheſions, and combinations of the particles, may either increaſe or diminiſh the quantity of any ſecretion. Thus, ſuppoſe the humour, which paſſes through the glands of the inteſtines, to be compoſed of three or four ſeveral ſorts of particles; that *Medicine*, which will eaſily cohere to thoſe particles, and cohering, increaſe their mutual attractions, ſo as they may unite in greater numbers at, or before they arrive at the inteſtines, than they would have done, if the *Medicine* had not been given, muſt neceſſarily increaſe the quantity of humour which paſſes through the glands of the inteſtines; if the quantity of blood which arrives at the glands, be not diminiſhed in the ſame proportion, as the number of particles is increaſed.—After the ſame manner do diuretics, ſudorifics, and *Medicines* which promote all other ſecretions, operate. See DIURETIC, SUDORIFIC, &c.

Why increaſing the quantity of ſome ſecretions, ſhould diminiſh that of others, is not eaſy to explain on any other foot: for if the blood be equally mixed in every part of the body, with all the humours which are ſeparated from it; that is, if the mixture of the blood be every where alike, ſo that every humour bears the ſame proportion to the reſt of the arterial blood, in one part of the body, that it does in another; and if every humour has its own proper gland, through which it is ſeparated: then what is ſeparated by one gland, is not ſubſtracted from another; and conſequently does not diminiſh the quantity of humour which flows to this other, but does indeed rather increaſe the quantity of this other ſecretion: for the more any one humour is carried off, the greater proportion any other remaining in the blood, bears to the remaining blood: And therefore the more any one ſecretion is increaſed, the more all the reſt ſhould be increaſed likewiſe. But if all the humours be compoſed by a combination of a few different ſorts of particles, then the more apt theſe particles are to run into any one ſort of combination, the leſs all other combinations muſt be: and conſequently the increaſing any one ſecretion, muſt neceſſarily diminiſh the quantity of all others; but moſt eſpecially of that, which has the moſt of the ſame ſort of particles. See SECRETION, HUMOUR, &c.

Capital MEDICINES. See the article CAPITAL.

Chalaſtic MEDICINES. See the article CHALASTIC.

Hypochondriacal MEDICINES. See HYPOCHONDRIACAL.

Hyſteric MEDICINES. See the article HYSTERIC.

MEDIETAS *linguæ*, an inqueſt impanneled, whereof the one half conſiſts of natives or denizens, the other of aliens.

It is uſed in pleas, wherein the one party is a ſtranger, and the other a denizen.—Solomon de Stanford, a Jew, in the Time of Edward I. had a cauſe tried before the ſheriff of Norwich, by a jury of *ſex probos & legales homines, & ſex legales judæos de civitate Norvici*. See JURY.

MEDITATION, an act by which we conſider any thing cloſely, or wherein the ſoul is employed in the ſearch, or conſideration of any truth. See ATTENTION.

In religion, it is uſed to ſignify a conſideration of the myſteries, and grand truths of the chriſtian faith.

Myſtic divines, make a great difference between *Meditation*, and *contemplation*: The former conſiſts in diſcurſive acts of the ſoul, conſidering methodically, and with attention, the myſteries of faith, and the precepts of morality; and is performed by reflections and reaſonings, which leave behind them manifeſt impreſſions in the brain.—The pure contemplative have no need of *Meditation*, as ſeeing all things in God at a glance, and without any reflection.

When a man therefore has once quitted *Meditation*, and is arrived at contemplation, he returns no more; and, according to Alvarez, never reſumes the oar of *Meditation*, except when the wind of contemplation is too weak to fill his ſails. See CONTEMPLATION.

MEDITERRANEAN, ſomething incloſed within land; or that is remote from the ocean. See EARTH, OCEAN, &c.

MEDITERRANEAN is more particularly uſed to ſignify that large ſea, which flows between the continents of Europe, and Africa; entring by the ſtreights of Gibraltar, and reaching into Aſia, as far as the Euxine ſea, and the Palus Mæotis. See SEA.

The Mediterranean was antiently called the *Grecian Sea*, and the *Great Sea*: It is now cantoned out into ſeveral diviſions, which bears ſeveral names. To the weſt of Italy it is called the *Liguſtic*, or *Tuſcan Sea*; near Venice, the *Adriatic*; towards Greece, *Ionic* and *Ægean*; between the Helleſpont and the Boſphorus, the *White Sea*, as being very ſafe; and beyond, the *Black Sea*, its navigation being dangerous.—The Arabs call the Mediterranean Sea, the *chamber-pot*, by reaſon, it ſeems, of its figure.

MEDITULLIUM, is uſed by anatomiſts for that ſpongy ſubſtance between the two plates of the cranium, and in the interſtices of all laminated bones. See BONE, and CRANIUM.

MEDIUM, a latin term, ſignifying *middle*, or *mean*. See MEAN and MEDIATE.

MEDIUM, in logic, or *Medium of a ſyllogiſm*, called alſo the *mean*, or *middle term*, by the Italians, *mezzo termino*; is an argument, reaſon, or conſideration, for which we affirm, or deny any thing: Or it is the cauſe, why the greater extreme is attributed to, or denied of the leſs, in the concluſion. See MAJOR, MINOR, CONCLUSION, &c.

Thus, in the ſyllogiſm, ‘ Every good thing is to be deſired; ‘ but all virtue is good; therefore all virtue is to be deſired.’ The term *good* is the *medium*; *virtue* the leſs extreme, and to be deſired the greater. See SYLLOGISM, EXTREME, PROPOSITION, TERM, PREMISSES, &c.

It is called *medium*, as being a kind of mediator between the ſubject and predicate; or, by reaſon, the extremes are ſo diſpoſed as to affirm, or deny by means hereof.—Some call it *argumentum tertium*, a third argument; and others ſimply *argumentum*, as being the cauſe why we aſſent to the concluſion. See ARGUMENT.

Mediums, or *middle terms*, are the things principally ſought for, in diſcourſing; ſo that the invention of *Mediums* makes the moſt eſſential part of logic. But the rules commonly given by logicians for that purpoſe, are mere impertinencies.—In effect, no ſuch rules can be given: Nor have we any way of coming at ſuch *Mediums* or reaſons, but by a cloſe attention to clear ideas. See DISCOURSE, LOGIC, INVENTION, &c.

MEDIUM, in arithmetic, or an *arithmetical Medium*, *or mean*, called in the ſchools *Medium rei*, is that which is equally diſtant from each extreme; or, which exceeds the leſſer extreme, as much as it is exceeded by the greater; in reſpect of quantity, not of proportion.

Thus, nine is a *medium* between ſix and twelve. See *arithmetical* PROPORTION.

Geometrical **MEDIUM**, or *mean*, called in the ſchools *Medium perſonæ*, is that where the ſame ratio is preſerved between the firſt and ſecond, as between the ſecond and third terms; or that which exceeds in the ſame ratio, or quota of itſelf, as it is exceeded.

Thus ſix is a geometrical *Medium* between four and nine. See *geometrical* PROPORTION.

This is the *Medium* which virtue is ſuppoſed to obſerve; whence ſome call it *Medium quoad nos*, as having a view to circumſtances, times, places, perſons, &c. Diſtributive juſtice obſerves a geometrical *Medium*; commutative juſtice, an arithmetical one. See JUSTICE.

MEDIUM *participationis*, in the ſchools, is that ſaid to be compounded of the two extremes.—Thus, man, who is partly body, partly mind, is a *Medium* by participation of the two extremes; ſo, is warmth the *Medium* of heat and cold, &c.

MEDIUM *negationis* or *remotionis*, is that, from which both extremes are derived; or, it is a ſubject, capable of receiving both extremes, and yet not neceſſarily poſſeſſed of either.

In which latter ſenſe, the will is a *mean* with reſpect to virtue and vice; and the underſtanding, with reſpect to knowledge and ignorance.

MEDIUM *quod*, or *Medium ſuppoſiti*, is ſomewhat between the agent and patient, which receives the action of the one, ere it arrive at the other.

In this ſenſe, air is a *Medium* between the fire, and the hand heated thereby.

MEDIUM *quo*, is the form, or faculty, whereby an agent produces an effect: in which ſenſe, heat is ſaid to be the *Medium* or *mean*, whereby fire acts on the hand.

MEDIUM *ſub quo*, is that which renders the power to act, compleat, in the general; without determining it to any particular object: In which ſenſe, light is the *Medium* under which the eye perceives any colour.

MEDIUM *in quo*, is that, by inſpection whereof, a power is produced in any thing, of knowing or perceiving another: Such, is a ſpeculum, as it ſhews an object; an image, as it repreſents the reality, &c.

MEDIUM, in mechanical philoſophy, is that ſpace or region, through which a body paſſes in its motion towards any point. See MOTION.

Thus æther is ſuppoſed to be the *Medium*, wherein the heavenly bodies move. (See ÆTHER.) Air the *Medium* wherein bodies move near our earth. (See AIR and ATMOSPHERE.) Water is the *Medium* in which fiſhes live and move. See WATER. And glaſs is alſo a *Medium* of light, as it affords it a free paſſage. See GLASS, LIGHT, RAY, &c.

That denſity or conſiſtence in the parts of the *Medium*, whereby the motion of bodies in it is retarded, is called *the reſiſtance of the Medium*; which, together with the force of gravity, is the cauſe of the ceſſation of Motion of projectiles. See RESISTANCE *of the Medium*, &c.

Subtile or *æthereal* MEDIUM.—Sir Iſ. Newton makes it probable, That beſide the particular aerial *Medium*, wherein we live and breath, there is another more univerſal one, which he calls an *ætherial Medium*; vaſtly more rare, *ſubtile*, elaſtic, and active, than air; and by that means freely permeating the pores and interſtices of all other *Mediums*, and diffuſing itſelf through the whole creation: And by the intervention hereof he thinks it is, that moſt of the great phænomena of nature are effected. See NEWTONIAN.

This *Medium* he ſeems to have recourſe to, as the firſt and moſt remote phyſical ſpring; and the ultimate of all natural cauſes. By the vibrations of this *Medium*, he takes heat to be propagated from lucid bodies; and the intenſeneſs of heat increaſed and preſerved in hot bodies, and from them communicated to cold ones. See HEAT.

By this *Medium* he takes light to be reflected, inflected, refracted, and put alternately in fits of eaſy reflection and tranſmiſſion; which effects he elſewhere aſcribes to the power of attraction: ſo that this *Medium* appears the ſource and cauſe even of attraction. See LIGHT, REFLECTION, REFRACTION, INFLECTION, and ATTRACTION.

Again, this *Medium* being much rarer within the heavenly bodies, than in the heavenly ſpaces; and growing denſer, as it recedes further from them; he ſuppoſes the cauſe of the gravitation of theſe bodies towards each other, and of the parts towards the bodies. See GRAVITATION.

Again, from the vibrations of this ſame *Medium*, excited in the bottom of the eye by the rays of light, and thence propagated through the capillaments of the optic nerves into the ſenſory, he takes viſion to be performed; ſee VISION. And ſo hearing, from the vibrations of this or ſome other *Medium*, excited in the auditory nerves, by the tremors of the air, and propagated through the capillaments of thoſe nerves into the ſenſory: and thus of the other ſenſes. See SENSATION, HEARING, &c.

And again, he conceives muſcular motion to be performed by the vibrations of the ſame *Medium*, excited in the brain at the command of the will, and thence propagated through the capillaments of the nerves into the muſcles; and thus contracting and dilating them. See MUSCLE and MUSCULAR.

The elaſtic force of this *Medium*, he ſhews, muſt be prodigious: Light moves at the rate of 70,000,000 miles in about ſeven minutes, yet the vibrations and pulſes of this *Medium*, to cauſe the fits of eaſy reflection and eaſy tranſmiſſion, muſt be ſwifter than light, which is yet 700,000 times ſwifter than ſound. The elaſtic force of this *Medium*, therefore, in proportion to its denſity, muſt be above 490,000,000,000 times greater than the elaſtic force of the air, in proportion to its denſity: The velocities and pulſes of elaſtic *Mediums* being in a ſub-duplicate ratio of the elaſticities, and the rarities of the *Mediums*, taken together. And thus may the vibrations of this *Medium* be conceived as the cauſe of the elaſticity of bodies. See ELASTICITY.

Further, the particles of this *Medium* being ſuppoſed infinitely ſmall, even ſmaller than thoſe of light; if they be likewiſe ſuppoſed, like our air, to have a repelling power, whereby they recede from each other, the ſmallneſs of the particles may exceedingly contribute to the increaſe of the repelling power, and conſequently to that of the elaſticity and rarity of the *Medium*, and ſo fit it for the free tranſmiſſion of light, and the free motions of the heavenly bodies.—In this *Medium* may the planets and comets roll without any conſiderable reſiſtance. If it be 700,000 times more elaſtic, and as many times rarer, than air; it reſiſtance will be above 600,000,000 times leſs than that of water: A reſiſtance that would make no ſenſible alteration in the motion of the planets in ten thouſand years.

And is not ſuch a *Medium* better diſpoſed for the heavenly motions, than that of the Carteſians, which fills all ſpace adequately, and without leaving pores; is vaſtly denſer than gold; and therefore muſt reſiſt more? See *ſubtile* MATTER, PLENUM, &c.

If any aſk how a *Medium* can be ſo rare, let him tell how the air, in the upper regions of the atmoſphere, can be above a hundred thouſand times rarer than gold. How an electrical body can, by friction, emit an exhalation ſo rare and ſubtile, yet ſo potent, as, though its emiſſion occaſions no ſenſible alteration in the weight of the body, yet it ſhall be diffuſed through a ſphere of two foot in diameter, and carry up leaf-copper, or leaf-gold, at the diſtance of a foot from the electrical body. Or how the effluvia of a magnet can be ſo ſubtile, as to paſs a plate of glaſs without any reſiſtance or diminution of force; yet ſo potent, as to turn a magnetick needle beyond the glaſs. See EFFLUVIA, ELECTRICITY, &c.

That the heavens are not filled with any other, but ſuch a ſubtile ætherial *Medium*, is evident from phænomena: whence elſe are thoſe laſting and regular motions of the planets and comets, in all manner of courſes, and directions? And how are ſuch motions conſiſtent with that reſiſtance, which muſt reſult from that denſe, fluid *Medium*, wherewith the Carteſians fill the heavens?

The reſiſtance of fluid *Mediums* ariſe partly from the coheſion of the parts of the *Medium*, and partly from the vis inertiæ of matter. The firſt, in a ſpherical body, is nearly as the diameter, or, at moſt, as the factum of the diameter, and the velocity of the body. The latter is as the ſquare of that factum. Thus are the two kinds of reſiſtance diſtinguiſhed in any *Medium*; and being diſtinguiſhed, it will be found that almoſt all the reſiſtance of bodies, moving in ordinary fluids, ariſes from the vis inertiæ. That part which ariſes from the tenacity of the *Medium*, may be diminiſhed, by dividing the matter into ſmaller parts, and making thoſe more ſmooth and ſlippery: But the other will ſtill be proportional to the denſity of the matter, and cannot be diminiſhed any other way, but by a diminution of the ſame. See RESISTANCE.

Thus the reſiſtance of fluid *Mediums*, is nearly proportional to their denſities; and thus the air we breath, being about nine hundred times lighter than water, muſt reſiſt about nine hundred times leſs than water: As, in effect, the ſame author has found it does by experiments on pendulums. Bodies moving in quick-ſilver, water, or air, do not appear to meet with any other reſiſtance, but what ariſes from the denſity and tenacity of thoſe fluids; which they muſt, were their pores filled with a denſe and ſubtile fluid. See VACUUM.

Heat, it is found, diminiſhes the tenacity of bodies very much; yet does it not decreaſe the reſiſtance of water, ſenſibly. The reſiſtance of water, therefore, ariſes chiefly from its vis inertiæ; conſequently, if the heavens were as denſe as water, or as quick-ſilver, they would not reſiſt much leſs: if abſolutely denſe, without any vacuum, be the particles never ſo ſubtile and fluid, they would reſiſt much more than quick-ſilver. A ſolid globe, in ſuch a *Medium*, would loſe above half its motion, while it moves thrice the length of its own diameter; and a globe not perfectly ſolid, ſuch as the planets, would loſe more.

To make way therefore for the laſting motions of the planets and comets, the heavens muſt be empty of all matter, except, perhaps, ſome very fine effluvia, from the atmoſpheres of the earth, planets, and comets; and ſome ſuch ætherial *Medium* as we have deſcribed.—A denſe fluid can ſerve for no purpoſe, in the heavens, but to diſturb the celeſtial motions, and make the frame of nature languiſh; and in the pores of bodies, can only ſerve to check the vibrating motion of their parts, wherein their heat and activity conſiſts. Such a *Medium*, therefore, unleſs we had ſome evidence of its exiſtence, muſt be given up; and that given up, the hypotheſis of light's conſiſting in a preſſion, falls alſo to the ground. See LIGHT, PLANETS, PRESSION, CARTESIANISM, &c.

MEDIUM *ſeptum*. See the article SEPTUM.

MEDIUS *venter*, in anatomy, denotes the breaſt or thorax. See THORAX and VENTER.

Glutæus MEDIUS. See the article GLUTÆUS.

MEDLEY. See the article CHANCE *medley*.

MEDULLA *oſſium*, or *Marrow of the bones*, is a ſoft fatty ſubſtance, placed in the cavities or pores of divers bones. See MARROW.

The *Medulla* is incloſed in a membrane; and is devoid of ſenſe: it is red in the greater cavities, white in the leſs, and ſoft and ſucculent in ſpungy bones. See BONE.

From this is ſecreted the medullary oil. See MEDULLARY *oil*.

MEDULLA *cerebri* and *cerebelli*, denotes the white ſoft part of the brain and *cerebellum*, covered on the outſide with the cortical ſubſtance, which is of a more dark or aſhy colour.—See the origin, ſtructure, and uſe thereof, under BRAIN and CEREBELLUM.

MEDULLA *oblongata*, is the *medullary* part of the brain and cerebellum joined in one; the fore-part of it coming from the brain, and the hind-part from the cerebellum.—See *Tab. anat.* (oſteol.) *fig* 5. *litt. dd.*

It lies on the baſis of the ſkull, and is continued through the great perforation thereof into the hollow of the vertebræ of the neck, back, and loins: though only ſo much of it retains the name *oblongata*, as is included within the ſkull. After its exit thence, it is diſtinguiſhed by the name of *Medulla ſpinalis.* See MEDULLA *ſpinalis*, and CRURA.

The ſubſtance of the *Medulla oblongata* being only an aggregate of thoſe of the brain and cerebellum, muſt, like them, be purely fibrous or nervous, and only an aſſemblage of minute tubes for the conveyance of the animal ſpirits. It ariſes, as it were, from four roots; whereof the two largeſt ſpring from the brain, and are called *crura*: the two leſſer from the cerebellum, which Dr. Willis calls *pedunculi.* See BRAIN, and CEREBELLUM.

Upon inverting it, the firſt thing that appears upon its trunk, is a protuberance, ſomewhat like a ring, and for that reaſon called *protuberantia annularis.* Then follow ten pair of nerves, which have their origin here, and are hence ſent to the ſeveral parts of the body. See NERVE. Immediately under the firſt pair, or olfactories, appear two ſmall arteries, or branches of the carotides. The ſecond pair, or optics, being cut off, appears the infundibulum, which ends in the grandula pituitaria, and on each ſide, the carotid arteries enter the ſkull. In the lateral ventricles of the *Medulla* are two prominences on each ſide, the one pair called *corpora ſtriata*, from the appearance of ſtripes, or nervous fibres, within them; their outer ſubſtance being cortical or glandulous, like the reſt of the ſurface of the brain, though not ſo deep. Betwixt the corpora ſtriata is a broad thin production of the *Medulla*, called *fornix*; and underneath them lie two other prominences, called *thalami nervorum opticorum.* On either ſide of theſe is a plexus of blood-veſſels, called *plexus choroides.* And under the fornix a narrow aperture, called the *rima*, which lets into the infundibulum; which is a paſſage from the third ventricle to the glandula pituitaria, through the *Medulla* of the brain; being lined with the pia mater. Under this, in the ſinus called *ſella equina*, or *turcica*, upon the os cribroſum, is the glandula pituitaria; which is ſurrounded with a plexus of veſſels, called *rete mirabile*, only viſible in brutes. See RETE, PITUITARY, &c. On the hind-part of the third ventricle is a ſmall foramen, called *anus*, leading to the fourth ventricle of the cerebellum: At the orifice of this is ſeated a ſmall gland, which, from its fancied reſemblance to a pine-apple, is called *conarium*, or *glandula pinealis*; where Des Cartes and his followers, imagine the ſeat of the ſoul to be. See PINEAL. On the back-ſide of the *Medulla oblongata*, near the cerebellum, are four protuberances, whereof the upper and larger are called *nates*, the under and leſſer *teſtes*. See NATES, and TESTES. Between theſe and the proceſſes of the cerebellum, is the fourth ventricle, from its figure called *calamus ſcriptorius.* See CALAMUS. On the *Medulla oblongata*, near its extremity, are four other prominences, two on each ſide; called *corpora pyramidalia*, and *olivaria*. See OLIVARIA, CONARIUM.

MEDULLA *ſpinalis*, or the *ſpinal Marrow*, is a continuation of the *Medulla* oblongata, or *medullary* part of the brain, without the ſkull. See SPINE.

It conſiſts, as the brain does, of two parts, a white or *medullary*, and a cineritious or glandulous; the former without, and the other within. The ſubſtance of the exterior part is much the ſame with that of the corpus calloſum, only ſomewhat tougher, and more fibrous: which difference becomes the more apparent, as it deſcends the lower; by reaſon of the ſtreightneſs of the cavity, which growing gradually more narrow, preſſes the *medullary* fibres cloſer together, and renders them more compact, and gathers them into more diſtinct faſciculi, till having deſcended the whole tract of the ſpina, they end in the cauda equina. It is the origin of moſt of the nerves of the trunk of the body: It ſends out thirty pair on each ſide to the limbs, the great cavities, and other parts; which are nothing but faſciculi of *medullary* fibres, covered with their proper membranes. See NERVE.

The *ſpinal Marrow* is generally ſaid to be covered with four coats: The firſt, or external one, is a ſtrong nervous ligament, which ties the vertebræ together, to the inſide of which it firmly adheres. The ſecond is a production of the dura mater; it is exceedingly ſtrong, and ſerves to defend the *ſpinal Marrow* from any hurt from the flexures of the vertebræ.

The third is a production of the arytænoides, and is a thin pellucid membrane, lying between the dura and pia mater, or the ſecond and fourth membranes of the *Medulla.* This membrane gives a coat to the nerves that go out of the ſpina, which is the inner membrane of the nerves, as the dura mater gives the outer. The fourth coat is a continuation of the pia mater, and is an extremely thin, fine, tranſparent membrane; ſtrictly embracing the whole ſubſtance of the *Medulla*, dividing it in the middle into two tracts, and making, as it were, two columns of it.—See *Tab. Anat.* (oſteol.) *fig.* 6. See alſo SPINE, VERTEBRÆ, &c.

MEDULLARY *oil*, is no more than the finer and more ſubtile parts of the *Medulla*, or marrow of the bones. See MARROW, and OIL.

This, Dr. Havers obſerves, paſſes not into the bones through ducts, but by ſmall pores formed into viſicles or glandules, which are conglomerated into diſtinct lobules, contained in ſeveral membranes inveſting the whole marrow; all which veſicles or bags are propagated from the outward coat of the arteries; and by theſe it paſſes from one to another, till it arrives at the ſides, or extreme parts of the bone. That part of it which is ſupplied to the interſtices of the joints, goes into them by paſſages, penetrating through the bone into thoſe cavities, and formed for that end. The uſe of this *oil* is either common to all the bones, whoſe temper it preſerves, and keeps from being too brittle; or more peculiarly to the joints, where it is very ſerviceable, 1°. To lubricate the bones at their extremities, that they may move more eaſily and free. 2°. To keep the ends of the articulated bones from growing hot with motion. 3°. To preſerve the joints from wearing by attrition, and rubbing one againſt another: And 4°. To preſerve the ligaments of the joints from dryneſs and rigidity, and lubricate thoſe parts which ſlide upon the bones, and keep the cartilages which are joined to them, flexible.

MEETER. See the article METRE.

MEGADOMESTICUS. See DOMESTIC.

MEGALENSIA *, or MEGALESIA, in antiquity, ſolemn feaſts celebrated among the Romans on the 12th of April, in honour of the great mother of the gods, that is, Cybele or Rhea; wherein were ſports or combats held before the temple of that goddeſs. See FEAST, &c.

* They were called *Megalenſia*, from the Greek μεγαλη, great; Cybele being accounted the great goddeſs.

MEI *miſerere.* See the article MISERERE.

MEINOUR. See the article MAINOUR.

MELA, a chirurgeon's inſtrument, called alſo *ſpeculum*, and by the vulgar, *tenta*, or *probe.* See PROBE.

Its uſe is to probe ulcers, or draw a ſtone out of the yard: Its form is various, according to the uſe it is intended for. See SPECULUM.

MELANCHOLY *, in medicine, a low kind of delirium, without a fever; uſually attended with fear, heavineſs, and ſorrow, without any apparent occaſion. See DELIRIUM.

* The word in Greek, Μελαγχολια, formed from μελας, black; and χολη, bile.

The antients attributed this diſeaſe to black and cloudy ſpirits, ariſing as vapours from a redundant atrabilary humour. See ATRABILIS, and CHOLER.

Some of the moderns aſcribe it to the irregular motion of the ſpirits, and their acid conſtitution; and others, who ſeem to know it better, to too heavy and viſcid a blood, which permits not a ſufficiency of ſpirits to be ſeparated in the brain, to animate and invigorate the nerves and muſcles: laſtly, others to a dryneſs of the meninges of the brain.

This diſeaſe is varied an infinite number of ways, according to the temperament and ideas of the perſon affected with it. It is a ſpecies of madneſs, and only differs from a downright mania in degree. See MANIA.

MELANOGOGUES *, ΜΕΛΑΝΟΓΩΓΑ, are ſuch *Medicines* as are ſuppoſed particularly to purge off atrabilis or black choler.

* The word is formed from μελας, *niger*, black; and αγω, *duco*, to lead, or draw.

But there is no ſuch ſpecies of choler now regarded, and conſequently this diſtinction of evacuants is but little uſed. See PURGATIVES, and ATRABILIS.

MELASSES. See the article MOLOSSES.

MELCHITES, a religious ſect in the Levant, who ſcarce differ from the Greeks in any thing relating either to faith, or worſhip; only that they do not ſpeak the Greek language.

The word, in the original Syriac, ſignifies *royaliſts*, and was formerly applied by the catholics to the heretics who refuſed to ſubmit to the deciſions of the council of Chalcedon: intimating by this appellation, that they were of the religion of the emperor.

Thoſe now called *Melchites*, are ſuch people, as, inhabiting among the Syrians, Cophtæ, or Egyptians, and other levantine nations, follow the opinions of the Greeks, though no Greeks themſelves: And it is for this reaſon that Gabriel Sionita calls them indifferently by the names of *Greeks*, and *Melchites.* See GREEK.

The ſame author obſerves, that they are ſpread through all the Levant; that they deny purgatory; and are declared enemies to the pope and his primacy.—For the reſt, they fall in with the Greeks, both as to articles of faith, and diſcipline.

They have tranſlated the Greek euchologium, and other books of that kind, into Arabic; and have the canons of councils in the ſame language. To thoſe of the council of Nice, they have added new canons, commonly called the *Arabic canons*; which are likewiſe received by the Jacobites and Maronites: Though moſt of the learned look on them as ſpurious.

MELCHIZEDECHIANS, or MELCHISEDEKIANS, antient ſectaries, ſo called, becauſe they raiſed *Melchizedech* above all creatures, and even above Jeſus Chriſt.

The author of this ſect was one Theodotus, whence the *Melchizedechians* became more commonly known by the name of *Theodotians*; all the difference between thoſe, and the ſtrict *Theodotians*, conſiſting in that particular article relating to *Melchizedech*; who, according to them, was the great and ſupreme virtue.

MELICERIS, ΜΕΛΙΚΗΡΙΣ, a tumour or abſciſs incloſed in a cyſtis; conſiſting of matter not unlike honey, whence its name. The *Meliceris* is otherwiſe called *atheroma.*—It gathers without pain, and gives way upon preſſure, but returns again: It is to be cured by warm diſcutients. See ATHEROMA.

MELISMATICO *ſtylo.* See the article STYLE.

MELITITES, ΜΕΛΙΤΙΤΗΣ, a greyiſh ſtone, which, when pulverized, yields a milky liquor, of a taſte ſomewhat like honey, whence it takes its name.

It is found in mines of metals, and ſeems to partake pretty much of the nature of lead; having a ſweetneſs ſomewhat like the ſal ſaturni, but much fainter.

It only differs from the galactite, in that it is milder to the taſte. See GALACTITES. The antients uſed it in inflammations of the eyes, and to dry ulcers.

MELIUS *inquirendum,* a writ which lieth for a ſecond inquiry to be made of what lands and tenements a man died ſeized, where partiality is ſuſpected upon the writ called *diem clauſit extremum.*

MELODY*, ΜΕΛΩΔΙΑ, in muſic, is the agreeable effect of different muſical ſounds, ranged or diſpoſed in ſucceſſion. See SOUND.

* The word is compounded of the Greek μέλι, honey; and ᾠδὴ, ſinging.

Melody is the effect only of one ſingle part, voice, or inſtrument; by which it is diſtinguiſhed from *harmony*; though in common ſpeech, theſe two are frequently confounded.

Harmony is the agreeable reſult of the union of two or more concording muſical ſounds heard in conſonance, *i. e.* at one and the ſame time; ſo that harmony is the effect of two parts at leaſt: As therefore a continued ſucceſſion of muſical ſounds produces *Melody,* ſo does a continued combination of theſe produce harmony. See HARMONY, CONCORD, and *muſic in* PARTS.

Though the term *Melody* be chiefly applicable to the treble, as the treble is chiefly diſtinguiſhed by its air; yet ſo far as the baſs may be made airy, and to ſing well, it may be alſo properly ſaid to be *melodius.* See TREBLE, and BASS. Of the twelve harmonical intervals of muſical ſounds, diſtinguiſhed by the names of *ſecond leſſer, ſecond greater*; *third leſſer, third greater*; *fourth*; *falſe fifth, fifth*; *ſixth leſſer, ſixth greater*; *ſeventh leſſer, ſeventh greater*; and *octave*; all *Melody* as well as harmony, are compoſed: For the octaves of each of theſe are but replications of the ſame ſound; and whatever is ſaid of any, or all of theſe ſounds, is to be underſtood alſo of their octaves. See OCTAVE.

For the rules of MELODY, ſee the article COMPOSITION.

MELT. See the article MILT.

MELTING-*fire.*	See the article	FIRE.
Surveyor of MELTING.		MELTING.

MEMBERS, in anatomy, the exterior parts, ariſing from the trunk, or body of an animal, like boughs from the trunk of a tree. See BODY.

In which ſenſe, *Members, membra,* amount to much the ſame with *limbs, artus*: Though ſome make a difference between the two; reſtraining *Members* more immediately to the fleſhy parts which cover the limbs, and artus to the bones and nerves. Phyſicians divide the body into three regions or venters, the head, the breaſt, and the lower ventricle; and the extremities, which are the *Members.* See EXTREMITY.

Each *Member,* and portion of the body, was antiently devoted to ſome divinity. The head to Jupiters, the breaſt to Neptune, the navel to Mars, the ear to Memory, the forehead to the Genius, the right-hand to Faith or Fidelity, the knees to Mercy; the eye-brows, again, to Jupiter, the eyes to Cupid, or, according to others, to Minerva, the hind-part of the right ear to Nemeſis, the back to Pluto, the reins to Venus, the feet to Mercury, the heels and ſoals of the feet to Thetis, and the fingers to Minerva.

MEMBER, in architecture, denotes any part of a building; as a frieze, cornich, or the like.

MEMBER is ſometimes alſo uſed for moulding. See MOULDING.

MEMBER, in grammar, is applied to the parts of a period, or ſentence. See PERIOD, and SENTENCE.

MEMBERED, or MEMBRED, in heraldry, is where the legs or feet of an eagle, griffin, or other bird, are of a different colour from the reſt of the body.

MEMBRANA, in anatomy.	See	MEMBRANE.
MEMBRANA *communis muſculorum.*		
MEMBRANA *propria muſculorum.*		
MEMBRANA *communis vaſculorum.*		
MEMBRANA *adipoſa.*	See	ADIPOSA.
MEMBRANA *carnoſa.*		CARNOSA.
MEMBRANA *nictitans.*		NICTITATING.
MEMBRANA *tympani.*		TYMPANUM, and FORAMEN.
MEMBRANA *urinaria.*		ALLANTOIS.

MEMBRANE, MEMBRANA, in anatomy, a ſimilar part of an animal body; being a thin, white, flexible, expanded ſkin, formed of ſeveral ſorts of fibres interwoven together, and ſerving to cover or wrap up certain parts of the body. See BODY, and PART.

The *membranes* of the body are various; and variouſly denominated:—Such are the perioſteum, pleura, pericardium, peritonæum, *&c.* which ſee under their proper articles; PERIOSTEUM, *&c.*—Such alſo are the *Adipoſa, Carnoſa,* and *Nictitating.*

Thoſe *membranes* which ſerve as integuments, or covers of veſſels, are called *coats* or *tunics*; and thoſe which cover the brain, are, by a peculiar name, called *meninges.* See TUNIC, and MENINGES.

The fibres of *membranes* give them an elaſticity, whereby they can contract, and cloſely graſp the parts they contain; and their nervous fibres give them an exquiſite ſenſe, which is the cauſe of their contraction: they can therefore ſcarcely ſuffer the ſharpneſs of medicines, and they are difficultly united, when wounded. In their texture, there is a number of ſmall glands, which ſeparate an humour, fit for moiſtening the parts they contain. By reaſon of the thickneſs and tranſparency of the *membranes,* the ramifications of the blood-veſſels are more apparently ſeen in them, than in any other part of the body: here the innumerable diviſions, windings and turnings, ſerpentine progreſſions, and frequent inoſculations, not only of veins and arteries together, but alſo of veins with veins, and arteries with arteries, make a moſt agreeable embroidery, and delicate net-work, covering the whole *membrane.* See VESSEL, *&c.*

The uſe of the *membranes* is to cover and wrap up the parts, and ſtrengthen them; to ſave them from external injuries; to preſerve the natural heat; to join one part to another; to ſuſtain ſmall veſſels, and the nerves which run through their duplicatures; to ſtop the returning of the humours in their veſſels, as the valves ſtop the returning of the blood in the veins and heart; of the chyle in the thoracic duct; and of the lympha in the lymphatic veſſels. See VALVE, *&c.*

Anatomiſts generally aſſert, that there is a *membrana communis muſculorum,* or *membrane* common to all the muſcles, being led into that miſtake by the aponeuroſis of ſeveral; whereas, upon ſtricter obſervation, there is no ſuch thing to be found. See MUSCLE.

The *membrana propria muſculorum,* is that which immediately covers all and every one of the fibres of a muſcle, and is cloſely tacked to them. There is another common *membrane,* called *membrana communis vaſculorum*; which is a thin *membrane,* accompanying almoſt all the veſſels of the body. See VESSEL, VEIN, ARTERY, *&c.*

All theſe *membranes* receive veins, arteries, and nerves, from the parts which are neareſt to them.

MEMBRANES *of the eyes.*	See the article	EYE.
MEMBRANOSA *armilla.*		ARMILLA.

MEMBRANOSUS, in anatomy, a muſcle of the leg, ſo called, from its large *membranous* expanſion incloſing all the muſcles of the triba and the tarſus; whence it is alſo called *faſcia lata.*—See *Tab. Anat.* (*Myol.*) *fig.* 2. *n.* 34. *fig.* 1. *n.* 48. *fig.* 6. *n.* 34.

It hath a ſharp fleſhy beginning from the fore-part of the ſpine of the os illum, but ſoon becomes *membranous,* and covers almoſt all the muſcles of the thigh and leg, down to the foot, where it joins with the ligamentum annulare; and in its action turns the leg outwards.

MEMBRED. See the article MEMBERED.

MEME.—*Que eſt* MEME. See the article QUE.

MEMORIS, or MEMORIALS, a term now much in uſe for hiſtories, compoſed by perſons who had ſome ſhare, or concern in the tranſactions they relate, or who were eye witneſſes of them; anſwering to what the Latins called *commentarii.* See COMMENTARY, and HISTORY.

The French are great dealers in this way of writing, and have an infinite number of books of *memoirs,* containing, for the generality, the lives, actions, intrigues, amours, *&c.* of the writers.

MEMOIRS is alſo uſed for a journal of the acts, and proceedings of a ſociety; or a collection of the matters debated, tranſacted, *&c.* therein.—Such are the *memoirs* of the royal academy of ſciences, *&c.* See JOURNAL, ACADEMY, *&c.*

MEMORY, ΜΝΗΜΗ, a power, or faculty of the mind, whereby it retains or recollects the ſimple ideas or images of things we have ſeen, imagined, underſtood, *&c.* See SOUL, POWER, FACULTY, *&c.*

Of all the faculties, there is none harder to account for, or that has perplexed philoſophers more, than the *memory.* Some will have it a mere organ, as the eye, ear, *&c.*—Dr. Hook, in an *Eſſay towards a mechanical account of memory,* makes it to conſiſt in a ſtock of ideas or images, formed occaſionally by the mind, out of the fine parts of the brain, and diſpoſed, or laid by in order.

Des Cartes and his followers maintain, That the animal ſpirits exciting a motion in the moſt delicate fibres of the brain, leave a kind of traces or footſteps, which occaſion our *remembrance.* Hence it happens, that by paſſing ſeveral times over the ſame things, the ſpirits becoming accuſtomed to the ſame paſſages, leave them open, and ſo make their way without any effort or labour; and in this conſiſts the eaſe wherewith we recollect ſuch ideas. Thus wine is found to ſharpen the *memory*, in regard the ſpirits of the wine put the animal ſpirits in motion, and agitate the fibres of the brain the more briſkly. See IDEA, BRAIN, TRACE, REMEMBRANCE, &c.

Father Malebranche expreſſes his notion of *memory* thus: ‘ It being granted, that all our different perceptions are owing to changes happening in the fibres of the principal part of the brain, wherein the ſoul more immediately reſides, the nature of the *memory* is obvious: for as the leaves of a tree, that have been folded for ſome time, in a certain manner, preſerve a facility or diſpoſition to be folded again in the ſame manner; ſo the fibres of the brain, having once received certain impreſſions by the courſe of the animal ſpirits, and by the action of objects, preſerve, for ſome time, a facility to receive the ſame diſpoſition. Now it is in this facility that *memory* conſiſts; for we think on the ſame things, when the brain receives the ſame diſpoſitions.

‘ Further, as the animal ſpirits act ſometimes more briſkly, and ſometimes more languidly on the ſubſtance of the brain; and as ſenſible objects make much deeper, and more laſting impreſſions, than the imagination alone; it is eaſy, on this ſcheme, to conceive why we do not remember all things alike: Why a thing, for inſtance, ſeen twice, is repreſented more vividly to the mind, than another ſeen but once: Why things that have been ſeen, are uſually remembred more diſtinctly, than thoſe that have been only imagined, &c.’ See HABIT.

‘ Old men are defective in *memory*, and cannot learn any thing without much difficulty, becauſe they want animal ſpirits to make new traces, and becauſe the fibres of the brain are become too hard to receive, or too moiſt to retain ſuch impreſſions. For the ſame reaſon, thoſe who learn with the greateſt eaſe, forget the ſooneſt; in regard when the fibres are ſoft and flexible, objects make a ſlight impreſſion, which the continual courſe of animal ſpirits eaſily wears off: On the contrary, the fibres of thoſe who learn ſlowly, being leſs flexible, and leſs ſubject to be ſhaken, the traces are more deeply engraven, and laſt the longer.

‘ From all which obſervations it follows, that the *memory* is abſolutely dependent on the body; being impaired or ſtrengthened, according to the changes that befall the body; a fall, the tranſports of a fever, &c. being frequently found to eraſe or blot out all the traces, to bear away all the ideas, and to cauſe an univerſal forgetfulneſs.’

The chief difficulty that clogs this doctrine of *memory*, is to conceive how ſuch an infinite number of things, as the head is ſtored withal, ſhould be ranged in ſo much order in the *memory*, as that the one ſhould not efface the other: and how in ſuch a prodigious aſſemblage of traces impreſſed on the brain, the animal ſpirits ſhould awake preciſely thoſe which the mind has occaſion for! See SPIRITS.

Seneca ſays of himſelf, that by the mere effort of his natural *memory*, he was able to repeat two thouſand words upon once hearing them, each in its order; though they had no dependence or connection on each other. After which he mentions a friend of his, Portius Latro, who retained in his memory all the declamations he had ever ſpoke, and never had his *memory* fail him, even in a ſingle word. He alſo mentions Cyneas, ambaſſador to the Romans from king Pyrrhus, who in one day had ſo well learnt the names of his ſpectators, that the next he ſaluted the whole ſenate and all the populace aſſembled, each by his name. Pliny ſays, that Cyrus knew every ſoldier in his army by name; and L. Scipio, all the people of Rome. Charmidas, or rather Carneades, when required, would repeat any volume found in the libraries; as readily as if he were reading. —Dr. Wallis tells us, that without the aſſiſtance of pen and ink, or any thing equivalent, he was able in the dark, by mere force of *memory*, to perform arithmetical operations, as multiplication, diviſion, extraction of roots, &c. to forty places. Particularly, that in February 167½, at the requeſt of a foreigner, (by night, in bed) he propoſed to himſelf a number of fifty-three places, and found its ſquare root to twenty-ſeven places; and without ever writing down the number, dictated it from his *memory*, at his next viſit, twenty days afterwards.

Local or *artificial* MEMORY, is an art or invention, by means whereof the *memory* is ſuppoſed to be aided, ſtrengthened, and inlarged.

This art ſeems to conſiſt in nothing elſe but a certain method of coupling or aſſociating ideas of things to be remembred, with the ideas of other things, already diſpoſed orderly in the mind, or that are before the eyes.—It is of an old ſtanding, having been practiſed by many of the antient orators; ſome whereof are ſaid to have made uſe of paintings, images, and emblems on this occaſion: Though others contented themſelves with the parts, members, ornaments, furniture, and other circumſtances of the place where they were to ſpeak. Moretus tells us, that a young man of Corſica pretending to do wonders this way, Muretus put him to the trial; and upon dictating to him two or three thouſand words, ſome Greek, ſome Latin, ſome Barbarous; all without any relation to each other, and the greateſt part without any meaning at all: the artiſt immediately, and without any heſitation, or the leaſt ſtumbling or diſplacing, repeated them all, from firſt to laſt, in the ſame order wherein they had been dictated; and this done, beginning where he ended, he repeated them all backwards, from laſt to firſt. Adding, that this was but a ſlight eſſay of his *memory*; and that he would undertake to repeat thirty-ſix thouſand words in the ſame manner.

The truth is, this art ſeems better calculated for retaining things without any coherence or dependence on one another, as mere words or ſounds, &c. than for things where reaſon or judgment are any way required.

Raim. Lully took ſo much pains with it, that it now goes by his name, being called *Lully's art*. See ART.

MEMPHITES, or *lapis* MEMPHITICUS, a ſort of ſtone mentioned by Dioſcorides, Pliny, and other natural hiſtorians; ſuppoſed to be found in Egypt not far from the city Cairo, the antient Memphis; whence its name.

The property it is famed for, is, that being pulverized, and ſmeared on any part of the body to be cut off, it deadens it ſo, as that the patient ſhall perceive no pain from the operation.

MEN.—*Midſhipmen.*	See the article	MIDSHIP-*Men.*
Moot-MEN.		MOOT-*Men.*
Port-MEN.		PORT-*Men.*
Queſt-MEN.		QUEST-*Men.*
Sides-MEN.		SIDES-*Men.*
Twelve-MEN.		TWELVE-*Men.*
Veſtry-MEN.		VESTRY-*Men.*

MENANDRIANS, the moſt antient branch of Gnoſtics; thus called from Menander their chief, a diſciple of Simon Magus, and himſelf a reputed magician. See SIMONIAN and GNOSTICS.

He taught, that no perſon could be ſaved unleſs he were baptized in his name: He conferred a peculiar ſort of baptiſm, which would render thoſe who received it immortal in the next world. St. Iræneus repreſents him, as pretending to be, That firſt virtue hitherto unknown to the world, and to have been ſent by the angels for the ſalvation of all mankind.

He took upon him, ſays St. Epiphanius, *hær.* 2. to be greater than his maſter; which contradicts Theodoret, who makes Menander a ſubordinate virtue to Simon Magus, the great virtue of all. See SIMONIANS.

MENDICANTS, *beggars*; a term applied to ſeveral orders of religious, who live on alms, and go a begging from door to door. See MONK and RELIGIOUS.

There are four antient orders which paſs principally by the name of the *four mendicants*: The Carmelites, Jacobines, Franciſcans, and Auguſtins. See CARMELITES, JACOBINES, &c.

Among the number of *medicants*, are alſo ranked the Capuchins, Recollects, Minims, and others, who are branches, or derivations from the former. See CAPUCHINS, RECOLLECTS, &c.

The *medicants* at their firſt eſtabliſhment, were rendered incapable of having any revenues. The multitude of *medicants* is now a heavy tax on the people.

MENIAN *column*. See the article COLUMN.

MENINGES, ΜΗΝΙΓΓΕΣ, in anatomy, the coats, or membranes, wherewith the brain is incloſed. See BRAIN.

The Arabs call them mothers; whence we alſo uſually call them in Latin the *pia*, and *dura mater*. See PIA, and Dura *mater*.

There are two *meninges*, external and internal; called *menix craſſa*, and *tenuis*.

Craſſa MENINX, or *dura mater*, is the external one, and the groſſeſt. It lies immediately under the cranium, and covers the whole ſubſtance of the brain, and the ſpinal marrow, and affords a coat to the trunks of the larger nerves. See NERVE, &c. It is connected on the upper part to the perioſteum by means of fibres, and on the under ſide to the pia mater by the branches of the ſinus's, and by the arteries and nerves. It conſiſts of two leſſer coats or membranes, which ſome have taken for two dura maters; the exterior, hard: and the inner, more ſmooth, ſoft, and moiſt. It deſcends double between the two hemiſpheres of the brain, which it divides as deep as the corpus calloſum, and by reaſon of its curvature, occaſioned by the convexity of the brain in that part, is called *falx*, from its reſemblance to a ſickle. See FALX. It likewiſe inſinuates itſelf between the brain and cerebellum, and ſo prevents the brain from lying too hard on the cerebellum. In the duplicatures thereof, are ſeveral cavities called *ſinus's*, which are a ſort of venous canals ſerving for the conveyance of the blood. Of theſe there are four conſiderable ones, viz. the longitudinales and laterales. See SINUS.

MENINX *tenuis*, or *pia mater*, lyes under the dura mater, immediately under the brain. It is a fine thin membrane adhering ſo cloſely, and inſinuating itſelf into all the folds and amfractuous parts of the brain, that it is ſcarce to be ſeparated from it. This membrane covers the whole brain, cerebellum, and medulla oblongata, and ſerves, together with the other, for the defence of the brain, and the ſupport of its veſſels.

Between the two, lies another fine tranſparent membrane, called *arachnoides*; but the beſt anatomiſts take this for no more than the external lamina of the pia mater. See ARACHNOIDES.

MENIPPEAN, *ſatyra* MENIPPEA, a kind of ſatyr conſiſting of proſe and verſe intermixed. See SATYR.

It is thus called from Menippus, a Cynic philoſopher, who delighted in compoſing ſatyrical letters, *&c.*—In imitation of him, Varro alſo wrote ſatyrs under the title of *ſatyræ Menippeæ:* Whence this ſort of compoſition is alſo denominated *Varronian ſatyr.*

Among the moderns, there is a famous piece under this title, firſt publiſhed in 1594, againſt the chiefs of the league, called alſo the *catholicon* of Spain. It is eſteemed a maſter-piece for the time. See CATHOLICON.

MENISCUS, in optics, a glaſs, or lens, concave on one ſide, and convex on the other; ſometimes alſo called *lunula.* See LENS and OPTIC *glaſs.*

In a *meniſcus*, if the diameter of the convexity be equal to that of the concavity, a ray falling parallel to the axis, will continue parallel thereto after refraction.

Such a *meniſcus* therefore, will neither collect, nor diſperſe the rays; and is therefore of no uſe in dioptricks. See REFRACTION.

To find the focus of a *meniſcus*, the rule is, As the difference of the ſemi-diameters of the convexity and concavity, is to the ſemi-diameter of the convexity: ſo is the diameter of the concavity, to the diſtance of the focus from the *meniſcus.* Hence, If the ſemi-diameter of the concavity, be triple the ſemi-diameter of the convexity, the diſtance of the focus from the *meniſcus* will be equal to the ſemi-diameter: and therefore the *meniſcus* will be equivalent to a lens equally convex on either ſide. See CONVEX-*lens.*

Again; if the ſemi-diameter of the concavity be double that of the convexity; the diſtance of the focus will be equal to the diameter: and therefore the *meniſcus* will be equivalent to a plano-convex lens. See PLANO-*convex.*

If the ſemi-diameter of the concavity be quintuple that of the convexity, the *meniſcus* will be equivalent to a ſphere. See *ſpherical* LENS.

The ſemi-diameter therefore of the convexity being given; that of the concavity required to remove the focus to any given diſtance from the *meniſcus*, is eaſily found. See FOCUS.

MENNONITES, a ſect in the United Provinces, in moſt reſpects the ſame with thoſe in other places called *anabaptiſts.* See ANABAPTIST.

They had their riſe in 1496, in a village in Friezeland: their founder was one Mennon, who undertook to reform the religion of the antient anabaptiſts, and to throw out all enthuſiaſm touching the new kingdom of Chriſt, *&c.*

The *mennonites* hold, that there is no original ſin; that the firſt man was not created juſt; that in ſpeaking of the father, ſon, and holy ghoſt, we muſt not uſe the word *perſon*, nor that of *trinity*; that Jeſus Chriſt did not take his fleſh from the ſubſtance of his mother, but from the eſſence of the father; or that the word of the father became man; that he brought it from heaven, or that we do not know whence he had it: And that the union of the divine and human nature was ſo effected, as that the divine was rendered viſible, and liable to death.

The *mennonites* teach farther, that Chriſtians are not allowed to ſwear; to exerciſe any civil magiſtrature; to uſe the ſword, not even for the puniſhment of criminals. They add, that miniſters of the word are not permitted to receive any wages for their work; that they muſt not baptize little children; and that the ſouls of men after death reſt in an unknown place till the day of judgment.

The *mennonites* are ſub-divided into divers ſects; whereof the two principal are, the *mennonites* of Friezeland, and thoſe of Flanders.

The latter exerciſe a very ſtrict church-diſcipline, and excommunicate for the ſlighteſt offence; nor do they hold it lawful to have any ſociety or communication with thoſe excommunicated.—Thoſe of Friezeland, on the contrary, receive into their communion ſuch as are excommunicated by the others; whence they have been called *ſtercorarii*, and *borboriſtæ.* Their diſcipline is very remiſs.

They recommend an univerſal toleration of religions very earneſtly, and receive all kinds of perſons into their aſſemblies, provided they be of good morals, and believe the ſcripture to be the word of God; however divided they may be as to the particular articles of faith.

Though the *mennonites* uſually paſs for a ſect of anabaptiſts, yet M. Herman Schin, a *mennonite* miniſter, who has publiſhed their hiſtory and apology, maintains that they are not anabaptiſts, either in principle, or by origin: He owns they baptize none but adults; but then, neither do they re-baptize any who had received it in their childhood. They ſpeak with a great deal of prudence and reſerve as to the extraordinary operations of the holy ſpirit; and are far from the fanaticiſm of the old anabaptiſts. No people are more ſubmiſſive to magiſtrates, or carry paſſive obedience farther than they. Far from rebellion; they condemn even the moſt juſt war, *&c.*

MENOLOGY *, MENOLOGIUM, in the Greek church, is much the ſame with *martyrology*, or *calendar* in the Latin. See MARTYROLOGY, and CALENDAR.

> * The word comes from the Greek, μην, month, and λογος, diſcourſe.

The Greek *menologium* is divided into the ſeveral months in the year; and contains an abridgment of the lives of the ſaints; with a bare commemoration of the names of ſuch whoſe lives were never written. The Greeks have various *menologies.* The Romans tax them with inſerting divers heretics in their *menologies* as ſaints. Baillet treats of them at large.

MENSÆ *domeſticus.* See the article DOMESTICUS.

MENSALIA, MENSALS, ſuch parſonages, or livings as were formerly united to the tables of religious houſes; and therefore by canoniſts called *menſal* benefices. See PARSONAGE, and BENEFICE.

MENSES *, CATAMENIA, in medicine, the monthly evacuations from the uterus, of women not with child, or not giving ſuck. See MENSTRUAL.

> * They are ſo called from *menſis*, month, the period wherein they return. They are alſo called *flowers, courſes*, &c. See FLOWERS.

The *menſes* make one of the moſt curious and difficult phænomena in the whole human body; for the explanation whereof, many hypotheſes have been framed: though the matter is yet ſcarcely aſcertained.

It is generally agreed by all, that the neceſſity women are under for ſome extraordinary ſupply to compenſate the expence, and ſupport them during the time of geſtation, was the final reaſon why this redundance at other times was given them. But this is all they agree in. Some not content with this occaſion alone, will have the *menſtruous* blood offend in quality more than in quantity; which they argue from the pain it gives many women in the evacuation.—They add, that its malignity is ſo great, that it excoriates the parts of men by mere contact; that the breath of a *menſtruous* woman will give a permanent ſtain to ivory, or a looking-glaſs; that a little of the blood dropped on any vegetable, blaſts, or renders it ſterile; that if a pregnant woman be defiled with the *menſes* of another woman, ſhe miſcarries; that if a dog taſtes them, he runs mad, and grows epileptic: All which, with many more fables of the ſame kind, though related by great authors, Dr. Drake rejects, as too ridiculous to need a refutation.

Others aſcribe this effect to an imaginary dominion of the moon over the bodies of women.—This was formerly the prevailing opinion; though the ſmalleſt reflection would have ſhewn the weakneſs of it: For had this purgation been owing to the influence of the moon, all women of the ſame age and temperament, would have found it at the ſame periods and revolutions of the moon, *i. e.* at the ſame time; which all experience ſhews to be falſe.

There are two other opinions which carry with them great probability, and are argued with a great deal of ſtrength and reaſon. In both which, the quality of the blood is allowed to be innocent; but they ſtill differ about the reaſon of its iſſue.—The former is that of Dr. Bohn and Dr. Freind, who maintain this flux to be the reſult of a plethora, or plenitude; and to be evacuated only for relief againſt the quantity. See PLETHORA.

Dr. Freind, who has maintained the cauſe of a plethora with the greateſt ſtrength and clearneſs, ſuppoſes that this plethora ariſes from a coacervation in the blood-veſſels of a ſuperfluity of aliment, which he thinks remains over and above what is expended by the ordinary ways; and that women have this plethora, and not men, becauſe their bodies are more humid, and their veſſels, eſpecially the extremities of them, more tender, and their manner of living generally more unactive than that of men; and that theſe things concurring, are the occaſion that women do not perſpire ſufficiently to carry off the ſuperfluous alimentary parts, till it be accumulated in ſuch quantity as to diſtend the veſſels, and force its way through the capillary arteries of the uterus. It is ſuppoſed to happen to women more than the females of other ſpecies, which have the ſame parts, becauſe of the erect poſture of the former; and the vagina, and other canals, being perpendicular to the horizon; ſo that the preſſure of the blood is directed towards their orifices: whereas, in brutes, they are parallel to the horizon, and the preſſure wholly on the ſides of thoſe veſſels. The diſcharge, he thinks, happens in this part rather than in any other, as being more favoured by the ſtructure of the veſſels; the arteries being very numerous, and the veins ſinous and winding, and therefore more apt to retard the impetus of the blood; and conſequently, in a plethoric caſe, to occaſion the rupture of the extremities of the veſſels, which may laſt, till by a ſufficient diſcharge the veſſels are eaſed of their over-load.

This is the ſubſtance of Dr. Freind's theory, from whence he very mechanically, and very philoſophically, accounts for the ſymptoms.

To his argument, why women have *menſes* rather than men, we may add from Boerhaave, that in the former, the os ſacrum is wider, and ſtands farther out, and the os coccygis farther in; the oſſa innominata wider, and farther apart, and the loweſt of them, as well as the lower eminences of the os pubis, farther outwards than in the latter. Hence in women, the latitude or expanſion about theſe bones, and the capacity of the pelvis, is vaſtly great in proportion to thoſe of men; and yet in a woman not pregnant, there is not much to fill this expanſe. Again, the fore-ſide of the thorax is ſmoother in women than in men, and the blood-veſſels, lymphatics, adipoſe and nervous veſſels, membranes and fibres, are much laxer in women than in men: whence all their cavities, cells, veſſels, &c. are more eaſily repleniſhed, and the humours aggregated in them; beſides, that they are found to perſpire leſs than men, and to arrive much ſooner at their maturity, or ακμη of increaſe. To which he adds the conſideration of the ſoft pulpous texture of the uterus, and the vaſt number of veins and arteries it is filled withal.

Hence, a healthy maid, being arrived at her growth, begins to prepare more nutriment than is required for the ſupport of the body; which, as there is not to be any farther accretion, muſt of neceſſity fill the veſſels, and eſpecially thoſe of the uterus, and breaſts, as being the leaſt compreſſed. Theſe will be dilated more than the others; whence the lateral vaſcules evacuating their humour into the cavity of the uterus, it will be filled, and extended: Hence, a pain, heat, heavineſs, will be felt about the loins, pubes, &c. the veſſels of the uterus at the ſame time will be ſo dilated, as to emit blood into the cavity of the uterus, its mouth will be lubricated and looſened, and blood iſſue out. As the quantity of blood is diminiſhed, the veſſels will be leſs preſſed, and will contract themſelves cloſer, ſo as again to retain the blood, and let paſs the groſſer part of the ſerum; till at length, only the uſual ſerum paſſes. Again there are more humours prepared, which are more eaſily lodged in veſſels once dilated; hence the menſes go, and return at various periods in various perſons.

This hypotheſis, however plauſible, is oppoſed by Dr. Drake, who maintains that there is no ſuch repletion, or at leaſt that it is not neceſſary to menſtruation. Arguing, that if the menſes were owing to a plethora ſo accumulated, the ſymptoms would ariſe gradually, and the heavineſs, ſtiffneſs, and inactivity, neceſſary ſymptoms of a plethora, would be felt long before the period were compleated, and women would begin to be heavy, and indiſpoſed ſoon after evacuation, and the ſymptoms increaſe daily: Which is contrary to all experience; many women, who have them regularly and eaſily, having no warning, nor other rule to prevent an indecent ſurprize, than the meaſure of the time; in which, ſome that have ſlipped, have been put to confuſion and ſhifts, no ways conſiſtent with the notice a plethoric body would give. He adds, that even in thoſe who are difficultly purged this way, the ſymptoms, though very vexatious and tedious, do not make ſuch regular approaches, as a gradual accumulation neceſſarily requires. If we conſider what violent ſymptoms come on in an hour, we ſhall be extremely puzzled to find the mighty acceſſion of matter which ſhould in an hour or a day's time make ſuch great alterations. According to the hypotheſis, the laſt hour contributes no more than the firſt, and of conſequence, the alteration ſhould not be greater in the one than the other; ſetting aſide the bare eruption.

This is the ſubſtance of what is argued againſt Dr. Friend's theory; which, it muſt be owned, notwithſtanding theſe dejections, is ſtill the moſt rational and conſiſtent that has yet been advanced.

Thoſe who oppoſe it, give into the doctrine of fermentation, and maintain the evacuation of blood, in thoſe parts, to be the effect of an effervеſcence, or ebullition of the blood. This opinion has been maintained by many, particularly Dr. Charleton, Bale, De Graaf, and Drake. The two firſt of whom ſuppoſe a ferment peculiar to the women which produces this flux, and affects that part only, or at leaſt principally. Dr. Graaf, leſs particular in his notion, only ſuppoſes an effervеſcence of the blood raiſed by ſome ferment, without aſſigning how it acts, or what it is. The ſudden turgeſcence of the blood, occaſioned them all to think, that it aroſe from ſomething till then extraneous to the blood, and led them to the parts principally affected, to ſeek for an imaginary ferment, which no anatomical enquiry could ever ſhew, or find any receptacle for, nor any reaſoning neceſſarily infer. Again, that heat which frequently accompanies this turgeſcence, led them to think the caſe more than a plethora, and that there was ſome extraordinary inteſtine motion at that time.

Dr. Drake improves on the doctrine of a ferment; and contends not only that it is neceſſary there ſhould be a ferment, but a receptacle alſo for this ferment: Concluding from the ſuddenneſs and violence of the ſymptoms, that a great quantity muſt be conveyed into the blood in a ſhort time, and conſequently, that it muſt have been ready gathered in ſome receptacle, where, while it was lodged, its action was reſtrained. But he goes farther ſtill, and pretends to aſcertain the place, &c. both of the one and the other, making the gall-bladder to be the receptacle, and the bile the ferment. This liquor he thinks well adapted to raiſe a fermentation in the blood, when diſcharged into it in a quantity: And as it is contained in a receptacle that does not admit of a continual iſſue, may be there reſerved, till in a certain period of time, the bladder becoming turgid and full through the compreſſion of the incumbent viſcera, it emits the gall: which, by the way of the lacteals, inſinuating itſelf into the blood, may raiſe that effervеſcence which occaſions the aperture of the uterine arteries. See Gall.

To confirm this, he alledges, that perſons of a bilious conſtitution, have the *menſes* either more plentifully, or more frequently than others; and that diſtempers manifeſtly bilious, are attended with ſymptoms reſembling thoſe of women labouring under difficult menſtruation. If it be objected, that on this foot, men ſhould have *menſes*, as well as women; he anſwers, that men do not abound in bile ſo much as women; the pores of the former being more open, and carrying off more of the ſerous part of the blood, which is the vehicle of all the other humours; and, conſequently, a greater part of each is diſcharged through them than in women; wherein the ſuperfluity muſt either continue to circulate with the blood, or be gathered in proper receptacles, which is the caſe in the bile. The ſame reaſon he gives why menſtruation ſhould not be in brutes; the pores of theſe being manifeſtly more open than thoſe of women, as appears from the crop of hair which they bear; for the vegetation whereof, a large cavity, and a wider aperture of the glands is neceſſary, than where no ſuch thing is produced. Yet there is ſome difference between the males and females even among theſe, the latter having their *menſes*, though not ſo often, nor in the ſame form and quantity, as women.

He adds, that the ſeveral phænomena of the *menſes*, whether in a natural, a regular, or diſeaſed caſe, flow naturally and readily from this hypotheſis; and that whatever may be accounted for from a plethora, or from any particular ferment, may, without any ſtraining, be applied to this.

The root of black hellebore, and ſteel, are the principal remedies for obſtructions of the *menſes*; the former is almoſt infallible, and in many caſes where the latter is not only ineffectual, but improper; as in plethoric habits, for with ſuch, ſteel will ſometimes raiſe hyſteric commotions, convulſions, and a kind of uterine furor; whereas hellebore thins the blood, and diſpoſes it for a diſcharge without making it more impetuous. So that though each provoke the *menſes*, yet they do it by different ways; ſteel by increaſing the blood's velocity, and giving it a greater moment againſt the uterine arteries; and hellebore by dividing it, and rendering it more fluid. See Hellebore and Chalybeat.

MENSIS.		Month.
Mensis *chymicus.*	See	Menstruum.
Mensis *vetitus*		Fence *month.*

MENSTRUAL, or Menstruous, a term in medicine, applied to the blood which flows from women in their ordinary monthly purgations. See Menses.

The *menſtrual* blood is the exceſs, or redundance of the blood in the body. It may be defined an excrement ſerving for the formation, as well as nutrition of the fœtus in the womb, and which at other times is evacuated monthly. See Blood.

Of all animals, there are none beſides women, and perhaps apes, which have their *menſtrual* purgations.—Hippocrates ſays, that the *menſtrual* blood gnaws and tears the earth like vinegar. Pliny and Columella add, that it burns herbs, kills plants, tarniſhes looking glaſſes, and that dogs which taſte it, run mad. But this is all fabulous; it being certain that this blood is the ſame with that in the veins and arteries. See Blood.

By the Jewiſh law, a woman was unclean while the *menſtrual* blood flowed: and the man who touched her, or the moveables ſhe had touched, were declared unclean. Levit. chap. xv.

Menstrual *epacts.*	See	Epact.
Menstrual *longitude of the moon.*		Argument.

MENSTRUUM *, Solvent, or Dissolvent, in chymiſtry, any liquor that will diſſolve, that is, ſeparate the parts of hard bodies. See Dissolvent and Dissolution.

* The term takes its riſe from this, that ſome chymiſts pretend the compleat diſſolution of a mixed body cannot be effected in leſs than forty days, which period they call a *philoſophical month.*

Thus aqua regalis is a *menſtruum* for gold; aqua fortis, and ſpirit of nitre, for moſt other metals; common water for ſalts, &c. See Gold, Silver, Salt, &c.

Menſtruum is properly defined a body, which being applied to, or intermixed with another, does ſo diſſolve it, as that all the diſſolving parts float among the parts diſſolved; and ſo divides it into its minuteſt parts, as that the parts of the diſſolvent are intermixed with thoſe of the body diſſolved.—Whence it appears, that every *menſtruum* in diſſolving a body, is likewiſe diſſolved itſelf; ſo as with the body it diſſolves, to make up one body. A knife therefore divides bread, but is not on that account a *menſtruum*; as it does not conſtitute one body with the bread: but water boiled with the bread is a *menſtruum*, with regard to the bread, as it only makes up one body therewith. See Dissolution.

Menstruums may be divided into two claſſes; the firſt conſiſts of ſuch as are fluid; the ſecond of ſuch as are ſolid; that is, they are either actually divided, or they muſt be ſo ere they act.

Fluid Menstruums are water, dew, oils, ſaline and acid ſpirits, alkali ſalts, &c.

Solid Menstruums, are ſuch as muſt be made fluid ere they will diſſolve; ſuch are moſt ſalts, nitre, vitriol, &c. See Water, Salt, Vitriol, &c.

All *menſtruums*, at the time they act as ſuch, that is, at the time they are diſſolving, act as fluids; whether ſuch *menſtruum* be a fluid or a ſolid. Thus, *e. gr.* ſilver is a *menſtruum* with regard to gold; for if you take an ounce of ſilver, melt it in the fire, and add a grain of gold; all the parts of the ſilver will intermix themſelves with the parts of the gold; ſo as that the gold and ſilver, which before were ſeparate, now make one maſs.—But gold and ſilver are only *menſtruums* as they are diſſolved by the fire; *i. e.* as they are fluid.

For the action of Menstruums, Sir Iſaac Newton accounts for it from the acids wherein they are impregnated. The particles of acids are found to be endued with a ſtrong attractive force, wherein their activity conſiſts, and by virtue whereof they diſſolve bodies. See Attraction. Theſe acids he ſuppoſes of a middle nature between water and hard bodies, and to attract both. By this attraction they gather together about the particles of bodies, whether metallic, ſtony, or the like, and adhere to them very cloſe, ſo as ſcarce to be ſeparable from them by diſtillation, or ſublimation. Thus ſtrongly attracted, and gathered together on all ſides, they raiſe, diſjoin, and ſhake aſunder the particles of bodies, *i. e.* they diſſolve them; and by the attractive power whereby they ruſh againſt the particles of the bodies, they move the fluid, and ſo excite heat, ſhaking ſome of the particles to that degree, as to convert them into air, and ſo generating bubbles. See Acid.

Dr. Keil gives us the theory or foundation of the action of *menſtruums*, in the following propoſitions.

1°. Two corpuſcles may be placed ſo near each other, without touching, as that the force wherewith they attract each other, ſhall eaſily exceed that of their gravity.

2°. If a corpuſcle placed in a fluid be every way equally attracted by the ambient particles, the corpuſcle will not be put in any motion; but if it be attracted more by ſome of the particles than by others, it will then tend towards that quarter where the attraction is the ſtrongeſt: and the motion thus produced will be correſpondent to the inequality of the attraction: that is, if the inequality be great, the motion will be ſo; and if little, little.

3°. Corpuſcles ſwimming in a fluid, and attracting each other more than the interpoſed particles of the fluid; thoſe particles of the fluid will be driven aſide, and the corpuſcles approach each other with a force equal to the exceſs of their mutual attraction, beyond the attraction of the particles of the fluid.

4°. If a body be placed in a fluid whoſe parts attract the particles of the fluid more ſtrongly than thoſe particles are attracted by one another; and if in the body there be ſeveral pores pervious to the particles of thoſe fluids, the fluid will preſently diffuſe itſelf through the pores; and if the connection of the parts in that body be not ſo ſtrong as that it may be exceeded by the impetus of the particles ruſhing together; the immerſed body will undergo a diſſolution.

Hence, for a *menſtruum* to be fit to diſſolve a given body, there are three things required. 1°. That the parts of the body attract the particles of the *menſtruum* more ſtrongly than thoſe are attracted by each other. 2°. That the body have pores adequate and pervious to the particles of the *menſtruum.* 3°. That the coheſion of the parts of the body be not ſo ſtrong but that it may be torn aſunder by the impetus of the particles ruſhing together. Hence alſo it follows, that the particles which conſtitute ſpirit of wine, are more ſtrongly attracted by each other, than by thoſe of a ſaline body immerged in it.

Hence we ſee the reaſons of the different effects of different *menſtruums*; why ſome bodies, for inſtance metals, diſſolve in a ſaline *menſtruum:* Others again, as reſin, in a ſulphureous one, &c. particularly why ſilver diſſolves in aqua fortis, and gold only in aqua regalis; all the varieties whereof are accountable for, from the different degrees of coheſion, *i. e.* of attraction in the parts of the body to be diſſolved, the different diameters and figures of its pores, the different degrees of attraction in the *menſtruum*, and the different diameters and figures of its parts. See Cohesion.

Suppoſe, *e. gr.* the attraction of gold to that of ſilver, to be as a to b; and of ſilver to aqua fortis as b to d; but that of aqua fortis to aqua regia, as d to e; let f ſignify the magnitude of particles in aqua fortis, and r thoſe in aqua regia; c the coheſion of gold, and g the coheſion of ſilver: If the diameters of the particles f be greater than the diameters of the pores of gold, they can never diſſolve the gold, let their attractive force be ever ſo ſtrong. But if $\overline{b - fxd}$ be greater than g, then the ſilver will yield to the *menſtruum* whoſe particles are f, and leſs than the pores of the ſilver; and if $\overline{b - exr}$ be leſs than g, the ſilver will never diſſolve in the *menſtruum*, the particles whereof are r, and the attractive force e. But if $\overline{a - exr}$ be greater than c, the *menſtruum* made up of the particles r, and whoſe attractive force is e, will be able to penetrate and diſſolve the gold.

How a *menſtruum* may ſuſpend bodies much heavier than itſelf, which very often happens, may be conceived by conſidering, that the parts of no fluid can be ſo eaſily ſeparated, but they will a little reſiſt, or retard the deſcent of any heavy bodies through them; and that this reſiſtance is, *cæteris paribus*, ſtill proportionable to the ſurface of the deſcending bodies: But the ſurfaces of the bodies do by no means increaſe, or decreaſe, in the ſame proportion as their ſolidities do; for the ſolidity increaſes as the cube, but the ſurface only as the ſquare of the diameter. Small bodies, therefore, will have much larger ſurfaces, in proportion to their ſolid contents, than larger bodies will; and conſequently when exceedingly diminiſhed, may eaſily be buoyed up in the liquor. See Descent, Resistance, &c.

Menstruum, in pharmacy, chiefly denotes a body that will extract the virtues of ingredients by infuſion, decoction, or the like. See Extract, Infusion, Decoction, &c.

Menstruum *peracutum*, is a name given by Mr. Boyle to a *menſtruum* he extracted from bread only, that would prey on bodies more compact than many hard minerals, nay even on glaſs, and do many things that aqua fortis would not do.—With this he drew tinctures not only from crude corals, but alſo from the lapis hæmatites, and granates, nay from diamonds, and rubies. See Digestion.

MENSURATION, the act, or art of *meaſuring*. See Measuring, and Triangle.

MENTAL, ſomething that relates, or is reſtrained, to the operation of the underſtanding.

Thus, a *mental* prayer is ſuch a one as is made merely in the mind, without pronouncing one word of it. See Prayer.

Mental reſervations are the refuge of Hypocrites. See Reservation.

MENTUM, in anatomy, the lower part of the face, beneath the mouth; which we otherwiſe diſtinguiſh by the name of *chin*. See Face.

MEPHITIS, or Mephitical *exhalation*, denotes a poiſonous and noxious ſteam iſſuing out of the earth, and chiefly from a ſulphurous principle. See Poison, Damp, Exhalation, &c.

The moſt remarkable place of this kind is the Grotta del Cane near Puzzoli, about two miles from Naples, in Italy; the ſteams of which kill dogs, or other animals, when brought within its reach: A very curious account of which, and the manner of its efficacy, is given by Dr. Mead, in his eſſay on poiſons. See Crotto.

MER.—*Ouſter le* Mer. See the article Ouster.

MERCATOR's *chart*, or *projection*, is a ſea-chart, or projection of the ſurface of the earth in plano, wherein the meridians, parallels and rhumb lines are all repreſented by ſtrait lines; the meridians being likewiſe parallel; though their degrees are not equal, but are continually enlarged as they approach nearer the pole, in the ſame proportion as the parallel circles on the globe decreaſe as they approach the pole: that is, in the ratio of the radius to the ſine complement of the latitude. See Projection.

For the conſtruction, uſe, advantages, &c. hereof, ſee *mercator's* Chart.

Mercator's *ſailing*, is that performed loxodromically, by means of *mercator's* charts. See *mercator's* Sailing.

MERCHANDICE, or Mercantile *profeſſion*, the function of a merchant; or the art, method, &c. of exerciſing a wholeſale commerce. See Commerce.

The *mercantile* profeſſion is eſteemed noble, and independent. In France, by two arrets of Louis XIV, the one of 1669, the other of 1701, the nobility are allowed to trade, both by land and ſea, without derogating from their nobility: And we have frequent inſtances of merchants ennobled in that country, in regard of the utility of their commerce, and the manufactures they have ſet up. In Bretagne, even a retail trade does not derogate from nobility.

When the nobles of that province are diſpoſed for commerce, they let their nobility ſleep; that is, they do not loſe it, but only ceaſe to enjoy the privileges of their nobleſſe while their commerce continues, and re-aſſume it, by giving over trade, without any letters or inſtrument of re-habilitation.

In republics it is ſtill more valued; but no where more than in England, where the younger ſons and brothers of peers are frequently bred up to *merchandice*. Add to this, that many of the Italian princes are the principal merchants of their ſtates; and think it no diſcredit to make their palaces ſerve as warehouſes: And that many of the kings of Aſia, moſt of thoſe of the coaſt of Africa and Guinea, traffic with the Europeans, ſometimes by their miniſters, and ſometimes in perſon.

The qualifications requiſite for the profeſſion of a *merchant*, are, 1°. To keep books ſingle or double, *viz.* journals, ledgers, and others. 2°. To draw invoices, contracts, charter-parties, policies of aſſurance, bills of exchange, letters miſſive, &c. 3°. To know the relation between the monies, weights, and meaſures, of ſeveral countries. 4° The places where the ſeveral kinds of *merchandice* are manufactured, in what manner made, what the materials compoſed of, and whence; the preparation the materials require before they are wrought; and the merchandices afterwards. 5°. The lengths and breadths of ſtuffs, as ſilks, wools, hairs, linens, &c. the regulations of the places where they are manufactured, and their different prices at different ſeaſons. 6°. The dying, and the ingredients for the formation of the different colours. 7°. The *merchandices* that abound, or are more rare, in one country than another; their kinds and qualities; and the manner of trafficking in them to the beſt advantage, whether by land, by ſea, or rivers. 8°. The commodities permitted or prohibited, both for the import and export of a ſtate. 9°. The price of exchange according to the courſe of ſeveral places, and what it is that raiſes or lowers it. 10°. The duties to be paid both at the import and export of wares, according to the uſage of the place, the tarifs, regulations, *&c.* 11°. The manner of packing, bailing, and tunning *merchandices*, to keep them either in magazines, or in voyages, *&c.* 12°. On what terms a merchant-veſſel may be freighted, and inſured. 13°. The goodneſs and value of every thing requiſite for the conſtruction or refitting of veſſels, the prices of woods, cordage, maſts, anchors, ſails, and other neceſſaries. 14°. The wages ordinarily given captains, officers, and ſailors: and the manner of contracting with them. 15°. The foreign languages, which may be reduced to three principal ones, *viz.* the Spaniſh, uſed almoſt through all the eaſt, particularly on the coaſt of Africa, from the Canaries to the cape of Good Hope; the Italian, uſed throughout the coaſts of the Mediterranean, and many places of the Levant; and the Teutonic or German, uſed throughout moſt countries of the north. 16°. The conſular juriſprudence, the laws, cuſtoms, companies, colonies, chambers of inſurance, conſulates in the ſeveral countries; and in the general, all the ordinances, regulations, and policies, relating to commerce.

MERCHANT, a perſon who carries on merchandize, or ſuſtains the mercantile profeſſion. See MERCHANDICE.

MERCHANT-*ſhip*. See SHIP.

Law MERCHANT.	See	LAW.
Statute MERCHANT		STATUTE.
Tenant per ſtatute MERCHANT.		TENANT.

MERCHENLAGE, the law of the Mercians. See LAW.

MERCURE *galant*. See the article GALANT.

MERCURIAL, ſomething that conſiſts of, or bears a relation to, *mercury*. See MERCURY.

Thus we ſay, a *mercurial* perſon, to denote a perſon of a briſk, volatile complexion; ſuch perſons being ſuppoſed by aſtrologers to be under the more immediate influence of the planet *Mercury*. So alſo, we ſay *mercurial* fumes, *mercurial* ſpirits, *&c.* with reference to the mineral *mercury*.

MERCURIAL *medicines*.	See	MERCURIALS.
MERCURIAL *phoſphorus*.		PHOSPHORUS.
MERCURIAL *ſalivation*.		SALIVATION.
MERCURIAL *thermometer*.		THERMOMETER.
MERCURIAL *unguents*, *frictions*, &c.		SALIVATION.
MERCURIAL *waters*.		WATER.

MERCURIALS, medicines compoſed, or prepared, of *mercury*, or quick-ſilver. See MERCURY.

The principal of the claſs of *mercurials*, are mercurius albus, or white precipitate of mercury; ſweet and corroſive ſublimate of mercury; calomel; artificial cinnabar; turbith mineral; prince's powder; æthiops mineral, *&c.* See each under its proper article, SUBLIMATE, PRECIPITATE, MERCURY, CINNABAR, TURBITH, CALOMEL, *&c.*

The medicinal efficacy of *mercury* depends on its extreme diviſibility, and fineneſs of its particles, and on their gravity, or weight. By means of the firſt, it finds a paſſage into the inmoſt receſſes of the animal ſtructure, and, when properly guarded, does not exert itſelf till it comes in the remoteſt ſcenes of action; where moſt other medicines either do not arrive, or at leaſt not till their force is rebated.—This property it has in common with camphor. See CAMPHOR.

By the latter, it is enabled to make ſtill more conſiderable alterations in the animal œconomy, by rendering the fluids thinner, and breaking open the ſecretory paſſages: But this effect it has in common with chalybeats. See CHALYBEATS.

It may be added, that the ſame property whereby it becomes ſo powerful a deobſtruent, indicates, that it is to be avoided in hectics, and all caſes where the conſtitution is drawn low by too profuſe evacuations; in regard *mercurials* tend to keep up or increaſe the exceſs of impetus in the fluids, and that overcapacity in the ſecretory orifices, wherein the defect of ſuch a conſtitution ſeems to conſiſt. See HECTIC.

MERCURY, ☿, in aſtronomy, the ſmalleſt of the inferior planets, and the neareſt the ſun. See PLANET and SYSTEM.

The mean diſtance of *Mercury* from the ſun is to that of our earth from the ſun as 387 to 1000; its excentricity 8 degrees. The inclination of its orbit, that is, the angle formed by the plane of its orbit with the plane of the ecliptic, is 6 degrees 52 minutes: Its diameter to that of the earth as 3 to 4; and therefore the globe of *Mercury* will be to that of the earth as 2 to 5. See EXCENTRICITY, INCLINATION, DIAMETER, DISTANCE, *&c.*

According to Sir Iſaac Newton, the heat and light of the ſun on the ſurface of *Mercury*, is ſeven times as intenſe as on the ſurface of our earth in the middle of ſummer: which, as he found by experiments made for that purpoſe by a thermometer, is ſufficient to make water boil. Such a degree of heat therefore muſt render *Mercury* uninhabitable to creatures of our conſtitution: And if bodies on its ſurface be not inflamed and ſet on fire, it muſt be becauſe their degree of denſity is proportionably greater than that of ſuch bodies are with us. See HEAT.

The revolution of *Mercury* round the ſun, or his year, is performed in eighty-ſeven days, twenty-three hours; his diurnal revolution, or the length of his day, is not yet determined; nor is it certain whether he has ſuch a motion round his own axis, or not. See PERIOD, REVOLUTION, *&c.*

What variety of weather or ſeaſons it may be liable to, we are ſtill at a loſs; as not knowing the inclination of his axis to the plane of his orbit. The force of gravity on the ſurface of *Mercury*, is ſeven times as ſtrong as on the ſurface of the earth. Its denſity, and conſequently, the gravitation of bodies towards the centre, cannot be accurately determined; but no doubt it muſt exceed that of our earth, by reaſon of the exceſs of heat there. See GRAVITY, DENSITY, *&c.*

Mercury changes its phaſes, like the moon, according to its ſeveral poſitions with regard to the ſun and earth. See MOON. It appears full, in its ſuperior conjunctions with the ſun, becauſe we can ſee the whole illumined hemiſphere: But in its lower conjunction, we only ſee the obſcure or unillumined hemiſphere: In his approach towards the ſun, his light is falcated or horned. See PHASES.

The ſituation of this planet proves evidently, that the hypotheſis of Ptolemy is falſe: For *Mercury* is ſometimes obſerved betwixt the earth and ſun; and ſometimes beyond the ſun. But the earth is never found between *Mercury* and the ſun; which however muſt happen, if the ſpheres of all the planets incompaſſed the earth, as a centre, according to the Ptolemaic ſcheme. See PTOLEMAIC *ſyſtem*.

The diameter of the ſun viewed from *Mercury*, would appear three times as big as it appears on our earth; that planet being thrice as near him as we are; and therefore the ſun's diſk would appear ſeven times as large as it appears to us:

Its greateſt diſtance from the ſun, with regard to us, never exceeds twenty-eight degrees, whence it is ſeldom viſible; being commonly either loſt in the ſun's light, or, when the moſt remote from the ſun, in the crepuſculum. The beſt obſervations of this planet, are thoſe made when it is ſeen on the ſun's diſk; for in its lower conjunction, it paſſes before the ſun like a little ſpot, eclipſing a ſmall part of his body, only obſervable with a teleſcope. The firſt obſervation of this kind, was that of Caſſendi in 1632. See TRANSIT.

To an inhabitant of *Mercury*, the ſolar ſpots will appear to traverſe his diſk ſometimes in a right line from eaſt to weſt, and ſometimes elliptically. As the other five planets are above *Mercury*, their phænomena will be nearly the ſame there, as with us. Venus and the earth, when in oppoſition to the ſun, will ſhine with full orbs, and afford a noble light to that planet.

MERCURY, in chemiſtry and natural hiſtory, denotes a fluid, mineral mater, perfectly reſembling ſilver in fuſion. See MINERAL.

Mercury is known under a great number of denominations: The common name among the antients was *hydrargyrum*, q. d. water of ſilver. The moderns commonly call it *mercury*, from ſome ſuppoſed relation it bears to the planet of that name. In Engliſh it is popularly called *quick-ſilver*, from its appearance. Many of the chymiſts call it *proteus*, from the variety of forms, colours, *&c.* it paſſes through in their preparations.

Naturaliſts are divided what claſs of foſſils to range *mercury* under: Some make it a metal; others a ſemi-metal; and others an imperfect metal. See FOSSIL, and SEMI-METAL.

Boerhaave obſerves, that it is very improperly called a *metal*, inaſmuch as it has not all the characters of ſuch a body; nor ſcarce any thing in common with the other metals, except weight and ſimilarity of parts: Thus, for example, it is neither diſſolvable by fire, malleable, nor fixed: In effect, it ſeems to conſtitute a peculiar claſs of foſſils; and is rather the mother, or baſis of all metals, than a metal itſelf. See METAL.

Perfect metals, according to M. Homberg, *&c.* are nothing but pure *mercury* whoſe little particles are penetrated on all ſides, and filled with the matter of light, which unites and binds them together into a maſs, ſo that the parts of fluid *mercury*, which are ſuppoſed to be little ſolid globes, in their metallification are rendered rough and uneven, being pierced on all ſides, and having their pores or perforations filled with the matter of light. By ſuch means they loſe their firſt conformation, and the politure or ſmoothneſs of their ſurfaces, which is one of the principal cauſes of the fluidity of *mercury*.

The chymiſts make *mercury* one of their hypoſtatical principles: Not, as M. Homberg obſerves, that it anſwers the character of a principle, which is that whoſe ſubſtance cannot be analyſed, or reduced into matters more ſimple; but becauſe the analyſis has not yet been diſcovered: Though it is poſſible it may hereafter, there being little doubt but that *mercury* is a compound. This is the more probable, in regard *mercury* may be deſtroyed, which never happens to ſimple bodies. The manner of deſtroying *mercury*, is, firſt, by changing it into a perfect metal, by introducing a ſufficient quantity of light within its ſubſtance; and then expoſing this metal to a burning-glaſs, where, in a little time, it evaporates almoſt wholly into ſmoke, leaving nothing behind but a light earthy duſt.

Characters, or properties of MERCURY, are, Firſt, That of all bodies it is the heavieſt, after gold; and ſtill the purer it is, the heavier: Nay, ſome of the philoſophers even hold that *mercury* well purged of all its ſulphur, would be heavier than gold itſelf. The ordinary proportion is that of fourteen to nineteen. If any *mercury* be found to weigh more than according to this ratio, it may be ſafely concluded to have gold in it. See GOLD, and WEIGHT.

The ſecond character of *mercury*, is to be of all bodies the moſt fluid; that is, its parts ſeparate, and recede from each other by the ſmalleſt force.—Conſequently, of all bodies it is that whoſe parts cohere the leaſt, or are the leaſt tenacious; and therefore of all others the leaſt ductile and malleable. The parts of water do not divide ſo readily as thoſe of quick-ſilver; and the parts of oil much leſs: There is a certain tenacity even in the parts of ſpirit of wine which reſiſts ſeparation; but there is ſcarce any coheſion at all in the parts of *mercury*. See FLUIDITY, and FIRMNESS.

The third property of *mercury*, which, indeed, depends on the ſecond, is, That of all bodies it is diviſible into the minuteſt parts.—Thus, being expoſed to the fire, it reſolves into a fume ſcarce perceivable to the eye; but in whatever manner it be divided, it ſtill retains its nature, and is the ſame ſpecific fluid. For the vapours of diſtilled or volatized *mercury* received in water, or on moiſt leather, or the like, become pure *mercury*; and if *mercury* be mixed with other bodies, in order to fix it, for it is ſcarce fixable of itſelf, it is eaſily ſeparable from them again by fire, and reducible into pure *mercury* as before. See DIVISIBILITY.

The fourth character is to be extremely volatile, being convertible into fume, even by a ſand-heat. In effect, it does not ſuſtain the fire long enough either to boil, or ignite. Though it muſt be added, if the fire be at firſt very gentle, and increaſe by eaſy degrees, it may be retained therein a pretty long time, and be fixed ſo at length to become ignited in the crucible, as we learn from ſome very tedious experiments made at Paris. See VOLATILITY.

The gilders are but too well acquainted with the vapours of *mercury*, which frequently render them epileptic, and paralytic, and ſometimes ſalivate them; being of ſo penetrating a nature, as to take away any ſcirrhous tumours, though very apt to reach and deſtroy the nobler parts.

The fifth property is, that it eaſily enters, and intimately adheres to gold, leſs eaſily to the other metals, with difficulty to copper, and not at all to iron. See AMALGAMATION.

Indeed we have heard much among the adepts about making an amalgama with *mercury* and iron; but the experiment would never ſucceed with that induſtrious chymiſt, Dr. Boerhaave. It is poſſible there may be ſome way of binding thoſe two bodies together; and no doubt an amalgama might be made, if a large quantity of gold were added to the iron: But then, if the compound were beaten into duſt, in water, the iron would waſh away, and the gold remain. On this account it is, that ſuch as have occaſion to handle quick-ſilver, always make choice of iron-inſtruments for that purpoſe. We have known women, in a ſalivation, to have their ear-rings grow white and ſoft with the effluvia of the *mercury*; and hence the gilders, to lay gold on any other body, diſſolve it in hot *mercury*, which done, they apply the ſolution on the body to be gilt, ſuppoſe ſilver; then ſetting it over the coals, the *mercury* flies away, and leaves the gold adhering like a cruſt to the ſilver. Laſtly, rubbing the cruſt with lapis hæmatites, the ſilver is gilt. See GILDING.

The ſixth character is, That of all fluids, it is the coldeſt, and the hotteſt: ſuppoſing the circumſtances the ſame.

Boerhaave ſhews, that fire is equally diffuſed through all bodies; and that there is in reality the ſame degree thereof in *mercury*, as in ſpirit of wine; and yet if you try with your finger, *mercury* in the cold, is much colder, and, over the ſame fire, conſiderably hotter, than this ſpirit. This property depends on the great weight of *mercury*: for the heat and cold of all bodies is *cæteribus paribus* as their weights. Now, *mercury* being fourteen times heavier than water; if both of them be expoſed in a winter's night to the ſame cold, the *mercury* muſt be ſo much colder than water, as it is heavier. So, alſo, if they be both applied to the ſame degree of heat, while the water becomes warm, the *mercury* will be hot enough to burn the hands. See HEAT, and COLD.

The ſeventh property is, that it is diſſoluble by almoſt all acids, and unites itſelf with them; at leaſt with all foſſil acids. Thus it is diſſolved in oil of vitriol, ſpirit of ſulphur per campanam, ſpirit of nitre, and aqua regia.

It is prepared with oil of vitriol, into turbith mineral; with ſpirit of ſulphur, into cinnabar; with aqua regia, or ſpirit of ſea-ſalt or ſal-gemma, into corroſive ſublimate. See TURBITH, CINNABAR, SUBLIMATE, &c.

Only vinegar does not diſſolve it; and hence we are furniſhed with a method of detecting the frauds of druggiſts, &c. who make a practice of ſophiſticating quick-ſilver with lead. Do but take a mortar, and pound the *mercury*, with vinegar therein; if the vinegar grow ſweetiſh, it is a proof there is a mixture of lead: If copper have been mixed with it, the *mercury* will turn greeniſh, or bluiſh; if there be no adulteration, the *mercury* and vinegar will both remain as before.

The eighth property is, that it is the moſt ſimple of all bodies, next after gold: Accordingly, we find it the ſame in all its parts, ſo far as our obſervation goes. If a ſingle grain of *mercury* be diſſolved in ſpirit of nitre, a proportionable part of the grain will be diſtributed into every minute particle of the menſtruum; and by diluting the whole with an ounce of aqua ſtygia, the whole grain of *mercury* will be revived. Had we the *mercury* of the philoſophers, called alſo *vital mercury*, *mercury of metals*, &c. ſo much talked of; it is aſſerted it would be ſtill vaſtly ſimpler than gold: For, from gold, we can ſometimes ſeparate *mercury*, and ſometimes ſulphur; but from pure *mercury*, nothing beſide itſelf can be ſeparated.

The ninth property of *mercury* is, not to be in any meaſure acrid, for it ſhews no acrimony to the taſte, nor does it corrode any body; and if a carcaſe were to be buried in quick-ſilver, it might doubtleſs remain there without being any way hurt.

The extraordinary effects, however, it produces in the body, have given people a notion of its being acrid. But the caſe is, that when received into the blood, it acts by its weight and velocity; whence it tears and deſtroys the veſſels, and thus occaſions thoſe great alterations, which lead the chymiſts into their miſtakes.

In effect, all its medicinal operations are to be accounted for from the properties already enumerated.

Mines of MERCURY.—The chief are thoſe of Hungary, Spain, Friuli, and Peru. The greateſt part of our quick-ſilver is brought us from Friuli, where there are abundance of mines belonging to the emperor, though now mortgaged to the Dutch. It is found under three ſeveral forms. 1°. In ruddy glebes or clods, called *cinnabar*. 2°. In hard ſtony glebes, or a mineral ſubſtance of a ſaffron, and ſometimes a blackiſh colour. 3°. It is alſo found pure: For upon opening holes in the beds of ſtones, &c. there ſometimes guſhes a vein or ſtream of pure *mercury*, called *virgin-mercury*.

This laſt ſort is moſt valued: Paracelſus and Baſil Valentine prefer it far to any other ſort, for chymical operations. Dr. Brown aſſures us in his travels, that enquiring of one of the directors of the quick-ſilver mines, wherein the difference between this and common *mercury* conſiſted; he was anſwered, that virgin-*mercury*, mixed and amalgamated with gold, renders the ſulphur of the gold volatile: but this has been ſeveral times tried without ſucceſs.

Method of procuring or ſeparating MERCURY *from the ore on earth.*—They firſt grind the mineral glebe into powder; this done, they pour a great quantity of water upon it, ſtirring and working the whole briſkly about till the water become exceeding thick, and turbid. This water having ſtood till it be ſettled, they pour it off, and ſupply its place with freſh, which they ſtir and work as before. This they repeat, and continue to do, till the water at length comes away perfectly clear; then, all remaining at the bottom of the veſſel, is *mercury*, and other metalline matter.

To this *mercury*, &c. they add the ſcoria of iron, putting the whole in large iron retorts, and ſo diſtilling it; by which means all the heterogenous, metallic and ſtony part, is ſeparated therefrom; and the *mercury* left pure.

As to the *mercury* in cinnabar, they do not find it worth while to diſtil, and get it out; cinnabar ſelling at too high a price alone. See CINNABAR.

The miſerable people condemned or hired to work in thoſe mines, all die in a little time. They are firſt affected with tremors, and proceed to ſalivate; then their teeth drop out, and they are ſeized with pains all over, eſpecially in their bones, which the *mercury* penetrates, and thus die.

In Spain, the melting and exhaling of the mineral is performed with more care, and with an engine contrived for that purpoſe. As to the earthly matter wherewith the *mercury* is mix'd, that of Spain is red, and ſpeckled with black and white; and ſo hard, that it is not to be broken up with gun-powder. In Hungary it is frequently a hard ſtone, but ordinarily a reddiſh earth. In Friuli there is a ſoft earth where the virgin quick-ſilver is found, and a hard ſtone which yields the common *mercury*.

The mine of Idica, one of thoſe belonging to Friuli, is ſo rich, that it yields always half quick-ſilver, ſometimes two thirds.

The mine of Juan Cabelaca, in Peru, is ſtill more conſiderable; the earth is of a whitiſh red, like bricks half burnt; it is firſt broke, then expoſed to the fire, by ſpreading it on a layer of common earth, wherewith the grate of an earthen ſurface is covered; under which is lighted a little fire of an herb, called by the Spaniards, *icho*: which is of that neceſſity in theſe works, that the cutting it is prohibited for the ſpace of twenty leagues round. In proportion as the mineral heats, the *mercury* riſes volatized into ſmoke; which ſmoke finding no vent through the capital of the furnace, which is exactly luted, eſcapes thro' a hole made for the purpoſe, communicating with ſeveral earthern cucurbites fitted within one another. The water at the bottom of each cucurbite condenſing it to ſmoke, the quick-ſilver precipitates, and is taken up, when the operation is over. In this proceſs, there are three things remarkable. The firſt, That the further the cucurbites are from the furnace, the more they are filled with quick-ſilver. The ſecond, That at laſt they all grow ſo hot, that they would break, were they not ſprinkled from time to time with water. Thirdly, That the workmen employed never hold it long, but become paralytic, and die hectic. A precaution they uſe, is to hold a piece of gold in the mouth, to imbibe the effluvia, and intercept their paſſage into the body. Dr. Pope tells us of one he ſaw in the mines of Friuli, who in half a year's time was ſo impregnated with the metal, that putting a piece of braſs in his mouth, or even rubbing it in his fingers, it would turn white as ſilver.

The method of purifying MERCURY, is, by waſhing it ſeveral times in vinegar, wherein common ſalt hath been diſſolved; or by paſſing, and repaſſing it frequently over a ſhammy ſkin. Am. Paræus tells us, that the beſt way is to make a dog ſwallow a pound at a time, and afterwards to ſeparate it from the excrements, and waſh it in vinegar.

The uſes of MERCURY are very conſiderable in gilding, making looking-glaſſes, in refining gold, *&c.* See each under its head, GILDING, REFINING, MIRROUR, LOOKING-GLASS, FOLIATING, *&c.*

But eſpecially in medicine, and particularly for the cure of the venereal diſeaſe, raiſing ſalivations, and on other occaſions. See VENEREAL *diſeaſe*, SALIVATION, and MERCURIALS.

The preparations of MERCURY are very various; this metal making one of the moſt conſiderable articles in the chymical pharmacy. The moſt common preparations are,

White precipitate of MERCURY, MERCURIUS *præcipitatus albus*, is compounded of crude *mercury* drove over from ſea-ſalt in a retort, or revived from common cinnabar, and diſſolved in aqua fortis; then a brine prepared of ſpring-water and ſea-ſalt is filtred through a cap-paper, and the ſolution of *mercury* dropped gradually into this brine, whence there is a white powder precipitated, which is to be waſhed from all its acrimony with ſome ſimple diſtilled water, or warm ſpring water, and the whole dried.

This is the common precipitate of the ſhops, uſually called *white precipitate.*—Its operation is moſtly by ſtool, ſometimes by vomit, and will ſalivate, if ordered accordingly. It is frequently mixed with pomatums for the itch, and other foulneſſes of the ſkin; for which purpoſe, it is neceſſary to keep the body laxative, and to take ſomething inwardly to take hold of the mercurial principles, and prevent their raiſing a ſalivation, which they may otherwiſe do. See PRECIPITATE.

Corroſive ſublimate of MERCURY, MERCURIUS *ſublimatus corroſivus*, is a compoſition of vitriol calcined to a redneſs, common ſalt, and purified nitre, with crude *mercury* cleanſed by ſtraining through a leather, all rubbed together in a mortar, till the ſalts are reduced into powder, and not the leaſt globule of *mercury* appears. The mixture is then put into a matraſs, and that ſet in a furnace with a ſand-heat, under which a fire being kept to its greateſt height for twelve or fifteen hours, the *mercury* will be ſublimed, and ſtick to the top of the veſſel.

This ſublimate is a violent eſcharotic, and eats away proud fleſh; half a dram of it diſſolved in a pound of lime-water, turns it yellow, which is then called *phagedænic* water; it is uſed to waſh ulcers, and tetterous eruptions. See SUBLIMATE.

Sweet ſublimate of MERCURY, MERCURIUS *ſublimatus dulcis*, or *aquila alba*, is a compoſition of the preceding corroſive ſublimate with crude *mercury*, ground together till no *mercury* appear, and then put into a bolt-head, well ſtopped, and ſet in a ſand-heat, with a gentle fire, for the ſpace of two hours; which heat is to be then increaſed for three hours longer, and, laſtly, made very ſtrong, for as much more. When this is cold, the glaſs is broke, and the ſublimate ſeparated from the light flowers at top, and the duſt at bottom.—This is then powdered afreſh, and the operation repeated in the ſame manner three times.

If it be further repeated, a ſixth time, it is called *calomel.* See CALOMEL.

Fixing of MERCURY. See FIXATION and PHILOSOPHER'S *ſtone*.

MERCURY, *or* MERCURY *of bodies*, is alſo uſed by chymiſts to denote the third of the principles, or elements of natural bodies; called alſo *ſpirit.* See PRINCIPLE.

In this ſenſe, *mercury* is defined the moſt ſubtile, light, volatile, penetrating, and active part of all bodies. See SPIRIT.

MERCURY *of metals*, or *of the philoſophers*, is a pure, fluid ſubſtance in form of common running *mercury*, ſaid to be found in all metals, and capable of being extracted from the ſame. See METAL.

The notion of *mercury* of metals, is founded on the common ſyſtem of the chymiſts, That *mercury* or quick-ſilver is the baſis, or matter of all metals; and that metals are only *mercury* fixed by a certain ſulphur. See SULPHUR, *&c.*

Mr Boyle aſſures us, he had a way of drawing a true, running *mercury*, or quick-ſilver from antimony. See ANTIMONY.

Animated MERCURY is quick-ſilver impregnated with ſome ſubtile and ſpirituous particles; ſo as to render it capable of growing hot, when mingled with gold. See AMALGAMA.

MERCURY alſo ſerves as a title for books, and papers of news; ſo called from the heathen deity Mercury, ſuppoſed the meſſenger of the gods. See JOURNAL.

Thus we have monthly *mercuries*; the French have a gallant *mercury*, *&c.*

In a like ſenſe, *mercury* is alſo figuratively applied to perſons who make it their buſineſs to collect news, or to run about and diſtribute it.

MERCURY, in heraldry, denotes the purple colour in the coats of ſovereign princes. See PURPURE.

MERCURY is ſometimes alſo uſed for the torricellian experiment, or barometer. See BAROMETER.

Though *mercury* be not ordinarily ſuſtained in a tube above the height of twenty-eight or twenty-nine inches, yet M. Huygens has found, that *mercury* well purged, and in a cloſe ſtill place, will be ſuſtained to the height of ſeventy-two inches; which is a phænomenon the philoſophers are all at a loſs to account for. See TORRICELLIAN *experiment*.

MERIDIAN, in aſtronomy, a great circle of the ſphere, paſſing through the zenith, nadir, and poles of the world; and dividing the ſphere into two hemiſpheres, the one eaſtern, and the other weſtern. See CIRCLE and SPHERE.

Or, the *meridian* is a verticle circle, as AZBN (*tab. aſtron. fig.* 6.) paſſing through the poles of the world, P and Q. See VERTICAL *circle*.

It is called *meridian*, from the latin *meredies*, noon, or midday, by reaſon when the ſun is in this circle, it is noon in thoſe places ſituate under it.

MERIDIAN, in geography, is a great circle, as PAQD, (*tab. geography, fig.* 7.) paſſing through the poles of the earth P and Q; and any given place at Z. So that the plane of the terreſtrial *meridian*, is in the plane of the celeſtial one.

Hence, 1. As the *meridian* inveſts the whole earth, there are ſeveral places ſituated under the ſame *meridian.* And, 2. As it is noon-tide whenever the centre of the ſun is in the *meridian* of the heavens; and as the *meridian* of the earth is in the plane of the former: it follows, that it is noon, at the ſame time, in all places ſituate under the ſame *meridian.* 3. There are as many *meridians* on the earth, as there are points conceived in the equator. In effect, the *meridians* always change, as you change the longitude of the place; and may be ſaid to be infinite: Each ſeveral place from eaſt to weſt having its ſeveral *meridian.*

Firſt MERIDIAN, is that from which the reſt are accounted, reckoning from weſt, to eaſt.—The firſt *meridian* is the beginning of longitude. See LONGITUDE.

The fixing of a firſt *meridian* is a matter merely arbitrary; and hence different perſons, nations, and ages, have fixed it differently; whence ſome confuſion has aroſe in geography. The rule among the antients was to make it paſs through the place furtheſt to the weſt that was known. But the moderns knowing, that there is no ſuch place in the earth as can be eſteemed the moſt weſterly; the way of computing the longitudes of places from one fixed point is much laid aſide.

Ptolemy aſſumed the *meridian* that paſſes through the furtheſt of the Canary Iſlands as his firſt *meridian*; that being the moſt weſtern place of the world then known. After him, as more countries were diſcovered in that quarter, the firſt *meridian* was removed further off. Some fixed it to the iſland of St. Nicholas, near Cape Verd; Hondius to the iſle of St. James; others to the iſland Del Corvo one of the Azores. The lateſt geographers, particularly the Dutch, have pitched on the Pike of Teneriff; others on the iſle of Palm, another of the Canaries; and, laſtly, the French, by command of their king, on the iſland of Fero, another of the Canaries.

But, without much regard to any of theſe rules, our geographers, and map-makers, frequently aſſume the *meridian* of the place where they live, or the capital of their country, for a firſt *meridian*, and thence reckon the longitudes of their places.

The aſtronomers in their calculations uſually chuſe the *meridian* of the place where their obſervations are made, for their firſt *meridian*; as Ptolemy at Alexandria; Tycho Brahe at Uranibourg; Riccioli at Bologna; Mr. Flamſteed at the royal obſervatory at Greenwich; the French at the obſervatory at Paris. See OBSERVATORY.

In the *Philoſophical Tranſactions*, there is a ſuggeſtion, that the *meridians* vary, in time.—This ſeems very probable, from the old *meridian-line* in the church of St. Petronio at Bologna, which is found to vary no leſs than eight degrees from the true *meridian* of the place at this time; and from that of Tycho at Uranibourg, which M. Picart obſerves, varies eighteen minutes from the modern *meridian.* If there be any thing of truth in this hint, Dr. Wallis ſays, the change muſt ariſe from a change of the terreſtrial poles, (here on earth, of the earth's diurnal motion) not of their pointing to this or that of the fixed ſtars: For if the poles of the diurnal motion remain fixed to the ſame place on the earth, the *meridians* which paſs through theſe poles muſt remain the ſame.

But the notion of the changes of the *meridian* ſeems overthrown by an obſervation of M. Chazelles, of the French academy of ſciences, who, when in Egypt, found that the four ſides of a pyramid built three thouſand years ago, ſtill looked very exactly to the four cardinal points. A poſition which can never be looked upon as fortuitous!

MERIDIAN *of a globe*, or *ſphere*, is the brazen circle, in which the globe hangs and turns. See GLOBE.

It is divided into four nineties, or three hundred and ſixty degrees,

grees, beginning at the equinoctial: On it, each way, from the equinoctial, on the celeſtial globes, is counted the ſouth and north declination of the ſun or ſtars: And on the terreſtrial globe, the latitude of places north or ſouth. There are two points on this circle, called the *poles*: and a diameter continued from thence through the centre of either globe, is called the *axis*, of the earth or heavens, on which they are ſuppoſed to turn round. See POLE, and AXIS.

On the terreſtrial globes there are uſually thirty-ſix *meridians* drawn; one through every tenth degree of the equator, or through every tenth degree of longitude.

The uſes of this circle are, to ſet the globes to any particular latitude; to ſhew the ſun's or a ſtar's declination, right aſcenſion, greateſt altitude, *&c.* See GLOBE.

MERIDIAN *line*, an arch, or part, of the meridian of a place; terminated, each way, by the horizon.

Or, a *meridian line* is the interſection of the plane of the meridian of the place, with the plane of the horizon; vulgarly called a *north and ſouth line*, becauſe its direction is from one pole towards the other. See MERIDIAN.

The uſe of a *meridian line* in aſtronomy, geography, dialling, *&c.* is very great; and on its exactneſs all depends: Whence infinite pains have been taken by divers aſtronomers to have it to the laſt preciſion.—M. Caſſini has diſtinguiſhed himſelf by a *meridian line* drawn on the pavement in the church of St. Petronio at Bologna, the largeſt and moſt accurate in the world. In the roof of the church, a thouſand inches above the pavement, is a little hole, through which the ſun's image, when in the *meridian*, falling upon the *line*, marks his progreſs all the year. When finiſhed, M. Caſſini, by a public writing, informed the mathematicians of Europe, of a new oracle of Apollo or the ſun eſtabliſhed in a temple, which might be conſulted with entire confidence as to all difficulties in aſtronomy. See SOLSTICE, and GNOMON.

To draw a MERIDIAN *line.*—Knowing the ſouth quarter pretty nearly, obſerve the altitude FE (*Tab. Aſtronomy, fig.* 8.) of ſome ſtar on the eaſtern ſide thereof not far from the *meridian* HZRN. Then, keeping the quadrant firm on its axis, ſo as the plummet may ſtill cut the ſame degree, only directing it to the weſtern ſide of the *meridian*, wait till you find the ſtar has the ſame altitude as before, *fe*. Laſtly, Biſſect the angle EC*e* formed by the interſection of the two planes wherein the quadrant is placed at the time of the two obſervations, by the right line HR. This HR is a *meridian line.*

Or thus; On a horizontal plane, from the ſame centre C, (*Fig.* 9.) deſcribe ſeveral arches of circles BA, *ba*, *&c.* And on the ſame centre C, erect a ſtyle or gnomon perpendicular to the plane ACB, a foot, or half a foot long. About the twenty-firſt of June, between the hours of nine and eleven in the morning, and between one and three after noon, obſerve the points, B, *b*, *&c.* A, *a*, wherein the ſhadow of the ſtyle terminates. Biſſect the arches AB, *ab*, *&c.* in D, *d*, *&c.* If then the ſame right line DE biſſect all the arches AB, *ab*, *&c.* it will be the *meridian line* ſought.

In regard the extremity of the ſhadow is ſomewhat hard to determine, it is beſt to have the ſtyle flat a-top, and to drill a little hole, noting the lucid ſpot projected by it on the arches AB and *ab*, inſtead of the extremity of the ſhadow. Otherwiſe, the circles may be made with yellow, inſtead of black, *&c.*

Several authors have invented particular inſtruments and methods for the deſcribing of *meridian lines*, or rather for determing equal altitudes of the ſun in the eaſtern and weſtern parts of the heavens; as Mr. Grey, Mr. Derham, *&c.* in the *Philoſophical tranſactions*. But as the former of the methods above delivered, ſuffices for aſtronomical obſervations, and the latter for more ordinary occaſions, we ſhall forbear to give any deſcriptions thereof.

From what has been ſhewn, it is evident that whenever the ſhadow of the ſtyle covers the *meridian line*, the centre of the ſun is in the meridian; and therefore it is then noon.—And hence the uſe of a *meridian line* in adjuſting the motion of clocks, *&c.* to the ſun.

Hence alſo, if the *meridian line* be biſſected by a right line OV, drawn perpendicularly through the point C; OV will be the interſection of the meridian, and firſt vertical; and, conſequently, O will ſhew the eaſt point, and V the weſt.

Laſtly, if a ſtyle be erected perpendicularly in any other horizontal plane, and a ſignal be given when the ſhadow of the ſtyle covers the *meridian line* drawn in another plane, noting the apex or extremity of the ſhadow projected by the ſtyle, a line drawn from that point through that wherein the ſtyle is raiſed will be a *meridian line*. See MERIDIAN *altitude*.

MERIDIAN *line*, on a dial, is a right line ariſing from the interſection of the *meridian* of the place with the plane of the dial. See DIAL.

This is the line of twelve o' clock; and from hence the diviſion of the hour-line begins.

Magnetical MERIDIAN, is a great circle paſſing through or by the magnetical poles; to which the magnetic needle, or needle of the mariners compaſs, if not otherwiſe hindred, conforms itſelf. See MAGNET and COMPASS.

MERIDIAN *altitude* of the ſun or ſtars, is, their altitude when in the *meridian* of the place where they are obſerved. See ALTITUDE.

The *meridian* altitude may be defined an arch of a great circle perpendicular to the horizon, and comprehended between the horizon and the ſtar then in the *meridian* of the place. See SUN, STAR, PLANET, *&c.*

To take the MERIDIAN *altitude of the ſtars.*—Aſtronomers make two principal kinds of obſervations of the ſtars; the one when they are in the *meridian*, and the other when in vertical circles. See COELESTIAL *obſervation.*

For *meridian obſervations*; there are two inſtruments principally uſed, the quadrant and gnomon. See QUADRANT and GNOMON.

To take the meridian altitude with a quadrant; if the poſition of the *meridian* be known, and the plane of an aſtronomical quadrant be placed in the *meridian* line by means of the plumb-line ſuſpended at the centre: The *meridian* altitudes of the ſtars, which are the principal obſervations whereon the whole art of aſtronomy is founded, may eaſily be determined.

The *meridian* altitude of a ſtar may likewiſe be had by means of a pendulum-clock, if the exact time of the ſtar's paſſage by the *meridian* be known. Now it muſt be obſerved, that ſtars have the ſame altitude for a minute before and after their paſſage by the *meridian*, if they be not in or near the zenith: But if they be, their altitudes muſt be taken every minute when they are near the *meridian*; and then their greateſt altitudes will be the *meridian* altitudes ſought.

As to the manner of obſerving, it is found very difficult to place the vane of the quadrant in the *meridian* exactly enough to take the *meridian* altitude of a ſtar; for unleſs there be a convenient place, and a wall where the quadrant may be firmly faſtened in the plane of the *meridian*, which is not eaſily had, we ſhall not have the true poſition of the *meridian* proper to obſerve the ſtars. It will be much eaſier therefore on ſeveral accounts, to uſe the portable quadrant, by which the altitude of the ſtar may be obſerved a little before its paſſage over the *meridian* every minute till its greateſt altitude be found. Here though we have not the true poſition of the *meridian* by this means, yet we have the apparent *meridian* altitude of the ſtar.

Though this method, in the general be very good, and free of any ſenſible error, yet in caſe a ſtar paſſes by the *meridian* near the zenith, it proves ſomewhat defective: For in theſe kind of obſervations, the inconvenient ſituation of the obſerver; the variation of the ſtar's azimuth ſeveral degrees in a little time; the alteration of the inſtrument, and the difficulty of replacing it vertically, will prevent the obſervations from being oftner than in every four minutes. But in each minute, the altitude varies about fifteen minutes of a degree, ſo that there will be the difference of a degree in the ſtar's altitude between each obſervation. In ſuch caſes, therefore, it will be better to have the true poſition of the *meridian*, or the exact time wherein the ſtar paſſes the *meridian*, in order either to place the inſtrument in the *meridian*, or to obſerve the altitude of the ſtar the moment it paſſes the *meridian*.

To find the MERIDIAN *altitude of the ſun*, &c.—*by a gnomon.* See GNOMON.—by other means, ſee ALTITUDE.

MERIDIANI*, in antiquity, is a name which the Romans gave to a kind of gladiators, who entered the arena about noon; after the beſtiarii, who fought in the morning againſt beaſts, had finiſhed. See GLADIATOR.

The *Meridiani* were a ſort of artleſs combatants, who fought man with man, ſword in hand: Hence Seneca takes occaſion to obſerve, that the combats of the morning were full of humanity, compared with thoſe which followed.

MERIDIONAL *diſtance*, in navigation, the ſame with *departure*, or eaſting and weſting; being the difference of longitude between the *meridian*, under which the ſhip now is, and any other *meridian* ſhe was under before. See DEPARTURE, and LONGITUDE.

MERIDIONAL *parts*, *miles*, or *minutes*, in navigation, are the parts, by which the *meridians* in Mercator's chart do increaſe, as the parallels of latitude decreaſe. See CHART.

The co-ſine of the latitude of any place being equal to the radius, or ſemi-diameter of that parallel, therefore in the true ſea-chart, or nautical planiſphere, this radius being the radius of the equinoctial, or whole ſine of ninety degrees, the *meridional parts* at each degree of latitude muſt increaſe as the ſecants of the arch contained between that latitude and the equinoctial do decreaſe.

The tables therefore of *meridional parts* in books of navigation, are made by a continual addition of ſecants, calculated in ſome books (as in Sir Jonas Moor's tables) for every degree and minute of latitude; and theſe will ſerve, either to make or graduate a Mercator's chart, or to work the Mercator's ſailing.

To uſe them, you muſt enter the table, with the degree of latitude at the head, and with the minute on the firſt column towards the left-hand; and in the angle of meeting, you will have the *meridional* parts.

Having the latitudes of two places, to find the *meridional miles*, or *minutes* between them: conſider whether the places be, one under the equinoctial, and the other wide thereof; or the one on the one ſide the equinoctial, and the other on the other; or whether they both lie on the ſame ſide.

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* They were thus called from *Meridies*, *i. e.* noon, the time when they exhibited their ſhews.

If one place lie under the equator, the *meridional minutes* next under the degree of latitude of the other place, is the *meridional* difference of latitude, or latitude enlarged.

If one be in north, and the other in ſouth latitude; the *meridional minutes* correſponding to the two latitudes added together, give the *meridional minutes* between them.

Both places lying towards the ſame pole; ſubſtract the *meridional parts* anſwering to the leſs latitude from thoſe of the greater; the remainer gives the *meridional minutes*.

MERIT, in theology, is uſed to ſignify the moral goodneſs of the actions of men, and the reward due to them.

The Romiſh ſchoolmen diſtinguiſh two kinds of *merit* towards God: the one of *congruity*, the other of *condignity*.

Merit *of congruity*, is, when there is no juſt proportion between the action, and the reward; but he who beſtows the reward, ſupplies by his goodneſs or liberality, what was wanting in the action.—Such is the *merit* of a ſon towards his father: but this is only *merit* in an improper ſenſe.

Merit *of condignity*, is, when there is an abſolute equality, and a juſt eſtimation between the action, and the reward: as in the wages of a workman.

Thoſe of the reformed religion diſclaim all *merit of condignity* towards God: Even their beſt work do not merit any thing at his hands.—The doctrine of *condign merits* makes one of the great articles of controverſy between the Romiſh and reformed churches.

MERLON *, in fortification, that part of the parapet which lies betwixt two embraſures. See Parapet, and Embrasure.

* The word comes from *merula*, or *merla*, which in the corrupt Latin was uſed for a battlement.

It is uſually from eight to nine feet long on the ſide of the cannon, and ſix on the ſide of the field; about ſix feet high, and eighteen thick.

MERMAID, or Merman, a ſea-creature frequently talked of, ſuppoſed half human, and half a fiſh. See Monster.

However naturaliſts may doubt of the reality of *mermen*, or *mermaids*, we have teſtimony enough to eſtabliſh it. In the year 1187, as Larry informs us, ſuch a monſter was fiſhed up in the county of Suffolk, and kept by the governour for ſix months. It bore ſo near a conformity with man, that nothing ſeemed wanting to it beſides ſpeech. One day it took the opportunity of making its eſcape, and plunging into the ſea, was never more heard of. *Hiſt. de Angleterre*, P. I. p. 403.

In the year 1430, after a huge tempeſt, which broke down the dykes in Holland, and made way for the ſea into the meadows, &c. ſome girls of the town of Edam in Weſt-Freezeland, going in a boat to milk their cows, perceived a *mermaid* embarraſſed in the mud, with a very little water. They took it into their boat, and brought it with them to Edam, dreſſed it in women's apparel, and taught it to ſpin. It fed like one of them, but could never be brought to offer at ſpeech. Some time afterwards it was brought to Haerlem, where it lived for ſome years, though ſtill ſhewing an inclination to the water. Parival relates, that they had given it ſome notion of a deity, and that it made its reverences very devoutly when ever it paſſed by a crucifix. *Delices de Hollande.*

In the year 1560, near the iſland of Manar, on the weſtern coaſt of the iſland of Ceylon, ſome fiſhermen brought up at one draught of a net, ſeven *mermen* and *maids*; of which, ſeveral jeſuits, and among the reſt, F. Hen. Henriques, and Dimas Boſquez, phyſician to the vice-roy of Goa, were witneſſes. The phyſician, who examined them with a great deal of care, and made diſſections thereof, aſſerts, that all the parts both internal and external, were found perfectly conformable to thoſe of men. See the *Hiſt. de la compagnie de Jeſus*, P. II. T. IV. N°. 276. where the relation is given at length.

We have another account well atteſted of a *merman*, near the great rock called Diamond, on the coaſt of Martinico. The perſons who ſaw it, gave in a preciſe deſcription of it before a notary. They affirmed that they ſaw it wipe its hand over its face, and even heard it blow its noſe.

Another creature of the ſame ſpecies was caught in the Baltic in the year 1531, and ſent as a preſent to Sigiſmond king of Poland, with whom it lived three days, and was ſeen by all the court. Another very young one was taken near Rocca de Sintra, as related by Damian Goes.

The king of Portugal and the grand maſter of the order of St. James, are ſaid to have had a ſuit at law to determine which party theſe monſters belonged to.

MERO *motu*. See the article Ex *mero*.

MERSION. See Immersion, and Emersion.

MERUIT.—*Quantum* Meruit. See Quantum.

MESARÆUM, ΜΕΣΑΡΑΙΟΝ, in anatomy, the ſame with *meſenterium*. See Mesentry.

Mesaræum, is alſo uſed in a more reſtrained ſenſe for a part, or diviſion of the meſentery; being that faſtened to the ſmall guts. See Mesentery.

That part of the meſentery which is faſtened to the thick guts is called meſocolon. See Mesocolon.

MESARAIC *veſſels*, in the general ſenſe, are the ſame with *meſenteric*. See Mesenteric.

In common uſe, *meſaraic* is more frequently applied to the veins; and meſenteric to the arteries, of the meſentery.

MESENTERIC, or Mesaraic, an epithet given to two arteries ariſing from the deſcending aorta, and proceeding to the meſentery.

There is an upper, or ſuperior *meſenteric*, which goes to the upper part of the meſentery; and a lower, or inferior *meſenteric*, which diſtributes itſelf through the lower part.—See *Tab. Anat.* (*Angeiol.*) *fig.* 1. *n.* 43, 45. See alſo Artery.

We have alſo a *meſenteric vein*, compoſed of an infinity of veins proceeding from the meſentery; which, with the vena ſplenica ariſing from the ſpleen, form the vena porta.

Anatomiſts alſo reckon a *meſenteric nerve*, which ariſes from the intercoſtal, and ſends ſeveral branches to the meſentery. See Nerve.

Mesenteric *plexus*, a plexus, or piece of net-work formed by the branches or ramifications of the par vagum.

The *plexus meſentericus magnus*, or *great meſenteric plexus*, is formed out of the concurrent branches of ſeveral other plexus's, and ſends its nervous fibres through the whole meſentery along with the meſaraic veſſels, which, with various circumligations, they accompany to the inteſtines. See Plexus.

Omphalo-**Mesenteric**. See the article Omphalo-*meſenteric*.

MESENTERY *, Mesenterium, or Mesaræum, in anatomy, a fatty membranous body; thus called, as being placed in the middle of the inteſtines, which it connects to one another. See Intestines.

* The word comes from the Greek, μεσος, middle, and εντερον, inteſtine gut.

The *meſentery* is almoſt of a circular figure, with a narrow production, to which the end of the colon, and the beginning of the rectum, are tied.

It is about four fingers and a half in diameter: Its circumference, being full of plaits and foldings, is about three ells in length. The inteſtines are tied like a border on this circumference of the *meſentery*: There are three inches of the inteſtines thus faſtened. See Intestines.

The *meſentery* itſelf is ſtrongly tied to the three firſt vertebræ of the loins. It is compoſed of three laminæ; the inner, upon which the glands and fat lie, and the veins and arteries run, is its own proper membrane; and the other two which cover each ſide of the proper membrane come from the pertionæum. Between the two external laminæ of the *meſentery*, run the branches of the arteria meſenterica, ſuperior and inferior, which bring the blood to the inteſtines; and the venæ meſaraicæ, which being branches of the porta, carry the blood back to the liver. Here the large branches of both arteries and veins communicating with one another, march directly to the guts; where, with the nerves from the plexus meſentericus, they divide into an infinite number of ſmall branches, which ſpread themſelves extremely finely upon the coats of the inteſtines. The venæ lacteæ, and lymphatic veſſels, run likewiſe upon the *meſentery*, in which there are alſo ſeveral veſicular glands; the biggeſt of which in the middle of the *meſentery*, is called *pancreas aſellii*; theſe glands receive the lympha and chyle from the lacteal veins. See Pancreas, and Lacteal.

The *meſentery* has been ordinarily divided into two parts, the meſaræum, and meſocolon. The firſt appended to the inteſtina tenuia; and the latter to the craſſa.—But this is a diviſion of no great moment.

The uſe of the *meſentery*, is, firſt, to gather the inteſtines into a narrow compaſs, that the courſe of the chyliferous veſſels towards their common recepticle may be but ſhort; to cover and protect them and the blood-veſſels; and to connect and diſpoſe the inteſtines, ſo as to ſecure them from any entanglement that might hinder their periſtaltic motion.

MESN *, or Measne, a term in law ſignifying him who is lord of a manor, and ſo hath tenants holding of him; yet he himſelf holds of a ſuperior lord. See Lord.

* The word is properly derived from *maiſne*, *quaſi minor natu*, becauſe his tenure is derived from another, from whom he holds.

Mesn, alſo denotes a writ, which lieth where there is lord *meſn* and tenant; and the tenant is diſtrained for ſervices due from the *meſn* to the ſuperior lord.

MESOCOLON, ΜΕΣΟΚΩΛΟΝ, in anatomy, that part of the meſentery connected to the great guns, eſpecially the colon. See Mesentery.

The *meſocolon* lies in the midſt of the colon, to which it is joined. Its lower part ſticks to a part of the rectum.

MESOLABE, Mesolabium, a mathematical inſtrument invented by the antients for finding two mean proportionals mechanically, which they could not come at geometrically. See Proportional.

It conſiſts of three parallelograms moving in a groove to certain interſections. Its figure is deſcribed by Eutochius in his commentary on Archimedes.

MESO-LOGARITHM, a term uſed by Kepler to ſignify the logarithms of the co-ſines, and co-tangents: The former of which my lord Neper calls *anti-logarithms*, and the latter *differentiales*.

Theſe are alſo called *artificial ſigns and tangents.* See LOGARITHM, CO-SINE, CO-TANGENT, ANTI-LOGARITHM, *&c.*

MESOPLEURII *, in anatomy, the intercoſtal muſcles. See INTERCOSTAL.

* The word is derived from μεσος, *medius*, middle; and πλευρον, *coſta*, rib.

MEST-PLEURII, is ſometimes alſo uſed for the intermediate ſpaces between the coſtæ, or ribs. See RIBS.

MESSE, or MASS, MISSA. See MASS.

MESSENGERS, in the Engliſh polity, are carriers of letters and meſſages; more particularly, certain officers chiefly employed under the direction of the ſecretaries of ſtate; always in readineſs to be ſent with all manner of diſpatches, foreign, and domeſtic. See SECRETARY *of ſtate*.

They are alſo employed, with the ſecretaries warrants, to take up perſons for high treaſon, or other offences againſt the ſtate, which do not ſo properly fall under the cognizance of the common law, and perhaps, are not proper to be divulged in the ordinary courſe of juſtice.

The priſoners they apprehend are uſually kept at their own houſes, for which they are allowed by the government 6 *s.* 8 *d. per* day. When they are diſpatched abroad, they have an allowance for their journey, as ſtated, *viz.* to Paris 30 *l.* to Holland, 25 *l.* to Edinburgh, 30 *l.* to Ireland, 30 *l.* and ſo to other places in proportion. Part of which money is advanced to them for their journey.

They wait twenty at a time, monthly, diſtributed as follows, *viz.* four at court, five at one ſecretary's office, five at the other, and two at the third office for North Britain, three at the council-office, and one at the lord chamberlain's of the houſhold. Their poſts, if purchaſed, are eſteemed worth 300 *l.* Their ſtanding ſalary is 45 *l. per annum.*

MESSENGERS *of the exchequer*, are officers attending the exchequer, in the nature of purſuivants. They are four in number. Their buſineſs is to attend the lord treaſurer, carry his letters, precepts, *&c.*

MESSENGER *of the preſs*, a perſon who by order of the court ſearches printing-houſes, bookſellers ſhops, *&c.* in order to diſcover ſeditious books, *&c.*

MESSIAH *, a term ſignifying anointed or ſacred; and in that ſenſe applied to kings and prieſts: but, by way of eminence, to Jeſus Chriſt, the Saviour promiſed by the prophets of the old law. See CHRIST.

* The word comes from the Hebrew, *maſcuach*, anointed, of the verb, *maſchach*, to anoint: whence Jeſus Chriſt claims the title on a manifold account: 1°. As having been anointed king of kings from all ages. 2°. As chief of the prophets. 3°. As high-prieſt of the law of grace, or prieſt for ever after the order of Melchizedek.

The ſon of God is variouſly denominated according to his various qualities and attributes. He is called the *word*, as being the eternal ſon of the father, and conſubſtantial with him: *Chriſt*, Χριϛος, a Greek term, ſignifying anointed, of the ſame import with the Hebrew *meſſiah*; *Jeſus*, *i. e.* ſaviour, of the Hebrew, *Jehoſua*, by reaſon he ſaves his people from their ſins. —In effect, he is called *word*, as being the ſon of God; *Jeſus*, as man; *Chriſt*, as being anointed; and *Meſſiah*, as being both God and man.

The Jews ſtill wait for the coming of the *Meſſiah*; being infatuated with the notion of a temporal *Meſſiah* that is to be a mighty conqueror, and to ſubdue all the world. See PROPHECY, *&c.*

Jeſus Chriſt aſſerts himſelf the *Meſſiah*. In St. John, iv. 25. the Samaritan woman ſays to Jeſus, *I know that when* Meſſiah *comes*, (*who is called the* Chriſt) *he will tell us all things. Jeſus anſwered her, I that ſpeak to thee, am he.*

There are ſeveral impoſtors who have endeavoured to paſs for *Meſſiahs*. J. Lent, a Dutchman, has written a hiſtory of falſe *Meſſiahs. De pſeudomeſſiis.* The firſt he mentions was one Barcochab, who appeared under the empire of Adrian. The laſt is rabbi Mordecai, who began to be talked of in 1682. A little before him, *viz.* in 1666, appeared Sabbethai Sebi, who was taken by the Turks, and turned Mahometan.

MESSIEURS, a French title of honour, or civility, lately introduced into our language; being the plural of *monſieur*, and equivalent to the Engliſh, *ſirs.* See MONSIEUR, SIRE, *&c.*

The French lawyers always begin their pleadings, and harangues with *meſſieurs*; which word is alſo frequently repeated in the courſe of their ſpeeches; on which occaſion it anſwers to our Engliſh word, *gentlemen.*

The French ſay, *Meſſieurs du parlement*; *du conſeil*; *des comptes*, &c.

MESSUAGE, MESSUAGIUM, in law, a dwelling-houſe with ſome land adjoining, aſſigned for its uſe.

By the name of *meſſuage* may a garden, ſhop, mill, cottage, chamber, cellar, or the like, paſs.

In Scotland, MESSUAGE, denotes what we call the *manor-houſe*; *viz.* the principal dwelling-houſe within any barony. See MAOR, MANSION, *&c.*

MESYMNIUM, a name which the antients gave to a part of their tragedy; or to certain verſes in their tragedies. See TRAGEDY.

The *meſymnium* was a kind of burden, as *Io Pæan*; *O Dithyrambe*; *Hymen*, *O Hymenæe*, or the like; which when placed at the end of a ſtrophe, was called *ephymnium*; and when inſerted in the middle of a ſtrophe, *meſymnium.* See STROPHE, and CHORUS.

METACARPUS *, or METACARPIUM, in anatomy, that part of the hand between the wriſt and the fingers.—See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 10. 10. *fig.* 7. *n.* 13. See alſo HAND.

* The word comes from the Greek μετα, *poſt*, behind; and καρπος, *manus*, hand. See CARPUS.

The *metacarpus* conſiſts of four bones, which anſwer to the four fingers; whereof that which ſuſtains the fore-finger is the biggeſt and longeſt. They are all round and long, a little convex towards the back of the hand, and concave and plain towards the palm: They are hollow in the middle, and full of marrow; they touch one another only at their extremities, leaving ſpaces in their middle, in which lie the muſculi interoſſei. See INTEROSSEI.

In their upper end there is a ſinus, which receives the bones of the wriſt; their lower extremity is round, and is received into the ſinus of the firſt bones of the fingers. See FINGER.

The inner part of the *metacarpus* is called the *palm*, and the outer, the *back of the hand*. See PALM, *&c.*

METACHRONISM, in chronology, an error in computation of time, either on the ſide of defect, or exceſs. See CHRONOLOGY, ANACHRONISM, *&c.*

METACISM, METACISMUS, in grammar, a defect in the pronunciation of the letter *M.*

Iſidore repreſents the *metaciſm* as a final *m*, followed by a vowel; as *bonum aurum*, *Bethlehem erat*, &c.

METACONDYLI, is uſed by ſome authors for the out-moſt bones, or joints of the fingers, next the nails. See FINGER, and CONDYLUS.

METAL, ΜΕΤΑΛΛΟΝ, in natural hiſtory, a ſimple, ponderous, ſhining, fixt, foſſil body, that fuſes, and becomes fluid, by fire, and by cold coagulates and hardens into a ſolid maſs, capable of being diſtended under the hammer. See FOSSIL.

Metal is ſaid to be *ſimple*, as it may be affirmed of every the minuteſt particle of a *metal*, *e. gr.* a grain of gold, that it is gold, or has all the properties of gold. See GOLD.—*Fuſible* by fire, that is, when expoſed to a great fire, it diſſolves into parts which are eaſily moveable among themſelves, or are in actual motion. See FUSION.—*Fixt*, *i. e.* bearing the fire without flying off in vapours: Though it is only to a certain degree that *metals* are fixed; for by the large burning-glaſſes of Meſſ. Tſchirnhauſen and Villette, all *metals* are found to evaporate. See FIXITY, VOLATILITY, BURNING-*glaſs*, &c.

Such is the proper idea of *metals*, which is not applicable to any other body in nature: For a diamond, or other ſtone, though a ſimple body, is not fuſible in the fire, nor capable of being ſtretched under the hammer. See DIAMOND. And ſalt, though diſſolvable by fire, is not malleable, but breaks under the hammer. See SALT, *&c.*

There are indeed certain woods which yield in ſome meaſure to the hammer; but then they fall to duſt in the fire: and ſo of the reſt. See MALLEABLE, *&c.*

We find but ſix *metals* in all nature, *viz.* gold, lead, ſilver, copper, iron, and tin. See the nature, characters, production, uſes, *&c.* of each, under its proper article; GOLD, LEAD, SILVER, COPPER, IRON, and TIN.

To theſe a ſeventh *metal* is uſually added, *viz.* mercury, or quick-ſilver; but improper, as it has not all the characters of a *metal*, nor ſcarce any thing in common with the other *metals*, except weight and ſimilarity of parts. See MERCURY, *&c.*

Thus, it is neither diſſolvable by fire, malleable, nor fixt: In effect, it ſeems to conſtitute a peculiar claſs of foſſils, and is rather the mother, or baſis of all *metals*, than a *metal* itſelf.—However, as it is uſually reckoned among them, and as it wants nothing to render it a *metal*, but an additional ſulphur to fix and connect its parts together, it may without any great harm be conſidered under that claſs.

The common radical character of *metals* is, that of all known bodies, they are the heavieſt. By Dr. Halley's experiments, the weight of gold to that of glaſs is determined to be as 9 to 1; and the weight of tin, the lighteſt of all *metals*, to that of gold, as 7 to 19; which conſiderably ſurpaſſes the weight of all ſtones, marbles, gems, and other the moſt ſolid bodies, as appears from the tables of ſpecific gravities. Nor is there any body in nature but a *metal*, that is one third of the weight of gold. See SPECIFIC *gravity*.

The Royal Society furniſh us with various experiments of this kind. The weights of the ſeveral *metals*, and other ſolids, they have examined hydroſtatically, by weighing them in air and in water; and the weights of the fluids by weighing an equal portion of each. By ſuch experiments they find, that taking the ſame weights of water and gold, the bulk or magnitude of the former is to the latter as 19636 to 1000; conſequently that the weight of gold is to water nearly as 19 to 1.

The ſpecific weight of the ſeveral *metals* by this means determined, ſtand thus:

Gold	19636	Iron	7852
Quick-ſilver	14019	Tin	7321
Lead	11345	Granate	3978
Silver	10535	Water	1000
Copper	8843	Air	$\frac{3}{17}$

The cube inch of		*Ounces.*	*Drams.*	*Grains.*
Gold		12	2	52
Quick-ſilver	Weighs	8	6	8
Lead		7	3	30
Silver		6	5	28
Copper		5	6	36
Iron		5	1	24
Tin		4	6	17

As to the origin and formation of METALS, various are the ſentiments of philoſophers, antient and modern.—M. Tournefort is of opinion, that *metals*, as well as all other minerals, have their origin from ſeeds, like plants; that they have veſſels with juices circulating in them, *&c.* See STONE, and MINERAL.

Plato will have the cauſe of *metals* to be a humid vapour, incloſed in the bowels of the earth, which being variouſly intermixed with parts of the earth, produces various *metals*. Plotin maintains ſulphur to be the father of *metals*; and an oleaginous viſcous humour, the mother. Lidyat endeavours to prove all *metals* generated by a ſubterranean fire; urging, among other reaſons, that many *metals*, when taken out of the earth, are exceedingly hot. Du Hamel ſhews, that *metals* do not take their riſe either from any vaporous exhalation, or from water, or from earth; but are generated of mercury, ſulphur, and ſalt. He adds, that *metals* take their matter and weight from the mercury, (See MERCURY.) and their tincture and form from ſulphur. See SULPHUR.

The ſame author owns the firſt rudiment of a *metal* to be a ſaline ſubſtance ſwimming in water, which is by little and little carried off. By how much the terreſtrial parts are more exquiſitely mixed with the aqueous or humid, by ſo much is the *metal* more heavy and firm, as having fewer and ſmaller pores. Hence its ductility: for its parts being extremely ſmall, denſe, and complicated, may be drawn out into a very ſpacious ſurface. On which account it is, that gold exceeds all other *metals* both in weight and ductility; hence alſo its fixity, its parts being too cloſe and denſe to be exhaled. The water defends the earth from being burnt, and the earth the water from flying off; neither forſakes the other, but each is bound in an undiſſolvable knot. The moiſture gives ductility, the earth ſolidity. Where the mixture is leſs perfect, whether the earth or the water prevail, the *metal* will neither have ſo much weight, as having larger pores; nor will it bear the fire ſo well. For if the earth prevail, as in iron, or the water, as in lead; heat will ſet the one at liberty from the other; the moiſture evaporates, and the earth is reduced into ſcoria, *&c.*

Dr. Woodward maintains, that all *metals* now found in the ſtrata of the earth owe their preſent condition to the deluge; when, he alſo imagines the ſtrata of ſtone, earth, marble, *&c.* were formed. See DELUGE.

The *metallic* and mineral matter now found in the perpendicular intervals or fiſſures of the ſeveral ſtrata, whereof the earth is compoſed, was, according to him, at the time of the deluge, lodged in the bodies of thoſe ſtrata; and brought thence, and tranſmitted into theſe intervals ſince that time; the intervals themſelves not exiſting, till the ſtrata were formed and broke again, to let the water from the earth. See STRATA.

Now the water, which, he imagines, is conſtantly aſcending from the abyſs (See ABYSS.) towards the ſurface of the earth, continually pervading the ſtrata, detaches out of their pores and interſtices ſuch *metallic* and mineral corpuſcles as it finds looſe in its way, carrying them along with it to the perpendicular intervals, where having a freer paſſage than before, it deſerts them, and leaves them in thoſe intervals. And this he takes to be the way in which all *metals*, now found in thoſe places, were brought thither, and ſtill grow.

Thoſe in the ſtrata, however, he obſerves, do not nor can grow; but, on the contrary, are continually leſſened and diminiſhed, by ſo much as has been conveyed into the perpendicular intervals, and brought forth of the ſurface of the earth by ſprings and exhalations from the abyſs, *&c.* See FOSSIL.

The ſame ingenious author complains of the great uncertainty and inconſtancy in the mineral and *metallic* kingdom; neither colour, figure, nor ſituation in the earth, being to be depended on, ſo as to make any poſitive judgment from them.—A pyrites or marcaſite, for inſtance, ſhall have the colour and brightneſs of gold and ſilver, and yet afford nothing but a little vitriol and ſulphur; while a pebble in appearance ſhall have a mixture of a valuable *metal* in it. It is common too to find the ſame *metal* ſhot into a great number of different forms, as well as to find different kinds of *metal* of the ſame form. And as to their place in the earth, there is the ſame uncertainty; being ſometimes found in the perpendicular fiſſures or intervals of the ſtrata, ſometimes interſperſed in the bodies of the ſtrata, and ſometimes in both. The ſame *metals* are alſo placed indifferently in all kind of terreſtrial matter, or in ſtrata of very different natures. They are frequently intermixed with each other, ſo that it is a rare thing to find any of them pure and ſimple; but copper and iron ſhall be in the ſame maſs, gold and copper, ſilver and lead, tin and lead; nay, ſometimes all ſix together in the ſame lump. See MINERAL.

The French chymiſts have been very curious in their inquiries into the nature, and production of metals.—M. Geoffroy, from a mixture of ſulphur with a vitriolic ſalt, and an argillous earth, brought an iron, which he maintained to be a new production, or a compoſition reſulting from the aſſemblage of certain principles which exiſted ſeparately in the ingredients that formed the *metal*; in a word, that it was an artificial iron. And obſerving that there were parcels of this *metal* in the coloured aſhes of plants, and of moſt other inflammable ſubſtances, he concluded that it might be formed there alſo by the union of the ſame three principles.

This was oppoſed by M. Lemery the younger, who maintained that the iron contained in the aſhes of plants, was not formed there by calcination, but was really exiſtent in the plants themſelves; being raiſed in their veſſels along with the juices of the earth; and further, that all the ingredients whereof M. Geoffroy's artificial iron was formed, do really contain iron in themſelves, either in ſmaller or larger quantities: Not the argilla only, where the iron is eaſily diſcovered by an animated knife; nor the oil of vitriol, which is drawn from a mineral the ground whereof is iron; but alſo linſeed-oil, whereof M. Geoffroy's ſulphur was made; and even that of turpentine, ſweet almonds, *&c.* relating withal the operations whereby each of thoſe oils may be reduced to an earth wherein is iron.

To this it was anſwered, that in what manner ſoever iron be procured from the ſeveral ingredients ſeparately, there will be ſtill found infinitely leſs in them, than when mixed; and that of conſequence the mixture produces iron. That as for oils, it is evident they are not ſimple ſubſtances, but are compoſed of an earth, an acid, and a ſulphurous, or inflammable part; which are the three preciſe principles required for the formation of iron: ſo that, according to all appearances, it is of an aſſemblage of thoſe ſulphurs, ſalts, and earth in the oil, that the iron is formed by calcination; and therefore that the means uſed to the iron in the ingredients, are the very ſame with thoſe by which it is compoſed.

Hence it appears, that vegetable matters contain the principles of minerals. But M. Geoffroy goes further: and to ſupport his doctrine of the production of *metals*, undertakes to prove, that the principles of vegetables, and thoſe of minerals, are eſſentially the ſame; and that one may readily, and with eaſe, decompound minerals, by ſeparating their principles, and compound them again, by ſubſtituting principles taken from vegetables in lieu of thoſe taken away.

To clear this point, he examines and compares the principles of mineral and vegetable ſalts. The principal in the mineral claſs, are nitre, ſea-ſalt, and vitriol: All which ſalts we find in plants. On the other hand, the eſſential ſalt of the parietaria is wholly nitrous, and melts on the coals like ſalt-petre. The fixt ſalts of the carduus benedictus, abſinthium, kali, *&c.* contain a great deal of ſea-ſalt, which cryſtallizes in cubes, and precipitates on the coals. Add, that the greateſt part of the fixt ſalts of plants calcined to a certain degree, yield a ſtrong ſmell of ſulphur, which can proceed from nothing but a vitriolic ſalt, rarefied and volatilized by the oil of the plant. By theſe ſalts we may be able to judge of all the other ſalts of plants; for the volatile ſalts are nothing elſe but fixed ſalts diſengaged from the groſſeſt part of their earth, and joined with parts of oil. See SALT.

Further, there is ſcarce any reaſon to doubt, that the acid juices drawn from vegetables, are of the ſame nature with the mineral acids; with this only difference, that the acids of plants have been extremely rarefied by fermentation, and united ſo cloſely with ſulphurs, that it is not without a great deal of difficulty that they are ſeparated.

Thus, diſtilled vinegar, which we make no ſcruple of ranking among the vitriolic acids; does only differ from ſpirit of ſulphur, ſpirit of vitriol, or even the cauſtic oil of vitriol, in that the acids in the vinegar are diffuſed among a great deal of phlegm, and ſtrongly united to a great deal of oil, which yet may be ſeparated. By diſſolving copper in the acid of vinegar, ſeparated as much as poſſible from its oil, there are formed cryſtals, like in figure to thoſe of blue vitriol. From all which it appears, that the ſalts of plants do not differ eſſentially from thoſe of minerals.

For ſulphurs, the inflammable or ſulphurous principle is the ſame in vegetables as in minerals. And M. Geoffroy even ſhews, that the principle of inflammability in common ſulphur, is the ſame with that which renders the fat of animals, the oils and reſins of plants, and the bitumens of the earth, inflammable. To which he adds, that this ſame ſulphurous principle is not only likewiſe found in metallic ſubſtances, but that it is this which gives them their fuſibility, ductility, and metalline forms. Thus antimony, which is a ſubſtance approaching the neareſt of any to a *metal*, is little elſe but a burning ſulphur. By exhaling this, it loſes its *metallic* form, and turns to a kind of grey aſhes, which being melted, inſtead of *metal* become glaſs. By melting this over again, and adding to it ſome inflammable matter, as tartar, it returns into a regulus.

As to the ſpecies of METALS, there are four which the chymiſts call *imperfect*, becauſe their principles are not bound ſo faſt together, but that the force of a common fire deſtroys them; theſe are, iron, copper, lead, and tin: the others, which are proof againſt common fire, are gold and ſilver, called *perfect metals*.

In the four firſt it is eaſy to ſee the principle of inflammability: They become all fuſible by the addition of ſalt-petre, either in a greater or leſs degree. Iron is that wherein this is the moſt viſible; next, tin; then copper and lead.—But the principle is more conſpicuous ſtill, in the duſt or ſmall filings of the *metals*, let fall in the flame of a candle, than in the lump.

For gold and ſilver, the ſulphurous principle is not ſo obvious. No heat but that of the ſun collected into a focus, is able to decompound them. But no doubt they have the ſame principles with the other *metals*, though not ſo eaſily ſeen.—In gold, as well as in the imperfect *metals*, the baſis is an earth capable of vitrification, as appears by the glaſs remaining after the calcination of gold in a burning-glaſs; and there is reaſon to believe, that the greateſt part of what is exhaled in ſmoak during the operation, is the ſulphurous principle mixed with ſalts.

As to ſilver, there is ſomething in it extremely various. When purified with antimony, it vitrifies by the burning-glaſs; but if purified with lead, it leaves nothing behind it but grey aſhes.—The baſis of this *metal* is doubtleſs an earth capable of vitrification; and what exhales in ſmoak, is apparently a mixture of ſulphur, ſalts, and a little earth volatilized by the fire. See SULPHUR.

From all which, and many more obſervations of the ſame kind, M. Geoffroy ventures to draw the following concluſions. That the ſubſtances whereof *metals* are compoſed, do not differ eſſentially from thoſe which compoſe vegetables.—That the imperfect *metals* are compoſed of a ſulphur, vitriolic ſalt, and vitrifiable earth.—That this ſulphurous principle is more or leſs ſtrongly joined with the other principles; very ſtrongly in gold and in ſilver, leſs in antimony, and very little in mineral ſulphur.—That the principle of inflammability may be ſeparated from *metallic* ſubſtances, either by culinary fire, or by the ſun. —That the *metal* thus deſpoiled of its principle, is converted into aſhes; and that theſe aſhes, purſued farther with a violent fire, vitrify; and that ſuch aſhes or glaſſes, by the application of ſome inflammable matter, reſume the *metallic* form they had loſt. —That it is by this means linſeed-oil turns argilla into iron.—That if we knew all the other *metallic* earths, they might likewiſe be immediately converted into *metals*, by the projection of ſome inflammable matter.—That it is the ſaline and earthy parts, found in oil of vitriol, that furniſh the earthy vitrifiable part which makes the baſis or ground of iron, and that it receives the *metallic* form from the ſulphurous principle of the oil. —That the iron found in the aſhes of plants, was produced there in the ſame manner: And, That it is a compoſition of the vitrifiable earth of the plants, the acid of thoſe plants, and their oily or inflammable principle.

The ſame author, the better to aſcertain the conſtituent parts of *metals*, made a great number of experiments on them with the duke of Orleans's large burning-glaſs; the reſult whereof falls in with, and confirms the doctrine laid down above.—From thoſe experiments, he gathers, That the four *metals* which we call *imperfect*, *viz.* iron, copper, tin, and lead, are compoſed of a ſulphur or oily ſubſtance, capable of burning, and a *metallic* earth, capable of vitrification.—That from this ſulphur proceed the opacity, brightneſs, and malleability of a *metal*.—That this *metallic* ſulphur does not appear at all different from the oil or ſulphur of vegetables, or even animals; and that it is the ſame in mercury as in the four imperfect *metals*.—That theſe four *metals* have for their baſis an earth ſuſceptible of vitrification; that this earth is different in each of the four *metals*, in that it vitrifies differently in each; and that on this difference in vitrifying, depends the difference of *metals*. See VITRIFICATION.

The learned Boerhaave, after an accurate ſurvey of the ſeveral *metals*, their characters, properties, preparations, uſes, &c. draws the following corollaries concerning the general nature of *metals*. 1°. That which diſtinguiſhes *metals* from all other bodies, as well as from each other, is their heavineſs: Though every *metal* has its peculiar weight; which no art is able to imitate, and which depends, as Helmont and the chymiſts expreſs it, on the anatic homogeneity of their parts. Now, the later philoſophers have proved, that all corporeal magnitude has juſt ſo much reality in it, as weight; and therefore if you have found the heavineſs of any *metal*, you have at the ſame time found its corporeity. Sir Iſaac Newton treating of gravity, and Huygens of the pendulum, ſhew that weight and reality are correſpondent. See WEIGHT, and GRAVITY.

2°. The *metals* appear to be ſimple, yet are really compounds. Their component principles, according to the antients, are ſulphur and mercury; to which ſome of the moderns have added ſalt: but it is certain ſalt is no conſtituent part, or ingredient of *metals*, but rather ſomething external adhering to them. All *metals* conſiſt of two parts, or principles; mercury as the baſis or matter; and ſulphur as the binder or cement: the firſt, the ſubſtratum, or *metallic* matter; and the ſecond, that which renders it fixed and malleable. The mercury, it is to be noted, is the ſame with our quick-ſilver, only defæcate, and clear of any heterogeneous matter; whereas the common quick-ſilver is always mixed. As to the ſulphur, it is not the vulgar foſſil ſulphur, but a peculiar ſort of matter ſpecifically denominated *ſulphur of metals*, concluded by ſome of our lateſt, and beſt chymiſts, particularly M. Homberg, to be fire; which being mixed with the mercury, fixes it, and according to the different degrees of its union and coheſion therewith, produces different *metals*. See MERCURY, SULPHUR, FIRE, &c.

This doctrine of the compoſition of *metals* is confirmed by an experiment of Mr. Boyle, who after having retained mercury a long time in a moderate fire, took a piece of gold out of it, which it was apparent was not in the mercury before it was expoſed to the fire. M. Homberg has an experiment to the ſame effect; from which he concludes, that gold conſiſts of a ſulphurous ignious part, and a heavy mercurial part fixed thereby; and that upon taking away the ſulphurous or fiery part, the gold is converted into fluid mercury. See MERCURY.

3°. All *metals* muſt firſt be mercury, ere they be gold; and the thing ſuperadded to common mercury, whereby it is prevented from becoming gold, is a ſharp volatile body, which, when heated, becomes corroſive, and emits fumes; which are the properties of the foſſil ſulphur.

4°. If any *metal*, or other body, could be found that only differed from gold in its wanting weight, it were impoſſible ever to make gold of it; and, on the contrary, if a body could be had that is as heavy as gold, all the other properties, as colour, fixity, ductility, &c. might eaſily be added. And hence the more knowing among the alchymiſts hold the primary matter of gold to be quick-ſilver; which, ſay they, is gold at heart, as coming neareſt to gold in point of ſpecific gravity. Only there is a corroſive body, *i. e.* ſulphur, adhereing to it, which, if it were ſeparated, you would have gold; or if it were only inverted, ſilver.

And accordingly on ſuch principles whoever would make gold out of any other foreign matter, muſt remember, that the more his matter differs from mercury in weight, &c. the leſs gold it will make. See PHILOSOPHER's *ſtone*.

5°. Therefore *metals* are tranſmutable into one another: for if mercury be the common matter of all *metals*, and if all the difference lie in the fixing ſpirit of ſulphur, which, as it is leſs or more ſubtile or pure, conſtitutes this or that *metal*; it is no way improbable they ſhould be tranſmuted by a purer fixing ſulphur taking place of a corroſive one, and fixing the matter into a more perfect *metal*. See TRANSMUTATION.

6°. The pureſt *metals* reſult of the pureſt and moſt defæcate mercury, and the ſmalleſt quantity of the ſubtileſt ſulphur. Hence, mercury of gold is heavier than common mercury, and has always ſome impure part that is lighter than gold; and could that be taken away, and the fixing ſpirit be added, it would become heavier than gold.

7°. The imperfect *metals* conſiſt of impure mercury and imperfect ſulphur, with ſome other variable heterogeneous matter in it: This, fuſed by the fire, emits a fume which whitens copper, after which the ſulphur exhales yet further. The reality of ſuch a third matter is evinced hence, that all theſe baſer *metals* are reſolvable not only into mercury and ſulphur, but alſo into ſcoria or ſordes, which are lighter and more earthy than either of the other, and accordingly ſwim therein.

8°. Upon the whole it appears, that in the three nobler *metals*, gold, mercury, and ſilver, it is principally the greater or leſs proportion of the ſulphur to the mercury, that determines them to be gold, mercury, or ſilver: That it is by this proportion thoſe ſeveral *metals* are defined and denominated; and that from this difference of proportion, flow all the ſpecific differences of colour, weight, fixity, ductility, volatility, fuſibility, ſolubility, ſalubrity, &c.

9°. That in the other baſer *metals*, beſides this different proportion of the two principles, there intervenes another cauſe of diverſity, *viz.* a third principle, or matter of an earthy kind, and very different from either of the reſt; which adhering to the pure elemental ſulphur, corrupts and adulterates, and variouſly modifies it: And from the different circumſtances of this third principle, conſidered along with thoſe of the ſulphur itſelf, reſult the ſpecific differences of the more imperfect *metals* as to weight, colour, &c.

Bath METAL, called alſo *Princes* METAL, is a kind of factitious *metal*, compoſed of the fineſt and pureſt braſs mixed with tin, or rather with ſome mineral, as zinc; whereby it becomes more diſpoſed to receive a poliſh, luſtre, &c. as alſo fitter to be gilt. 'Tis ſaid to have been invented by prince Rupert, whence its name. See ZINC.

Bell METAL, is a compoſition of copper and tin melted together. See BELL.

The ordinary proportion is twenty-two or twenty-three pounds of tin to an hundred weight of copper.—Some add lead and braſs to the compoſition. See BRASS.

Blueing of METALS. See the article BLUEING.

Painting on METALS. See the article PAINTING.

Ruſt of METALS. See the article RUST.

Line of METALS.—On Gunter's Sector, are ſometimes two lines thus called, and noted with the characters of the ſeven metals, ☉, ☽, ☿, ♄, ♀, ♂, and ♃; their uſe is to give the proportions between the ſeveral *metals* as to their magnitudes and weights. See SECTOR.

To be laid under METAL, in gunnery, is when the mouth of a gun lies lower than her breech.

METAL, in heraldry.—There are two *metals* uſed in heraldry, by way of colours, *viz.* gold and ſilver; in blazon, called *or*, and *argent.* See OR and ARGENT.

In the common painting of arms, theſe *metals* are repreſented by white and yellow, which are the natural colour of thoſe *metals.* See COLOUR.

In engraving, gold is expreſſed by dotting the coat, *&c.* all over; ſilver, by leaving it quite blank.

It is a general rule in heraldry, never to place *metal* upon *metal*, nor colour on colour: So that if the field be one of the *metals*, the bearing muſt be of ſome colour, and vice verſa; otherwiſe the arms are falſe: Though this rule admits of ſome exceptions. See COLOUR.

METALLIC, or METALLINE, an adjective applied to ſomething that bears a relation to *metals.* See METAL.

Painting in enamel is performed with *metallic* colours, that is, with ſuch as come from *metals*, or are made with *metals*; no other being able to endure the fire. See ENAMEL.

F. Romani has publiſhed a *metallic* hiſtory of the popes. La France Metallique, is a book of medals moſtly imaginary, pretended to be taken from the cabinets of the curious, where they never were, by Jaques de Bie, engraver. M. Bizot has alſo publiſhed the *metallic* hiſtory of Holland.

METALLIC *mines.* See the article MINE.

METALLIC *vitriols.* See the article VITRIOL.

METALLORUM *crocus.* See the article CROCUS.

Sulphur METALLORUM. See the article SULPHUR.

METALLURGIA, the art of *metals*, that is, of preparing and working metals, from the glebe or mineral, to the utenſil. See METAL.

The *metallurgia* includes what relates to the finding of the metallic glebe, or ore in the mine; the judging of its kind, richneſs, and the proportion of metal therein; the digging and ſeparating it from the earth, and other matters; and the purifying and diſpoſing it into a compleat, pure, malleable metal. See MINE and MINERAL.

Boerhaave divides *metallurgia* into four parts. The firſt teaches how metals grow in the mine, how they are diſcovered, and how procured out of the ſame. The ſecond how to ſeparate the metallic from the other matter of the ore. The third, how to reduce the ſeparated matter to its ſimplicity and ductility. The fourth, to work, gild, poliſh, and imitate the finer metals in the coarſer.

METAMORPHISTS, a ſect of heretics in the XVIth century, whoſe diſtinguiſhing tenet was, That the body of Jeſus Chriſt was, upon his aſcenſion into heaven, changed, and metamorphoſed into God.

METAMORPHOSIS, * *transformation*; the change of a perſon or thing into another form. See TRANSFORMATION.

* The word is Greek, Μεταμορφωσις; formed of μετα, change, or removal from one place or ſtate to another; and μορφη, form, figure.

The antients held two kinds of *metamorphoſes:* The one real, the other apparent. The *metamorphoſis* of Jupiter into a bull, and of Minerva into an old woman, were only apparent. That of Lycaon into a wolf, and of Arachne into a ſpider, were of the real kind.

Moſt of the antient *metamorphoſes* include ſome allegorical meaning, relating either to phyſics or morality.—Ovid's *metamorphoſes* is a collection of hiſtories of ſuch transformations, poetically related.—Some authors are of opinion, that a great part of the antient philoſophy is couched under them; and Dr. Hooke has made an attempt to unriddle, and lay open ſeveral of them.

METAPHOR *, METAPHORA, in rhetorick, a figure of ſpeech whereby a word is transferred from its proper ſignification, to another: or, whereby the proper denomination of one thing is applied to another; which other thing is more elegantly explained by this tralatitious or foreign name, than by that which naturally belongs to it. See TROPE.

* The word comes from the Greek μεταφορα, tranſlation, or diſplacing; of μετα, trans, and φερω, I bear, or carry.

As, when we ſay, the light of the underſtanding; to burn with zeal; to float between hope and deſpair, *&c.*

The *metaphor* is the moſt common of all the figures of ſpeech; and is that uſually meant when we ſay a thing is ſpoken figuratively. See FIGURE.

The *metaphor* is a ſhort ſimile; an image being thereby called from its proper ſubject to give the reſemblance of another. See SIMILE.—An allegory is no more than a continued *metaphor.* See ALLEGORY.

The ſources or places whence *metaphors* are drawn, are innumerable: They may be fetched from divine matters; thus Cicero calls Plato our *God*, *deus ille noſter Plato.* From the elements; as a *torrent* of eloquence. From plants; as where virtue has taken *root.* From artificial things; as where Appian is called the *cymbal* of the world; Longinus, a living *library*; Pertinax, fortune's *foot-ball*, &c.

Quintilian diſtinguiſhes *metaphors* into four kinds: The firſt, when a word is transferred from one animal to another; as when Livy ſays that Cato uſed to *bark* at Scipio: or, when our Saviour calls Herod, *fox.* The ſecond, when the word is tranſferred from one inanimate to another; as *bridle*, for *laws.* The third, when inanimates are applied to animates; as the *flower* of youth. And the laſt, when animates are applied to inanimates; as the river *diſdained* its bounds.

As the *metaphor* is intended to ſet things before the eyes; it becomes ſo much the more perfect, as it ſhews them the more vividly, by repreſenting them in motion and action. A *metaphor* ſhould have nothing in it either coarſe or ſhocking, or that may raiſe it above the ſimplicity of nature: Nor ſhould it appear a *metaphor* to any but thoſe who view it very cloſely. A *metaphor* ſhould never be carried too far; for in that caſe, it degenerates into puerility.—*Metaphors* ſhould always be followed in the ſame kind; they become unnatural, when different images are introduced.—In all *metaphorical* dictions, there ſhould be a kind of unity, ſo that the different words uſed, may have a kind of ſuitableneſs to each other: Different ideas are always abſurd: As in this inſtance; The church was beſieged with a deluge of troubles: Where the two images, *ſiege* and *deluge*, have no relation.

There is nothing young writers are more faulty in, than the indiſcrete uſe of *metaphors:* Thoſe who affect the merveilleux, are eternally on the metaphorical ſtrain; nor know any bounds, or reſtraint. They who underſtand them beſt, uſe them with the greateſt reſerve. Mr. Addiſon propoſes it as a rule for writers, to imagine their *metaphors* actually painted before them, and to view and examine the juſtneſs of their application and aſſemblage under thoſe circumſtances; throwing every thing out of the writing, but what might be retained in the picture. Card. Perron preſcribes this general rule for *metaphors*; that they muſt always deſcend from the genus to the ſpecies; and never go backwards from the ſpecies to the genus: Thus we ſay figuratively, the *bonds of ſociety*; and not the *human cords* which tie us together: *Bond* being a genus, and *cord* a ſpecies.

METAPHRAST, METAPHRASTES, a tranſlator, or perſon who renders an author into another form or another language, word for word. See TRANSLATION.

A *metaphraſe*, μεταφρασις, uſually ſignifies ſomething more than either a paraphraſe, or a tranſlation: According to Baillet, a *metaphraſt* implies a tranſlator, gloſſator, and interpolator, all at once. See PARAPHRASE, *&c.*

METAPHYSICS *, METAPHYSICA, *tranſnaturals*; a branch of ſcience, about whoſe nature and idea, there is ſome difference among authors. See SCIENCE.

* The word is formed of the prepoſition μετα, *trans*, beyond, or above; and φυσις, nature, or φυσικη, natural.

Some define *metaphyſics*, that part of ſcience which conſiders ſpirits, and immaterial beings; which others chuſe to diſtinguiſh by the name of *pneumatics.* See SPIRIT and PNEUMATICS.

Others, keeping cloſer to the etymology of the word, explain *metaphyſics* by *tranſ-natural*, or *præter-natural*, or even *poſt-natural philoſophy.*

Others, with more propriety, conceive *metaphyſics* to be what ſome others call *ontology*, or *ontoſophy*, i. e. the doctrine *de ente*, or of being, *quatenus* being. See ONTOLOGY and ABSTRACTION.

In the ſame view, ſome philoſophers call this ſcience by the name *philoſophia*, or *ſcientia generalis*, as being the foundation, or, as it were, the ſtamen or root from whence all the other parts of philoſophy ariſe, and wherein they all meet; its object being *being* in the abſtract, or general, not reſtrained to this or that ſpecies of beings; not to ſpirit any more than body: So that the doctrines of *metaphyſics*, are applicable to all beings whatever. See ENS.

Philoſophers again, are divided as to the notion of a ſcience *de ente* in general. Some hold it real, preciſe, and ſolid enough to be demonſtrated; others judge it too obſcure, faint, and confuſed to be admitted into philoſophy.

Being, abſtracted from every ſort or ſpecies of being, is certainly a very vague term; and does not ſeem to give footing enough for a ſcience: We do not ſee how it can affect the mind as an object. Add, that the common *metaphyſics* cannot demonſtrate any part of its ſubject, but aſſumes the whole: There are no principles, or axioms whereon to demonſtrate *metaphyſics*, which contain the principles of all other ſciences. See MATHEMATICS.

The firſt who wrote profeſſedly on the ſubject of *metaphyſics* is Ariſtotle. Indeed he is the firſt who uſes the word: Μετα τα φυσικα, is the title of one of his books, which ſome of his commentators will have to ſignify no more than *after the books of phyſics.* M. du Hamel, taking the prepoſition μετα in the ſenſe of *poſt*, is even of opinion that the word was coined by Ariſtotle's ſtotle's followers; and that the word was unknown to Ariſtotle.

Ariſtotle's *metaphyſics* ſeem to have been intended for a kind of natural theology. F. Malebranche and Mr. Locke have wrote much more clearly and conſiſtently of *metaphyſics*, than any of the antients. See UNITY, MODE, TRUTH, DURATION, &c.

METAPHYSICAL, ſomething belonging to *metaphyſics*. See METAPHYSICS.

The word is alſo uſed to denote ſomething ſubtile, abſtract, and refined.—In which ſenſe we ſay, ſuch a reaſoning, ſuch a proof, is too *metaphyſical*, &c.

A *metaphyſical* caſe, is an imaginary or chimerical caſe, which can ſcarce ever happen, or not without much difficulty; and which ought not to be laid down as a rule for common occaſions.

METAPHYSICAL *certitude*. See CERTITUDE.

METAPHYSICAL *diſtinction*. See DISTINCTION.

METAPHYSICAL *evidence*. See EVIDENCE.

METAPHYSICAL *form*. See FORM.

METAPHYSICAL *perfection*. See PERFECTION.

METAPHYSICAL *poſſible*. See POSSIBLE.

METAPHYSICAL *univerſality*. See UNIVERSALITY.

METAPLASM *, METAPLASMUS, in grammar, a tranſmutation, or change made in a word, by adding, retrenching or altering a letter or ſyllable thereof.

* The word comes from the Greek, *μεταπλασμος*, which ſignifies the ſame; compounded of *μετα* and *πλασσω*, *fingo*.

METASTASIS, ΜΕΤΑΣΤΑΣΙΣ, in medicine, the removal of a morbid humour from one part to another; frequently obſerved in nervous caſes.

A *metaſtaſis*, or tranſlation, is ſometimes alſo found in the groſſer humours; the refluent blood taking up digeſted matter from one part, and diſpoſing it upon another. See FLUXION.

METATARSUS, in anatomy, that part of the human ſkeleton, containing the middle of the foot.—See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 30. *fig.* 7. *lit. e. e.* See alſo FOOT.

* The word comes from *μετα*, *trans*, beyond; and *ταρσος*. See TARSUS.

The *metatarſus* conſiſts of five bones, reaching from the heel to the toes; whereof that which ſuſtains the great toe, is the thickeſt; and that which ſuſtains the next toe, the longeſt. The reſt grow, each ſhorter than other. They are longer than the bones of the metacarpus; in other things they are like them, and are articulated to the toes, as theſe are to the fingers. See METACARPUS.

METATHESIS *, *tranſpoſition*; a grammatical figure, whereby letters or ſyllables of a word are tranſpoſed, or ſhifted out of the natural ſituation.—as, *Evandre* for *Evander*; *I præ* for *præi*. See TRANSPOSITION.

The word is Greek, *μεταθεσις*, formed of *μετα*, *trans*; and *θεσις*, *poſition*.

METEMPSYCHI, antient heretics, who, in imitation of Pythagoras, held the *metempſychoſis*, or tranſmigration of ſouls. See METEMPSYCHOSIS.

METEMPSYCHOSIS *, ΜΕΤΕΜΨΥΧΩΣΙΣ, in the antient philoſophy, the paſſage, or tranſmigration of the ſoul of a man, after death, into the body of ſome other animal. See SOUL.

* The word is Greek, formed of *μετα*, beyond; and *εμψυχοω*, I animate or enliven.

Pythogoras and his followers held, That after death mens ſouls paſſed into other bodies, of this or that kind, according to the manner of life they had led. If they had been vicious, they were impriſoned in the bodies of miſerable beaſts, there to do penance for ſeveral ages; at the expiration whereof, they returned afreſh to animate men.—If they had lived virtuouſly, ſome happier brute, or even a human creature, was to be their lot. See PYTHAGOREANS.

What led Pythagoras into this opinion, was, the perſuaſion he had, that the ſoul was not of a periſhable nature: whence he concluded, that it muſt remove into ſome other body, upon its abandoning this. Lucan treats this doctrine as a kind of officious lie, contrived to mitigate the apprehenſion of death, by perſuading men that they only changed their lodging; and ceaſed to live, to begin a new life.

Reuchlin denies this doctrine; and maintains, that the *metempſychoſis* of Pythagoras implied nothing more than a ſimilitude of manners, deſires, and ſtudies formerly exiſting in ſome perſon deceaſed, and now revived in another alive.—Thus, when it was ſaid that Euphorbus was revived in Pythagoras, no more was meant than that the martial virtue, which had ſhone in Euphorbus at the time of the Trojan war, was now in ſome meaſure revived in Pythagoras, by reaſon of the great reſpect he bore the Athletæ. For thoſe people wondering how a philoſopher ſhould be ſo much taken with men of the ſword, he palliated the matter, by ſaying that the ſoul of Euphorbus, *i. e.* his genius, diſpoſition and inclinations, were revived in him. And this gave occcaſion to the report that Euphorbus's ſoul, who periſhed in the Trojan war, had tranſmigrated into Pythagoras.

Ficinus aſſerts, That what Plato ſpeaks of the migration of a human ſoul into a brute, is intended allegorically, and to be underſtood only of the manners, affections, and habits degenerating into a beaſtly nature by vice.—Serranus, though he allows ſome force to this interpretation, yet inclines rather to underſtand the *metempſychoſis* of a reſurrection. See RESURRECTION.

Pythagoras is ſaid to have borrowed the notion of a *metempſychoſis* from the Egyptians, others ſay from the antient Brachmans. It is ſtill retained among the Banians and other idolaters of India and China; and makes the principal foundation of their religion. So extremely are they bigotted to it, that they not only forbear eating any thing that has life, but many of them even refuſe to defend themſelves from wild beaſts. They burn no wood, leſt ſome little animalcule ſhould be in it; and are ſo very charitable, that they will redeem from the hands of ſtrangers, any animals that they find ready to be killed. See BRACHMANS, BANIANS, &c.

METEMPTOSIS *, a term in chronology, expreſſing the ſolar equation, neceſſary to prevent the new moon from happening a day too late.

* The word comes from the Greek, *μετα*, *poſt*, and *πιπτω*, *cado*, I fall.

By which it ſtands contra-diſtinguiſhed from *proemptoſis*, which ſignifies the lunar equation, neceſſary to prevent the new moon from happening a day too ſoon. See PROEMPTOSIS.

The new moons running a little backwards, that is, coming a day too ſoon at the end of three hundred and twelve years and a half; by the proemptoſis, a day is added every three hundred years, and another every two thouſand four hundred years: On the other hand, by the *metemptoſis*, a biſſextile is ſuppreſſed each one hundred thirty four years, that is, three times in four hundred years.—Theſe alterations are never made, but at the end of each century; that period being very remarkable, and rendring the practice of the calendar eaſy.

There are three rules for making this addition, or ſuppreſſion of the biſſextile-day, and by conſequence for changing the index of the epacts. 1°. When there is a *metemptoſis* without a proemptoſis, the next following, or lower index, muſt be taken. 2°. When there is a proemptoſis without a *metemptoſis*, the next preceding, or ſuperior index, is to be taken. 3°. When there is both a *metemptoſis* and a proemptoſis, or when there is neither the one nor the other, the ſame index is preſerved. Thus in 1600 we had D; in 1700, by reaſon of the *metemptoſis*, C was taken; in 1800 there will be both a proemptoſis and a *metemptoſis*; ſo the ſame index will be retained. In 1900 there will be a *metemptoſis* again, when B will be taken, which will be preſerved in 2000; becauſe there will then be neither the one nor the other—This is as far as we ſhall need it. Clavius has calculated a cycle of 301800 years; at the end of which period, the ſame indices return in the ſame order. See EPACT.

METEOR *, in phyſiology, a changeable, moveable, imperfect mixt body, or reſemblance of a body, appearing in the atmoſphere, and formed out of the matter of the common elements, altered a little by the action of the heavenly bodies, but not transformed.

* The Greeks call them *μετεωρα*, q. d. *ſublimia*, or high-raiſed; the Latins, *impreſſiones*, as making ſigns or impreſſions in the air.

Meteors are of three kinds:

Ignious, or *fiery* METEORS, conſiſt of a fat ſulphurous ſmoke ſet on fire; ſuch are lightning, thunder, ignis fatuus, draco volans, falling ſtars, and other fiery phænomena appearing in the air. See THUNDER, FATUUS, &c.

Aerial or *airy* METEORS, conſiſt of flatulent and ſpirituous exhalations; ſuch are winds, whirlwinds, and hurricanes. See WIND, HURRICANE, &c.

Aqueous or *watery* METEORS, are compoſed of vapours, or watery particles variouſly ſeparated and condenſed by heat and cold; ſuch are clouds, rainbows, hail, ſnow, rain, dew, and the like. See CLOUD, RAINBOW, HAIL, SNOW, RAIN, DEW, &c.

The formation of *meteors* is explained pretty largely by Des Cartes, in a treatiſe expreſs. Ariſtotle and Gaſſendus have alſo handled the ſame ſubject. Dr. Woodward's opinion is, That the matter of *meteors* is in great meaſure of a mineral nature; That the mineral particles contained in the ſtrata of the earth, are raiſed by the ſubterraneous heat, together with the vapours aſcending from the abyſs, and pervading thoſe ſtrata; eſpecially at ſuch times as the ſun's heat is ſufficient to penetrate the exterior parts of the earth, and to make room for their eſcape into the atmoſphere. Thus ſulphurous, nitrous, and other active, and volatile mineral particles, form various *meteors*, according to the various fate they meet with in the air. See VAPOUR, EXHALATION, MINERAL, AIR, &c.

METEOROLOGY, the doctrine of meteors; explaining their origin, formation, kinds, phænomena, &c. See METEOR.

METEOROSCOPE *, a name which the antient mathematicians gave to ſuch inſtruments as they uſed for obſerving, and determining the diſtances, magnitudes and places of the heavenly bodies.

* From the Greek *μετεωρος*, high; and *σκοπος* of *σκεπτομαι*, I view, obſerve.

METHEGLIN, a drink prepared of honey; one of the moſt pleaſant and general drinks the northern parts of Europe affords; and much uſed among the antient inhabitants. See DRINK, HONEY, MEAD, *&c.*

* The word in Welch, *meddyglyn*, where it ſignifies the ſame.

There are divers ways of making it: One of the beſt whereof follows. Put as much live honey naturally running from the comb, into ſpring-water, as that when the honey is thoroughly diſſolved, an egg will not ſink to the bottom, but be juſt ſuſpended in it: This liquor boil for an hour, or more, till ſuch time as the egg ſwim above the liquor about the breadth of a groat; when very cool, next morning, it may be barreled up; adding to each fifteen gallons an ounce of ginger, as much of mace and of cloves, and half as much cinnamon, all groſly pounded: a ſpoonful of yeſt may be alſo added at the bung-hole, to promote the fermenting. When it has done working, it may be cloſely ſtopped up, and after it has ſtood a month, may be drawn off into bottles.

METHOD *, METHODUS, the art, or rule of diſpoſing things in ſuch a manner, as they may be eaſily comprehended; either in order to diſcover the truth, which we ourſelves are ignorant of; or to ſhew and demonſtrate it to others when known. See TRUTH and ERROR.

* The word comes from the Greek μεθοδος, which ſignifies the ſame.

The ſchools have a long time diſputed, whether logic be an art, a ſcience, or *method?* See LOGIC, ART, SCIENCE, *&c.*

Gaſſendus diſtributes *method* with regard to its object, into three kinds, or branches; *viz.* Inventionis, *the method of invention*, or diſcovering a truth unknown. See INVENTION.

Methodus judicii, the method of judging, or determining of a truth, or propoſition propoſed. See JUDGMENT.

And *methodus demonſtrationis*, or method of demonſtration; that is, of exhibiting it to another. See DEMONSTRATION.

Method, with regard to the order of procedure, is uſually divided into two kinds; the one of *reſolution*, which is that we generally uſe in our enquiry after truth.—The other of *compoſition*, by which the truth once found, is taught or imparted to others. See COMPOSITION and RESOLUTION.

In the *method of reſolution*, called alſo by geometers the *analytic method*, we proceed from ſome general, known truth, to others which belong to ſome particular or ſingular thing. See ANALYSIS.

In the *method of compoſition*, called alſo the *ſynthetic method*, we propoſe ſome certain, general truths, from which we produce particular truths. See SYNTHESIS.

If in the *method* of reſolution we lay down any axioms; it is not immediately in the beginning, and all together; but as they are found neceſſary in the diſquiſition: On the contrary, in the *method* of compoſition, they are propoſed all together in the beginning, before there is any abſolute need of them. See AXIOM and MAXIM.

The two *methods* differ from each other, as the *methods* of ſearching out a genealogy, either by deſcending from the anceſtors to their poſterity, or by aſcending from the poſterity to the anceſtors: both of them have this in common, That their progreſſion is from a thing known, to another unknown. Thoſe things that are known, in each, are ſet in the front, or firſt place; that by them we may be able to arrive at thoſe which are not known.

The following things are required in both *methods*, that error may be avoided.—1°. That no propoſition be admitted as true, to which a man can, with a good conſcience, deny his aſſent; or which is not evident. 2°. That the connection of the following propoſition with the foregoing, in every ſtep of the progreſſion, be likewiſe evident or neceſſary. To theſe may be added two other prudential maxims, that hold good in each *method:* As, that we ought to reaſon on thoſe things only, of which we have clear and perſpicuous ideas; or of obſcure things only, ſo far as we know them: and that we ſhould always begin from the ſimple and eaſy, and dwell on them a-while, before we proceed to things compounded, and more difficult.

Laws peculiar to the analytic method, are, 1°. That we muſt clearly and perfectly underſtand the ſtate of the queſtion propoſed. 2°. That with ſome energy or effort of the mind, one or more intermediate ideas be diſcovered; which are to be a common meaſure or ſtandard, by whoſe help the relations between the ideas to be compared are to be found out. 3°. That we cut off all that has no neceſſary relation to the truth ſought after, from the thing which is to be the ſubject of our conſideration. 4°. That a compounded queſtion be divided into parts, and thoſe ſeparately conſidered in ſuch order, as that we begin with thoſe which conſiſt of the more ſimple ideas, and never proceed to the more compounded, till we diſtinctly know the more ſimple, and by reflection have rendered them obvious to the underſtanding. 5°. That certain ſigns of our ideas comprehended in obvious and eſtabliſhed figures, or in the feweſt words poſſible, be imprinted in the memory, or marked on paper, leſt the mind have any further trouble about them. 6°. Theſe things done, that the ideas (according to the ſecond law) be then compared with each other, either by reflection alone, or by expreſs words. 7°. If after we have compared all the ideas, we cannot find out what we ſeek, we are then, by the third law, to cut off all the propoſitions, which, after a full examination, we find of no uſe to the ſolution of the queſtion, and begin a-freſh. If, after this method has been repeated as often as is neceſſary, nothing of what we have obſerved ſeems to conduce to the ſolution of the queſtion, we ought to give it over as out of our reach.

The *ſynthetick method*, is only practicable in things, whoſe principles we perfectly know; as in geometry, which is wholly employed in the conſideration of abſtract modes; of which our mind has clear and adequate ideas.—When the enquiry is into ſubſtances, as in phyſics, we cannot make uſe of the *method of compoſition*, by reaſon their kinds, and intimate eſſences are unknown to us. See SUBSTANCE, BODY, *&c.*

This *method* has not been by any ſo juſtly and accurately obſerved, as by the mathematicians, whoſe principles are perfectly known: Its laws therefore will be beſt drawn from their practice. As 1°. To offer nothing but what is couched in words or terms perfectly underſtood; for which reaſon they always define the words they make uſe of. 2°. To build only on evident and clear principles, ſuch as cannot be contradicted by any who underſtand them; for which reaſon they firſt propound their maxims or axioms, which they demand to be granted them, as being ſelf-evident, and needing no proof. 3°. To prove demonſtratively all their conſequences; for which reaſon they uſe nothing in their arguments or proofs, but definitions that have been laid down, axioms that have been granted, and propoſitions that have been already proved; which become principles to things that follow them.

METHOD, *methodus*, is more peculiarly uſed in mathematics for divers particular proceſſes for ſolving problems.—In this ſenſe we ſay METHOD *of exhauſtions.* See EXHAUSTIONS.

METHOD *of fluxions.* See the article FLUXIONS.

METHOD *de maximis & minimis*, *&c.* See MAXIMUM.

METHOD *of tangents.* See the article TANGENTS.

Differential METHOD, *&c.* See DIFFERENTIAL.

Exponential METHOD, *&c.* See EXPONENTIAL.

Poriſtic METHOD. See the article PORISTIC.

METHODISTS, METHODICI, a ſect of antient phyſicians, who reduced the whole healing art to a few common principles or appearances. See PHYSICIAN.

The *Methodiſts* were the followers of Theſſalus, whence they were alſo called *Theſſalici.*—They were ſtrenuouſly oppoſed by Galen in ſeveral of his writings; who ſcrupled not to aſſert, that the *methodical hereſy* ruined every thing that was good in the art.

Quincy miſtakenly uſes *methodiſts*, *methodici*, for thoſe phyſicians who adhere to the doctrine of Galen, and the ſchools; and who cure with bleedings, purges, *&c.* duly applied according to the ſymptoms, circumſtances, *&c.* in oppoſition to empirics and chymiſts, who uſe violent medicines, and pretended ſecrets or noſtrums. See EMPIRIC, CHYMIST, *&c.*

METOCHE, ΜΕΤΟΧΗ, in the antient architecture, a term uſed by Vitruvius, to ſignify the ſpace or interval between the dentils.—See *Tab. Archit. fig.* 30. *lit. c c.* See alſo DENTICLE.

Baldus obſerves, that in an antient MS. copy of that author, the word *metatome* is found for *metoche.* Hence Daviler takes occaſion to ſuſpect that the common text of Vitruvius is corrupted; and concludes, that it ſhould not be *metoche*, but *metatome*, *q. d.* ſection.

METONIC *cycle*, in chronology, the lunar cycle, or period of nineteen years; thus called from its inventor Meton, an antient Athenian. See CYCLE and PERIOD.

When the *metonic* cycle is compleated, the lunations, or the new and full moons, return on the ſame day of the month; ſo that on whatever days the new and full moons happen this year, nineteen years hence they will fall preciſely on the very ſame day of the month, as Meton and the primitive fathers thought. See LUNATION.

For this reaſon, at the time of the council of Nice, when the manner of ſettling the time for obſerving Eaſter was eſtabliſhed, the numbers of the *metonic* cycle were inſerted in the calendar in letters of gold, on account of their great uſe; and the year of the cycle for that year was called the *golden number* of that year. See GOLDEN NUMBER.

METONYMY *, ΜΕΤΩΝΥΜΙΑ, a rhetorical trope, conſiſting in a tranſmutation, or change of names; or a putting of the effect for the cauſe, or the ſubject for the adjunct: and *vice verſa.* See FIGURE.

* The word comes from the Greek μετα, *trans*, and ονομα, *nomen*, name.

The *metonymy* is the moſt extenſive of all the tropes. It is ſometimes alſo called *tranſnominatio*, and differs not much from hypallage. See HYPALLAGE.

There are four kinds of *metonymies* in principal uſe: The firſt, when we put the inventor for the thing invented; as Bacchus for wine, Ceres for bread. The ſecond, when we put the containing for the thing contained; as a glaſs for the wine within it. The third, when effect is put for the cauſe; as the captain for his ſoldiers, Greece for the Greeks, the author for his works. The fourth, when the ſign is put for the thing ſignified; as the gown for the prieſthood, *&c.*

METOPE *, or METOPA, in architecture, the ſquare ſpace or interval between the triglyphs, in the Doric frieze.—See *Tab. Archit. fig.* 28. *lit. R.* See alſo TRIGLYPH and FRIEZE.

* The word, in the original Greek, ſignifies the diſtance between one aperture or hole and another, or between one triglyph and another; the triglyphs being ſuppoſed to be ſolives or joiſts that fill the apertures: from μετα *inter*, between, and οπη *foramen.*

The antients uſed to adorn theſe parts with carved works, or paintings, repreſenting the heads of oxen, veſſels, baſons, and other utenſils of the heathen ſacrifices.

As there is found ſome difficulty in diſpoſing the triglyphs and *metopes* in that juſt ſymmetry which the Doric order requires; ſome architects make it a rule, never to uſe this order but in temples.

Semi METOPE is a ſpace ſomewhat leſs than half a *metope*, in the corner of a Doric frieze.

METOPOSCOPY *, ΜΕΤΩΠΟΣΧΟΠΙΑ, the art of diſcovering the temperament, inclinations, and manners of perſons by inſpecting their features, and the lines in their faces, and eſpecially of their foreheads. See DIVINATION.

* The word comes from the Greek μετωπον, *frons*, forehead; and σκοπια, inſpection, of σκεπτομαι, I view.

Metopoſcopy is no more than a branch of phyſiognomy; the latter taking its conjectures from all parts of the body: But both the body, and the branch are extremely precarious, not to ſay vain. See PHYSIOGNOMY.

Ciro Spontoni, who has wrote on the ſubject of *metopoſcopy*, obſerves, that there are ſeven principal lines conſidered in the forehead; each of which has its peculiar planet. The firſt is the line of Saturn; the ſecond of Jupiter, *&c.*

METRE, or METER, ΜΕΤΡΟΝ, in poetry, denotes a ſyſtem of feet of a juſt length. See FOOT, VERSE and MEASURE.

Ariſtidies defines *metre*, a ſyſtem of feet compoſed of diſſimilar ſyllables, of a juſt extent.

In which ſenſe *metre* amounts to much the ſame with genus carminis, or ſort of verſe, and differs from rhythm. See VERSE and RHYTHM.

METRICAL *verſes* are thoſe conſiſting of a determinate number of long, and ſhort ſyllables; as thoſe of the Greek and Latin poets. See QUANTITY.

Capellus obſerves, that the genius of the Hebrew language is incompatible with *metrical* poetry. See HEBREW, POETRY, VERSIFICATION, *&c.*

METRICE, or METRICA, among the antients, was that part of poetry employed about the quantities of ſyllables, feet, ſorts of metre, or verſe, *&c.* See QUANTITY, MUSIC, POETRY, VERSE, FOOT, *&c.*

METROCOMIA *, a term in the antient church hiſtory, ſignifying a borough or village, that had other villages under its juriſdiction.

* The word comes from the Greek μητηρ, mother, and κωμη, town, village.

What a metropolis was among cities, that a *metrocomia* was among country towns. The antient *metrocomiæ* had each its chorepiſcopus or rural-dean, and here was his ſee or reſidence See METROPOLIS and CHOREPISCOPUS.

METROPOLIS *, ΜΗΤΡΟΠΟΛΙΣ, the capital of a country, or province; or the principal city, and, as it were, mother of all the reſt. See CITY.

* The word comes from the Greek μητηρ, *mater*, mother; and πολις, *urbs*, city; as who ſhould ſay, the mother-city, *&c.*

METROPOLIS is alſo applied to archiepiſcopal churches; and ſometimes to the principal or mother church of a city. See CHURCH and METROPOLITAN.

METROPOLITAN, is indifferently applied to an archbiſhop, and to his cathedral church. See ARCHBISHOP and CATHEDRAL.

The Roman empire having been divided into thirteen dioceſes, and one hundred and twenty provinces; each dioceſe and each province had its metropolis, or capital city, where the proconſul, or the vicar of the empire had his reſidence. See DIOCESE and PROCONSUL.

To this civil diviſion, the eccleſiaſtical was afterwards adapted; and the biſhop of the capital city, had the direction of affairs, and the pre-eminence over all the biſhops of the province. His reſidence in the metropolis, gave him the title of *metropolitan.*

This erection of *metropolitan* is referred to the end of the third century, and was confirmed by the council of Nice.—Indeed archbiſhop Uſher, and de Marca, maintain it to be an eſtabliſhment of the apoſtles; but in vain: For it is next to certain, that the eccleſiaſtical government was regulated on the foot of the civil, and that it was hence the name and authority of *metropolitans* was given to the biſhops of the capital cities of the empire, or the provinces that compoſed it.—This is ſo true, that in the conteſt between the biſhop of Arles, and the biſhop of Vienne, each of whom laid claim to the *metropolitanſhip* of the province of Vienne; the council of Turin appointed, that which ere of them could prove his city to be the civil metropolis, ſhould enjoy the title, and rights of eccleſiaſtical *metropolitan.*

Though the eccleſiaſtical government was modelled on the political; yet in Gaul, and ſome other countries, the diſtinctions of *metropolitan* and primate were not obſerved till very late. As the Præfectus Galliæ reſided by turns at Trevoux, Vienne, Arles, and Lyons, he communicated the rank and dignity of *metropolitan* and primate to each of them in their turn; and yet none of the Gallican biſhops aſſumed to themſelves the rights, nor even the precedence of *metropolitans*. The epiſcopate levelled them all; and they had no regard, but to the privileges of ſeniority.—This equality laſted till the fifth century, when the conteſt between the biſhops of Vienne and Arles was ſet on foot.

M. du Pin obſerves, that in the provinces of Africa, excepting thoſe whereof Carthage was the *metropolis*, the place where the moſt aged biſhop reſided became the *metropolis*. The reaſon of which without doubt was this, that neither the proconſul, nor præfectus, ever fixed their reſidence.

The ſame author obſerves, that in Aſia there were *metropolis's* merely nominal, that is, which had no ſuffragan, nor any rights of *metropolitans*. The biſhops of Nice, Chalcedon, and Berytus, had the precedence of the other biſhops, and the title of *metropolitans*, without any other prerogative beſides the honour of the appellation; they themſelves being ſubject to their *metropolitans.*

A *metropolitan* has the privilege of ordaining his ſuffragans; and appeals from ſentences paſſed by the ſuffragans, are preferred to the *metropolitan*. See BISHOP and PRIMATE.

MEZANINE, or MEZZANINE, a term uſed by ſome architects to ſignify an attic, or little ſtory contrived occaſionally over the firſt ſtory, for the conveniency of a wardrobe or the like. See ATTIC.

The word is borrowed from the Italians, who call *mezzanini* thoſe little windows, leſs in height than breadth, which ſerve to illuminate an attic, or entreſole.

MEZZO-TINTO, in ſculpture, a particular manner of engraving figures on copper. See ENGRAVING.

Mezzo-tinto is ſaid to have been firſt invented by prince Rupert; and Mr. Evelyn, in his hiſtory of Chalcography, gives us a head performed by that prince in this way.

It is pretty different from the common way of engraving. To perform it, they rake, hatch, or punch the ſurface of the plate all over with a knife, or inſtrument for the purpoſe; firſt one way, then a-croſs, *&c.* till the face of the plate be thus entirely furrowed with lines or furrows cloſe, and as it were contiguous to each other; ſo that if an impreſſion were then taken from it, it would be one uniform blot or ſmut.

This done, the deſign is drawn, or marked on the ſame face: after which, they proceed with burniſhers, ſcrapers, *&c.* to expunge and take out the dents or furrows in all the parts where the lights of the piece are to be; and that more or leſs, as the lights are to be ſtronger or fainter: leaving thoſe parts black which are to repreſent the ſhadows or deepnings of the draught.

MIASMA, ΜΙΑΣΜΑ, is uſed to ſignify ſuch particles, or atoms, as are ſuppoſed to ariſe from diſtempered, putrifying, or poiſonous bodies, and to affect people at a diſtance. See CONTAGION.

MICHAELMAS, the feaſt of St. Michael the arch-angel; held on the 29th of September. See QUARTER-DAY and TERM.

MICHAEL's *wing*. See the article WING.

MICROCOSM *, ΜΙΚΡΟΚΟΣΜΟΣ, a Greek term, literally ſignifying *little world*; chiefly underſtood of *man*, who is ſo called by way of eminency, as being an epitome of all that is wonderful in the great world, or macrocoſm. See MACROCOSM.

* The word is formed from the Greek μικρος, *parvus*, little; and κοσμος, *mundus*, world.

MICROGRAPHIA *, MICROGRAPHY, a deſcription of the parts, and proportions of objects that are too ſmall to be viewed without the aſſiſtance of a microſcope. See MICROSCOPE.

* The word is compounded of μικρος, *parvus*, and γραφη, *ſcriptio*, deſcription.

MICROMETER *, an aſtronomical machine, which by means of a very fine ſcrew, ſerves to meaſure extremely ſmall diſtances in the heavens; as the apparent diameters of the planets, *&c.* to a great degree of accuracy. See DISTANCE.

* The word comes from the Greek μικρος, *parvus*, and μετρον, *menſura*; in regard a ſmall length, *e. gr.* an inch, is hereby divided into a vaſt number of parts, *e. gr*, in ſome, 2800; and in others, more.

There is ſome controverſy about the invention of the *micrometer*. Meſſ. Auzout and Picard have the credit of it in common fame; as being the firſt who publiſhed it, in the year 1666. But Mr. Townley, in the *philoſophical tranſactions*, reclaims it for one of our own countrymen, Mr. Gaſcoyne. He relates, that from ſome ſcattered papers and letters of this gentleman, he had learnt, that before our civil wars he had invented a *micrometer*, of as much effect as that ſince made by M. Auzout, and had made uſe of it for ſome years, not only in taking the diameters of the planets, and diſtances upon land, but in determining other matters of nice importance in the heavens; as the moon's diſtance, *&c.*

Monſ. de la Hire, in a diſcourſe on the æra of the inventions of the *micrometer*, pendulum clock, and teleſcope, read before the royal academy of ſciences, in 1717, makes M. Huygens the inventor of the *micrometer*. That author, he obſerves, in his *obſervations on Saturn's ring*, &c. publiſhed in 1659, gives a method of finding the diameters of the planets by means of a teleſcope, *viz.* by putting an object, which he calls *virgula*, of a proper bigneſs to take in the diſtance to be meaſured, in the focus of the convex object-glaſs: In this caſe, ſays he, the ſmalleſt object will be ſeen very diſtinctly, in that place of the glaſs. By ſuch means, he adds, he meaſured the diameters of the planets, as he there delivers them.

This *micrometer*, M. de la Hire obſerves, is ſo very little different from that publiſhed by the marquis de Malvaſia, in his ephemerides, three years after, that they ought to be eſteemed the ſame; and the *micrometer* of the marquis differed yet leſs from that publiſhed four years after his by Auzout and Picard. Hence M. de la Hire concludes, that it is to M. Huygens the world is indebted for the invention of the *micrometer:* without taking any notice of the claim of our countryman, Mr. Gaſcoyne, which is prior by many years to any of them.

Conſtruction and uſe of the Micrometer.—Wolfius deſcribes a *micrometer* of a very eaſy, and ſimple ſtructure; firſt contrived by Kirchius, Thus:

In the focus of a teleſcope fit a braſs or iron ring AB (*tab. Aſtron. fig.* 11.) with female ſcrews diametrically oppoſite to each other. Into theſe inſert male ſcrews CE and FB, of ſuch length, as that they may be turned in the tube, ſo as to touch each other. And with this inſtrument very ſmall ſpaces in the heavens may be accurately meaſured.

For when any objects, viewed through a tube, appear contiguous to the ſcrews; if theſe be turned till they juſt touch two oppoſite points, whoſe diſtance is to be meaſured, it will be evident how many threads of the ſcrew they are apart. To determine how many ſeconds anſwer to each thread; applying the tube towards the heavens, turn the ſcrews; till they touch two points, whoſe diſtance is already accurately known; and obſerve the number of threads correſponding to that interval. Thus, by the rule of Three, a table may be made of the ſeconds correſponding to the ſeveral threads; by means whereof, without more ado, the diſtances of any points may be determined.

The ſtructure of the *micrometer* now chiefly in uſe, with the manner of fitting it to a teleſcope, and applying it, is as follows:

ABC*g* (*Tab. Aſtron. fig.* 12.) is a rectangular braſs frame; the ſide AB being about three inches long, and the ſide BC, as likewiſe the oppoſite ſide A*g*, about ſix inches; and each of the three ſides about eight tenths of an inch deep. The two oppoſite ſides of this frame are ſcrewed to the circular plate, to be mentioned hereafter.

The ſcrew P, which has exactly forty threads in an inch, being turned round, moves the plate GDEF along two grooves made near the tops of the two oppoſite ſides of the frame; and the ſcrew Q having the ſame number of threads in an inch as P, moves the plate RNMY along two grooves, made near the bottom of the ſaid frame, in the ſame direction as the former plate moves, but with only half the velocity of that other. Theſe ſcrews are turned both at once, and ſo the plates are moved along the ſame way, by means of a handle turning the endleſs ſcrew S, whoſe threads fall in between the teeth of the pinions on the ſcrews P and Q. And note, that two half revolutions of the endleſs ſcrew S, carry the ſcrew P exactly once round.

The ſcrew P turns the hand *a* faſtened thereto, over a hundred equal diviſions, made round the limb of a circular plate, to which the above-named two oppoſite ſides of the frame are ſcrewed at right angles. The teeth of the pinion on the ſcrew P, whoſe number is 5, take into the teeth of a wheel on the back-ſide of the circular plate, whoſe number is 25. Again, on the axis of this wheel is a pinion of two, which takes into the teeth of another wheel, moving about the center of the circular plate, on the outſide thereof; having 50 teeth. This laſt wheel moves the leſſer hand *b* once round the above-mentioned circular plate, in the $\frac{1}{100}$ part of the time the hand *a* is moving round: For becauſe the number of teeth in the pinion on the ſcrew P, are 5, and the number of teeth of the wheel this pinion moves, are 20; therefore the ſcrew P moves four times round, in the time that wheel is moving once round. Further, ſince there is a pinion of two which takes into the teeth of a wheel, whoſe number is 50; therefore this wheel with 50 teeth, will move once round in the time that the wheel of 20 teeth moves 25 times round; and conſequently the ſcrew P, or hand *a*, muſt move a hundred times round, in the ſame time as the wheel of fifty teeth or the hand *b*, has moved once round.

Hence it follows, that if the circular plate W, which is faſtened at right angles to the other circular plate, be divided into two hundred equal parts, the index *x*, to which the handle is faſtened, will move five of thoſe parts in the ſame time, in which the hand *a* moves one of the hundred diviſions round the limb of the other circular plate. Thus by means of an index *x*, and plate W, every fifth part of each of the diviſions round the other plate, may be known.

Farther, ſince each of the ſcrews P and Q, have exactly forty threads in an inch; therefore the upper plate GDEF, will move one inch, while the hand *a* moves forty times round; the four thouſandth part of an inch, while the hand moves over one of the diviſions round the limb; and the twenty thouſandth part of an inch, while the index *x* moves one part of the two hundred round the limb of the circular plate W: And the under plate RNMY will move half an inch, the two thouſandth part of an inch, and the ten thouſandth part of an inch, the ſame way, in the ſaid reſpective times.

Hence, if the under plate, having a large round hole therein, be fixed to a teleſcope, ſo that the frame is moveable, together with the whole inſtrument, except the ſaid lower plate; and the ſtrait ſmooth edge HI, of the fixed plate ABIH; as likewiſe the ſtrait ſmooth edge DE of the moveable plate GDEF, be perceivable through the round hole in the under plate, in the focus of the object-glaſs; then, when the handle of the *micrometer* is turned, the edge HI of the narrow plate ABIH fixed to the frame, and DE of the moveable plate, will appear through the teleſcope equally to approach to, or recede from each other.

By theſe edges we ſhall be able to meaſure the apparent diameters of the ſun, moon, *&c.* the manner of doing which take as follows:

Suppoſe in looking at the moon through the teleſcope, you have turned the handle till the two edges DE and HI are opened, ſo as juſt to touch or claſp the moon's edges; and that there were twenty-one revolutions of the hand *a*, to compleat that opening. Firſt ſay, As the focal length of the object-glaſs, which ſuppoſe ten feet, is to radius, ſo is one inch to the tangent of an angle ſubtended by one inch in the focus of the object-glaſs; which will be found twenty-eight minutes thirty ſeconds. Again, becauſe there are exactly forty threads of the ſcrews in one inch; ſay, If forty revolutions of the hand *a*, give an angle of 28′ 30″, what angle will twenty-one revolutions give? The anſwer will be, fifteen minutes eight ſeconds. And ſuch was the moon's apparent diameter; and ſo may the apparent diameters of any other objects be taken.

It muſt be here obſerved, that the diviſions on the top of the plate GDEF, are diagonal diviſions of the revolutions of the ſcrews, with diagonal diviſions of inches againſt them. Thus as the ſaid plate ſlides along, theſe diagonals are cut by diviſions made on the edge of the narrow plate KL, fixed to the oppoſite ſides of the frame by means of two ſcrews. Theſe diagonal diviſions ſerve for a regiſter to count the revolutions of the ſcrews, and to ſhew how many there are in an inch, or the parts of an inch.

Mr. Derham tells us, that his *micrometer* is not, as uſually, to be put into a tube, but to meaſure the ſpectres of the ſun on paper, (of any radius) or to meaſure any part of them. By this means he can eaſily, and very exactly, with the help of a fine thread, take the declination of a ſolar ſpot at any time of the day; and by his half-ſeconds watch, meaſure the diſtance of the ſpot from the ſun's eaſtern or weſtern limb.

MICROSCOPE, ΜΙΚΡΟΣΚΟΠΕΙΟΝ, a dioptrical inſtrument, by means whereof very minute objects are repreſented exceedingly large, and viewed very diſtinctly; according to the laws of refraction. See Refraction.

Microſcopes are properly diſtinguiſhed into ſimple, or *ſingle*; and compound, or *double*.

Single Microscopes are thoſe which conſiſt of a ſingle lens, or a ſingle ſpherule.

Compound Microscopes conſiſt of ſeveral lenſes duly combined. See Lens.

As optics have been improved, other varieties have been contrived, in the ſorts of *microſcopes:* Hence *reflecting microſcopes*, *water microſcopes*, *&c.* See Reflecting, *&c.*

When, and by whom *microſcopes* were firſt invented, is not certainly known. Huygens tells us, that one Drebbel, a Dutchman, had the firſt *microſcope*, in the year 1621; and that he was reputed the inventor of it: though F. Fontana a Neopolitan, claims the invention to himſelf, but dates it from the ſame year. As a teleſcope inverted is a *microſcope*; the diſcovery might eaſily enough have aroſe from thence. See Telescope.

Foundation and theory of ſingle Microscopes.—If an object AB (*tab. Optics, fig.* 21.) be placed in the focus of a ſmall convex lens, or a ſimple *microſcope* DE, and the eye be applied cloſe to the other ſide of the microſcope, *the object will be ſeen diſtinct, in an erect ſituation, and magnified in the ratio of the diſtance of the focus to the diſtance wherein objects are to be placed to be ſeen diſtinctly with the naked eye.*

For the object AB being placed in the focus of the convex lens DE, the rays iſſuing from the ſeveral points thereof, after refraction, will be parallel to each other. See Lens and Refraction. Conſequently the eye will ſee it *diſtinctly*, by virtue of what is proved under the word Telescope.

Further, ſince one of the rays AF proceeding from the point A, after refraction, becomes parallel to the incident ray; and therefore, ſetting aſide the thickneſs of the lens, is found directly againſt it; and the ſame holds of all the other rays carried to the eyes: the rays, A F, and B F, to which the reſt coming from A and B are parallel, will enter the eye in the ſame manner as if they entered without paſſing through the lens; and will therefore appear erect; as if the lens were away. See VISION.

Laſtly, it is manifeſt that the object A B will be ſeen under the ſame angle as if viewed by the naked eye: But ſince it appears very diſtinct, whereas to the naked eye, at the ſame diſtance, it would appear extremely confuſed, it is the ſame thing as if the object ſhould ſeem removed to the diſtance F H, wherein it is viewed with equal diſtinctneſs, and under the ſame angle. The diameter of the object A B, therefore, will be to the apparent diameter I K, as F C to F H, *i. e.* as the diſtance of the focus of the lens to the diſtance wherein an object is to be placed in order to view it diſtinctly. See MAGNITUDE and ANGLE.

Huygens takes it for granted, that an object ſeen with the naked eye, is then in its utmoſt diſtinctneſs, when ſeen at the diſtance of eight digits, or tenths of a foot; which agrees pretty near with the obſervations of others.

Laws of ſingle MICROSCOPES.—1°. Simple *microſcopes* magnify the diameter of the object A B in the ratio of the diſtance of the focus F C to an interval of eight digits. *v. gr.* If the ſemi-diameter of a lens convex on both ſides be half a digit, $AB : IK = \frac{1}{2}\,8 = 1 : 16$, that is, the diameter of the object will be increaſed in a ſedecuple proportion, or as ſixteen to one.

2°. Since the diſtance F H is conſtant, *viz.* eight digits, by how much the diſtance of the focus F C is ſmaller, ſo much the ſmaller ratio will it have to F H; conſequently the diameter of the object will be ſo much the more magnified.

3°. Since in plano-convex lens's, the diſtance of the focus is equal to the diameter; and in lens's convex on both ſides, to the ſemi-diameter; ſimple *microſcopes* will enlarge the diameter ſo much the more, as they are ſegments of ſmaller ſpheres.

4°. If the diameter of the convexities of a plano-convex lens, and a lens convex on both ſides, be the ſame, *viz.* $= 1$; the diſtance of the focus of the firſt will be 1; of the ſecond $\frac{1}{2}$. Conſequently, the ſemi-diameter of the object A B will be to the apparent one in the firſt caſe as 1 to 8, in the latter as $\frac{1}{2}$ to 8, *i. e.* as 1 to 16. A lens, therefore, convex on both ſides, magnifies twice as much as a plano-convex.

As the whole depends on the juſt and ſteady ſituation of objects with regard to the lens, various methods have been contrived to that end: Whence we have ſeveral different kinds of ſingle *microſcopes.* The moſt ſimple is as follows.

1°. A B, *fig.* 22. is a little tube, to one of whoſe baſes B C, is fitted a plain glaſs, to which an object, *viz.* a gnat, wing of an inſect, down, or the like, is applied: To the other baſe, A D, at a proper diſtance from the object is applied a lens convex on both ſides, whoſe ſemi-diameter is about half an inch. The plain glaſs is turned to the ſun, or the light of a candle, and the object is ſeen magnified. And if the tube be made to draw out, lens's of different ſpheres may be uſed.

Again, a lens, convex on both ſides, is incloſed in a cell A C, *fig.* 22. n° 2. and by a ſcrew H there faſtened acroſs; through the pedeſtal C D paſſes a long ſcrew, by means whereof, and the female ſcrew I, a ſtyle or needle fixed perpendicular to its extreme, is kept firm at any diſtance from the lens. In E is a little tube, on which, and on the point G, the various objects are to be diſpoſed: Thus there may be lens's of various ſpheres applied.

2°. But the *microſcope* which is found to anſwer the end beſt, is as follows: A B, *fig.* 23. is a round braſs tube, whoſe exterior ſurface is formed into a ſcrew of a length ſomewhat leſs than the diſtance of the focus of a glaſs convex on both ſides, uſed here for illuminating the object, and fitted to its baſe A C, by a ring with a ſcrew in it D E.

F G is another braſs tube, ſomewhat wider than the firſt, and open each way for an object to be applied to the *microſcope.* To its upper baſe G H is faſtened a ſpring of ſteel-wire, twiſted into a ſpiral I; whereby an object placed between two round plates, or ſlices, K and L, in the manner hereafter mentioned, is by means of the ſcrew B C, brought to the *microſcopical* lens, (or magnifying glaſs, whereof there are ſeveral) and kept firm in its place. To the baſis H G, which has a female ſcrew M, are fitted cells N, with a male ſcrew O, wherein lens's of various ſpheres, guarded by ferrils, are included. In P is a female ſcrew, by which an ivory handle P Q is faſtened to the *microſcope.*

In the ivory ſlice T are round holes, in which are fitted little circles of Muſcovy talc, for objects, eſpecially ſmall and pellucid ones, as little inſects, or the wings, ſcales, &c. of larger, to be faſtened to.

When live inſects are to be viewed, they are covered with the braſs ſlice Y, which is put in a little ſquare braſs bed, perforated with holes X: And the ſame ſlice, whether alone, or incloſed in the bed, being laid between the round plates K and L, is brought to the lens by means of the ſcrew A B, till the object may be diſtinctly viewed.

If other pellucid oblong objects are to be viewed, as down, cuticle, &c. inſtead of the ſlice above, is uſed the inſtrument mentioned above, for viewing wings of flies; whoſe ſtructure is manifeſt from inſpection.

There are other inſtruments in the apparatus of the *microſcope*, as little tongs, &c. for taking up ſmall objects, a glaſs-tube for viewing the circulation of the blood in fiſhes, &c. which need no deſcription.

What has been ſaid hitherto, is to be underſtood of *lenticular microſcopes*; for *ſpherical* ones, their doctrine will be underſtood from what follows.

If an object A B, *fig.* 21. n° 2. be placed in the focus of a glaſs ſpherule F, and the eye be behind it, *v. gr.* in the focus G; the object will be ſeen diſtinct, in an erect ſituation, and magnified, as to its diameter, in a ratio of $\frac{3}{4}$ of the diameter E I, to the diſtance at which objects are to be placed to be ſeen diſtinctly with the naked eye.

The firſt part of the propoſition is proved in the ſame manner of ſpheres, as of lens's: As, then, a good eye ſees an object diſtinctly at the diſtance of eight digits, a glaſs ſpherule will inlarge the diameter of an object in a ratio of $\frac{3}{4}$ of the diameter to 88 digits. Suppoſe then the diameter of the ſpherule E I $\frac{1}{10}$ of a digit, C E will be $= \frac{1}{20}$, and $FE = \frac{1}{40}$; and therefore $FC = \frac{1}{20} + \frac{1}{40} = \frac{3}{40}$. Conſequently, the true diameter of an object to its apparent one is in the ratio of $\frac{3}{40}$ to 8; *i. e.* as 3 to 320, or 1 to 103 nearly.

Now a lens convex on both ſides, increaſes the diameter in a ratio of the ſemi-diameter to the ſpaces of eight digits; wherefore $\frac{1}{2}$ having a leſs ratio to 8 than $\frac{3}{4}$; if a lens and a ſphere have the ſame diameter, the former will magnify more than the latter: And pretty much after the ſame manner it may be ſhewn that a ſphere of a leſs diameter, magnifies more than another of a large one.

For the methods of caſting little glaſs ſpherules for MICROSCOPES; there are various.—Wolfius deſcribes one as follows: A ſmall piece of very fine glaſs, ſticking to the wet point of a ſteel-needle, is to be applied to the extreme bluiſh part of the flame of a torch; or, which is better, to the flame of ſpirit of wine, to prevent its being blackened. Being there melted, and run into a little round drop, it is to be removed from the flame; upon which it inſtantly ceaſes to be fluid: folding, then, a thin plate of braſs, and making very ſmall ſmooth perforations, ſo as not to leave any roughneſs on the ſurfaces; and further, ſmoothing them over to prevent any glaring: fit the ſpherule between the plates againſt the apertures, and the whole in a frame, with objects convenient for obſervation.

Dr. Adams gives another method, thus: Take a piece of fine window-glaſs, and raiſe it with a diamond into as many lengths as you think needful, not exceeding an eighth of an inch in breadth; then holding one of thoſe lengths between the fore-finger and thumb of each hand over a very fine flame till the glaſs begins to ſoften, draw it out till it be as fine as an hair, and break; then, applying each of the ends into the pureſt part of the flame, you have two ſpheres preſently, which you may make larger or leſs at pleaſure. If they ſtay long in the flame, they'll have ſpots; ſo they muſt be drawn out immediately after they are turned round. As to the ſtem, break it off as near the ball as poſſible; and, lodging the remainder of the ſtem between the plates; by drilling the hole exactly round, all the protuberances are buried between the plates; and the *microſcope performs* to admiration.

After theſe manners may ſpheres be made much ſmaller than any lens; ſo that the beſt *microſcopes*, or thoſe which magnify the moſt, are made thereof. For ſuppoſe the diameter of a ſpherule to be $\frac{1}{16}$ of a digit, the diſtance of its focus will be $\frac{3}{64}$; and therefore its real diameter to its apparent one, as $\frac{1}{32} + \frac{1}{64}$; that is, as $\frac{3}{64}$ to 8, or as 3 to 512; or laſtly, as 1 to 170. Its ſurface therefore will be increaſed in the proportion of 1 to 28900, and its bulk in a ratio of 1 to 4913000.

M. Leewenhoeck and M. Muſſchenbroeck have ſucceeded very well in ſpherical *microſcopes*; and the apparatus of the latter is much commended: But we forbear any deſcriptions thereof; it being eaſy for any who conſiders the ſtructure of thoſe conſiſting of lens's, to conceive how thoſe of ſpheres may be contrived.

Water MICROSCOPE.—Mr. S. Gray, and after him, Wolfius and others, have contrived *water-microſcopes*, conſiſting of ſpherules, or lens's of water inſtead of glaſs, fitted up ſomewhat after the manner of thoſe above-mentioned; (as ſpheres of water may be likewiſe uſed inſtead of glaſs in any of the common *microſcopes.*) But ſince the diſtance of the focus of a lens or ſphere of water, is greater than in one of glaſs, (the ſpheres whereof they are ſegments being the ſame) *water-microſcopes* magnify leſs, and are therefore leſs eſteemed than thoſe of glaſs. The ſame Mr. Gray firſt obſerved that a ſmall drop or hemiſpherule of water held to the eye by candle-light or moon-light, without any other apparatus, magnified the animalcule contained in it, vaſtly more than any other *microſcope*. The reaſon is, that the rays coming from the interior ſurface of the firſt hemiſphere, are reflected ſo as to fall under the ſame angle on the ſurface of the hind hemiſphere, to which the eye is applied, as if they came from the focus of the ſpherule; whence they are propagated to the eye in the ſame manner as if the objects were placed without the ſpherule in its focus.

Hollow glaſs ſpheres, of the diameter of about half a digit, filled with ſpirit of wine, are frequently uſed for *microſcopes*; but they do not magnify near ſo much.

Theory of compound, or double MICROSCOPES.—Suppoſe an object-glaſs E D, *Fig.* 24. the ſegment of a very ſmall ſphere, and the object A B placed without the focus F.

Suppoſe an eye-glaſs G H, convex on both ſides, and the ſegment of a ſphere greater (though not too great) than that of D E, and let it be ſo diſpoſed behind the object, as that if C E : C L : : C L : C K, the focus of the eye-glaſs may be in K. Laſtly, ſuppoſe L K : L M : : L M : L I.

If then O be the place wherein an object is ſeen diſtinct with the naked eye; the eye in this caſe being placed in I, will ſee the object A B diſtinctly in an inverted ſituation, and magnified in a compound ratio of M K to L K and L C to C O; as is proved from the laws of dioptrics.

Laws of double MICROSCOPES.—1°. The more an object is magnified by the *microſcope*, the leſs is its *field*, *i. e.* the leſs it takes in at one view.

2°. To the ſame eye-glaſs, may be ſucceſſively applied object-glaſſes of various ſpheres; ſo as that both the entire objects, but leſs magnified, and their ſeveral parts, much more magnified, may be viewed through the ſame *microſcope*. In which caſe, by reaſon of the different diſtance of the image, the tube L K, in which the lens's are fitted, ſhould be made to draw out.

For the proportion of the object-glaſs to the eye-glaſs, ſome commend the ſubduple ratio, and ſome the ſubſeſquiſextile. De-Chales will have the ſemi-diameter of the convexity of the object-glaſs to be $\frac{1}{3}$ of a digit; or at moſt $\frac{1}{2}$; in the eye-glaſs an entire digit, or even 1 $\frac{1}{2}$. Cherubin makes the ſemidiameter of the object-glaſs $\frac{1}{4}$, $\frac{1}{3}$, or $\frac{1}{2}$ of a digit; the ſemi-diameter of the eye glaſs 1 $\frac{3}{4}$, or 1 $\frac{1}{2}$ of a digit.

Since it is proved, that the diſtance of the image L K from the object-glaſs D E will be greater, if another lens, concave on both ſides, be placed before its focus; it follows, that the object will be magnified the more if ſuch a lens be here placed between the object-glaſs D E, and the eye-glaſs G H.—Such a *microſcope* is much commended by Conradi, who uſed an object-lens, convex on both ſides, whoſe ſemi-diameter was two digits, its aperture equal to a muſtard-ſeed; a lens concave on both ſides 12, or at moſt 16 digits; and an eye-glaſs convex on both ſides, of 6 digits.

4°. Since the image is projected to the greater diſtance, the nearer another lens of a ſegment of a larger ſphere, is brought to the object-glaſs; a *microſcope* may be compoſed of three lens's, which will magnify prodigiouſly.

5. From theſe conſiderations it follows, that the object will be magnified the more, as the eye-glaſs is the ſegment of a ſmaller ſphere; but the field of viſion will be the greater, as the ſame is a ſegment of a larger ſphere: If then two eye-glaſſes, the one a ſegment of a larger, the other of a ſmaller ſphere, be ſo combined, as that the object appearing very near through them, *i. e.* not farther diſtant than the focus of the firſt, be yet diſtinct; the object at the ſame time will be exceedingly magnified, and the field of viſion much greater than if only one lens were uſed: And the object will be ſtill more magnified, and the field enlarged, if both the object and eye-glaſs be double. But in regard an object appears dim, when viewed through ſo many glaſſes, part of the rays being reflected in paſſing through each; the multiplying of lens's is not adviſeable: And the beſt among compound *microſcopes*, are thoſe which conſiſt of one object-glaſs, and two eye-glaſſes.

For a *microſcope* of three lens's, De-Chales commends an object-glaſs of $\frac{1}{3}$ or $\frac{1}{4}$ of a digit; and the firſt eye-glaſs he makes 2, or 2 $\frac{1}{2}$ digits; the diſtance between the object-glaſs and eye-glaſs about twenty lines.—Conradi had an excellent *microſcope*, the object-glaſs whereof was half a digit, and the two eye-glaſſes (which were placed very near) four digits: But it anſwered beſt when in lieu of the object-glaſs, he uſed two glaſſes, convex on both ſides, their ſphere about a digit and half, or at moſt two, and their convexities touching each other within the ſpace of half a line.—Euſtachius de Divinis, inſtead of an object-glaſs, convex on both ſides, uſed two plano-convex lens's, whoſe convexities touched. Grindelius did the ſame; only that the convexities did not quite touch. Zahnius made a binocular *microſcope*, wherein both eyes were uſed.

Structure or mechaniſm of a double MICROSCOPE.—The induſtry and addreſs of our countryman, Mr. Marſhall, here deſerves to be remembered: The moſt commodious *double microſcope* is of his contrivance. In this, the eye-glaſſes are placed in the tube at A and B, *Fig.* 25. and the object-glaſs at C. The little pillar D E is turned by means of a ball E, moveable in the ſocket F; and thus the *microſcope* is accommodated to any ſituation. The ſame pillar is divided into as many parts, 1, 2, 3, 4, 5, *&c.* as there are lens's of different ſpheres to be uſed in viewing different objects; ſo that the diſtance of the object from the object-glaſs may be found without any trouble. But as it is ſcarce exactly enough determined this way, the tube may be brought nearer the object at diſcretion, by means of the ſcrew G H.

The objects are either laid on the circle I, or fitted to proper inſtruments, having their points or ſtiles paſſing through the little tube L M.

Laſtly, to illuminate the object, a lens convex on both ſides, N O, is diſpoſed in a convenient ſituation. The reſt appears from the figure.

Reflecting MICROSCOPE, is that which magnifies by reflection, as the above-mentioned ones do by refraction. See REFLECTION.

The ſtructure of ſuch a *microſcope* may be conceived thus: Near the focus of a concave ſpeculum, A B, *fig.* 25. n° 2. place a minute object C, that its image may be formed larger than itſelf in D. To the ſpeculum join a lens convex on both ſides E F, ſo as the image D may be in its focus.

The eye will here ſee the image inverted, but diſtinct, and enlarged; conſequently the object will be larger than if viewed through the lens alone. See MIRROUR.

The inventor of this *microſcope* is the great Sir I. Newton; but it is ſomewhat to be feared leſt the objects appear dim.

Any teleſcope is converted into a *microſcope*, by removing the object-glaſs to a greater diſtance from the eye-glaſs. And ſince the diſtance of the image is various, according to the diſtance of the object from the focus; and it is magnified the more, as its diſtance from the object-glaſs is greater; the ſame teleſcope may be ſucceſſively converted into *microſcopes* which magnify the object in different degrees. See TELESCOPE.

MID, or MIDDLE, in philoſophy, and mathematics. See MEAN and MEDIUM.

MIDDLE *latitude*, in navigation, is half the ſum of two given *latitudes*. See LATITUDE.

MIDDLE *latitude ſailing*, is uſed for a method of working the ſeveral caſes in ſailing, nearly agreeing with Mercator's way, but without the help of meridional parts. See SAILING, MERIDIONAL *parts*, MERCATOR, *&c.*

MIDDLE *priced ſtones*. See the article STONE.

MIDDLE *region*. See the article REGION.

MIDDLE *of the action*. See the article ACTION.

MIDDLE *of an eclipſe*. See the article ECLIPSE.

Maſonry filled up in the MIDDLE. See the article MASONRY.

MID-HEAVEN, *medium cœli*, in aſtronomy, is that point of the ecliptic which culminates, or is in the meridian. See CULMINATION, *&c.*

MIDRIFF, in anatomy. See the article DIAPHRAGM.

MIDSHIP-*men*, are officers aboard a ſhip, whoſe ſtation, when they are on duty, is, ſome on the quarter-deck, others on the poop, *&c.*

Their buſineſs is to mind the braces, to look out, and to give about the word of command from the captain, and other ſuperior officers. They all aſſiſt on occaſion both in ſailing the ſhip, and in ſtowing and rummaging the hold.

They are uſually gentlemen, who, having ſerved their time as volunteers, are now upon their preferment.

MIDSUMMER-*day*, is the feſtival of St. John the baptiſt, held on the 24th of June. See QUARTER-DAY.

MIGRATION, or TRANSMIGRATION, the paſſage, or removal of any thing out of one ſtate, or place into another; particularly of colonies of people, birds, *&c.* into other countries. See TRANSMIGRATION.

The *migration of the ſouls of men* into other animals after death, is the great doctrine of the Pythagoreans, called the *metempſychoſis*. See METEMPSYCHOSIS.

The *migration of birds*, as the ſwallow, quail, ſtork, crane, fieldfare, woodcock, nightingale, and other birds of *paſſage*, is a very curious article in natural hiſtory, and furniſhes a notable inſtance of the powerful inſtinct impreſſed by the creator. Mr. Derham obſerves two things remarkable therein; the firſt, That theſe untaught, unthinking creatures ſhould know the proper times for their paſſage, when to come, and when to go; as alſo, that ſome ſhould come when others go.—No doubt, the temperature of the air as to heat and cold, and their natural propenſity to breed their young, are the great incentives to thoſe creatures to change their habitation: But why ſhould they at all ſhift their habitation, and why is not ſome certain place to be found in all the terraqueous-globe affording them convenient food and habitation all the year round?

The ſecond, That they ſhould know what way to ſteer their courſe, and whither to go. What inſtinct is it, that moves a poor fooliſh bird to venture over vaſt tracts of land and ſea? If it be ſaid, that by their high aſcents up into the air, they can ſee croſs the ſeas, yet what ſhould teach or perſuade them that that land is more proper for the purpoſe than this? That Britain, for inſtance, ſhould afford them better accommodation than Egypt? than the Canaries? than Spain? or any other of the intermediate countries? *Phyſico-Theol.* p. 349.

Lud. de Beaufort remarks, that birds in their *migration* obſerve a wonderful order and polity: They fly in troops, and ſteer their courſe through huge unknown regions, without the compaſs. *Coſmol. Divin.* It is to be added, that the birds of paſſage are all peculiarly accommodated by the ſtructure of their parts for long flights. See PASSAGE.

Naturaliſts are divided as to the places whither birds of paſſage retire when they leave us. Mr. Willughby thinks the ſwallows fly into Egypt, and Æthiopia. *Ornith. lib.* 2. *c.* 3.

Olaus Magnus ſays, they lurk in holes, or under water; which is confirmed by Etmuller, who aſſures us, that he ſaw a buſhel of them taken out of a frozen fiſh-pond, all hanging together head to head, feet to feet, *&c.* in one cluſter. *Diſſert* 2. *c.* 10. —Olaus adds, that this is a common thing in the northern countries; and that ſuch a cluſter being carried accidentally by ſome boys into a ſtove, the ſwallows, after thawing, began to fly about, but weakly, and for a very little time.

A further confirmation of this account was given by Dr. Colas, a perſon very curious in ſuch things, to the *Royal Society*. Speaking of the way of fiſhing in the northern parts, by breaking holes, and drawing their nets under the ice, he related, that he ſaw ſixteen ſwallows ſo drawn out of the lake of Samrodt, and about thirty out of the king's great pond in Roſineilen; and that at Schlebitten, near a houſe of the earl of Dohna, he ſaw two ſwallows juſt come out of the waters that could ſcarce ſtand, being very wet and weak, with their wings hanging on the ground.—He added, that he had often obſerved the ſwallows to be weak for ſome days after their appearance.

MILDEW, *rubigo*, a diſeaſe happening to plants, cauſed by a dewy moiſture, which falling on them, and continuing, for want of the ſun's heat to draw it up; by its acrimony corrodes, gnaws, and ſpoils the inmoſt ſubſtance of the plant, and hinders the circulation of the nutritive ſap: upon which the leaves begin to fade, and the bloſſoms and fruit are much prejudiced.

According to Cook and Mortimer, *mildew* is a thick, clammy vapour exhaled in the ſpring and ſummer from plants, bloſſoms, and even the earth itſelf, in cloſe ſtill weather, when there is neither ſun enough to draw it on high, nor wind enough to diſperſe it.—Hanging thus in the lower regions, when the evening's cold comes on, it condenſes and falls on the plants; with its thick clammy ſubſtance ſtops up their pores, and thus prevents perſpiration, and hinders the ſap from aſcending to nouriſh its flowers, ſhoots, *&c.* See DEW.

It is added, this dew falling on the top of the ſhoot of a cherry-tree about Midſummer, has been found to ſtop the ſhoot; ſo as the tree has ſhot forth in other places.

Blights and *mildews* are commonly taken for the ſame thing; yet are they very different. See BLIGHT.

On plants which have ſmooth leaves, as the oak, *&c.* the dew hangs, and may be ſeen, taſted, *&c.* Others whoſe leaves are rougher, imbibe it. When it falls on wheat, *&c.* it beſpots the ſtems with a colour different from the natural one.

Theſe dews, Mr. Mortimer takes to be the principal food of bees; being ſweet, and eaſily convertible into honey. See HONEY.

MILE, in geography, a long meaſure, whereby the Engliſh, Italians, and ſome other nations, uſe to expreſs the diſtance between places. See MEASURE, DISTANCE, *&c.* See alſo MERIDIONAL.

In which ſenſe *mile* amounts to much the ſame with *league* uſed by the French and other nations for the like purpoſe. See LEAGUE.

The *mile* is of different extent in different countries. The geographical, or Italian, *mile* contains a thouſand geometrical paces, mille paſſus, whence the term *mile* is derived. See PACE, GEOGRAPHICAL, *&c.*

The Engliſh *mile* conſiſts of eight furlongs, each furlong of forty poles, and each pole of ſixteen foot one half. See POLE.

Caſimir has made a curious reduction of the *miles*, or leagues, of the ſeveral countries in Europe into Roman feet, which are equal to the Rhinland feet generally uſed throughout the north. See FOOT.

	Feet
The mile of Italy	5000
of England	5454
of Scotland	6000
of Sweden	30000
of Muſcovy	3750
of Lithuania	18500
of Poland	19850
of Germany, the ſmall	20000
The middle	22500
The largeſt	25000
of France	15750
of Spain	21270
of Burgundy	18000
of Flanders	20000
of Holland	24000
of Perſia, called alſo Paraſanga	18750
of Egypt	25000

MILES, a Latin term, which, in its general import, ſignifies *ſoldier*. See SOLDIER and MILITIA.

In our Engliſh laws, and cuſtoms, *miles* is peculiarly appropriated to a knight, called alſo *eques*. See KNIGHT and EQUES.

MILIARY *glands*, *glandulæ* MILIARES, in anatomy, a great number of ſmall glands interſperſed throughout the ſubſtance of the cutis, or ſkin. See GLAND and CUTIS.

The *miliary glands* are the organs whereby the matter of ſweat, and inſenſible perſpiration, is ſecreted from the blood. See PERSPIRATION and SWEAT.

They are interwove with the pyramidal papillæ of the ſkin; and are each ſerved with a branch of an artery, vein, and nerve; as alſo with a proper excretory duct, through which the fluid matter ſecreted from the blood in the ſubſtance of the gland, is excreted, and ſent forth at the pores, or perforations of the cuticle. See PORE and CUTICLE.

MILIARY *fever*, is a malignant fever wherein the ſkin is ſprinkled over with little purple ſpots, like grains of *millet*.

It is alſo called a *purple fever*, from the colour of the ſpots. See PURPLE and FEVER.

MILIARY *herpes*. See the article HERPES.

MILITANT, a term underſtood of the body of Chriſtians, while here on earth.

The Romaniſts divide the church into *militant*, patient, and triumphant: The *militant* is on earth; the patient, or paſſive, they place in purgatory; and the triumphant in heaven. See CHURCH.

MILITARE *ærarium*. See the article ÆRARIUM.

MILITARIS *toga*. See the article TOGA.

MILITARIS *via*. See the article VIA.

MILITARY, ſomething belonging to the *militia*, or ſoldiery. Thus,

MILITARY *architecture*, denotes the art of fortification. See ARCHITECTURE and FORTIFICATION.

MILITARY *art*, the art or ſcience of making or ſuſtaining war to advantage. See WAR.

MILITARY *column* among the Romans, was a column on which was engraved a liſt of the troops of an army, or the ſoldiers employed in any expedition. See COLUMN.

MILITARY *execution*, the delivery of a city, or country up to be ravaged, and deſtroyed by the ſoldiers, upon its refuſing to pay contribution-money. See EXECUTION.

MILITARY *exerciſes*, are the evolutions, or various manners of ranging, and exerciſing ſoldiers. See EVOLUTION.

MILITARY *fever*, a kind of malignant fever frequent in armies, by reaſon of the ill food, *&c.* of the ſoldiers. See FEVER.

MILITARY *government* is the ſupreme command and diſpoſal of all the *military* power of a nation, by land and ſea. See GOVERNMENT.

MILITARY *law*. See LAW *of arms*, and MARTIAL.

MILITARY *machine*. See the article MACHINE.

MILITARY *order*. See ORDER and KNIGHTHOOD.

MILITARY *pyrotechny*. See the article PYROTECHNY.

MILITARY *teſtament* among the Romans, was what we call a nuncupative-will; or a teſtament made only by word of mouth, in the preſence of two witneſſes. See TESTAMENT.

This was a privilege peculiar to the ſoldiery, and to them only when in the field; for at other times they were ſubject to the common laws.

MILITARY *ways*, *viæ militares*, are the large Roman roads, which Agrippa procured to be made through the empire, in the time of Auguſtus, for the more convenient marching of troops, and conveyance of carriages. See ROAD.

N. Bergier has wrote the hiſtory of the origin, progreſs, and amazing extent of theſe *military roads*; which were paved from the gates of Rome to the extreme parts of the empire. See VIÆ.

MILITES *candidati*. See the article CANDIDATI.

MILITIA * a collective term, underſtood of the body of ſoldiers, or perſons who make profeſſion of arms. See SOLDIER.

* The word comes from the Latin, *miles*, a ſoldier; and *miles*, from *mille*, which was antiently wrote *mile*: For in levying ſoldiers at Rome, as each tribe furniſhed a thouſand, *mille* or *mile*, men, whoever was of that number, was called *miles*. See TRIBE.

MILITIA, in its proper and more reſtrained ſenſe, is uſed to ſignify the inhabitants, or, as we call them, the *trained-bands* of a town, or country; who arm themſelves, on a ſhort warning, for their own defence.

In which ſenſe, *militia* is oppoſed to regular, ſtated forces.

The ſtanding *militia* of England is now computed to be about 200000 horſe and foot; but may be increaſed at the pleaſure of the king.

For the direction and command of theſe, the king conſtitutes *lords lieutenants* of each country, with power to arm, array, and form into companies, troops, and regiments, to conduct, (upon occaſion of rebellion, and invaſion) and employ the men ſo armed within their reſpective counties, and other places where the king commands; to give commiſſions to colonels, and other officers; to charge any perſon with horſe, horſeman, arms, *&c.* proportionable to his eſtate, *&c.* See LORD *lieutenant*, *&c.*

No perſon to be charged with a horſe unleſs he have 500 pounds yearly revenue, or 6000 pounds perſonal eſtate; nor with a foot-ſoldier, unleſs he have fifty pounds yearly, or 600 pounds perſonal eſtate.

MILITUM *curia*. See the article CURIA.

MILITUM *expenſis levandis*. See the article EXPENSIS.

MILK, *lac*, a white juice, or humour, which nature prepares in the breaſts of women, and the udders of other animals; for the nouriſhment of their young. See BREAST.

Milk is thicker, ſweeter, and whiter, than the chyle itſelf, from which it is derived, and that probably, without much more artifice or alteration than the leaving behind ſome of its aqueous parts. See CHYLE.

The antients held it formed from the blood; but the moderns are of opinion, it comes from the pure chyle, conveyed by the arteries to the breaſts, and without any other coction filtrated through the glands whereof they are compoſed, like urine through the reins; without undergoing any conſiderable change. See SECRETION.

According to M. Leewenhoeck's obſervations, *milk* conſiſts of little globules ſwimming in a clear tranſparent liquor, called *ſerum*, or *whey*. See SERUM.

Milk is a compoſition of three different kinds of parts, butyrous, caſeous, and ſerous. The *butyrous* parts are the cream and oil that ſwim a-top. See BUTTER. The *caſeous* are the groſſer parts, and thoſe that coagulate, and are made into cheeſe. See CHEESE. The *ſerous* are properly a lympha, and make what we call *whey*. See SERUM, LYMPH, *&c.*

Dr. Drake ſays, that *milk* is nothing but oil and water united by the artifice of nature, perhaps by the intervention of ſome peculiar ſalts, which, *milk* itſelf, however ſweet at firſt, does, after a little ſtanding, diſcover to be pretty plentifully therein.

Milk is firſt found in the breaſts of women after they have been pregnant about four months. The fermentation of the *milk* in the breaſts, the firſt days after a woman is delivered, occaſions a fever, which takes its name therefrom.

Ariſtotle ſays, there are ſome men who have *milk* in their breaſts. Cardan tells us he ſaw one that had enough to ſuckle a child.

In the *Philoſophical Tranſactions*, we have an account of a wether brought to *milk* by the ſucking of a lamb; which lamb was maintained by it all the ſummer, till it was weaned.

Milk corrupted in the ſtomachs of children, occaſions the ſeveral diſeaſes incident to that age. Dohel, a Daniſh phyſician, who has wrote expreſsly on this ſubject, tells us, an excellent remedy in ſuch caſe, is a glaſs of water with a little ſalt diſſolved in it: This acts as an emetic, and throws up the corruption that occaſioned the diſorder. Celſus mentions this remedy, *l.* I. c. 3. See CHILDREN.

Galen obſerves, that in animals fed with *milk*, the greateſt part of the food of the mother is converted into that humour.

There are ſeveral kinds of *milk*, uſed not only as food, but as phyſic: As cows *milk*, aſſes *milk*, mares *milk*, ſheeps *milk*, and goats *milk.*—Theſe are preſcribed as proper to alter a ſharp thin blood into a craſis more ſoft, balſamic, and nutritive; and in conſtitutions where they fit the firſt paſſages, muſt be very good for that end, as being already prepared into nutriment, ſo far as is required for their admiſſion into the blood. But where the juices of the ſtomach are ſharp, theſe liquors are apt to be turned into curd. Whenever *milk*, therefore, of what kind ſoever, is ordered in conſumptions, and as a reſtorative, it is with good reaſon joined with the teſtaceous powders, and ſuch things as are proper to deſtroy thoſe acidities.

Aſſes *milk* is ſaid to be a great beautifier and preſerver of the ſkin. Poppæa, wife of the emperor Nero, uſed it for that purpoſe; having four or five hundred aſſes conſtantly in her retinue, to furniſh her every morning with a freſh bath.

We have ſeveral artificial *milks*, ſo called from their reſemblance of natural ones. As,

MILK *of the moon*, *lac lunæ*, a name given by naturaliſts to foſſil agaric. See AGARIC.

Milk of the moon, or *flower of ſilver*, is a white, porous, friable, inſipid earth, frequently found in form of a white farinaceous powder, but ſometimes concreted into a maſs, ſoft, fungous, and not unlike agaric.

Some ſay it is chiefly found in ſilver mines, and that it is a flower ſublimate from the ore of that metal; whence its denomination. See SILVER,

MILK *of ſulphur*, *lac ſulphuris*, a preparation of flowers of ſulphur, and ſalt of tartar; preſcribed by phyſicians, as a ſudorific. See SULPHUR.

MILK *water*. See the article WATER.

Virgin's MILK, *lac virginale*, compoſed of rock allum, ſpring water, litharge, and vinegar; uſed as a coſmetic, to drive in pimples, and check any cutaneous eruptions, by its cooling, reſtringent quality.

MILKY *grotto*. See the article GROTTO.

MILKY *way*, *via lactea*, or *galaxy*. See GALAXY.

MILL, in propriety, denotes a machine for *grinding*. See GRINDING.

MILL, in a more general ſignification, is applied to all machines whoſe action depends on a circular motion. See MACHINE, *&c.*

Of theſe there are various kinds, which acquire different names according to the various manners in which the moving power is applied.—They may all be reduced to three: *viz.* *Windmills*, *water-mills*, and *hand-mills*; under which laſt, are alſo comprehended thoſe worked by horſes, *&c.*

Water-MILLS are thoſe turned by the force, or fall of a river, *&c.* Of which, there are two kinds; thoſe where the force of the water is applied above the wheel, called *over-ſhot*; and thoſe where it is applied below the wheel, called *under-ſhot mills.*

Wind-MILLS, are thoſe turned by the force of wind gathered in their ſails.

Of theſe, ſome are called *vertical*, others *horizontal*, according to the poſition of the ſails; or rather according to the direction of their motion with regard to the horizon.

For the beſt form of horizontal ſails, as alſo for determining the poſition of the axis of wind-mills, ſee WIND-*mill.*

Portative, or *Hand*-MILLS, are thoſe kept in motion by the hand; or whoſe mill-ſtones are turned, or piſtons driven, by the force of horſes, or other beaſts.

The uſe of *mills* and mill-ſtones, according to Pauſanias, was firſt invented by Myla, ſon of Meleges, firſt king of Sparta. Though Pliny attributes the invention of every thing belonging to bread and baking, to Ceres. Polydore Virgil was not able to diſcover the author of ſo uſeful a machine. It is doubted whether or no water-mills were known to the Romans, there being no mention made in the Digeſt but of *mills* turned by ſlaves and aſſes.—Salmaſius, however, and Gothofred, will not allow *water-mills* to have been unknown to the antient Romans, though they were not in ordinary uſe.—*Wind-mills* are of much more modern invention: The firſt model of theſe was brought from Aſia into Europe, in the time of the holy wars.

MILL is alſo uſed for any machine, which being moved by ſome external force, ſerves to give a violent impreſſion on things applied thereto.

Mills in this ſenſe, are machines of vaſt uſe in the manufactures, arts, and trades; for the making and preparing divers kinds of merchandizes.—The principal are thoſe which follow.

Fulling-MILL, is a water-mill which raiſes and beats down large wooden piſtons in proper veſſels, called *peels* or *troughs*; in order to full, ſcower, and cleanſe woollen ſtuffs. See FULLING.

Linnen-MILLS do not differ much from fulling-mills. Their uſe is to ſcower linnens, after having been firſt cleanſed when taken out of the lixivium, or lye. See BLEACHING. Some of theſe go by water, the generality by horſes.

Paper-MILL, a water-mill furniſhed with ſeveral large hammers, which beat, or pound the rags or cloth in a kind of wooden troughs; and thus by reducing them to little pieces, turn them into a kind of pulp, by means of water conveyed into the troughs by a pipe for the purpoſe. See PAPER.

MILL in coinage, is a machine uſed to prepare the laminæ or plates of metal, and to give them the proper thickneſs, hardneſs, and conſiſtence before they be ſtruck or ſtamped. See COINING.

This machine has not been long known among us; but is of ſome ſtanding in Germany. It conſiſts of ſeveral wheels dented like thoſe of clocks, *&c.* which move two cylinders of ſteel, between which the metal is paſſed to be brought to its proper thickneſs. It was firſt turned with water; ſince, with horſes.

MILL, among gold-wire-drawers, is a little machine conſiſting of two cylinders of ſteel, ſerving to flatten the gold, or ſilver wire, and reduce it into laminæ, or plates. See GOLD-WIRE.

They have alſo *mills* to wind the gold-wire or thread on the ſilk; compoſed of ſeveral rows of bobins all turned at the ſame time. See DUCTILITY.

Forge-MILLS, turned by water, ſerve to raiſe and let fall one or more huge hammers, to beat and form the iron into bars, anchors, or other maſſive works. See FORGE.

Gun-powder MILL, is that uſed to pound, and beat together the ingredients whereof gun-powder is compoſed. See GUN-POWDER.

This is done in a kind of iron or braſs mortar by means of iron peſtles wrought by a wheel without-ſide the *mill*, turned by the water falling on it.

Leather-MILLS, are uſed to ſcower, and prepare with oil, the ſkins of ſtags, buffalo's, elks, bullocks, *&c.* to make what they call *buff-leather*, for the uſe of military-men.

This is effected by means of ſeveral large piſtons riſing and falling on the ſkins in large wooden troughs, by means of a wheel without-ſide, turned by the force of water. See BUFF.

Oil-MILLS, whether turned by men, water, hand, or horſe, ſerve to bruiſe or break the nuts, olives, and other fruits and grains, whoſe juice is to be drawn by expreſſion to make oil. See OIL, OLIVE, *&c.*

Sawing-MILL is a water-mill, ſerving to ſaw ſeveral planks or boards at the ſame time. See SAWING.

Theſe are frequent in France, eſpecially in Dauphiné. They were lately prohibited in England, where they were begun to be introduced, from a view to the ruin of the ſawyers, which muſt have enſued.

There are alſo *Silk*-MILLS, for ſpinning, throwing, and twiſting ſilks; which are large round machines in form of turrets, five or ſix foot high, and ſix yards in diameter; which being turned either by the force of water, or that of men, work at the ſame time an infinity of bobins faſtned thereto, whereon the ſilk had been wound to be here ſpun and twiſted. See SILK, *&c.*

There are abundance of *mills* of this kind in France, eſpecially about Lyons and Tours, ſome of which are ſo diſpoſed, as that three of them will go at the ſame time, and by the ſame wheel wrought by water, or by ſtrength of hand. That in the Hopital de la Charité at Lyons, is wonderful, a ſingle man working no leſs than forty-eight of theſe *mills*. See MILLING.

Stamping MILL. See the article STAMPING.

Sugar-MILL, is a machine that ſerves to bruiſe the ſugar-canes, and expreſs the liquor or juice contained therein. See SUGAR.

The *ſugar-mills* are very curious contrivances.—Of theſe there are four kinds, being turned either by water, wind, men, or horſes.

Thoſe turned by the hand were firſt in uſe, but are now laid aſide, as being an intolerable hardſhip on the poor negroes, who were doomed thereto; beſides the ſlowneſs of their progreſs.

Wind-mills are the moſt modern, but they are yet ſomewhat rare; excepting in St. Chriſtopher's and Barbadoes, and among the Portugueze. Theſe make good diſpatch, but have this inconvenience, that they are not eaſily ſtopped; which proves frequently fatal to the negroes who feed them.

Tan, or *Bark*-MILLS, wrought by water or horſes, ſerve to cut certain barks into a coarſe ſort of powder, proper for the tanning of hides, *&c.* See BARK and TANNING.

MILLS *for ſword-blades*, are likewiſe moved by water. They are frequent at Vienne in Dauphiné. By working heavy hammers, they forge thoſe excellent ſword-blades, called *blades of Vienne.*

MILL-*pool*. See the article POOL.

MILLEPEDES, *wood-lice*, a ſort of little inſects, with a multitude of feet, uſually of a dark colour, and which when touched roll up into a ball; of conſiderable uſed in medicine.

Millepedes are ſo much in the acquaintance of the people, that they ſeem to be maſters of their medicinal uſes, and take them in many caſes without any other direction. They are, by all experience, found to be very diuretic and abſterſive; which makes them not only frequent in preſcriptions for diſorders in the reins, but alſo in obſtructions of the viſcera, and particularly in the jaundice.

They abound with a nitrous ſalt, which they ſeem to derive from the earthly diet they live on. It is ſomewhat volatilized by its digeſtion and circulation in the inſect; as ſuch ſalt always is more or leſs, in proportion to the digeſtive powers of the animal, into whoſe blood it enters; yet not ſo much, but that it is brackiſh and pungent upon the palate. This makes their deterſive qualities extend further than the larger glands, and enables them to ſcour even the minuteſt paſſages, and keep the nerves clear from viſcidities, and ſuch things as would clog their ſprings; whereby they are good in palſies, epilepſies, and all nervous diſtempers.

As they open and cleanſe away viſcoſities, and by their minuteneſs and aſperities cut their way through any obſtructions, they are good in ſtruma's, and all inveterate tumours or ulcers. Remarkable cures have been performed in each way by a long uſe of them. They are beſt adminiſtered in ſubſtance, or bruiſed in white wine, the liquor being taken without ſettling.

There are ſeveral chymical preparations of *millepedes*, as ſpirit, volatile ſalt, oil, and wine of *millepedes.*

MILLENARII *, MILLENARIANS, a ſect among Chriſtians, chiefly in the primitive church; who hold that Jeſus Chriſt is to come again and reign on earth for the ſpace of a thouſand years; during which time, the faithful are to enjoy all manner of temporal bleſſings, and at the expiration of this term, the day of judgment is to take place. See MILLENNIUM.

* The *millenarii* are alſo called *chiliaſts*, *chiliaſtæ*; from the Greek χιλιας, *mille*, a thouſand.

This opinion of the *millenarii* is very antient, and may be traced back almoſt as far as the time of the apoſtles. It had its origin from a paſſage in the apocalypſe too literally underſtood, wherein mention is made of Chriſt's reign on earth, *&c.*

The opinion of S. Papias, ſays Mr. Launoy, touching the new kingdom of Jeſus Chriſt on earth, after the reſurrection, was held for near three centuries, e'er it was charged as erroneous; as appears from eccleſiaſtical hiſtory. It was allowed of, and followed by the greateſt men among the primitive fathers; as Irenæus, Juſtin Martyr, Tertullian, *&c.* Dionyſius of Alexandria, and St. Jerom, oppoſed this imaginary *millenary* reign very ſtrongly.

MILLENNIUM *, a term literally ſignifying a *thouſand years*; chiefly uſed for the time of our Saviour's ſecond appearance, and reign on earth. See MILLENARII.

* The word is Latin, compounded of *mille*, a thouſand, and *annus*, year.

Mr. Whiſton, in ſeveral of his writings, has endeavoured to ſupport the notion of a *millennium.* According to his computation, it was to have commenced about the year 1720.

MILLIARE, or MILLIARIUM, among the Romans, denoted a *mile*, conſiſting of a thouſand paces, *mille paſſus*; whence the name. See MILE and LEAGUE.

In the Roman empire, the *milliaria*, in all the great roads, were marked with ſtones, or columns, erected for that purpoſe; commencing from a column in the heart of the city, called *milliare aureum.* See ROAD.

Thoſe columns were alſo hence denominated *milliary columns.* See COLUMN.

MILLIARY *fever.* See the article MILIARY.

MILLIARY *glands.* See the article MILIARY.

MILLIARY *herpes.* See the article HERPES.

MILLIARY *terms.* Sea the article TERM.

MILLING, in the manufactories, an operation called alſo *fulling.* See FULLING.

MILLING, or *throwing of ſilk*, is the laſt preparation of ſilk before dying; ſerving to twiſt it, more or leſs according to the work it is intended for. See SILK.

To prepare the ſilk for *milling*, they firſt put it in boiling water, incloſed between two linnen cloths.—The *mill* is a ſquare machine, compoſed of ſeveral pieces of wood mortiſed in each other ſo as to form a kind of large cage, in the centre whereof are two wheels placed parallel over each other, whoſe axis bears on two poſts.—When the machine is ſimple, a ſingle man turns theſe wheels by means of a little cogg in which they catch, and a large handle.

The wheels put in motion by the handle, communicate their motion to eight windles, or reels, or even more, according to the largeneſs of the machine; on the flights, or arms whereof the ſilk is wound from off two rows of bobins placed on each ſide the machine, each row at the height of one of the two wheels in the centre.—Theſe bobins have their motion by means of leathern thongs, which bear on little cylinders of wood that ſupport them, and turn at length on the two wheels at the center; ſo that the ſilk on each bobin twiſts, as it winds, and forms its ſeparate ſkain.

The ſmalleſt wheel moves two hundred of theſe bobins, over which a ſingle perſon is ſufficient to inſpect, to put new bobins or ſpools in lieu of thoſe diſcharged of their ſilk, and to knot the ends when they break.

MILLION, in arithmetic, the number of ten hundred thouſand; or a thouſand times a thouſand. See NUMERATION.

The revenues of princes are now only computed in *millions.* See REVENUE and POLITICAL *arithmetick.*

A *million of gold*, or *million of money*, is ſometimes underſtood of a *million* of pounds; and ſometimes a *million* of crowns. See CROWN, *&c.*

MILL-REE, or MILLE-RAY, a Portugueze gold coin, current for ſomewhat more than the Spaniſh piſtole. See COIN.

The *mill-ree* is thus called, as conſiſting of a thouſand *rees.* See REE—It is alſo called a St. *Stephen*, from the figure of that martyr impreſſed thereon.

They have alſo a *mill-ree* of the little croſs, which in reality is only half the former; and whoſe value is that chiefly uſed in computations.

MILOHYOIDÆUS. See MYLOHYOIDÆUS.

MILT, in anatomy, a popular name for the Spleen. See SPLEEN.

MILT, or MELT, in natural hiſtory, the ſoft roe in fiſhes; thus called by reaſon it yields, by expreſſion, a whitiſh juice reſembling milk. See ROE.

The *milt* is properly the ſeed, or ſpermatic part of the male fiſh. The *milt* of a carp is reckoned a choice bit.

It conſiſts of two long whitiſh irregular bodies, each included in a very thin fine membrane. M. Petit conſiders them as the teſticles of the fiſh wherein the ſeed is preſerved: the lower part, next the anus he takes for the veſiculæ ſeminales. Vid. *Mem. Acad. R. Scien.* ann. 1733. p. 291.

MIME *, MIMUS, a term in the antient comedy, ſignifying a *buffoon*, or *mimic*, who acted poſtures ſuitable to the perſon, or ſubject he repreſented. See ARCHIMIMUS.

* The word comes from the Greek, μιμος, imitator; formed of μιμεομαι, I imitate. The ſame comedians were alſo ſometimes called *pantomimes*, becauſe of their counterfeiting all manner of poſtures and geſtures. See PANTOMIME.

MIMESIS, ΜΙΜΗΣΙΣ, in rhetoric, a figure, whereby the words, geſtures, ſpeech, actions, *&c.* of another perſon are imitated. See MIME and PANTOMIME.

MIND, *mens*, denotes a thinking or underſtanding being. See THINKING, *&c.*

Philoſophers generally allow of three kinds of *minds*, viz. *God*, *angels*, and the human *ſoul.* For a thinking being muſt either be finite, or infinite: If infinite, it is *God*; and if finite, it is either joined with a human body, or not; if the latter, it is an *angel*; if the former a *ſoul.* See GOD, ANGEL, and SOUL.

The *human mind* is properly defined a thinking, rational ſubſtance: By *thinking*, it is diſtinguiſhed from body; and by *reaſoning*, from God, and angels, which are ſuppoſed to ſee and know things intuitively, without the help of deduction, and diſcourſe. See DISCOURSE, REASONING, and KNOWLEDGE.

Affections of the MIND. See the article AFFECTION.

MINE, in natural hiſtory, a place under ground where metals, minerals, or even precious ſtones, are dug up. See METAL, MINERAL, PRECIOUS STONE, *&c.*

As, therefore, the matter dug out of *mines* is various; the *mines* themſelves acquire various denominations: as *gold-mines*, *ſilver-*

ſilver-mines, *copper-mines*, *iron-mines*, *diamond-mines*, *ſalt-mines*, *mines of antimony*, *of alum*, &c.

For *gold* and *ſilver mines*, the richeſt and moſt celebrated are thoſe of Peru and Chili in America. See GOLD and SILVER. —*Iron-mines* are more abundant in France than elſewhere. See IRON.—*Copper-mines* are chiefly in Sweden and Denmark. See COPPER.—*Lead* and *Tin-mines* abound moſt in England. See LEAD and TIN.—*Quick-ſilver-mines* in Hungary and Spain.— *Diamond-mines* in Golconda.— *Salt-mines* in Poland, *&c.* See QUICKSILVER, DIAMOND, SALT, *&c.*

Metallic mines are chiefly found in mountains; though the reaſon thereof does not appear. It is probable, plains may abound as much therewith, would people dig deep enough. But plains are commonly cultivated; and beſide, the water will ſcarce allow them to be dug. Add, that the *metallic* veins always run either horizontal or oblique; and for that reaſon, are eaſieſt found on the ſides of eminences.

The metallic veins are commonly encompaſſed with a ſort of ſtone peculiar to the *mine*, and are accompanied with ſeveral ſtrata of different matters, as clay, gravel, rock, *&c.* They who work in *mines*, know by the ſize, and colour of the ſtones, when they approach the vein. See STRATA and VEIN.

They diſcover that there is a *mine* in a mountain by the marcaſites, or mineral ſtones falling from it; by the mineral taſte of the waters; by the quality of the exhalations raiſed from it; and by the difference between the earth over the *mines*, and that of the neighbouring parts in the cold time of ſpring and autumn, the froſt lying on the adjacent places, when it thaws about the mines. Add, that the ground's producing but little graſs, and that little, pale and colourleſs, is an indication of a *mine*.

Some pretend to diſcover *mines* by the ſole virtue of the hazle-tree, out of which they form a forked ſtick, called *virgula divinatoria*, which, they ſay, turns of itſelf, in their hands, but differently, according to the different nature of the metals or minerals underneath. This artifice made a great noiſe in France towards the end of the ſeventeenth century; and the corpuſcular philoſophy was called to account for it. But it is now in little credit. See VIRGULA DIVINA.

There are ſome *mines*, wherein the metals are found at their firſt opening very crude and imperfect; which yet, in time, grow ripe and rich. Alonſo Barba relates, that in Potoſi, ſtones have frequently been thrown aſide, as not containing any thing conſiderable of metal; and yet have been found many years afterwards exceeding full thereof. Cæſalpinus aſſures us, that earths which yield no metal at all, ſometimes becomes very fertile veins. In an iſland of the Tyrrhene-Sea, after the iron *mines* have been exhauſted, they ſtop them up about ten years, at the end whereof, they find them as rich as before.—*For the formation of mineral and metallic matters in mines*, ſee MINERAL.

MINE, in the art of war, denotes a ſubterraneous canal, or paſſage dug under the wall, or rampart of a fortification intended to be blown up by gun-powder.

The *alley*, or paſſage of a *mine*, is uſually about four foot ſquare; at the end of this is the *chamber* of the *mine*, which is a cavity about five foot in width and in length, and about ſix in height; and here the gun-powder is beſtowed. See CHAMBER.

The *ſauciſſe* of the *mine* is the train; for which there is always a little aperture left. See SAUCISSE.

There are various kinds of *mines*, which acquire various names; as royal *mines*, ſerpentine *mines*, forked *mines*, according as their paſſages are ſtrait, oblique, winding, *&c.*

There are alſo mines made in the field, which are called *fougades*. See FOUGADE.

Mines are either dug within the body of the earth, as thoſe made by the beſieged to blow up the works of the beſiegers, before they make a lodgment on the covered way: Or in eminences and riſing grounds, as to make a breach in the ramparts, *&c.* Or to blow up walls: Or, laſtly, to tear up rocks.

Theory of MINES.—M. Chevalier, in the memoirs of the royal academy of ſciences, has handled the ſubject of *mines* with a great deal of accuracy. He has calculated the force of gun-powder, the effort it makes, and the reſiſtance it meets with in heaving up the ground. He ſhews, that a cubic foot of air incloſed in two cubic feet of gun-powder, is capable of ſuſtaining a weight of near 290000 pounds. But obſerves withal, that this force is vaſtly greater than what it is found by experience to have; and that in fact, 140 pounds of powder do not raiſe above 30000 pounds of earth. The reaſon of which difference he aſcribes to ſeveral cauſes; as, that the powder does not take fire all at once, ſo that its force is divided; that part of the ſhock is loſt in the canal or paſſage of the *mine*, and in the pores of the bodies incompaſſing the *mine*; that the tenacity of the parts of the earth reſiſt a ſeparation; that it is not enough that the earth be ſupported, but it muſt be carried upwards with a certain velocity; and that the weight of the atmoſphere, is a very conſiderable obſtacle, to which no regard is had in the calculation. See GUN-POWDER.

From a great number of experiments it appears, 1°. That the effect of a *mine* is always towards the weakeſt ſide; ſo that the diſpoſition of the chamber of a *mine* does not at all contribute to determine this effect either one way or another, as the miners miſtakenly imagine.

2°. That the quantity of the powder muſt be greater or leſs, in proportion to the greater or leſs weight of the bodies to be raiſed, and to their greater or leſs coheſion; and the reſult of all the experiments that have been made for determining the different quantity of powder to be uſed for different bodies, is to allow for each cubic fathom,

Of looſe earth,	9 or 10 pounds of powder.
Of firm ſolid earth, and ſtrong ſand	11 or 12
Of argil, or fat clayey earth,	15 or 16
Of new maſonry, not very ſtrongly bound,	15 or 20
Of old maſonry well bound,	25 or 30

3°. That the aperture, or funnel of a *mine* that has been played, if it had been rightly charged, is a cone, the diameter of whoſe baſe is double the height, taken from the center of the *mine*.

4°. That when the *mine* has been over-charged, its aperture is nearly cylindrical, the upper extremity not being much wider than the chamber at bottom, where the powder was lodged.

5°. That, beſide the ſhock of the powder againſt the bodies it takes up, it likewiſe cruſhes all the earth that borders upon it, both underneath and ſide-ways, which cruſh extends itſelf the further as the matters make the leſs reſiſtance.

To account for all the effects reſulting from theſe experiments, and to determine the quantity of powder required for the charge of a *mine*, and the moſt advantageous diſpoſition for anſwering the intent: Let us conceive, 1°. A *mine*, whereof all the parts wherewith it is incompaſſed are incapable of being compreſſed, and make an equable reſiſtance, ſuch as that of a bomb equally thick throughout, ſuſpended in the air; where it muſt be obſerved, that beſides the reſiſtance of the body, the effort of the powder muſt likewiſe ſurmount the weight of the ambient air; in which caſe the body will be beaten into duſt, or at leaſt into very ſmall pieces.

2°. Conceive a *mine* incompaſſed wholly by ſuch bodies as are equally compreſſible, and that reſiſt every way with equal force. In this caſe, the firſt effect of the powder will be to compreſs all thoſe bodies equally, and they will not be ſeparated, till by the violence of their compreſſion, they are all incapable, any longer, to reſiſt its effort; ſo that unleſs the powder be in great quantity, all its effect may end in the mere compreſſion of the adjacent bodies. For this reaſon, they ſometimes block up the chamber of the *mine* with large beams, and ſometimes wall it up with ſtones, that the adjacent bodies may reſiſt the more.

Laſtly, ſuppoſe a *mine* where all the bodies that incompaſs it, are equally compreſſible, but where there is leſs reſiſtance on one ſide than another; in this caſe, there will be a ſphere of compreſſion, whoſe diameter will be ſo much the greater, as the weak ſide reſiſts the more. With regard to which, there are three things to be conſidered.

Firſt, If the effort of the powder be very great with relation to the reſiſtance of the weak ſide, the compreſſion will but reach a little way, that ſide being tore off too ſuddenly for the neighbouring parts to receive their ſhock. In which caſe, the aperture or funnel will be almoſt cylindrical, the diameter of the upper extreme not much exceeding that of the chamber; and the earth will be thrown to a great diſtance, which the enemy may make an advantage of, by forming lodgments in the cavity, as was done at the ſiege of Verue.

Secondly, If the *mine* be under-charged, it only makes a ſimple compreſſion on the weakeſt ſide, as it happened at Cividad Rodrigo.

Thirdly, If the *mine* be charged with a quantity of powder between the two extremes, it will raiſe a cone of earth, the diameter of whoſe baſe will have a greater or leſs ratio to its height from the centre of the *mine*, as the effort of the powder is greater or leſs.

The moſt advantageous effect is when the diameter of the baſe of the cone is double its height: In which caſe, the earth blown up, falls almoſt all back again into the aperture of the *mine*; ſo that the enemy cannot make any lodgment.

To charge a *mine*, therefore, ſo as it may have the moſt advantageous effect poſſible, the weight of the matter to be carried up muſt be known, *i. e.* the ſoldity of a right cone, whoſe baſe is double the height of the earth over the centre of the *mine*, which is eaſily found from the rules of geometry.—Having found the ſolidity of the cone in cubic fathoms, multiply the number of fathoms by the number of pounds of powder neceſſary for raiſing the matter it contains, according to the proportion already laid down; and if the cone contain matters of different weights, take a mean weight between them all; having always a regard to their degree of coheſion.

As to the diſpoſition of *mines*, we have but one general rule, which is, that that the ſide towards which one would determine the effect, be the weakeſt. But this varies according to occaſions and circumſtances.

Counter-MINE. See the article COUNTER-*mine*.

Gallery of a MINE. See the article GALLERY.

Knight of the Mine, is a military honour, antiently conferred on perſons who had diſtinguiſhed themſelves in engagements in *mines*.

Mine-*ſhips*, are ſhips filled with gun-powder, incloſed in ſtrong vaults of brick or ſtone, to be fired in the midſt of an enemy's fleet.

Mine is alſo a French meaſure. See Measure.

MINERA, in medicine, the ſeat, or rather matter, of a diſeaſe. See Disease.

The term is applied by ſome authors to thoſe parts of the body wherein there are collections and coacervations of humours made; which hardening, form obſtructions, and produce diſeaſes.

In this ſenſe we ſay, the *minera morbi*, &c.—

MINERAL, in natural hiſtory, is ſometimes uſed in the general for *foſſil*; and applied to any body, ſimple or compound, dug out of a ſubterraneous place or *mine*; from which it takes the denomination. See Mine.

In this ſenſe, metals, ſulphurs, foſſil ſalts, ſemi-metals, *&c.* are *minerals*. See Fossil.

On this principle, they divide *minerals* into two claſſes; the one *fuſible*, and *malleable*; *i. e.* which melt with fire, and ſtretch on the anvil; which are what we properly call *metals*. See Metal.—The others want thoſe two properties; and are what in the ſtrict ſenſe we call *minerals*. See Oar and Marcasite.

Some divide *minerals* into *ſimple* and *compound*: To the firſt belong *ſtones*; *ſalts*, as alum, nitre, *&c.* *Inflammable minerals*, as ſulphur and bitumen; and *metals*, as gold, *&c.*

Other more accurate writers, reſtrain the word *mineral* to what we otherwiſe call *ſemi-metal*. See Semi-metal.

Mineral, in this ſenſe, may be defined a compound foſſil, wherein there is ſomething diſcovered, in all reſpects like metal, only that it is not malleable; joined, or compounded with ſome other foſſil, as ſalt, ſulphur, ſtone, or earth.

Such are *antimony*, *cinnabar*, *biſmuth*, *calaminaris*, *vitriol*, *pyrites*, *marcaſites*, *cobalt*, *oker*, the *magnet*, *lapis hæmatites*, *armenus*, and *ſtellatus*. See each under its proper article, Antimony, Cinnabar, Bismuth, Vitriol, Calaminaris, *&c.*

Some attribute the formation of *minerals* to the action of the ſun without; ſome to the central fire within; and ſome think the cold does all by uniting, condenſing, and congealing certain juices of the earth.

Des Cartes takes metals to have been formed from the beginning of the world; and to have ranged themſelves, by the laws of gravity, about the centre. In proceſs of time, he ſuppoſes theſe to have been corroded by the acid ſalts, *&c.* and abundance of the parts thereof carried up along with thoſe ſalts by the ſubterranean heat, and depoſited in divers parts of the earth.

Monſ. Tournefort ſuppoſes ſeeds of *minerals*, as of animals, and vegetables. Every thing, according to him, comes from eggs, even ſtones; and the largeſt rocks were originally no more than grains of ſand. See his ſyſtem more at length under the article Stone.

Others, as M. Geoffroy, contend that metals, *&c.* may be the reſult of a mixture of certain matters, which had nothing metallic in them. Thus, in the aſhes of all vegetables we find a ferruginous matter which the load-ſtone attracts; and yet it will hardly be ſaid that iron exiſted in the plants. We ſee no ſigns of iron in argilla, work it in what manner you will; and yet add linſeed oil, and by fire you will procure iron. And the like may be ſaid of divers other matters.

Hence it is probable, metals may be formed by a mere combination of different ingredients; much like ſulphur, which we all know is made by adding an inflammable principle to a vitriolic ſalt. The earth may every where abound with thoſe matters, which are continually circulating through its pores and canals, and which meeting with an earth homogeneous to them, fix thereto; and commence *minerals*.

The *minerals*, metals, and ſtones lie in beds; and have done ſo ever ſince the flood, if not from the creation; yet it is highly probable they have a faculty of growing in their reſpective beds; that, as their beds are robbed and emptied by miners, ſo after a while they recruit again. Thus vitriol, Mr. Boyle thinks, may grow by the help of the air, and alum does the ſame. We are aſſured (ſays that author) by the experienced Agricola, that the earth, or oil of alum, being robbed of its ſalts, will, in tract of time, recover it by being expoſed to the air.

As for metals, there is good reaſon to believe they grow likewiſe; from what has been alledged by Mr. Boyle in his obſervations about the growth of metals, and particularly as to the growth of iron. To the inſtances he brings from Pliny, Fallopius, Cæſalpinus, and others, we may add, that in the foreſt of Dean in Glouceſterſhire, the beſt iron, and in the greateſt quantities, are found in the old cinders which they melt over again.—This ſome impute to the negligence of the former melters in not exhauſting the ore. But Mr. Derham thinks it rather owing to the new impregnations of the old ore, or cinders from the air, than to any ſeminal principle in the ore itſelf.

The chymiſts generally take *minerals* to be nothing elſe but imperfect metals, which not having arrived at maturity, may be perfected by chymical operations, and raiſed to true metals.—This agreeable, but fatal deluſion, has given riſe to the ſect of philoſophers, who ſtudy the philoſopher's ſtone. See Metal, Gold, Philosopher's *ſtone*, *&c.*

Æthiops Mineral. See the article Æthiops.

Turbith Mineral. See the article Turbith.

Mineral-*oil*. See the article Oil.

Minerale *bezoardicum*. See the article Bezoardicum.

Cryſtal Mineral. See Crystal *mineral*.

Mineral-*waters*, are thoſe, which at their ſpringing forth from under ground, are found impregnated with ſome *mineral* matter; as ſalt, ſulphur, vitriol, *&c.* See Water.

Such are hot baths, ſpaws, purging, *&c.* ſprings. See Bath, Spaw, Spring, *&c.*

MINIATURE*, or Mignature, a delicate kind of painting, conſiſting of little points or dots, inſtead of lines; uſually done on velom, with very thin, ſimple water-colours. See Painting.

* The word comes from the Latin *minium*, red lead; that being a colour much uſed in this kind of painting. The French frequently call it *mignature*, from *mignon*, fine, pretty, on account of its ſmallneſs and delicacy.

Miniature is diſtinguiſhed from other kinds of painting by the ſmallneſs and delicacy of its figures, the weakneſs of their colours, and faintneſs of the colouring; and in that it requires to be viewed very near.

Thoſe colours that have the leaſt body, are the beſt and moſt commodious for painting in *miniature*; as carmine, ultramarine, fine lakes, and green made of the juices of ſeveral kinds of herbs and flowers.

Painting in *miniature* is the niceſt and moſt tedious of all others; being performed wholly with the point of the pencil.

There are ſome painters who never uſe any white colour in *miniature*, but make the ground of the velom ſerve to raiſe their figures; in which caſe, the lights appear bright in proportion to the depth and ſtrength of the colours of the figures. Others, before they go to work, give the velom a light waſh with white lead, well prepared and purified.

When the colours are laid on flat without dotting, though the figures be ſmall, and the ground either velom or paper, it is not called *miniature*, but *waſhing*.

The colours for *miniature* may be mixed up with water of gum arabic, or gum tragacanth.

MINIM, in muſic, a note, or character of time; equal to two crotchets, or half a ſemibreve. See Time, and Characters *of muſic*.

Sextuple of the Minim. See the article Sextuple.

MINIMA *naturæ*, or Minima *naturalia*, among philoſophers, the primary particles, whereof bodies conſiſt; the ſame with what are otherwiſe called *corpuſcles*, and *atoms*. See Corpuscle, Atom, Matter, Particle, *&c.*

Minima, in the higher geometry, the ſmalleſt quantities attainable in any given caſe. See Maximum.

Per Minima. See the article Per *minima*.

MINIMENTS, or Muniments. See Muniments.

MINIMI *digiti extenſor*. See the article Extensor.

Minimi *digiti pedis abductor*. See the article Abductor.

MINIMS, Minimi, an order of religious, inſtituted about the year 1440, by S. Francis de Paulo.

Theſe have improved on the humility of the *minors*, by terming themſelves *minimi*, or *minims*, q. d. leaſt, or ſmalleſt. See Minors.

MINIMUS *glutæus*. See the article Glutæus.

MINION, a ſort of cannon, or piece of ordnance, whereof there are two kinds; large, and ordinary. See Cannon and Ordnance.

The large Minion, or one of the largeſt ſize, has its bore $3\frac{1}{4}$ inch diameter, and is 1000 pounds weight; its load is $3\frac{1}{4}$ pounds of powder; its ſhot three inches in diameter, and $3\frac{3}{4}$ pound weight; its length is eight foot, and its level range 125 paces.

The ordinary Minion is three inches diameter in the bore, and weighs about 800 pounds weight. It is ſeven foot long; its load $2\frac{1}{2}$ pounds of powder; its ſhot near three inches diameter, and weighs three pounds four ounces; and ſhoots point-blank 120 paces.

MINISTER, one that ſerves, or attends on God, the public, or a private perſon. See Servant.

In the reformed church, prieſts, or thoſe ordained to preach, and do the other functions of the prieſthood, are called abſolutely and ſimply *miniſters*.

In which ſenſe, biſhops, *&c.* are ſaid to be *miniſters* of God; *miniſters* of the word; of the goſpel, *&c.* In ſome churches they are alſo called *paſtors*, See Bishop, Priest, *&c.*

Ministers *of the altar*, are properly thoſe who attend, and aſſiſt the prieſt at the adminiſtration of the euchariſt.

Deacon, and ſubdeacon, are titles that properly ſignify *miniſters*; Διακονος, *miniſter*. See Deacon and Subdeacon.

Officers of ſtate, *&c.* are called the king's *miniſters*; as adminiſtring the affairs of juſtice, policy, *&c.* for him. See Officer.

Minister *of ſtate*, is he with whom a prince entruſts the adminiſtration of his government; or to whom he commits the care, and direction of the principal affairs thereof. See State, Government, and Arch-minister.

Boethius is propoſed as a model for *miniſters* of ſtate. The grand viſier is the prime *miniſter* of the Ottoman empire. See Visier.

Foreign **Ministers**, or the *miniſters of foreign princes*, are their ambaſſadors, envoys, agents, or reſidents in the courts of other princes.

There are two kinds of foreign *miniſters*.—*Miniſters* of the firſt rank, who are alſo called *embaſſadors*, and *envoys in extraordinary*. See Embassador and Envoy.

And *miniſters* of the ſecond rank, who are the ordinary reſidents. See Resident.

Thoſe of the firſt rank have a repreſentative character, which the others have not; though theſe laſt are ſometimes inveſted with fuller powers than the former.

Minister is alſo the title which certain religious orders give to their ſuperior. See Superior.

In this ſenſe we ſay the *miniſter* of the Mathurins, or Trinitarians. See Trinitarian, *&c.*

Minister, among the Jeſuits, is the ſecond ſuperior of each houſe; thus called, as being an aſſiſtant to the ſuperior, or rector. See Jesuits.

The general of the Cordeliers order is called the *miniſter general.* See General.

MINISTRY, or **Ministery**, a profeſſion, office, or employment which a perſon diſcharges for the ſervice of God, the public, or ſome particular perſon. See Minister.

In which ſenſe we ſay, a biſhop muſt give account to God of his *miniſtry*, &c.

Ministry is alſo uſed for the government of a ſtate, by ſome great miniſter, under the ſovereign authority.

In which ſenſe we ſay, the *miniſtry* of the cardinal de Richelieu, *&c.*

Ministry is alſo frequently uſed as a collective word, ſignifying the miniſters or officers of ſtate.

Thus we ſay, the *miniſtry* oppoſed a thing; meaning, the miniſters oppoſed it.

MINIUM, a mineral colour, called alſo *red lead*, uſed by painters, illuminers, *&c.* See Lead.

Minium is a preparation of lead, performed by fire. It is made by melting the metal in an earthen unglazed pan, and ſtirring it over the fire till it be reduced to a powder called *calcined lead*, which being further urged by a reverberatory fire for three or four hours, turns red, and is the *minium*.

Beſide the uſe of *minium* as a colour, it is alſo an ingredient in an officinal compoſition, called *emplaſtrum de minio*, uſed as a deſiccative and cicatrizer.

It was with *minium*, prepared in this manner, the antient Roman and Grecian ladies tinged their nails and faces of a red colour. For as to vermillion, without doubt it was not known in thoſe days. See Vermillion.

MINOR, a Latin term, litterally denoting *leſs*; uſed in oppoſition to *major*, greater. See Major.

Thus we ſay, St. James *minor*; Aſia *minor*; the *minor* excommunication, *&c.*

The four **Minor** *orders*, are the four inferior orders conferred in the Romiſh church, between the tonſure and ſubdeaconate.—Theſe are that of *porter*, or *door-keeper*; that of *reader*; that of *exorciſt*; and that of *acolyth*. See Exorcist, Acolyth, *&c.*

Minor *ædiles*. See the article Ædile.
Minor *anticus ſerratus*. See the article Serratus.
Minor *barons*. See the article Baron.
Canis **Minor**. See the article Canis.
Rectus **Minor**. See the article Rectus.
Minor *gaſtricus*. See the article Gastricus.
Minor *oculi obliquus*. See the article Obliquus.
Teres **Minor**. See the article Teres.
Urſa **Minor**. See the article Ursa.

Minor, in law, denotes a perſon yet under age, or who by the laws of the country, is not yet arrived at the power of adminiſtring his own affairs, or the poſſeſſion of his eſtate. See Age.

Among us, a perſon is a *minor* till the age of twenty-one: before which time his acts are invalid. See Major.

Yet if a patron, *&c.* have a right of advowſon, by the common law he may preſent at the age of fourteen years; and may of himſelf, and without his father, or guardian, conſent to any proceſs relating to beneficiary matters. See Patron.

Hence, in the canon law, there is no title, *de minoribus*; and the reaſon is, that the ſeveral ages whereat the common law declares a perſon capable of a benefice, or of ſacred orders, are ſo many ſpecies of canonical majorities.

Minor, in logic, is the ſecond propoſition of a formal, or regular ſyllogiſm, called alſo the *aſſumption*. See Syllogism, Proposition, Assumption, and Major.

I grant the major, but deny the *minor*. See Term, and Premises.

Minor, in muſic, is applied to certain concords, which differ from, or are lower than others of the ſame denomination by a leſſer ſemi-tone, or four commas.

Thus we ſay, a third *minor*, or leſſer third: a ſixth major, and *minor*. See Third, Sixth, *&c.*

Concords that admit of major and *minor*, *i. e.* greater and leſs, are ſaid to be *imperfect concords*. See Concord.

MINORS, or *Friars* **Minors**, an appellation which the Franciſcans aſſume, out of ſhew of humility; calling themſelves *fratres minores*, i. e. *leſſer brothers*; and ſometimes *minorites*. See Cordeliers, and Order.

There is alſo an order of regular *minors* at Naples, eſtabliſhed in the year 1588, and confirmed by Sixtus V.

MINOT, a French meaſure. See Measure.

MINOTAUR, **Minotaurus**, in antiquity, a fabulous monſter, much talked of by the poets; feigned to be half man, and half bull.

The *minotaur* was brought forth by Paſiphae, wife of Minos king of Brete. It was ſhut up in the labyrinth of that iſland; and at laſt killed by Theſeus. See Labyrinth.

Servius gives us the explication of this fable. He ſays, that a ſecretary of king Minos, named Taurus, bull, had an intrigue with the queen Paſiphae, in the chamber of Dædalus; and that ſhe was at length delivered of twins, one of which reſembled Minos, and the other Taurus.—This occaſioned the production to be reputed monſtrous.

MINOVERY *, a treſpaſs committed in the foreſt, by ſomething that is a man's handy work; as an engine to catch deer, *&c.* See Forest.

* The word is formed of the French *Main·œuvre*, q. d. handy-work.

MINSTER *, antiently ſignified the church of a monaſtery, or convent. See Church.

* The word is Saxon, *mynſter*, or *mynſtre*.

MINSTREL *, an antient term for a fidler, or player on any other kind of muſical inſtrument.

* Borel derives the word from *manus* and *hiſtrio*, one who diverts with the hand; or from *minor hiſtrio*, little buffoon: Du Cange from *miniſtellus*, a diminutive of miniſter, by reaſon the *minſtrels* were antiently ranked among the lower officers, miniſters, or ſervants.

The word *minſtrel*, in its original, was uſed for people who ſung, and ſerenaded their miſtreſſes. Afterwards it became a name for all kinds of muſicians: and at length paſſed to buffoons, and country-ſcrapers.

MINT, the place where the king's money is coined. See Coin.

Antiently there were *mints* in moſt cities of England. See Money, and Coinage.—The chief *mint*, at preſent, is the tower of London. See Tower.

Officers of the **Mint**, are, 1°. The *warden*, who is the chief, and is to receive the bullion, and over-ſee all the other officers. See Warden, and Master. 2°. The *maſter-worker*, who receives the bullion from the warden, cauſes it to be melted, and delivered to the monyers, and takes it from them again when coined. 3°. *Comptroller*, who is to ſee that the money be made to the juſt aſſize, and to over-ſee the officers. 4°. The *aſſay-maſter*, who weighs the ſilver and gold, and ſees whether it be ſtandard. 5°. The *auditor*, who takes all the accounts. 6°. The *ſurveyor of the melting*, who is to ſee the ſilver caſt out, and that it be not altered after it is delivered to the melter, *i. e.* after the aſſay-maſter has made trial of it. 7°. The *clerk of the irons*, who is to ſee that the iron be clean, and fit to work with. 8°. The *graver*, who engraves the dies and ſtamps for the coinage of the money. 9°. The *melters*, who melt the bullion before it comes to coining. 10°. The *blanchers*, who anneal, or boil and cleanſe the money. 11°. The *porters*, who keep the gate of the *mint*. 12°. The *provoſt* of the *mint*, who provides for all the moneyers, and overſees them. And laſtly, the *moneyers*, ſome of which ſhear the money; ſome forge it; ſome ſtamp or coin it; and ſome round and mill it. See Coinage.

MINT-*water*. See the article Water.

MINTERS, or **Moneyers**. See Moneyers.

MINTING, is ſometimes uſed for the coining of money. See Coining.

MINUS, in algebra. See Characters *in arithmetic*.

Quo **Minus**, in law. See the article Quo *minus*.

MINUSCULÆ, in printing, denotes the ſmall, or running letters; as contradiſtinguiſhed from *majuſculæ*, or capitals. See Letter, Capital, *&c.*

MINUTE *, in geography and aſtronomy, is the 60th part of a degree. See Degree.

* The word comes from the Latin, *minutus*, ſmall.

In which ſenſe, *minute* is alſo called *prime*, or *prime-minute*. See Prime.—The diameter of the ſun is ſeen under an angle of 39 *minutes* in winter; and 31 in ſummer. See Diameter, and Sun.

The diviſions of degrees are fractions, whoſe denominators increaſe in a ſexagecuple ratio; that is, a *minute* or prime is $=\frac{1}{60}$; a ſecond, or ſecond *minute* $=\frac{1}{3600}$, *&c.* See Sexagesimal.

In aſtronomical tables, *&c.* *minutes* are expreſſed by acute accents,

cents, thus, ′; ſeconds by two, ″; thirds by three, ‴. See SECOND, and THIRD, &c.

MINUTE, in computation of time, is uſed for the ſixtieth part of an hour. See HOUR.

MINUTE, in architecture, uſually denotes the ſixtieth, ſometimes only the thirtieth part, or diviſion of a module. See MODULE.

MINUTE, is alſo uſed to ſignify a ſhort memoir, or ſketch of any thing taken haſtily in writing.

In this ſenſe we ſay, the *minutes* of the proceedings of the houſe of lords, &c.

Meridional MINUTES. See the article MERIDIONAL.

MINUTES *of emerſion*. See the article EMERSION.

MIPARTY, *Chamber of*. See CHAMBER.

MIQUELETS, a kind of foot-ſoldiers, inhabiting the Pyrenean mountains; armed with piſtols under their belts, a carbine, and a dagger.—The *miquelets* are dangerous people for travellers to meet.

MIRABILIS *aqua*. See the article WATER.

Rete MIRABILE. See the article RETE.

MIROBOLANS, or MYROBALANS, in pharmacy. See MYROBALANS.

MIRACLE, in a popular ſenſe, is a *prodigy*; or an extraordinary event that ſurprizes us by its novelty. See PRODIGY.

MIRACLE, in a more accurate and philoſophical ſenſe, is an effect that does not follow from any of the known laws of nature; or which is inconſiſtent with ſome known laws thereof. See NATURE.

A *miracle*, therefore, being a ſuſpenſion of ſome law, cannot come from any hand leſs than his who fixed that law. See GOD, LAW, &c.

Spinoſa denies that any power can ſuperſede that of nature; or that any thing can diſturb, or interrupt the order of things: and accordingly defines a *miracle* to be a rare event, happening in conſequence of ſome laws that are unknown to us. See SPINOSISM.

Divines define *miracle*, an extraordinary and wonderful effect, above the power of nature, wrought by God, to manifeſt his power or providence; or to give credit to ſome meſſenger ſent from himſelf.—Thus Jeſus Chriſt evinced the truth of his miſſion, and his doctrine, by *miracles*; and thus alſo did Moſes. It is ſtill a diſpute in the world, how far it may be in the power of the devil to work *miracles*; or wherein the ſpecific difference lies between the *miracles* of Moſes, and thoſe of Pharaoh's magicians; thoſe of Jeſus Chriſt and the apoſtles, and thoſe of Simon Magus and Apollonius Tyaneus! Whether the latter were any more than mere deluſions of the ſenſes; or whether any ſupernatural and diabolical power concurred with them? See MAGIC.

The Romans attribute *miracles* to their emperors Adrian and Veſpaſian.—The church of Rome abounds in *miracles*; if we believe their writers, ſome of their monks have wrought more *miracles* than all the apoſtles; and this without any viſible neceſſity for them.

As full as that church pretends to be of ſaints, it is a rule with them, that none are ever canonized till there be good proof of his having wrought *miracles*. So that were all thoſe allowed good *miracles*, and to have happened out of the common order of nature, they are ſo numerous, one would be tempted to think there were no order or law of nature at all. See SAINT, and CANONIZATION.

St. Auguſtine is a ſtrong advocate for *miracles*. He mentions ſeveral, whereof he was an eye-witneſs; and others, whereof he was informed by thoſe that were. In the ſingle city of Hippo he tells us there were ſeventy *miracles* wrought in the ſpace of two years, on the building a chapel in honour of St. Stephen. There are thoſe however, who ſet aſide the authority of all *miracles*; thinking it unbecoming the wiſdom of God to eſtabliſh ſuch laws, as that he ſhould find it frequently neceſſary to ſuperſede. And as the former, from the avowed authority of ſome *miracles*, fetch an argument for the truth of all; pleading thoſe which are allowed as well as thoſe which are queſtioned: ſo theſe alledge the falſe ones as concluſions againſt them all.

In effect, though *miracles* may prove the ſuperintendency of a voluntary agent, and that the univerſe is not guided by neceſſity or fate; yet that mind muſt be weak and inadvertent who needs them to confirm the belief of a wiſe and good deity: Since the deviation from general laws, unleſs upon very extraordinary occaſions, muſt be a preſumption of inconſtancy and weakneſs, rather than of a ſteady wiſdom and power; and muſt weaken the beſt arguments we have for the ſagacity and power of the univerſal mind. *Inquiry into the original of the ideas of beauty*, &c.

MIRROUR, or MIRROR, a *ſpeculum*, or body which exhibits the images of objects preſented thereto, by reflection. See REFLECTION.

The uſe of *mirrours* is very antient. Mention is made of brazen *mirrours*, or looking-glaſſes, in Exodus xxxviii. 8. where Moſes is ſaid to have made a *brazen laver*, or baſon, *of the looking-glaſſes of the women continually aſſembled at the door of the tabernacle*. It is true, ſome modern commentators will not allow the *mirrours* themſelves to have been braſs; but of glaſs, only ſet, or framed in braſs. But the moſt learned among the rabbins do all allow that in thoſe times, the *mirrours* made uſe of by the Hebrew women in dreſſing their heads, were of metal; and that the devout women mentioned in this paſſage, made preſents to Moſes of all their *mirrours* to make the brazen laver. See the Jeſuit Bonfrerius's comment on this text.

It might likewiſe be proved, that the antient Greeks made uſe of brazen *mirrours*; from divers paſſages among the antient poets. See BURNING-*glaſs*.

MIRROUR, in the more confined ſenſe of the word, is peculiarly uſed to ſignify a ſmooth ſurface of glaſs, tinned or quickſilvered on the back ſide; which exhibits the images of objects oppoſed thereto. See LOOKING-GLASS.

MIRROUR, in catoptrics, denotes any poliſhed body impervious to the rays of light, and which of conſequence reflects them equally. See RAY, and LIGHT.

Thus water in a deep well or river, and ſmooth polite metals, are ranked among the number of *mirrours*.

In this ſenſe, the doctrine of *mirrours* makes the ſubject of catoptrics. See CATOPTRICS.

The doctrine of MIRROURS *is founded on the following general principles.*—1°. Light reflected from any *mirrour*, or ſpeculum, makes the angle of incidence equal to that of reflexion; which ſee demonſtrated under the word REFLECTION.

Hence, a ray of light, as H B (*Tab. Optics. fig.* 26.) falling perpendicularly on the ſurface of a ſpeculum, D E will be reflected back upon itſelf:—which we find by experience it actually does.

From the ſame point of a *mirrour*, therefore, A, there cannot be ſeveral rays reflected to the ſame point; ſince in that caſe, all the angles of reflection muſt be equal to the ſame angle of incidence ABD, and therefore to each other; which is abſurd. Nor can the ray A B be reflected to two or more points; ſince, in that caſe, all the angles of reflexion would be equal to the ſame angle of incidence ABF: which is likewiſe abſurd.

2°. From every point of a *mirrour*, are reflected rays thrown on it from every point of a radiant object.—Since then rays coming from different parts of the ſame object, and ſtriking on the ſame point of the *mirrour*, cannot be reflected back to the ſame point; the rays which flow from different points of the ſame radiating object, are again ſeperated after reflexion: ſo that each point ſhews whence it came. See RADIANT.

Hence it is, that the rays reflected from *mirrours* exhibit the objects to view.—Hence alſo, it appears, that rough uneven bodies muſt reflect the light in ſuch manner, as that rays coming from different points will be blended or thrown confuſedly together.

Mirrours may be divided into *plane*, *concave*, *convex*, *cylindrical*, *conical*, *parabolical*, and *elliptical*.

Plane MIRROURS, are thoſe which have a plain or flat ſurface. See PLANE, and PLAIN.

Theſe, by a popular word, we call *looking-glaſſes*.

For the manner of making plain *mirrours*, or ſpecula, ſee LOOKING-GLASS.

Laws and phænomena of plain mirrours.—1°. In a plain *mirrour*, every point of an object, as A, (*Tab. Optics, fig.* 27.) is ſeen in the interſection, B, of the cathetus of incidence, A B, with the reflected ray C B.

Hence, 1°. As all the reflected rays meet with the cathetus of incidence in B; by whatever reflected ray the radiant point A be ſeen, it will ſtill appear in the ſame place. Conſequently, any number of perſons viewing the ſame object in the ſame *mirrour*; will all ſee it in the ſame place behind the *mirrour*.—And hence it is, that the ſame object has only one image, and that we do not ſee it double with both eyes. See VISION.

Hence alſo the diſtance of the image B, from the eye C, is compounded of the ray of incidence A D, and the reflected ray C D: And the object A radiates reflectedly, in the ſame manner as it would do directly, were it removed into the place of the image.

2°. The image of a radiant point, B, appears juſt ſo far behind a plain *mirrour*, as the radiant point is before it.

Hence, If the *mirrour* A G be placed horizontal; the point A will ſeem ſo much below the horizon, as it is really elevated above it: Conſequently, erect objects will appear as if inverted; and therefore men ſtanding on their feet, as if on their heads. Or, if the *mirrour* be faſtened to the ceiling of a room, parallel to the horizon, objects on the floor will appear above the ceiling as much as they really are below it; and that upſide down.

3°. In a plain *mirrour*, the images are perfectly ſimilar, and equal to the objects. And hence their uſe as looking-glaſſes.

4°. In a plain *mirrour*, things on the right hand, appear as on the left; and *vice verſa*.

Hence alſo, we have a method of meaſuring any inacceſſible altitude by means of a plain *mirrour*.—Thus, the *mirrour* being placed horizontally in C, (*Fig.* 28.) retire from it till ſuch time as the top of the tree be ſeen therein. Meaſure the height of the eye DE; the diſtance of the ſtation from the point of reflection E C, and the diſtance of the foot of the tree from the ſame. Then to E C, C B, and E D, find a fourth proportional A B. This is the altitude ſought. See ALTITUDE.

5°. If a plain *mirrour* be inclined to the horizon in an angle of 45 degrees; an object perpendicular to it will appear parallel, and an horizontal object perpendicular.

And hence, the eye being placed beneath the *mirrour*, the earth will appear perpendicularly over it; or if placed over it, the earth will appear perpendicularly under it. Hence alſo, a globe deſcending down a plane a little inclined, may, by means of a *mirrour*, be exhibited as mounting up a vertical plain, to the great ſurprize of ſuch as are unacquainted with catoptrics.—And hence we have a method of repreſenting ourſelves as if flying.—For a *mirrour* inclined to the horizon under an angle of 45°, we have obſerved, will repreſent vertical objects as if horizontal. Conſequently, a large *mirrour* being ſo diſpoſed; as you advance toward it, you will ſeem to move horizontally; and nothing will be wanting to the appearance of flying, but to ſtrike out the arms and legs. It muſt be added, however, that as the floor is elevated along with you, your feet will ſtill be ſeen to walk as along a vertical plane. To deceive the eye intirely, therefore, it muſt be kept from the feet.

6°. If the object A B (*fig.* 29.) be parallel to the ſpeculum C D, and equally diſtant from it, with the eye; the reflecting line C D will be half the length of the object A B.

And hence, to be able to ſee the whole body in a plain *mirrour*; its height and breadth muſt be half your height, and breadth. Conſequently, the height and breadth of any object to be ſeen in a *mirrour*, being given; we have alſo the height and breadth of the *mirrour* wherein the whole object will appear, at the ſame diſtance with the eye.

Hence alſo, as the length and breadth of the reflecting part of the ſpeculum, are ſubduple of thoſe of the object to be reflected; the reflecting part of the *mirrour*, is to the ſurface reflected in a ſubquadruple ratio. Conſequently, the reflecting portion being a conſtant quantity; if in any place you ſee the whole body in a *mirrour*, you will ſee it in every other place, whether you approach nearer, or recede farther from it.

7°. If ſeveral *mirrours*, or ſeveral fragments, or pieces of a *mirrour*, be all diſpoſed in the ſame plane; they will only exhibit an object once.

8°. If two plain *mirrours*, or ſpecula meet in any angle; the eye, placed within that angle, will ſee the image of an object placed within the ſame, as often repeated as there may be catheti drawn determining the places of the images, and terminated without the angle.

Hence, as the more catheti terminated without the angle, may be drawn as the angle is more acute; the acuter the angle, the more numerous the images. Thus Z. Traber found at an angle of one third of a circle, the image was repreſented twice at $\frac{1}{4}$ thrice, at $\frac{1}{5}$ five times, at $\frac{1}{12}$ eleven times.

Further, if the *mirrours* be placed upright, and ſo contracted; or if you retire from them, or approach to them, till the images reflected by them coaleſce, or run into one, they will appear monſtrouſly diſtorted: Thus if they be at an angle ſomewhat greater than a right one, the image of your face will appear with only one eye; if the angle be leſs than a right one, you will ſee three eyes, two noſes, two mouths, *&c.* At an angle ſtill leſs, the body will have two heads. At an angle ſomewhat greater than a right one, at the diſtance of four feet, the body will be headleſs, *&c.* Again, if the *mirrours* be placed the one parallel to the horizon, the other inclined to it, or declined from it, it is eaſy to perceive that the images will be ſtill more romantic. Thus, one being declined from the horizon to an angle of 144 degrees, and the other inclined to it; a man ſees himſelf ſtanding with his head to another's feet.

Hence it appears how *mirrours* may be managed in gardens, *&c.* ſo as to convert the images of thoſe near them into monſters of various kinds: And ſince glaſs *mirrours* will reflect the image of a lucid object twice or thrice; if a candle, *&c.* be placed in the angle between two *mirrours*, it will be multiplied an infinite number of times.

On theſe principles are founded various catoptric machines, ſome of which repreſent objects infinitely multiplied and diſtorted; others infinitely magnified, and ſet at vaſt diſtances. See CATOPTRIC *ciſtula*, *&c.*

Convex MIRROURS are thoſe whoſe ſurface is convex. See CONVEX.

Note, by *convex* ſurfaces, authors generally mean ſuch as are ſpherically convex. See CONVEXITY.

Manner of preparing or making convex ſpecula, or MIRROURS.—There are divers methods uſed by divers artiſts; particularly as to the matter, or compoſition. One of the beſt that is known, is given us by Wolfius thus;

Melt one part of tin, another of marcaſite together, and to the melted maſs add two parts of mercury; as ſoon as the mercury begins to evaporate into ſmoak (which it preſently does) the whole compoſt is to be thrown into cold water, and when well cooled, the water decanted off. The mixture is then to be ſtrained through a linen cloth two or three fold; and what is thus ſecerned, poured into the cavity of a glaſs ſphere: this ſphere is to be turned gently round its axis till the whole ſurface is covered; the reſt being reſerved for future uſe.

If the ſphere were of coloured glaſs, the *mirrour* will be ſo too.

And in the ſame manner may conic, elliptic, cylindric, and other *mirrours* be made.

How they may be made of metal, ſee under *concave* MIRROUR.

Laws, or *phænomena of convex* MIRROURS.—1°. In a ſpherical convex *mirrour*, the image of a radiant point appears between the centre, and the tangent; but nearer to the tangent than the centre.

Hence, the diſtance of the object from the tangent is greater than that of the image. And, conſequently, the object is further diſtant from the ſpeculum than the image.

2°. If the arch B D, (*fig.* 31.) intercepted between the point of incidence D, and the cathetus A B; or the angle C formed in the centre of the *mirrour* by the cathetus of incidence A C, and that of obliquation F C, be double the angle of incidence; the image B will appear on the ſurface of the ſpeculum.

3°. If the arch intercepted between the point of incidence, and the cathetus; or the angle C formed in the centre of the *mirrour* by the cathetus of incidence, and the cathetus of obliquation, be more than double the angle of incidence; the image will be without the *mirrour*.

4°. If the arch intercepted between the point of incidence, and the cathetus; or the angle formed in the centre of the *mirrour*, by the cathetus of incidence, and that of obliquation be leſs than double the angle of incidence; the image will appear within the ſpeculum.

5°. In a convex *mirrour*, a remoter point, A, (*fig.* 32.) is reflected from a point F, nearer the eye O, than any nearer point B in the ſame cathetus of incidence.

Hence, if the point of the object A, be reflected from the point of the *mirrour* F; and the point of the object B from the point of the *mirrour* E: all the intermediate points between A and B will be reflected from the intermediate points of the ſpeculum between F and E. Conſequently F E will be the line that reflects A B.

Hence alſo, a point of the cathetus B, ſeems at a greater diſtance C *b* from the centre C; than a more remote one, A.

6°. A nearer point B (*fig.* 33.) not in the ſame cathetus with a remoter, H; is reflected to the eye O, from a nearer point of the ſpeculum, than the remoter H.

Hence, if the point of an object A, be reflected from the point of a *mirrour* C; and the point of the object B, from the point of the ſpeculum D, all upon the ſame point O: All the intermediate points between A and B will be reflected from all the intermediate points between C and D. Conſequently, the image F G, of the object B A, is contained between the catheti B E, and A E.

7°. In a ſpherical convex *mirrour*, the image is leſs than the object.

And hence the uſe of ſuch *mirrours* in the art of painting, where objects are to be repreſented leſs than the life.

8°. In a convex *mirrour*, the more remote the object; the leſs its image: And again, the ſmaller the *mirrour*, the leſs the image.

9°. In a convex *mirrour*, the right hand is turned to the left; and the left to the right: And magnitudes perpendicular to the *mirrour*, appear topſy turvey.

10°. The image of a right line perpendicular to the *mirrour*, is a right line; but that of a right line either oblique to the *mirrour*, or parallel thereto, is convex.

11°. Rays reflected from a convex *mirrour*, diverge more than if reflected from a plane *mirrour*.

Hence light, by being reflected from a ſpherical *mirrour*, is weakned; and, conſequently, the effects of reflected light are weaker than thoſe of direct. Hence alſo, myopes ſee remote objects more diſtinctly in a convex *mirrour*, than they do directly.

Rays reflected from a convex *mirrour* of a ſmaller ſphere, diverge more than if reflected from a larger. Conſequently, the light is more weakned, and its effects are leſs conſiderable in the former caſe than the latter.

Concave MIRROURS are thoſe whoſe ſurface is concave. See CONCAVE.

Note, by *concave*, authors commonly mean *ſpherically concave.*

Manner of preparing or making concave MIRROURS.—Firſt, a mould is to be provided for caſting them. In order to this, take clay well dried, pulverize, and ſift it; mix it up with water, and then ſtrain or filter it; with this, work up horſe-dung and hair ſhred ſmall, till the maſs be ſufficiently tough; to which, on occaſion, may be added charcoal-duſt, or brick-duſt, well ſifted.

Two coarſe moulds are then prepared of a gritty ſtone, the one concave, the other convex, which are to be ground on one another with wet ſand between, till ſuch time as the one perfectly fits the other. By this means a perfect ſpherical figure is acquired.

The maſs prepared before, is now to be extended on the table by means of a wooden roller, till it be of a thickneſs proper for the *mirrour*; and then being ſtrewed with brick-duſt to prevent its ſticking, it is laid over the convex mould, and ſo gets the figure of the *mirrour*. When this is dry, it is covered with another lay of the ſame maſs; which once dried, both covers, or ſegments of the hollow ſphere made of clay, are taken off. The innermoſt of the two being laid aſide, the ſtone mould is anointed with a pigment prepared of chalk and milk, and the outer cover again put over it.

Laſtly, the joining being covered over with the ſame clay whereof the cover is formed; the whole mould is bound together with iron-wire; and two holes cut through the cover, the one for the melted matter of the *mirrour* to be poured thro', the other for the air to eſcape at, to prevent the *mirrour's* being ſpoiled with bubbles.

The mould thus prepared; eight parts of copper, one of Engliſh tin, and five of marcaſite, are melted together; a little of the mixture is taken out with a ladle, and if it be too red, when cold, more tin is put in; if too white, more copper: The maſs is then poured into the mould before prepared; and ſo aſſumes the figure of a *mirrour.*

Some with ten parts of copper mix four of Engliſh tin, a little antimony and ſal armoniac, ſtirring the maſs about as long as any fumes ariſe from it. Others have other compoſitions; many of which are deſcribed by Schottus and Zahnius.

The *mirrour* being thus caſt, is cemented to a wooden frame, and thus worked to and fro over the convex ſtone mould, firſt with water and ſand; and, laſtly, without ſand, till it be fit for poliſhing. The ſtone-mould is then covered with paper, and that ſmeared over with Tripoly duſt and calx of tin: over which the *mirrour* is worked to and fro till it have got a perfect poliſh.—And in the ſame manner are glaſs *mirrours* poliſhed, excepting that the convex ſurface is there worked in the concave mould.

When the *mirrours* are very large, they are fixed on a table, and firſt ground with a gritty ſtone, then with pumice, then with fine ſand, by means of a glaſs cemented to a wooden frame; and laſtly rubbed with calx of tin and Tripoly duſt by a wet leather.

For concave *mirrours* of glaſs; the mould is uſually made of alabaſter: The reſt, as in metal *mirrours.*

Laws and phænomena of concave MIRROURS.—1°. If a ray, as K I, (*fig.* 34.) fall on a concave *mirrour* L I, under an inclination of 60 degrees, and parallel to the axis A B; the reflected ray I B will concur with the axis A B in the pole of the glaſs B.—If the inclination of the incident ray be leſs than 60 degrees, as that of E, the reflected ray E F will concur with the axis at the diſtance B F, which is leſs than a fourth part of the diameter.—And univerſally, the diſtance of the point F, wherein the ray H E concurs with the axis, from the centre C, is to half the radius C D in the ratio of the whole ſine, to the coſine of inclination.

Hence it is gathered by calculation, that in a concave ſpherical *mirrour*, whoſe breadth ſubtends an angle of ſix degrees, parallel rays meet after reflection in a part of the axis leſs than the one thouſand four hundred fifty ſeventh part of the radius: if the breadth of the concave *mirrour* be 6, 9, 12, 15, or 18 degrees; the part of the axis wherein the parallel rays meet after reflection is leſs than $\frac{1}{363}$, $\frac{1}{160}$, $\frac{1}{89}$ $\frac{1}{58}$, $\frac{1}{38}$ of the radius.

And on this principle it is, that *burning-glaſſes* are built.

For ſince the rays diffuſed through the whole ſurface of the concave *mirrour*, after reflection are contracted into a very ſmall compaſs; the light and heat of the parallel rays muſt be prodigiouſly increaſed thereby, *viz.* in a duplicate ratio of the breadth of the *mirrour*, and the diameter of the circle wherein all the rays are collected: And ſince the ſun's rays are, as to any purpoſes on earth, parallel, (ſee LIGHT) no wonder concave *mirrours* ſhould burn with ſo much violence. See BURNING-*glaſs.*

From this ſame principle is likewiſe deduced a method of repreſenting the images of objects in a dark room; which ſee under CAMERA *obſcura.*

2°. A lucid body being placed in the focus F, of a concave *mirrour*, E I, (*fig.* 34.) the rays after reflection become parallel.

Hence an intenſe light may be projected to a vaſt diſtance, by a lighted candle, &c. placed in the focus of a concave *mirrour.* Hence alſo, if the parallel rays be received by another concave *mirrour*, they will again concur in its focus, and burn.

Zahnius mentions an experiment of this kind made at Vienna, where two concave *mirrours*, the one ſix, the other three feet diameter, being placed about twenty-four feet apart, with a live coal in the focus of the one, and a match and tinder in the other, the rays of the coal lighted the candle.

3°. If a lucid body be placed between the focus F, (*fig.* 34. *n.* 2.) and the *mirrour* H B C, the rays after reflection will diverge from the axis B A. Whence it follows that light is weakned by reflection.

4°. If a lucid body be placed between the focus F, and the center G, the rays after reflection will meet in the axis beyond the centre.

Hence if a candle be placed in I, its image will appear in A; if it be placed in A, its image will be in I; in the intermediate points between I and A the ſection of light will be a circle, and that ſo much the greater, as it is nearer the point of concourſe.

5°. If a luminous body be placed in the centre of the *mirrour*, all the rays will be reflected back upon themſelves.

Hence if the eye be placed in the centre of a concave *mirrour*, it will ſee nothing but itſelf, and that confuſedly through the whole *mirrour.*

6°. If a ray falling from the point of the cathetus *h*, (*fig.* 35.) on the convex *mirrour*, *h* E, be together with its reflex I F, continued within the concavity of the *mirrour*; F H will be the incident ray from the point of the cathetus H and F O its reflex.

Hence, ſince the point of the cathetus H is the image of the point *h* in the convex *mirrour*; but the point *h* the image of H in the concave: if the image of an object reflected by a convex ſpeculum, be ſeen by a reflection made in its concavity, it will appear like the object itſelf.

And ſince the image of an infinite cathetus is leſs in a convex glaſs by one fourth of its diameter; a portion of the cathetus leſs than a fourth part of the diameter, may appear of any magnitude required in a concave one.

A point therefore diſtant from a concave ſpeculum, leſs than one fourth of the diameter, muſt appear behind the *mirrour* at any diſtance, how great ſoever.

Since the image of any object how broad ſoever, is contained, in a convex ſpeculum, between the two lines of incidence of its extreme points; if an object be placed between the two lines at a diſtance leſs than one fourth of its diameter, the breadth of the image, how great ſoever, may all appear.

Since then the image of an object included between two lines, at a diſtance leſs than one fourth of the diameter, may exceed the juſt height and breadth of the object; nay, may be made of any magnitude, how big ſoever: Objects placed between the focus and *mirrour*, muſt appear of enormous magnitudes in concave *mirrours*; the image being ſo much the greater in the concave *mirrour*, as it is leſs in the convex.

In a convex *mirrour*, the image of a remote object appears nearer the centre than that of a nearer object: therefore in a concave *mirrour*, the image of an object remote from the *mirrour*, appears at a greater diſtance than that of a nearer object, provided the diſtance of the object from the centre be leſs than a fourth part of the diameter.

In a convex ſpeculum, the image of a remote object is leſs than that of a near one; therefore in a concave one, the image of an object placed between the focus and the *mirrour*, is nearer the focus than the ſpeculum.

The image therefore of an object receding continually from a concave ſpeculum, becomes continually greater, provided it do not recede beyond the focus, where it becomes confuſed; and as it approaches, it grows continually leſs.

In a convex ſpeculum, if the ſphere, whereof it is a ſegment, be ſmaller, the image is ſmaller than in another of a larger ſphere; therefore in a concave, if the ſphere whereof it is a ſegment, be ſmaller, the image will be larger than in another, whoſe ſphere is larger; whence concave *mirrours*, if they be ſegments of very ſmall ſpheres, will do the office of microſcopes.

7°. If an object be placed between a concave *mirrour* and its focus, its image will appear behind the *mirrour*, in an erect but inverted ſituation.

8°. If an object A B, (*fig.* 36.) be placed between the focus and the centre, its image E F will appear inverted, and in the open air, beyond the centre, the eye being placed beyond the centre.

9°. If an object E F be placed beyond the centre C, and the eye likewiſe beyond the centre, the image will appear inverted in the open air between the centre and the focus.

Hence, the inverted images of objects placed beyond the centre, are reflected by a concave *mirrour*, erect, and may be received on a paper applied between the centre and the focus, eſpecially if the room be dark: if the object E F be further diſtant from the centre than is the focus, the image will be leſs than the object.

On this principle, concave *mirrours*, eſpecially thoſe which are ſegments of large ſpheres, and are capable of reflecting entire objects, exhibit many pleaſing phænomena. Thus, if a man flouriſh a ſword againſt the *mirrour*, another comes out thereof, and meets him with the ſame motions; and the image of his head coming out of the *mirrour*, if he ſtrike it with his real ſword, the imaginary ſword will ſtrike his real head. If he ſtretch out his hand, another hand will be ſtretched out of the *mirrour*, and meet it at a great diſtance in the open air, &c.

And on the ſame principle are built catoptric ciſtulæ, which when looked into, exhibit images vaſtly bigger than the cheſt. See CATOPTRIC *ciſtula.*

10°. The image of a right line perpendicular to a concave *mirrour*, is a right line; but all oblique or parallel lines are concave.

Cylindrical, conical, parabolical, and *elliptical* MIRROURS, or ſpecula, are thoſe terminated by a ſurface reſpectively cylindrical, conical, parabolical, and ſpheroidical. See CYLINDER, CONE, PARABOLA, &c.

To prepare, or make, cylindrical, conical, parabolical, elliptical, and hyperbolical MIRROURS.—For the *cylindrical* and *conical* ſort, if they are to be of glaſs, the method of preparing them is the ſame as that already laid down for convex *mirrours*.

If of metal, they are to be made after the manner of concave *mirrours*, only that the clay moulds there deſcribed, require other wooden ones of the figure of the *mirrour*.

For *elliptical*, *parabolical*, and *hyperbolical mirrours*, the mould is to be thus prepared. On a wooden or brazen plane or table, deſcribe the figure of an ellipſis, AB, (*Fig.* 37.) a parabola, or an hyperbola CD, (*Fig.* 38.) after the manner taught under thoſe heads; which done, cut out the figure from the plane with all the accuracy imaginable.

To the elliptic figure, fit an axis, as EF, with two fulcra to ſuſtain it, *&c.* and a handle to move it. Lay a quantity of the clay above deſcribed under it; and turn about the axis by the handle, till the plane AB have turned, or impreſſed the elliptical figure exactly thereon.

The axis of the parabolical, or hyperbolical figure CD, is to be fixed at the vertex in ſuch manner as that it may always remain erect. This to be turned about as above, till it have given its own figure to the clay applied about it.

The part of the mould thus formed, is to be dried, and either ſmeared over with fat, or ſprinkled with brick-duſt. Then a convex mould to be made, by putting a quantity of the ſame clay into the cavity thus formed.—This latter is called the *male*, as the former the *female* mould.

The male mould being well dried, is to be applied within the female; in ſuch manner as only to leave the intended thickneſs of the *mirrour* between them.—The reſt as for concave *mirrours*.

Theſe mirrours are not made without the utmoſt difficulty; by reaſon, be the moulds ever ſo juſt, the figure of the *mirrour* is apt to be damaged in the grinding.

Phænomena, or properties of cylindrical MIRROURS.—1°. The dimenſions of objects correſponding length-wiſe to the *mirrour*, are not much changed; but thoſe correſponding breadth-wiſe have their figures altered, and their dimenſions leſſened ſo much the more, as they are further from the *mirrour:* Whence ariſes a very great diſtortion.

2°. If the plane of reflexion cut the cylindric *mirrour* through the axis, the reflection is performed in the ſame manner, as in a plane *mirrour*; if it cut it parallel to the baſe, the reflexion happens in the ſame manner as in a ſpherical *mirrour*; if, laſtly, it cut it obliquely, or be oblique to its baſe, the reflexion is the ſame as in an elliptic *mirrour*.

Hence, as the plane of reflexion never paſſes through the axis of the *mirrour*, except when the eye and objective-line are in the ſame plane; nor parallel to the baſe, except when the radiant point and the eye are at the ſame height: The reflexion in a cylindrical *mirrour* is uſually the ſame as in an elliptic one.

3°. If a hollow cylindric *mirrour* be oppoſed directly to the ſun, inſtead of a focus of a point, the rays will be reflected into a lucid line parallel to its axis, at a diſtance ſomewhat leſs than a fourth part of its diameter.

Hence ariſes a method of drawing anamorphoſes, *i. e.* wild deformed figures on a plane, which appear beautiful and well proportioned when viewed in a cylindrical *mirrour*. See ANAMORPHOSIS.

For elliptic, *parabolic*, *conic*, and *pyramidal* MIRROURS, we are not much acquainted with their properties: Only that,

In the firſt, if a ray ſtrike on it from one of its focus's, it is reflected into the other: So that a lighted candle being placed in one, its light will be collected in the other.

That the ſecond, inaſmuch as all the rays they reflect meet in one point, make the beſt burning-glaſſes of all others.

And, Laſtly, That wild irregular figures may be ſo drawn on a plane, as that the eye being placed over the axis of the two laſt, they ſhall appear beautiful and well proportioned. See ANAMORPHOSIS.

MIS, a particle prefixed to divers words, particularly law-terms; denoting ſome fault, or defect.—As, in *miſpriſion*; *miſdicere*, to ſcandalize one; *miſdocere*, to teach amiſs, *&c.* See MISPRISION, *&c.*

MISANTHROPY *, a general diſlike or averſion to man, and mankind.

* The word is Greek, Μισανθρωπια, formed of μισος, *odium*, hatred; and ανθρωπος, *homo*, man,

In which ſenſe it ſtands oppoſed to *philanthropy*. See PHILANTHROPY.

MISAVENTURE, or MISADVENTURE, in law, the killing a man partly by negligence, and partly by chance.—As, if a perſon, thinking no harm, careleſsly throw a ſtone, or ſhoot an arrow, wherewith he kills another: This is a *miſadventure*; and in this caſe he commits no felony, but only loſes his goods, and has a pardon of courſe for his life. See HOMICIDE.

Staundford diſtinguiſhes between *aventure* and *miſaventure*. The firſt he makes to be mere chance; as if a man being upon, or near the water, be taken with ſome ſudden ſickneſs, and ſo fall in, and be drowned; or into the fire, and be burnt. See CHANCE-*medley*.

Miſaventure, according to him, is when a man comes to his death by ſome outward violence; as the fall of a tree, the running of a cart-wheel, the ſtroke of a horſe, or the like. Weſt diſtinguiſhes homicide into caſual and mixed. The firſt, when a man is ſlain by mere accident, againſt the mind of the killer; as, if the ax fly off the helve, and kill a man: Which is the ſame with Briton's *miſaventure*.

MISCHNA, or MISNA, a part of the Jewiſh talmud. See TALMUD.

The *miſchna* contains the text; and the gemara, which is the ſecond part of the talmud, contains the commentaries: ſo that the gemara is, as it were, a gloſſary on the *miſchna*.

The *miſchna* conſiſts of various traditions of the Jews, and of explanations of ſeveral paſſages of ſcripture.—The Jews maintain, that it was compleated, and reduced into a body, by rabbi Juda, in the ſecond century, to prevent the memory of their traditions from periſhing. But the generality of the learned ſcarce allow it of ſo much antiquity, and bring it ſeveral centuries lower.

It is written in a much purer ſtyle, and is not near ſo full of dreams and viſions as the gemara. See GEMARA.

MISCONTINUANCE, in law, the ſame with *diſcontinuance*. See DISCONTINUANCE.

MISDEMEANOUR, an offence, or fault, particularly in the execution of an office.

High crimes and miſdemeanours, denote offences of a heinous nature next to high treaſon. See CRIME, *&c.*

MISE, a French term, literally denoting expence, or diſburſement; uſed in our law-books in divers acceptations.—Sometimes for the profits of lands; ſometimes for taxes, or taillages; and ſometimes for expences, or coſts: As, *pro miſis & cuſtagiis*, for coſts and charges in the entries of judgments, *&c.*

MISE, more peculiarly denotes an honorary gift, or cuſtomary preſent, wherewith the people of Wales uſed to ſalute every new king and prince of Wales at their entrance upon the principality.

Antiently, the *miſe* was given in cattle, wine, corn, *&c.* for the ſupport of the prince's family; but when that dominion was annexed to the Engliſh crown, the gift was changed into money.—The county of Flint pays two thouſand marks, *&c.* for their *miſe*.

The county of Cheſter alſo pays a *miſe* or tribute of five thouſand marks at the change of every owner of the ſaid earldom, for enjoying the privileges of that palatinate.—At Cheſter they have a *miſe* book, wherein every town and village in the county is rated what to pay towards the *miſe*.

MISE is alſo uſed in ſpeaking of a writ of right. What in other actions is called in *iſſue*, in a writ of right is called a *miſe* or *me:* ſo that *to join the miſe upon the meer*, is as much as to ſay, to join iſſue on the meer right, *i. e.* to join upon this point, whether has the more right, the tenant or demandant. See ISSUE, *&c.*

Yet even in a writ of right, if a collateral point be tried, it is there called an *iſſue*, not a *miſe*. See RIGHT.

MISE is alſo ſometimes uſed corruptly for *meaſe*, a meſſuage or tenement.

In ſome manors, a *miſe* or *meaſe* place is taken for ſuch a meſſuage or tenement, as yields the lord a herriot at the death of the tenant.

MISERERE, *have mercy*, the name, and firſt word, of one of the penitential pſalms; being that commonly given by the ordinary to ſuch condemned malefactors, as are allowed the benefit of the clergy.—Whence it is alſo called the *pſalm of mercy*. See CLERGY.

MISERERE *mei*, denotes a kind of colic, or diſorder of the inteſtines, wherein the excrements, inſtead of paſſing off the common way, are thrown up by the mouth. See COLIC.

The *miſerere mei* is the ſame with what we otherwiſe call *volvulus* and *iliac paſſion*. See ILIAC *paſſion*.

It takes its name from the intolerable pain and anguiſh it occaſions the patient; which is ſuch as claims pity from the beholders: *Miſerere mei* being a Latin phraſe, which literally ſignifies, Have pity on me.

MISERICORDIA, MERCY, in law, an arbitrary amerciament, or puniſhment impoſed on any perſon for an offence. See AMERCEMENT.

Where the plaintiff or defendant in any action is amerced, the entry is always *ideo in miſericordia*.

It is thus called, according to Fitzherbert, by reaſon it ought to be but ſmall, * and leſs than the offence, according to the tenor of magna charta.

* *Mulcta lenior ſic dicta, quod leniſſima imponitur* miſericordia; *graviores enim mulctas* fines *vocant; atrociſſimas*, redemptiones. See FINE, and REDEMPTION.

Hence, if a man be unreaſonably amerced in a court not of record, as a court-baron, *&c.* there is a writ called *moderata miſericordia*, directed to the lord, or his bailiff, commanding them to take moderate amerciaments.

MISERICORDIA *communis*, is when a fine is ſet on the whole county, or hundred.

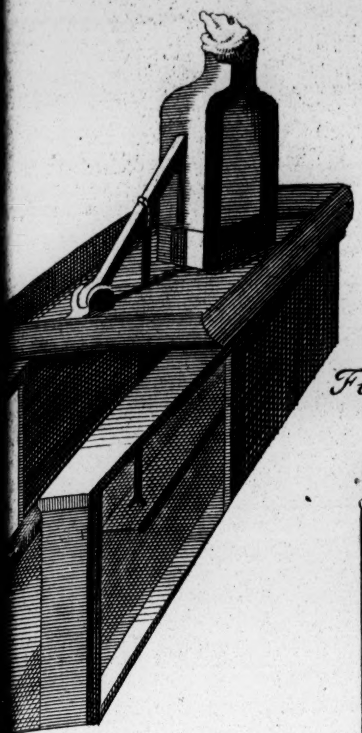
MISFEASANCE, in law, a miſdeed or treſpaſs. Whence alſo *misfeaſor*, a treſpaſſer. See TRESPASS.

MISKERING, *Miskerring*. See ABISHERSING.

MISLETOE. See the article MISTLETOE.

TAB. MISCELLANY

Fig. 1. Marquetry.



Rocket

Fig. 2. Sculpture

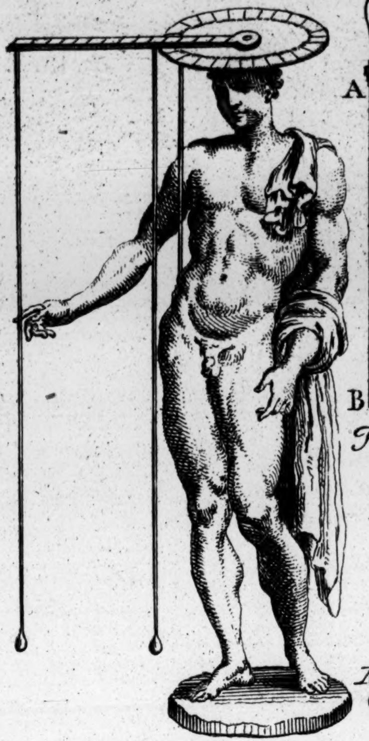


Fig 8. Rocket

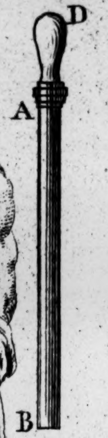


Fig 9. Rocket

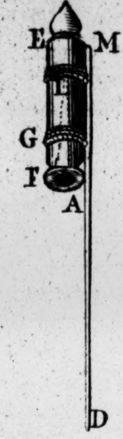


Fig 11. Rocket

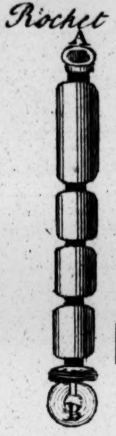


Fig 10. Rocket

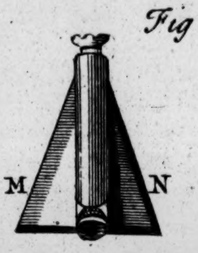
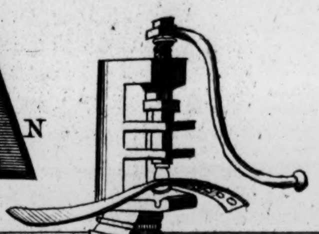


Fig. 3. Coining.



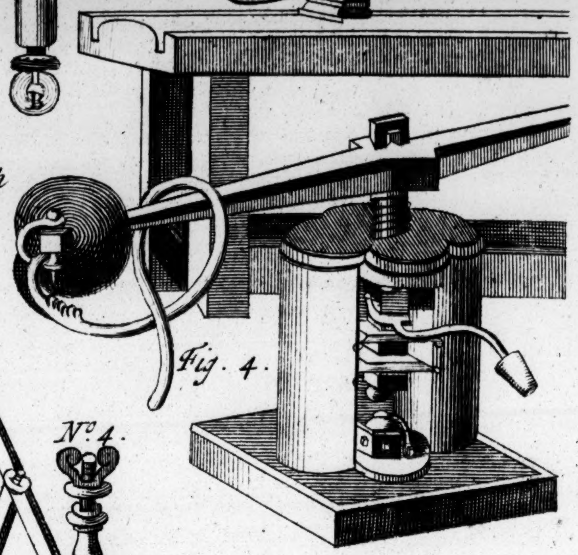


Fig. 4.

Fig. 5. Fountainpen

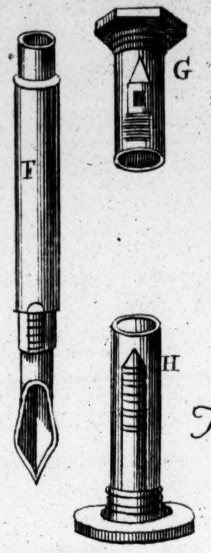


Fig. 6. Pentagraph

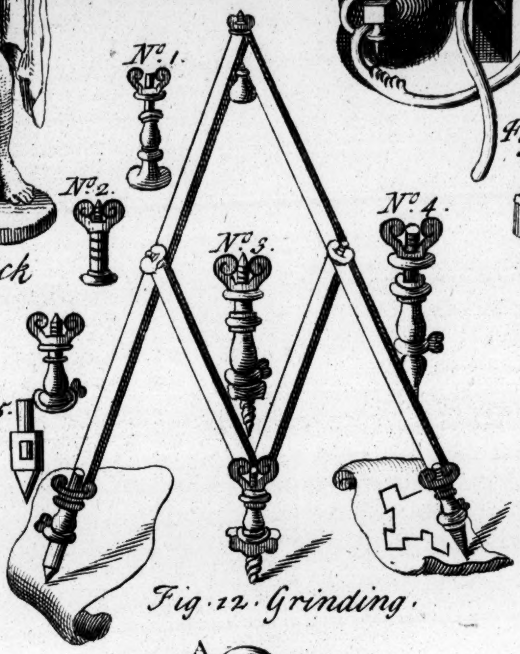

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Fig. 9. Composing Stick

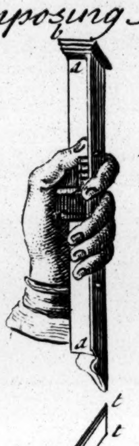

Fig. 8. Printing Press

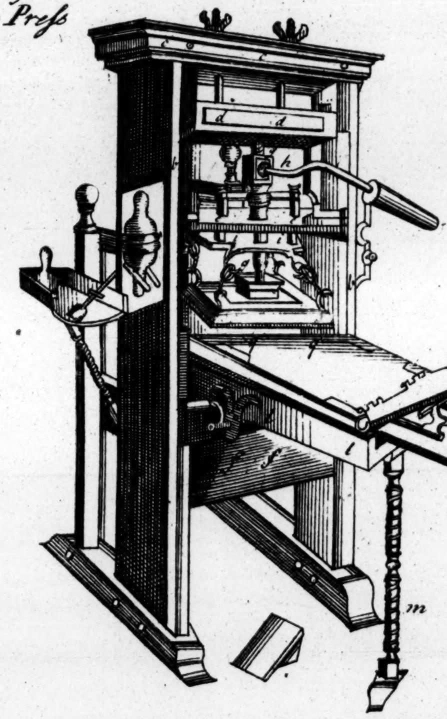

Fig. 12. Grinding.

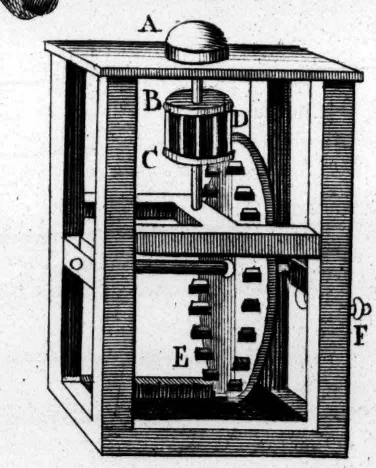

Fig. 14. Grinding.

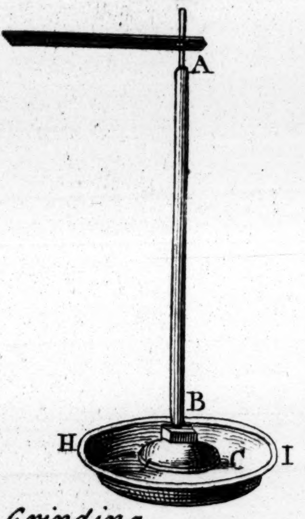

Fig. 13 Grinding.

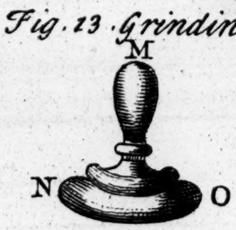

Fig. 15 Organ.

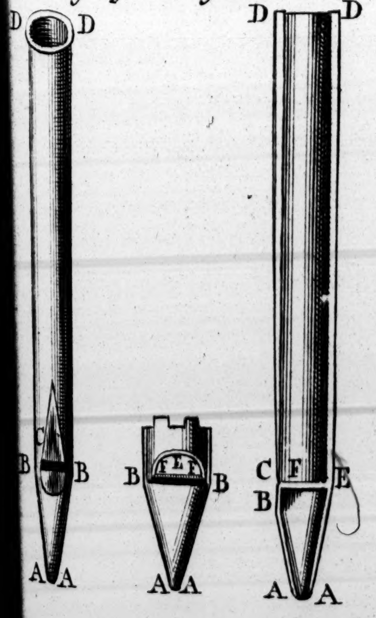
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Fig. 16 Organ

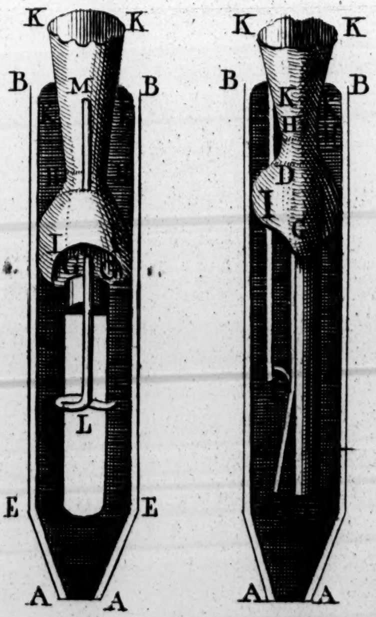
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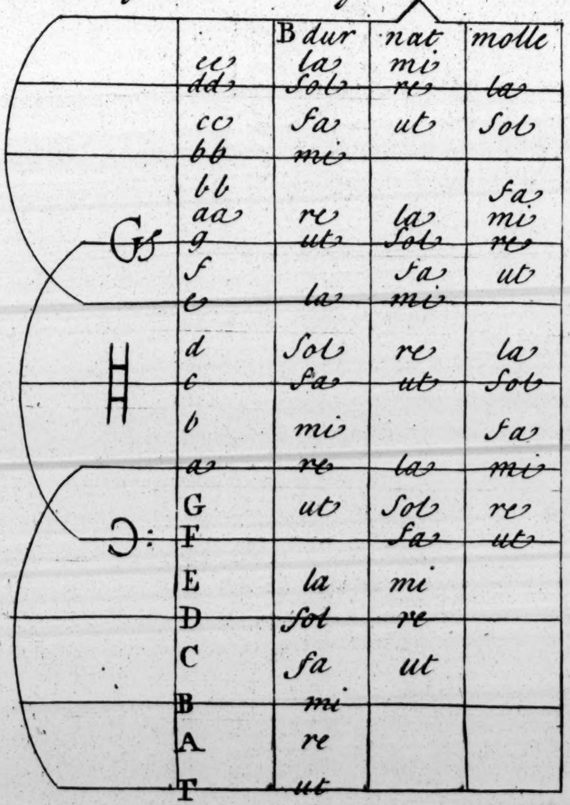
Fig. 17. Gammut, or Guido's Scale



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dd	Sol	re	la
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bb			fa
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f		fa	ut
e	la	mi	
d	Sol	re	la
c	fa	ut	Sol
b	mi		fa
a	re	la	mi
G	ut	Sol	re
F		fa	ut
E	la	mi	
D	sol	re	
C	fa	ut	
B	mi		
A	re		
Γ	ut		

Nº XII

MISNA. See the article MISCHNA.

MISNOMER *, in law, a wrong name; or the uſing of one name for another. See NAME.

* The word is compounded of the French *mens*, which compoſition ſignifies amiſs; and *nommer*, to name.

MISPRISION, in law, ſignifies a neglect, or overſight.—Thus, MISPRISION *of clerks*, is a neglect of clerks, in writing or keeping records. See CLERK.

By the *miſpriſion of clerks*, no proceſs ſhall be annulled or diſcontinued. And juſtices of aſſize ſhall amend the defaults of clerks miſ-ſpelling of a ſyllable, or letter in writing.

MISPRISION *of treaſon*, is a negligence in not revealing treaſon, where a perſon knows it to be committed. See TREASON.

Miſpriſion is the concealment, or not diſcloſing, of known treaſon, for which the offenders are to ſuffer impriſonment during the king's pleaſure; and to loſe their goods, and the profit of their lands during their lives.

MISPRISION *of felony*, is only fineable by the juſtices before whom the party is attainted. See FELONY.

Juſtices of the common pleas have a power to aſſeſs any amerciaments upon perſons offending by *miſpriſions*, contempts, or neglects, for not doing, or miſdoing any thing in, or concerning, fines. See FINE.

MISSAL, MISSALE, a maſs-book, containing the ſeveral maſſes to be uſed on the ſeveral days, feaſts, &c. See MASS.

The Roman *miſſal* was firſt compiled by pope Zachary, and afterwards reduced into better order by pope Gregory the great, who called it the *book of ſacraments*.

Each dioceſe, and each order of religious, have their particular *miſſal*, accommodated to the feſtivals of the province, or of the order.

MISSELTOE. See the article MISTLETOE.

MISSEN-*maſt*, or MIZZEN-*maſt*, of a ſhip, is a *maſt*, or round long piece of timber, ſtanding upright in the ſternmoſt part. —See *Tab. Ship. fig.* 1. *n.* 1, 13, 19. See alſo MAST.

MISSEN-*ſail*, is that belonging to the miſſen-yard. See SAIL.

When at ſea they uſe the word *miſſen* alone, they always mean the *ſail*, and not the *maſt*. See SAIL.

Some great ſhips require two *miſſens*; in which caſe, that next the main-maſt, is called the *main-miſſen*; that next the poop the *bonaventure-miſſen*.

Change the MISSEN, that is, bring the *miſſen-yard* over to the other ſide the maſt.

Peek the MISSEN, that is, put the *miſſen* right up and down the maſt. See PEEK.

Spell the MISSEN, &c. that is, let go the ſheet, and peek it up.

MISSION. See EMISSION, MANUMISSION, REMISSION, and TRANSMISSION.

MISSION, in theology, denotes a power, or commiſſion to preach the goſpel. See EVANGEIST, &c.

Jeſus Chriſt gave his diſciples their *miſſion* in theſe words, *Go, and teach all nations*, &c. See APOSTLE.

The Romaniſts reproach the Proteſtants, that their miniſters have no *miſſion*; as not being authorized in the exerciſe of their miniſtry, either by an uninterrupted ſucceſſion from the apoſtles, or by miracles, or by any extraordinary proof of a vocation. See ORDINATION.

The anabaptiſts deny any other *miſſion* neceſſary for the miniſtry than the talents neceſſary to diſcharge it. See ANABAPTIST.

MISSION is alſo uſed for an eſtabliſhment of people zealous for the glory of God, and the ſalvation of ſouls; who go and preach the goſpel in remote countries, and among infidels. See MISSIONARY.

There are *miſſions* in the Eaſt, as well as the Weſt-Indies.—Among the Romaniſts, the religious orders of St. Dominic, St. Francis, St. Auguſtin, and the Jeſuits, have *miſſions* in the Levant, America, &c.

The Jeſuits have alſo *miſſions* in China, and all other parts of the globe, where they have been able to penetrate.—The mendicants abound in *miſſions*.

MISSION, is alſo the name of a congregation of prieſts, and laymen, inſtituted by Vincent de Paul, and confirmed in 1626 by Pope Urban VIII. under the title of *Prieſts of the congregation of the* miſſion.

Theſe profeſs to make it their whole buſineſs to aſſiſt the poor people in the country; and to this purpoſe oblige themſelves never to preach, or adminiſter any of the ſacraments in any town where there is an archbiſhop, biſhop, or provincial reſiding.

They are ſettled in moſt provinces of France, Italy, Germany, and in Poland.—At Paris, they have a ſeminary, which they call the *foreign miſſion*; where youth are bred up and qualified for *miſſions* abroad.

MISSIONARY, an eccleſiaſtic who devotes himſelf and his labours, to ſome *miſſion*; either for the inſtruction of the orthodox, the conviction of heretics, or the converſion of infidels.

MISSIVE, ſomething *ſent* to another.—From the Latin, *mitto*, I ſend.

We ſay *miſſive* letters, or letters *miſſive*, meaning letters ſent from one to another. See EPISTLE.

In propriety, *letters miſſive* are letters of buſineſs, but not buſineſs of great concern; in contradiſtinction from letters of gallantry, letters on points of learning, diſpatches, &c.

MIST, a meteor called alſo *fog*. See FOG.

MISTLETOE, MISLETOE, or MISSELTOE, in natural hiſtory, a plant of the paraſite kind; growing, not on the ground, but on other trees, as the oak, apple-tree, pear-tree, white-thorn, aſh, lime, willow, elm, &c. See PARASITE.

Miſtletoe, by phyſicians, &c. called *viſcus*, grows to the height of about two feet. It conſiſts of ſeveral ſtems, which are uſually covered with a greeniſh, ſometimes a yellowiſh bark, about the thickneſs of the finger, hard, woody, and divided by knots; from which ſpring the leaves, which grow by two and two oppoſite to each other, oblong, thick, of a greeniſh, or yellowiſh colour, veined their whole length, and rounded at the end. Its flowers grow by three and three, trefoil-wiſe, at the extremes of the branches: each flower is a yellow calyx, one third of an inch in diameter, divided into four parts.

The fruit likewiſe grows by three and three, at the extremes of the branches: They are a kind of white oval berries, not unlike little pearls, filled with a flattiſh ſeed in form of a heart; covered with a fine ſilvered membrane, and encloſed with a viſcid, glutinous humour, of a whitiſh colour, wherein the ſeed naturally buds or germinates, and puts forth two eyes.—From this juice it is, that the Latins denominate the plant *viſcus*.—The fruit grows on different branches from the flowers.

That uncommon ſoil, whereon the *miſtletoe* grows, has occaſioned abundance of fabulous notions both as to its production and virtues.

Pliny and moſt naturaliſts relate, that thruſhes being exceedingly fond of the berries of the *miſtletoe*; they ſwallow them, and caſt them out again on the branches of trees where they uſe to perch; and by this means give occaſion to a new production of *miſtletoe*. By cracking the berries with their bills, or claws, they are ſuppoſed to let out the viſcous juice, which facilitates their ſticking: And hence that proverb, *Turdus ſibi cacat malum*; the *viſcus* being ſometimes uſed as bird-lime.

Mr. Bradley endeavours to refute the popular opinion of the antients, that the ſeeds of the *miſtletoe* could not vegetate. Their endeavouring to propagate it in the earth without ſucceſs, he takes to have led them into the error: And aſſerts, that it may be propagated by ſeed on any tree whatever. The method too is very eaſy. About Chriſtmas, when the berries are full ripe, you need only apply them on the ſmooth bark of any tree; the viſcid juices they are encompaſſed withal, will make them ſtick; and, provided the birds do not devour the ſeed, you may, without any further trouble, expect a young plant the following year.

Others rather chuſe to account for the propagation of *miſtletoe* from the ſyſtem hereafter advanced for that of *muſhrooms*. See MUSHROOM.

For the virtues of *miſtletoe*, it ſeems of the moſt efficacy in the epilepſy; againſt which ſome will have it ſpecifick. Dr. Colbatch has wrote expreſsly to prove it ſuch. It is alſo preſcribed in apoplexies, lethargies, and virtigos; and wore about the necks of children to prevent convulſions, and eaſe the cutting of their teeth.

The beſt is the *miſtletoe of the oak*; though it is not this which is commonly uſed, but that of the apple or pear tree. Mr. Bradley obſerves, that there is no variety in this plant, but that the leaves, flowers, fruit, &c. are all alike on whatever kind of tree it grows: But others pretend to diſtinguiſh that of the oak by ſeveral particulars.

The virtues aſcribed to the *miſtletoe*, may perhaps be the remains of the religious honours paid it by the antient Gauls; among whom the Druids, aſſembled conſtantly on the firſt day of the year, went in queſt thereof with hymns, and other ceremonies and rejoicings, diſtributing it again among the people, as a thing ſacred, after having firſt conſecrated it, crying, *Au guy l' an neuf*, to proclaim the new year. See DRUIDS.

The cry is ſtill kept up at Picardy, where they add *plantez*, to wiſh a plentiful new year.

M. Perrault obſerves, that the *miſtletoe* is full of a poiſonous juice, which weakens the tree whereon it grows; and that the fruit has always a diſagreeable taſte while it ſticks on it.

MISY, ΜΙΣΥ, in natural hiſtory, ſee CHALCITIS.

MITE, a ſmall coin, formerly current; equal to about one third part of a farthing. See MONEY and COIN.

MITE alſo denotes a ſmall weight uſed by the moneyers. It is equal to the twentieth part of a grain, and is divided into twenty-four doits. See WEIGHT.

MITHRIDATE, MITHRIDATIUM, in pharmacy, an antidote or compoſition in form of an electuary, ſerving either as a remedy or a preſervative againſt poiſons. See ANTIDOTE, POISON, &c.

Mithridate is one one of the capital medicines in the apothecaries ſhops; being compoſed of a vaſt number of drugs, as *opium, myrrh, agaric, ſaffron, ginger, cinnamon, ſpickenard, frankincenſe, caſtor, pepper, gentian*, &c.

It is accounted a cordial, opiate, ſudorific and alexipharmic.—Matthiolus ſays it is more effectual againſt poiſon than Venice-treacle; though eaſier to be made.

It takes its name from its inventor, Mithridates king of Pontus,

tus, who is ſaid to have ſo fortified his body againſt poiſons with antidotes and preſervatives, that when he had a mind to diſpatch himſelf, he could not find any poiſon that would take effect.

The receipt of it was found in his cabinet, written with his own hand, and was carried to Rome by Pompey. It was tranſlated into verſe by Damocrates, a famous phyſician, and was afterwards tranſlated by Galen, from whom we have it: Though there is room to imagine it has undergone conſiderable alterations ſince the time of its royal preſcriber.

MITRALES *valvulæ*, Mitral *valves*, in anatomy, two valves in the heart; thus called from their reſembling the figure of a mitre. See Valve and Heart.

They are placed at the orifice of the pulmonary vein, in the left ventricle of the heart. The office is to cloſe the orifice thereof, and prevent the return of the blood through the pulmonary vein into the lungs again. See Pulmonary *vein*, Circulation, *&c.*

MITRE *, Mitra, a pontifical ornament, wore on the head by biſhops, and certain abbots, on ſolemn occaſions. See Bishop, Abbot, *&c.*

* The word comes from the Greek μιτρα, which ſignifies the ſame.

The *mitre* is a round cap, pointed, and cleft a-top with two pendents hanging down the ſhoulders.—Abbots wear the *mitre* turned in profile; and bear the croſier inwards, to ſhew that they have no ſpiritual juriſdiction without their own cloiſters.

The pope has alſo granted to ſome canons of cathedrals the privilege of wearing the *mitre*.—The counts of Lyons are ſaid to have aſſiſted at church in *mitres*.

In Germany, ſeveral great families bear the *mitre* for their creſt; to ſhew that they are advocates, or feudataries of antient abbies, or officers of biſhops, *&c.* See Advouee.

The pope has four *mitres*, which are more or leſs rich according to the ſolemnity of the feaſt-days they are to be worn on.

The *mitre* was originally the womens head-dreſs, as the hat was that of the men. This appears from Servius, who reproaches the Trojans, or Phrygians, that they were dreſſed like women, and wore *mitres*.—*Et tunicæ manicas, & habent redimicula* mitræ.

The cardinals antiently wore *mitres*, before the hat which was firſt granted them by the council of Lyons in 1245. See Cardinal.—Authors make no mention of the *mitre* as an epiſcopal ornament before the year 1000.

Mitre, in architecture, is the workmens term for an angle that is juſt 45 degrees; or half a right one.

If the angle be a quarter of a right angle, they call it a *half-mitre*. See Angle, *&c.*

To deſcribe ſuch angles, they have an inſtrument called the *mitre-ſquare*; with this they ſtrike *mitre-lines* on their quarters, or battens: And for diſpatch, have a *mitre-box*, as they call it, which is made of two pieces of wood, each about an inch thick, one nailed upright on the edge of the other; the upper piece hath the *mitre-lines* ſtruck upon it on both ſides, and a kerf to direct the ſaw in cutting the *mitre* joints readily, by only applying the piece into this box. See Bevil.

MITRED *abbots*. See the article Abbot.

MITTENDIS *recordo & proceſſu*. See Recordo.

MITTIMUS, in law, a writ, by which records are ordered to be transferred from one court to another; ſometimes immediately, as out of the King's Bench into the Exchequer; and ſometimes by a certiorari into the Chancery, and from thence by a *mittimus* into another court.

Mittimus is alſo uſed for a precept in writing directed by a juſtice of peace to a goaler, for the receiving and ſafe keeping a felon, or other offender, by him committed to the goal.

MIXING *of mortar*. See the article Mortar.

MIXT, or Mixt *body*, in philoſophy, is that which is compounded of divers elements, or principles. See Mixtion, *&c.*

By which, *mixt* ſtands contradiſtinguiſhed from *ſimple*, or *elementary*, which is applied to bodies conſiſting of one principle only; as the chymiſts take ſulphur, ſalt, *&c.* to do. See Element and Body.

The ſchoolmen define a *mixt body* to be a whole, reſulting from ſeveral ingredients, altered, or new modified by the mixture.—On which principle, the ſeveral ingredients do not actually exiſt in the *mixt*, but are all changed, ſo as to conſpire to a new body of a different form, from the forms of the ingredients.—But the modern philoſophers rarely conceive the term in ſo much ſtrictneſs.

The buſineſs of chymiſtry, we ſay, is to reſolve *mixt bodies* into their principles, or component parts. See Principle, Chymistry, *&c.*

The ſchool-philoſphers diſtinguiſh *mixt bodies* into *perfect* and *imperfect*.

Perfect Mixts are the claſs of vital or animated bodies; where the elements or ingredients they are compoſed of, are changed or transformed by a perfect mixture.—Such are plants, beaſts, and men.

Imperfect Mixts are inanimate bodies; the forms whereof remain ſtill the ſame as of the ingredients that conſtitute them.—Such are meteors, minerals, metals, *&c.*

Mixt *action*, in law, is an action partly real, and partly perſonal. See Action.

A *mixt action* is that which lies both for the *thing* detained, and againſt the *perſon* of the detainer.—Or it is that which ſeeks both the recovery of a thing we are unjuſtly deprived of, and damages, or a penalty for the unjuſt detainment thereof.

Such are actions of waſte, and quare impedit; actions for tythes on the ſtatute 2 and 3 Edw. 6. *&c.*

Mixt *angle*. See the article Angle.

Mixt *cloths*. See the article Cloth.

Mixt *fables*. See the article Fable.

Mixt *figure*, in geometry, is that which conſiſts partly of right lines, and partly of curve lines. See Figure.

Mixt *force*. See the article Force.

Mixt *hiſtory*. See the article History.

Mixt *mathematics*. See the article Mathematic.

Mixt *mode*, according to Mr. Locke, is a combination of ſeveral ſimple ideas of different kinds. See Idea and Mode.

Thus, *beauty*, as it conſiſts in a certain compoſition of colour, figure, proportion, *&c.* of different parts, cauſing delight to the beholder, is a *mixt mode*. Such alſo are *theft*, murder, *&c.*

The mind, that author obſerves, being once furniſhed with ſimple ideas, can put them together in ſeveral compoſitions, without examining whether they exiſt ſo in nature together. And hence it is that theſe ideas are called *notions*; as if they had their original and conſtant exiſtence more in the thoughts of men, than in the reality of things; and that to form ſuch ideas, it ſufficed that the mind put the parts of them together; and that they were conſiſtent in the underſtanding: without conſidering whether they had any real being. See Notion.

There are three ways whereby we get theſe complex ideas of *mixt modes*. Firſt, By experience and obſervation of things themſelves: Thus by ſeeing two men wreſtle, we get the idea of wreſtling. Secondly, By invention, or voluntary putting together of ſeveral ſimple ideas in our own mind: So he that firſt invented printing, had an idea of it firſt in his mind before ever it exiſted. Thirdly, By explaining the names of actions we never ſaw, or notions we cannot ſee; and by enumerating all thoſe ideas which go to the making them up.

Thus the *mixt mode* which the word *lye* ſtands for, is made up of theſe ſimple ideas; Firſt, Articulate ſounds. Secondly, Certain ideas in the mind of the ſpeaker. Thirdly, Certain words, the ſigns of theſe ideas; Fourthly, Thoſe ſigns put together by affirmation, or negation, otherwiſe than the ideas they ſtand for are in the mind of the ſpeaker, ſince the language was made.

Complex ideas are uſually got by the explication of thoſe terms that ſtand for them. For ſince they conſiſt of ſimple ideas combined, they may, by words ſtanding for thoſe ſimple ideas, be repreſented to the mind of one who underſtands thoſe words; though that combination of ſimple ideas was never offered to his mind by the real exiſtence of things.

Mixt *number*, in arithmetic, that which is partly an integer, and partly a fraction; as $4\frac{1}{2}$. See Fraction.

Mixt *obligation*. See the article Obligation.

Mixt *ratio*, or *proportion*, is when the ſum of the antecedent and conſequent is compared with the difference between the antecedent and conſequent—as if $\overset{3}{a} : \overset{4}{b} :: \overset{12}{c} : \overset{16}{d}$ then $\overset{\cdot 7}{a \times b\cdot}\ \overset{1\ldots}{a - b} :: \overset{28}{c \times} : \overset{4}{c - d}.$ See Ratio and Proportion.

Mixt *ſalts*. See the article Salts.

Mixt *ſtairs*. See the article Stairs.

Mixt *ſervice*. See the article Service.

Mixt *tithes*, are thoſe of cheeſe, milk, *&c.* and of the young of beaſt. See Tithe.

MIXTILINEAR *angle*. See the article Angle.

MIXTION, Mixtio, or Mistio, the act of *mixing*; or the union and coalition of divers corpuſcles into one body. See Mixt and Mixture.

The Peripatetics, who hold an alteration eſſential to *mixtion*, define it the union of ſeveral altered ingredients, or miſcibles. See Ingredient.

Mixtion makes a conſiderable operation in the chymical and galenical pharmacy; where divers powders, ſpecies, and other ſimples, are ſaid to be *mixed*, *miſceri*, though without any communication or tranſition of the virtues of one into thoſe of another. See Composition.

MIXTURE, Mixtura, or Mistura, in a philoſophical ſenſe, is an aſſemblage, or union of ſeveral bodies of different properties, in the ſame maſs. See Mixt and Mixtion.

To determine the ratio of the ingredients of a *mixture*, is that celebrated problem propoſed by Hiero king of Syracuſe to Archimedes, on occaſion of a crown of gold wherein the workman had fraudulently mixed ſilver; the ſolution whereof was matter of ſo much tranſport to that divine mechanic.

It may be determined thus.—Weigh the *mixture*, immerge it in ſome fluid; and find the weight it loſes therein. (See Specific *gravity*.) Then find what weight any determinate quantity of any ingredient loſes in the ſame fluid: And by the *rule of three* find what weight each ought to loſe therein, were its weight equal to that of the *mixture*. Subſtract the leſs loſs from the greater, which will give the exceſs wherewith the loſs of the lighter exceeds that of the heavier. Then ſubſtract the weight loſt by the heavier, from that loſt by the whole *mixture*, to find the exceſs of the weight loſt by the *mixture* beyond that loſt by the heavier.

MIXTURE, in matters of drapery, denotes the union, or blending of ſeveral wools of different colours, not yet ſpun. See CLOTH.

Hence a *mixture*, or mixed ſtuff, is that whoſe woof and warp are of wools of different colours dyed and mixed before they were ſpun.

MOAT, in fortification, a depth or trench dug round a town, or fortreſs to be defended, on the outſide of the wall, or rampart.—See *Tab. Fortif. fig.* 21. *lit. h h h*, *&c.* See alſo RAMPART, Foss, and DITCH.

The depth and breadth of the *moat* often depend on the nature of the ſoil; according as it is marſhy, rocky, or the like.

The brink of the *moat* next the rampart in any fortification is called the *ſcarp*, and the oppoſite one the *counterſcarp*. See SCARP and COUNTERSCARP.

Dry MOAT is that which is deſtitute of water; and ought to be deeper than one which is full of water.

Lined MOAT is that whoſe ſcarp and counterſcarp are caſed with a wall of maſon's work lying a-ſlope.

Flat-bottomed MOAT is that which hath no ſloping, its corners being ſomewhat rounded.

Angle of the MOAT. See the article ANGLE.

MOATAZALITES, a religious ſect among the Turks, who deny all forms and qualities in the divine Being. See GOD, ATTRIBUTE, *&c.*

There are two opinions among the Turkiſh divines concerning God. The firſt admit metaphyſical forms, or attributes; as, that God has wiſdom by which he is wiſe; power by which he is powerful; eternity by which he is eternal, *&c.*

The ſecond allow God to be wiſe, powerful, eternal; but will not allow any form or quality in God, for fear of admitting a multiplicity.

Thoſe who follow this latter opinion are called *Moatazalites.*—They who follow the former, *Sephatites.*

MOBILE, *Moveable*; any thing ſuſceptible of motion, or that is diſpoſed to be moved either by itſelf, or by ſome other prior *mobile*, or mover. See MOTION.

Primum MOBILE in the antient aſtronomy, was a ninth heaven, or ſphere, imagined above thoſe of the planets and fixed ſtars. See SPHERE, HEAVEN, and PRIMUM.

This was ſuppoſed to be the firſt mover, and to carry all the lower ſpheres round along with it; by its rapidity communicating to them a motion whereby they revolved in twenty-four hours.—But the diurnal revolution of the planets is now accounted for without the aſſiſtance of any ſuch *primum mobile.*

Perpetuum MOBILE. See PERPETUAL *motion.*

MOBILIA *bona*, in the civil law, are what in common law, *&c.* we call *moveables*, or *moveable goods.* See MOVEABLES.

MOBILITY, in the ſchools, *&c.* an aptitude, or facility to be moved. See MOTION.

The *mobility of* mercury is owing to the ſmallneſs, and ſphericity of its particles; and is that which renders its fixation ſo difficult. See MERCURY and FIXATION.

The hypotheſis of the *mobility* of the earth is the moſt plauſible; and is that commonly admitted by the later aſtronomers. See EARTH.

Pope Paul V. appointed commiſſioners to examine the opinion of Copernicus touching the *mobility* of the earth. The reſult of their enquiry, was, a prohibition to aſſert, not that the *mobility* was poſſible, but that it was actually true. That is, they allowed the *mobility* of the earth to be held as an hypotheſis, which gives an eaſy and ſenſible ſolution of the phænomena of the heavenly motions; but forbad the *mobility* of the earth to be maintained as a theſis, or a real effective thing; by reaſon they conceived it contrary to ſcripture. See COPERNICAN.

MODAL, in logic, *&c.* a term applied to propoſitions which include certain conditions or reſtrictions. See CONDITIONAL, PROPOSITION, and DISTINCTION.

MODE, or MOOD, MODUS, in philoſophy, a *manner* of being; or a quality, or attribute of a ſubſtance, or ſubject, which we conceive as neceſſarily depending on the ſubject, and incapable of ſubſiſting without it. See ATTRIBUTE, and SUBSTANCE.

Mr. Locke defines *modes* to be thoſe ideas (he ſhould have ſaid *things*) which do not imply any ſuppoſition of ſubſiſting by themſelves, but are conſidered as mere dependences, and affections of ſubſtances. See ACCIDENT.

Our ideas of things may be reduced to two kinds: The one of things which we conceive ſeparately, and by themſelves, called *ſubſtances*; and the other of things which we conceive as exiſting in others, in ſuch manner as that we cannot allow them exiſtence without them; and theſe we call *modes*, or *accidents.*

Thus, when we reflect on wax, and roundneſs; we conſider the wax as a thing which may ſubſiſt without the roundneſs; *Wax* therefore we denominate a *ſubſtance:* on the contrary, we conſider the *roundneſs* ſo dependant on the wax, that it cannot ſubſiſt without it, there being no conceiving of roundneſs diſtinct and ſeparate from a round body.—This therefore we call a *mode*, or *accident.* See IDEA.

It is the characteriſtic, then, of a true *mode*, to have ſuch a relation to ſome ſubject, as not to be clearly and diſtinctly conceivable without conceiving the ſubject, whereof it is a *mode*, at the ſame time: when, on the other hand, the conception of the ſubject does not at all infer or require that of the *mode.* See SUBJECT.

Thus, what gives us to know that thought is not a *mode* of extended ſubſtance, or matter, is, that extenſion, and the other properties of matter may be divided from thought, without ceaſing to conceive thought all the while. See THINKING, EXTENSION, *&c.*

We always conſider things as clothed with certain *modes*, except we reflect on them in the abſtract, or general: And it is the variety of *modes*, and relations, that occaſions the great variety of denominations of the ſame thing. It is the various *modes* of matter, *e. gr.* that make all the diverſity of bodies, or corporeal beings in nature. See RELATION, MATTER, *&c.*

There are various diviſions and kinds of *modes:* One of the moſt common, is into *internal* and *external.*

Internal MODES are thoſe inherent in the ſubſtance; —as roundneſs in the bowl; flatneſs in the noſe; crookedneſs in the finger, *&c.*

Theſe, we have obſerved, cannot exiſt, nor even be conceived without the ſubject, as being only circumſtances thereof, or even, according to ſome, only the ſubject itſelf conſidered, not ſimply, but as ſuch. Thus the roundneſs of the bowl, is only the bowl itſelf conſidered as round, *&c.*

External MODES are thoſe extraneous to the ſubject; —as when we ſay a thing is deſired, loved, beheld, *&c.* Theſe coincide with what we call *relations.* See RELATION.

Add, that there are *modes* which are likewiſe ſubſtances, as apparel, hair, *&c.* which may ſubſiſt without the ſubject.

Mr. Locke divides *modes* into *ſimple*, and mixt or *compound.*

Simple MODES are combinations of ſimple ideas of the ſame kind, or even of the ſame ſimple ideas divers times repeated; —as a dozen, a ſcore, *&c.* which are only the ideas of ſo many diſtinct units put together.

The modifications of any ſimple idea, Mr. Locke obſerves, are as perfectly different and diſtinct ideas in the mind as thoſe the moſt remote and inconſiſtent: Thus, *two* is as diſtinct from *three*, as blindneſs from heat. With this view that author examines the *ſimple modes* of ſpace.—Which are found to be diſtance, capacity, extenſion, figure, place, and duration. See SPACE, DISTANCE, EXTENSION, FIGURE, PLACE, and DURATION.

The mind has ſeveral diſtinct ideas of *ſliding*, *rolling*, *walking*, *creeping*, *&c.* which are all but the different modifications of motion. *Swift* and *ſlow* are two different ideas of motion, the meaſures whereof are made out of the diſtances of time and ſpace put together. See MOTION.

The like variety we have in ſounds; every articulate word is a different modification of ſound, as are all notes of different length put together, which make that complex idea called *time.* See SOUND, and TIME.

The *modes* of colours might be alſo very various; ſome of which we take notice of, as the different degrees, or as they are termed, *ſhades of the ſame colour.* But ſince we ſeldom make aſſemblages of colours without taking in figure alſo, as in painting, *&c.* thoſe which are taken notice of, do moſt commonly belong to mixed *modes*; as *beauty*, *rainbow*, &c. All compounded taſtes and ſmells are alſo *modes* made up of the ſimple ideas of thoſe ſenſes.

As to the *modes of thinking*; when the mind turns its view inward upon itſelf, *thinking* is the firſt idea that occurs, wherein it obſerves a great variety of modifications; and therefore frames to itſelf diſtinct ideas. See THINKING, and THOUGHT.

Thus the perception annexed to any impreſſion on the body made by an external object, is called *ſenſation.* Where an idea recurs without the preſence of the object, it is called *remembrance.* When ſought after by the mind, and brought again in view, it is called *recollection.* When held there long under attentive conſiderations, it is called *contemplation.* When ideas float in the mind without regard or reflection, it is called in French, *reverie.* When the ideas are taken notice of, and, as it were, regiſtered in the memory, it is *attention.* When the mind fixes its view on any one idea, and conſiders it on all ſides, it is *intention* and *ſtudy.* See SENSATION, *&c.*

Of theſe various *modes* of thinking, the mind forms as diſtinct ideas, as it does of white and red, a ſquare, or a circle.

Mixed MODES are combinations of ſimple ideas of ſeveral kinds; as in *beauty*, which conſiſts in a certain compoſition of colour, figure, *&c.* *Theft*, which is the concealed change of the poſſeſſion of any thing without conſent of the proprietor, *&c.* See MIXT.

There are three ways whereby we get ideas of *mixt modes.* 1°. By experience and obſervation of things themſelves; thus by ſeeing two men wreſtle, we get the idea of wreſtling. 2°. By invention, or voluntary putting together of ſeveral ſimple ideas in our own minds; ſo he that firſt invented printing, had an idea of it firſt in his mind, before ever it exiſted. 3°. By explaining the names of actions we never ſaw, or notions we cannot ſee; and by enumerating all thoſe ideas, which go to the making them up.—Thus the *mixt mode* which the word *lye* ſtands for, is made up of theſe ſimple ideas: (1.) Articulate ſounds. (2.) Certain ideas in the mind of the ſpeaker. (3.) Words, the ſigns of theſe ideas. (4.) Thoſe ſigns put together by affirmation, or negation, otherwiſe than the ideas they ſtand for are in the mind of the ſpeaker.

Mixt modes have their unity from an act of the mind, combining thoſe ſeveral ſimple ideas together, and conſidering them as one complex one: The mark of this union is one name given to that combination. Men ſeldom reckon any number of ideas to make one complex one, but ſuch collections, as there be names for. Thus, the *the killing of an old man* is as fit to be united in one complex idea, as *the killing of a father*; yet there being no name for it, it is not taken for a particular complex idea; nor a diſtinct ſpecies of action from that of killing any other man: Thoſe collections of ideas have names generally affixed, which are of frequent uſe in converſation; in which caſes men endeavour to communicate their thoughts to one another, with all poſſible diſpatch. Thoſe others, which they have ſeldom occaſion to mention, they lay not together, nor give them names.

This gives the reaſon, why there are words in every language, which cannot be rendred by any one ſingle word of another. For the faſhions and cuſtoms of one nation make ſeveral combinations of ideas familiar in one, which another had never any occaſion to make. Such were, Ὀϛρακισμὸς, among the Greeks; and *proſcriptio* among the Romans. See OSTRACISM and PROSCRIPTION. This alſo occaſions the conſtant change of languages; becauſe the change of cuſtom and opinion brings with it new combinations of ideas, which, to avoid long deſcriptions, have new names annexed to them, and ſo they become new ſpecies of *mixt modes*.

Of all our ſimple ideas, thoſe which have had moſt *mixt modes* made out of them, are thinking, and motion, (which comprehend in them all action) and power, from whence theſe actions are conceived to flow. For actions being the great buſineſs of mankind, it is no wonder that the ſeveral *modes* of thinking and motion, ſhould be taken notice of; and the ideas of them obſerved, and laid up in memory, and have names aſſigned them. For without ſuch complex ideas with names to them, men could not eaſily hold any communication about them.

Of this kind are the *modes* of actions diſtinguiſhed by their cauſes, means, objects, ends, inſtruments, time, place, and other circumſtances; as alſo of the powers fitted for thoſe actions. Thus *boldneſs* is the power to do or ſpeak what we intend, without fear or diſorder; which power of doing any thing, when it had been acquired by frequent doing the ſame thing, is that idea we call *habit*; and when forward and ready upon every occaſion, to break into action, we call it *diſpoſition*: Thus *teſtineſs* is a diſpoſition or aptneſs to be angry. Power being the ſource of all action, the ſubſtances, wherein thoſe powers are, when they exert this power, are called *cauſes*: And the ſubſtances thereupon produced, or the ſimple ideas introduced into any ſubject, *effects*. The efficacy whereby the new ſubſtance or idea is produced, is called in the ſubject exerting that power, *action*; in the ſubject wherein any ſimple idea is changed, or produced, *paſſum*. Which efficacy in intellectual agents, we can conceive to be nothing elſe, but *modes* of thinking and willing: In corporeal agents, nothing elſe but modifications or motions.

Whatever ſort of action, beſides theſe, produces any effect, we have no notion or idea of. And, therefore, many words which ſeem to expreſs ſome action, ſignify nothing of the action, but barely the effect, with ſome circumſtances of the ſubject wrought on, or cauſe operating: Thus *creation*, and *annihilation*, contain in them no idea of the action, or manner whereby they are produced, but barely of the cauſe, and the thing done. And when a country-man ſays, *the cold freezes water*, though the word, *freezing*, ſeems to import ſome action, yet it truly ſignifies nothing but the effect, *viz.* that the water that was before fluid, is become hard and conſiſtent; without intimating any idea of the action whereby it is done.

In *mixt modes*, it is the name that ſeems to preſerve their eſſences, and to give them their laſting duration. The collection of ideas is made by the mind; but the name is, as it were, the knot which ties them faſt together: Hence we ſeldom take any other for diſtinct ſpecies of *mixt modes*, but ſuch as are ſet out by names. We muſt obſerve, that the names of *mixt modes* always ſignify the real eſſences of their ſpecies; which being nothing but the abſtract complex ideas, and not referred to the real exiſtence of things, there is no ſuppoſition of any thing more ſignified by any name of a *mixt mode*, but barely that complex idea, the mind itſelf has formed; which when the mind has formed, is all it would expreſs by it, and is that on which all the properties of the ſpecies depend, and from which alone they flow; and ſo, in theſe, the real and nominal eſſence is the ſame.

This alſo ſhews the reaſon, why the names of *mixt modes* are commonly got, before the ideas they ſtand for are perfectly known; becauſe there being no ſpecies of theſe ordinarily taken notice of, but ſuch as have names; and thoſe ſpecies being complex ideas made arbitrarily by the mind; it is convenient, if not neceſſary, to know the names, before we learn the complex ideas: unleſs a man will fill his head with a company of abſtract complex ideas, which others having no names for, he has nothing to do with, but to lay by, and forget again. In the beginning of languages, it was neceſſary to have the idea, before one gave it the name; and ſo it is ſtill, where a new complex idea is to be made, and a name given it. In ſimple ideas, and ſubſtances, it is otherwiſe; which being ſuch ideas, as have real exiſtence and union in nature, the ideas or names are got, one before the other, as it happens.

The ſchoolmen make numerous other diviſions of *modes*; as into *immediate* and *mediate*: *Eſſential* and *non-eſſential*: *Poſitive* and *privative*: Of *ſpirit* and of *body*: Of *thinking*, and of *having*.

Immediate MODES are thoſe immediately attributed to their ſubjects, or ſubſtances.

Mediate MODES are thoſe attributed to ſubjects by the intervention of ſome other *mode*.

Thus, *e. gr.* motion is an immediate *mode* of the body; knowledge of the mind, *&c.* But ſwiftneſs and ſlowneſs are not immediately attributable to the body; but only to the body in reſpect of motion.

Eſſential, or *inſeparable* MODES, are attributes without which the ſubſtance cannot exiſt.—As, wiſdom, goodneſs, power, *&c.* in God: figure, place, quantity, extenſion, *&c.* in body. See ATTRIBUTE.

Non-eſſential, or *ſeparable* MODES, are attributes affecting created ſubſtances, and remaining affixed thereto ſo long as it is neceſſary.—Such are coldneſs, of water: hardneſs, of ſtone: whiteneſs, of milk, *&c.*

Poſitive MODES, are thoſe which give ſomething real, poſitive, and abſolute to their ſubſtance.—Thus roundneſs is a poſitive *mode* of a globe, *&c.*

Privative MODES are attributed to ſubjects, when the mind perceiving ſome attributes wanting therein, frames a word, which at firſt ſight ſeems to note ſomething poſitive, but which in reality only notes the want of ſome property, or *mode*.—Thus a privation of light is attributed to a blind man, *&c.*

MODES *of ſpirit* are two, *viz.* Cognition, or knowledge; and willing. See KNOWLEDGE and WILL.

MODES *of body* are three, *viz.* figure, reſt, and motion. See FIGURE, REST, and MOTION.

MODES *of having*, are thoſe whereby any thing may be had by another.—Ariſtotle enumerates ſeven of theſe: A thing, for inſtance, may be had either by the *mode* of quality, as knowledge; by that of magnitude, as circumference; by the *mode* of part, as the hand, *&c.*

Diviſion of a MODE. See the article DIVISION.

MODE, in grammar. }
MODE, in logic. } See the article MOOD.

MODE is alſo uſed in logic, for the modification of a propoſition; or that which renders it *modal* and *conditional*. See CONDITIONAL and PROPOSITION.

Indirect MODES. See the article INDIRECT.

MODE, or MOOD, in muſic, a particular manner of beginning, continuing and ending a ſong, whereby we are engaged to make uſe of certain notes, or chords, preferable to, or oftener than others.

MODE is defined by ſome authors, the particular manner of conſtituting the octave; or the melodious conſtitution of the octave, as it conſiſts of ſeven eſſential, or natural notes beſides the key, or fundamental. See OCTAVE.

A *mode*, then, is not any ſingle note, or ſound; but the particular order of the concinnous degrees of an octave: The fundamental note whereof may, in another ſenſe, be called the *key*, as it ſignifies that principal note which regulates the reſt.

The proper difference between a *mode* and a *key*, conſiſts in this, that an octave with all its natural and concinnous degrees, is called a *mode*, with reſpect to the conſtitution, or the manner and way of dividing it; and with reſpect to the place of it in the ſcale of muſic, that is, the degree or pitch of tune, it is called a *key*: that is, an octave of ſounds may be raiſed in the ſame order, and kind of degrees which makes the ſame *mode*, and yet be begun higher or lower; that is, be taken at different degrees with reſpect to the whole, which makes different keys: and from the ſame definition it follows, that the ſame key may be found with different *modes*; that is, the extremes of two octaves may be in the ſame degree of tune, and the diviſion of them different. See KEY.

Now it may be further obſerved, that of the natural notes of every *mode*, or octave, three go under the name of the eſſential notes in a peculiar manner, *viz.* the fundamental, the third, and fifth; their octaves being reckoned the ſame, and marked with the ſame letters in the ſcale: the reſt are particularly called *dependents*. Again, the fundamental is alſo called the *final*; the fifth the *dominante*; and the third, as being between the other two, the *mediante*. See KEY.

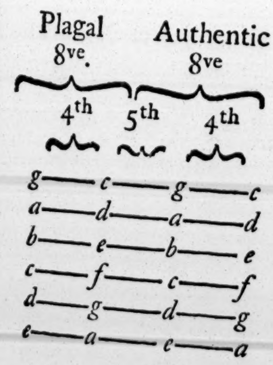
The doctrine of the antients with regard to *modes*, which they ſometimes alſo call *tones*, is ſomewhat obſcure; there being an unaccountable difference among their authors as to the definitions, diviſions, and names of their *modes*. They agree indeed, that a *mode* is a certain ſyſtem or conſtitution of ſounds; and that an octave, with all its intermediate ſounds, is ſuch a conſtitution: but the ſpecific differences of tones, or *modes*, ſome place in the manner of diviſion, or order of their concinnous parts; and others merely in the different tenſion of the whole; *i. e.* as the whole ſeries of notes are acuter or graver, or ſtand higher or lower in the ſcale of muſic.

Boethius is very dark on this head, and defines a *mode* to be, as it were, an entire body of modulation, conſiſting of a conjunction of conſonances: as, the diapaſon.

Ptolemy makes the *modes* the ſame with the ſpecies of the diapaſon; but at the ſame time ſpeaks of their being at ſome diſtance from each other. Some contended for thirteen, ſome for fifteen *modes*, which they placed at a ſemi-tone's diſtance from each other; but it is plain, thoſe underſtood the differences to be only in their place or diſtances from each other; and that there is one certain harmonious ſpecies of octave applied to all; *viz.* that order which proceeds from the proſlambanomenos of the ſyſtema immutatum, or the A of the modern ſyſtem. Ptolemy argues, that if this be all, they may be infinite, though they muſt be limited for uſe and practice. But, indeed, much the greater part define them by the ſpecies of the diapaſon; and therefore only make ſeven *modes*; but as to their uſe, we are left entirely in the dark.

If the *modes* be nothing but the ſeven ſpecies of octaves, the uſe of them can only be, that the proſlambanomenos of any *mode*, being made the principal note of a ſong, there may be different ſpecies of melody anſwering to thoſe different conſtitutions. But then we are not to conceive, that the proſlambanomenos, or fundamental of any *mode* is fixed to any particular chord of the ſyſtem, *v. gr.* the Phrygian to *g*, ſo that we muſt always begin there when we would have a piece of melody of that ſpecies. When we ſay in general, that ſuch a *mode* begins in *g*, it is no more than to ſignify the ſpecies of octave as they appear in a certain fixed ſyſtem; but we may begin in any chord of the ſyſtem, and make it the proſlambanomenos of any *mode*, by adding new chords, or altering the tuning of the old. If this were the true nature, and uſe of the tones, moſt of theſe *modes* muſt have been imperfect, and incapable of good melody, as wanting ſome of thoſe which we reckon the eſſential and natural notes of a true *mode*. Again, if the eſſential difference of the *modes* conſiſt only in the gravity or acuteneſs of the whole octave, then we may ſuppoſe one ſpecies or concinnous diviſion of the octave, which being applied to all the chords of the ſyſtem, makes them true fundamentals for a certain ſeries of ſucceſſive notes, by changing, as above, the tone of certain chords in ſome caſes, or by adding new chords to the ſyſtem. But that muſt have been a ſimple kind of melody, produced by admitting only one concinnous ſeries, and that too wanting ſome uſeful and neceſſary chords.

Muſic was conſiderably improved in the eleventh century, by Guido Aretinus; who, among other innovations, reformed the doctrine of *modes*. It is true, they were ſtill defined by the ſpecies of the octave, in Ptolemy's manner; and their number was fixed to ſeven; but afterwards taking occaſion to conſider the harmonical and arithmetical diviſions of the octave, whereby it reſolves into a fourth above a fifth, or a fifth above a fourth, they hence conſtituted twelve *modes*, making of each octave two different *modes*, according to this different diviſion: but becauſe there are two of them that cannot be divided both ways, there are but twelve *modes*. Of theſe, ſuch as were divided harmonically, that is, with the fifths loweſt (which were ſix) were called *authentic*; and the other ſix which had the fifths higheſt, were called *plagal modes*. See the ſcheme annexed.



To theſe *modes*, they gave the names of the antient Greek tones, as Dorian, Phrygian, Lydian: But the ſeveral authors differ in the application and order of theſe names. So that we are ſtill in great meaſure at a loſs what they meant by thoſe diſtinctions, and what their real uſe was.—The beſt account we can give is this; They conſidered that an octave which wants a fourth or fifth, is imperfect; theſe being the concords next to octave, the ſong ought to touch thoſe chords moſt frequently and remarkably; and becauſe their concord is different, which makes the melody different, they eſtabliſhed by this two *modes* in every natural octave that had a true fourth and fifth: Then, if the ſong was carried as far as this octave above, it was called a *perfect mode*; if leſs, as to the fourth or fifth, it was called *imperfect*; if it moved both above and below, it was called a *mixt mode*.—Thus it is ſome authors ſpeak about theſe *modes*.

Others, conſidering how indiſpenſable a chord the fifth is in every *mode*, took for the final, or key-note, in the arithmetically divided octaves, not the loweſt chord of that octave, but that very fourth.—The only difference then in this method between the authentic and plagal *modes* is, that the authentic goes above its final to the octave; the other aſcends a fifth, and deſcends a fourth; which will indeed be attended with different effects, but the *mode* is eſſentially the ſame, having the ſame final to which all the notes refer.

We are now to conſider wherein the *modes* of one ſpecies, as authentic, or plagal, differ among themſelves: This muſt either be by ſtanding higher or lower in the ſcale, *i. e.* by the different tenſion of the whole octave, or rather by the different ſubdiviſion of the octave into its concinnous degrees; there can be no other.—We are to conſider then, whether theſe differences are ſufficient to produce ſuch very different effects as are aſcribed to the ſeveral *modes*; for inſtance, that the one produces mirth, another ſadneſs, a third is proper for religion, a fourth for love, *&c.* That theſe effects are owing merely to the conſtitution of the octave, ſcarce any body will affirm. The differences in the conſtitution will, indeed, have ſome influence; but it will be ſo little, as that by the various combinations of other cauſes, one of theſe *modes* may be uſed to different purpoſes. The greateſt difference is that of thoſe octaves which have the third *l*, or third *g*, making what on other occaſions we call the *ſharp* and *flat key*.

However, if the *modes* depend upon the ſpecies of octaves, how can they be more than ſeven? And as to the diſtinction between authentic and plagal, we have already obſerved, that it is imaginary with reſpect to any eſſential difference conſtituted thereby in the kind of the melody; for though the carrying the ſong above or below the final, may have different effects, yet this is to be aſcribed to other cauſes beſides the conſtitution of the octaves. It is particularly obſervable, that thoſe authors who give us examples in actual compoſition of their twelve *modes*, frequently take in the artificial notes ♯ and ♭, to perfect the melody of their key; and by this means depart from the conſtitution of the octave, as it ſtands fixed in the natural ſyſtem. There is nothing certain or conſiſtent therefore in their way of ſpeaking; but the *modes* are all really reducible to two, *viz.* the ſharp and flat; the other differences reſpecting only the place of the ſcale where the fundamental is taken.

The antient *modes*, beſides their general diviſion into authentic and plagal, had alſo their reſpective names from the ſeveral Greek provinces where they are ſuppoſed to have been invented.—Originally, indeed, there were but three, *viz.* Doric, Lydian, and Phrygian; which were particularly called *tones*, becauſe at a tone's diſtance from one another. The reſt were added afterwards, and were ſome of them named from the relations they bore to the former, particularly the *hypo-doric*, as being below the doric.

The *Doric* **MODE** was a mixture of gravity and mirth, invented by Thamyras of Thrace. See **DORIC**.

The *Phrygian* **MODE** was adapted to the kindling of rage; invented by Marſyas the Phrygian.

The *Lydian* **MODE** was proper for funeral ſongs; invented, according to Pliny, by Amphion.

The *Myxolodian* was invented by Sappho.—The *Æolic*, *Ionic*, and *Hypo-Doric* by Philoxenus.—And the *Hypo-Lydian* by Polymneſtes.

Beſides theſe *modes of tune*, old authors have alſo introduced *modes of time*, or meaſures of notes.—Theſe at firſt were diſtinguiſhed into greater and leſs, and each of theſe again into perfect and imperfect. But afterwards they reduced all into four *modes*, which included the whole buſineſs of time.—As thoſe *modes* are now diſuſed, they are hardly worth the reciting.

The common *mode* now in uſe, is much more ſimple and natural than any of thoſe; *viz.* the proportion, which in theirs varied, being in ours fixed, *viz.* 2 : 1. A large equal to two longs; a long to two breves; a breve to two ſemi-breves, *&c.* proceeding in the ſame proportion to the laſt or loweſt notes. And if on ſome occaſions the proportion of 3 : 1 betwixt two ſucceſſive notes is required, it is eaſily expreſſed by annexing a point (.). See **TIME**, **NOTE**, *&c.*

The antients had likewiſe their *modi melopœiæ*, of which Ariſtides names theſe; *dithyrambic*, *nomic*, *and tragic*: which were called *modes* from their expreſſing the ſeveral motions and affections of the mind. See **DITHYRAMBIC**, *&c.*

MODEL, an original, or pattern propoſed for any one to copy, or imitate. See **ORIGINAL**.

St. Paul's church is ſaid to be built on the *model* of St. Peter's at Rome. See **ARCHETYPE**, **ECTYPE**, *&c.*

MODEL is particularly uſed in building, for an artificial pattern, made of wood, ſtone, plaiſter, or other matter, with all its parts and proportions; in order for the better conducting and executing ſome great work, and to give an idea of the effect it will have in large.

In all great buildings, it is much the ſureſt way to make a *model* in relievo; and not to truſt to a bare deſign, or draught. See **DESIGN**.

There are alſo *models* for the building of ſhips, *&c.* for extraordinary ſtair-caſes, *&c.*

MODEL, in painting and ſculpture, is any thing propoſed to be imitated.—And

Hence, in the academies, they give the term *model* to a naked man, diſpoſed in ſeveral poſtures, to give an opportunity to the ſcholars to deſign him in various views and attitudes.

The ſculptors have little *models* of clay or wax to aſſiſt them in their deſigns of others that are larger, in marble, *&c.* and to judge of the attitude and correctneſs of a figure. See FIGURE.

Statuaries likewiſe give the name *model* to certain figures of clay or wax, which are but juſt faſhioned, to ſerve by way of guide for the making of larger, whether of marble, or other matter. See STATUE.

MODERATOR, in the ſchools, the perſon who preſides at a diſpute, or in a public aſſembly. See PRESIDENT.

Such a doctor was the *moderator*, the preſident, at ſuch a diſputation, in ſuch an aſſembly, *&c.*

MODERN, ſomething new, or of our time.—In oppoſition to what is antique, or *ancient.* See ANCIENT.

Modern authors, according to Naude, are all thoſe who have wrote ſince Boethius: The *modern* philoſophy commences with Galileo: The *modern* aſtronomy with Copernicus. See PHILOSOPHY, and ASTRONOMY.

MODERN *medals*, are all thoſe that have been ſtruck within theſe three hundred years. See MEDAL.

MODERN *coins.* See the article COINS.

MODERN *Hebrew.* See the article HEBREW.

MODERN *weights.* See the article WEIGHTS.

MODERN, in architecture, is improperly applied to the preſent, or Italian manner of building; as being according to the rules of the antique. (See ANTIQUE.) Nor is the term leſs abuſed, when attributed to architecture purely Gothic. See GOTHIC.

Modern architecture, in propriety, is only applicable to that which partakes partly of the antique, retaining ſomewhat of its delicacy and ſolidity; and partly of the Gothic, whence it borrows members and ornaments, without proportion or judgment. See ARCHITECTURE.

MODIFICATION, in philoſophy, that which *modifies* a thing; that is, gives it this or that manner of being. See MODE.

Quantity and quality are accidents which *modify* all bodies. See QUANTITY, and QUALITY.

According to Spinoſa's ſyſtem, all the beings that compoſe the univerſe, are only ſo many different *modifications* of one and the ſame ſubſtance. It is the different arrangement and ſituation of their parts, that make all the difference between them. See SPINOSISM.

MODIFICATIVE, ſomething that *modifies*, or gives a thing a certain manner of being. See MODE.

Father Buffier eſtabliſhes a new part of ſpeech, which he calls *modificative.* Nouns, and verbs, he obſerves, are ſuſceptible of divers circumſtances or *modifications*: In the phraſe, *zeal acts*, we have a noun and verb, without any *modification*; but in that, *zeal without diſcretion acts raſhly*, the noun and the verb are each attended with a *modification* or circumſtance.

This laſt kind of words, which ſerve to *modify* nouns and verbs, ſince they have no general name in the common grammars, he chuſes to call *modificatives*:—which include what grammarians commonly call *adverb*, *conjunction*, and *prepoſition.* See CONJUNCTION, PREPOSITION, *&c.*

MODILLIONS *, in architecture, ornaments in the corniche of the Ionic, Corinthian, and Compoſite columns.—See *Tab. Architect. fig.* 20. and 26 *lit. c.* See alſo CORNICHE.

* The word comes from the Italian, *Modiglione*, a little meaſure.

The *modillions* are little inverted conſoles, or brackets, in form of an S, under the ſoffit of the corniche, ſeeming to ſupport the projecture of the larmier; though in reality they are no more than ornaments. See CONSOLE.

The *modillion* is ſometimes alſo called *mutule*; though cuſtom has introduced a little difference between the idea of a *modillion*, and a mutule; the mutule being peculiar to the Doric order, and the *modillion* to the higher orders. See MUTULE.

The *modillions* ought always to be placed over the middle of the column. They are particularly affected in the Corinthian order, where they are uſually enriched with ſculpture.—Their proportions muſt be ſo adjuſted, as to produce a regularity in the parts of the ſoffit.

The *inter-modillions*, *i. e.* the diſtances between them, depend on the inter-columnations, which oblige the *modillions* to be made of a certain length and breadth, in order to render the intervals perfect ſquares, which are always found to have better effect than parallelograms. To this it muſt be added, that in adjuſting the *modillions*, care ſhould be taken that they have ſuch a proportion, as that when the orders are placed over one another, there be the ſame number in the upper order as in the lower, and that they fall perpendicularly over each other.

Modillions are alſo uſed under the corniches of pediments; though Vitruvius obſerves that they were not allowed of in his time, in regard *modillions* were intended to repreſent the ends of rafters, which could not be ſuppoſed to be found in a pediment. See PEDIMENT.

Some will have the *modillions* of a pediment to repreſent purlins; and thoſe at the eaves to repreſent rafters. Daviler rather takes them for a kind of inverted conſoles or corbels.

MODIOLUS, a chirurgeon's inſtrument, the ſame with *anabaptiſton* and *trepanum.* See TREPANUM.

MODIUS, in antiquity, a kind of dry meaſure in uſe among the Romans for ſeveral ſorts of grain. See MEASURE.

The *modius* contained thirty-two heminæ, or ſixteen ſextaries; or $\frac{1}{3}$ of the amphora: amounting to an Engliſh peck. See HEMINA, AMPHORA, *&c.*

MODO *&* *forma*, in law, a phraſe uſed in proceſſes and pleadings, whereby the defendant abſolutely denies the thing charged on him by the plaintiff, *modo & forma declarata*, in the manner and form ſet forth.

The civilians in the like ſenſe ſay, *negat allegata, prout allegantur, eſſe vera.*

MODULATION, in muſic, is the art of keeping in, and on occaſion changing the mode, or key; and returning to it again; without offence to the ear. See MODE.

Under this term is comprehended the regular progreſſion of the ſeveral parts through the ſounds that are in the harmony of any particular key, as well as the proceeding naturally and regularly from one key to another.

The rules of *modulation* in the firſt ſenſe belong to harmony and melody. See HARMONY, and MELODY.—We ſhall here only add a word with regard to the rules of *modulation* in the latter ſenſe.

As every piece muſt have a principal key; and ſince the variety ſo neceſſary in muſic to pleaſe and entertain, forbids the being confined to one key; and that therefore it is not only allowable, but neceſſary, to *modulate* into, and make cadences on ſeveral other keys, having a relation and connection with the principal key: It muſt be conſidered what it is that conſtitutes a connection between the harmony of one key and that of another, that it may be hence determined into what keys the harmony may be conducted with propriety. See KEY.

As to the manner in which the *modulation* from one key to another is to be performed, ſo that the tranſition may be eaſy and natural; it is not eaſy to fix any preciſe rules: for though it is chiefly performed by the help of the ſeventh *g* of the key, into which the harmony is to be changed, whether it be flat or ſharp; yet the manner of doing it is ſo various and extenſive, as no rules can eaſily circumſcribe. A general notion of it may be conceived under the following terms.

The ſeventh *g* in either ſharp or flat key, is the third *g* to the fifth *f* of the key, by which the cadence in the key is chiefly performed; and by being only a ſemi-tone under the key, is thereby the moſt proper note to lead into it, which it does in the moſt natural manner imaginable. Inſomuch that the ſeventh *g* is never heard in any of the parts, but the ear expects the key ſhould ſucceed it; for whether it be uſed as a third, or as a ſixth, it always affects us with ſo imperfect a ſenſation, that we naturally expect ſomething more perfect to follow, which cannot be more eaſily and ſmoothly accompliſhed, than by the ſmall interval of a ſemi-tone, to paſs into the perfect harmony of the key. Hence it is, that the tranſition into one key is beſt effected, by introducing its ſeventh *g*, which ſo naturally leads to it.

MODULE, in architecture, a certain meaſure, taken at pleaſure, for regulating the proportions of columns, and the ſymmetry, or diſtribution of the whole building. See COLUMN.

Architects uſually chuſe the diameter, or ſemi-diameter, of the bottom of the column for their *module*; and this they ſub-divide into parts, or minutes. See MINUTE.

Vignola divides his *module*, which is a ſemi-diameter, into twelve parts, in the Tuſcan and Doric, and into eighteen for the other orders.

The *module* of Palladio, Scamozzi, M. Cambray, Deſgodetz, Le Clerc, *&c.* which is alſo the ſemi-diameter, is divided into thirty parts or minutes in all the orders. See MINUTE.

Some divide the whole height of the column into 20 parts for the Doric, $22\frac{1}{2}$ for the Ionic, 25 for the Roman, *&c.* and one of theſe parts they make a *module*, to regulate the reſt of the building by.

There are two ways of determining the meaſures, or proportions of buildings; the firſt by a fixed ſtandard meaſure, which is uſually the diameter of the lower part of the column, called a *module*, ſubdivided into 60th parts, called *minutes.*—In the ſecond, there are no minutes, nor any certain and ſtated diviſion of the *module*; but it is divided occaſionally into as many parts as are judged neceſſary. Thus, the height of the Attic baſe, which is half the *module*, is divided either into three, to have the height of the plinth; or into four, for that of the greater torus; or into ſix, for that of the leſſer.

Both theſe manners have been practiſed by the antient, as well as the modern architects: But the ſecond, which was that chiefly uſed among the antients, is in my opinion preferable. Perrault.

As Vitruvius, in the Doric order, has leſſened his *module*, which in the other orders is the diameter of the lower part of the column; and has reduced that great *module* to a mean one, which is a ſemidiameter: M. Perrault reduces the *module* to a third part for the ſame reaſon, *viz.* to determine the ſeveral meaſures without a fraction.—For in the Doric order, beſide that the height of the baſe, as in the other orders, is determined by one of theſe mean *modules*; the ſame *module* gives likewiſe the heights of the capital, architrave, triglyphs, and metopes. But our little *module*, taken from the third of the diameter of the lower part of the column, has uſes much more extenſive; for, by this the heights of pedeſtals, of columns, and entablatures, in all the orders, are determined without a fraction.

As then the great *module*, or diameter of the column, has ſixty minutes; and the mean *module*, or half the diameter, thirty minutes; our little *module* has twenty. *Id.*

MODUS *decimandi*, is when a parcel of land, a ſum of money, or a yearly penſion, belongs to the parſon, either by compoſition or cuſtom, time out of mind, in ſatisfaction for tithes in kind. See TITHE.

MOHAIR, a kind of ſtuff, ordinarily of ſilk, both woof and warp; having its grain wove very cloſe.

There are two kinds of *mohairs*, the one ſmooth and plain; the other watered like tabbys: The difference between the two only conſiſts in this, that the latter is calendered, the other not.—There are alſo *mohairs* both plain, and watered, whoſe woof is woollen, cotton, or thread.

MOIDORE, MOEDORE, or MOEDA, a gold coin, ſtruck, and current in Portugal. See COIN.

The *moidore* is properly the Portugueſe *piſtole*; and is equivalent to two mille-rees. See PISTOLE, MILLE-REE, *&c.*

There are alſo *doppio-moedas*, or double piſtoles, and demi-piſtoles.

MOIETY, MEDIETAS, the *half* of any thing. See HALF.

MOINEAU, in fortification, is a flat baſtion raiſed before a curtin when it is too long, and the baſtions of the angles too remote to be able to defend one another. See BASTION.

Sometimes the *moineau* is joined to the curtin, and ſometimes is divided from it by a moat.—Here muſqueteers are placed, to fire each way.

MOISTURE *radical.* See the article RADICAL.

MOLA *, in medicine, ſee the article MOLE.

* The word is Latin, and literally ſignifies a *mill-ſtone.*

MOLA, in anatomy, a bone of the knee, called alſo *patella*, *rotula*, &c.—See *Tab. Anat.* (*oſteol.*) *fig.* 23. *n.* 21. 21. See alſo PATELLA.

MOLARES, in anatomy, the *grinders*; an epithet given to the large teeth; as ſerving, like mill-ſtones, to grind the food. —See *Tab. Anat.* (*oſteol.*) *fig.* 2. *lit. f.* See alſo TOOTH.

The number of *molares* is not always the ſame. Some perſons have twenty; and others only ſixteen, *viz.* four or five on each ſide of either jaw.—They are very large, hard, and ſtrong; being faſtned into their alveoli or ſockets by ſeveral roots.

MOLASSES. See the article MOLOSSES.

MOLD. See the article MOULD.

MOULDED *column.* See the article COLUMN.

MOLE *, MOLA, or MOLA *carnea*, in medicine, a miſhapen maſs of hard fleſh, ſometimes generated in the wombs of women, inſtead of a fœtus; called alſo a *falſe conception.* See CONCEPTION.

* The Latins give it the name *mola*, which literally ſignifies *mill-ſtone*, from its reſemblance thereto in form and hardneſs.

The *mole* is the chaos of an embryo; and would have grown to an infant, had not the proceſs of conception been diſturbed. Though it be without regular bones, viſcera, *&c.* yet the lineaments frequently are not ſo far effaced, but that there are ſome remains of a child; ſometimes a hand, and ſometimes a foot, have been ſpied; but commonly the ſecundines.

It is rare that more than one *mole* is excluded; though Sennertus obſerves there are inſtances of two, three, or even more. He adds, that though they uſually come alone, yet they have been known to come with a fœtus, ſometimes before it, and ſometimes after it. See CONCEPTION.

The *mole* is diſtinguiſhed from an *embryo*, in that it has no placenta whereby to receive its nouriſhment from the mother. Inſtead of that, it grows immediately to the womb; and is nouriſhed thence. See FOETUS.

It has a kind of vegetative life, and continues growing in bulk till the time of excluſion. Sometimes it has been borne in the womb for two or three years.

This production is ſuppoſed to ariſe from ſome defect or indiſpoſition of the ovum, or egg; or, perhaps, from the male's ſeed wanting force to penetrate it ſufficiently in order to open, or expand the parts. Or, the effect may be accounted for, by ſuppoſing an ovum to drop into the womb, without being impregnated by the ſeed of the male: In all which caſes, the egg continuing to grow, and yet wanting ſomething neceſſary to organize and form it into an embryo, becomes a ſhapeleſs lump. See EMBRYO.

Authors are divided whether or no women ever bring forth *moles* without any intercourſe with men? Some ſay there are *moles* which derive their origin from the menſtruous blood detained, coagulated, and hardened; through which the blood and ſpirits have made themſelves paſſages, *&c.* See MENSES.

The *mole* is diſtinguiſhed from a true conception, by its tremulous palpitating motion; by its rolling from ſide to ſide; and by the belly's ſwelling equally every way. The breaſts ſwell as in caſe of a juſt embryo; but the humour generated therein is not true milk, but a crude matter, formed of the ſuppreſſed menſes.

To bring the *mola* out of the womb, bleeding and violent purgings are uſed, and at laſt ſtrong emmenagogues. If theſe fail, recourſe is to be had to manual operation.

MOLE, MOLES, a maſſive work formed of large ſtones laid in the ſea by means of coffer-dams, extended either in a right line or an arch of a circle, before a port; which it ſerves to cloſe; to defend the veſſels in it from the impetuoſity of the waves, and prevent the paſſage of ſhips without leave.

Thus we ſay the *mole* of the harbour of Meſſina, *&c.*

MOLE, is ſometimes alſo uſed to ſignify the harbour itſelf. See HARBOUR.

MOLE, MOLES, among the Romans, was alſo uſed for a kind of mauſoleum, built in a manner of a round tower on a ſquare baſe, inſulate, incompaſſed with columns, and covered with a dome. See MAUSOLEUM.

The *mole* of the emperor Adrian, now the caſtle of St. Angelo, was the greateſt, and moſt ſtately of all the *moles*. It was crowned with a brazen pine-apple, wherein was a golden urn containing the aſhes of the emperor.

MOLECULE, MOLECULA, in phyſics, a little maſs, or portion of any body. See PART and PARTICLE.

The air, by reſpiration, inſinuating itſelf into the veins and arteries, endeavours by its elaſtic power to divide and break the *molecules* of the blood, which on their ſide reſiſt ſuch diviſion.

MOLESTANDO. See the article NON-*moleſtando.*

MOLINE', in heraldry. A *Croſs*-MOLINE' is that which turns round both ways at all its extremities, though not ſo wide or ſharp as that ſaid to be *anchored.* See CROSS.

In Upton, the points are all cut off, which makes it very different from the croſs anchored. See FER *de moulin.*

MOLINISTS, a ſect in the Romiſh church, who follow the doctrine and ſentiments of the Jeſuit *Molina*, relating to ſufficient and efficacious grace. See GRACE, *&c.*

Their great antagoniſts are the Janſeniſts. See JANSENISM.

MOLINOSISTS, a ſect among the Romaniſts, who adhere to the doctrine of Molinos.—Theſe are the ſame with what are otherwiſe called *Quietiſts.* See QUIETISTS.

MOLLET. See the article MULLET.

MOLLIS *portio.* See the article PORTIO.

MOLMUTIN, or MOLMUTIAN *laws*, the laws of Dunwallo Molmutius, XVIth king of the Britons, who is ſaid to have begun his reign 440 years before the incarnation. See LAW.

He was the firſt who publiſhed any laws in this land; and they continued famous therein till the time of William the Conqueror.

MOLOSSES, MOLASSES, or MELASSES, that groſs, yet fluid matter remaining of ſugar, after refining, and which no boiling will bring to a conſiſtence more ſolid than that of ſyrup; hence alſo called *ſyrup of ſugar.* See SUGAR and REFINING.

Properly, *moloſſes* are only the ſediment of one kind of ſugar called *chypre*, or brown ſugar, which is the refuſe of other ſugars not to be whitened, or reduced into loaves.

Moloſſes are much uſed in Holland among poor people, for the preparation of tobacco, and inſtead of ſugar.

There are alſo a kind of brandy, or ſpirit made of *moloſſes*; but by ſome held exceedingly unwholeſome, and therefore diſcouraged. See BRANDY and SPIRIT.

MOLOSSUS, in the Greek and Latin poetry, a foot conſiſting of three long ſyllables.—As *audiri*, *cantabant*, *virtutem.* See FOOT.

It takes its name either from a dance in uſe among the people called *Moloſſi*, or *Epirotæ*; or from the temple of Jupiter *Moloſſus*, where odes were ſung, in which this foot had a great ſhare; or becauſe the march of the *Moloſſi* when they went to the combat, was compoſed of theſe feet, or had the cadence thereof.—The ſame foot was alſo called among the antients *Voitumnius*, *extenſipes*, *hippius*, *&* *chanius.* Dion. 3. p. 475.

MOLTA, or MOLTURA, a duty or toll paid by vaſſals to the lord for grinding their corn at his mill.

MOLTING, or MOULTING, the falling off or change of hair, feathers, ſkin, horns, voice, and other diſpoſitions of the body of animals, happening in ſome, annually, in others at certain ſtages of their life.

The generality of beaſts *molt* in the ſpring.

The *moulting* of a hawk is called *mewing.* See HAWK and FALCONRY.

The *molting* of a deer is the quitting of his horns in February or March; the *molting* of a ſerpent is the putting off his ſkin. See EXUVIÆ.

MOLUTA *arma.* See the article ARMA.

MOMENT, in time, the moſt minute, and indiviſible part of duration; or what we otherwiſe call an *inſtant.* See TIME, and INSTANT.

MOMENTS, in the new doctrine of infinites, denote the infinitely ſmall parts of quantity. See INFINITE.

Moments are the ſame with what we otherwiſe call *infiniteſimals*, and *differences*; being the *momentary* increments, or decrements of quantity conſidered as in a continual flux. See DIFFERENCE and FLUXION.

Moments are the generative principles of magnitude: They have no determined magnitude of their own; but are only inceptive thereof. See INCEPTIVE.

Hence, as it is the ſame thing if in lieu of theſe *moments*, the velocities of their increaſes and decreaſes be made uſe of, or the finite quantities proportionable to ſuch velocities; the method of proceeding which conſiders the motions, changes, or fluxions of quantities, is denominated by Sir Iſ. Newton the method of fluxions. See FLUXIONS.

Leibnitz, and moſt foreigners, conſidering theſe infinitely ſmall parts, or infiniteſimals as the differences of two quantities; and thereby endeavouring to find the differences of quantities, *i. e.* ſome *moments*, or quantities infinitely ſmall, which being taken an infinite number of times, ſhall equal given quantities, call theſe moments, *differences*; and the method of procedure, the *differential calculus.* See CALCULUS *differentialis.*

MOMENT, MOMENTUM, in mechanics, is the ſame with *impetus*; or the quantity of motion in a moving body. See MOTION.

MOMENTUM, is ſometimes alſo uſed ſimply for the motion itſelf.

Moment is frequently defined by the *vis inſita*, or the power by which moving bodies continually change place. See VIS.

In comparing the motions of bodies, the ratio of their *momenta* is always compounded of the quantity of matter, and the celerity of the moving body; ſo that the *moment* of any ſuch body may be conſidered as a rectangle under the quantity of matter, and the celerity.

And ſince it is certain that all equal rectangles have their ſides reciprocally proportionable; therefore if the *moments* of any moving bodies be equal, the quantity of matter in one to that of the other will be reciprocally as the celerity of the latter to the celerity of the former; and, on the contrary, if the quantities of matter be reciprocally proportionable to the celerities, the *moments*, or quantities in each, will be equal.

The *moment* alſo of any moving body may be conſidered as the aggregate or ſum of all the *moments* of the parts of that body; and therefore where the magnitudes and number of particles are the ſame, and where they are moved with the ſame celerity, there will be the ſame *moments* of the wholes. See MOTION.

MOMENTARY *motion.* See the article QUANTITY.

MONARCHY *, ΜΟΝΑΡΧΙΑ, a large ſtate governed by one; or a ſtate where the ſupreme power is lodged in the hands of a ſingle perſon. See GOVERNMENT.

* The word comes from the Greek μοναρχης, one who governs alone; formed of μονος *ſolus*, and αρχη *imperium*, government.

The moſt antient *monarchy* was that of the Aſſyrians, which was founded ſoon after the deluge.—We uſually reckon four grand, or univerſal *monarchies*, the Aſſyrian, Perſian, Grecian, and Roman. Though St. Auguſtin makes them but two, *viz.* thoſe of Babylon and Rome.—There ſeems in reality no neceſſity to make the Medes, Perſians and Greeks ſucceed to the whole power of the Aſſyrians, to multiply the number of the *monarchies*: It was the ſame empire ſtill, and the ſeveral changes that happened in it, did not conſtitute different *monarchies.* Thus the Roman empire was ſucceſſively governed by princes of different nations, yet without any new *monarchy* being formed thereby. Rome therefore may be ſaid to have immediately ſucceeded Babylon in the empire of the world. See EMPIRE.

Of *monarchies* ſome are *abſolute* and *deſpotic*, where the will of the monarch is uncontrollable; as Denmark, *&c.* others *limited*, where the prince's authority is reſtrained by laws, and part of the ſupreme power lodged in other hands; as in England.

Some *monarchies* again are *hereditary*, where the ſucceſſion devolves immediately from father to ſon; and others *elective*, where, on the death of the *monarch*, his ſucceſſor is appointed by election; as in Poland.

According to Hobbes, *monarchy*, as well as ariſtocracy, derives all its authority from the people, who transfer all their right, *v. gr.* the ſupreme power, by a plurality of ſuffrages, *&c.* to ſome one perſon called a *monarch*; ſo that whatever the people could have done before this tranſlation, may be now rightfully done by him, to whom the tranſlation is made.—This done, the people are no longer to be looked on as a perſon, but a diſſolved multitude; in regard they were only one by virtue of the ſupreme power, which they have now transferred to another.

Nor can the *monarch*, according to this author, oblige himſelf by any covenants, to any perſon, for the authority he has received; in regard he receives the power from the people, which, as ſoon as that is done, ceaſes to be a perſon; and the perſon ceaſing, the obligation to the perſon ceaſes of courſe.—The people therefore are obliged to pay obedience to the *monarch*, by virtue of thoſe covenants, whereby they mutually oblige themſelves to what the people, as a perſon, injoins to be done.

He argues further, that as a *monarch* cannot be obliged by any covenants; ſo neither can he do any injury to his ſubjects: an injury being nothing elſe but a breach of covenant; and where there is no covenant, there can be no breach. *De cive, cap.* 8.

MONASTERII *proviſor.* See the article PROVISOR.

MONASTERY, a convent, or houſe built for the reception of religious; whether it be abbey, priory, nunnery, or the like. See ABBEY, PRIORY, *&c.*

MONASTERY is only properly applied to the houſes of monks, mendicant friars, and nuns. The reſt are more properly called *religious houſes.* See RELIGIOUS.

MONASTIC, ſomething belonging to monks, or the monkiſh life. See MONK.

The *monaſtic* profeſſion is a kind of civil death, which has the ſame effect with the natural death. The council of Trent, *&c.* fix ſixteen years for the age at which a perſon may be admitted into the *monaſtical* ſtate.

St. Anthony is the perſon who in the fourth century firſt inſtituted the *monaſtic* life; as St. Pachomius, in the ſame century, is ſaid to have firſt ſet on foot the cœnobitic life, *i. e.* regular communities of religious. See COENOBITE.

In a ſhort time, the deſarts of Egypt became inhabited with a ſet of ſolitaries, who took upon them the *monaſtic* profeſſion. See ANACHORET, HERMITE, *&c.*—St. Baſil carried the monkiſh humour into the eaſt, where he compoſed a rule, which afterwards obtained through a great part of the weſt.

In the eleventh century, the *monaſtic* diſcipline was grown very remiſs: St. Odo firſt began to retrieve it in the monaſtery of Cluny: That monaſtery, by the conditions of its erection, was put under the immediate protection of the holy ſee; with a prohibition to all powers, both ſecular and eccleſiaſtical, to diſturb the monks in the poſſeſſion of their effects, or the election of their abbot. In virtue hereof, they pleaded an exemption from the juriſdiction of the biſhop; and extended this privilege to all the houſes dependent on Cluny. This made the firſt congregation of ſeveral houſes under one chief immediately ſubject to the pope, ſo as to conſtitute one body, or, as they now call it, one *religious order.* Till then, each monaſtery was independent of other, and ſubject to the biſhop. See ORDER, CONGREGATION, ABBOT, RELIGIOUS, *&c.*

MOND. See the article MOUND.

MONDAY.—*Plough*-MONDAY. See the article PLOUGH.

MONETÆ *pes.* See the article PES.

MONETAGIUM, MONETAGE, or MINTAGE, the right or privilege of coining money. See MINT, COINING, *&c.*

MONETALES *triumviri.* See the article TRIUMVIRI.

MONETARIUS, or MONEYER, a name which antiquaries and medaliſts give to thoſe who ſtruck the antient coins, or monies. See MONEYER.

Some of the old Roman, *&c.* coins, have the name of the *monetarius*, either written at length, or at leaſt the initial letters of it. See COIN, *&c.*

MONEY, or MONY, MONETA, a piece of metal marked for coin, with the arms of a prince, or ſtate, who make it circulate or paſs, at a fixed rate, for things of different value; to facilitate the buſineſs of commerce. See COMMERCE.

Paulus the lawyer, defines *money* a thing ſtamped with a public coin, and deriving its uſe and value from its impreſſion rather than its ſubſtance.

Monſ. Boizard defines *money* a piece of matter to which public authority has affixed a certain value, and weight; to ſerve as a medium in commerce.

The æra of the invention of *money* is not eaſy to be ſettled. There is no room to doubt but that in the earlieſt ages, the ordinary way of traffick among men was by trucking or exchanging commodity for commodity. Thus in Homer, Glaucus's golden armour was valued at one hundred cows; and Diomedes's armour at ten. See EXCHANGE.

But in courſe of time, it was found neceſſary in the way of commutative juſtice, to have ſome common meaſure or ſtandard, according to which all other things ſhould be eſtimated. This, as ſome gather from Joſephus, was firſt invented by Cain: Though the firſt tidings we hear of it, is in the time of Abraham, who paid four hundred ſhekels for a burying-place.

The Greeks refer the invention of *money* to Hermodice, wife of king Midas: And the Latins to Janus.—*Money* being a common meaſure for reducing wares to a balance, it was called by the Greeks *nomiſma*; not from king Numa, but from *nomos*, as being eſtabliſhed by law. By the Latins it was called *pecunia*; either becauſe the wealth of thoſe days conſiſted in their cattle; or, as Pliny will have it, becauſe their firſt coin was ſtamped with the figure of a cow. They alſo call it *moneta, à monendo*, as Suidas obſerves, becauſe when the Romans were at a want of *money*, Juno admoniſhed them to uſe juſtice, and there ſhould be no want of *money*. The effect whereof when they had found, ſhe was ſur-named *Juno Moneta*, and *money* was coined in her temple. In proceſs of time, *money* herſelf was made a goddeſs, and enſhrined by the name of *dea pecunia*, under the figure of a woman holding a balance in one hand, and a cornucopia in the other.

On the foot *money* now ſtands, it may be divided into *real*, or *effective*; and *imaginary.*

Real MONEY includes all coins, or ſpecies of gold, ſilver, copper, and the like; which have courſe in commerce, and do really exiſt.—Such are *guineas*, *crowns*, *piſtoles*, *pieces of eight*, *ducats*, &c. Which ſee under their proper heads; as alſo under COIN.

Real money, civilians obſerve, has three eſſential qualities, *viz. matter*, *form*, and *weight* or *value*.—For *matter*, copper is that thought to have been firſt coined; afterwards ſilver; and, laſtly, gold, as being the moſt beautiful, ſcarce, cleanly, diviſible, and pure of all metals.

The degrees of goodneſs are expreſſed in gold by carats; and in ſilver by penny-weights, *&c.* For there are ſeveral reaſons for not coining them pure and without alloy, *viz.* the great loſs and expence in refining them, the neceſſity of hardening them to make them more durable, and the ſcarcity of gold and ſilver in moſt countries. See Alloy.

Among the antient Britons, iron rings, or, as ſome ſay, iron plates, were uſed for *money*. Among the Lacedæmonians iron bars quenched with vinegar, that they might not ſerve for any other uſe. Seneca obſerves, that there was antiently ſtamped *money* of leather, *corium forma publica impreſſum.* And the ſame thing was put in practice by Frederic II. at the ſiege of Milan; to ſay nothing of an old tradition among our ſelves, that in the confuſed times of the barons wars, the like was done in England: But the Hollanders, we know, coined great quantities of paſteboard in the year 1574. Numa Pompilius made *money* of wood and leather. Nor does it appear that the Romans were much acquainted with the art of ſtriking *money* in metal during the time of their kings. The firſt ſilver *money* they coined was in the year of Rome 484; and their firſt gold *money* in 546. See Coining.

As to the *form of money*, it has been more various than the matter.—Under this are comprehended the weight, figure, impreſſion, and value.

For the *impreſſion*, the Jews, though they deteſted images, yet ſtamped on the one ſide their ſhekel, the golden pot which had the manna; and on the other, Aaron's rod. The Dardans, two cocks fighting. Alexander, as is held by ſome, his horſe Bucephalus: Though this may be doubted of, in regard the horſe is found as frequently on the coins of ſeveral of the kings of Macedon, his predeceſſors, as on his: The Athenians ſtamped their coins with an owl, or an ox; whence the proverb on bribed lawyers, *bos in lingua.* They of Ægina, with a tortoiſe; whence that other ſaying, *virtutem & ſapientiam vincunt teſtudines.* For the Romans, the monetarii ſometimes impreſſed the images of men that had been eminent in their families on the coins: But no living man's head was ever ſtamped on a Roman coin till after the fall of the commonwealth. From that time they bore the emperors head on one ſide. From this time the practice of ſtamping the prince's image on coins, has obtained among all civilized nations; the Turks and other Mahometans alone excepted, who, in deteſtation of images, inſcribe only the prince's name, with the year of the tranſmigration of their prophet.

As to the *figure*, it is either round, as in England; multangular or irregular, as in Spain; ſquare, as in ſome parts of the Indies; or nearly globular, as in moſt of the reſt.

After the arrival of the Romans in this iſland, the Britons imitated them, coining both gold and ſilver with the images of their kings ſtamped on them. When the Romans had ſubdued the kings of the Britons, they alſo ſuppreſſed their coins, and brought in their own; which were current here from the time of Claudius to that of Valentinian the younger, about the ſpace of five hundred years.

Mr. Camden obſerves, that the moſt antient Engliſh coin he had known was that of Ethelbert king of Kent, the firſt Chriſtian king in the iſland; in whoſe time all *money* accounts began to paſs by the names of *pounds*, *ſhillings*, *pence*, and *mancuſes.* See Pound, *&c.*

Pence ſeems borrowed from the Latin *pecunia*, or rather from *pendo*, on account of its juſt weight, which was about three pence of our *money*. Theſe were coarſely ſtamped with the king's image on the one ſide, and either the mint-maſter's, or the city's where it was coined, on the other. Five of theſe pence made their ſcilling, probably ſo called from *ſcilingus*, which the Romans uſed for the fourth part of an ounce. Forty of theſe ſcillings made their pound, and four hundred of theſe pounds were a legacy, or a portion for a king's daughter; as appears by the laſt will of king Alfred. See Penny, *&c.*

By theſe names they tranſlated all ſums of *money* in their old Engliſh teſtament; talents by *pundes*; Judas's thirty pieces of ſilver by *thirtig ſcillinga*; tribute *money*, by *penining*; the mite by *feorthling*.

But it muſt be obſerved, they had no other real *money*, but pence only; the reſt being imaginary *moneys*, *i. e.* names of numbers, or weights. Thirty of theſe pence made a mancus, which ſome take to be the ſame with a mark; manca, as appears by an old MS. was *quinta pars unciæ.* See Mark.

Theſe manca's or mancus's, were reckoned both in gold and ſilver. For in the year 680, we read that Ina king of the Weſt Saxons, obliged the Kentiſhmen to buy their peace at the price of thirty thouſand manca's of gold. In the notes on king Canute's laws, we find this diſtinction, that *mancuſa* was as much as a mark of ſilver; and *manca* a ſquare piece of gold, valued at thirty pence.

The Danes introduced a way of reckoning *money* by ores, *per oras*, mentioned in domes-day book; but whether they were a ſeveral coin, or a certain ſum, does not plainly appear. This, however, may be gathered from the abby-book of Burton, that twenty ores were equivalent to two marks.

They had alſo a gold coin called *bizantine*, or *bezant*, as being coined at Conſtantinople, then called *Bizantium.* The value of which coin is not only now loſt, but was ſo entirely forgot even in the time of king Edward the third, that whereas the biſhop of Norwich was fined a bizantine of gold to be paid the abbot of St. Edmond's-Bury, for infringing his liberties (as it had been enacted by parliament in the time of the conqueror) no man then living could tell how much it was; ſo it was referred to the king to rate how much he ſhould pay. Which is the more unaccountable, becauſe but an hundred years before, two hundred thouſand beſants were exacted by the ſoldan for the ranſom of St. Lewis of France; which were then valued at one hundred thouſand livres. See Besant.

Though the coining of *money* be a ſpecial prerogative of the king, yet the antient Saxon princes communicated it to their ſubjects; inſomuch that in every good town there was at leaſt one mint; but at London eight, at Canterbury four for the king, two for the archbiſhop, one for the abbot at Wincheſter, ſix at Rocheſter, at Haſtings two, *&c.* See Mint.

The Norman kings continued the ſame cuſtom of coining only pence, with the prince's image on one ſide, and on the other the name of the city where it was coined, with a croſs ſo deeply impreſſed, that it might be eaſily parted, and broken into two halves, which ſo broken, they called half-pence; or into four parts, which they called *fourthings*, or *farthings.* See Farthing.

In the time of K. Richard the firſt, money coined in the eaſt parts of Germany, came in ſpecial requeſt in England, on account of its purity, and was called *eaſterling money*, as all the inhabitants of thoſe parts were called *Eaſterlings.* And ſhortly after, ſome of thoſe people ſkilled in coining were ſent for hither, to bring the coin to perfection; which ſince has been called *ſterling* for *Eaſterling.* See Sterling.

King Edward the firſt, who firſt adjuſted the meaſure of an ell by the length of his arm, herein imitating Charles the Great, was the firſt alſo who eſtabliſhed a certain ſtandard for the coin, which is expreſſed to this effect by Greg. Rockley, mayor of London, and mint-maſter.—'A pound of *money* containeth 'twelve ounces: In a pound there ought to be eleven ounces, 'two eaſterlings, and one farthing; the reſt alloy. The ſaid 'pound ought to weigh twenty ſhillings and three pence in account and weight. The ounce ought to weigh twenty pence, 'and a penny twenty-four grains and a half.—Note, that eleven 'ounces two pence ſterling ought to be of pure ſilver, called '*leaf-ſilver*, and the minter muſt add of other weight ſeventeen 'pence half-penny farthing, if the ſilver be ſo pure.'

About the year 1320, the ſtates of Europe firſt began to coin gold, and among the reſt, our king Edward III. The firſt pieces he coined were called *Florences*, as being coined by Florentines; afterwards he coined nobles; then roſe-nobles, current at ſix ſhillings and eight pence; half-nobles, called *half-pennies*, at three ſhillings and four pence of gold; and quarters at twenty pence, called *farthings of gold.* The ſucceeding kings coined roſe-nobles, and double roſe-nobles, great ſovereigns, and half Henry nobles, angels and ſhillings.

King James the firſt coined unites, double crowns, Britain crowns: Then crowns, half crowns, *&c.* See Crown.

Falſe, or *baſe* Money, is either that ſtruck by an unqualified perſon, and of unſtatutable metals; or that which has loſt of its weight, either by being clipped on the corners, or filed on the edges, or laſtly, by having ſome of its ſurface peeled off; if gold, by aqua regalis; if ſilver, by aqua fortis.

Another kind of baſe *money* is that made of pieces of iron, copper, or other metal, covered on each ſide with a thin plate or leaf of gold or ſilver, neatly ſodered and joined around the edges, and ſtruck, like other coin, with figures, legends, *&c.* only to be diſtinguiſhed from them by the bulk, and weight, and ſound.

Imaginary Money, or Money *of account*, is that which has never exiſted; or at leaſt which does not exiſt in real ſpecies, but is a denomination invented or retained to facilitate the ſtating of accounts, by keeping them ſtill on a fixed footing, not to be changed, like current coins, which the authority of the ſovereign raiſes or lowers according to the exigencies of ſtate.—Of which kind are *pounds*, *livres*, *marks*, *maravedies*, &c.

Money of account, according to M. Boizard, is a ſum of *money*, or a certain number of ſpecies which may change in ſubſtance and quantity, but never in quality.—Thus fifty pounds conſiſts of fifty pieces called *pounds*, which are not real, but may be paid in ſeveral real ſpecies, as in guineas, crowns, ſhillings, *&c.* which are changeable, as guineas, *v. gr.* which are ſometimes higher, ſometimes lower. See Pound, and Guinea.

Moneys *of account, or manners of reckoning* Money *in* Europe *and* Aſia.—We here confine ourſelves to the *moneys* of thoſe two parts of the world: America having none; the reſpective *moneys* of account of the Europeans, who have there made ſettlements, being eſtabliſhed with them. As to Africa, the cities of Barbary and Egypt, whither the Europeans traffick, reckon much after the ſame manner as in the Levant, and in the dominions of the grand ſignior: For the reſt, throughout that vaſt extent of coaſt, where we trade for negroes, gold-duſt, elephants teeth, wax, leathers, *&c.* either the miſerable inhabitants do not know what *money* of account is, or if they have any, it is only what ſtrangers, ſettled among them, have introduced.—The *macoute*, however, and the *piece*, which are manners of accounting among theſe Barbarians, will be mentioned in their place. See PIECE.

Engliſh MONEY *of account*, is the pound, ſhilling, and penny ſterling: The pound containing twenty ſhillings, and the ſhilling twelve pence. See POUND, COIN, and STERLING.

French MONEY *of account*, was antiently the pariſis, tournois, and the ecu, or crown: but ſince the ordonnance of 1667, they only reckon by livres, *i. e.* pounds; ſols, *i. e.* ſhillings; and deniers tournois, *i. e.* pence. The livre, 20 ſols, or $\frac{1}{3}$ of the ecu, or crown; the ſol, 12 deniers. See LIVRE, DENIER, &c.

The maille, obole, or half-penny tournois, is alſo now a *money* of account, though antiently a real coin. The maille is divided into two pites, and each pite into two ſemi-pites; all *moneys* of account. To which muſt be added the frank, of the ſame value with the livre, *viz.* 20 ſols tournois; and the blanc, 5 deniers tournois; and the carolus, ten: All three antiently real coins. See FRANC, &c.

Dutch and Flemiſh MONEYS *of account*. In Holland, Zealand, Barbant, and Cologne, they uſe the pundt, or livre de gros; ſchelling, or ſol de gros; and penning, or deniers groſs. The pundt, containing 20 ſchelling; and the ſchelling, 12 pennings. The pundt equal to 7 livres, 4 ſols French, or 10 ſhillings $\frac{3}{10}$ ſterling. They alſo account by florins or guilders, patards and pennings. The florin is equal to $\frac{1}{6}$ of the pound, or 20 patards; and the patard, 12 pennings. The merchants uſe each method of accounting indifferently.

Spaniſh MONEY *of account*, is the peſo, ducat of ſilver and vellon, rial of vellon, and cornados and maravedis of ſilver and vellon. The peſo is to the ducat as 12 to 10. The ducat of ſilver contains 11 rials of ſilver; and that of vellon, 11 rials of vellon; which makes a difference of near one half. The ſilver rial being current for 7 ſhillings ſterling, and that of vellon only at 3 : 8 *d.* ſterling. 34 maravedis make the rial of vellon, and 63 that of ſilver. The maravedi is divided into 4 cornaros.

German and Swiſs MONEY *of account*. In Switzerland, and many of the chief cities of Germany, particularly Francfort, they account by florins (but on a footing different from that of Holland) by creux's or creutzers, and pennins. The florin equal to 3 ſhillings ſterling, and divided into 60 creux or kreutz, and the creux into 8 pennins. In others, as Nuremberg, &c. they account by rix-dollars, florins, and creux, The rix-dollar equal to 4 : 8 *d.* ſterling, divided into 100 creux, and the creux into 8 pennins. In others, as Hambourg, Berlin, &c. by rix-dollars, marks lubs, ſchellings lubs, and deniers lubs. The rix-dollar and dollar on the foot of the French crown, or 4 : 6 ſterling, divided into 3 marks, and the mark into 16 ſchellings, and the ſchelling into 12 pennins. At Hambourg they alſo uſe the livre, ſchelling, and denier de gros. At Ausbourg and Bolzamont, they account by dollars and creux's; the dollar equal to 4 : 6 ſterling, divided into 90 creux's. At Nambourg, by rix-dollars gros and fenins; the rix-dollar equal to 4 : 6 ſterling, divided into 36 gros, and the gros into 12 fenins. At Strasbourg by florins, creux, and pennins. The florin equal to 1 *s.* 6 *d.* ſterling, divided into 60 creux, and the creux into 8 pennins.

Italian MONEYS *of account*. In Italy, the *moneys* of account are various, almoſt as the cities of commerce. At Rome, they account by pounds, ſhillings, and pence of gold *di ſtampa*. At Venice, by ducats, and groſs *di banco*. The ducat divided into 24 groſs, each groſs equal to 2 pence $\frac{1}{2}$ ſterling. And by ducats currant, called alſo *ſequins*, equal to 9 *s.* 2 *d.* ſterling; and by pounds, ſhillings, and pence. At Lucca and Bergamo, they uſe the four laſt; and only the three laſt at Bologna, Mantua, and Savoy: In Geneva, beſides pounds, ſhillings, and pence, they account alſo by florins, containing 6 ſoldis, or 6 pence $\frac{1}{2}$ ſterling. At Leghorn and Genoa, beſides pounds, ſhillings, and pence, they account by piaſters, equal to 4 *s.* 6 *d.* ſterling. At Nova, their *moneys* of account are crowns, ſhillings, and pence of gold *de marc*. At Raconis, pounds, florins, and groſs. At Ancona, crowns, ſhillings, and pence. At Naples, ducats, grains, and tarins, equal to one ſhilling ſterling, divided into 20 grains.

Sicilian and Malteſe MONEYS *of account*. At Meſſina, Palermo, and throughout Sicily, they account by pounds, ounces, tarins, grains, and piccoli's; which are ſummed by 30, 20, and 6: the ounce being 30 tarins, the tarin 20 grains, and the grain 6 piccoli's. At Malta, they account by pounds, ounces, carlins and grains. The ounce 30 tarins, or 60 carlins, or 600 grains; the carlin equal to 6 *d.* $\frac{1}{4}$ ſterling.

Poliſh MONEYS *of account*. Throughout Poland, moſt of the dominions of the king of Pruſſia, and Dantzic, they account by rix-dollars, roups, and grochs. The rix-dollar equal to 4 *s.* 6 *d.* ſterling, and divided into 32 roups; and again, in the Pruſſian territories, into 24 grochs: In Poland, into 90 grochs. Sometimes they uſe the florin, groch, and penny.

Swediſh, Daniſh, and Muſcovite MONEYS *of account*. In Sweden, they account by dalles, equal to 32 ſols lubs, or 3 ſhillings ſterling. In Denmark, by rix-dollars, and ſtivers; the rix-dollar divided into 48 ſtivers.

In Muſcovy, they account by roobles, altins, and grifs or grives. The rooble equal to 100 copecs, or 2 rix-dollars, or 9 ſhillings ſterling; divided into 10 grifs; 3 altins $\frac{1}{3}$ make the grif, or 10 copecs; the copec at 13 pence $\frac{3}{4}$ ſterling.

Turkiſh MONEYS *of account*. The Turks, both in Europe, Aſia, and Africa, account by purſes, either of ſilver or gold, (the laſt only uſed in the ſeraglio) with half-purſes of gold, called alſo *rizes*. The purſe of ſilver equal to 1500 French livres, or 112 *l.* 10 *s.* ſterling. The half-purſe in proportion. The purſe of gold 15000 ſequins, equal to 30000 French crowns, or 6750 pounds ſterling; ſeldom uſed but for preſents to favourites: So that a *purſe*, ſimply, ſignifies a purſe of ſilver, or 1500 livres. They are called *purſes*, becauſe all the *money* in the treaſury of the ſeraglio is kept in leathern bags or purſes, of thoſe contents. The merchants alſo uſe Dutch dallars, called *aſtani* or *abouquels*, with meideins and aſpres. The dallar equal to 35 meideins, and the meidein to 3 aſpres; the aſpre to $\frac{1}{2}$ penny ſterling.

Perſian MONEYS *of account*. In Perſia, they account by the toman (called alſo *man*, and *tumein*) and the dinar-biſti. The toman is compoſed of 50 abaſſis, or a hundred mamodies, or 200 chapes, or 10000 dinars; which accounting the abaſſi on the foot of eighteen French ſols, or the dinar on that of a denier, amounts to 3 *l.* 12 *s.* 6 *d.* ſterling the toman. They alſo account by larins, eſpecially at Ormus, and on the coaſts of the Perſian gulph. The larin equivalent to 11 pence ſterling; and on that footing uſed alſo in Arabia, and a great part of the Eaſt-Indies.

Chineſe MONEYS *of account*, are the pic, picol, and tael; which though in effect weights, do likewiſe ſerve as *moneys of account*; obtaining in Tunquin as well as China. The pic is divided into 100 catis, ſome ſay 125. The cati into 16 taels; each tael equal to 1 ounce 2 drachms. See *Chineſe* COINS. The picol contains 66 catis $\frac{3}{4}$; the tael equivalent to 6 *s.* 8 *d.* ſterling.

Japaneſe MONEYS *of account*, are the ſchuites, cockiens, oebans or oubans, and taels. Two hundred ſchuites are equal to 500 Dutch pounds; the cockien equal to 10 Low-country pounds; 1000 oebans make 45000 taels.

Mogul MONEYS *of account*. At Surat, Agra, and the reſt of the eſtates of the Great Mogul, they uſe lacres, acres, or leeths; implying a hundred thouſand: Thus a lacre of rupees is a hundred thouſand rupees; the lacre being nearly on the footing of the tun of gold in Holland, and the million of France.

MONEYS *of account of other iſlands and coaſts of India*. Throughout Malabar, and at Goa, they uſe tangas, vintins, and pardos xeraphin. The tanga is of two kinds, *viz.* of good, and bad alloy. Hence their cuſtom is to count by good or bad *money*. The tanga of good alloy is $\frac{1}{5}$ better than the bad; ſo that 4 tangas good being allowed the pardos xeraphin, there will be required 5 of the bad; 4 vintins good make a tanga likewiſe good; 15 barucos a vintin. The good baruco is equal to a Portugueſe ree, a French denier, or $\frac{1}{15}$ of a penny ſterling. In the iſland of Java, they uſe the ſonta, ſapacou, fardos, and catis; which laſt *money*, together with the leeth, or lacre, is much uſed throughout all the Eaſt-Indies. The ſanta is two hundred caxas, or little pieces of that country hung on a ſtring; and is equal to $\frac{10}{12}$ of a penny ſterling. Five ſantas make the ſapacou. The fardos equal to 2 *s.* 8 *d.* ſterling. The cati contains 20 taels; the tael 6 *s.* 8 *d.* ſterling.

There are iſlands, cities, and ſtates of the Eaſt-Indies, whoſe *moneys of account* are not here expreſſed; partly becauſe reducible to ſome of thoſe above-mentioned; and partly becauſe we find no certain conſiſtent account of them in any of the authors, or memoirs herein conſulted.

African MONEYS *of account*. From Cape Verd, to the Cape of Good Hope, all exchanges and valuations of merchandizes are made on the foot of the macoute and piece: which though no *moneys of account*, (for thoſe barbarians having no real *moneys*, need no imaginary ones to eſtimate them by,) yet ſerve in lieu thereof. At Loango de Boirie, and other places on the coaſt of Angola, the eſtimations are made by macoutes; and at Malimbo, and Cabindo, on the ſame coaſt, the negroes reckon by pieces. Among the firſt, the macoute is equivalent to 10: Ten macoutes make 100; which likewiſe leaves us a kind of imaginary *money*. To eſtimate any purchaſe, exchange, &c. they fix on the one ſide the number of macoutes required, *e. gr.* for a negro; on the other for how many macoutes they agree to receive each kind of merchandize required for the negro: ſo that there are ſeveral bargains made for one. Suppoſe, *v. gr.* the ſlave be fixed at 3500; this amounts to 350 macoutes. To make up this number of macoutes in merchandizes, they fix the price of each in macoutes. Two Flemiſh knives, *e. gr.* are accounted one macoute; a copper-baſon two pounds weight, three; a barrel of gun-powder, three, &c. For the piece, it ſerves in like manner to eſtimate the value of goods, duties, &c. on either ſide. Thus the natives require 10 pieces for a ſlave; and the Europeans put, *v. gr.* a fuſee at 1 piece; a piece of ſalampoures blue, at 4 pieces, &c.

MONEYS *of account among the antients.—Grecian* MONEYS *of account*. The Grecians reckoned their ſums of *money* by drachmæ, minæ, and talenta. The drachma equal to 7 $\frac{3}{4}$ *l.* ſterling; 100 drachmæ made the mina, equal to 3 *l.* 4 *s.* 7 *d.*

ſterling; 60 minæ made the talent, equal to 193 *l.* 15 *s.* ſterling: Hence 100 talents amounted to 19375 *l.* ſterling.

The mina and talentum indeed, were different in different provinces: Their proportions in Attic drachms are as follow. The Syrian mina contained 25 Attic drachms; the Ptolemaic $33\frac{1}{3}$; the Antiochic and Eubæan 100; the Babylonic 116; the greater Attic and Tyrian $133\frac{1}{3}$; the Æginean and Rhodian $166\frac{2}{3}$.

The Syrian talent contained 15 Attic minæ; the Ptolemaic 20; the Antiochic 60; the Eubæn 60; the Babylonic 70; the greater Attic and Tyrian 80; the Æginean and Rhodian 100.

Roman MONEYS *of account*, were the ſeſtertius, and ſeſtertium. The ſeſtertius equal to 1 *d.* $3\frac{3}{4}$. ſterling. One thouſand of theſe made the ſeſtertium, equal to 8 *l.* 1 *s.* 5 *d.* 2 *q.* ſterling. One thouſand of theſe ſeſtertia made the decies ſeſtertium (the adverb *centies* being always underſtood) equal to 8072 *l.* 18 *s.* 4 *d.* ſterling. The decies ſeſtertium they alſo called *decies centena millia nummum.* Centies ſeſtertium, or centies HS were equal to 80729 *l.* 3 *s.* 4 *d.* Millies HS to 807291 *l.* 13 *s.* 4 *d.* Millies centies HS to 888020 *l.* 16 *s.* 8 *d.*

Cert-MONEY.	See the article	CERT-*money*.
Chimney-MONEY.		CHIMNEY-*money*.
Poll-MONEY.		POLL-*money*.
Preſt-MONEY.		PREST-*money*.
Preſtation-MONEY.		PRESTATION-*money*.
Salvage-MONEY.		SALVAGE-*money*.
Ship-MONEY.		SHIP-*money*.
Trophy-MONEY.		TROPHY-*money*.

MONEYERS, MONEYORS, or MONIERS, officers of the mint, who work, and coin gold and ſilver money; and anſwer all the waſte and charges. See MINT, COINING, and MONETARIUS.

MONEYERS is ſometimes alſo uſed for *bankers*; or thoſe who make a trade of turning, and returning money. See BANKER.

MONITORY *letters*, are letters of warning and admonition, ſent from an eccleſiaſtical judge upon information of ſcandals and abuſes within cognizance of his court.

MONK*, antiently denoted a perſon who retired from the world, to give himſelf up wholly to God, and to live in ſolitude, and abſtinence. See RELIGIOUS.

* The word is derived from the Latin *monachus*, and that from the Greek μοναχος, ſolitary, of μονος, *ſolus*, alone; by reaſon the antient *monks* lived in ſolitude, as the true *monks* ſtill do.

Such were the Hermits and Anachorets, who withdrew into deſarts, and lived remote from all commerce of mankind. See HERMIT and ANACHORET.

Some writers, as father Helyot, *diſſert. prelim.* trace the original of *monks* up as early as the time of the Therapeutæ, and maintain that there had been an uninterrupted ſucceſſion of *monks* from the Therapeutæ to St. Anthony. Others, on the contrary, are contented with going back as far as St. Paul, the firſt hermit. See THERAPEUTÆ.

The *monks*, at leaſt the antient ones, were diſtinguiſhed into *ſolitaries*, *cœnobites*, and *ſarabaites*.

The *ſolitary* are thoſe who live alone, in places remote from all towns, or habitations of men, as do ſtill ſome of the hermits.

The *cœnobites* are thoſe who live in community with ſeveral others in the ſame houſe, and under the ſame ſuperiors. See COENOBITE.

The *ſarabaites* were ſtrolling *monks*, having no fixed rule or reſidence. See SARABAITES.

The houſes of *monks* again were of two kinds, *viz. Monaſteries lauræ.* See MONASTERY and LAURA.

Thoſe we call *monks* now a-days, are cœnobites, who live together in a convent or monaſtery, who make vows of living according to a certain rule eſtabliſhed by the founder, and wear a habit which diſtinguiſhes their order. See VOW and RULE.

Thoſe that are endowed, or have a fixed revenue, are moſt properly called *monks*, *monachi*; as the Chartreux, Benedictines, Bernardines, &c.—The Mendicants, or thoſe that beg, as the Capuchins, and Franciſcans, are more properly called *religious*, and *friars*; though the names are frequently confounded. See RELIGIOUS.

The firſt *monks* were thoſe of St. Anthony; of St. Baſil, called in the eaſt, *calogeri*, from καλος γερον, good old man; and thoſe of St. Jerom; the hermites of St. Auguſtine, and afterwards thoſe of St. Benedict and St. Bernard; at length came thoſe of St. Francis, and St. Dominic, with a legion of others; which ſee under their proper heads, BENEDICTINS, &c.

Monks are diſtinguiſhed by the colour of their habits into *black*, *white*, *grey*, &c.—Among the *monks*, ſome are called *monks of the choir*, others *profeſſed monks*, and others *lay monks*; which laſt are deſtined for the ſervice of the convent, and have neither clericate nor literature. See LAY.

Cloiſtered MONKS, are thoſe who actually reſide in the houſe: in oppoſition to *extra-monks*, who have benefices depending on the monaſtery.

Monks are alſo diſtinguiſhed into *reformed*, whom the civil and eccleſiaſtical authority have made maſters of antient convents, and put in their power to retrieve the antient diſcipline, which had been relaxed; and *antient*, who remain in the convent, to live in it according to its eſtabliſhment at the time when they made their vows, without obliging themſelves to any new reform.

Antiently, the *monks* were all laymen, and were only diſtinguiſhed from the reſt by a particular habit, and an extraordinary devotion.—Not only the *monks* were prohibited the prieſthood; but even prieſts were expreſsly prohibited from becoming *monks*, as appears from the letters of St. Gregory. Pope Cyricius was the firſt who called them to the clericate, on occaſion of ſome great ſcarcity of prieſts, that the church was then ſuppoſed to labour under. And ſince that time, the prieſthood has been uſually united to the monaſtical profeſſion. See FATHER, &c.

Profeſſed MONKS. See the article PROFESSED.

Proprietary MONKS. See the article PROPRIETARY.

MONKS-HOOD. See the article ACONITE.

MONKS *rhubarb.* See the article RHUBARB.

MONKS *ſeam*, among ſailors, is, when the ſelvedges of ſails are laid a little over one another, and ſewed on both ſides.

MONOCHORD, a muſical inſtrument wherewith to try the variety and proportion of muſical ſounds. See TUNE.

Monochord, according to Boethius, is an inſtrument invented by Pythagoras, for meaſuring geometrically, or by lines, the quantities and proportions of ſounds.

The antient *monochord* was compoſed of a rule divided, and ſubdivided into divers parts, whereon there was a ſtring pretty well ſtretched upon two bridges, at each extreme thereof. In the middle between both was a moveable bridge, called *magas*, by whoſe means, in applying it to the different diviſions of the line, the ſounds were found to be in the ſame proportion to one another, as the diviſions of the line cut by the bridge were.

The *monochord* is alſo called the *harmonical canon*, or *canonical rule*; becauſe ſerving to meaſure the degrees of gravity, and acuteneſs of ſounds. Ptolemy examines his harmonical intervals by the *monochord*. See CANON, GRAVITY, &c.

There are alſo *monochords* with divers ſtrings, and a multitude of fixed bridges; the uſe of all which may be ſupplied by one ſingle moveable bridge; by only ſhifting it under a new chord or ſtring, which is placed in the middle, and repreſents the entire ſound, or the open note, anſwering all the diviſions on the other bridges.

When the chord was divided into equal parts, ſo that the terms were as 1 and 1, they called them *uniſons*; if they were as 2 to 1, *octaves*, or *diapaſons*; when they were as 8 to 2, *fifths*, or *diapentes*; if they were as 4 to 3, they called them *fourths*, or *diateſſerons*; if the terms were as 5 to 4, *diton*, or a *greater third*; if as 6 to 5, a *demi-diton*, or a *leſſer third*; laſtly, if as 24 to 25, *demi-diton*, or *dieſis*. See UNISON, OCTAVE, DIAPASON, DIAPENTE, DIATESSERON, &c.

The *monochord* being thus divided, was properly what they called a *ſyſtem*, of which there were many kinds, according to the different diviſions of the *monochord*. See SYSTEM.

Dr. Wallis has taught the diviſion of the *monochord* in the *Philoſophical tranſactions*; but that inſtrument is now diſuſed, the modern muſic not requiring ſuch diviſion.

MONOCHORD*, is alſo uſed for any muſical inſtrument, conſiſting of only one chord, or ſtring.—Such is the trumpet-marine. See CHORD, and TRUMPET.

* The word is Greek, Μονοχορδος, formed of μονος, *ſolus*, ſingle, and χορδη, chord.

MONOCHROMA*, ΜΟΝΟΧΡΩΜΑ, a picture all of one colour. See CAMIEUX, CLAIROBSCURE, &c.

* The word is compounded of the Greek μονος, ſingle; and χρωμα, colour.

MONODY*, MONODIA, in the antient poetry, a kind of mournful ſong, or ditty, ſung by a perſon all alone; to utter his grief.

* The word is compounded of μονος, *ſolus*, and ωδη, ſong.

MONOGAMY*, the ſtate or condition of thoſe who have only married once, or are reſtrained to a ſingle wife. See MARRIAGE, BIGAMY, &c.

* The word is compounded of μονος, *ſolus*, and γαμος, marriage. See POLYGAMY.

MONOGRAM, MONOGRAMMUS, a cypher, or character, compoſed of one or more letters interwoven; being a kind of abbreviation of a name; antiently much uſed as a badge, ſeal, arms, &c. See SEAL, CIPHER, &c.

Under the eaſtern empire, it is uſual to find MIK, which are the *monogram* of Maria, Jeſus, Conſtantine.

The uſe of *monograms* is of an antient ſtanding, as appears from Plutarch, and from ſome Greek medals of the time of Philip of Macedon, Alexander his ſon, &c.

The Roman labarum bore the *monogram* of Jeſus Chriſt, conſiſting of two letters, a P placed perpendicularly through the middle of an X, *e. gr.* ☧, as we find it in ſeveral medals of the time of Conſtantine; thoſe being the two firſt letters of the word ΧΡΙΣΤΟΣ, Chriſt. See LABARUM.

Kings formerly marked their coins with their *monograms*: Of this we have inſtances in Charlemain's coins. That prince alſo uſed the *monogram* for his ſignature. Eginhard gives us this reaſon for it, *viz.* that Charlemain could not write; and that having attempted in vain to learn in his grown age, he was reduced to the neceſſity of ſigning with a *monogram*.

The antients alſo uſed *monograms* as notes, or abbreviations of inſcriptions; for the underſtanding whereof we have expreſs treatiſes of Valerius Probus, Sert. Urſatus, *&c.* See CHARACTER.

MONOLOGUE *, a dramatic ſcene, wherein a perſon appears alone on the ſtage, and ſpeaks to himſelf. See SOLILOQUY.

* The word is formed of the Greek, μονος, *ſolus*; and λογος, diſcourſe, ſpeech.

MONOMACHIA *, ΜΟΝΟΜΑΧΙΑ, a duel, or ſingle combat of man againſt man. See DUEL.

* The word comes from the Greek, μονος, *ſolus*; and μαχη, combat.

Monomachia was antiently allowed by law, for the trial or proof of crimes. It was even permitted in pecuniary cauſes, as appears by antient records. It is now forbid both by the civil and canon laws. See COMBAT.—Alciat has wrote a treatiſe *De monomachia*.

MONOMIAL, in algebra, a root or quantity that has but one name; or conſiſts but of one part or member.—Such are *ab*, *aab*, *aaabb*. See QUANTITY, BINOMIAL, TRINOMIAL, ROOT, *&c.*

Monomials may be either rational, or irrational. See RATIONAL, *&c.*

MONOPETALOUS, in botany, a term applied to flowers which have only one undivided petalum, or leaf. See FLOWER, PETALA, *&c.*

MONOPHYSITES *, a general name given to all thoſe ſectaries in the Levant, who only own one nature in Jeſus Chriſt. See THEANDRIC.

* The word comes from the Greek, μονος, *ſolus*; and φυσις, *natura*.

The *monophyſites* however, properly ſo called, are the followers of Severus, and Petrus Fullenſis. See JACOBITE.

MONOPOLY *, ΜΟΝΟΠΩΛΙΟΝ, an unlawful kind of traffic, when one or more perſons make themſelves ſole maſters of any commodity, trade, manufacture, or the like, with deſign to enhance its price; thoſe who have occaſion for it being obliged to purchaſe it at their hands, and on their own terms.

* The word is pure Greek, formed of μονος, *ſolus*, and πωλεω, *vendo*, q. d. I ſell alone.—Among the Romans, the term was ſo odious, that Tiberius, as Suetonius relates, having occaſion to make uſe of it, begged leave of the ſenate for it, as being borrowed from the Greek.

There are two kinds of *monopolies*: The one, when a merchant buys up, for inſtance, all the corn of a province, to retail it at an advanced rate to the people.

The other when a letter, or patent, is procured from the prince, prohibiting any other perſon to ſell any commodity beſides the patentee.

MONOPTERE, ΜΟΝΟΠΤΕΡΟΣ, a kind of temple among the antients, round, and without walls; having its dome ſupported by columns. See TEMPLE.

MONOPTOTE, MONOPTOTON, in grammar, a noun which has only one caſe: as, *inficias*. See CASE.

MONOPYRENEOUS *fruits*, are ſuch as only contain one kernel, or ſeed. See FRUIT.

MONORHYME *, a poetical compoſition, all the verſes whereof end with the ſame rhyme. See RHYME.

* The word comes from the Greek μονος, *ſolus*; and ρυθμος, rhyme. See RHYME.

Monorhymes are ſaid to have been invented by the old French poet Leonin, who addreſſed ſome Latin verſes of this kind to pope Alexander III. Whence they are alſo called *Leonine verſes*. See LEONINE.

MONOSTICH, MONOSTICHON, an epigram or poetical piece conſiſting of one ſingle verſe. See VERSE, and EPIGRAM.

MONOSYLLABLE, MONOSYLLABUM, a word of a ſingle ſyllable; or, that conſiſts of one or more letters which are pronounced together. See WORD, and SYLLABLE.

The French language abounds in *monoſyllables* more than any other. This renders it the more perplexing to foreigners, and yet the beauty of the language ſeems to conſiſt in it. One of the beſt and ſmootheſt lines in Malherbe conſiſts of twelve *monoſyllables*; ſpeaking of Caliſta, he ſays,—*Et moy je ne voy rien quand je ne la voy pas.*—In this the genius of the Engliſh tongue differs very much from the French, an uninterrupted ſeries of *monoſyllables* in the former having always an ill effect. This Mr. Pope both intimates and exemplifies in the ſame verſe.—*And ten low words oft creep in one dull line.*—Paſquier cites an elegy of forty-two verſes, conſiſting wholly of *monoſyllables*.

MONOTHELITES *, an antient ſect, who ſprung out of the Eutychians; thus called, as only allowing of one will in Jeſus Chriſt. See EUTYCHIAN.

* The word is compounded of the Greek μονος, ſingle; and θελημα, will, of θελω, *volo*, I will.

The opinion of the *monothelites* had its riſe in 630, and had the emperor Heraclius for an adherent: It was the ſame with that of the Acephalous Severians. See SEVERIANS.

They allowed of two wills in Chriſt, conſidered with regard to the two natures; but reduced them to one, by reaſon of the union of the two natures: Thinking it abſurd there ſhould be two free wills in one and the ſame perſon. See PERSON.

They were condemned by the ſixth general council, as being ſuppoſed to deſtroy the perfection of the humanity of Jeſus Chriſt, depriving it of will, and operation. That council declared their belief of two wills, and two operations, without diviſion, or without changing the one for the other, without either diſtinguiſhing or confounding them; the human will being ſubject to the divine. See THEANDRIC.

MONOTONIA, MONOTONY, a want of variation, or inflection, of the voice; or a fault in pronunciation, where a long ſeries of words are delivered with one unvaried tone. See PRONUNCIATION.

This is one of the principal faults of our Engliſh orators. *Monotonia* is oppoſed to chanting, or ſinging.

MONS *Lunae*. See ABDUCTOR.

MONSEIGNEUR *, in the plural MESSEIGNEURS, a title of honour, and reſpect uſed by the French in writing to perſons of ſuperior rank, or quality.

* The word is a compound of *mon*, my, and *ſeigneur*, lord.

Dukes, peers, archbiſhops, biſhops, and preſidents *a la mortier* are complimented with the title of *monſeigneur*. In the petitions preſented to the ſovereign courts, they uſe the term *noſſeigneurs*.

MONSEIGNEUR, abſolutely uſed, is a quality now reſtrained to the dauphin of France. See DAUPHIN.

This cuſtom was unknown till the time of Louis XIV. Till then, the dauphin was ſtiled *monſieur le dauphin*.

MONSIEUR *, in the plural MESSIEURS, a term, or title of civility, uſed by the French, in ſpeaking to their equals, or thoſe a little below them; anſwering to Mr. or Sir, among the Engliſh. See SIRE.

* The word is a compound of *mon*, *my*, and *ſieur*, Sir. See SIEUR.—Borel derives it from the Greek κυριος, *lord* or *ſire*, q. d. *moncyeur*. Paſquier derives *ſieur*, and *monſieur*, from the Latin *ſenior*, elder. The Italians ſay *ſignor*, and the Spaniards *ſenor*, in the ſame ſenſe, and from the ſame origin.

The ſuperſcriptions of all letters begin, *A monſieur monſieur*, ſuch a one.

The uſe of the word *monſieur* was formerly more extenſive than at preſent: They applied it to people who lived many ages before them: Thus, *monſieur* St. Auguſtine, *monſieur* St. Ambroſe; and the vulgar ſtill ſay, *monſieur* St. Paul, *monſieur* St. James, *&c.* The Romans, during the flouriſhing times of their liberty, were unacquainted with that term of parade and flattery, which they afterwards made uſe of in the word *dominus*. In ſpeaking, or writing to each other, they only gave each other their proper names; which practice laſted even after Cæſar had brought the republic under his command. But after the Roman emperors were once well ſeated in the throne, the courtiers, and minions who by flattery ſought to procure favours from them, ſtudied new honours. Suetonius obſerves, that a comedian on the theatre having called Auguſtus, *dominus*, lord; the ſpectators all ſtared at him. So that the emperor forbad, for the future, that quality to be attributed to him. Caligula was the firſt, who expreſsly commanded himſelf to be called *dominus*. Martial, entirely devoted to tyranny, calls Domitian, *dominum deumque noſtrum.*—In time, the title was alſo applied to the people; and of *dominus*, at length was formed *dom*. See DOM.

MONSIEUR, abſolutely uſed, is a title or quality appropriated to the ſecond ſon of France, or the king's brother.

In a letter of Philip de Valois, that prince ſpeaking of his predeceſſor, calls him *monſieur le roy*, *monſieur* the king. At preſent, no body calls the king *monſieur*, but the children of France. See SIRE.

MONSOON, a regular, or periodical wind, in the Eaſt-Indies, blowing conſtantly the ſame way, during ſix months of the year, and the contrary way the remaining ſix. See WIND.

In the Indian ocean, the winds are partly *general*, and blow all the year round the ſame way, as in the Æthiopic ocean; and partly *periodical*, *i. e.* half the year blow one way, and the other half near on the oppoſite points. And thoſe points and times of ſhifting differ in different parts of this ocean.—Theſe latter are what we call *monſoons*.

Monſoons then are a ſpecies of what we otherwiſe call *trade-winds*. See TRADE-*wind*.

They take the denomination *monſoon* from an antient pilot, who firſt croſſed the Indian ſea by means hereof. Though others derive the name from a Portugueſe word ſignifying *motion*, or change of wind, and ſea.

Lucretius and Apollonius make mention of annual winds which ariſe every year, *eteſia flabra*, which ſeem to be the ſame with what in the Eaſt-Indies we now call *monſoons*.

MONSTER *, MONSTRUM, a birth, or production of a living thing, degenerating from the proper and uſual diſpoſition of parts, in the ſpecies it belongs to.—As, when there are too many members, or too few; or ſome of them are extravagantly out of proportion, either on the ſide of defect or exceſs.

* The word comes from the Latin, *monſtrum*, of *monſtrando*, ſhewing —Whence alſo the box wherein relicks were antiently kept to be ſhewn was called *monſtrum*. Dugdale mentions an inventory of the church of York with this article, *Item unum monſtrum cum oſſibus ſancti Petri in Beryl, & crucifixo in ſummitate.* See RELICK.

Ariſtotle defines a *monſter* to be a defect of nature, when acting towards ſome end, it cannot attain to it, by reaſon ſome of its principles are corrupted. See NATURE.

Monſters do not propagate their kind; for which reaſon ſome rank mules among the number of *monſters*; as alſo hermaphrodites. See MULE and HERMAPHRODITE.

Females, which bring forth twins, are found moſt liable to produce *monſters*.—The reaſon, probably, is owing to this; that though the twins are covered with one common chorion, yet they have each their ſeparate amnios, which, by their contiguity may chance to grow together, and ſo occaſion a confuſion, or blending of the parts.—Hence ſo many double creatures. See DOUBLE.

F. Malebranche accounts for the production of *monſters* in the animal world, thus.—The creator has eſtabliſhed ſuch a communication between the ſeveral parts of his creation, that we are not only naturally led to imitate one another, *i. e.* have a diſpoſition to do the ſame things, and aſſume the ſame manners with thoſe with whom we converſe; but alſo have certain natural diſpoſitions which incline us to compaſſion, as well as imitation. Theſe things moſt men feel, and are ſenſible of; and, therefore, need not be proved. The animal ſpirits then are not only naturally carried into the reſpective parts of the body to perform the ſame actions, and the ſame motions which we ſee others do, but alſo to receive in ſome manner their wounds, and take part in their ſufferings.

Experience tells us, that when we look attentively on any perſon ſeverely beaten, or that has a large wound, ulcer, or the like; the ſpirits immediately flow into thoſe parts of our body which anſwer to thoſe we ſee ſuffer in the other; unleſs their courſe be ſtopped from ſome other principle. This flux of ſpirits is very ſenſible in perſons of a delicate conſtitution, who frequently ſhudder, and find a kind of trembling in the body on theſe occaſions; and this ſympathy in bodies, produces compaſſion in the mind.

Now, it muſt be obſerved, that the view of a wound, *&c.* wounds the perſon who views it the more ſtrongly and ſenſibly, as the perſon is more weak and delicate; the ſpirits making a ſtronger impreſſion on the fibres of a delicate body, than in thoſe of a robuſt one. Thus ſtrong, vigorous men, *&c.* ſee an execution without much concern, while women, *&c.* are ſtruck with pity and horror. As to children ſtill in their mother's womb, the fibres of their fleſh being incomparably finer than thoſe in women, the courſe of the animal ſpirits muſt neceſſarily produce much greater alterations.

Theſe things being laid down, *monſters* are eaſily accounted for. Suppoſe, *v. gr.* a child born a fool, and with all its legs and arms broke in the ſame manner as thoſe of criminals in ſome countries are; which caſe we chuſe to inſtance in, becauſe we are told from Paris that ſuch a *monſter* was actually born there, and lived in one of their hoſpitals twenty years: The cauſe of this accident, according to the principles laid down, was, that the mother ſeeing a criminal executed, every ſtroke given to the poor man, ſtruck forcibly the imagination of the woman; and by a kind of counter-ſtroke, the tender and delicate brain of the child. Now, though the fibres of the woman's brain were ſtrangely ſhaken by the violent flux of animal ſpirits on this occaſion, yet they had ſtrength and conſiſtence enough to prevent an entire diſorder; whereas the fibres of the child's brain being unable to bear the ſhock of thoſe ſpirits, were quite ruined; and the ravage was great enough to deprive him of reaſon all his life-time.

Again, the view of the execution frighting the woman, the violent courſe of the animal ſpirits was directed forcibly from the brain to all thoſe parts of the body correſponding to the ſuffering parts of the criminal; and the ſame thing muſt happen in the child. But in regard the bones of the mother were ſtrong enough to reſiſt the impulſe of thoſe ſpirits, they were not damaged. And yet the rapid courſe of theſe ſpirits could eaſily overpower, and break the tender and delicate fibres of the bones of the child; the bones being the laſt parts of the body that are formed, and having a very ſlender conſiſtence while the child is yet in the womb.

To which it may be here added, that had the mother determined the courſe of theſe ſpirits towards ſome other part of her body, by tickling or ſcratching herſelf vehemently, the child would not, in all probability, have had its bones broken; but the part anſwering that, to which the motion of the ſpirits was determined, would have been the ſufferer.

Hence appears the reaſon, why women in the time of geſtation, ſeeing perſons, *&c.* marked in ſuch a manner in the face, impreſs the ſame mark on the ſame parts of the child: And why, upon rubbing ſome hidden part of the body, when ſtartled at the ſight of any thing, or agitated with any extraordinary paſſion, the mark or impreſſion is fixed on that hidden part rather than on the face of the child. From the principles here laid down, may moſt, if not all, the phænomena of *monſters* be eaſily accounted for.

Vegetable MONSTERS.—There are alſo monſtrous productions in the plant world: Such, *e. gr.* are what ſome botaniſts call *mules*. See MULE, GENERATION, *&c.*

Floriſts give the denomination *monſters*, or *monſtrous flowers*, to thoſe flowers which are not only double, but double podded; or when inſtead of one flower there are two or three riſing one above another from a ſingle ſtalk. See FLOWER.

MONSTRANS *de droit*, a writ iſſuing out of chancery, for reſtoring a perſon to lands or tenements that are his in right, tho' on ſome occaſion found in poſſeſſion of another lately dead.

MONSTRAVERUNT, a writ which lies for a tenant who holds by free charter in antient demeſn, upon his being diſtrained for the payment of any ſervice or impoſition contrary to the liberty he does, or ought to enjoy.

MONTANISTS, antient heretics, ſo called from their leader Montanus, who acted the prophet, and had his propheteſſes.

The *Montaniſts* are the ſame with what were otherwiſe denominated *Phrygians*, *Cataphrygians*, and *Quintilians*. See PHRYGIAN, CATAPHRYGIAN, QUINTILIAN, and PEPUZIAN.

MONTANUM *veru*. See the article VERU.

MONTENSES. See AGONISTICI.

MONTH, MENSIS, the twelfth part of a year. See YEAR.

Time, we have obſerved, is duration marked out for certain uſes, and meaſured by the motions of the heavenly bodies. See TIME and DURATION.

Hence reſult divers kinds of years, and *months*, according to the particular luminary by whoſe revolutions they are determined, and the particular purpoſes they are deſtined for: as, *ſolar months*, *lunar months*, *civil months*, *aſtronomical months*, &c.

Solar MONTH is the ſpace of time wherein the ſun moves through one entire ſign of the ecliptic. See SUN.

Hence, if regard be had to the ſun's true motion, the *ſolar months* will be unequal; ſince the ſun is longer in paſſing through the winter ſigns, than thoſe of the ſummer.

But as he conſtantly travels through all the twelve in 365 days, 5 hours, and 49 minutes, the quantity of a mean *month* will be had by dividing that number by 12. On this principle, the quantity of a *ſolar month* will be found 30 days, 10 hours, 29 minutes, 5 ſeconds.

Lunar MONTHS are either *ſynodical*, *periodical*, or *illuminative*.

Lunar ſynodical MONTH, called alſo abſolutely, *lunar* MONTH, and *lunation*, is the ſpace of time between two conjunctions of the moon with the ſun; or between two new moons. See SYNODICAL *month* and LUNATION.

The quantity of the *ſynodical month* is 29 days, 12 hours, $44'$, $3''$, $11'''$. See MOON.

Lunar periodical MONTH is the ſpace of time wherein the moon makes her round through the zodiac; or wherein ſhe returns to the ſame point. See PERIODICAL.

The quantity of this *month* is 27 days, 7 h. $43'$. $8''$.

The antient Romans made uſe of *lunar months*, and made them alternately of 29 and 30 days. They marked the days of each *month* by three terms, *viz. Calends*, *nones*, and *ides*. See CALENDS, NONES, *&c.*

Lunar illuminative MONTH, is the ſpace from the firſt time of her appearance after new moon, to her firſt appearance after the new moon following.

Hence, as the moon appears ſometimes ſooner after the new moon, and ſometimes later; the quantity of the *illuminative month* is not always the ſame.—By this *month* the Turks and Arabs go.

Aſtronomical, or *natural* MONTH, is that meaſured by ſome exact interval correſponding to the motion of the ſun, or moon.

Such are the lunar and ſolar *months* above mentioned. Where note, That theſe *months* can be of no uſe in civil life; where it is required that the *months* begin and end on ſome certain day. For this reaſon recourſe is had to another form of *months*.

Civil, or *common* MONTH, is an interval of a certain number of whole days, approaching nearly to the quantity of ſome aſtronomical, either lunar, or ſolar *month*. See DAY.

Civil months are various, according to the aſtronomical *month* they are accommodated to.

Civil lunar MONTHS are to conſiſt alternately of 29 and 30 days. Thus will two *civil months* be equal to two aſtronomical ones, abating for the odd minutes. And, conſequently the new moon will be hereby kept to the firſt day of each ſuch *civil month* for a long time together.

However, to make them keep conſtant pace with the *civil months*, at the end of each 948 *months*, a *month* of 29 days muſt be added; or elſe every 33d *month* muſt conſiſt of 30 days.

This was the *month* in civil, or common uſe among the Jews, Greeks, and Romans, till the time of Julius Cæſar.

Civil ſolar MONTHS are to conſiſt alternately of 30 and 31 days; excepting one *month* of the twelve, which for every fourth year ſhould conſiſt of 30 days, and the other years of 29.—This form of *civil months* was introduced by Julius Cæſar.

Under Auguſtus, the ſixth *month*, till then from its place called *ſextilis*, was denominated *auguſtus*, in honour of that prince, and to make the compliment yet greater, a day was added to it. So that it now conſiſted of 31 days, though till then it had only contained 30. To make up for which, a day was taken from February; ſo that henceforward it only conſiſted of 28 days, and every third year of 29; though before it had ordinarily conſiſted of 29 days, *&c.*—And ſuch are the *civil* or *calendar months* which now obtain through Europe. See CALENDAR.

Philoſophical Month, among chymiſts, is the ſpace of 40 days and nights. See Menstruum.

Dracontic Month. See the article Dracontic.

Emboliſmic Month. See the article Embolismic.

Fence Month. See the article Fence-*month*.

Twelve-Month. See the article Twelve-*month*.

Month *climates*. See the article Climate.

MONTHLY *courſes*. See the article Menses.

MONT-PAGNOTE, *the poſt of the invulnerable*, an eminence choſe without the reach of the cannon of a place beſieged, where curious perſons poſt themſelves to ſee an attack, and the manner of the ſiege, without being expoſed to danger.

MONUMENT *, in architecture, a building deſtined to preſerve the memory of the perſon who raiſed it, or of him for whom it was raiſed.—Such are, a triumphal arch, a mauſoleum, a pyramid, &c. See Mausoleum, &c.

* The word comes from the Latin *monumentum*, of *monere*, to adviſe, advertiſe.

The firſt *monuments* which the antients erected, were the ſtones which they laid over their tombs, whereon they wrote the names and actions of the deceaſed. See Tomb.

Theſe ſtones were diſtinguiſhed by various names according as their figures were different. The Greeks gave the name *ſteles*, Στηλης, to ſuch as were ſquare in their baſe, and preſerved the ſame depth throughout their whole length; whence were derived our ſquare pilaſters, or attic columns. See Pilaster.

They called thoſe *ſtyles*, Στυλοι, which being round in their baſe, ended in a point at top, which gave occaſion to the invention of diminiſhed columns. See Column.

The name *pyramids* they gave to thoſe which were ſquare at the foot, and terminated in a point at top, in manner of a funeral pile. See Pyramid.

And the name *obeliſc*, to thoſe whoſe baſes were more in length than in breadth, and which roſe, ſtill leſſening, to a very great height, reſembling the figure of the ſpits or inſtruments uſed by the antients in roaſting the fleſh of their ſacrifices, which they called *obeli*, οϐελοι. See Obelisk.

The Monument, abſolutely ſo called among us, denotes a magnificent pillar erected by order of parliament, in memory of the burning of the city, anno 1666, in the very place where the fire began.

It is of the Dorick order, 202 foot high from the ground, and 15 foot in diameter, all of ſolid Portland ſtone, with a ſtaircaſe in the middle of black marble. The pedeſtal is 21 foot ſquare, and 40 high; the front being enriched with curious baſſo relievo's.

MONY. See the article Money.

MOOD, or Mode, in logic, called alſo *ſyllogiſtic* Mood, is a proper diſpoſition of the ſeveral propoſitions of a ſyllogiſm, in reſpect of quantity, and quality. See Syllogism and Proposition.

By proper diſpoſition, we mean ſuch wherein the antecedent being true, the conſequent, in virtue of the form, cannot be falſe.—So that all thoſe *moods* or manners of ſyllogiſms are at once excluded, where no concluſion formally follows; or where the antecedent being true, a falſe concluſion may be drawn from it. See Conclusion, &c.

There are two kinds of *moods*; the one *direct*, the other *indirect*.

Direct Mood, is that wherein the concluſion is drawn from the premiſes directly and immediately.—As, every animal is a living thing; every man is an animal; therefore every man is a living thing.

Indirect Mood, is that wherein the concluſion is not inferred immediately from the premiſes, but follows from them by means of a converſion.—As, every animal is a living thing, every man is an animal; therefore ſome living thing is a man.

There are fourteen direct *moods*; whereof four belong to the firſt figure; 4 to the 2d; and 6 to the 3d. See Figure.

They are denoted by ſo many artificial words framed for that purpoſe, *viz.* 1. *Barbara*, *celarent*, *darii*, *ferioque*. 4. *Baralip*, *celantes*, *dabitis*, *fapeſmo*. *friſeſom*. 2. *Ceſare*, *cameſtres*, *feſtino*, *baroco*. 3. *Darapti*, *felapton*, *diſamis*, *datiſi*, *bocardo*, *feriſon*. The uſe and effect of which words lie wholly in the ſyllables, and the letters whereof the ſyllables conſiſt. Each word, *e. gr.* conſiſts of three ſyllables, denoting the three propoſitions of a ſyllable, *viz.* major, minor, and concluſion. Add, that the letters of each ſyllable are either vowels or conſonants: The vowels are *A*, which denotes an univerſal affirmative propoſition; *E*, an univerſal negative; *I*, a particular affirmative; and *O*, a particular negative.

Thus, *barbara* is a ſyllogiſm or *mood* of the firſt figure, conſiſting of three univerſal affirmative propoſitions: *Boralip* of the fourth figure, conſiſting of two univerſal affirmative premiſes, and a particular affirmative concluſion. See Barbara, Celarent, Darii, &c.—The conſonants are chiefly of uſe in the reduction of ſyllogiſms. See Reduction.

Mood, or Mode, in grammar, is uſed to ſignify the different manners of conjugating verbs, agreeably to the different actions, or affections to be expreſſed; as ſhewing, commanding, wiſhing, &c. See Verb.

Hence ariſe five *moods*, *viz.* the *indicative*, *imperative*, *optative*, *ſubjunctive*, and *infinitive*. See Indicative, Imperative, Optative, &c.

Some grammarians reckon but four *moods*, confounding the optative with the ſubjunctive; and ſome make ſix, dividing the optative into potential, and optative.

The Greeks have five *moods* of verbs differing in termination; but the Latins have but four.—In Engliſh the terminations are the ſame in all the *moods*.

For the origin of *moods*, it may be obſerved, that verbs are of that kind of words which ſignify the manner and form of our thought; whereof the principal is affirmation. Verbs are alſo formed to receive different inflections, as the affirmation regards different perſons, and different times, whence ariſe the tenſes and perſons of verbs. See Verb, &c.

But beſides theſe, men have thought fit to invent other inflections, to explain what paſſes in their mind ſtill more diſtinctly: For, in the firſt place, they conſidered, that beſide the ſimple affirmations, as *he loves*, *he loved*; there were others modified and conditional, as, *if he loved*, *though he ſhould love*: And the better to diſtinguiſh theſe affirmations from the others, they doubled the inflections of thoſe tenſes, or times; making ſome ſerve for ſimple affirmations, as *I love*, *he loved*; and reſerving the reſt for affirmations that were modified; as, *if he ſhould love*, *might he have loved*.—Yet they kept not ſteadily to their rules; but ſometimes made uſe of ſimple inflections to expreſs affirmations that were modified; as *etſi vereor*, for *etſi verear*. And it is from this laſt kind of inflection, that grammarians have formed the *mood* they call *ſubjunctive*. See Subjunctive.

But further, beſides the affirmation, the action of our will may be taken for a *mood*, or manner of our thought; and men have found themſelves under a neceſſity of expreſſing what they *will*, as well as what they *think*.—Now we may will a thing in ſeveral manners; whereof there are three which may be conſidered as the principal. Firſt then, we ſometimes will things which do not depend on ourſelves, and in that caſe we only will them by a bare wiſh, which the Latins expreſs by the particle *utinam*; and we by, *pleaſe God*. Some languages, for inſtance, the Greek, have invented particular inflections for this end; whence the grammarians have taken occaſion to call it the *optative mood*: and there ſeems ſomething like both in the French, Italian, and Spaniſh tongues, in regard theſe have a kind of triple tenſes; but in Latin, Engliſh, &c. the ſame inflections ſerve for the ſubjunctive, and for the optative. For this reaſon, one may very well retrench this *mood* from the Latin conjugations; it being the different inflections that make *moods*, not the different manners of ſignifying, which may be varied to infinity. See Optative.

We ſometimes will in another manner; as when we are content a thing ſhould come to paſs, though we do not abſolutely deſire it; as when Terence ſays, *profundat*, *perdat*, *pereat*, let him ſpend, ſink, periſh.—Men might have invented a particular inflection, to expreſs this movement, as in Greek they have done to expreſs a ſimple deſire: But they have not done it; and in lieu thereof, make uſe of the ſubjunctive. In Engliſh we add the particle, let him ſpend, &c.—Authors call this the *potential*, or *conceſſive mood*. See Potential.

The third manner of willing, is when what we deſire, depending on another perſon, of whom we can obtain it, we ſignify our will that he do it.—This is the motion we uſe, when we command or pray; and to expreſs this motion, was invented the *mood* we call *imperative*; which has no firſt perſon in the ſingular, becauſe a man, properly ſpeaking, cannot command himſelf: In ſome languages it has no third perſon, becauſe, in ſtrictneſs, a man cannot command any perſon, but him to whom he ſpeaks and addreſſes himſelf.—And in regard the command or prayer always relates to what is to come, it happens that the imperative *mood*, and the future tenſe, are frequently uſed for each other, (eſpecially in the Hebrew;) as *non occides*, *thou ſhalt not kill*, for *do not kill*. Hence ſome grammarians place the imperative among the number of futures. See Imperative.

Of all the *moods* we have mentioned, the oriental languages have none but the laſt, which is the imperative; and on the contrary, the modern languages have none of them any particular inflection for the imperative.—The method we take for it in Engliſh, is either to omit the pronoun, or tranſpoſe it; thus, I love, is a ſimple affirmation; love, an imperative: We love, an affirmation; love we, an imperative.

Mood, in philoſophy. }
Mood, in muſic. } See the article Mode.

Moon, *luna*, ☽, in aſtrononomy, one of the heavenly bodies, uſually ranked among the planets; but with more propriety accounted a ſatellite, or ſecondary planet. See Planet, and Satellite.

The *moon* is an attendant of our earth, whom ſhe reſpects as a centre, and in whoſe neighbourhood ſhe is conſtantly found; inſomuch as if viewed from the ſun, ſhe would never appear to depart from us by an angle greater than ten minutes. See Earth.

As all the other planets move primarily round the ſun, ſo does the *moon* round the earth: her orbit is an ellipſis, in which ſhe is retained by the force of gravity; performing her revolution round us in 27 days, 7 hours, 43 minutes, which is alſo the preciſe time of her rotation round her axis. See ORBIT, and REVOLUTION.

The mean diſtance of the *moon* from the earth, is 60½ ſemi-diameters of the earth; which is equivalent to 240,000 miles. See DISTANCE.

The mean eccentricity of her orbit, is $\frac{55}{1000}$ of her mean diſtance, which makes a conſiderable variation in that mean diſtance. See EXCENTRICITY.

The *moon*'s diameter is to that of the earth, as 11 to 40.2; or 2175 miles: Its mean apparent diameter is 31 minutes 16½, and that of the ſun 32 minutes 12 ſeconds. See DIAMETER, and SEMI-DIAMETER.

The *moon*'s ſurface contains 14,000,000 ſquare miles; and its ſolidity 5,000,000,000 cubical ones: The denſity of the *moon*'s body is to that of the earth, as 48911 to 39214; to that of the ſun, as 48911 to 10000: Its quantity of matter to that of the earth, nearly as 1 to 39.15: and the force of gravity on its ſurface, is to that on the ſurface of the earth, as 139.2 to 407.8. See SOLIDITY, DENSITY, GRAVITY, *&c.*

Phænomena of the MOON.—The different appearances of the *moon* are very numerous: Sometimes ſhe is increaſing, then waneing; ſometimes horned, then ſemi-circular; ſometimes gibbous, then full and globular. See PHASES.

Sometimes again, ſhe illumines us the whole night; ſometimes only a part of it; ſometimes ſhe is found in the ſouthern hemiſphere; ſometimes in the northern: All which variations having been firſt obſerved by Endymion, an antient Grecian, who watched her motions, he was fabled to have fallen in love with her.

The ſource of moſt of theſe appearances, is, that the *moon* is a dark, opake, and ſpherical body; and only ſhines with the light ſhe receives from the ſun: whence only that half turned towards him is illumined; the oppoſite one remaining in its native darkneſs. The face of the *moon* viſible on our earth, is that part of her body turned towards the earth; whence, according to the various poſitions of the *moon* with regard to the ſun, and earth, we obſerve different degrees of illumination; ſometimes a large, and ſometimes a leſs portion of the enlightened ſurface being viſible.

Phaſes of the MOON.—To conceive the lunar phaſes: Let S (*Tab. Aſtronomy*, *fig.* 13.) repreſent the ſun, T the earth, R S T a portion of the earth's orbit, and ABCDEFG the orbit of the *moon*, wherein ſhe revolves round the earth, in the ſpace of a month, advancing from weſt to eaſt: Connect the centres of the ſun and *moon* by the right line S L, and through the centre of the *moon* imagine a plane MLN, to paſs perpendicular to the line SL: the ſection of that plane with the ſurface of the *moon*, will give the line that bounds light and darkneſs, and ſeparates the illumined face from the dark one.

Connect the centres of the earth and *moon* by T L, perpendicular to a plane PLO, paſſing through the centre of the *moon*; that plane will give on the ſurface of the *moon*, the circle that diſtinguiſhes the viſible hemiſphere, or that towards us, from the inviſible one, and therefore called the *circle of viſion.*

Whence it appears, that whenever the *moon* is in A, the circle bounding light and darkneſs, and the circle of viſion, coincide: So that all the illumined face of the *moon* will be turned towards the earth: in which caſe, the *moon* is with reſpect to us full, and ſhines the whole night; with reſpect to the ſun, ſhe is in oppoſition; in regard the ſun and *moon* are then ſeen in oppoſite parts of the heavens, the one riſing when the other ſets. See CONJUNCTION, and OPPOSITION.

When the *moon* arrives at B, the whole illumined diſk MPN is not turned towards the earth; ſo that the viſible illumination will be ſhort of a circle, and the *moon* will appear gibbous, as in B. See GIBBOUS.

When ſhe reaches C, where the angle CTS is nearly right, there only one half of the illumined diſk is turned towards the earth, and then we obſerve a half-*moon*, as in C; and ſhe is ſaid to be *dichotomized* or *biſſected.* See DICHOTOMY.

In this ſituation the ſun and *moon* are a fourth part of a circle removed from each other; and the *moon* is ſaid to be in a *quadrate aſpect*, or to be in her *quadrature.* See QUADRATURE.

The *moon* arriving at D, only a ſmall part of the illumined face MPN, is turned towards the earth: for which reaſon, the ſmall part that ſhines upon us, will be ſeen falcated, or bent into narrow angles or horns, as in D. See FALCATED.

At laſt, the *moon* arriving at E, ſhews no part of her illumined face to the earth, as in D; this poſition we call the *new moon*, and ſhe is then ſaid to be in conjunction with the ſun; the ſun and *moon* being in the ſame point of the ecliptic. See CONJUNCTION.

As the *moon* advances towards F, ſhe reſumes her horns: and as before the new *moon*, the horns were turned weſtward; ſo now they change their poſition, and look eaſtward: when ſhe comes at G, ſhe is again in quadrate aſpect with the ſun; in H gibbous, and in A again full.

Here, the arch EL, or the angle STL, contained under lines drawn from the centres of the ſun and *moon* to that of the earth, is called the *elongation of the moon* from the ſun: and the arch MO, which is the portion of the illumined circle MON, that is turned towards us, and which is the meaſure of the angle that the circle bounding light and darkneſs, and the circle of viſion, make with each other, is every where nearly ſimilar to the arch of elongation EL; or which is the ſame thing, the angle STL is nearly equal to the angle MLO: as is demonſtrated by geometers. See ELONGATION.

To delineate the MOON's *phaſes for any time.*—Let the circle COBP (*fig.* 14.) repreſent the *moon*'s diſk turned towards the earth, and let OP be the line in which the ſemi-circle OCP is projected, which ſuppoſe cut at right angles by the diameter BC; then making LP the radius, take LF equal to the co-ſine of the elongation of the *moon*; and upon BC, as the greater axis, and LF, the leſs, deſcribe the ſemi-ellipſis BFC; this ellipſis will cut off from the *moon*'s diſk the portion BFCP of the illumined face viſible on the earth.

As the *moon* illumines the earth by a light reflected from the ſun, ſo is ſhe reciprocally illumined by the earth, which reflects the ſun's rays to the ſurface of the *moon*, and that more abundantly than ſhe receives them from the *moon.*—For, the ſurface of the earth is above 15 times greater than that of the *moon*; and therefore ſuppoſing the texture of each body alike, as to the power of reflecting; the earth muſt return 15 times more light to the *moon* than ſhe receives from it.—In new *moons*, the illumined ſide of the earth is turned fully towards the *moon*, and will therefore at that time illumine the dark ſide of the *moon*; and then the lunar inhabitants, (if ſuch there be) will have a *full earth*, as we, in a ſimilar poſition, have a *full moon:* And hence ariſes that dim light obſerved in the old and new *moons*; whereby, beſides the bright horns, we perceive ſomewhat more of her body behind them, though very obſcurely. —When the *moon* comes to be in oppoſition to the ſun, the earth ſeen from the *moon* will appear in conjunction with him, and its dark ſide will be turned towards the *moon*; in which poſition the earth will diſappear to the *moon*, as that does to us at the time of the new *moon*, or in her conjunction with the ſun. After this, the lunar inhabitants will ſee the earth in a horned figure.—In fine, the earth will preſent all the ſame phaſes to the *moon*, as the *moon* does to the earth.

Dr. Hook, accounting for the reaſon why the *moon*'s light affords no viſible heat, obſerves, that the quantity of light which falls on the hemiſphere of the full *moon*, is rarified into a ſphere 288 times greater in diameter than the *moon*, e'er it arrive at us; and conſequently that the *moon*'s light is 104368 weaker than that of the ſun.—It would therefore require 104368 full *moons* to give a light and heat equal to that of the ſun at noon. See SUN, HEAT, *&c.*

Courſe and motion of the MOON.—Though the *moon* finiſh its courſe in 27 days, 7 hours, which interval we call a *periodical month*, ſhe is longer in paſſing from one conjunction to another; which ſpace we call a *ſynodical month*, or a *lunation.* See MONTH, and LUNATION.

The reaſon is, that while the *moon* is performing its courſe round the earth in its own orbit, the earth with its attendant is making its progreſs round the ſun, and both are advanced almoſt a whole ſign towards the eaſt; ſo that the point of the orbit, which in the former poſition was in a right line paſſing the centres of the earth and ſun, is now more weſterly than the ſun: and therefore when the *moon* is arrived again at that point, it will not yet be ſeen in conjunction with the ſun; nor will the lunation be compleated in leſs than 29 days and a half. See PERIODICAL, SYNODICAL, *&c.*

Were the plane of the *moon*'s orbit coincident with the plane of the ecliptic, *i. e.* were the earth and *moon* both moved in the ſame plane, the *moon*'s way in the heavens, viewed from the earth, would appear juſt the ſame with that of the ſun; with this only difference, that the ſun would be found to deſcribe his circle in the ſpace of a year, and the *moon* hers in a month.—But this is not the caſe; for the two planes cut each other in a right line, paſſing through the centre of the earth, and are inclined to each other in an angle of about five degrees. See INCLINATION.

Suppoſe, *e. gr.* AB (*fig.* 15.) a portion of the earth's orbit; T the earth; and CEDF the *moon*'s orbit, wherein is the centre of the earth: from the ſame centre T, in the plane of the ecliptic, deſcribe another circle CGDH, whoſe ſemi-diameter is equal to that of the *moon*'s orbit: Now, theſe two circles being in ſeveral planes, and having the ſame centre T, will interſect each other in a line DC, paſſing through the centre of the earth. Conſequently, CED, one half of the orbit of the *moon*, will be raiſed above the plane of the circle CGH, towards the north; and DFC, the other half, will be ſunk below it towards the ſouth.—The right line DC, wherein the two circles interſect each other, is called the *line of the nodes*, and the points of the angles C and D, *the nodes:* whereof, that where the *moon* aſcends above the plane of the ecliptic, northwards, is called the *aſcending node*, and the *head of the dragon*; and the other D, the *deſcending node*, and the *dragon's tail*; (See NODE.) and the interval of time between the *moon*'s going from the aſcending node, and returning to it, a *dracontic month.* See DRAGON, and DRACONTIC.

If the line of the nodes were immoveable, that is, if it had no other motion, but that whereby it is carried round the ſun, it would ſtill look towards the ſame point of the ecliptic; *i. e.* would always keep parallel to itſelf: but it is found by obſervation, that the line of the nodes conſtantly changes place, and ſhifts in ſituation from eaſt to weſt, contrary to the order of the ſigns, and by a retrograde motion, finiſhes its circuit in about 19 years; in which time each of the nodes returns to that point of the ecliptic, whence it before receded. See Cycle.

Hence it follows, that the *moon* is never preciſely in the ecliptic, but twice, each period, *viz.* when ſhe is in the nodes.—Throughout the reſt of her courſe ſhe deviates from it, being nearer or further from the ecliptic, as ſhe is nearer or further from the nodes. In the points F and E, ſhe is at her greateſt diſtance from the nodes; which points are called her *limits.* See Limits.

The *moon's* diſtance from the nodes, or rather from the ecliptic, is called her *latitude*, which is meaſured by an arch of a circle drawn through the *moon* perpendicular to the ecliptic, and intercepted between the *moon* and the ecliptic.—The *moon's* latitude, when at the greateſt, as in E or F, never exceeds 5 degrees, and about 18 minutes; which latitude is the meaſure of the angles at the nodes. See Latitude.

It appears by obſervation, that the *moon's* diſtance from the earth is continually changing; and that ſhe is always either drawing nearer, or going further from us.—The reaſon is, that the *moon* does not move in a circular orbit, which has the earth for its centre; but in an elliptic orbit; (as repreſented in *fig.* 16.) one of whoſe foci is the centre of the earth: AP repreſents the greater axis of the ellipſis, and the line of the apſides; and TC, the eccentricity: the point A, which is the higheſt apſis, is called the *apogee of the moon*; and P, the lower apſis, is the *moon's perigee*, or the point wherein ſhe comes neareſt the earth. See Apogee, and Perigee.

The ſpace of time wherein the *moon*, going from the apogee, returns to it again, is called the *anomaliſtic month.*

If the *moon's* orbit had no other motion, but that wherewith it is carried round the ſun, it would ſtill retain a poſition parallel to itſelf, and always point the ſame way, and be obſerved in the ſame point of the ecliptic; but the line of the apſides is likewiſe obſerved to be moveable, and to have an angular motion round the earth from weſt to eaſt, according to the order of the ſigns, returning to the ſame ſituation in the ſpace of about nine years. See Angular *motion*, and Apsis.

The irregularities of the Moon's *motion*, and that of her orbit, are very conſiderable.—For, 1°. When the earth is in her aphelion, the *moon* is in her aphelion likewiſe; in which caſe ſhe quickens her pace, and performs her circuit in a ſhorter time: On the contrary, when the earth is in its perihelion, the *moon* is ſo too, and then ſhe ſlackens her motion; and thus revolves round the earth in a ſhorter ſpace, when the earth is in her aphelion, than when in her perihelion: So that the periodical months are not all equal. See Periodical *month.*

2°. When the *moon* is in her ſyzygies, *i. e.* in the line that joins the centres of the earth and ſun, which is either in her conjunction or oppoſition; ſhe moves ſwifter, *cæteris paribus*, than when in the qurdratures. See Syzygies.

3°. According to the different diſtance of the *moon* from the ſyzygies, *i. e.* from oppoſition or conjunction, ſhe changes her motion: In the firſt quarter, that is, from the conjunction to her firſt quadrature, ſhe abates ſomewhat of her velocity; which, in the ſecond quarter, ſhe recovers: In the third quarter, ſhe again loſes; and in the laſt, again recovers.—This inequality was firſt diſcovered by Tycho Brahe, who called it the *moon's variation.* See Variation, and Reflection.

4°. The *moon* moves in an ellipſis, one of whoſe foci is in the centre of the earth, round which ſhe deſcribes areas proportionable to the times, as the primary planets do round the ſun; whence her motion in the perigee muſt be quickeſt, and ſloweſt in the apogee.

5°. The very orbit of the *moon* is changeable, and does not always perſevere in the ſame figure; its eccentricity being ſometimes increaſed, and ſometimes diminiſhed; greateſt, when the line of the apſides coincides with that of the ſyzygies; and leaſt, when the line of the apſides cuts the other at right angles. See Orbit.

6°. Nor is the apogee of the *moon* without an irregularity; being found to move forwards, when it coincides with the line of the ſyzygies, and backwards, when it cuts that line at right angles.—Nor is this progreſs and regreſs in any meaſure equal: in the conjunction, or oppoſition, it goes briſkly forwards; and in the quadratures, moves either ſlowly forwards, ſtands ſtill, or goes backward. See Apogee.

7°. The motion of the nodes is not uniform; but when the line of the nodes coincides with that of the ſyzygies, they ſtand ſtill; when the nodes are in the quadratures, *i. e.* when their line cuts that of the ſyzygies at right angles, they go backwards, from eaſt to weſt; and this, Sir I. Newton ſhews, with the velocity of $16''$, $19'''$, $24''''$, in an hour. See Node.

The only equable motion the *moon* has, is that wherewith ſhe turns round her axis exactly in the ſame ſpace of time, in which ſhe revolves round us in her orbit; whence it happens, that ſhe always turns the ſame face towards us.

For, as the *moon's* motion round its axis is equal, and yet its motion or velocity in its orbit is unequal; it follows, that when the *moon* is in its perigee, where it moves ſwifteſt in its orbit, that part of its ſurface, which, on account of its motion in the orbit, would be turned from the earth, is not ſo, entirely; by reaſon of its motion round its axis.—Thus, ſome parts in the limb, or margin of the *moon*, ſometimes recede from the center of the diſk, and ſometimes approach towards it, and ſome parts, that were before inviſible, become conſpicuous: which is called the *moon's* libration. See Libration.

Yet this equability of rotation occaſions an apparent irregularity: for the axis of the *moon*, not being perpendicular to the plane of its orbit, but a little inclined to it; and this axis maintaining its paralleliſm, in its motion round the earth; it muſt neceſſarily change its ſituation, in reſpect of an obſerver on the earth; to whom, ſometimes the one, and ſometimes the other pole of the *moon*, becomes viſible. Whence it appears to have a kind of wavering or vacillation.

Phyſical cauſe of the Moon's *motions.*—The *moon*, we have obſerved, moves round the earth, by the ſame laws, and in the ſame manner, as the earth and other planets round the ſun.—The ſolution therefore of the lunar motion, in general, comes under thoſe of the earth, and other planets. See Planet and Earth.

As for the particular irregularities in the *moon's* motion, to which the earth, and other planets, are not ſubject, they ariſe from the ſun, which acts on, and diſturbs her in her ordinary progreſs through her orbit; and are all mechanically deducible from the ſame great law, whereby her general motion is directed, *viz.* the law of *gravitation* or *attraction.* See Gravitation.

Other ſecondary planets, *v. gr.* the ſatellites of Jupiter and Saturn, are doubtleſs ſubject to the like irregularities with the *moon*; as being expoſed to the ſame perturbating or diſturbing force of the ſun; but their diſtance ſecures them from our obſervation. See Satellite.

The laws of the ſeveral irregularities in the *ſyzygies, quadratures*, &c. ſee under Syzygies, Quadratures, *&c.*

Aſtronomy of the Moon.—1°. To determine the period of the *moon's* revolution round the earth, or the *periodical month*; and the time between one oppoſition and another, or the *ſynodical month.*

Since, in the middle of a lunar eclipſe, the *moon* is oppoſite to the ſun: (See Eclipse.) Compute the time between two eclipſes, or oppoſitions; and divide this, by the number of lunations, that have paſſed in the mean time: the quotient will be the quantity of the ſynodical month.—Compute the ſun's mean motion during the time of the ſynodical month, and add this to the entire circle deſcribed by the *moon.*—Then, as the ſum is to 360°, ſo is the quantity of the ſynodical month to the periodical.

Thus, Copernicus, in the year 1500, November 6, at twelve at night, obſerved an eclipſe of the *moon* at Rome; and Auguſt 1, 1523, at 4 h. $25'$, another at Cracow: hence, the quantity of the ſynodical month is thus determined:

Obſ. 2 An. 1523 d. 237 h. $4.25'$
Obſ. 1 An. 1500 d. 310 h. $2.20'$

Interval of time An. 22 d. 292 h. $2.5'$.
Add the interlacary days 5

Exact interval An. 22 d. 297 h. $2.5'$
or $11991005'$

Which divided by 282 months elapſed, in the mean time, gives the quantity of the ſynodical month $42521', 9'', 9'''$; that is, 29 days, 12 hours, 41 minutes.

From two other obſervations of eclipſes, the one at Cracow, the other at Babylon, the ſame author determines more accurately the quantity of the ſynodical month to be

$42524'. 3''. 10'''. 9''''$.

That is 29 d. 11 h. $43'. 3''. 10'''$.
The ſun's mean motion in the time $29°. 6'. 24''. 18'''$.
The *moon's* motion $389. 6. 24.18$
Quantity of the periodical month 27 d. 7 h. $43'. 5''$.

Hence, 1°. The quantity of the periodical month being given; by the rule of three we may find the *moon's* diurnal and horary motion, *&c.* And thus may tables of the mean motion of the *moon* be conſtructed. See Tables; ſee alſo Diurnal and Horary.

2°. If the ſun's mean diurnal motion be ſubſtracted from the *moon's* mean diurnal motion; the remainder will give the *moon's* diurnal motion from the ſun: and thus may a table of latitudes be conſtructed, ſuch as thoſe of Bullialdus. See Latitude.

3°. Since in the middle of a total eclipſe, the *moon* is in the node; if the ſun's place be found for that time, and to this be added ſix ſigns, the ſum will give the *place of the node.* See Node.

4°. From comparing the antient obſervations with the modern, it appears that the nodes have a motion, and that they proceed *in antecedentia*, i. e. from Taurus to Aries, from Aries to Piſces, *&c.* If then to the *moon's* mean diurnal motion, be added the diurnal motion of the nodes, the ſame will be the motion of the latitude; and thence, by the rule of three, may be found in what time the *moon* goes 360° from the dragon's head, or in what time ſhe goes from, and returns to it: That is the quantity of the *dracontic month.* See DRACONTIC.

5°. If the motion of the diurnal apogee be ſubſtracted from the mean motion of the *moon*, the remainder will be the *moon*'s mean motion from the apogee: and thence, by the rule of three, is determined the quantity of the *anomaliſtic month.*

According to the obſervations of Kepler, the mean ſynodical month is 29 d. 12 h. 44′. 3″. 2‴. Her periodical month 27 d. 7 h. 43′. 8″. The place of the apogee for the year 1700, January 1. old ſtile, was 11 S 8°. 57′. 1″. The place of the aſcending nodes 4 S. 27°. 39′ 17″. Mean diurnal motion of the *moon* 13°. 10′. 35″. Diurnal motion of the apogee 6′. 41″. Diurnal motion of the nodes 3′. 11″. Laſtly, the eccentricity 4362 parts, ſuch, whereof the ſemi-diameter of the eccentric is 100000: and therefore the diurnal motion of the latitude is 13°. 13′. 46″; and the diurnal motion from the apogee 13°. 3′. 54″.

To find the MOON's *age.*—To the day of the month add the epact of the year, and the months from March incluſive.—The ſum, if under 30; if over, the exceſs is the *moon*'s age.—If the month have but 30 days, the exceſs above 29 is the *moon*'s age. See AGE.

To find the time of the MOON's *being in the meridian*, or *ſouthing.* —Multiply her age, if under 15 day, by 4; and divide the product by 5; the quotient gives the hour, and the remainder multiplied by 12, the minute. If her age exceed 15, ſubſtract 15, and proceed with the remainder as before.

To find the time of the MOON's *beginning to ſhine.*—Multiply her age, if under 15, by 48; and divide the product by 60: the quotient gives the hour; and the remainder the minute. If her age be above 15 days, ſubſtract the time thus found, from 24; the remainder gives the time of ſhining in the morning.

For the eclipſes of the MOON, ſee ECLIPSES.—*For the* MOON's *parallax*, ſee PARALLAX.

Theory of the MOON's *motions and irregularities.*—The tables of equation, which ſerve to ſolve the irregularities of the ſun, do likewiſe ſerve for thoſe of the *moon.* See EQUATION.

But then theſe equations muſt be corrected for the *moon*; otherwiſe they will not exhibit the true motions in the ſyzygies.—The method is thus: Suppoſe the *moon*'s place in the zodiac, required in longitude, for any given time; here, we firſt find, in the tables, the place where it would be, ſuppoſing its motion uniform, which we call *mean*, and which is ſometimes faſter, and ſometimes ſlower than the true motion: then, to find where the *true* motion will place her, which is alſo the *apparent*, we are to find in another table at what diſtance it is from its apogee; for, according to this diſtance, the difference between her true and mean motion, and the two places which correſpond thereto, is the greater.—The true place thus found, is not yet the *true* place; but varies from it, as the *moon* is more, or leſs remote both from the ſun, and the ſun's apogee: which variation reſpecting, at the ſame time, thoſe two different diſtances, they are to be both conſidered and combined together, as in a table apart. Which table gives the correction to be made of the true places firſt found.—That place thus corrected, is not yet the *true* place, unleſs the *moon* be either in conjunction, or oppoſition: If ſhe be out of theſe, there muſt be another correction, which depends on two things taken together, and compared, *viz.* the diſtance of the *moon's* corrected place from the ſun; and of that at which ſhe is with regard to her own apogee; this laſt diſtance having been changed by the firſt correction.

By all theſe operations and corrections, we at length arrive at the *moon's true place* for that inſtant. In this it muſt be owned, occur prodigious difficulties: The lunar inequalities are ſo many, that it was in vain the aſtronomers laboured to bring them under any rule, before the great Sir Iſ. Newton; to whom we are indebted both for the mechanical cauſes of theſe inequalities, and for the method of computing and aſcertaining them: So that he has a world, in great meaſure, of his own diſcovering, or rather ſubduing.

From the theory of gravity he ſhews, that the larger planets revolving round the ſun, may carry along with them ſmaller planets revolving round themſelves; and ſhews, *à priori*, that theſe ſmaller muſt move in ellipſes having their umbilici in the centres of the larger; and have their motion in their orbit variouſly diſturbed by the motion of the ſun; and, in a word, muſt be affected with thoſe inequalities which we actually obſerve in the *moon.* And from this theory, he argues analogous irregularities in the ſatellites of Saturn.

From this ſame theory he examines the force which the ſun has to diſturb the *moon*'s motion, determines the horary increaſe of the area which the *moon* would deſcribe in a circular orbit by radii drawn to the earth—her diſtance from the earth—the horary motion in a circular and elliptic orbit—the mean motion of the nodes—the true motion of the nodes—the horary variation of the inclination of the *moon*'s orbit to the plane of the ecliptic.

Laſtly, From the ſame theory he has found the annual equation of the *moon*'s mean motion to ariſe from the various dilatation of her orbit; and that variation to ariſe from the ſun's force, which being greater in the perigee, diſtends the orbit; and being leſs in the apogee, ſuffers it to be again contracted.—In the dilating obit, ſhe moves more ſlowly; in the contracted, more ſwiftly: and the annual equation, whereby this inequality is compenſated, in the apogee, and perigee is nothing at all; at a moderate diſtance from the ſun, amounts to 11′, 50″; and in other places is proportional to the equation of the ſun's centre, and is added to the mean motion of the *moon*, when the earth proceeds from its aphelion to its perihelion; and ſubſtracted when in the oppoſite part.

Thus, ſuppoſing the radius of the *orbis magnus* 1000, and the earth's eccentricity $16\frac{7}{8}$; this equation, when greateſt, according to the theory of gravity, comes out 11′, 49″.

He adds, that in the earth's perihelion the nodes move ſwifter than in the aphelion, and that in a triplicate ratio of the earth's diſtance from the ſun, inverſely. Whence ariſe annual equations of their motions, proportionable to that of the centre of the ſun.—Now the ſun's motions in a duplicate ratio of the earth's diſtance from the ſun inverſely, and the greateſt equation of the centre which this inequality occaſions, is 1°, 56′, 26′, agreeable to the ſun's eccentricity $16\frac{11}{12}$. If the ſun's motion were in a triplicate ratio of its diſtance inverſely, this inequality could generate the greateſt equation 2°, 56′, 9″; and therefore the greateſt equations which the inequalities of the motions of the *moon*'s apogee and nodes occaſion, are to 2°, 56′, 9″, as the mean diurnal motion of the *moon*'s apogee, and the mean diurnal motion of her nodes are to the mean diurnal motion of the ſun.—Whence the greateſt equation of the mean motion of the apogee comes out 19′, 42″; and the greateſt equation of the mean motion of the nodes 9′, 27″. The former equation is added, and the latter ſubſtracted, when the earth proceeds from its perihelion to its aphelion; and the contrary in the oppoſite part of its orbit.

From the ſame theory of gravity it alſo appears, that the ſun's action on the *moon* muſt be ſomewhat greater when the tranſverſe diameter of the lunar orbit paſſes through the ſun, than when it is at right angles with the line that joins the earth and ſun: And, therefore, that the lunar orbit is ſomewhat greater in the firſt caſe, than in the ſecond.—Hence ariſes another equation of the mean lunar motion, depending on the ſituation of the *moon*'s apogee with regard to the ſun, which is greateſt when the *moon*'s apogee is in an octant with the ſun; and none, when ſhe arrives at the quadrature, or ſyzygies; and is added to the mean motion, in the paſſage of the *moon*'s apogee from the quadrature to the ſyzygies, and ſubſtracted in the paſſage of the apogee from the ſyzygies to the quadrature.

This equation, which Sir Iſaac calls *ſemeſtris*, when greateſt, *viz.* in the octants of the apogee, ariſes to 3′, 45″, at a mean diſtance of the earth from the ſun; but it increaſes and diminiſhes in a triplicate ratio of the ſun's diſtance inverſely; and therefore in the ſun's greateſt diſtance, is 3′, 34″; in the ſmalleſt, 3′ 56″, nearly. But when the apogee of the *moon* is without the octants, it becomes leſs, and is to the greateſt equation, as the ſine of double the diſtance of the *moon*'s apogee, from the next ſyzygy or quadrature, to the radius.

From the ſame theory of gravity it follows, that the ſun's action on the *moon* is ſomewhat greater when a right line drawn through the *moon*'s nodes paſſes through the ſun, than when that line is at right angles with another joining the ſun and earth: And hence ariſes another equation of the *moon*'s mean motion, which he calls *ſecunda ſemeſtris*, and which is greateſt when the nodes are in the ſun's octants, and vaniſhes when they are in the ſyzygies, or quadratures; and in other ſituations of the nodes is proportionable to the ſine of double the diſtance of either node from the next ſyzygy, or quadrature.

It is added to the *moon*'s mean motion while the nodes are in their paſſage from the ſun's quadratures to the next ſyzygy, and ſubſtracted in their paſſage from the ſyzygies to the quadratures in the octants.

—When it is greateſt, it amounts to 47″, at a mean diſtance of the earth from the ſun; as appears from the theory of gravity: At other diſtances of the ſun, this equation in the octants of the nodes is reciprocally as the cube of the ſun's diſtance from the earth; and therefore in the ſun's perigee is 45″; in his apogee nearly 49″.

By the ſame theory of gravity, the moon's apogee proceeds the faſteſt when either in conjunction with the ſun, or in oppoſition to it; and is retrograde when in quadrature with the ſun.—In the former caſe, the eccentricity is greateſt, and in the latter ſmalleſt.—Theſe inequalities are very conſiderable, and generate the principal equation of the apogee, which he calls *ſemeſtris*, or *ſemi-menſtrual.* The greateſt *ſemi-menſtrual* equation is about 12°, 18′.

Horrox firſt obſerved the *moon* to revolve in an ellipſis round the earth placed in the lower umbilicus: And Halley placed the centre of the ellipſis in an epicycle whoſe centre revolves uniformly about the earth: And from the motion in the epicycle ariſe the inequalities now obſerved in the progreſs and regreſs of the apogee, and the quantity of the eccentricity.

Suppoſe the mean diſtance of the *moon* from the earth divided into 100000, and let T (*Tab. Aſtron. fig.* 17.) repreſent the earth, and T C the mean eccentricity of the *moon* 5505 parts ; produce TC to B, that CB may be the ſine of the greateſt ſemi-menſtrual equation 12°, 18′ to the radius TC ; the circle BDA, deſcribed on the center C, with the interval CB, will be the epicycle wherein the centre of the lunar orb is placed, and wherein it revolves according to the order of the letters BDA.—Take the angle BCD equal to double the annual argument, or double the diſtance of the true place of the ſun from the *moon*'s apogee once equated, and C T D will be the ſemi-menſtrual equation of the *moon*'s apogee ; and T D the eccentricity of its orbit tending to the apogee equated a ſecond time.—From hence the *moon*'s mean motion, apogee, and eccentricity, as alſo the greater axis of its orbit 200000 ; the *moon*'s true place, as alſo her diſtance from the earth are found, and that by the commoneſt methods.

In the earth's perihelion, by reaſon of the greater force of the ſun, the centre of the *moon*'s orbit will move more ſwiftly about the center C, than in the aphelion, and that in a triplicate ratio of the earth's diſtance from the ſun inverſely. By reaſon of the equation of the centre of the ſun, comprehended in the annual argument, the centre of the *moon*'s orbit will move more ſwiftly in the epicycle B D A, in a duplicate ratio of the diſtance of the earth from the ſun inverſely.

That the ſame may ſtill move more ſwiftly in a ſimple ratio of the diſtance inverſely from the centre of the orbit D, draw DE towards the *moon*'s apogee, or parallel to T C ; and take the angle E D G equal to the exceſs of the annual argument, above the diſtance of the *moon*'s apogee from the ſun's perigee in conſequentia ; or which is the ſame thing, take the angle C D F equal to the complement of the true anomaly of the ſun to 360° ; and let D F be to D C as double the eccentricity of the *orbis magnus* to the mean diſtance of the ſun from the earth, and the mean diurnal motion of the ſun from the *moon*'s apogee, to the mean diurnal motion of the ſun from its own apogee, conjunctly, *i. e.* as $33\frac{7}{8}$ is to 1000, and 52′, 27″, 16″, to 59′ 8″ 10‴ conjunctly ; or as 3 to 100. Conceive the centre of the *moon*'s orbit placed in the point F, and to revolve in an epicycle whoſe center is D, and radius D F, while the point D proceeds in the circumference of the circle D A B D : Thus the velocity wherewith the centre of the *moon*'s orbit moves in a certain curve, deſcribed about the centre C, will be reciprocally as the cube of the ſun's diſtance from the earth.

The computation of this motion is difficult, but will be made eaſy by the following approximation. If the *moon*'s mean diſtance from the earth be 100000 parts, and its eccentricity T C 5505 of thoſe parts, the right line CB or CD will be found $1172\frac{3}{4}$, and the right line DF $35\frac{1}{5}$. This right line at the diſtance T C, ſubtends an angle to the earth, which the transferring of the centre of the orbit from the place D to F generates in the motion of this centre ; and the ſame right line doubled, in a parallel ſituation, at the diſtance of the upper umbilicus of the *moon*'s orbit from the earth, ſubtends the ſame angle, generated by that tranſlation in the motion of the umbilicus ; and at the diſtance of the *moon* from the earth ſubtends an angle which the ſame tranſlation generates in the motion of the *moon* ; and which may therefore be called the *ſecond equation of the centre.*

This equation of a mean diſtance of the *moon* from the earth, is as the ſine of the angle contained between the right line D F, and a right line drawn from the point F to the *moon*, nearly ; and when greateſt, amounts to 2′, 25″.—Now the angle comprehended between the right line D F and a line from the point D, is found either by ſubſtracting the angle E D F from the mean anomaly of the *moon*, or by adding the *moon*'s diſtance from the ſun to the diſtance of the *moon*'s apogee from the apogee of the ſun. And as radius is to the ſine of the angle thus found, ſo is 2′, 25″ to the ſecond equation of the centre, which is to be added, if that ſine be leſs than a ſemi-circle, and ſubſtracted if greater : Thus we have its longitude in the very ſyzygies of the luminaries.

If a more accurate computation be required, the *moon*'s place thus found muſt be corrected by a ſecond variation. The firſt and principal variation we have already conſidered, and have obſerved it to be greateſt in the octants. The ſecond is greateſt in the quadrants, and ariſes from the different action of the ſun on the *moon*'s orbit, according to the different poſition of the *moon*'s apogee to the ſun, and is thus computed : As radius is to the verſed ſine of the diſtance of the *moon*'s apogee from the ſun's perigee, in conſequentia, ſo is a certain angle P to a fourth proportional. And as radius is to the ſine of the *moon*'s diſtance from the ſun, ſo is the ſum of this fourth proportional and another angle Q to the ſecond variation, which is to be ſubſtracted, if the *moon*'s light be increaſing ; and added, if diminiſhing.

Thus we have the *moon*'s true place in her orbit ; and by reduction of this place to the ecliptic, the *moon*'s longitude. The angles P and Q are to be determined by obſervation : in the mean time, if for P be aſſumed 2′, and for Q 1′, we ſhall be near the truth.

Nature and furniture of the MOON.—1°. From the various phaſes of the *moon :* From her only ſhewing a little part illumined, when following the ſun ready to ſet : From that part's increaſing as ſhe recedes from the ſun, till at the diſtance of 180° ſhe ſhines with a full face ; and again wains as ſhe re-approaches that luminary, and loſes all her light when ſhe meets him : From the lucid part's being conſtantly turned towards the weſt, while the *moon* increaſes ; and towards the eaſt when ſhe decreaſes ; it is evident, that only that part ſhines on which the ſun's rays fall.—And from the phænomena of eclipſes, happening when the *moon* ſhould ſhine with a full face, *viz.* when ſhe is 180° diſtant from the ſun ; and the darkned parts appearing the ſame in all places, it is evident ſhe has no light of her own, but borrows whatever light ſhe has from the ſun. See PHASES, ECLIPSE, and SUN.

2°. The *moon* ſometimes diſappears in a clear heaven, ſo as not to be diſcoverable by the beſt glaſſes ; little ſtars of the fifth and ſixth magnitude all the time remaining viſible.—This phænomenon Kepler obſerved twice anno 1580, and 1583 ; and Hevelius in 1620. Riccioli, and other Jeſuits at Bologna, and many people throughout Holland obſerved the like April 14, 1642, yet at Venice and Vienna ſhe was all the time conſpicuous. December 23, 1703, there was another total obſcuration : At Arles ſhe firſt appeared of a yellowiſh brown ; at Avignon ruddy and tranſparent, as if the ſun had ſhone through ; at Marſeilles, one part was reddiſh, the other very duſky ; and, at length, though in a clear ſky, wholly diſappeared.—Here it is evident, that the colours appearing different at the ſame time, do not belong to the *moon* ; but that they are occaſioned by an atmoſphere around her variouſly diſpoſed in this and that place, for refracting of theſe or thoſe coloured rays.

3°. The eye, either naked, or armed with a teleſcope, ſees ſome parts in the *moon*'s face darker than others, which are called *maculæ*, or *ſpots*. Through the teleſcope, while the *moon* is either increaſing or decreaſing, the illumined parts in the maculæ appear evenly terminated ; but in the bright parts, the boundary of the light appears jagged and uneven, compoſed of diſſimilar arches, convex and concave. (See *Tab. Aſtronomy, fig.* 18.)—There are alſo obſerved lucid parts diſperſed among the darker ; and illumined parts are ſeen beyond the limits of illumination ; other intermediate ones remaining ſtill in darkneſs ; and near the maculæ, and even in them, are frequently ſeen ſuch lucid ſpecks.—Beſide the maculæ obſerved by the antients, there are other variable ones inviſible by the naked eye, called *new maculæ*, always oppoſite to the ſun ; and which are hence found among thoſe parts which are the ſooneſt illumined in the increaſing *moon*, and in the decreaſing *moon* loſe their light later than the intermediate ones ; running round, and appearing ſometimes longer, ſometimes ſmaller. See MACULÆ, and SPOTS.

Hence, (1.) As all parts are equally illumined by the ſun, in as much as they are equally diſtant from him : If ſome appear brighter, and others darker ; ſome reflect the ſun's rays more copiouſly than others ; and therefore they are of different natures. And, (2.) Since the boundary of the illumined part is very ſmooth and equable in the maculæ, their ſurface muſt be ſo too. (3.) The parts illumined by the ſun ſooner, and deſerted later than others that are nearer, are higher than the reſt, *i. e.* ſtand up above the other ſurface of the *moon*. (4.) The new maculæ anſwer perfectly to the ſhadows of terreſtrial bodies.

4°. Hevelius writes, that he has ſeveral times found, in ſkies perfectly clear, when even ſtars of the ſixth and ſeventh magnitude were conſpicuous, that at the ſame altitude of the *moon*, and the ſame elongation from the earth, and with one and the ſame excellent teleſcope, the *moon* and its maculæ do not appear equally lucid, clear, and perſpicuous, at all times ; but are much brighter, purer, and more diſtinct at one time than another. From the circumſtances of the obſervation, 'tis evident, the reaſon of this phænomenon is not either in our air, in the tube, in the *moon*, nor in the ſpectator's eye ; but muſt be looked for in ſomething exiſting about the *moon*.

5°. Caſſini frequently obſerved Saturn, Jupiter, and the fixed ſtars, when hid by the *moon*, near her limb whether the illumined or dark one, to have their circular figure changed into an oval one ; and in other occultations found no alteration of figure at all. In like manner, the ſun and *moon* riſing and ſetting in a vaporous horizon, do not appear circular, but elliptical.

Hence, as we know, by ſure experience, that the circular figure of the ſun and *moon* is only changed into an elliptical one by means of the refraction in the vapory atmoſphere ; it is pretty apparent, that at the time when the circular figure of the ſtars is thus changed by the *moon*, there is a denſe matter incompaſſing the *moon*, wherein the rays emitted from the ſtars are refracted ; and that at other times, when there is no change of figure, this matter is wanting. See ATMOSPHERE.

This phænomenon is well illuſtrated by the following experiment : To the inner bottom of any veſſel, either plane, convex, or concave, with wax faſten a circle of paper ; then pouring in water, that the rays reflected from the circle into the air may be refracted before they reach the eye ; viewing the circle obliquely, the circular figure will appear changed into an ellipſis.

6°. The *moon*, then, is a denſe opake body, beſet with mountains, valleys, and ſeas.—That the *moon* is denſe, and impervious to the light, has been ſhewn : but ſome parts ſink below, and others riſe above the ſurface; and that conſiderably, in as much as they are viſible at ſo great a diſtance of the earth from the ſun: In the *moon* therefore are huge mountains, and very deep valleys. Ricciolus meaſured the height of one of the mountains, called *St. Catherine*, and found it nine miles high. Again, in the *moon* are ſpacious tracts having ſmooth even ſurfaces, and thoſe reflecting leſs light than the reſt: Hence, as the ſurface of fluid bodies is naturally even, and as ſuch bodies being tranſparent, tranſmit a great part of the rays of light, and reflect very little; the lunar ſpots are fluid, tranſparent bodies: and as they continue conſtantly the ſame, are *ſeas*.—In the *moon*, therefore, are mountains, valleys and ſeas.—Hence again, the lucid parts of the ſpots are *iſlands* and *peninſula's*.

And ſince in the maculæ, and near their limbs, are ſeen ſome parts higher than others, in the lunar ſeas are *rocks* and promontories.

And ſince the new ſpots are contiguous to the mountains, and in all reſpects like the ſhadows of bodies on our earth; no doubt they are the ſhadows of the lunar mountains: Whence alſo appears that the matter of the *moon* is opake.

Note, This reaſoning will be put paſt doubt by viewing the ſenſible horizon from ſome eminence: Where it paſſes over a plain, the line will appear ſmooth and even; where a-croſs mountains and valleys, irregular and winding; ſmooth, but dark, &c.

7°. The moon is incompaſſed with an heavy and elaſtic atmoſphere, wherein vapours and other exhalations aſcend, and whence they return in form of dew and rain.

In a total eclipſe of the ſun, we find the *moon* incircled with a lucid ring parallel to her periphery.

Of this, we have too many obſervations to doubt: In the great eclipſe in 1713, the ring was very conſpicuous at London, and elſewhere. Kepler obſerves the ſame of an eclipſe in 1605, at Naples and Antwerp; and Wolfius of another in 1606 at Leipſick, deſcribed at large in the *Acta Eruditorum*, with this notable circumſtance, that the part next the *moon* was viſibly brighter, than that furtheſt from it; which is confirmed by the obſervations of the French aſtronomers in the *Memoires de l' Academie*, &c. *an.* 1706.

Hence about the *moon* is ſome fluid, which correſponds to her figure, and which both reflects and retracts the ſun's rays. And hence alſo, this fluid is denſer below, near the *moon*'s body; and rarer above. Now as the air which incompaſſes our earth is ſuch a fluid, it is manifeſt there is *air* above the *moon*; and ſince the different denſity of the air depends on its different gravity and elaſticity, no doubt the different denſity of the lunar air has the ſame cauſes. Again, we have obſerved, the lunar air is not always equally clear and tranſparent: ſometimes it changes the ſpherical figures of the ſtars into ovals; and in the ſeveral total eclipſes juſt mentioned, there was obſerved a trembling in the *moon*'s limb, immediately before immerſion, with an appearance of thin, light ſmoak flying over it during immerſion, very apparent in England. And hence, as theſe ſame phænomena are obſerved in our air when full of vapours, it is pretty plain, at the time when theſe phænomena are obſerved in that of the *moon*, it is full of *vapours* and *exhalations*. And, laſtly, ſince at other times the lunar air is clear and tranſparent, producing none of theſe phænomena, the vapours muſt have been precipitated on the *moon*; and therefore either dew, or rain, or ſnow have fallen.

8°. The *moon*, then, is a body in all reſpects like our earth, and fitted for the ſame purpoſes. For we have ſhewn that it is denſe—opake—has mountains and valleys—ſeas, with iſlands, peninſulæ, rocks, and promontories—a changeable atmoſphere, wherein vapours and exhalations riſe and fall—day and night; a ſun to illuminate the one, and a moon the other,——ſummer and winter, &c.

From theſe, by analogy, may infinite other properties and appendages of the *moon* be deduced—From the changes in the atmoſphere will follow winds, and other meteors; and according to the different ſeaſons of the year, *rain*, *miſts*, *froſt*, *ſnow*, &c.—From the inequalities upon the *moon*'s ſurface will ariſe *lakes*, *rivers*, *ſprings*, &c.

Now nature, we know, produces nothing in vain: rains and dews fall on our earth to make plants vegetate; and plants take root, grow, produce ſeeds and fruits for animals to feed on.—But nature is ſtill uniform and conſiſtent with herſelf, and like things ſerve for like ends.—Why then may not there be plants and animals in the *moon*? To what other purpoſe ſo nice a proviſion for them?

Theſe arguments will receive new force when we come to ſhew that our earth itſelf is a planet; and that when viewed from the other planets, it appears, in ſome, like the *moon*; in others, like Venus; in others, like Jupiter, &c. a ſimilitude between the planets, both optical and phyſical, being a ſtrong preſumption their furniture is alike. See Earth and Planet.

To meaſure the height of the mountains of the Moon.—Suppoſe ED (*fig.* 19.) the *moon*'s diameter, ECD the boundary of light and darkneſs; and A the top of a hill in the dark part beginning to be illumined: With a teleſcope obſerve the proportion of AE, or the diſtance of A from the line where the light commences, to the diameter ED: Here we have two ſides of a rectangled triangle AE, CE; the ſquares of which added together give the ſquare of the third; whence the ſemi-diameter CD being ſubſtracted, leaves AB, the height of the mountain.

Ricciolus, *v. gr.* found the top of mount St. Catherine illumined at the diſtance of $\frac{1}{16}$ of the *moon*'s diameter from the confines of light. Suppoſing, therefore, CE, 8; and AE 1; the ſquares of the two will be 65, whoſe root is 8.062 the length of AC; ſubſtracting therefore BC=8, the remainder is AB=0.62. The *moon*'s ſemi-diameter, therefore, is to the mountain's height as 8 is to 0.62; *i. e.* as 800 to 62. Suppoſing, therefore, the diameter of the *moon* 1182 Engliſh miles, by the rule of three we find the height of the mountain nine miles.

The heights, &c. of the lunar mountains being meaſurable, aſtronomers have taken occaſion to give each its name. Ricciolus, whom moſt others now follow, diſtinguiſhed them by the names of celebrated aſtronomers; and by theſe names they are ſtill expreſſed in obſervations of the lunar eclipſes, &c. See the figure, *Tab. Aſtron. fig.* 20.

Moon-*dial*. See the article Dial.

Prime of the Moon. See the article Prime.

MOOR, Mora, a heath, or barren tract of ground. See Waste and Common.

The word is ſometimes alſo uſed for a *moraſs*, *moſs*, or *fen*. See Morass.

Mora muſſa, in antient writings, particularly denotes a moſs, or peat-moſs. See Turf.

MOORING, at ſea, is the laying out of anchors, in a proper place, for the ſecure riding of a ſhip. See Anchor and Unmoor.

To Moor *acroſs*, is to lay out one of the anchors on one ſide.

To Moor *alongſt*, is to have an anchor in a river, and a hawſer on ſhore.

To Moor *quarter-ſhot*, is to moor quartering, between the two firſt ways.

Mooring *for eaſt*, *weſt*, &c. is when they obſerve which way, and on what point of the compaſs the wind or ſea is moſt likely to endanger the ſhip, and there lay out an anchor.

MOORS-*head*, in chymiſtry, a copper cap made in form of a head, to be ſet over the chimney of a reverberating furnace. See Reverberatory and Head.

Moors-*head* alſo denotes the head of a copper or glaſs-ſtill or alembic, which is luted on to the body or cucurbit, and hath a beak or pipe to let the ſpirit run down into the receiver.

MOOT *, a difficult caſe, or queſtion argued by the ſtudents of inns of court, by way of exerciſe. See Mooting.

* The word is formed either from the Saxon, *metan*, *gemetan*, meeting; or from the French, *mot*, word.

MOOTING, the chief exerciſe of the ſtudents in the inns of court; being the arguing of caſes, which young utter barriſters, &c. perform at appointed times, the better to enable them for practice, and the defence of their clients cauſes. See Moot, and Inns *of court*.

Such, as from their learning and ſtanding are called by the benchers to argue *moot-caſes*, are ſometimes called *utter barriſters*; the reſt, who for want of experience, &c. are not admitted, or by ſome called *inner barriſters*. See Barrister.

The place where the *moot caſes* were argued, was antiently called a *moot-hall*. See Hall.

In the inns of court there is a *bailiff* or *ſurveyor of the moots*, yearly choſen by the bench to appoint the *moot-men* for the inns of chancery, and to keep account of performance of exerciſes, both there and in the houſe.

MOOT-*men*, are thoſe who argue *moot caſes*. See Moot.

Out of theſe *moot-men* are choſe readers for the inns of chancery; where, in term-time and in vacations, they argue caſes in the preſence of attorneys and clerks. See Mooting.

Morals, any thing relating to the manners, or conduct of life. See Manners.

Beſides the theological virtues, as *faith*, *hope*, *charity*, &c. there are alſo *moral* virtues, as *juſtice*, *temperance*, &c. See Virtue.

Moral *actions*, or *acts*, are ſuch as render the agent *good*, or *evil*; and conſequently, rewardable and puniſhable becauſe he does them. See Good, &c. See alſo Action.

Moral *cauſe*. See the article Cause.

Moral *certainty*, or *aſſurance*, is uſed to ſignify a very ſtrong probability; in contradiſtinction to a mathematical demonſtration. See Certitude.

Moral *evidence*.	See the article	Evidence.
Moral *evil*.		Evil.
Moral *fables*.		Fable.
Moral *good*.		Good.

Moral *impoſſibility*, is what we otherwiſe call a *very great*, and almoſt *inſuperable difficulty*; in oppoſition to a phyſical, or natural impoſſibility. See Impossibility.

Moral *neceſſity*. See the article Necessity.

Moral *perfection*. See the article Perfection.

Moral *philoſophy*, a ſcience whoſe object is to direct, and form men's manners; to explain the reaſon, and nature of actions; and to teach and inſtruct us how to acquire that felicity which is agreeable to human nature. See Philosophy.

Moral philoſophy is the ſame with what we otherwiſe call *ethics*, ſometimes *morality*. See ETHICS, and MORALITY.

MORAL *quantity*. See the article QUANTITY.

MORAL *ſenſe*, the faculty whereby we diſcern, or perceive what is good, virtuous, beautiful, *&c.* in actions, manners, characters, *&c.*

A late author has endeavoured to prove, that it is a peculiar ſenſe whereby we get the ideas of theſe things; and denominates it a *moral ſenſe*. See *moral* SENSE.

MORAL *theology*, is that which treats of caſes of conſcience; called alſo *caſuiſtry*, or *caſuiſtical divinity*. See THEOLOGY.

MORAL *univerſality*. See the article UNIVERSALITY.

MORAL *of a fable*, is the inſtruction drawn from it. See FABLE.

Thus when Phædrus at the end of a fable adds, *Hoc illis dictum qui*, &c. This makes what we call the *moral*: The Greeks called it επιμυθιον, when at the end of the fable; and προμυθιον at the beginning. Among the Latins it was called *affabulatio*.

MORALITY, denotes a conformity in things and actions, to thoſe unalterable obligations which reſult from the nature of our exiſtence, and the neceſſary relations of life; whether to God as our creator, or to mankind as our fellow-creature. See ACTION, *&c.*

MORALITY, is alſo uſed for the ſcience, or doctrine of morals; or the art of living well and happily: deduced from reaſon, and the nature, relation, and fitneſs of things.

In which ſenſe it amounts to the ſame with what we otherwiſe call *ethics*, *moral philoſophy*, or the *doctrine of offices*. See ETHICS, MORAL, OFFICE, DUTY, *&c.*

Notwithſtanding the great obſcurity and uncertainties in the moral ſcience, Mr. Locke is of opinion, that the doctrine of manners is equally capable of being brought to demonſtration with the doctrine of quantity and number, that is, with the pureſt parts of mathematics. See KNOWLEDGE, DEMONSTRATION, QUANTITY, NUMBER, MATHEMATICS, *&c.*

According to this author, the idea of a ſupreme Being, infinite in power, goodneſs, and wiſdom, whoſe workmanſhip we are, and on whom we depend; and the idea of ourſelves, as underſtanding rational creatures; would, if duly conſidered, afford ſuch foundations of our duty, and rules of action, as might place *morality* among the ſciences capable of demonſtration; wherein we need not doubt, but that from principles as inconteſtible as thoſe of the mathematics, by neceſſary conſequences, the meaſure of right and wrong, might be made out to any one, who will apply himſelf, with the ſame indifferency and attention to the one, as he doth to the other of theſe ſciences. For the relations of other modes may certainly be perceived, as well as thoſe of number and extenſion.—*E. gr.* That *where there is no property, there is no injuſtice*, is a propoſition as certain as any in Euclid; for the idea of property being a right to any thing, and the idea of injuſtice being the invaſion or violation of that right, it is evident, that theſe ideas being thus eſtabliſhed, and theſe names annexed to them, I can as certainly know this propoſition to be true, as that a triangle has three angles equal to two right ones.—Again, *no government allows abſolute liberty*: the idea of government being the eſtabliſhment of ſociety, upon certain rules or laws, which require conformity to them; and the idea of abſolute liberty being for any one to do whatever he pleaſes, I am as capable of being certain of the truth of this propoſition, as of any in mathematics.

What has given the advantage to the ideas of quantity, and made them thought more capable of certainty and demonſtration, than the ideas of good and evil, right and wrong, *&c.* is, 1°. That the former can be repreſented by ſenſible marks, which have a nearer correſpondence with them than any words or ſounds. Diagrams drawn on paper are copies of the ideas, and not liable to the uncerrainty that words carry in their ſignification; but we have no ſenſible marks that reſemble our moral ideas, and nothing but words to expreſs them by, which though, when written, they remain the ſame; yet the ideas they ſtand for may change in the ſame man, and it is very ſeldom they are not different in different perſons.

2°. Moral ideas are commonly more complex than figures; whence theſe two inconveniencies follow. 1°. That their names are of more uncertain ſignification: the preciſe collection of ſimple ideas they ſtand for, not being ſo eaſily agreed on, and ſo the ſign that is uſed for them in communication always, and in thinking often, does not readily carry with it the ſame idea. 2°. The mind cannot eaſily retain thoſe preciſe combinations ſo exactly and perfectly, as is neceſſary in the examination of the habitudes and correſpondencies, agreements or diſagreements of ſeveral of them one with another, eſpecially where it is to be judged of by long deductions, and the intervention of ſeveral other complex ideas, to ſhew the agreement or diſagreement of two remote ones.

One part of theſe diſadvantages in moral ideas, which has made them be thought not capable of demonſtration, may in a good meaſure be remedied by definitions, ſetting down that collection of ſimple ideas which every term ſhall ſtand for, and then uſing the term ſteadily and conſtantly for that preciſe collection. See DEFINITION.

The mathematician conſiders the truth and properties belonging to a rectangle or circle, only as they are ideas in his own mind, which poſſibly he never found actually exiſted mathematically; that is, preciſely true: yet his knowledge is not only certain, but real; becauſe real things are no further, nor intended to be, meant by any ſuch propoſitions, than as things really agree to thoſe archetypes in the mind. It is true of the idea of a triangle, that its three angles are equal to two right ones; it is true alſo of a triangle, where-ever it exiſts: What is true of thoſe figures that have barely an ideal exiſtence in the mind, will hold true of them alſo, when they come to have a real exiſtence in matter. Hence it follows, that moral knowledge is as capable of real certainty as mathematics: For certainty being nothing but the perception of ſuch agreement, by the intervention of other ideas, our moral ideas, as well as mathematical, being archetypes themſelves, and ſo adequate or compleat ideas, all the agreement or diſagreement we ſhall find in them, will produce real knowledge, as well as in mathematical figures. That which is requiſite to make our knowledge certain, is the clearneſs of our ideas; and that which is required to make it real, is that they anſwer their archetypes.

But it will here be ſaid, That if moral knowledge be placed in the contemplation of our own moral ideas, and thoſe are of our own making, what ſtrange notions will there be of juſtice and temperance? What confuſion of virtues and vices, if every man may make what ideas of them he pleaſes? It is anſwered: No confuſion or diſorder at all in the things themſelves, nor the reaſonings about them, no more than there would be a change in the properties of figures, and their relations one to another, if a man ſhould make a triangle with four corners, or a trapezium with four right angles; that is, in plain Engliſh, change the names of the figures, and call that by one name which is called ordinarily by another. The change of name will indeed at firſt diſturb him, who knows not what idea it ſtands for; but as ſoon as the figure is drawn, the conſequences and demonſtration are plain and clear.

Juſt the ſame is it in moral knowledge: Let a man have the idea of taking from others, without their conſent, what they are juſtly poſſeſſed of, and call this *juſtice* if he pleaſeth; he that takes the name there, without the idea put to it, will be miſtaken, by joining another idea of his own to that name: but ſtrip the idea of that name, or take it, ſuch as it is, in the ſpeaker's mind, and the ſame things will agree to it, as if you called it *injuſtice*. One thing we are to take notice of, That where God, or any other law-maker, has defined any moral names, there they have made the eſſence of that ſpecies to which that name belongs; and there it is not ſafe to apply or uſe them otherwiſe; but in other caſes, it is bare impropriety of ſpeech to apply them contrary to the common uſage of the country they are uſed in.

MORASSE *, a marſh, fen, or low moiſt grounds, which receive the waters from above, without having any deſcent to carry them off again. See FEN.

* Somner derives the word from the Saxon *merſc*, lake; Salmaſius from *mare*, a collection of waters; others from the German *maraſt*, a muddy place; and others from *mareſc*, of *maricetum*, *à mariſcis*, i. e. ruſhes.

In Scotland, Ireland, and the north of England, they have a peculiar kind of *moraſſes*, called *moſſes*, or *peat-moſſes*, whence the country-people dig their peat or turf. See TURF.

The earl of Cromartie gives a particular account of theſe moſſes in the *Philoſophical tranſactions*. They are covered with a heathy ſcurf, under which is a black, moiſt, ſpungy earth, in ſome places ſhallower, in others deeper, ordinarily from three or four, to ſeven or eight feet depth, though in ſome few places twice or thrice as much.

This black, ſpungy earth, they cut into oblong ſquares with iron ſpades fitted to that end, eight or nine inches long, and four or five broad; as the men cut them up, they are carried and ſpread on a dry ground, to be dried in the wind and ſun. Some of theſe become harder, ſome ſofter, according to the nature of the mould or earth: The more black and ſolid, the better fire; and they are the leaſt eſteemed which are grayeſt, lighteſt, and moſt ſpungy.

When they have cut off one ſurface of four or five inches deep, they proceed downwards to another, and ſo to a third and a fourth, till they come to the hard channel; unleſs they be ſtopped with water, which they alſo ordinarily remove by making a channel, if they can; but where they cannot, there the water ſtagnates. In ſuch waſted pits, or *peat-dikes*, as they call them, where water hinders the cutting the ſpungy earth to the bottom, the pits will be filled up again in ſome years with a new ſpungy earth; which in proceſs of time comes to the conſiſtence of peat-moſs as at firſt, and a ſcurfy heath-turf grows over the top of it. When the dikes are dug down to the hard channel, the moſſes do not renew, as in the other caſe; though it has been obſerved, that if they be cut down to the channel, provided the heathy turf cut off from the top be but laid on the channel, in courſe of time the moſs grows again. Theſe moſſes are always level; though they are frequently found on hills, and near the tops of them too. Yet, as that curious nobleman obſerves, the moſſes have always a deſcent to them, and generally from them; inſomuch that he never knew any where the water might ſtagnate. It is the water draining from above, that ſeems to be the parent of peat. In many of theſe moſſes are found quantities of fir and oak wood, uſually whole trees; for the ſmaller branches are ſeldom found unconſumed. This wood is as good for uſe as any old wood is; only that having imbibed a deal of moiſture, it takes ſome time to dry, in order to fit it for uſe.

There are many places where wood will not grow, where yet the moſſes are well ſtocked with this under-ground timber; but yet it appears there muſt have been woods formerly; elſe how come they in the moſſes? To prove this, that noble lord gives us the hiſtory and origin of a moſs, in great meaſure from his own experience.—In the pariſh of Lochburn, in the year 1651, he ſaw, near the top of a very high hill, a plain about a mile over, then covered with a firm ſtanding wood, but which was ſo very old, that not only the trees had no leaves or bark on, but the outſide for the ſpace of an inch inward was dead, white timber, though within they were firm. Coming by the ſame place fifteen years after, he could not diſcover the leaſt appearance of a tree, but inſtead thereof a plain green ground covered with a moſs; the trees being all fallen, and having lain ſo thick over one another, the green had over-run the whole timber, by means of the moiſture draining from the hill above it, and ſtagnating on the plain. He adds, that none could paſs over it; the ſcurf not being firm enough to ſupport them. In thirty years more he found the whole piece of ground turned into a common peat-moſs, and the country-people digging turf and peats.—This accounts for the generation of moſſes, and whence it is that many of them are furniſhed with timber.

MORATUR, or DEMORATUR, in law, ſignifies as much as, *he demurs*; that is, the party here goes not forward, but reſts, or abides upon the judgment of the court, who take time to deliberate, argue, and adviſe thereon. See DEMURRER.

When the council of the party are of opinion, that the count or plea of the adverſe party is inſufficient in law; then he *demurs*, or abides in law, and refers the ſame to the judgment of the court.

MORBID, MORBIDUS, in medicine, is applied to thoſe parts, humours, &c. wherein a diſeaſe lies. See DISEASE.

MORBID, in painting, is particularly applied to fat fleſh very ſtrongly expreſſed.

MORBILLI, in medicine, a diſeaſe popularly called *meaſles*. See MEASLES.

MORBUS, a term purely Latin, ſignifying *diſeaſe*. See DISEASE.

MORBUS *comitialis*, denotes the *epilepſy*; thus called by the Romans, becauſe when in any of their public aſſemblies perſons fell down with this diſtemper, they immediately broke up, and diſſolved the comitia, which was the common appellation for ſuch courts. See EPILEPSY, and COMITIALIS.

MORBUS *Gallicus*.	See the article	VENEREAL *diſeaſe*.
MORRUS *prodromus*.		PRODROMUS.
MORBUS *pedicularis*.		PEDICULARIS.
MORBUS *regius*.		JAUNDICE.
MORBUS *virgineus*.		CHLOROSIS.
Cholera MORBUS.		CHOLERA.

MORESK, or MORISCO, a kind of painting, carving, &c. done after the manner of the Moors; conſiſting of ſeveral groteſque pieces and compartiments promiſcuouſly intermingled, not containing any perfect figure of a man, or other animal, but a wild reſemblance of birds, beaſts, trees, &c. See GROTESQUE. Theſe are alſo called *arabeſques*, and are particularly uſed in embroideries, damaſk-work, &c. See ARABESQUE.

Moreſque dances, vulgarly called *morrice-dances*, are thoſe altogether in imitation of the Moors; as ſarabands, chacons, &c. which are uſually performed with caſtanets, tabours, &c. See CASTANETS.

MORGANATIC *marriage*. See the article MARRIAGE.

MORNING, the beginning of the day; or the time of the ſun-riſing. See DAY, and RISING.

The aſtronomers reckon *morning*, *manè*, from the time of midnight, to that of mid-day.—Thus an eclipſe is ſaid to begin at eleven a-clock in the *morning*, &c.

MORNING-*ſtar*, is the planet Venus, when a little to the weſtward of the ſun; that is, when ſhe riſes a little before him. In this ſituation, ſhe is called by the Greeks, *phoſphorus*; by the Latins, *lucifer*, &c. See PHOSPHORUS.

MORNING *twilight*. See the article CREPUSCULUM.

MOROCCO *, or MARROQUIN, the ſkin of a goat, or ſome other animal reſembling it, called *menon*, frequent in the Levant, dreſſed in ſumac, or galls, and coloured of any colour at pleaſure, much uſed in tapiſtry, book-binding, &c.

We have *Morocco* ſkins brought from the Levant, Barbary, Spain, Flanders, and France; red, black, yellow, blue, &c. —The various manners of preparing *Moroccos*, both black and in colours, are ſo curious, and withal ſo little known among us, that the public will not be diſpleaſed to find them here.

Manner of preparing black MOROCCO.—The ſkins having been dried in the hair, are ſteeped in clear water three days and nights, ſtretched on a wooden horſe or leg, like that uſed by tanners, beaten with a large knife for the purpoſe, and ſteeped a-freſh in water, changed daily till they be well come again. —In this ſtate, they are thrown into a large vat in the ground, full of water, wherein quick-lime has been ſlaked, where they lie fifteen days; whence, however, they are taken, and again returned every night and morning: They are then thrown into a freſh vat of lime and water, and ſhifted night and morning, as before, for fifteen days longer; then rinſed in clear water, and the hair taken off, on the leg, with the knife; returned into a third vat, and ſhifted as before, for about eighteen days; ſteeped twelve hours in a river, taken out, rinſed, put in pails, where they are pounded with wooden peſtles, changing the water twice: then laid on the horſe, and the fleſh taken off, returned into pails of new water, taken out, and the hair-ſide ſcraped; returned into freſh pails, taken out, and thrown into a pail of a particular form, having holes at bottom: here they are beaten the ſpace of an hour, and freſh water poured on from time to time; ſtretched on the leg, and ſcraped on either ſide; returned into pails of freſh water; taken out, ſtretched, and ſewed up all around in manner of bags, leaving out the hind legs, which ſerve to make an aperture for the conveyance of a mixture mentioned hereafter.

The ſkins thus ſewed, are put in luke-warm water, where dogs excrement has been diſſolved. Here they are ſtirred with long poles half an hour, left at reſt a dozen, taken out, rinſed in freſh water, and filled by a tunnel with a preparation of water and ſumac mixed and heated over the fire till ready to boil; and as they are filled, the hind-legs are ſewed up to ſtop the paſſage. In this ſtate they are let down into the veſſel of water and ſumac, and kept ſtirring four hours ſucceſſively, taken out, and heaped on one another; after a little time, their ſides are changed: and thus they continue an hour and half, till drained. This done, they are looſened, and filled a ſecond time with the ſame preparation, ſewed up again, and kept ſtirring two hours, piled up, and drained as before. This is again repeated a third time, with this difference, that they are now only ſtirred a quarter of an hour; after which, they are left till the morrow morning, when they are taken out, drained on a rack, unſewed, the ſumac taken out, folded in two from head to tail, the hair-ſide outwards, laid over each other on the leg, to perfect their draining, ſtretched out, and dried; then trampled under foot by two and two, ſtretched on a wooden table, what fleſh and ſumac remains ſcraped off, and the hair-ſide rubbed over with oil, and that again with water.

Having thus received their oil and water, they are wrung in the hands, then ſtretched and preſſed tight on the table with an iron inſtrument like that of the curriers, the fleſh-ſide uppermoſt; then turned, and the hair-ſide rubbed ſtrongly over with a handful of ruſhes, to ſqueeze out as much of the oil remaining within as poſſible. The firſt courſe of black is now laid on the hair-ſide, by means of a lock of hair twiſted and ſteeped in a kind of black dye, prepared of ſour beer, wherein pieces of old ruſty iron have been thrown. When half dry by hanging in the air, they are ſtretched on a table, and rubbed over every way with a paumelle or wooden toothed inſtrument, to raiſe the grain, over which is paſſed a light couche of water, then ſleeked, by rubbing them with ruſhes prepared for the purpoſe. Thus ſleeked, they have a ſecond couche of black, then dried, laid on the table, rubbed over with a paumelle of cork, to raiſe the grain again; and after a light couche of water, ſleeked over anew, and to raiſe the grain a third time, a paumelle of wood uſed.

After the hair-ſide has thus received all its preparations, the fleſh-ſide is pared with a ſharp knife for the purpoſe; the hair-ſide rubbed ſtrongly over with a woolen cap, having firſt given it a luſtre with barberries, citron, or orange. The whole is finiſhed, by raiſing the grain lightly for the laſt time with the paumelle of cork, which leaves them in a condition for ſale and uſe.

Manner of preparing red MOROCCO.—The ſkins are ſteeped twenty-four hours in a river, taken out, ſtretched on the leg, beat with the knife, returned into the water for twenty-four hours, re-beaten on the leg, re-ſteeped; thrown into a vat, and for three weeks, taken out and returned every morning, to diſpoſe them to peel.—Being taken out for the laſt time, they are ſcraped with the knife, and when the hair is quite oft, thrown in pails of freſh water, where they are rinſed; then the fleſh-ſide ſcraped, thrown into the pails, and thus alternately from the leg to the pails, till they leave the water quite clean: then they are put in lukewarm water, with the ſumac as before, and after twelve hours, rinſed in clear water, and ſcraped on the leg on both ſides, pounded in pails, and the water changed three times; then wrung and ſtretched on the leg, and paſſed after each other into water, with allum diſſolved in it. Thus allumed, they are left to drain till the morning, then wrung out, pulled on the leg, and folded from head to tail, the fleſh inwards.

In this ſtate they receive their firſt dye, by paſſing them after one another into a red liquor, prepared with lacca, and ſome other ingredients, kept ſecret among the *maroquineers*.—This they repeat again and again, till the ſkins have got their firſt colour. They are then rinſed in clear water, ſtretched on the leg, and left to drain twelve hours; thrown into water, into which white galls pulverized have been paſſed through a ſieve, and ſtirred inceſſantly for a day with long poles, taken out, hung on a bar a-croſs the water all night, white againſt red, and red againſt white, and in the morning the water ſtirred up, and the ſkins returned into it for twenty-four hours.

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* The name is ordinarily derived from the kingdom of *Morocco*, whence it is ſuppoſed the manner of preparing them was firſt borrowed.

MORPHEW, Morphæa, a leprous ſort of freckle or ſcurf which breaks out ſometimes upon the ſkin; particularly about the forehead; called alſo *alphus*. See Alphus.

MORSELLI, or Morsuli, are denominations given to thoſe forms of medicines to be chewed in the mouth, as a *lozenge*; the word ſignifying a little mouthful. See Lozenge.

MORSUS *diaboli*, *devil's bit*; a plant which ſeems to have a fringe around the bottom of its root: otherwiſe called *ſuccisa*. See Succisa.

It has its denomination from its roots, which appear as if bitten off at the bottom: which ſuperſtitious people attributed to the devil as done out of envy, leſt we ſhould have too much of ſo ſalutary a root. It was formerly looked on as a good alexipharmic; but is now much out of uſe.

From a likeneſs hereto, has the edge or ſelvedge of the tubæ fallopianæ, obtained the ſame appellation. See Fallopian.

Morsus *canis rabidi*. See the article Hydrophobia.

Morsus *viperæ*. See the article Viper.

Mort *d'anceſtre*, in law, ſee Assise *of mort d'anceſtre*.

MORTALITY, a term frequently uſed to ſignify a contagious diſeaſe, which deſtroys great numbers either of men, or beaſts. See Disease, Plague, Murrain, *&c.*

Bills of Mortality, are weekly liſts compiled by the pariſh-clerks in, and about, London, containing the numbers of ſuch as die of each diſeaſe, as well as of thoſe that are born, every week. See Bill.

The bills of mortality comprehend not only the alleys, ſuburbs and liberties of London, and Weſtminſter, and borough of Southwark, but fifteen out-pariſhes next adjacent.—But then they are limited to the chriſtenings and burials in the pariſh-churches: For as to thoſe of the Diſſenters, Quakers, *&c.* they do not come under the cognizance of the pariſh-clerks.

The bills are of ſome ſtanding in England, in imitation whereof the like are now eſtabliſhed at Paris. They are very uſeful on ſeveral accounts, particularly in judging of the *mortality* of any diſeaſe, and whether an epidemic or infectious diſtemper increaſes or abates.

There are alſo *yearly bills*, collected out of the weekly ones.—By theſe it appears, that the annual number of burials at London is twenty-five or twenty-ſix thouſand: at Paris it is ſeventeen, or eighteen thouſand.

Mr. Graunt, who examined the London bills very accurately, has wrote an expreſs treatiſe of them.—Among other things, he calculates from them, that of 100 perſons who are born in the ſame week, there are but 64 left at the end of ſix years; but 40 at the end of ſixteen years; at the end of twenty-ſix years, but 25; and the end of thirty-ſix years, but 16; at the end of forty-ſix years, but 10; at the end of fifty-ſix, no more than 6; at the end of ſixty-ſix years, but 3; at the end of ſeventy-ſix, but 1; and at the end of eighty years, they are reduced to none.

He likewiſe makes it appear, that in England in general, more are born than die; but in London, more die than are born: The proportion of births to burials, in the former, being as 1 $\frac{1}{12}$ to one; in the latter as 1 $\frac{1}{17}$ to one. Thus alſo cities and market-towns are found to bury 1 $\frac{7}{100}$ to 1 birth. But in Paris they outdo London; their deaths being 1 $\frac{1}{2}$ to 1 birth. In the villages of England, fewer die than are born; there being but one death to 1 $\frac{17}{100}$ births. See Marriage.

MORTAR, or Morter, in architecture, a compoſition of lime, ſand, *&c.* mixed up with water; ſerving, as a cæment, to bind the ſtones, *&c.* of a building. See Building, Cæment, *&c.*

The antients had a kind of *mortar* ſo very hard and binding, that, after ſo long a duration, 'tis next to impoſſible to ſeparate the parts of ſome of their buildings; though there are ſome who aſcribe that exceſſive ſtrength to time, and the influence of certain properties in the air, which is found to harden ſome bodies very ſurprizingly. See Air.

The lime uſed in the antient *mortar* is ſaid to have been burnt from the hardeſt ſtones, and even fragments of marble. See Lime.

De Lorme obſerves, that the beſt *mortar* is that made of pozzolana for ſand; adding, that it penetrates black flints, and turns them white. See Pozzolana.

Mr. Worledge obſerves, that fine ſand makes weak *mortar*; and the rounder the ſand, the ſtronger the *mortar*. He therefore adviſes the ſand to be waſhed e'er mixed; and adds, that dirty water weakens the *mortar* conſiderably. See Sand.

Wolfius obſerves, that the ſand ſhould be dry and ſharp, ſo as to prick the hands when rubbed; yet not earthy, ſo as to foul the water it is waſhed in.

Vitruvius obſerves, that foſſil-ſands dry ſooner than thoſe taken out of rivers. Whence he adds, the latter is fitted for the inſides, the former for the outſides of a building. He ſubjoins, that foſſil-ſand lying long in the air, becomes earthy. Palladio takes notice, that of all ſands white ones are the worſt; the reaſon is owing to their want of aſperity.

The proportion of lime and ſand in our common *mortar* is extremely variable. Vitruvius preſcribes three parts of pit-ſand and two of river-ſand to one of lime; but the ſand here ſeems to be over-doſed. About London, the proportion of ſand to quick lime is as 36 to 25. In ſome parts they uſe equal quantities of each.

Mixing and blending of Mortar.—M. Felibien obſerves that the antient maſons were ſo very ſcrupulous herein, that the Greeks kept ten men conſtantly employed for a long ſpace of time, to each baſon, which rendered the mortar of ſuch prodigious hardneſs, that Vitruvius tells us the pieces of plaiſter falling off from old walls ſerved to make tables.—Felibien adds, it is a maxim among old maſons to their labourers, that they ſhould dilute with the ſweat of their brow, *i. e.* labour it a long time, inſtead of drowning it with water, to have done the ſooner.

Beſides the common *mortar* uſed in laying of ſtones, bricks, *&c.* there are ſeveral other kinds. As,

White Mortar, uſed in plaiſtering the walls and ceilings; made of ox-hair mixed with lime and water, without any ſand. See Plaister.

Mortar *uſed in making of water-courſes*, *ciſterns*, *&c.* is very hard and durable, made of lime and hog's greaſe, ſometimes mixed with the juice of figs, and ſometimes with liquid pitch: after application it is waſhed over with linſeed oil. See Cistern.

Mortar *for furnaces*, &c. is made with red clay wrought in water, wherein horſe-dung and chimney-ſoot has been ſteeped. See Furnace.

Mortar *for ſun-dials* on walls may be made of lime and ſand tempered with linſeed oil; or, for want of that, with ſcummed milk. This will grow to the hardneſs of a ſtone.

For buildings, one part of waſhed ſoap-aſhes mixed with another of lime and ſand, make a very durable *mortar*. See Cæment, *&c.*

MORTAR-PIECE, a ſhort piece of ordnance, thick and wide, proper for throwing bombs, carcaſſes, ſhells, ſtones, *&c.* See Ordnance, Bomb, Carcass, *&c.*

There are two kinds of *mortars*: the one hung, or mounted on a carriage with low wheels, after the manner of guns; called *pendent*, or *hanging mortars*. See Mounting.—The other fixed on an immoveable baſe, called *ſtanding mortars*.

At the head of the bore, or chaſe of the *mortar*, is the *chamber* for the charge of powder.—This is uſually made cylindrical, all but the baſe, which they make hemiſpherical: Though ſome of the latter engineers prefer ſpherical chambers; as the ſurface of thoſe being leſs, under equal capacities, make leſs reſiſtance to the gun-powder. See Chamber.

The thickneſs of the *mortar* about the chamber is to be much greater than about the chaſe; by reaſon the gun-powder makes a much greater effort about the chamber than elſewhere. The diameter of the chamber to be much leſs than that of the bore; by reaſon bombs, ſhells, *&c.* are much lighter than the bullets of equal diameters; and, conſequently, leſs powder ſuffices. See Bullet.

To charge, or *load a* Mortar, the proper quantity of gun-powder is put into the chamber; and if there be any vacant ſpace, they fill it up with hay; ſome chuſe a wooden plug. Over this they lay a turf; ſome a wooden tampion fitted to the bore of the piece; and laſtly the bomb, taking care that the fuſee be in the axis thereof, and the orifice be turned from the muzzle of the piece. What remains, is to be filled up with hay, ſtraw, turf, *&c.* ſo as the load may not be exploded without the utmoſt violence. See Charge.

The quantity of gun-powder to be uſed, is found by dividing the weight of the bomb by 30. Though this rule is not always to be ſtrictly obſerved. See Gun-Powder.

To elevate the Mortar, ſo as its axis may make any given angle with the horizon; they apply the artillery-level, or gunner's quadrant; the uſe whereof ſee under the articles Level and Quadrant. See alſo Elevation.

An elevation of 70 or 80 degrees is what is commonly choſe for rendering *mortars* moſt ſerviceable in caſting ſhells into towns, forts, *&c.* though the greateſt range be at 45°. See Range.

If all *mortar-pieces* were, as they ought to be, exactly ſimilar, and their requiſites of powder as the cubes of the diameters of their ſeveral bores; and if their ſhells, bombs, carcaſſes, *&c.* were alſo ſimilar, then, comparing like with like, their ranges on the plane of the horizon, under the ſame degree of elevation, would be equal; and, conſequently, one piece being well proved, *i. e.* the range of the granado, bomb, carcaſs, *&c.* being found to any degree of elevation, the whole work of the *mortar-piece* would become very eaſy, and exact.

But ſince *mortars* are not thus ſimilar, 'tis required that the range of the piece at ſome known degree of elevation be accurately found by meaſuring; and from hence all the other ranges may be determined.

Thus, to find the range of the piece at any other elevation required; ſay, as the ſine of double the angle under which the experiment was made, is to the ſine of double the angle propoſed, ſo is the range known, to the range required.

Suppoſe, for inſtance, it be found that the range of a piece elevated to 30 degrees is 2000 yards; to find the range of the ſame piece with the ſame charge when elevated to 45 degrees: Take the ſine of 60°, the double of 30°, and make it the firſt term of the rule of three; the ſecond term muſt be the ſine of 90°, the double of 45°; and the third the given range 2000: The fourth term will be 2310, the range of the piece at 45°. If the elevation be greater than 45°, inſtead of doubling it, take the ſine of double its complement to 90°. As ſuppoſe the elevation of a piece be 50°, take the ſine of 80°, the double of 40°.

Again, if a determinate diſtance to which a ſhot is to be caſt, be given, and the angle of elevation to produce that effect be required; the range known muſt be the ſtrſt term in the rule of three, which ſuppoſe 2000 yards; the range propoſed, which we ſuppoſe 1600 yards, the ſecond term; and the ſine of 60 double of the elevation for the range of 2000 yards, the third term. The fourth term will be found the ſine of 43°, 52′, whoſe half 21°, 56′, is the angle of elevation the piece muſt have, to produce the deſired effect. And if 21°, 56′, be taken from 90°, you will have 68°, 4′ for the other elevation of the piece, with which the ſame effect will likewiſe be produced.

Note, to avoid the trouble of finding ſines of double the angles of propoſed elevations, Galileo and Torricelli give us the following table, wherein the ſines of the angles ſought are had by inſpection.

Degrees.	Degrees	Ranges.	Degrees.	Degrees.	Ranges.
90	0	0	0	0	0
89	1	349	66	24	7431
88	2	698	65	25	7660
87	3	1045	64	26	7880
86	4	1392	63	27	8090
85	5	1736	62	28	8290
84	6	2709	61	29	8480
83	7	2419	60	30	8660
82	8	2556	59	31	8829
81	9	3090	58	32	8988
80	10	3420	57	33	9135
79	11	3746	56	34	9272
78	12	4067	55	35	9397
77	13	4384	54	36	9511
76	14	4695	53	37	9613
75	15	5000	52	38	9703
74	16	5299	51	39	9781
73	17	5592	50	40	9841
72	18	5870	49	41	9903
71	19	6157	48	42	9945
70	20	6428	47	43	9976
69	21	6691	46	44	9994
68	22	6947	45	45	10000
67	23	7193			

The uſe of the table is obvious.—Suppoſe, for inſtance, it be known by experiment that a *mortar* elevated 15°, charged with three pounds of powder, throw a bomb to the diſtance of 350 fathom; and it be required, with the ſame charge, to throw a bomb 100 fathom farther: Seek in the table the number anſwering to 15 degrees, and you will find it 5000. Then as 350 is to 450, ſo is 5000 to a fourth number, which is 6428. Find this number, or that neareſt it, in the table, and againſt it you will find 20°, or 70°; the angles of elevation.

For the weight, dimenſions, *&c.* of the bombs, *&c.* to be caſt out of *mortars*, and the lines of the projection; ſee Bomb, Projectile, *&c.*

MORTGAGE *, in law, an obligation, whereby lands or tenements of the debtor, are pawned or bound over to the creditor for money, or other effects borrowed; peremptorily to be the creditor's for ever, if the money be not repaid at the day agreed on. See Gage, *&c.*

* Glanvil defines *mortgage*, *mortuum vadium*, to be that *cujus fructus vel reditus interim percepti in nullo ſe acquietant.* Thus 'tis called *mortgage*, i. e. *dead gage*, of *mort*, death; and *gage*, pledge; becauſe whatever profit it yields, yet it redeems not itſelf by yielding ſuch profit, except the whole ſum borrowed be likewiſe paid at the day; the *mortgager* being by covenant to receive the profits till default of payment. Others hold it called *mortgage*, becauſe if the money be not paid at the day, the land *moritur*, dies, to the debtor, and is forfeited to the creditor.

In this ſenſe, *mortgage*, in common law, amounts to much the ſame with *hypotheca* in the civil law. See Hypotheca.

The creditor holding ſuch land, on ſuch agreement, is in the mean time called *tenant in mortgage.* See Tenant.—He who lays the pawn or gage, is called the *mortgager*, and he that takes it the *mortgagee.*—If a *mortgage* include exceſſive uſury, it is prohibited by a ſtatute 37 Hen. VIII.

The French ſometimes uſe the word *mortgage* in the ſame ſenſe in their language, where it ſtands in contradiſtinction to a ſimple contract, which does not carry with it the mean profits, and which they call *viſ-gage*, live-pledge.

A *mortgage* is an engagement for the ſecurity of the creditor; for which purpoſe various means have been contrived: That of the pawn or pledge, ſeems to have been the moſt antient, being in reality the ſame thing with the *mortgage*; all the difference conſiſting in this, that in a *mortgage* the pawn was put into the hands of the creditor; whereas in a ſimple engagement, the thing remained in the hands of the debtor.—But it was afterwards found much more commodious to engage lands by a ſimple convention, than by an actual delivery.

Accordingly, this was practiſed by the Greeks; and from them borrowed by the Romans; who, the better to prevent deceits, fixed up viſible marks to inform the public, that the eſtate was engaged by the proprietor. Though theſe marks were found ſo injurious to the debtors, that the uſe of them was at length prohibited.

The Romans had four kinds of *mortgages*, or *hypothecæ*. The *conventional*, which proceeds from the will and conſent of the contracters: The *legal*, which is introduced by the law, and which is therefore called *tacit*: The *mortgage of the prætor*, when by the flight or refuſal of the debtor, the creditor was put in poſſeſſion of his effects: And the *judiciary mortgage*, when the creditor was put in poſſeſſion, in conſequence of a decree or ſentence.

The civil lawyers diſtinguiſh twenty-ſix different kinds of *tacit mortgages.*

MORTIER, a badge, or enſign of dignity born by the chancellors, and great preſidents of the parliaments of Paris. That born by the chancellor is a piece of cloth of gold, lined and turned up with ermin: That of the firſt preſident is a piece of velvet edged with a gold lace; that of the other preſidents is only a piece of gold lace.

They formely bore it on their head, but now in their hands, except in grand ceremonies, as at the entry of a king.—Hence the denomination, *preſidents a mortier.*

MORTIFICATION, *necroſis*, in medicine, a total extinction of the natural heat of the body, or a part thereof. See Heat.

Some define *mortification* a diſeaſe, wherein the natural juices of any part quite loſe their proper motion; and by that means fall into a fermentative one, and corrupt, and deſtroy the texture of the part.

There are two ſpecies, or rather degrees of *mortification*: The one called a *gangrene*, which is a *mortification* in its firſt, or beginning ſtate: The other a *ſphacelus*, which is a perfect, or finiſhed *mortification.* See Gangrene and Sphacelus.

MORTISE *, or Mortoise, in carpentry, *&c.* a kind of joint, wherein a hole or inciſion, of a certain depth, is made in the thickneſs of a piece of wood, which is to receive another piece, called a *tenon.* See Tenon.

* The word is originally French, *mortoiſe*, which ſignifies the ſame; and which Borel derives further from *mordere*, to bite.

MORTMAIN *, in law, the alienation of lands and tenements to any guild, corporation, or fraternity, and their ſucceſſors; as biſhops, parſons, vicars, *&c.* which may not be done without the king's licence, and that of the lord of the manor; or of the king alone, if it be immediately holden of him.

* The word literally denotes *dead-hand*; being a compound of *mort*, dead, and *main*, hand.—Accordingly Hottoman defines *mortmain* to be the poſſeſſion of thoſe who are, as it were, immortal, becauſe they never ceaſe to have heirs; ſo that the eſtate never reverts to its firſt lord; *main*, hand, being uſed for poſſeſſion; and *mort*, dead, by antiphraſis, for immortal.—Others aſſign the reaſon of the name thus; that the ſervices and other profits due for ſuch lands, ſhould not, without ſuch licence, come into a dead hand, (*mainmort*,) *i. e.* into a hand as it were dead, that is, ſo dedicated to God, or pious uſes, as to be different from other lands, tenements, or hereditaments, and never to revert to the donor, or any temporal or common uſe.

The preſidents and governors of hoſpitals may, without licence in *mortmain*, purchaſe land, *&c.* not exceeding the yearly value of 3000 *l.* Stat. 14. Car. 2.

MORTUARY, is a gift left by a man at his death to his pariſh-church, for a recompence of perſonal tithes and offerings, not duly paid in his life-time.

A *mortuary* is not properly and originally due to an incumbent from any but thoſe of his own pariſh: But, by cuſtom, in ſome places of the kingdom, it is paid to the parſons of other pariſhes, as the corpſe paſſes through them.

MORTUUM *caput*. See the article Caput.

MOSAIC *, Mosaic *work*, or, as ſome chuſe to call it, Musaic, an aſſemblage of little pieces of glaſs, marble, ſhells, precious ſtones, woods, or the like, of various colours, cut ſquare and cemented on a ground of ſtucco, *&c.* imitating the natural colours and degradations of painting. See Painting.

In which ſenſe *moſaic work* includes *marquetry*, or *inlaid work*, *vaneering*, &c.

* The critics are divided as to the origin and reaſon of the name: Some derive it from *moſaicum*, a corruption of *muſaicum*, as that is of *muſivum*, as it was called among the Romans. Scaliger derives it from the Greek μȣ̃σα, and imagines the name was given to this ſort of works, as being very fine, and ingenious. Nebricenſis is of opinion it was ſo called, becauſe *ex illis picturis ornabantur muſea.*

But in its more proper and reſtrained ſenſe *Moſaic* only takes in works of ſtone, metals, and glaſs; thoſe of wood being diſtinguiſhed by the name of *marquetry* or *inlaying*. See MARQUETRY.

Others diſtinguiſh otherwiſe between *moſaic* and *marquetry*. In that properly called *moſaic*, the ſeveral ſtones are all of the ſame colour; and the changes, and diminutions of colours, and ſhades, are made by applying different ſtones one on another, but all of the ſame colour. *Marquetry*, on the contrary, conſiſts of ſtones of different colours; and by theſe the ſeveral colours, ſhades, degradations, *&c.* are expreſſed.

Moſaic ſeems to have taken its origin from *paving:* The fine effect and uſe of pavements, compoſed of pieces of marble of different colours ſo well joined together, as that when dried they might be poliſhed, and the whole make a very beautiful and ſolid body, which continually trodden upon, and waſhed with water, was not at all damaged; gave the painter the hint; who ſoon carried the art to a much greater perfection: ſo as to repreſent foliages, maſques, and other groteſque pieces of various colours, on a ground of black or white marble. In fine, obſerving the good effect which this kind of work had in pavements, and finding that it reſiſted water, they proceeded to line walls therewith, and to make various figures for the ornament of their temples and public buildings.

But nature not producing variety of colours enough for them in marbles, to paint all kinds of objects, they bethought of counterfeiting them with glaſs and metal colours; which ſucceeded ſo well with them, that having given all manner of teints to an infinite number of little pieces of theſe two matters, to counterfeit ſtones of various colours, in order to get more colours; the workmen arranged them with ſo much art, that their *moſaic* ſeemed almoſt to diſpute with paintings. This way of repreſenting objects having this advantage, that it reſiſts the injuries of the air as well as marble itſelf; and even grows more beautiful with time, which effaces all other kind of painting.

But the moderns have gone further, and ſetting aſide glaſs and metals, as too mean materials, have introduced, along with the fineſt marbles, the richeſt of precious ſtones, as lapis, agat, cornelians, emeralds, turquoiſes, *&c.*

Of theſe three kinds of *moſaic*-work, that of coloured glaſs and metals is now little in uſe, though of a ſurprizing luſtre and durableneſs: of the other two, that of marbles alone is in common uſe; the *moſaic* of precious ſtone being ſo very dear, that the few workmen who apply themſelves to it, make little elſe but petty-works, as ornaments for altar-pieces, tables for rich cabinets, *&c.* Though out of theſe muſt be excepted that ſumptuous chapel of the dukes of Tuſcany, which has been ſo long in hand, and which, if ever it be finiſhed, will be a noble monument of the magnificence and piety of thoſe princes, as well as of the patience and addreſs of the workmen employed therein.

We ſhall however enter into ſome detail of the manner of working in thoſe three kinds of *moſaic*; to which we ſhall add a fourth much newer, yet equally ingenious with any of the reſt, made with a kind of gypſum or talc, found in ſtone-quarries about Paris.

MOSAIC *work of glaſs.*—This kind they begin with little pieces of glaſs, which they provide of as many different colours as poſſible. To this end, the glaſſmens furnaces being diſpoſed, and their pots or crucibles full of the matter of which glaſs is made, or rather of glaſs already made, they put what colour or dye they think fit in each crucible, always beginning with the weakeſt, and augmenting the ſtrength of the colours from crucible to crucible, till they come to the deepeſt die, as in mixing of colours on a palette to paint in oil. When the glaſs has had ſufficient coction, and all the colours are in their perfection, they take out the glaſs hot, as it is, and lay it on a ſmooth marble, flatting it down with another like marble, and then cutting it into ſlices of equal bigneſs, and about the thickneſs of an inch and half. They then with an inſtrument, which the Italians call *bocca di cane*, make other pieces ſquare, and others of different figures and ſizes, as occaſion requires; theſe they diſpoſe orderly in caſes; as in painting in freſco, 'tis uſual to range all the different teints in ſhells, according to their colour.

If it be deſired to have gold, either in the ground of the painting, or in the ornaments, or the draperies, they take ſome of the pieces of glaſs, formed and cut in the manner juſt mentioned. Theſe they moiſten on one ſide with gum-water, and afterwards lay them over with gold-leaf. They then put this piece, or ſeveral pieces at a time, on a fire-ſhovel, which they place in the mouth of the furnace, after having firſt covered them with another hollow piece of glaſs. Here they continue till ſuch time as they become red-hot; after which the ſhovel is drawn out, all at once, and the gold becomes ſo firmly bound to the glaſs, that it will never afterwards leave it.

Now, to apply theſe ſeveral pieces, and out of them to form a picture, they firſt make a cartoon, or deſign; this they transfer on the ground or plaiſter, by calquing, as in painting in freſco. See FRESCO.

As this plaiſter is to be laid thick on the wall, it will continue freſh and ſoft a conſiderable time, ſo that there may be enough prepared at once to ſerve three or four days. It is compoſed of lime made of hard ſtone, with brick-duſt very fine, gum-tragacanth, and whites of eggs; when it is thus prepared, and laid on the wall, and the deſign finiſhed of what is to be repreſented; with plyers they take out the little pieces of glaſs, ranging them one after another, and ſtill keeping ſtrictly to the light, ſhadow, different teints and colours repreſented in the deſign; preſſing or flatting them down with a ruler, which ſerves both to ſink them within the ground, and to render the ſurface even.

Thus, in a long time, and with an infinite deal of trouble, they finiſh the work, which is ſtill the more beautiful, as the pieces of glaſs are more uniform, and ranged at more equal heights. Some of theſe are executed with ſo much juſtneſs, that they appear as ſmooth as a table of marble, and as finiſhed and maſterly as a painting in freſco; with this advantage, that they have a fine luſtre, and will hold almoſt for ever.

The fineſt works of this kind, that have deſcended to us, and thoſe whereon the moderns have retrieved the art, almoſt loſt, are thoſe of the church of St. Agnes, formerly the temple of Bacchus at Rome; beſides ſome at Piſa, Florence, and other cities of Italy. The moſt eſteemed among the works of the moderns, are thoſe of Joſeph Pine, and the chevalier Lanfranc, in the church of St. Peter at Rome. There are very good ones likewiſe at Venice.

MOSAIC *work of marble, and precious ſtones.*—Theſe two kinds bear ſo near a relation to each other, as to the manner of working, that to avoid repetition, we ſhall give them both under one; obſerving, by the way, wherein the one differs from the other, either in the ſawing or the ranging of the ſtones.

Moſaic of marble is uſed in large works, as in pavements of churches, baſilics, and palaces; and in the incruſtation and vaneering of the walls of the ſame edifices.—As to that of ſtones, eſpecially *precious ſtones*, 'tis only uſed in ſmall works, as before obſerved.

The ground of *moſaic* works wholly marble, is ordinarily a maſſive of marble, either white or black. On this ground the deſign is cut with a chiſſel, having been firſt calqued. When 'tis dug of a ſufficient depth, *i. e.* an inch or more, 'tis filled up with marble of a proper colour, firſt contourned, or faſhioned to the deſign, and reduced to the thickneſs of the cavities, with various inſtruments. To make the pieces, thus inſerted into the cavities, hold, whoſe ſeveral colours are to imitate thoſe of the deſign, they uſe a ſtucco, compoſed of lime and marble duſt; or a maſtic, which each workman prepares differently: after which, the work is half poliſhed with a ſoft kind of ſtone.

The figures thus marked out, the painter, or ſculptor himſelf draws, with a pencil, the colours of the figures not determined by the ground, and in the ſame manner makes ſtrokes or hatchings, in the places where ſhadows are to be; and when he has engraved with the chiſſel all the ſtrokes thus drawn, he fills them up with a black maſtick, compoſed partly of Burgundy pitch, poured on hot; taking off, afterwards, what is ſuperfluous, with a piece of ſoft ſtone or brick, which with water and beaten cement, takes away the maſtic, poliſhes the marble, and renders the whole ſo even, one would imagine it only conſiſted of a ſingle piece: 'Tis this kind of *moſaic* we ſee in the pompous church of the invalids at Paris, and the fine chapel at Verſailles; and wherewith ſome entire apartments of that palace are incruſtated.

For moſaic work of precious ſtones; there are required other and more delicate inſtruments than thoſe uſed in marble; as wheels, drills, tin-plates, *&c.* uſed by lapidaries, and carvers in ſtone. As none but the richeſt marbles and ſtones enter this work, to make them go the further, they are ſawn into the thinneſt leaves imaginable, ſcarce exceeding half a line in thickneſs; the block to be ſawed, is faſtened firmly with cords, on the bench, only raiſed a little on a piece of wood, one or two inches high. Two iron pins, which are on one ſide the block, and which ſerve to faſten it, ſerve alſo to direct the ſaw. The pieces to be ſawed, are put into a vice contrived for the purpoſe; in which ſtate, with a kind of ſaw or bow made of fine braſs wire, bent on a piece of ſpringy wood, together with emery ſteeped in water, the leaf is gradually faſhioned, by following the ſtrokes of the deſign made on paper, and glued on the piece. See MARQUETRY.

When there are pieces enough faſhioned to form an entire flower, or ſome other part of the deſign, they are applied. The ground that ſuſtains this *moſaic*, is uſually of free ſtone. The matter wherewith the ſtones are joined together, is a maſtic, or ſtucco, laid very thin on the leaves as they are faſhioned; and the leaves in this ſtate, applied with plyers. If any contour, or ſide of a leaf, be not either rounded enough, or ſquared enough, to fit the place where it is to be uſed, when it is too large, it is brought down with a braſs file or raſp, and when too ſmall, is managed with a drill, and other lapidary inſtruments.

Manner of making MOSAIC *work of gypſum*, a kind of coarſe talc, or ſhining tranſparent ſtone, found in the quarries of Montmartre near Paris, among the ſtones thence dug to make the plaiſter of Paris.—It is different from the plaiſter, but retains the name which the Romans gave the plaiſter, *viz. gypſum.* See GYPSUM and PLAISTER.

Of this ſtone, calcined in a kiln, beaten in a mortar, and paſſed through a ſieve, they make a kind of artificial marbles, imitating precious ſtones, and of theſe compoſe a kind of *moſaic* work, which comes little ſhort either of the durableneſs or vivacity of the natural ſtones; and which has this advantage, that it admits of continued pieces, or paintings of entire compartiments, without any joining viſible.

Some make the ground of plaiſter of Paris, others of free-ſtone: if the former, it is ſpread in a wooden frame, of the length and breadth of the intended work, and about an inch and half thick. This frame is ſo contrived, as, the tenons being only joined to the mortiſes by ſingle pins, they may be taken aſunder, and the frame be diſmounted when the plaiſter is dry. This frame they cover on one ſide with a ſtrong linnen cloth, nailed all round; and being placed horizontally, with the linnen at bottom, it is filled with plaiſter, paſſed through a wide ſieve. The plaiſter being half dry, the frame is ſet perpendicular, and left till it be quite dry; then taken out, by diſmounting the frame. In this *moſaic*, the ground is the moſt important part. Now to prepare the ſifted gypſum to be applied on this ground, they diſſolve and boil it in the beſt Engliſh glue, and after mixing with it the colour it is to bear, the whole is worked up together into the ordinary conſiſtence of plaiſter; and then taken and ſpread on the ground, five or ſix inches thick. It muſt be obſerved, that if the work be ſuch, as that mouldings are required, they are formed with gouges and other inſtruments.

'Tis on this plaiſter, thus coloured like marble or precious ſtone, and which is to ſerve as a ground to a work either of lapis, agat, alabaſter, or the like, that the deſign to be repreſented is drawn; having been firſt pounced or calqued. To hollow or impreſs the deſign, they uſe the ſame inſtruments with the ſculptors; the ground whereon they are to work, not being much leſs hard than marble itſelf. The cavities thus made in the ground, are filled up with the ſame gypſum boiled in glue, only differently coloured; and thus are the ſeveral colours of the original repreſented. To have the neceſſary colours and teints at hand, they temper quantities of the gypſum with the ſeveral colours, in little pots. When the deſign is thus filled, and rendered viſible, by half poliſhing it with brick or ſoft ſtone; they go over it again, cutting ſuch places as are either to be weaker, or more ſhadowed, and filling them with gypſum; which is repeated till all the colours, added one after another, repreſent the original to the life. The work being finiſhed, is ſcowered with ſoft ſtone, ſand and water; then with pumice ſtone, and laſtly, poliſhed with a wooden rubber and emery. Laſtly, a luſtre is given it, by ſmeering it over with oil, and rubbing it a long time with the palm of the hand; which gives it a gloſs nothing inferior to that of natural marble.

If it be only required to make a variegated table, or other work of ſeveral colours, without *moſaic* figures; the proceſs is ſomewhat different.—To this end, they only prepare ſeparately, in large bowls, as many different colours as nature ſhews in the marble to be imitated, and after incorporating them with the gypſum and glue-water, they take a truel-full of each, and diſpoſe them in a trough, without any order; then without mingling them, and only by cutting or croſſing the gypſum of each truel once or twice with each of the reſt, they give them that beautiful confuſion, for which natural marbles are ſo much valued: Of theſe they then make their tables, or lay a mold, according to the work to be done.

As to MOSAIC *work of wood*, more properly called *marquetry or inlaid work*, the antients were well acquainted with it, and uſed it for the adorning of their beds, tables, and other moveables; employing for this purpoſe ivory, and the richeſt woods.—But friar John of Verona ſeems to have contributed the moſt to its perfection, by diſcovering the ſecret of dying woods of all colours and degrees, by which means he was enabled to imitate painting, and even to repreſent architecture in perſpective.

They begin with ſawing their woods into leaves, of the thickneſs of one or two tenths of an inch; then take pieces of the deſign they are to follow, and faſten them to thoſe leaves, and with a little ſteel ſaw faſhion theſe to the contour of the deſign. All that is neceſſary being taken off with the ſaw, they give the ſhadow to thoſe places that require it, by placing the piece in a hot ſand, or otherwiſe, with the direction neceſſary to ſhadow it more or leſs. This done, they lay each piece in its place, on a ground of another wood, as dry oak, and there faſten them with ſtrong glue.

There are two other branches of *moſaic* work; the one called *damaskeening*, or *damask-work*, conſiſting in an aſſemblage of gold or ſilver threads, of which are ſometimes formed flat works, and ſometimes baſſo-relievos. See DAMASKEENING. The other is called *ſhell-work*, conſiſting of ſhells, artificial congelations, petrifications, &c. uſed in grottos. See GROTTO.

MOSQUE *, or MOSK, among the Mahometans, is a temple ſet a-part for the exerciſes of their religion. See TEMPLE, MAHOMETANISM, &c.

* The word comes from the Turkiſh *meſgid*, or *meſchit*, which properly ſignifies a temple built of wood, ſuch as the Turks firſt uſed. Hence the Spaniards derive their *meſcheta*, and the Italians *moſcheta*, and the French and Engliſh *moſque*, and *moſk*. Borel derives the word from the Greek μοσχος *calf*, becauſe of the frequent mention of a cow in the Alcoran. Others, and with the greateſt appearance of reaſon, derive it from the Arabic *maſgiad*, a place of worſhip.

There are royal *moſques* founded by the emperors, as the Solimania and Velidea at Conſtantinople; and private *moſques* founded by mufties, vizirs, baſſa's, &c.

Moſques are built like large halls, with iſles, galleries, and domes; and are adorned on the inſide with compartiments, and pieces of *arabeſque* work.—On one ſide is always found a pool with ſeveral cocks: and on the top is placed a creſcent.

The Turks have converted moſt of the Chriſtian churches into *moſques*. See CHURCH.

MOSS, MUSCUS, in natural hiſtory, a little plant of the paraſite kind, growing on the barks, &c. of ſeveral trees, as oak, poplar, aſh, cedar, &c. as well as on the ground. See PARASITE.

The moſt eſteemed, and odoriferous *bark* is that of the cedar; it is of ſome medicinal uſe, being aſtringent, and proper to ſtop hæmorrhages and dyſenteries.

The antients took the *moſs* of trees to be the effect of a diſorder or diſcompoſure of the texture of the bark; or at moſt a kind of little filaments ariſing from the bark. But the moderns find by ſeveral obſervations, that *moſſes* are all real, diſtinct plants, whoſe ſeed, being extremely ſmall, is incloſed in little capſulæ, which burſting of themſelves, the ſeed is carried off by the winds, till falling on the inequalities of the bark of trees, it is there ſtopped, takes root, and feeds at the expence of the tree, as mouldineſs does on bread, &c. See MOULDINESS.

The different kinds of *moſſes* are very numerous; Monſ. Vaillant reckons 137 ſeveral ſpecies in the ſingle neighbourhood of Paris.

There is alſo a kind of greeniſh *moſs* growing on human ſculls that have been long expoſed to the air, called *uſnea humana*, or *muſcus calvarius*. The antients made a deal of uſe of it as an aſtringent, &c. See USNEA.

Moſſes make an article of commerce; there being ſeveral kinds uſed in medicine, in perfuming, &c. Among others, the *ſea-moſs*, called *coralline*, (ſee CORALLINE) and the *moſs* of cedar and fir, which enter the compoſition of cyprus powder.

The *moſs* of common trees, as oak, aſh, poplar, &c. is uſed for caulking of veſſels. 'Tis alſo uſed by bird-merchants, to prepare cages for certain kinds of birds to hatch in.

The gardiners, &c. reckon *moſs* among the diſeaſes, or infirmities of plants. See DISEASE. Mr. Mortimer, &c. directs it to be rubbed, and ſcraped off with ſome proper inſtrument that will not hurt the bark of the tree, or with a piece of hair-cloth after a ſoaking rain; though the ſureſt cure is by removing the cauſe; which is effected by draining the land well of all ſuperfluous moiſture. Or, it may be prevented, in the firſt planting of trees, by not ſetting them too deep.

MOTE, MOTA, frequently occurs in our antient cuſtoms, for a meeting, court, or plea.

Of *motes*, by the Saxons alſo called *gemotes*, conſidered in the ſenſe of aſſemblies, or courts, there were divers kinds, as *wittenagemote*, *folkegemote*, *ſchiregemote*, *hundredgemote*, *burgemote*, *wardegemote*, *haligemote*, *ſwainegemote*, &c. See each under its proper article, WITTENAGEMOTE, FOLKEGEMOTE, &c.

MOTE, *mota*, was alſo uſed for a fortreſs, or caſtle; as *mota de Windſor*, &c.

MOTE, alſo denoted a ſtanding water to keep fiſh in; ſometimes a large ditch incompaſſing a caſtle, or dwelling-houſe. See MOAT.

MOTECTICO *ſtyle*. See the article STYLE.

MOTHER, *mater*, a female who ſtands in the relation of parent to another. See PARENT, &c.

Thus Eve is called our common *mother*: Cybele, among the antients, was the *mother* of the gods. See GOD.

Queen mother, ſignifies the ſame with what we otherwiſe call *queen dowager*. See DOWAGER.

We meet with empreſſes on medals and inſcriptions with the title of *mother* of the camp; *mother* of the ſenate, *mother* of the country: *Mater ſenatus*, *mater caſtrorum*, *mater patriæ*, &c. See FATHER.

MOTHER *of God*, is an attribute commonly given to the bleſſed Virgin. See VIRGIN.—It had its origin from the Greeks, who firſt called her Θεοτοκος; in imitation of whom ſome Latins began to call her *Deipara*, and *Dei genetrix*. The council of Epheſus firſt gave a ſanction to the appellation; but the 5th of Conſtantinople decreed that the Virgin ſhould always be thus called. This gave riſe to terrible diſputes: Anaſtaſius a preſbyter of Neſtorius, patriarch of Conſtantinople, firſt aſſerted in a ſermon that the Virgin was by no means to be called Θεοτοκος; upon which words a great tumult ariſing, Neſtorius took his preſbyter's part, and taught the ſame doctrine. See NESTORIAN. But tho' Θεοτοκος may be extended ſo as to ſignify as much as the *Mother of God*, becauſe τικτειν ſometimes denotes as much as γεννᾶν; whence accordingly it had been tranſlated in Latin *Dei genetrix* as well as *Deipara*; yet thoſe antient Greeks who called the Virgin Θεοτοκος, did not call her μητηρ του θεου, the *mother of God*: Till, the Latins tranſlating Θεοτοκος by *Dei genetrix*,

genetrix the Greeks came at length to re-tranſlate *Dei genetrix*, by ϑεȣ μητηρ. And thus both were brought to call her *Mother of God*.

The firſt who is noted by the Greeks to have thus ſtyled her *Mother of God* is Leo Magnus: His reaſon, as repreſented by S. Cyril, was this, that taking *the Lord* and *God* to be ſynonymous, he apprehended that Elizabeth firſt ſtyled Mary *the Mother of God*, becauſe ſhe ſtyled her *the Mother of her Lord*.

MOTHER *tongue*, is properly an original language, from which others are formed. See LANGUAGE.

Of *mother tongues*, Scaliger reckons ten in Europe, *viz.* the *Greek*, *Latin*, *Teutonic* or *German*, *Sclavonic*, *Epirotic*, *Scythian* or *European Tartar*, *Hungarian*, *Cantabrian*, *Iriſh* and *Britiſh*. See GREEK, LATIN, TEUTONIC, *&c.*

MOTHER *churches*, are thoſe which have founded, or erected others. See CHURCH.

In beneficiary matters they ſay, it is not lawful for a man to enjoy at the ſame time both the *mother* and the daughter: Meaning that the canon law does not allow an abby, and the benefices depending thereon, to be held by the ſame perſon.

Fits of the MOTHER. See the article HYSTERIC *affection*.

MOTION, primarily ſo called, or *local* MOTION, is a continued, and ſucceſſive change of place; or that ſtate of a body whereby it correſponds ſucceſſively to ſeveral different places, or is preſent ſucceſſively in different parts of ſpace. See PLACE.

In which ſenſe, the doctrine and laws of *motion* make the ſubject of mechanics, or ſtatics. See MECHANICS, *&c.*

The antient philoſophers conſidered *motion* in a more general and extenſive manner. They defined it, a paſſage out of one ſtate into another: and thus made ſix kinds of *motion*, viz. *Creation*, *generation*, *corruption*, *augmentation*, *diminution*, and *lation*, or *local motion*. See GENERATION, *&c.*

Some of the later ſchoolmen reduce theſe ſix kinds of *motion* to four: The firſt is general, including any paſſage from one ſtate to another; under which kind come *creation*, *production*, and *mutation*.—The ſecond is a paſſage of ſomething already exiſting from one ſtate to another: and thus *generation* is a *motion*.—The third, a ſucceſſive paſſage of ſomething already exiſting from one term to another; and thus *alteration*, and *accretion*, are ſpecies of *motion*.—The laſt, is *lation*, or *local motion*; and thus walking is *motion*.

But the lateſt philoſophers deny any other ſpecies beſide *local motion*; and reduce all the ſorts above-mentioned to this one.—So that we have here only to do with *lation* or *local motion*; whereof the reſt are only ſo many different determinations, or effects. See ACCRETION, ALTERATION, *&c.*

Phyſical writers, both antient and modern, have ever been perplexed about the nature, and definition of *local motion*.—The Peripatetics define it by, *Actus entis in potentia, prout in potentia*, Ariſt. 3. Phyſ. c. 2. But the notion ſeems too abſtract and metaphyſical for our days; and is of no uſe in explaining the properties of *motion*.

The Epicureans explain *motion* by the migration of a body, or a part of a body, from one place to another. On which definition, the later Epicureans refine, and call it the migration, or paſſage of a body from ſpace, to ſpace: Thus ſubſtituting the word *ſpace* for that of *place*.

The Carteſians define *motion* a paſſage, or removal of one part of matter out of the neighbourhood of thoſe parts immediately contiguous thereto, into the neighbourhood of others.

Which definition agrees, in effect, with that of the Epicureans: all the difference between them conſiſting in this; that what the one calls *body* and *place*, the other calls *matter*, and *contiguous parts*.

Borelli, and other late writers after him, define *motion* more accurately and fully, the ſucceſſive paſſage of a body from one place to another, in a determinate time, by becoming ſucceſſively contiguous to all the parts of the intermediate ſpace.

Motion, then, is agreed to be the tranſlation of a body from place to place: But authors differ infinitely when they come to explain wherein this *tranſlation* conſiſts.—And hence their diviſions of *motion* become exceedingly precarious.

Ariſtotle, and the Peripatetics, divide all *motion* into *natural* and *violent*.

Natural MOTION, is that which has its principle, or moving force, within the moving body.—Such is that of a ſtone falling towards the centre of the earth.

Violent MOTION, is that whoſe principle is without, and againſt which the moving body makes a reſiſtance.—Such is that of a ſtone thrown upwards.

The moderns generally divide *motion* into *abſolute* and *relative*.

Abſolute MOTION, is the change of abſolute place, in any moving body: whoſe celerity, therefore, will be meaſured by the quantity of abſolute ſpace which the moveable body runs through. See PLACE.

Relative MOTION, is a mutation of the relative, or vulgar place of the moving body; and has its celerity eſtimated by the quantity of relative ſpace run through.

Others divide *motion* into *proper*, and *improper*, or *foreign*.

Proper MOTION, is a removal out of one proper place into another, which hereby becomes proper, as being poſſeſſed by this body alone, in excluſion of all others.—Such is the *motion* of a wheel in a clock.

Improper, *extraneous*, *foreign*, or *common* MOTION, is the paſſage of a body out of one common place into another common place.—Such is that of a clock when moving in a ſhip, *&c.*

The reaſon of all this diverſity ſeems to ariſe from the not attending to the different meanings of the words; but comprizing all in one definition and diviſion; which they ſhould rather have diſtinguiſhed into ſeveral parts.

Some, *e. gr.* in their definitions of *motion*, conſider the moving body, not as it regards the adjacent bodies, but as it regards immoveable and infinite ſpace.—Others, again, conſider the moving body, not as it regards infinite ſpace, but as it regards other bodies vaſtly remote.—And others, laſtly, conſider the moving body, not as it regards remote bodies, but that ſurface only to which it is contiguous.

But theſe various meanings once ſettled, the diſpute clears up; for as every thing that moves may be conſidered in theſe three ſeveral manners; there hence ariſe three ſeveral kinds of *motions*: whereof, that which regards the parts of infinite immoveable ſpace, without conſideration of the circumambient bodies, may be called *abſolutely and truly proper motion*.

That which regards circumambient bodies vaſtly remote, which may themſelves poſſibly be moved, we call *relatively common motion*.

The laſt, which regards the ſurfaces of the next contiguous bodies, in as much as it may want all, both abſolute and common *motion*, we call *relatively proper motion*.

Abſolutely and truly proper MOTION, then, is the application of a body to different parts of infinite and immoveable ſpace.

This alone is *proper and abſolute motion*, being always generated and changed by forces impreſſed on the moving body itſelf, and by thoſe only; and being that to which the real forces of all bodies to put others in *motion* by impulſe, are owing; and to which thoſe *motions* are proportioned.—But this *motion* we cannot inveſtigate or determine accurately; nor can we diſtinguiſh, when two bodies are impelled on each other, in which of the two, (*v. gr.* that which appears to move the more ſwiftly, or the other which appears to move more ſlowly, and perhaps even to be at reſt,) the real *motion*, and conſequently, the real force whence the impulſe aroſe, is placed; not being able to determine whether the centre of gravity of the whole ſyſtem (which is but a point in infinite ſpace) is itſelf at reſt or in *motion*.

Relatively common MOTION, is a change of the ſituation of a body with reſpect to other remote circumambient bodies: and this is the *motion* we ſpeak of, when we ſay that men, cities, and the earth itſelf, move round the ſun.

This is alſo the *motion* we mean, when we eſtimate the quantity of *motion*, and the force any body has to impel another.—For inſtance, if a wooden ſphere, filled with lead to make it the heavier, be dropped from the hand, we uſe to eſtimate the quantity of *motion*, and the force which the ſphere has to impel another, by the celerity of the ſphere and the weight of the included lead; and that truly with regard to the force itſelf, and the effect thereof as it falls under our ſenſes.—But whether the real power or *motion* be in the ſphere which appears to ſtrike, or in the earth which appears to be ſtruck, that, as has been obſerved above, we cannot determine.

Relatively proper MOTION, is the ſucceſſive application of a body to the different parts of the contiguous bodies.

And this is the *motion* uſually underſtood in phyſical diſputes about the natures of particular things; as when we ſay, that heat, ſound, fluidity, *&c.* conſiſt in *motion*.

This muſt be added however, that by ſucceſſive application of a body, its whole ſurface, taken together, muſt be conceived ſucceſſively applied to different parts of the contiguous bodies.

From theſe ſeveral definitions of *motion* ariſe as many definitions of place: For when we ſpeak of *motion* (or reſt) *truly and abſolutely proper*, then place is that part of infinite and immoveable ſpace which the body fills.—When of *motion relatively common*, then place is a part of any ſpace or moveable dimenſion.—When of *motion relatively proper*, (which is really very improper) place is then the ſurface of the next adjacent bodies, or ſenſible ſpaces. See PLACE.

The definition of reſt is pretty well agreed on; but whether reſt be a mere privation of *motion*, or any thing poſitive, is hotly diſputed.—Malebranche, and others, maintain the former ſide of the queſtion: Cartes, and others, the latter.—Theſe laſt contend, that a body at reſt, has no power to perſevere in that reſt, nor to reſiſt any bodies that would deſtroy it; and that *motion* may as well be called a ceſſation of reſt, as reſt of *motion*. See REST.

The main argument urged by the former is this: Suppoſe a globe at reſt, and ſuppoſe God ceaſe to will its reſt; what will be the conſequence? It will reſt ſtill. Let it be in *motion*, and let God ceaſe to will its *motion*; what will be the conſequence? it will ceaſe to move; that is, be at reſt; becauſe the power whereby a body in *motion* perſeveres in that ſtate, is the poſitive will of God: that whereby the quieſcent body perſeveres, only his privative will.

But this is a *petitio principii*; for the force or conatus whereby bodies, whether moving or quieſcent, perſevere in thoſe ſtates, is the mere inactivity of matter; and therefore were it poſſible for God not to will any thing, a body already in *motion*, would move for ever; as a body at reſt, would reſt for ever.—To this inactivity of matter, it is owing that all bodies reſiſt according to their quantities of matter, and that any body ſtriking another with any given velocity, will move it in the ſame proportion which its denſity, or quantity of matter has, to the denſity or quantity of matter of the other. See VIS *inertiæ*.

Motion has ever been eſteemed a ſpecies of quantity; and its *quantum*, or greatneſs, which we otherwiſe call its *momentum*, is eſtimated partly from the length of the line which the moving body deſcribes; (as if a body paſs over a line of a hundred feet, the quantity of its *motion* is greater than if it paſſed over ten feet) and partly from the quantity of the matter moved together, or at the ſame time, *i. e.* not from the bulk or extenſion of the body, but from its maſs or weight; the air, and other ſubtile matters wherewith the pores are filled, not entering into the account: As if a body of two cubic feet run over a line of a hundred feet, the quantity of its *motion* is greater than that of a body of one cubic foot deſcribing the ſame line: For whatever *motion* one whole has, that is had in one half of the other; and the *motion* of the whole is the ſum of the *motion* of all its parts. See QUANTITY.

Hence it follows, that for two unequal bodies to have equal *motions*, or momentums, the lines which they paſs over muſt be in a reciprocal proportion of their maſſes or weights; *i. e.* if one body have three times the quantity of matter that another has, the line it runs over muſt be $\frac{1}{3}$ of the line run over by the other.—If two bodies, then, faſtened to the two extremities of a ballance or lever, have their maſſes in a reciprocal ratio of their diſtances from the fixed point, when theſe are moved, they muſt deſcribe lines in a reciprocal ratio of theſe maſſes.

For inſtance, if the body A (*Tab. Mechanic. fig.* 30.) have three times the maſs or weight of B, and each be faſtened to the extremes of the lever AB, whoſe fulcrum or fixed point is C, in ſuch manner as that the diſtance BC is thrice the diſtance CA; the lever cannot incline either way, but the ſpace which the leſs body moves, BE, will be thrice the ſpace AD, which the greater moves: ſo that their motions will be equal.—Nor is there any reaſon why the body A tending downwards, *v. gr.* with four degrees of *motion*, ſhould raiſe the body B, rather than B tending downwards likewiſe with the ſame four degrees of *motion*, ſhould raiſe the body A: They will therefore be in equilibrio.—On which foundation depends the whole doctrine of mechanics. See BALLANCE, STEELYARD, &c.

Hence that great problem of Archimedes, with any given power, how ſmall ſoever, to raiſe any weight given, how great ſoever.—For by increaſing the diſtance CB infinitely, the power of the body A will be increaſed infinitely. See MECHANICS, and EQUILIBRIUM.

And it is allowed on all hands, that *motion* is no eſſential attribute of matter; hence ariſes a diſpute about its *production*, and to what cauſe its *continuation* is owing? See COMMUNICATION, &c.

Quantity of MOTION, *if always the ſame?*—The Carteſians maintain, that the Creator at the beginning impreſſed a certain quantity of *motion* on bodies; and that under ſuch laws, as that no part of it ſhould be loſt, but the ſame portion of *motion* be conſtantly preſerved in matter: And hence they conclude, that if any moving body ſtrike on any other body, the former loſes no more of its *motion* than it communicates to the latter. See CARTESIAN.

This principle Sir Iſaac Newton overturns in the following words:—'From the various compoſitions of two *motions*, it is manifeſt there is not always the ſame quantity of *motion* in the world; for if two balls joined together by a ſlender wire, revolve with an uniform *motion* about their common centre of gravity, and at the ſame time that centre be carried uniformly in a right line drawn in the plane of their circular *motion*; the ſum of the *motions* of the two balls, as often as they are in a right line drawn from their common centre of gravity, will be greater than the ſum of their *motions* when they are in a line perpendicular to that other. Whence it appears, that *motion* may both be generated and loſt. But by reaſon of the tenacity of fluid bodies, and the friction of their parts, with the weakneſs of the elaſtic power in ſolid bodies, nature ſeems to incline much rather to the deſtruction, than the production of *motion*; and in reality *motion* becomes continually leſs and leſs. For bodies which are either ſo perfectly hard, or ſo ſoft, as to have no elaſtic power, will not rebound from each other: Their impenetrability will only ſtop their *motion*. And if two ſuch bodies, equal to each other, be carried with equal but oppoſite *motions*, ſo as to meet in a void ſpace, by the laws of *motion* they muſt ſtop in the very place of concourſe, loſe all their *motion*, and be at reſt for ever: unleſs they have an elaſtic power to give them a new *motion*. If they have elaſticity enough to enable them to rebound with $\frac{1}{4}$, or $\frac{1}{2}$, or $\frac{3}{4}$, of the force wherewith they meet, they will loſe $\frac{3}{4}$, or $\frac{1}{2}$, or $\frac{1}{3}$, of their *motion*. And this is confirmed by experiments: For if two equal pendulums be let fall from equal heights, ſo as to ſtrike full on each other; if thoſe pendulums, be of lead, or ſoft clay, they will loſe all, or almoſt all their *motion*; and if they be of any elaſtic matter, they will only retain ſo much *motion* as they receive from their elaſtic power.' If it be aſked, how it happens that *motion* being thus continually loſt, ſhould be continually renewed again: The ſame author adds, that it is renewed from ſome active principles, 'Such as the cauſe of gravity, whereby the planets and comets preſerve their *motions* in their orbits, and all bodies acquire a great degree of *motion* in falling; and the cauſe of fermentation, whereby the heart and blood of animals preſerve a perpetual warmth and *motion*; the inner parts of the earth are kept continually warmed; many bodies burn and ſhine; and the ſun himſelf burns and ſhines, and with his light warms and chears all things.' (as alſo from the cauſe of elaſticity, by which bodies reſtore themſelves into their former figures;) 'For we find but little *motion* in the world, except what plainly flows, either from theſe active principles, or from the command of the willer.' See GRAVITY, FERMENTATION, ELASTICITY, &c.

As to the continuation of MOTION, or the cauſe why a body once in *motion* comes to perſevere in it; this has been extremely controverted among phyſical writers, and yet follows very evidently from one of the grand laws of nature, *viz.* That all bodies perſevere in their preſent ſtate, whether of reſt or *motion*, unleſs diſturbed by ſome foreign powers. *Motion* therefore once begun, would be continued *in infinitum*, were it to meet with no interruption from external cauſes; as the power of gravity, the reſiſtance of the medium, &c. So that Ariſtotle's principle, every thing in *motion* affects reſt, is groundleſs. See NATURE.

Nor has the *communication of motion*, or the manner how a moving body comes to affect another at reſt; or how much of its *motion* is communicated by the firſt to the laſt, been leſs diſputed. See the laws thereof under the word PERCUSSION. See alſo COMMUNICATION.

MOTION, we have obſerved, is the ſubject of mechanics; and mechanics is the baſis of all natural philoſophy; which hence becomes denominated, *mechanical*. See MECHANICAL, and PHILOSOPHY.

In effect, all the phænomena of nature; all the changes that happen in the ſyſtem of bodies, are owing to *motion*; and are directed according to the laws thereof.

Hence, the modern philoſophers have applied themſelves with peculiar ardour to conſider the doctrine of *motion*; to inveſtigate the properties, laws, &c. thereof; by obſervation, experiment, and the uſe of geometry.—And to this we owe the great advantages of the modern philoſophy above that of the antients; who were extremely diſregardful of *motion*; notwithſtanding that they ſeemed ſo ſenſible of its importance, that they defined nature, by the firſt principle of *motion* and reſt of the ſubſtance wherein it is. See NATURE.

Among all the antients, there is nothing extant on *motion*, excepting ſome things in Archimedes's books, *De æqui-ponderantibus*.—To Galileo, a great part of the doctrine of *motion* is owing: He firſt diſcovered the general laws of *motion*, and particularly of the deſcent of heavy bodies, both at liberty, and on inclined planes; the laws of the *motion* of projectiles; the vibrations of pendulums, and ſtretched chords; with the theory of reſiſtences, &c. which were things the antients had little notion of. See DESCENT, PENDULUM, PROJECTILE, RESISTENCE, &c.

His diſciple, Torricelli, poliſhed, and improved the diſoveries of his maſter; and added to them divers experiments concerning the force of percuſſion, and the equilibrium of fluids. See PERCUSSION, and FLUID.—M. Huygens improved very conſiderably on the doctrine of the pendulum; and both he and Borelli on the force of percuſſion.—Laſtly, Newton, Leibnitz, Varignon, Mariotte, &c. have brought the doctrine of *motion* ſtill nearer to perfection.

The general laws of *motion* were firſt brought into a ſyſtem, and analytically demonſtrated together, by Dr. Wallis, Sir Chriſtopher Wren, and M. Huygens, all much about the ſame time; the firſt in bodies not elaſtic, and the two laſt in elaſtic bodies.—Laſtly, the whole doctrine of *motion*, including all the diſcoveries both of the antients and moderns on that head, was given by Dr. Wallis in his *Mechanica, ſive de motu*, publiſhed in 1670.

MOTION may be conſidered either as *equable*, and *uniform*; or as *accelerated*, and *retarded*.—*Equable motion* again may be conſidered either as *ſimple*, or as *compound*: And *Compound motion* either as *rectilinear*, or *curvilinear*.

And all theſe again may be conſidered either with regard to themſelves, or with regard to the manner of their production, and communication, by percuſſion, &c.

Equable MOTION, is that wherein the moving body proceeds with the ſame unvaried velocity. See EQUABLE.

The laws of *equable motion* are as follow.—The reader being only to obſerve, by the way, that *maſs*, or quantity of matter is expreſſed by M; *momentum*, or the quantity of *motion* or impetus, by I; *time*, or the duration of *motion*, by T; *velocity*, or its ſwiftneſs, by V; and *ſpace*, or the line it deſcribes, by S. See MOMENT, MASS, VELOCITY, &c.

Thus, if the ſpace be $=ſ$, and the time $=t$; the velocity will be expreſſed by $ſ : t$. And if the velocity $=v$, and the maſs $=m$; the momentum will likewiſe be $=v\,m$.

Laws of uniform or equable MOTION.—1°. The velocities V and *v* of two bodies moving equably, are in a ratio compounded of the direct ratio of the ſpaces S and ſ, and the reciprocal ratio of the times T and *t*.

For, V=S : T and *v*=ſ : *t*

$$\text{therefore, } V : v :: \frac{S : ſ}{T\,t}$$

V : *v* : : S *t* : ſT

Q. E. D.

This, and the following theorems, may be illuſtrated in numbers, thus:— Suppoſe a body A, whoſe maſs is as 7, that is, 7 pounds, in the time of 3 ſeconds paſſes over a ſpace of 12 feet; and another body B, whoſe maſs is as 5, in the time of 8 ſeconds paſſes over a ſpace of 16 feet. We ſhall then have M=7, T=3, S=12; *m*=5, *t*=8, ſ=16. And therefore V=4, *v*=2. The caſe then will ſtand thus:

V : *v* : : S *t* : ſT.

4 : 2 : : 12. 8 : 16. 3 : : 4 : 2.

Hence, if V=*v*, then will S *t*=ſT; therefore S : ſ : : T : *t*. That is, if two bodies move equably, and with the ſame velocities, their ſpaces are as the times.

The corollaries may be illuſtrated by numbers, in like manner as the theorems.—Thus ſuppoſe S=12, T=6, ſ=8, *t*=4. Then will the V=12 : 6=2, and *v*=8 : 4=2.

Conſequently by reaſon V=*v*

S : ſ=T : *t*

12 : 8=6 : 4.

If V=*v*, and alſo *t*=T; then will S=ſ, and ſo the bodies moving equably, will deſcribe equal ſpaces in equal times.

2°. The ſpaces S and ſ, over which two bodies paſs, are in a ratio compounded of the ratio of the times T and *t*, and of the velocities V and *v*.

For V : *v* : : S *t* : ſT

Therefore V ſT=*v* S *t*

And S : ſ : : V T : *v t*

In numbers 12 : 16 : : 4. 3 : 2. 8 : : 12 : 16.

Hence, If S=ſ, V T=*v t*, ſo that V : *v* : : *t* : T. that is, if two bodies moving equably, deſcribe equal ſpaces; their velocities will be in a reciprocal ratio of their times.

In numbers, if we ſuppoſe S=12, and ſ=12. Becauſe S=V T and ſ=*v t*; if V=2 and *v*=3, T=6 and *t*=4.

So that we have V : *v*=*t* : T

2 : 3=4 : 6.

Further, if *t*=T, then will V=*v*; and therefore bodies which move equably, deſcribe equal ſpaces in equal times, and have their velocities equal.

3°. The momenta, or quantities of *motion*, of two bodies moving equably, I and *i*, are in a ratio compounded of the velocities V and *v*, and the maſſes or quantities of matter M and *m*.

For I=V M, and *i*=*v m*; therefore I : *i* : : V M : *v*. *m*; that is, the ratio I to *i* is compounded of the ratio of V to *v*, and of M to *m*. Q. E. D.

If I=*i*, then will V M=*v m*; and therefore V : *v*=*m* : M. That is, if the momenta of two bodies moving equably, be equal; the velocities will be in a reciprocal ratio of their maſſes.

And therefore if M=*m*, V=*v*; that is, if the momenta and maſſes of two moving bodies be equal, their velocities are alſo equal.

4°. The velocities V and *v* of two bodies moving equably, are in a ratio compounded of the direct ratio of their momenta I and *i*, and the reciprocal one of their maſſes M and *m*.

Since I : *i* : : V M : *v m*

I *v m*=*i* V M

V : *v*=I *m* : *i* M

Q. E. D.

In numbers 4 : 2 : : 28.5 : 10.7 : : 4. 1 : 2. 1 : : 4 : 2

Hence, If V=*v*, then I *m*=*i* M; and therefore I : *i*=M : *m*; that is, if two bodies move equably, and with the ſame velocity, their momenta will be in the ſame ratio with their maſſes.

If M=*m*, I=*i*; and therefore if two bodies, that have the ſame maſſes, move equably, and with equal velocity, their momenta are equal.

5°. In an equable *motion*, the maſſes of the bodies M and *m* are in a ratio compounded of the direct ratio of their momenta, and the reciprocal ratio of their velocities V and *v*.

For, ſince I : *i* : : V M : *v m*

Therefore I *v m*=*i* V M

M : *m*=I *v* : *i* V.

In numbers 7 : 5 : : 28. 2 : 10.4 : : 7. 1 : 5. 1 : : 7 : 5.

If M=*m*, then will I *v*=*i* V; and therefore I : *i*=V : *v*. That is, if two bodies moving equably, have their maſſes equal, their momenta will be as their velocities.

In numbers, ſuppoſe I=12, *i*=8, M=4, *m*=4; then will V=12 : 4=3, and *v*=8 : 4=2.

Therefore I : *i*=V : *v*.

12 : 8=3 : 2

6°. In an equable *motion*, the momenta I and *i* are in a ratio compounded of the direct ratio's of the maſſes M and *m*, and the ſpaces S and ſ, and the reciprocal ratio of the times T and *t*.

For becauſe V : *v* : : S *t* : ſT

And I : *i* : : V M : *v m*

Therefore VI : *v i* : : V M S *t* : *v m* ſT

I : *i* : : M S *t* : *m* ſT

Q. E. D.

Hence, if I=*i*, then will M S *t*=*m* ſT; and therefore M : *m*=ſT : S *t*, S : ſ=*m* T : M *t* and T : *t*=M S : *m* ſ; that is, if two bodies moving equably, have their momenta equal, 1°. Their maſſes are in a ratio compounded of the direct ratio of their time, and the reciprocal one of their ſpaces. 2. Their ſpaces are in a ratio compounded of the direct ratio of the times, and the reciprocal one of their maſſes. 3°. Their times are in a ratio, compounded of their maſſes and their ſpaces.

Further, if M=*m*; then will ſT=S *t*; and therefore S : ſ=T : *t*; that is, if two bodies moving equably, have their momenta, and their maſſes equal, their ſpaces are as their times.

Again, if T=*t*, then will S=ſ. Two moving bodies therefore, whoſe maſſes and momenta are equal, deſcribe equal ſpaces in equal times.

If beſides I=*i*, S=ſ; then will *m* T=M *t*; and therefore M : *m* : : T : *t*; that is, if two moving bodies, whoſe momenta are equal, paſs over equal ſpaces, their maſſes are proportionable to their times.

Further, if T=*t*, then will M=*m*; and therefore bodies, whoſe momenta are equal, and which moving equably, deſcribe equal ſpaces in equal times, have their maſſes equal.

If beſides I=*i*, T=*t*; then will M S=*m* ſ; and therefore S : ſ : : *m* : M; that is, the ſpaces paſſed over in the ſame time, by two moving bodies, whoſe momenta are equal, are in a reciprocal ratio of their maſſes.

7°. In an equable *motion*, the ſpaces S and ſ are in a ratio compounded of the direct ratio's of the momenta I and *i*, and the times T and *t*; and the reciprocal one of the maſſes M and *m*.

For becauſe I : *i* : : M S *t* : *m* ſT,

I *m* ſT=*i* M S *t*

Wherefore S : ſ : : I T *m* : *i t* M.

Q. E. D.

In numb. 12 : 16 : : 3. 28.5 : 8.10.7 : : 3.4.1 : 8.2.1 : : 12 : 16.

Hence if S=ſ, I *t m*=*i t* M; and therefore I : *i* : : *t* M : T *m*, M : *m* : : I T : *i t*, T : *t* : : *i* M : I *m*. If two bodies therefore move equably over equal ſpaces, 1°. Their momenta will be in a ratio compounded of the direct ratio of the maſſes, and the reciprocal one of the times. 2°. Their maſſes will be in a ratio compounded of the momenta and the times. 3. The times will be in a ratio compounded of the direct ratio of the maſſes, and the reciprocal one of the momenta.

If beſide S=ſ, M=*m*; then will I T=*i t*; and therefore I : *i* : : *t* : T. That is, bodies whoſe maſſes are equal, have their momenta reciprocally proportionable to the times in which they move over equal ſpaces.

If beſide S=ſ, T=*t*; then will *i* M=I *m*; and therefore two bodies moving equably, and through equal ſpaces in equal times, have their momenta proportionable to their maſſes.

8°. Two bodies moving equably, have their maſſes M and *m*, in a ratio compounded of the direct ratio's of the momenta I and *i*, and the times T and *t*, and the reciprocal one of the ſpaces ſ and S.

For becauſe I : *i* : : M S *t* : *m* ſT, I *m* ſT=*i* M S *t*.

Wherefore M : *m* : : I T ſ : *i t* S.

Q. E. D.

In numbers 7 : 5 : : 3. 28. 16 : 8. 10. 12 : : 3. 7. 2 : 1. 10. 3 : : 7 : 5.

Again I : *i* : : M S *t* : *m* ſT.

In numbers 28 : 10 : : 7. 12. 8 : 5. 16. 3 : : 7. 4. 1 : 5. 2. 1 : : 28 : 10.

Hence if M=*m*, then will I T ſ=*i t* S; and therefore I : *i* : : *t* S : T ſ, S : ſ : : I T : *i t*, and I : *t* : : *i* S : I ſ. That is, in two moving bodies, whoſe maſſes are equal; 1°. The momenta are in a ratio compounded of the direct ratio of the ſpaces, and the reciprocal one of the times. 2°. The ſpaces are in a ratio compounded of the momenta and the times. 3°. The times are in a ratio compounded of the direct ratio of the ſpaces, and the reciprocal one of the momenta.

If beſide M=*m*, T=*t*, then will *i* S=I ſ; and therefore I : *i* : : S : ſ. That is, the momenta of two bodies, whoſe maſſes are equal, are proportional to the ſpaces paſſed over in equal times.

9°. In equable *motions*, the times T and *t* are in a ratio compounded of the direct ratio's of the maſſes M and *m*, and the ſpaces S and ſ, and the reciprocal one of the momenta I and *i*.

For becauſe $I : i :: M S t : m s T$, $I m s T = i M S t$.
Wherefore $T : t :: i M S : I m s$.
Q. E. D.

Hence, If $T = t$, $i M S = I m s$; and therefore $I : i :: M S : m s$, $M : m :: I s : i S$; and $S : s :: I m : i M$. That is, if two bodies, moving equably, deſcribe equal ſpaces in equal times; 1°. Their momenta will be in a ratio compounded of the maſſes and the ſpaces. 2°. Their maſſes will be in a ratio compounded of the direct ratio of the momenta, and the reciprocal one of the ſpaces. 3°. The ſpaces will be in a ratio compounded of the direct ratio of the momenta, and the reciprocal one of the maſſes.

Accelerated MOTION, is that which continually receives freſh acceſſions of velocity:—It is ſaid to be *uniformly accelerated*, when in equal times its acceſſions of velocity are equal. See ACCELERATION and ACCELERATED.

Retarded MOTION, is that whoſe velocity continually decreaſes:—It is ſaid to be *uniformly retarded*, when its decreaſe is continually proportional to the time. See RETARDATION.

Laws of MOTIONS *uniformly accelerated and retarded.*—'Tis an axiom that a body once at reſt, will never move, unleſs ſome other body put it in *motion*; and when once in *motion*, it will continue for ever to move, with the ſame velocity, and in the ſame direction, unleſs it be forced from its ſtate by ſome other cauſe.—This is evident from that fundamental axiom in philoſophy, That nothing happens without a ſufficient cauſe.

It follows, that a body moved by one only impulſe, muſt proceed in a right line.—If then it be carried in a curve, it muſt be acted on by a double power; one, whereby it would proceed in a right line; another, whereby it is continually drawn out of it.

If the action and re-action of two (*unelaſtic*) bodies be equal, there will no *motion* enſue; but the bodies after colliſion, will remain at reſt, by each other.

If a moving body be impelled in the direction of its *motion*, it will be accelerated; if by a reſiſting force, it will be retarded. Heavy bodies deſcend with an accelerated *motion*.

10°. If a body move with an uniform accelerated velocity; the ſpaces will be in a duplicate ratio of the times.

For, let the velocity acquired in the time t be $= v$, then will the velocity acquired in the time $2t - 2v$, in the time $3t = 3v$, &c. and the ſpaces correſponding to thoſe times, t, $2t$, $3t$, &c. will be as tv, $4vt$, $9vt$, &c. (by *Law* 2.) The ſpaces therefore are as 1. 4. 9, &c. And the times as 1. 2. 3. &c. that is, the ſpaces are in a duplicate ratio of the times. Q. E. D.

Hence, in a *motion* uniformly accelerated, the times are in a ſubduplicate ratio of the ſpaces.

11°. The ſpaces paſſed over by a body uniformly accelerated, increaſe, in equal times, according to the unequal numbers 1. 3. 5. 7, &c.

For, if the times, wherein a moving body equably accelerated, proceeds, be as 1. 2. 3. 4. 5, &c. the ſpace paſſed over in one moment, will be as 1, in 2 moments as 4, in 3 as 9, in 4 as 16, in 5 as 25, &c. (*Law* 10.) If therefore you ſubſtract the ſpace paſſed over in one moment, *viz.* 1. from that paſſed over in two moments, 4. there will remain the ſpace correſponding to the ſecond minute, *viz.* 3. In the ſame manner may be found the ſpace paſſed over in the third minute, $9 - 4 = 5$. The ſpace correſponding to the fourth minute, $16 - 9 = 7$; and ſo of the reſt. The ſpace of the firſt minute therefore is as 1, that of the ſecond as 3, that of the third as 5, of the fourth as 7, of the fifth as 9, &c. Therefore the ſpaces paſſed over by a body, moving with an uniformly accelerated *motion*, in equal times, increaſe according to the unequal numbers, 1, 3, 5, 7, 9, &c. Q. E. D.

12°. The ſpaces paſſed over by a body equably accelerated, are in a duplicate ratio of the velocities.

For, ſuppoſing the velocities to be V and v, the times T and t, the ſpaces S and s; then will $V : v :: T : t$. Wherefore, ſince $S : s :: T^2 : t^2$, (*Law* 10.) $S : s :: V^2 : v^2$.

Wherefore, in a *motion* uniformly accelerated, the velocities are in a ſubduplicate ratio of the ſpaces.

13°. Heavy bodies deſcend with an uniformly accelerated *motion*, in a medium void of reſiſtance, if the ſpaces be not very great.

For, ſince heavy bodies deſcend with an accelerated velocity, the power of gravity muſt continually impel them. But the power of gravity is found the ſame at all diſtances from the earth where the experiment can be made. Therefore heavy bodies muſt be driven downwards in the ſame manner in equal times. If then, in the firſt moment of time, they be impelled with the velocity v, they will be impelled with the ſame velocity v in the ſecond moment, and with the ſame in the third, fourth, &c. moments. Now the medium being ſuppoſed void of all reſiſtance, (by *Hypoth.*) they will ſtill retain the velocity they acquire; and by reaſon of their equal freſh acquiſitions every minute, they will deſcend with a *motion* uniformly accelerated. Q. E. D. See GRAVITY.

Hence, the ſpaces of deſcent are in a duplicate ratio of their times, and alſo of their velocities, and increaſe according to the uneven numbers 1, 3, 5, 7, 9, &c.

The times, and likewiſe the velocities, are in a ſubduplicate ratio of the ſpaces.

In ſuppoſing heavy bodies to move through a medium void of reſiſtance, we exclude, at once, all manner of impediments, under what name ſoever they be called, or from whatſoever cauſe they proceed; and among the reſt, that motion wherewith the earth revolving on its axis, carries with it heavy bodies during the time of their fall; though this is not ſenſible at any moderate diſtance.

It was Galileo who firſt diſcovered the law of the deſcent of heavy bodies; and that too by reaſoning; though he afterwards confirmed it by experiments. Theſe he repeated again and again, and ſtill found the ſpaces paſſed over as the ſquares of the time: But it muſt be obſerved, that the ſpaces are not to be taken in the length, but the height of the plane, as will be ſhewn elſewhere. See DESCENT.

The ſame experiments were tried, though in a different manner, by Ricciolus and Grimaldus, who let fall ſeveral ſtone balls of the ſame bulk and weight, eight ounces each, from various altitudes; meaſuring the times of deſcent by the vibrations of a pendulum. The reſult of their experiments is ſeen in the following table.

Vibrations.	Time.		Space at the end of the time.	Space paſſed over in each time.
	″	‴	Rom. feet.	Rom. feet.
5	0	50	10	10
10	1	40	40	30
15	2	30	90	50
20	3	20	160	70
25	4	10	250	90
6	1	0	15	15
12	2	0	60	45
18	3	0	135	75
24	4	0	240	105

14°. If a heavy body fall through a medium void of reſiſtance, and from a height not very great; the ſpace it paſſes over is ſubduple of that which it would paſs over by an uniform *motion* in the ſame time, with the velocity it has acquired at the end of its fall.

For, let the right line AB (*Tab. Mechanics, fig.* 31.) repreſent the whole time of a heavy body's deſcent; and let this be divided into any number of equal parts; to the abſciſſes AP, AQ, AS, AB, draw the right lines PM, QI, SH, BC, which may be as the velocities acquired, in thoſe times, in the deſcent. Since then $AP : AQ :: PM : QI$, $AP : AS :: PM : SH$, &c. (*Eucl.* VI. 2.) If then the altitude of the triangle ABC be conceived to be divided into equal parts infinitely ſmall; the *motion* being uniform in a moment of time infinitely ſmall; the little area $P p M m = P p . PM$ as the ſpace paſſed over in the little moment of time $P p$. Therefore the ſpace paſſed over in the time AB, will be as the ſum of all the little areas, *i. e.* as the triangle ABC. But the ſpace that would be deſcribed in the ſame time AB with the uniform velocity BC, being as the rectangle ABCD, it will be to the other ſpace as 1 to 2. (*Eucl.* I. 41.)

Hence, the ſpace paſſed over in half the time AB, with the velocity BC, is equal to the ſpace which the heavy body paſſes over from a ſtate of reſt in the whole time AB.

Hence alſo, the time wherein a heavy body falls from any given altitude being given; to determine the ſpaces it paſſes over in each part of that time.

Let the given altitude $= a$, the time $= t$, the ſpace paſſed over in one part of that time x. Then

$$1 : x :: t^2 : a$$

$$t^2 x = a$$

$$x = a : t^2.$$

The ſpace therefore paſſed over in the firſt part of time is $a : t^2$, and therefore that paſſed over in the ſecond part of time $= 3a : t^2$; that paſſed over in the third part $= 5a : t^2$, &c.

E. gr. In the above-mentioned experiments of Ricciolus, the ball deſcended 240 feet in four ſeconds. The ſpace therefore paſſed in the firſt ſecond $= 240 : 16 = 15$; that in the next ſecond $= 15 . 3 = 45$: that in the third $= 15 . 5 = 75$, &c.

The time of a heavy body's deſcent in a medium void of reſiſtance through any given ſpace, being given, to determine the time wherein it will paſs over another given ſpace, in the ſame medium.

Since the ſpaces are as the ſquares of the time, to the ſpace the heavy body moves in the given time, the ſpace required in the queſtion, and the ſquare of the given time, ſeek a fourth proportional; this will be the ſquare of the time required: Its ſquare root therefore being extracted, will yield the time required.—*E. gr.* In Ricciolus's experiments the ball fell 240 feet in four ſeconds; it is demanded then how much time it will take up in falling 135 feet? This time will be found $= \sqrt{(135 . 16 : 240)} = \sqrt{(135 : 15)}\ \sqrt{9} = 3$.

The ſpace a body falls in any given time in a medium void of reſiſtance being given, to determine the ſpace it will fall, in any other given interval of time.

Since the ſpaces are as the ſquares of the times, find a fourth proportional to the ſquare of the time wherein the body falls through the given ſpace, the ſquare of the time wherein it is to fall through the ſpace required, and the ſpace given; this fourth proportional will be the ſpace required.

Thus, by Ricciolus's experiments a ball falling 60 feet in two ſeconds, to find the ſpace it falls through in four ſeconds? The anſwer will be found $16.60 : 4 = 4.60 = 240$.

15°. If a body proceed with a *motion* uniformly retarded, it will paſs over half the ſpace which it would deſcribe in the ſame time by an equable *motion*.

For, ſuppoſe the given time divided into any number of equal parts; and draw the right lines B C, S H, Q I, P M thereto, which are to be as the velocities correſponding to the parts of time *o*, B S, B Q, B P, B A; ſo as letting fall the perpendiculars H E, I F, M G, the right lines C E, C F, C G, C B may be as the velocities loſt in the times H E, F I, G M, A B; that is, B S, B Q, B F, B A. Since $CE : CF :: EH : FI$, $CG : CB :: GM : BA$, A B C will be a triangle, (*Eucl.* III. 17.) If B *b*, therefore, be a moment of time infinitely ſmall, its *motion* will be uniform; and, therefore, the ſpace deſcribed by the moving body will be as the little area B *b c* C. The ſpace therefore deſcribed in the time A B is as the triangle A B C, *viz.* as the ſum of all the little areas B *b c* C. Now the ſpace deſcribed by the body moving uniformly with the velocity B C in the time A B, is as the rectangle ABCD, therefore the former is half of this. (*Eucl.* I. 41.)

16°. The ſpaces deſcribed by a *motion* uniformly retarded, in equal times, decreaſe according to the unequal numbers 7, 5, 3, 1.

For, ſuppoſe the moving body in the firſt inſtant of time to paſs over ſeven feet; I ſay, that in the ſecond if it be equally retarded, it will paſs over 5; in the third 3; and in the fourth 1. For let the equal parts of the axis of the triangle B S, S Q, Q P, P A be as the times; the ſemi-ordinates B C, S H, Q I, P M as the velocities at the beginning of any time; the trapezia B S H C, S Q I H, Q P M I, and the triangle P A M as the ſpaces deſcribed in thoſe times. Let then $BC = 4$ and $BS = SQ = QP. = PA = 1$. Then will $SH = 3$, $QI = 2$, $PM = 1$, (*Law* 13.) $BSHC = (4+3)\ 1:2 = \frac{7}{2}$. $SQIH = (3+2)\ 1:2 = \frac{5}{2}$. $QPMI = (2+1)\ 1:2 = \frac{3}{2}\ PAM = \frac{1}{2}$. Conſequently the ſpaces deſcribed in equal times are as $\frac{7}{2}$, $\frac{5}{2}$, $\frac{3}{2}$, $\frac{1}{2}$, that is as 7, 5, 3, 1.

For the cauſe, &c. *of the acceleration of* MOTION, ſee GRAVITY and ACCELERATION.

For the cauſe, &c. *of retardation*, ſee RESISTENCE and RETARDATION.

The laws wherein MOTION *is communicated* by the colliſion and percuſſion of bodies, are very different, as the bodies are either *elaſtic* or *unelaſtic*, and as the direction of the ſtroke is *oblique* or *direct*.

What relates to the colliſion of bodies *not elaſtic*, when the ſtroke or ſhock is direct, will come under the following heads.

17°. A moving body ſtriking againſt a body at reſt, will communicate *motion* thereto, and both will proceed in the direction of the firſt; and the momentum, or quantity of *motion*, in the two, will be the ſame after the ſtroke, as in the ſingle one before it.

For, it is the action of the firſt that gives the latter all the *motion* it has; and it is the re-action of the latter that takes off any part of the *motion* of the firſt. Now, as action and reaction are always equal, the momentum acquired by the one muſt be juſt equal to that loſt by the other; ſo that there is neither loſs nor gain from the ſtroke.

Hence, the velocity after the ſtroke, is found by multiplying the maſs of the firſt body by its velocity before the ſtroke, and dividing the product by the maſs of the ſecond body.

Hence if a body in *motion* ſtrike on another moving in the ſame direction, but more ſlowly, both will continue their *motion* in their firſt direction; and the momenta, or ſum of *motion* will be the ſame after as before the ſtroke.

If two equal bodies move againſt each other with equal velocities, after the ſtroke they will both remain at reſt.

Simple MOTION is that produced by ſome one power.

Compound MOTION is that produced by ſeveral conſpiring powers. See COMPOUND and COMPOSITION.

Powers are ſaid *to conſpire*, when the direction of the one is not oppoſite to that of the other; as when the radius of a circle is imagined to whirl round on its centre, and a point in the ſame radius is at the ſame time ſuppoſed impelled ſtrait along it.

All *curvilinear motion* is compound; as all ſimple *motion* is rectilinear.

18°. If a moving body A (*fig.* 26.) be acted on by a double power; the one according to the direction A B, the other according to A C; with the *motion* compounded thereof, it will deſcribe the diagonal of a parallelogram A D; whoſe ſides A B and A C it would have deſcribed in the ſame time with each of the reſpective powers apart.

For, if the body A were only acted on by the force impreſſed along A B; in the firſt inſtant of time it would be in ſome point of the right line A B, as in H, and ſo in the line H L parallel to A C; if it were only acted on by the power impreſſed in the direction A C, it would in the ſame inſtant of time be in ſome point of the line A C, as in I, and ſo in the line I L parallel to A B.—But ſince the directions of the powers are not oppoſite to each other, neither of them can impede the other; and therefore the body in the ſame inſtant of time will arrive both at the point H L and at I L; and will conſequently be in the point L, where the two meet.—In the ſame manner it appears that if K M and M G be drawn parallel to A B and A C, the body in the ſecond inſtant of time will be in M, and at length in D. *Q. E. D.*

Hence, ſince about every right line as A D, a parallelogram as A B D C, may be conſtructed, by making two equal triangles A C D and A B D, on one common baſe A D; every *rectilinear motion*, when it may be of ſervice for the demonſtration, may be conſidered as a *compound* one.

But as the proportion of the ſides A C and C D may be various, ſo alſo may the right line A D be deſcribed by a *motion* compounded various ways; and therefore the ſame rectilinear *motion* may be reduced to various compound *motions*.

Hence, if a moveable body be drawn by three ſeveral powers, according to the directions B A, A D, and A C, (*fig.* 33.) two of which taken together are equivalent to the third; they will be to each other as the right lines B D, D A, D C, parallel to their directions; that is, reciprocally as the ſines of the angles included between the lines of their directions, and the line of direction of the third: D B being to A D as the ſine of the angle B A D to the ſine of the angle A B D.

19°. In an equable compound *motion*, the velocity produced by the conſpiring powers, is to the velocity of each of the two apart, as the diagonal A D (*fig.* 26.) of the parallelogram ABDC, in the direction of whoſe ſides they act, to either of thoſe ſides A B or A C.

For in the ſame time that one of the powers would carry it over the ſide of the parallelogram A B, and the other over A C ſeparately, joined together they carry it over the diagonal A D. The diagonal A D therefore is the ſpace deſcribed by the conſpiring powers in the ſame time: but in an equable *motion* the velocities in the ſame time are as the ſpaces; the velocities therefore ariſing from the conſpiring forces are to the velocity ariſing from either force, as A D to A B or A C.

Hence the conſpiring forces therefore being given; *i. e.* the ratio of the velocities being given, by the lines A B and A C given in magnitude, and the direction through thoſe lines being given in poſition, or by the angle of direction; the celerity and direction of the oblique *motion* is given: becauſe the diagonal is given both in magnitude and poſition.

The oblique *motion* however being given, the ſimple ones are not, *vice verſa*, given; becauſe the ſame oblique *motion* may be compounded of various ſimple ones.

20°. In a compound *motion* produced by the ſame forces, the velocity is greater if the angle of direction be leſs; and leſs, if this be greater.

For, let the greater angle of direction be B A C, (*fig.* 34.) the leſs F A C; ſince the powers are ſuppoſed the ſame, A C will be common to each parallelogram A F C E and B A C D and beſides $AB = AF$. Now it is evident that in the caſe of the greater angle, the diagonal A D is deſcribed; and in the caſe of the leſs angle, A E; and both in the ſame time, by reaſon $AB = AF$. The velocities therefore are as A D to A E: Wherefore ſince A D is leſs than A E, the velocity in the caſe of the greater angle is leſs than in that of the leſs angle.

Hence, ſince the legs A C and C E, with the included angle being given, the angle C E A, and thence, alſo, A E is found; the velocity of the conſpiring powers, and the angle of direction, in any particular caſe, being given, the velocity of the compound *motion*, and conſequently the ratio of the velocities produced by the ſame powers under different angles of directions, may be determined.

For the particular laws of MOTION *ariſing from the colliſion of bodies both* elaſtic *and* unelaſtic, *and that where the directions are both* perpendicular *and* oblique, ſee PERCUSSION.

For circular MOTION, *and the laws of* projectile, ſee CENTRAL *forces*, and PROJECTILE.

For the MOTION *of pendulums, and the laws of* oſcillation, ſee PENDULUM and OSCILLATION.

Altitude of MOTION. See the article ALTITUDE.

Longitude of MOTION. See the article LONGITUDE.

Undulatory MOTION. See the article UNDULATORY.

Perpetual MOTION. See PERPETUAL *motion*.

The celebrated problem of a *perpetual motion*, conſiſts in the inventing a machine, which has the principle of its *motion* within itſelf.—M. de la Hire has demonſtrated the impoſſibility of any ſuch machine, and finds that it amounts to this, *viz.* to find a body which is both heavier and lighter at the ſame time; or a body which is heavier than itſelf. See MACHINE.

Animal MOTION, is that whereby the ſituation, figure, magnitude, &c. of the parts, members, &c. of animals are changed. See ANIMAL.

Under theſe *motions* come all the animal functions, as *reſpiration*, *circulation* of the blood, *excretion*, *walking*, &c. See FUNCTION.

Animal motions are uſually divided into two ſpecies, *viz. ſpontaneous*, and *natural*.

Spontaneous, or *muſcular* MOTION, is that performed by means of the muſcles, at the command of the will; hence alſo called *voluntary motion*. See MUSCULAR *motion*.

Natural, or *involuntary* MOTION, is that effected without ſuch command of the will; by the mere mechaniſm of the parts.

Such is the *motion* of the heart, and pulſe; the periſtaltic *motion* of the inteſtines, &c. See HEART, PERISTALTIC, &c.

Inteſtine MOTION, denotes an agitation of the particles, whereof a body conſiſts. See INTESTINE, FERMENTATION, EFFERVESCENCE, &c.

Some philoſophers will have every body, and every particle of a body, in continual *motion*. For fluids, it is the definition they give of them, that their parts are in continual *motion*. See FLUIDITY.

And as to ſolids, they infer the like *motion* from the effluvia continually emitted through their pores. See EFFLUVIA.

Hence *inteſtine motion* is repreſented to be a *motion* of the internal, and ſmaller parts of matter, continually excited by ſome external, latent age, which of itſelf is inſenſible, and only diſcovers itſelf by its effects; appointed by nature to be the great inſtrument of the changes in bodies.

MOTION, in aſtronomy, is peculiarly applied to the orderly courſes of the heavenly bodies. See SUN, PLANET, COMET, &c.

The *motion* of the earth, from weſt to eaſt, is now generally granted among aſtronomers: See it proved under the article EARTH.

The *motions* of the celeſtial luminaries are of two kinds, *diurnal* or *common*; and *ſecundary* or *proper*.

Diurnal or *primary* MOTION, is that wherewith all the heavenly bodies, and the whole mundane ſphere, appears to revolve every day round the earth, from eaſt to weſt. See DIURNAL, and STAR.

This is alſo called the *motion of the primum mobile*, and the *common motion*; to diſtinguiſh it from that rotation which is peculiar to each planet, &c.—It is about the various phænomena reſulting from this *motion*, that aſtronomy is chiefly employed. See ASTRONOMY.

Secundary or *proper* MOTION, is that wherewith a ſtar, planet, or the like, advances a certain ſpace every day from weſt towards eaſt. See MOBILE.

See the ſeveral *motions* of each luminary, with the irregularities, &c. thereof, under the proper articles; EARTH, MOON, STAR, &c.

Angular MOTION. See the article ANGULAR.

Horary MOTION *of the earth*. See the article HORARY.

Paracentric MOTION *of impetus*. See PARACENTRIC.

MOTION *of trepidation*, &c. See TREPIDATION and LIBRATION.

MOTION, in muſic, denotes the manner of beating the meaſure, to haſten or ſlacken the time of the words, or notes. See MEASURE and TIME.

The *motion*, in ſongs compoſed in double time, differs from thoſe in triple time. It is the *motion* that diſtinguiſhes courants and ſarabands, from gavots, borees, chacones, &c.

MOTION is alſo uſed among mechanics, for the inſide of a watch, &c. more commonly called *movement*. See MOVEMENT.

MOTIONS, in war, denote the marches, counter-marches, &c. an army makes in changing its poſt. See MARCH.

The great ſkill of a general conſiſts in diſcovering the enemies *motions*, and concealing his own. Nothing is more dangerous, than to make great *motions* before a powerful enemy, ready to come to blows.

MOTION, or *emotion*, in rhetoric, &c. See PASSION.

MOTORII, MOTORY *nerves*, the third part of nerves; ſerving for the motion of the eye. See NERVE.

This pair is united into one near their inſertion into the brain; by which means, when one eye is moved towards any object, the other is directed towards the ſame. See EYE.

MOTOS, Μοτὸς, a piece of lint, or linen cloth, teazed like wool, to be put into ulcers, to ſtop the flux of blood, &c.

MOTRIX, ſomething that has the power or faculty of *moving*. See FACULTY, MOTION, &c.

MOTTO, an Italian term, literally ſignifying *word*, or *ſaying*; uſed in arms, deviſes, &c. See ARMS and DEVICE.

MOTTO *of an armoury*, is a ſhort ſentence or phraſe carried in a ſcroll generally over, ſometimes under the arms; ſometimes alluding to the name of the bearer, ſometimes to the bearing, and ſometimes to neither. See ARMS.

The *motto*, or word, ſays Guillim, is an external ornament annexed to coat-armour; being the invention or conceit of the bearer, ſuccinctly and ſignificantly expreſſed, uſually in three, or four words, which are ſet in ſome ſcroll or compartiment, placed at the foot of the eſcutcheon.

As the *motto* holds the loweſt place in arms; ſo it is the laſt in blazoning. In ſtrictneſs, it ſhould expreſs ſomething intended in the atchievement; but cuſtom has now received whatſoever fancy of the deviſer. See BLAZON.

The uſe of *motto*'s is very antient; hiſtory, both ſacred and profane, furniſhing inſtances thereof. Our anceſtors made choice of *motto*'s to expreſs their predominant paſſions, as of piety, love, war, &c. or ſome extraordinary adventure befallen them: Moſt of which, from ſome ſuch original, have become hereditary in divers families.

The *motto* of the royal family of England, is, *Dieu & mon droit*, God and my right; of the royal family of Bourbon, *eſperance*, hope; of the order of the garter, *Honi ſoit qui mal y penſe*, ſhame be to him that evil thinks; of the duke of Norfolk, *Sola virtus invicta*; of the duke of Bedford, *Che ſara ſara*; of the duke of Devonſhire, *Cavendo tutus*, alluding to the family's name, Cavendiſh; of the duke of Kingſton, *Pie repone te*, alluding to the name Pierepoint; of the earl of Radnor, *Quæ ſupra*, alluding to the three ſtars in his arms; of the earl of Abingdon, *Virtus ariete fortior*, alluding to the three battering rams bore in the arms; of Forteſcue Lord Clinton, *Forte ſcutum ſalus ducum*.

The *motto of a deviſe*, is alſo called the *ſoul of the deviſe*. See DEVISE.

MOTU.—*Ex mero* MOTU. See the article EX.

MOVE *in arreſt of judgment*. See the article ARREST.

MOVEABLE, ſomething ſuſceptible of motion; or that is diſpoſed to be moved. See MOTION.

A ſphere is the moſt *moveable* of all bodies, *i. e.* the eaſieſt to move: A door is *moveable* on its hinges, the magnetical needle, on a pin, or pivot, &c.

Moveable is frequently uſed in contradiſtinction to *fixt*. See FIXT.

MOVEABLE *feaſts*, are ſuch as are not always held on the ſame day of the year, or month; though they be, on the ſame day of the week. See FEAST.

Thus, Eaſter is a *moveable* feaſt; being always held on the ſunday which falls upon or next after the firſt full moon following th 21ſt of March. Vid. *Philoſ. Tranſ.* N°. 240. p. 185.

All the other *moveable* feaſts follow Eaſter, *i. e.* keep their diſtance from it; ſo that they are fixed with reſpect thereto.

Such are *Septuageſima*, *Sexageſima*, *Aſh-Wedneſday*, *Aſcenſion-Day*, *Pentecoſt*, *Trinity-Sunday*, &c. Which ſee under their proper articles, SEPTUAGESIMA, &c.

MOVEABLES, or MOVEABLE *goods*, by civilians called *bona mobilia*, are thoſe which are capable of being removed from one place to another; or which may be concealed or perverted; as not being fixed to the ground, &c. See GOODS.

In England, we have two kinds of effects, *moveable* and *immoveable*: the *moveable* are ready money, merchandizes, bonds, book-debts, cattle, and houſhold furniture, not faſtened either with iron or nail, nor ſealed in the plaiſter, but which may be tranſported without either fraction, or deterioration. See CHATTEL.

In the cuſtomary laws, they ſay, *moveables* follow the perſon, and his proper habitation; *moveables* follow the body, &c. which words have different meanings in different countries.

Sometimes they ſignify, that *moveables* go according to the cuſtom of the place where is the habitation of the deceaſed, though he die in another place; and ſometimes they ſignify, that *moveables* follow the cuſtom of the place where the defunct died.

MOVEMENT, *motion*, a term frequently uſed in the ſame ſenſe with *automaton*. See AUTOMATON.

The moſt uſual *movements* for keeping time are *watches* and *clocks*: The firſt are ſuch as ſhew the parts of time; the ſecond ſuch as publiſh it. See WATCH and CLOCK.

MOVEMENT, in its popular uſe among us, ſignifies all the inner work of a watch, clock, or other engine, which *move*, and, by that motion, carry on the deſign of the inſtrument.

The *movement* of a clock, or watch, is the inſide; or that part which meaſures the time, ſtrikes, &c. excluſive of the frame, caſe, dial-plate, &c.

The parts common to both of theſe *movements* are, the *main-ſpring*, with its appurtenances; lying in the ſpring-box, and in the middle thereof lapping about the ſpring-arbor, to which one end of it is faſtened.—A top of the ſpring-arbor is the *endleſs ſcrew*, and its wheel; but in ſpring-clocks, this is a ratchet-wheel with its click, that ſtops it.—That which the main ſpring draws, and round which the chain or ſtring is wrapped, is called the *fuſy*: This is ordinarily taper; in large works going with weights, it is cylindrical, and called the *barrel*.—The ſmall teeth at the bottom of the fuſy or barrel, which ſtop it in winding up, is called the *ratchet*; and that which ſtops it when wound up, and is for that end driven up by the ſpring, the *garde-gut*.—The *wheels* are various; the parts of a wheel, are the *hoop* or *rim*; the *teeth*, the *croſs*, and the *collet* or piece of braſs ſoldered on the arbor or ſpindle, whereon the wheel is rivetted.—The little wheels playing in the teeth of the larger, are called *pinions*; and their teeth, which are 4, 5, 6, 8, &c. are called *leves*; the ends of the ſpindle are called *pivots*; and the guttered wheel, with iron ſpikes at bottom, wherein the line of ordinary clocks runs, the *pully*.—We need not ſay any thing of the *hand*, *ſcrews*, *wedges*, *ſtops*, &c. See Wheel, Fusy, *&c.*

Theory of calculating the numbers for Movements.—1°. It is to be obſerved, that a wheel divided by its pinion, ſhews how many turns the pinion has to one turn of the wheel.

2°. That from the fuſy to the balance, the wheels drive the pinions; conſequently the pinions run faſter, or make more revolutions than the wheels: but it is the contrary from the great wheel to the dial-wheel.

3°. That the wheels and pinions we write down either as vulgar fractions, or in the way of diviſion in common arithmetic; *v. gr.* a wheel of 60 moving a pinion of 5, is wrote either $\frac{60}{5}$, or better 5)60. And the number of turns the pinion has in one turn of the wheel, as a quotient, thus, 5)60(12. A whole *movement* may be wrote, as in the adjoining ſcheme; where the uppermoſt number expreſſes the pinion of report 4, the dial-wheel 36, and the turns of the pin 9; the ſecond, the pinion, and great wheel; the third, the ſecond wheel, *&c.* the fourth, the contrat wheel; and the laſt, 17, the crown-wheel.

4)36(9
———
5)55(11
5)45(9
5)40(8
———
17

Hence, 4°. From the number of turns any pinion makes in one turn of the wheel it works in, may be determined the number of turns a wheel or pinion has at any greater diſtance, *viz.* by multiplying together the quotients; the produce whereof is the number of turns. Thus,

Suppoſe the wheels and pinions as in the caſe adjoining; 11 multiplied by 9, gives 99, the number of turns of the ſecond pinion 5, in one turn of the wheel 55, which runs concentrical, or on the ſame ſpindle with the pinion 5. Again, 99 multiplied by 8, gives 792, the number of turns the laſt pinion has in one turn of the firſt wheel 5.

5)55(11
5)45(9
5)40(8

Hence we proceed to find, not only the turns, but the number of beats of the balance in the time of thoſe turns. For having found the number of turns the crown-wheel has in one turn of the wheel ſought, thoſe turns multiplied by it notches, give half the number of beats, in that one turn of the wheel. Suppoſe, *v. gr.* the crown-wheel to have 720 turns, to one of the firſt wheel; this number multiplied by 15, the notches in the crown-wheel, produces 10800; half the number of ſtrokes of the balance in one turn of the firſt wheel of 80 teeth. See Calculation.

The general diviſion of a *movement*, is into the clock, and watch parts. See Clock-*work* and Watch-*work*.

MOVER, or *firſt* Mover. See Mobile.

Perpetual Mover. See Perpetual *motion*.

MOULD, or Mold, in the mechanic arts, *&c.* a cavity artfully cut, with deſign to give its form, or impreſſion to ſome ſofter matter applied therein.

Moulds are implements of great uſe in ſculpture, foundery, *&c.* See Sculpture, Foundery, *&c.*

The workmen employed in melting the mineral or metallic glebe dug out of mines, have each their ſeveral *mould*, to receive the melted metal as it comes out of the furnace; but different according to the diverſity of metals and works.—In gold mines, they have *moulds* for ingots: In ſilver-mines for bars: In copper and lead-mines for pigs or ſalmons: In tin-mines for pigs and ingots: And in iron-mines for ſows, chimney-backs, anvils, caldrons, pots, and other large utenſils and merchandizes of iron, which are here caſt, as it were, at firſt hand. See Gold, Silver, Lead, Tin, Iron, *&c.*

The Moulds *of founders of large works*, as ſtatues, bells, guns, and other brazen works, are of wax, ſupported within-ſide by what they call a *core*, and covered without-ſide with a cap or caſe.—It is in the ſpace which the wax took up, which is now melted to leave it free, that the liquid metal runs, and the work is formed; being carried thither through a great number of little canals which cover the whole *mould*. See Foundery.

The Moulds *of moneyers*, are frames full of ſand, wherein the plates of metal are caſt that are to ſerve for the ſtriking of ſpecies of gold or ſilver. See Coinage.

Moulds *of founders of ſmall works*, are like the frames of coiners. It is in theſe frames, which are likewiſe filled wlth ſand, that their ſeveral works are faſhioned; into which, when the two frames whereof the *mould* is compoſed, are rejoined, the melted braſs is run. See Foundery.

Moulds *of letter-founders*, are partly of ſteel, and partly wood: The wood, properly ſpeaking, ſerves only to cover the real *mould* which is within, and to prevent the workman who holds it in his hand, from being incommoded by the heat of the melted metal. Only one letter or type can be formed at once in each *mould*. See *Letter*-Foundery.

Moulds *in the manufacture of paper*, are little frames compoſed of ſeveral braſs or iron wires faſtened together by another wire ſtill finer. Each *mould* is of the bigneſs of the ſheet of paper to be made, and has a rim or ledge of wood to which the wires are faſtened. Theſe *moulds* are more uſually called *frames* or *forms*. See Paper.

Furnace, and crucible maker's Moulds, are made of wood, of the ſame form with the crucibles; that is, in form of a truncated cone. They have handles of wood to hold, and turn them with, when being covered with the earth, the workman has a mind to round or flatten his veſſel. See Furnace, *&c.*

Moulds *for leaden bullets*, are little iron pinchers, each of whoſe branches terminates in a hemiſpherical concave, which when ſhut, form an entire ſphere. In the lips or ſides where the branches meet, is a little jet or hole, through which the melted lead is conveyed.

Glazier's Moulds.—The glaziers have two kinds of *moulds*, both ſerving to caſt their lead. In the one they caſt the lead into long rods or canes fit to be drawn through the vice, and the grooves formed therein. This they ſometimes call *ingot-mould*. In the other they *mould* thoſe little pieces of lead a line thick, and two lines broad, faſtened to the iron-bars. Theſe may be alſo caſt in the vice. See Vice, and Glasiery.

Goldſmiths Moulds,—The goldſmiths uſe the bones of the cuttle-fiſh to make *moulds* for their ſmall works; which they do by preſſing the pattern between two bones, and leaving a jet or hole to convey the ſilver through after the pattern has been taken out.

Mould, among maſons, is a piece of hard wood or iron, hollowed within-ſide, anſwerable to the contours of the mouldings or corniſhes, *&c.* to be formed. This is otherwiſe called *caliber*.

Moulds, among plumbers, are the tables whereon they caſt their ſheets of lead.—Theſe they ſometimes call ſimply *tables*.—Beſides which, they have other real *moulds* wherewith they caſt pipes without ſoldering. See each deſcribed under the article Plumbery.

Moulds, among glaſs-grinders, are wooden frames whereon they make the tubes wherewith they fit their perſpectives, teleſcopes, and other optic machines. See Glass, and Grinding.

Theſe *moulds* are cylinders, of a length and diameter according to the uſe they are to be applied to, but always thicker at one end than the other, to facilitate the ſliding.

The tubes made on theſe *moulds* are of two kinds; the one ſimply paſte-board and paper; the other of thin leaves of wood joined to the paſte-board.—To make theſe tubes to draw out, only the laſt or innermoſt is formed on the *mould*; each tube made afterwards ſerving as a *mould* to that which is to go over it; but without taking out the *mould* from the firſt. See Tube.

Moulds uſed in baſket-making are very ſimple, conſiſting ordinarily of a willow, or oſier turned or bent into an oval, circle, ſquare, or other figure, according to the baſkets, panniers, hampers, hots, and other utenſils intended.—On theſe *moulds* they make, or more properly meaſure all their work; and accordingly have them of all ſizes, ſhapes, *&c.*

Moulds, among tallow-chandlers, are of two kinds: The firſt for the common dipped candles, being the veſſel wherein the melted tallow is diſpoſed, and the wick dipped.

This is of wood, of a triangular form, and ſupported on one of its angles, ſo that it has an opening of near a foot a-top. The other, uſed in the fabrick of *mould*-candles, is of braſs, pewter, or tin.—Here each candle has its ſeveral *mould*. See each under the article Candle.

Mould, among gold-beaters, a certain number of leaves of velom, or pieces of guts, cut ſquare, of a certain ſize, and laid over one another, between which they put the leaves of gold and ſilver which they beat on the marble with the hammer.

They have four kinds of *moulds*; two whereof are of velom, and two of gut. The ſmalleſt of thoſe of velom conſiſts of forty or fifty leaves, the largeſt contains an hundred. For the others, each contains five hundred leaves.

The *moulds* have all their ſeveral caſes, conſiſting of two pieces of parchment, ſerving to keep the leaves of the *mould* in their place, and prevent their being diſordered in beating. See Gold-*beating*.

Mould, or Mold, in agriculture, denotes a black kind of earth, every where obvious on the ſurface of the ground: called alſo *natural* or *mother earth*: and by ſome alſo *loam*. See Earth, Soil, *&c.*

The beſt *mould* for the gardener's purpoſes, according to Mr. Evelyn, is that of a blackiſh grey colour; according to Mr. Switzer, that of a lively cheſnut, or hazle colour, which cuts like butter, and does not ſtick obſtinately, but is ſhort, tolerably light, breaking into ſmall clods, may be tempered without cruſting or chapping in dry weather, or turning to mortar in wet.

Next to cheſnut, are the dark greys, and ruſſet. The light and dark aſh-colours are naught, being thoſe commonly found in heathy ground. The yellowiſh red is worſt of all.

Hip-Mould. See the article Hip-*mould*.

Iron-Mould. See the article Iron-*mould*.

MOULDINESS, a term applied to bodies which corrupt in the air, from ſome hidden principle of humidity therein; and whoſe corruption ſhews itſelf by a certain white down, or lanugo on their ſurface.

This *mouldineſs*, when viewed with a microſcope, affords a curious ſpectacle; being a kind of meadow out of which ariſe herbs and flowers, ſome only in the bud, others full blown, and others decayed; each having its little root, ſtalk, and other parts: The figure whereof may be ſeen in Hook's *Micrographia*.—The ſame may be obſerved of the *mouldineſs* which gathers on the ſurface of liquid bodies.

Mr. Bradley obſerved this *mouldineſs* in a melon very accurately; and found the vegetation of theſe little plants exceedingly quick.—Each plant had its ſeeds in great abundance, which did not ſeem to be three hours ere they began to ſhoot up, and in ſix hours more the plant was compleat and mature, and the ſeed ready to fall.—When the fruit had been covered with a *mould* for ſix days, its vegetative quality began to abate, and was intirely gone in two days more; then came on a putrefaction, and the fleſhy parts of the melon yielded nothing but a ſtinking water, which began to have a gentle motion in its ſurface, and in two days time maggots appeared, which in ſix more laid themſelves up in their bags, where they continued four days, and then came out flies. See MUSHROOM.

MOULDING, any thing caſt in a mould, or that ſeems to have been ſo, though in reality it were cut with a chiſſel, or the ax.

MOULDINGS, in architecture, are jettings, or projectures beyond the naked of a wall, column, wainſcot, *&c.* the aſſemblage whereof forms corniſhes, door-caſes, and other decorations of architecture.—See *Tab. Architect. fig.* 1, to 12. See alſo ORNAMENT.

Some *mouldings* are ſquare, others round, ſome ſtrait, others curved, *&c.*—Some are plain, others carved, or adorned with ſculpture, either hollowed, or in relievo.

Some *mouldings* again are crowned with a fillet; others are without, as the doucine, talon, ovolo, torus, plinth, ſcotia, aſtragal, gula, corona, and cavetto. See each under its proper article, DOUCINE, TALON, OVOLO, *&c.*

Mouldings are in architecture what letters are in writing.—By the various diſpoſitions and combinations of *mouldings*, may be made an infinite number of different profiles for all ſorts of orders, and compoſitions, regular and irregular; and yet all the kinds of *mouldings* may be reduced to three; *viz.* ſquare, round, and mixt, *i. e.* compoſed of the other two.

For this reaſon, thoſe who invented the Gothic architecture, reſolving to recede from theſe perfect figures, and affecting to uſe others leſs perfect, to diſtinguiſh their architecture from the antique, introduced a new ſet of whimſical *mouldings* and ornaments. See GOTHIC, GROTESQUE, *&c.*

Regular *mouldings* are either *large*; as, doucines, ovolos, gulas, talons, torus's, ſcotias, *&c.* or *ſmall*, as fillets, aſtragals, conges, *&c.* which ſee in their places, DOUCINE, OVOLO, ASTRAGAL, FILLET, *&c.*

Bed-MOULDING. See the article BED-*moulding*.

Plane-MOULDING. See the article PLANE.

MOULIN.—*Fer de* MOULIN. See FER.

MOULINET, a French term properly ſignifying a little mill; being a diminutive of *moulin*, mill.

It is uſed in mechanics to ſignify a roller, which being croſſed with two levers, is uſually applied to cranes, capſtans, and other ſorts of engines of the like nature, to draw ropes, and heave up ſtones, timber, *&c.* See CAPSTAN, *&c.*

MOULINET is alſo a kind of turn-ſtile, or wooden croſs, which turns horizontally upon a ſtake fixed in the ground; uſually placed in the paſſages to keep out horſes, and to oblige paſſengers to go and come one by one.

Theſe *moulinets* are often ſet near the out-works of fortified places, at the ſides of the barriers, through which people paſs on foot.

MOULTING, in natural hiſtory. See MOLTING.

MOUND, a term uſed for a bank, rampart, or other fence, particularly of earth. See WALL, *&c.*

MOUND, or MOND, in heraldry, is a ball or globe with a croſs upon it; ſuch as our kings are uſually drawn with, holding it in their left hand, as they do the ſcepter in the right. See GLOBE.

MOUNT, an elevation of earth, called alſo *mountain*. See MOUNTAIN.

The words *mount* and *mountain* are ſynonymous; but the former is ſcarce ever uſed in proſe, unleſs when accompanied with ſome proper name, as *mount* Ætna, *mount* Gibel, *mount* Libanon, *mount* Sinai, *mount* Atlas, *mount* Parnaſſus, *&c.*

St. Catherine of MOUNT *Sinai*. See the article CATHERINE.

Knight of MOUNT *Carmel*. See the article CARMEL.

MOUNTS *of piety*, are certain funds, or eſtabliſhments in Italy, where money is lent out on ſome ſmall ſecurity.—We had alſo *mounts of piety* in England, raiſed by contribution for the benefit of people ruined by the extortions of the Jews.

MOUNTAIN, MONS, a part of the earth riſing to a conſiderable height above the level of the ſurface thereof. See EARTH.

The origin of *mountains* is variouſly aſſigned by philoſophers: Some will have them co-eval with the world, and created along with it.

Others, among whom Dr. Burnet, will have them to take their riſe from the deluge; urging, that the extreme irregularity and diſorder viſible in them, plainly ſhews they do not come immediately out of the hand of God, but are the recks of the old world broken into the abyſs. See ABYSS.

Others again, alledge from hiſtory, that the roots of many hills being eaten away, the hills themſelves have ſubſided, and ſunk into plains: Whence they conclude, that where the corruption is natural, the generation is ſo too.

This, indeed, appears pretty evident, that ſome *mountains* muſt have been generated gradually, and have grown up in proceſs of time, from the ſea-ſhells, *&c.* found in many of them; which may be accounted for from a violent wind blowing the ſand, *&c.* into huge heaps, which are afterwards made into a maſs by the rain, *&c.*—Some among the divines tell us, that the earth was created perfectly even; and that when God ſeparated the water from the land, he dug channels in the earth; and the earth ſcooped out, he threw up in *mountains*: but whether the *mountains* be ſufficient to fill all the channels of the ocean, let them look to it.

The uſes of *mountains* are numerous: We ſhall only mention two, or three. 1°. They ſerve as ſkreens to keep off the cold and nipping blaſts of the northern and eaſtern winds. 2°. They ſerve for the production of a great number of vegetables and minerals, which are not found in any other ſoil. 3°. The long ridges and chains of lofty and topping *mountains* being generally found to run from eaſt to weſt, ſerve to ſtop the evagation of the vapours towards the poles, without which they would all run from the hot countries, and leave them deſtitute of rain.

Mr. Ray adds, that they condenſe thoſe vapours, like alembic-heads, into clouds, and ſo by a kind of external diſtillation, give original to ſprings and rivers; and by amaſſing, cooling, and conſtipating them, turn them into rain; and by that means render the fervid regions of the torrid zone habitable. See SPRING, *&c.*

In hiſtory, we have inſtances of *mountains* travelling a conſiderable diſtance; particularly Huſket-Marvel-Hill, if I miſ-remember not, in Herefordſhire, which is ſaid to have made a conſiderable journey. See Speed's *Theat.*

To meaſure the height of a *mountain*, ſee ALTITUDE, *&c.*—Though there is another way uſed by Dr. Halley in the meaſure of Snowdon-Hill in Wales, by means of a barometer, the different heights of whoſe mercury at the top and bottom of the *mountain*, give its perpendicular altitude; accounting 82 feet perpendicular aſcent, for every inch varied in the height of the mercury. See BAROMETER, and LEVELLING.

MOUNTAIN-*green*.	See the article	GREEN.
Burning-MOUNTAINS.		VOLCANO.
MOUNTAINS *in the moon*.		MOON.

MOUNTING *the guard, trenches, breach*, &c. denotes the going upon duty, being upon guard, in the trenches, running to the breach, *&c.* See GUARD, TRENCH, *&c.*

MOUNTING *a cannon, mortar*, &c. is the ſetting it on its carriage; or the raiſing its mouth. See CANNON, MORTAR, CARRIAGE, *&c.*

MOUNTING, in the manufactories, ſomething that ſerves to raiſe or ſet off a work.—Thus the frame or border, and its dependencies, make the *mounting* of a looking-glaſs: The fuſt, or but, the *mounting* of a muſquet, carabine, *&c.* The hilt, *&c.* the *mounting* of a ſword.

MOUNTING *of a fan*, the ſticks which ſerve to open and ſhut it, whether they be of wood, ivory, tortoiſe-ſhell, whale-bone, Indian-cane, or the like. See FAN.

MOURNING, a particular dreſs or habit, wore to ſignify grief, on ſome melancholy occaſion. See FUNERAL, *&c.*

The modes of *mourning* are various in various countries; as are alſo the colours that obtain for that end.—In Europe, the ordinary colour for *mourning* is black; in China, white; in Turky, blue, or violet; in Egypt, yellow; in Æthiopia, brown. The antient Spartan and Roman ladies *mourned* in white; and the ſame colour obtained formerly in Caſtile on the death of their princes. Herrera obſerves, that the laſt time it was uſed, was in 1498, at the death of prince John.—Kings and cardinals mourn in purple.

Each people have their reaſons for the particular colour of their *mourning*: White is ſuppoſed to denote purity; yellow, that death is the end of human hopes, in regard leaves when they fall, and flowers when they fade, become yellow. Brown denotes the earth, whither the dead return. Black, the privation of life, as being the privation of light. Blue expreſſes the happineſs which it is hoped the deceaſed does enjoy; and purple, or violet, ſorrow on the one ſide, and hope on the other; as being a mixture of black and blue.

MOUTH, in anatomy, a part of the human face, conſiſting of the lips, the gums, the inſide of the cheeks, and the palate. See FACE, LIPS, *&c.*

All theſe parts are lined with a glandulous coat, which is continued over the whole inner ſurface of the *mouth*, and all its parts, the teeth excepted.

From the glands of this coat, through innumerable little excretory ducts, is ſeparated a kind of ſalival juice, which ſerves to keep the *mouth* and all its parts, moiſt, ſmooth, and ſlippery. See SALIVA.

On the hind part of the palate, perpendicularly over the rima of the larynx, hangs a round, ſoft, ſmooth body, like the end of a child's finger, formed by the duplicature of the membrane of the palate, and called the *uvula*, which is moved by two muſcles, called *ſphenoſtaphylinus* and *pterygoſtaphylinus*; and ſuſpended by as many ligaments. See UVULA.

Under the membrane of the palate, are a great number of glands, pretty conſpicuous in the fore-part, like grains of millet; whoſe excretory ducts piercing the membrane, open into the *mouth*: but towards the hind-part they lie much thicker, and about the root of the uvula are gathered ſo cloſe to one another, that they ſeem to form one large conglomerate gland; which is therefore by Verheyen, called *glandula conglomerata palatina*. See PALATE.—The gums are, as it were, the ſockets and ligaments of the teeth. See TOOTH.

Beſides the proper parts of the *mouth*, there are in and about it others highly ſerviceable and neceſſary thereto: Among which are the glands; the moſt conſiderable whereof are the parotides, the glandulæ maxillares, the ſublinguales, and the tonſils or amygdalæ; which ſee in their reſpective places, PAROTIDES, *&c.*

Theſe are the ſalival organs, whence ſprings all that liquor we call the *ſpittle*, which flows into the *mouth* by the reſpective ducts, after its ſeparation from the blood in the bodies of the glands: As the demand of ſpittle is greater in actions of the lower jaw, *i. e.* in maſtication, deglutition, much talking, *&c.* ſo does the diſpoſition of theſe ſalival ducts favour that diſcharge on thoſe occaſions.

Mr. Derham obſerves that the *mouth*, in the ſeveral ſpecies, is nicely adapted to the uſes of ſuch a part; well ſized and ſhaped for the catching of prey, for the gathering and receiving food, the formation of ſpeech, *&c.*

In ſome creatures it is wide and large, in others little and narrow; in ſome with a deep inciſure up into the head, for the better catching and holding of prey, and more eaſy comminution of hard, large, and troubleſome food; in others with a ſhorter inciſure, for the gathering and holding of herbaceous food.

In inſects it is very notable: in ſome forcipated, to catch, hold, and tear the prey; in others aculeated, to pierce and wound animals, and ſuck their blood; in others ſtrongly ridged with jaws and teeth, to gnaw and ſcrape out their food, carry burdens, perforate the earth, nay, the hardeſt wood, and even ſtones themſelves, for houſes and neſts for their young.

Nor is the *mouth* leſs remarkable in birds, being neatly ſhaped for piercing the air, hard and horny to ſupply the want of teeth; hooked in the rapacious kind, to catch and hold their prey; long and ſlender in thoſe who have their food to grope for in mooriſh places; and broad and long in thoſe that ſearch it in muddy places.

MOUTH is alſo uſed in the courts of princes, for what relates to their eating and drinking.—Hence, *officers of the mouth*, *yeomen of the mouth*, &c.

Daviler defines *mouth*, an apartment compoſed of ſeveral rooms, as offices, kitchens, *&c.* where the meat intended for the firſt tables, is dreſſed by itſelf.—At court, this is called the *king's mouth*.

MOUTH, in the manage, denotes a horſe's feeling or ſenſibility in that part where the bits are applied. See BIT, *&c.*

Ridges of a horſe's MOUTH. See the article RIDGE.

Opening, or *ſhutting the* MOUTH, of a cardinal, is a ceremony uſed in the conſiſtory at Rome; wherein the pope ſhuts a new-elected cardinal's *mouth*, ſo as he may not ſpeak at all, even though the pope ſhould ſpeak to him; and remains in the mean time deprived of all voice, both active and paſſive, till the calling of another conſiſtory, when the pope *opens his mouth* again, making a little harangue, to teach him how to ſpeak, and comport himſelf in the conſiſtory. See CARDINAL.

MOXA, a ſort of cotton, or downy ſubſtance, brought from China, and by ſome ſaid to grow on the lower part of the mugwort-leaf.

It is not known among us for any medicinal efficacy, however celebrated in the Indies for curing the gout, by being burnt upon the part: People here have not faith enough to try it this way; and ſome think if they had, in all likelihood, any other cauſtic would do as well. Quincy.

MUCILAGE, MUCILAGO, in pharmacy, *&c.* a thick, viſcous juice; ſo called, as reſembling the *mucus* of the noſe. See the article MUCUS.

Mucilages are prepared chiefly from roots, and ſeeds pounded in a mortar, and infuſed in hot water, and ſtrained through a cloth.

The ſeeds principally uſed for this purpoſe, are thoſe of althæa, mallows, ſymphytum, *&c.*

Mucilages enter the compoſition of ſeveral plaiſters.—They are ſometimes alſo made of gums and fruits, as figs, quinces, iſinglaſs, tragacanth, *&c.* See GUM, *&c.*

MUCILAGE alſo denotes a thick, pituitous matter, evacuated with the urine, in the gravel, and dyſuria.

MUCILAGINOUS *glands*, a very numerous ſet of glands in the joints, firſt deſcribed by Dr. Havers.—There are two ſorts of *mucilaginous glands*, ſome ſmall, next a-kin to milliary glands, being glandules placed all along the ſurface of the membranes, which lie over the articulations. See MUCUS, and ARTICULATION.

The other ſort are conglomerated, or many glandules collected, and planted one upon another, ſo as to make a bulk, and appear conſpicuouſly. In ſome of the joints, there are ſeveral of them; in others, there is a ſingle one.

As to the ſtructure of theſe large glands; they conſiſt of ſmall veſicles, which are not gathered together into ſeveral lobes, or bags of glandules, but are diſpoſed upon ſeveral membranes lying over one another; of which membranes there are ſeveral in every one of theſe glands, which appear evidently in thoſe who are hydropical. They have their blood-veſſels, as other glands: but their veins have a particular texture, in their courſe, for retarding the return of the blood from the glands, that the *mucilaginous* liquor, which is not ſeparated with the greateſt expedition, may have time for ſeparation; which is a contrivance, obſerved wherever a thick fluid is to be ſecerned. See ANIMAL *ſecretion.*

The large *mucilaginous glands* are variouſly ſituated; ſome in a ſinus formed in the joint; others ſtand near, or over-againſt the interſtice between the articulated bones: but in general, they are ſo placed, as to be ſqueezed gently, and lightly preſſed in the inflection or extenſion of the joint, in order to yield a quantity of mucilage proportionate to the motion of the part, and the preſent occaſion, without any injury.

The deſign of all theſe glands is to ſeparate a *mucilaginous* kind of liquor, which ſerves principally to lubricate the joints, or to make them ſlippery. It ſerves likewiſe to preſerve the ends of the articulated bones from attrition and heating: But all this it does in conjunction with the medullary oil; with which, together, is made a compoſition admirably well fitted for thoſe ends: for the mucilage adds to the lubricity of the oil, and the oil preſerves the mucilage from growing too thick and viſcous.

Dr. Havers obſerves the ſame glands to lie between the muſcles and tendons; and ſuppoſes that there is the ſame mixture there of an oily and *mucilaginous* ſubſtance; the one being that fat, which is found between the muſcles, and is ſupplied by the glandulæ adipoſæ; and the other ſeparated by the *mucilaginous* glandules, of which the common membrane of the muſcles is every where full. This mixture in the interſtices of the muſcles, lubricates them and their tendons, and preſerves them from ſhrinking, and growing rigid and dry. See MUSCLE.

MUCOUS *glands*, are three glands which empty themſelves into the urethra; ſo called by the firſt diſcoverer, Mr. Cowper, from the tenacity of the liquor which they ſeparate.—See *Tab. Anat.* (*Splanch.*) *fig.* 8. *lit. w.* See alſo MUCUS.

The two firſt diſcovered of theſe, are about the bigneſs of a French bean, of a depreſſed oval figure, and a yellowiſh colour, like the proſtrates; being on each ſide the bulb of the cavernous body of the urethra, a little above it.

Their excretory ducts, ſpring from the internal ſurface, next the inner membrane of the urethra; into which they open a little lower, by two diſtinct orifices, juſt below its bending under the oſſa pubis, in perinæo, where they diſcharge a tranſparent viſcous liquor.

The third *mucous* gland, is a ſmall, conglobate, yellowiſh gland, like the former, but ſomewhat leſs, ſituate above the angle of flexure of the urethra, under the oſſa pubis, in the perinæum, near the anus.—It has two excretory ducts, which enter the urethra obliquely, a quarter of an inch below the two former; and diſcharge a liquor like the former, both in colour and conſiſtence. See URETHRA.

MUCRO *cordis*, in anatomy, the lower pointed end of the heart. See HEART.

The word is Latin, *mucro*, where it properly ſignifies the point of a ſpear, *&c.*

Hence, MUCRONATED is applied to whatever tends to, or terminates in, a point, like that of a ſpear; as *mucronata cartilago*, *&c.* See XIPHOIDES.

MUCUS, *of the joints*, is a mucilaginous liquor, ſeparated by its proper glands, conveniently placed in the interſtices of the bones, where thoſe glands are gently preſſed by the motion of the parts: it ſerves to make the extremities of the bones, or joints, ſlip more eaſily. See BONE, and MUCILAGINOUS.

MUCUS, *of the urethra*, a viſcous tranſparent liquor, ſerving to line, and lubricate the part; that the ſeed and the urine may ſlip more freely, without either adhering to or lacerating the part. See URETHRA.

It comes from glands lately diſcovered by Mr. Cowper, about the penis; and is that, which in women is often miſtaken for ſemen. See MUCOUS *gland*, PENIS, SEED, *&c.*

MUCUS, *of the noſtrils*, is a viſcid excrementitious humour ſeparated by its proper glands, placed in the internal membrane of thoſe parts.—It ſerves to moiſten, lubricate, and defend the olfactory nerves; which being extremely ſoft and naked, would, without ſuch proviſion, be ſoon ſpoiled. See NOSE, *&c.*

MUD-*walls*. See the article WALL.

MUFTI. See the article MUPHTI.

MUGGLETONIANS, a religious ſect, which aroſe in England, about the year 1657; denominated from their leader, Lodowick Muggleton, a journeyman taylor.

Muggleton, with his aſſociate Reeves, ſet up for great prophets; and it is ſaid, pretended to an abſolute power of ſaving and damning whom they pleaſed: Giving out, that they we the two laſt witneſſes of God, that ſhould appear before the end of the world.

MUID, a large meaſure, in uſe among the French, for dry commodities; as corn, pulſe, ſalt, lime, coals, *&c.* See Measure.

The *muid* is no real veſſel uſed as a meaſure; but an eſtimation of ſeveral other meaſures, as the ſeptier, mine, minot, buſhel, *&c.*

At Paris, the *muid* of wheat, pulſe, and the like, is compoſed of twelve ſeptiers, each ſeptier making two mines, the mine two minots, the minot three buſhels, the buſhel four quarts, or ſixteen litrons, each litron 36 cubic inches, exceeding our pint by $1\frac{31}{32}$ cubic inch.—The *muid* of oats is double that of wheat, though compoſed, like that, of 12 ſeptiers; but each ſeptier contains 24 buſhels.—The *muid* of charcoal contains 20 mines, ſacks, or loads, each mine two minots, each minot eight buſhels, each buſhel four quarts, *&c.*

Muid is alſo one of the nine caſks, or regular veſſels uſed in France, to put wine and other liquors in.—The *muid* of wine divided into two *demi-muids*, four *quarter-muids*, and eight *half quarter-muids*, contains 36 ſeptiers, each ſeptier 8 pints, Paris meaſure; ſo that the *muid* contains 288 pints. See Measure.

MULATTO *, a name given, in the Indies, to thoſe who are begotten by a negro man on an Indian woman; or an Indian man on a negro woman.

* The word is originally Spaniſh, *mulata*, formed of *mula*, a mule, as being begotten of two different ſpecies.

Thoſe begotten of a Spaniſh woman and an Indian man, are called *metis*; and thoſe begotten of a ſavage by a *metis*, are called *jambos*.—Theſe are all very different in colour, and in their hair.

MULCT, Mulcta, a penalty, or fine of money, impoſed for a fault or miſdemeanour. See Fine, Amercement, *&c.*

MULE, in natural hiſtory, a mongrel kind of quadruped uſually generated between an aſs and a mare; ſometimes alſo between a horſe and a ſhe-aſs.

Mules are a ſort of monſters; and, therefore, do not propagate their kind. See Monster.

And yet the antients mention a ſort of *mules* that were prolific, in Phrygia, Syria, Cappadocia, and Africa. Witneſs Ariſtotle, *Hiſt. Animal. l.* 6. *c.* 36. Varro *de re Ruſtica*, *l.* 2. *c.* 1. Columella, *l.* 7. *c.* 36. Theophraſtus, and, after him, Pliny, *l.* 8. *c.* 44. Steno, examining the teſticles of a *mule*, found *ova* therein, with a ſort of placenta about them; which perſuaded him that *mules* might engender without any miracle. But the obſervation is fanciful, and the concluſion unworthy ſo able a naturaliſt!

The Roman ladies had equipages drawn by *mules*; as appears from the medals of Julia and Agrippina. And at this day, in Spain, the coaches of the nobility, and even princes, are uſually drawn by no other than *mules*. We are aſſured that M. de Thou, firſt preſident of the parliament, had the fourth coach in France, in 1585; till which time every body rid to court, parliament, *&c.* on *mules*. See Coach.

Mules, among gardeners, denote a ſort of vegetable monſters produced by putting the farina fœcundans of one ſpecies of plant into the piſtil, or utricle of another. See Generation *of plants*.

The carnation and ſweet-william being ſomewhat alike in their parts, particularly their flowers; the *farina* of the one will impregnate the other: and the ſeed ſo enlivened will produce a plant differing from either.—An inſtance of this we have in Mr. Fairchild's garden at Hoxton; where a plant is ſeen neither ſweet-william, nor carnation, but reſembling both equally; which was raiſed from the ſeed of a carnation that had been impregnated by the farina of the ſweet-william.—Theſe couplings being not unlike thoſe of the mare with the aſs, which produce the *mule*; the ſame name is given them; and they are like the others, incapable of multiplying their ſpecies.

This gives us a hint for altering the property and taſte of any fruit, by impregnating one tree with the *farina* of another of the ſame claſs; *e. gr.* a codling with a pearmain, which will occaſion the codling ſo impregnated to laſt a longer time than uſual, and be of a ſharper taſte. Or if the winter-fruits be fecundated with the duſt of the ſummer ſeeds, they will decay before their uſual time. And from this accidental coupling of the *farina* of one with another, it may poſſibly be that in an orchard where there is variety of apples, even the fruit gathered from the ſame tree differ in their flavour, and in the ſeaſon of maturity. It is from the ſame accidental coupling that proceeds the numberleſs varieties of fruits and flowers raiſed every day from ſeed. See Farina and Seed.

MULIEBRIA, a term ſometimes uſed to ſignify the privities of women; or ſo much as is otherwiſe called *cunnus*.—See *Tab. Anat.* (*Splanch.*) *fig.* 9. See alſo Genital and Generation.

MULIER, in law, ſignifies lawful iſſue born in wedlock, but begot before. See Bastard.

If a man have a ſon by a woman before marriage, which is a baſtard and illegitimate; and he after marries the mother of the baſtard, and they have another ſon: this ſecond ſon is called *mulier* *, and is lawful, and ſhall be heir to his father. Theſe we ſometimes alſo find with the additions, *baſtard eigne*, and *mulier puiſne*.

* Some derive the word from the Latin *melior*, or French *meilleur*, better; in regard the condition of a ſon born thus is better than that of an elder brother born before wedlock. Though, according to Glanvil, the lawful iſſue is rather called *mulier* than *melior*, becauſe begotten on *mulieres*, and not on *concubinæ*: For he calls ſuch iſſue *filios mulieratos*; oppoſing them to baſtards.—Agreeable to which, Briton has *frere mulier*, i. e. the brother begotten of the wife; in oppoſition to *frere* baſtard.

The like ſeems to obtain in Scotland, where, according to Skene, *mulieratus filius* is a lawful ſon begot of a lawful wife.

Mulier was alſo antiently uſed as an addition for a wife; ſometimes alſo for a widow.—According to Coke, virgin is alſo included under the name *mulier*. See Addition, *&c.*

MULLER, or Mullar, denotes a ſtone flat and even at bottom, but round a-top; uſed for grinding of matters on a marble. The apothecaries uſe *mullers* to prepare many of their ingredients; and painters for their colours, either dry or in oil.

Muller is alſo an inſtrument uſed by the glaſs-grinders; being a piece of wood, to one end whereof is cemented the glaſs to be ground, whether convex, in a baſon, or concave, in a ſphere or bowl. See Glass, and Grinding.

The *muller* is ordinarily about ſix inches long, turned round; the cement they uſe is compoſed of aſhes and pitch.

MULLET, or Mollet, in heraldry, a bearing in form of a flat, or rather of the rowel of a ſpur, which it originally repreſented.

The *mullet* has but five points; when there are ſix it is called a *ſtar*.—Though others make this difference, that the *mullet* is, or ought to be, always pierced, which a ſtar is not.—*Vid. Tab. Heraldry, fig.* 71.

The *mullet* is uſually the difference, or diſtinguiſhing mark for the fourth ſon, or third brother, or houſe. See Difference.

Though it is often alſo borne alone, as coat-armour: Thus, Ruby on a chief pearl, two *mullets* diamond, was the coat of the famous lord Verulam, firſt Sir Francis Bacon.

MULSUM, Mulse, a liquor made of wine and honey; or even of honey and water. See Hydromel, Honey, *&c.*

MULTA, or Multura *epiſcopi*, a fine, or final ſatisfaction antiently given the king by the biſhops, that they might have power to make their laſt wills; and that they might have the probate of other mens, and the granting of adminiſtrations.

MULTANGULAR, a figure, or body which has many angles. See Angle and Polygon.

MULTILATERAL, in geometry, is applied to thoſe figures which have more than four ſides or angles, more uſually called *polygons*. See Polygon.

MULTINOMIAL, or Multinominal *roots*, in mathematics, are ſuch as are compoſed of many names, parts, or members; as, $a+b+c+d$, &c. See Root, Monomial, Binomial, *&c.*

For the method of raiſing an infinite *multinomial* to any given power, or of extracting any given root out of ſuch a power; ſee a method of M. de Moivre in *Philoſ. Tranſact.* N°. 230.

MULTIPLE, Multiplex, in arithmetic, a number which comprehends ſome other number ſeveral times. See Number, Equimultiple, and Submultiple.

Thus 6 is a *multiple* of 2; or, which is the ſame, 2 is a quota part of 6; 2 being contained in 6 three times. And thus 12 is a *multiple* of 6, 4, 3; and comprehends the 1ſt twice, the 2d thrice, the 3d four times, *&c.*

Multiple *ratio*, or *proportion*, is that which is between *multiple* numbers. See Ratio.

If the leſſer term of a ratio be an aliquot part of the greater; the ratio of the greater to the leſs is called *multiple*: And that of the leſs to the greater *ſub-multiple*.

A *ſub-multiple* number is that contained in the *multiple*. Thus the numbers 1, 2, and 3 are *ſub-multiples* of 6 and 9.

Duple, triple, *&c.* ratio's; as alſo ſub-duples, ſub-triples, *&c.* are ſo many ſpecies of *multiple* and *ſub-multiple* ratio's. See Duple, Triple, &c.

Multiple *echo*. See the article Echo.

MULTIPLICAND, in arithmetic, is one of the factors in the rule of multiplication; being that number which is given to be multiplied by another called the *multiplicator*, or *multiplier*. See Multiplicator.

MULTIPLICATOR, in arithmetic, a number multiplied by another called the *multiplicand*. See Multiplicand.

The largeſt number is ordinarily made the multiplicand, and placed above the ſmaller, or *multiplicator*; but the reſult is the ſame which ſoever of the numbers be made multiplicand or *multiplicator*; 4 times 5, and 5 times 4 making the ſame ſum. See Multiplication.

MULTIPLICATION, the act of *multiplying*, or increaſing the number of any thing. See Multiplying.

The *multiplication* of the loaves in the wilderneſs was one of our Saviour's greateſt miracles. The Romaniſts hold a real *multiplication* of the body of Chriſt in the euchariſt; ſo that every communicant has a whole body, *&c.*

It is ordained and eſtabliſhed, that none from henceforth ſhall uſe to *multiply* gold, or ſilver, nor uſe the craft of *multiplication*; and if any the ſame do, he ſhall incur the pain of felony. *Stat.* 5 *Hen.* IV. c. 4. See PHILOSOPHER'*s-ſtone.*

This ſtatute was made on preſumption that ſome perſons ſkilful in chymiſtry, could *multiply* or augment thoſe metals by elixirs, or other ingredients; and change other metals into very gold and ſilver.—Under Henry VI. letters patent were granted to certain perſons (who undertook to perform the ſame, and to find the philoſopher's ſtone) to free them from the penalty in the ſaid ſtatute.—But the ſtatute has been ſince repealed, 1 *Will. & Mar. c.* 30.

MULTIPLICATION, in arithmetic, the act, or art of *multiplying* one number by another, to find the product. See PRODUCT.

Multiplication, which is the third rule in arithmetic, conſiſts in finding ſome third number, out of two others given; wherein, one of the given numbers is contained as often as unity is contained in the other.

Or, *Multiplication* is the finding what will be the ſum of any number added to itſelf, or repeated, as often as there are units in another.—So that *multiplication* of numbers is a compendious kind of addition. See ADDITION.

Thus the *multiplication* of 4 by 5 makes 20, *i. e.* four times five amount to twenty; which algebraiſts expreſs thus, 4 × 5 = 20. See CHARACTER.

In *multiplication*, the firſt factor, *i. e.* the number to be multiplied, or the multiplicand, is placed over that whereby it is to be multiplied; (See MULTIPLICAND) and the factum or product under both.

An example or two will make the proceſs of *multiplication* eaſy.—Suppoſe I would know the ſum 269 multiplied by 8, or 8 times 269.

Multiplicand —— —— ——	269
Multiplier —— —— ——	8
Factum, or Product —— ——	2152

The factors being thus diſpoſed, and a line drawn underneath, (as in the example) I begin with the multiplicator thus: 8 times 9 make 72, ſet down 2, and carry 7 tens, as in addition; then 8 times 6 make 48, and 7 I carried, 55; ſet down 5, and carry 5; laſtly, 8 times 2 make 16, and with 5 I carried 21, which I put down: ſo as coming to number the ſeveral figures placed in order, 2, 1, 5, 2, I find the product to be 2152. See NUMERATION.

Now ſuppoſing the factors to expreſs things of different ſpecies, *viz.* the multiplicand men, or yards, and the multiplier pounds; the product will be of the ſame ſpecies with the multiplicator. Thus the product of 269 men or yards multiplied by 8 pounds or pence, is 2152 pounds or pence; ſo many of theſe going to the 269 at the rate of 8 a-piece. Hence the vaſt uſe of *multiplication* in commerce, *&c.*

If the multiplicator conſiſt of more than one figure, the whole multiplicand is to be added to itſelf, firſt, as often as the right-hand figure of the multiplicator ſhews, then as often as the next figure of the multiplicator ſhews, and ſo on.—Thus 421 × 23 is equal to 421 × 3 and alſo 421 × 20. The product ariſing from each figure of the multiplicator, multiplied into the whole multiplicand, is to be placed by itſelf in ſuch a manner, that the firſt or right-hand figure thereof may ſtand under that figure of the multiplicator from which the ſaid product ariſes. For inſtance;

Multiplicand —— —— ——	421
Multiplicator —— —— ——	23
Particular product of 421 × 3 ——	1263
Particular product of 421 × 20 —— ——	842
The total product —— ——	9683

This diſpoſition of the right-hand figure of each product, follows from the firſt general rule; the right-hand figure of each product being always of the ſame denomination with that figure of the multiplicator from which it ariſes.

Thus in the example, the figure 2 in the product 842, is of the denominations of tens, as well as the figure 2 in the multiplicator. For 1 × 20 (that is the 2 of 23) = 20, or 2 put in the place of tens, or ſecond place.

Hence, if either of the factors have one or more cyphers on the right-hand, the *multiplication* may be performed without regarding the cyphers, till the product of the other figures be found: To which they are to be then affixed on the right. And if the multiplicator have cyphers intermixed, they need not to be regarded at all.—Inſtances of each follow.

12|	358|	1|0	24|00	8013
1|0	6|000	1|0	3|0	5006
120	214 8000	100	72 000	48078
				40065
				40113078

Thus much for an idea of *multiplication*, where the mutiplicator conſiſts wholly of integers; in the praxis whereof, it is ſuppoſed, the learner is apprized of the product of any of the nine digits multiplied by one another, eaſily learnt from the common table, (See TABLE.) or otherwiſe.

There are alſo ſome abbreviations of this art.—Thus to multiply a number by 5, you need only add a cypher to it, and then halve it.—To multiply by 15, do the ſame, then add both together. The ſum is the product.

Expedients for the more eaſy and expeditious multiplying large ſums are ſliding rules and nepairs bones.—The want of which may be ſupplied by tabulating the multiplicand.

Where the multiplicator is not compoſed wholly of integers; as it frequently happens in buſineſs, where pounds are accompanied with ſhillings and pence; yards with feet and inches: the method of procedure, if you multiply by a ſingle digit, is the ſame as in ſimple numbers, only carrying from one denomination to another, as the nature of each ſpecies requires. *E. gr.* to multiply 123 *l.* 14 *s.* 9 *d.* 3 *q.* by five: Say, 5 × 3 *q.* = 15 *q.* that is, 3 *d.* 3 *q.* write down the 3 *q.* and proceed, ſaying, 5 × 9 = 45 *d.* that is 3 *s.* 9 *d.* ſet down the 9 *d.* and proceed in the ſame manner through the reſt.

If you multiply by two or more digits, the methods of procedure are as follow.—Suppoſe I have bought 37 ells of cloth at 13 *l.* 16 *s.* 6 *d. per* ell, and would know the amount of the whole.—I firſt multiply 37 ells by the 13 *l.* in the common method of *multiplication* by integers, leaving the two products without adding them up; then multiply the ſame 37 ells by 16 *s.* leaving, in like manner, the two products without adding them. Laſtly, I multiply the ſame 37 by the 6 *d.* the product whereof is 222 *d.* which divided by 12, (See DIVISION.) gives 18 *s.* 6 *d.* and this added to the products of the 16 *s.* the ſum will be 610 *s.* 6 *d.* the amount of 37 ells at 16 *s.* 6 *d.* the ell. Laſtly, the 610 *s.* 6 *d.* are reduced into pounds by dividing them by 20: (See REDUCTION.) upon adding the whole, the amount of 37 ells at 13 *l.* 16 *s.* 6 *d.* will be found as in the following.

	37 ells At 13 pounds.	37 ells At 16 ſhillings.	37 ells. At 6 pence.
	111	222	222
	37	37	
	30 10 6	18 6	
Product	511 10 6	610 6	

Or thus: Suppoſe the ſame queſtion; reduce the 13 *l.* 16 *s.* into ſhillings, the amount will be 276 *s.* reduce 276 *s.* into pence, adding 6, the amount will be 3318 *d.* Multiply the 37 ells by 3318, the amount will be 122766 *d.* which divided by 12; and the quotient 10230 *s.* 6 *d.* reduced into pounds by cutting off the laſt figure on the right, and taking half of thoſe on the left, yields 511 *l.* 10 *s.* 6 *d.* the price of the 37 ells, as before.

Though by theſe two methods any *multiplications* of this kind may be effected, yet the operations being long, we ſhall add a third much ſhorter.—Suppoſe the ſame queſtion: Multiply the price by the factors of the multiplicator, if reſolvable into factors: if not, by thoſe that come neareſt it; adding the price for the odd one, or multiplying it by what the factors want of the multiplier. So, the work will ſtand thus: 37 ells at 16 *s.* 6 *d.*: 6 × 6 = 36 × 1 = 37:

Therefore ——			6
	82	19	0
	497	14	0
	13	16	6
	511	10	6

The price of the 37 ells.

But the moſt commodious is the fourth method, which is performed by aliquot and aliquant parts—where you are to obſerve by the way, that *aliquot parts* of any thing are thoſe contained ſeveral times therein, and which divide without any remainder; and that *aliquant* parts are other parts of the ſame thing compoſed of ſeveral aliquot parts. See ALIQUOT and ALIQUANT.

To MULTIPLY *by aliquot* parts, is in effect only to divide a number by 3, 4, 5, *&c.* which is done by taking a 3d, 4th, 5th, *&c.* from the number to be multiplied. Example.

To multiply, *v. g.* by 6 *s.* 8 *d.* Suppoſe I have 347 ells of ribbon at 6 *s.* 8 *d. per* ell.

Multiplicand —— ——	347 ells.
Multiplicator —— ——	6 *s.* 8 *d.*
Product	115 *l.* 13 *s.* 4 *d.*

The queſtion being ſtated, take the multiplicator, which according to the table of aliquot parts is the third; and ſay, the third of three is 1, ſet down 1; the third of 4 is 1, ſet down 1, remains 1, that is, 1 ten, which added to 7, makes 17; then the third of 17 is 5; remains 2 units, *i. e.* two thirds, or 13 *s.* 4 *d.* which place after the pounds. Upon numbering the figures 1, 1, and 5, integers, and 13 *s.* 4 *d.* the aliquot part remaining, I find the ſum 115 *l.* 13 *s.* 4 *d.*

For MULTIPLICATION *by aliquant parts:* Suppoſe I would multiply by the aliquant part 19 *s.* I firſt take for 10 *s.* half the multiplicand; then for 5, which is the fourth, and, laſtly, for 4, which is the 5th. The products of the three aliquot parts that compoſe the aliquant part, being added together, the ſum will be the total product of the *multiplication*, as in the following example; which may ſerve as a model for *multiplication* by any aliquant part that may occur.

Multiplicand	——	356 ells.
Multiplier	—— ——	19 *s.*
		178 *l.* for 10 *s.*
		89 *l.* for 5 *s.*
		71 *l.* 4 *s.* for 4 *s.*
Product	—— ——	338 *l.* 4 *s.*

For the proof of MULTIPLICATION.—The operation is right when the product divided by the multiplier quotes the multiplicand; or divided by the multiplicand quotes the multiplier.—A readier way, though not abſolutely to be depended on (See ADDITION.) is thus: Add up the figures of the factors, caſting out the nines; and ſetting down the remainders of each. Theſe multiplied together, out of the factum, caſt away the nines, and ſet down the remainder. If this remainder agree with the remainder of the factum of the ſum, after the nines are caſt out; the work is right.

Croſs MULTIPLICATION, or otherwiſe called *duodecimal arithmetic*, is an expeditious method of multiplying things of ſeveral ſpecies, or denominations, by others likewiſe of different ſpecies, &c. *E. gr.* Shillings and pence by ſhillings and pence; feet and inches by feet and inches; much uſed in meaſuring, &c.—The method is thus.

Suppoſe 5 feet 3 inches to be multiplied by 2 feet 4 inches; ſay, 2 times 5 feet is 10 feet, and 2 times 3 is 6 inches: Again, 4 times 5 is 20 inches, or 1 foot 8 inches; and 4 times 3 is 12 parts, or one inch; the whole ſum makes 12 feet 3 inches.—In the ſame manner you may manage ſhillings and pence, &c.

F.	I.
5	3
2	4
10	6
1	8
	1
12	3

MULTIPLICATION, in geometry, or in lines, is effected by ſuppoſing a line *a b*, (*Tab. Geomet. fig.* 9.) called the *deſcribent*, moving perpendicularly along another *b c*, called the *dirigent*. See DESCRIBENT, &c.

For by this means the deſcribent forms the rectangle *a d c b*; and if it be divided together with the dirigent into any number of equal parts, will by its motion deſcribe as many little rectangles as the units in the deſcribent and dirigent will produce when multiplied into one another; *viz.* 21. See DIRIGENT.

For when the line *a b* hath moved over one part of *a d*, it will by its three parts have deſcribed the three little rectangles in the firſt column; when it comes to 2, it will have deſcribed three more. And this is the reaſon why *multiplication* in the Latin tongue is uſually expreſſed by the word *ducta*, drawn: (and from hence alſo comes *product*) as if *a b* were multiplied by *b c*, they ſay, *a b ducta* in *b c*, becauſe the deſcribent is led, as it were, or carried along in an exact poſture upon the dirigent, and by that means deſcribes the rectangle; ſo that the rectangle and product are all one in geometry.

Now, as in all *multiplication* unity is to one factor as the other is to the product, *multiplication* in lines may be performed thus. Let *a b* (*Fig.* 10.) be to be multiplied by *a d*.—Make any angle at pleaſure; on one of the legs ſet off *a u* = to unity; and on the ſame leg ſet off *u d*, the multiplicator (3); then ſet the multiplicand *a b* (2) from *a* on the other leg of the angle; draw *u b*, and parallel to it through *d*, draw *d c*, (6). I ſay, *d c* or 6, is the product: for *a u* : *a d* :: *a b* : *b c*.

MULTIPLICATION *of plants*. See FECUNDITY *of plants*.

MULTIPLICATIVES. See NUMERALS.

MULTIPLYING, in the animal œconomy, the producing of one's like. See GENERATION.

Mankind *multiplied* at a prodigious rate before the flood; rabbits, fiſh, and moſt inſects, *multiply* incredibly: The ſingle milt of a cod, examined with M. Leewenhock's microſcope, was found to contain more ova than there are animals on the face of the earth. See INSECT, ANIMALCULE, &c.

M. Dodart has ſeveral diſcourſes on the multiplication of plants in the *Memoirs of the royal academy of ſciences*. He has examined the beech-tree particularly with this view, and found its increaſe to ſurpaſs all imagination. See FECUNDITY.

MULTIPLYING, in arithmetic, is the finding a number which contains the multiplicand as often as there are units in the multiplier. See MULTIPLICAND, &c.

The rule of three conſiſts in *multiplying* the third term by the ſecond, and dividing the product by the firſt. See RULE *of three*.

MULTIPLYING-*glaſs*, a lens, or glaſs in which objects appear increaſed in number. See LENS.

A *multiplying-glaſs*, called alſo *polyhedron*, is a glaſs formed or ground into ſeveral planes, or faces, making angles with one another; through which the rays of light iſſuing from the ſame point undergo different refractions, ſo as to enter the eye from every ſurface in a different direction; as if they came from ſeveral points.

And thus the ſame point is ſeen in ſeveral imaginary foci; and therefore appears *multiplied*. See REFRACTION.—For the phænomena and laws of *multiplying-glaſſes*, ſee POLYHEDRON.

MULTISILIQUOUS *plants*, are the ſame with *corniculate plants*, *viz.* thoſe which, after each flower, have divers diſtinct, ſlender, and frequently crooked, ſiliquæ, or pods, wherein their ſeed is contained; and which when they ripen, open of themſelves, and let the ſeeds drop. See CORNICULATE and SEMINATION. See alſo PLANT.

MULTITUDE, MULTITUDO, an aſſemblage, or collection, of a great number of things, or perſons.

Multitude is properly the abſtract whereby things are ſaid to be *many*. See MULTUM.

In which ſenſe *multitude* may be conſidered as *number*; (See NUMBER.) and ſtands oppoſed to *unity*. See UNITY.

In law, ſome will have *multitude* to imply at leaſt ten perſons; but Sir Edward Coke ſays, he could never find it reſtrained by the common law to any certain number, but always left to the diſcretion of the judges.

A MULTO *fortiori*, or *à minore ad majus*, is a way of argumentation often uſed by Littleton; whoſe force is thus: If it be ſo in a feoffment paſſing a new right; much more is it for the reſtitution of an antient right.

MULTUM, in arithmetic.—If A be one, B one, C one, D one, &c. And B, C, and D be not the ſame with A; A, B, C, and D are *multa*, or *plura*, many. Wolfius.

MULTURA *epiſcopi*. See the article MULTA.

MUM, a wholeſome kind of malt liquor, chiefly prepared in Germany. See MALT-LIQUOR.

The proceſs of making *mum*, as recorded in the town-houſe of Brunſwick, the place of moſt note for this liquor, is as follows:

Take 63 gallons of water that has been boiled to the conſumption of a third part; brew it with ſeven buſhels of wheaten-malt, one buſhel of oat-malt, and one buſhel of ground beans; when it is tunned, let not the hogſhead be too full at firſt, and as ſoon as it begins to work, put into it of the inner rind of fir three pounds, tops of fir and birch one pound, carduus benedictus three handfuls, flower of roſa ſolis, one handful or two, burnet, betony, marjoram, avens, penny-royal, wild thyme, of each a handful and a half; of elder-flowers, two handfuls or more; ſeeds of cardamum bruiſed 30 ounces, barberries bruiſed one ounce: put the herbs and ſeeds into the veſſel when the liquor has wrought a while, and after they are added, let the liquor work over the veſſel as little as may be, then fill it up: at laſt, when it is ſtopt, put into the hogſhead ten new-laid eggs unbroken or cracked, ſtop it up cloſe, and drink it at two years end.

Our Engliſh brewers uſe cardamum, ginger, and ſaſſafras inſtead of the inner rind of fir; and add walnut-rinds, madder, red ſanders, and elecampane.

MUMMY *, MUMIA, a carcaſs, or body embalmed or dried in the manner of the antient Egyptians. See EMBALMING.

* Menage, after Bochart, derives the word *mummy* from the Arabic *mumia*; of *mum*, wax. Salmaſius, from *amomum*, a kind of perfume. (See AMOMUM.) Though others hold, that in the Arabic tongue, the word *mumia* ſignifies a body embalmed, or aromatized.

Properly ſpeaking, *mummy* is not the fleſh of the deceaſed, but the compoſition wherewith it is embalmed; but in common uſe *mummy* is alſo uſed for the body.

The preparation of *mummy* is of ſo old a ſtanding, that it was in uſe in Egypt before the time of Moſes. The coffin in which the *mummy* is contained is of ſycamore-wood, which is found to keep ſound for the ſpace of 3000 years; but it is very different from our ſycamore.

Mummy is ſaid to have been firſt brought into uſe in medicine by the malice of a Jewiſh phyſician, who wrote that fleſh thus embalmed was good for the cure of divers diſeaſes, and particularly bruiſes, to prevent the blood's gathering and coagulating. The Turks prevent the export of *mummy* into Europe as much as poſſible.

There are two kinds of bodies denominated *mummies*.—The firſt are only carcaſſes, dried by the heat of the ſun, and by that means kept from putrefaction; frequently found in the dry ſands of Lybia.—Some ſay, they are the bodies of deceaſed people buried there on purpoſe to keep them entire without embalming; others that they are the carcaſſes of travellers, &c. over-whelmed with clouds of ſand raiſed by the hurricanes frequent in thoſe deſarts. Be that as it will, theſe *mummies* are of no uſe in medicine, and are only preſerved as curioſities.

The ſecond kind of *mummies* are bodies taken out of the pits, or catacombs near Cairo, wherein the Egyptians depoſited their dead after embalming.—It is theſe make the *mummy* ſo much valued, and to which ſuch extraordinary virtues are aſcribed.

It is ſaid, that all the *mummy* ſold in the ſhops, whether brought from Venice or Lyons, or even directly from the Levant by Alexandria, is factitious, and the work of certain Jews, who knowing the value the Europeans ſet on the Egyptian *mummy*, counterfeit it by drying carcaſſes in ovens, after having prepared them with powder of myrrh, caballin aloes, Jewiſh pitch, black pitch, and other coarſe or unwholeſome drugs.

The French Charletans, it ſeems, have likewiſe got the art of preparing *mummies.* Their method is ſimple enough: Out of the carcaſs of a perſon hanged, they take the brain and entrails, dry the reſt in an oven, ſteeping it in pitch, and other drugs. And this they ſell for right Egyptian *mummy.*

Paræus has a very curious treatiſe of *mummies,* wherein he ſhews the abuſes thereof; and makes it appear that they can never be of any real medicinal uſe.

Matthiolus is of the ſame opinion, after Serapion. Both theſe authors take even the Egyptian *mummies* to be no more than bodies embalmed with piſſaſphaltum.

Mummy, *mumia,* is more particularly uſed for the liquor, or juice oozing from human bodies aromatized and embalmed; gathered in the ſepulchres.—This is the *mummy* chiefly ſpoke of among the antient writers.

Mummy alſo denotes a medicinal drug, or a viſcous compoſition partaking of bitumen and pitch, found in the mountains and foreſts of Arabia, and other hot countries of the eaſt; much uſed in embalming of dead bodies.

Dioſcorides ſpeaks of a *mummy* found on the ſea-coaſt near Epidaurus, brought thither by the torrents from the Ceraunian mountains, and there dried by the ſun into huge heaps.

It ſmells like bitumen mixt with pitch. The people thereabouts call it *mineral wax.*—In Latin, or rather Greek, it is called *piſſaſphaltus.* See Pissasphaltus.

Mummy, *mumia,* is alſo uſed by ſome phyſicians for I know not what implanted ſpirit, found chiefly in carcaſſes, when the infuſed ſpirit is fled.

The infuſed ſpirit is ſometimes alſo called *mummy* in living ſubjects; and both the one and the other are ſuppoſed to ſerve in tranſplantation. See Transplantation.

A plant, for inſtance, bringing this *mumia* from one ſubject to another, the *mumia* joins and unites itſelf immediately, with the *mumia* or ſpirit of the new ſubject; and from this union ariſes a natural and common inclination between the two ſubjects.—And on this principle they account for ſympathetic or magnetic cures. See Sympathetic, *&c.*

Mummy is alſo uſed among gardeners for a ſort of wax uſed in the planting and grafting of trees. See Wax.

Agricola directs the preparation thereof as follows: Take one pound of common black pitch, and a quarter of a pound of common turpentine; put them together in an earthen pot, and ſet them on the fire in the open air, having ſomething in your hand to cover and quench it in time; the matter to be thus alternately lighted and quenched till all the nitrous and volatile parts be evaporated. To this a little common wax to be added; and the compoſition to be ſet by for uſe.

To apply it in the dreſſing of the roots of trees, melt it, and dip in the two ends of the pieces of root one after another; then put them in water, and plant them in the earth, the ſmall end downward, ſo that the larger may appear a little way out of the earth, and ſo have the benefit of the air; then preſs the earth hard down upon them that they may not receive too much wet. See Planting.

MUNDANDIS *vicis & venellis.* See the article Vicis.

MUNDIBURDUS. See Advocate.

MUNDICK, a ſort of marcaſite, or mineral glebe, found in the tin-mines, ſometimes white, yellow, or green, but generally of a dark brown colour.

It is frequently called *maxy*; and appears to be nothing elſe but a kind of ſulphur; fire alone being found to ſeparate it from the tin, in which caſe it evaporates into ſmoke. See Tin.

The *mundick ore* is eaſily diſtinguiſhed by its brown, ſad-coloured glittering, and by its diſcolouring the fingers.—Some ſay it feeds the tin, and yet allow that where there is much *mundick,* there is little or no tin. Vid. *Gibſ. Addit. to Camd. Brit. in Cornwall.* The tinners ſeparated it with great care from the tin, becauſe it made it thick and curdy.—But of late it has been tried, and wrought ſingly, and is found to turn to very good advantage by affording copper.

The ſteams of the *mundic* are very troubleſome to the miners; yet it is found a good vulnerary; and the miners uſe no other remedy for wounds but waſhing them in water that runs from the *mundic ore.*

MUNDIFICATIVES, or Mundifyers, in medicine, denote *cleanſers, purifyers,* or *detergents.* See Detergent.

Mundificative plaiſters, or unguents, are ſuch as deterge, and dry, and thus cleanſe ulcers of two kinds of matter, *viz. pus* and *ſanies.* See Ulcer.

The chief ingredients in *mundificative* unguents, are gentian, ariſtolochia, enula campana, and vulnerary herbs. See Detergent.

MUNDUS, *world.* See the article World.

Anima **Mundi.** See the article Anima.

MUNERARIUS. See Designator.

MUNICIPAL *, Municipalis, or Municeps, an appellation given to the inhabitants of the municipia, or municipal cities.

* The word is compounded of *munus,* office, employ; and *capio,* I take or hold.

In the Roman law, *municipal* denotes a perſon veſted with the rights and privileges of a Roman citizen.

This title the Romans frequently beſtowed on foreign cities and people; and in effect, it was little more than a title.

Municipal *cities, municipia,* were thoſe whoſe inhabitants were capable of civil offices in the city of Rome.

Theſe, according to Mariana, came ſomewhat ſhort of the privileges of the colonies. See Colony.

They had no ſuffrages or votes at Rome; But were left to be governed by their own laws, and magiſtrates.—It is true, ſome few *municipal* cities, by particular merit, *&c.* obtained the liberty of votes, which occaſioned that received diſtinction of *municipium ſine ſuffragio, & municipium cum ſuffragio.*

They were ſo called, becauſe *muneris hujus honorarii participes;* but by *munus honorarium,* was meant no more than the bare appellation of a Roman, whereby they were privileged to fight in a legion, as denizens; and not in auxiliary bands, as aſſociates. See Citizen.—The firſt who had the honour, were the Cærites.

Municipal, among us, is now applied to the cuſtomary laws that obtain in any particular city, or province; and which have no authority in the neighbouring places. See Custom, and Law.

Municipal *officers,* are thoſe elected to defend the intereſts of cities, their rights and privileges, and to maintain order and good policy; as mayors, ſheriffs, conſuls, bailiffs, *&c.* See Office.

In Spain, the *municipal* offices are bought. In England, they are obtained by election. See Office, Venal, *&c.*

MUNIMENTS, or Miniments, the evidences or writings, whereby a man is enabled to defend the title of his eſtate. See Muniment-*houſe,* Writing, Document, *&c.*

Wrangford ſays, the word *muniment* includes all manner of evidence, deeds, charters, *&c.* See Evidence, *&c.*

Muniment-*houſe*, a little, ſtrong apartment in cathedral and collegiate churches, caſtles, colleges, or the like, deſtined for keeping the ſeal, evidences, charters, *&c.* of ſuch church, college, *&c.* called *muniments,* or *miniments.* See Archive.

MUNIMINA, the grants, or charters of kings, and princes to churches *, ſo called, becauſe *cum eis muniuntur* againſt all thoſe who would deprive them of thoſe privileges.

* The word is formed of the Latin *munio,* I defend, ſtrengthen.

MUNIONS, in architecture, the ſhort upright poſts or bars which divide the ſeveral lights in a window frame. See Window.

MUNITION, or Ammunition, the proviſions wherewith any place is furniſhed in order for defence; or wherewith a veſſel is ſtocked for a voyage; or that follow a camp for its ſubſiſtence. See Ammunition.

Munition-*bread* is the proportion of bread diſtributed every day to the ſoldiers of a garriſon or army.—Each officer is allowed ſo many rations of *munition-bread.* See Ration.

MUPHTI, or Mufti, the chief, or patriarch of the mahometan religion, reſiding at Conſtantinople. See Mahometanism.

The *muphti* is the ſovereign interpreter of the Alcoran, and decides all queſtions of the law. See Alcoran, &c.

He takes place of the baſhaws; and his authority is often terrible to the grand ſignior himſelf.—It is he girds on the ſword to the grand ſignior's ſide; which ceremony anſwers to the coronation of our kings.

MURAGE, Muragium, in our cuſtoms, a reaſonable toll to be taken of every cart or horſe coming laden into a city or town, for the building or repairing the walls thereof.

MURAL, ſomething belonging to a *wall;* which the Latins call *murus.* See Wall.

Mural *crown,* among the antient Romans, was a kind of crown indented a-top, like the battlements of a wall. See Crown.

The *mural crown* was the reward of thoſe who firſt mounted the walls of the enemy: whence it was alſo called *corona obſidionalis.*

Mural *arch,* is a wall, or walled arch placed exactly in the plane of the meridian, *i. e.* upon the meridian-line; for the fixing of a large quadrant, ſextant, or other inſtrument, to obſerve the meridian altitudes, *&c.* of the heavenly bodies. See Meridian-*line* and Meridian-*altitude.*

Tycho Brahe was the firſt who uſed a *mural-arch* in his obſervations; after him Mr. Flamſteed, de la Hire, &c. uſed the ſame means. See Coelestial, &c.

MURDER. See the article Murther.

MURDERING *battery.* See the article Battery.

Mure.—*Counter*-mure. See the article Counter-*mure.*

MURENGERS, two officers of great antiquity in the city of Cheſter, being two of the principal aldermen choſe yearly to ſee the walls kept in good repair, and to receive certain toll and cuſtom for the maintenance thereof.

MURING, the walling, or raiſing the walls of a building. See Wall.

MURORUM *domeſticus.* See the article Domesticus.

MURRAIN, *gargle,* a mortality, or contagious diſeaſe among cattle. See Mortality.

Murrains are occaſioned various ways, but principally by a hot, dry ſeaſon; or rather by a general putrefaction of the air, which begets an inflammation in the blood, and a ſwelling in the throat, which ſoon proves mortal, and is communicated from one to another.

The ſymptoms are generally a hanging down and ſwelling of the head, rattling in the throat, ſhort breath, palpitation of the heart, ſtaggering, abundance of gum in the eyes, *&c.* breath hot, and tongue ſhining.

The moſt remarkable *murrain* we hear of, is that mentioned in the *Philoſophical tranſactions*, which ſpread itſelf through Switzerland, Germany, into Poland, *&c.*

The contagion ſeemed to propagate itſelf in form of a blue miſt, which fell on the graſs where the cattle grazed, inſomuch that whole herds returned home ſick, and being very dull, and forbearing their food, moſt of them died away in twenty-four hours time. On diſſection were found large corrupted ſpleens, ſphacelous and corroded tongues, *&c.* Thoſe people who managed them, without a due regard to their own health, were infected by them, and died like the beaſts.

Some imagine it had its riſe from noxious vapours thrown out of the earth in three diſtinct earthquakes perceived in the neighbourhood of the place where it began: Though Dr. Slare rather thinks it owing to ſwarms of volatile inſects. The antidote for the ſound, and the medicine for the ſick, were the ſame, *viz.* equal parts of ſoot, gun-powder, brimſtone, and ſalt, with as much water as would waſh it down, a ſpoonful in a doſe.

MURREY, in heraldry, a kind of purple colour, called alſo *ſanguine.* See SANGUINE, and PURPURE

MURRHINE, MURRHINUS, ΜΟΡʽΡΙΝΟΣ, in antiquity, an appellation given to a delicate ſort of earthen or ſtone ware, brought from the eaſt, whereof cups and vaſes were made, which added not a little to the ſplendor of a Roman banquet.

Critics are divided concerning the matter of the *pocula* or *vaſa murrhina*, *murrina*, or *murrea.* Some will have them to have been the ſame with our porcelane, or china-ware. See PORCELANE.

The generality hold them to have been made of ſome precious kind of ſtone, which was found chiefly, as Pliny tells us, in Parthia, but more eſpecially in Carmania.—Some conjecture them to have been of agate, others of onyx, others of coralline: Baronius doubtleſs was fartheſt out of the way, when he took them to be made of myrrh congealed and hardened.

Pompey is recorded as the firſt who brought theſe *murrhine* veſſels out of the eaſt, which he exhibited in his triumph, and dedicated to Jupiter Capitolinus.—But private perſons were not long without them. So fond, in effect, did the Roman gentry grow of them, that a cup which held three ſextaries was ſold for ſeventy talents. T. Petronius before his death, to ſpite Nero, (or as Pliny expreſſes it, *ut menſam ejus exhæredaret*, to diſinherit his beaufet,) broke a baſon, *trulla murrhina*, valued at three hundred talents, on which that emperor had ſet his heart.

MURTHER *, or MURDER, the act of killing another with violence, injuſtice, and effuſion of blood. See HOMICIDE.

* The word comes from the Saxon *morth*, death; which ſome will have to ſignify a violent death; whence, the barbarous Latin, *murdrum*, and *mordrum.*

Among the number of popular errors, is the notion which has obtained, that the dead body would bleed in the preſence, or upon the touch of the *murtherer.*

The crime of *murther* is puniſhed with death in almoſt all nations. See PUNISHMENT.

MURTHER, in our law, denotes a wilful, and felonious killing another upon prepenſed malice, whether ſecretly or openly, and whether Engliſhman or foreigner, living under the king's protection.

This prepenſed malice, which makes the eſſence of *murther*, is two-fold: 1°. *Expreſs*, where it may be evidently proved that there was ill-will. 2°. When one kills another ſuddenly, he having nothing to defend himſelf withal; as in going over a ſtile, or the like: For in ſuch a caſe, or when a man kills a mere ſtranger, the law preſumes he had malice, or that he would not have done it without any manner of provocation.

Formerly, *murther* was reſtrained to a clandeſtine, and treacherous killing.—Thus, *Murdritus homo antiquitus dicebatur, cujus interfector neſciebatur ubicumque vel quomodocumque eſſet inventus. Nunc adjunctum eſt, licet ſciatur quis* murdrum *fecerit, homicidium per proditionem.* Leges Hen. I.—*Arthurem nepotem propriis manibus per proditionem interfecit, peſſimo mortis genere quod Angli* murdrum *appellant.* Matth. Paris, an 1216.

Self-MURTHER, is otherwiſe called *ſuicide.* See FELO *de ſe.*

MURTHERERS, or MURTHERING-*pieces*, are ſmall pieces of ordinance, either of braſs or iron, having chambers, (that is, charges made of braſs or iron) put in at their breeches. See CHAMBER, and ORDINANCE.

They are moſtly uſed at ſea, at the bulk-heads of the forecaſtle, half-deck, *&c.* in order to clear the decks when an enemy boards the ſhip.

MUSCADINE *, a rich wine, of the growth of Provence, Languedoc, Cividad, *&c.* See WINE.

* The word, as well as the liquor, is French: Some fetch its original from *muſk*; the wine being ſuppoſed to have a little of the ſmell of that perfume: others from *muſca*, a fly, becauſe the flies are extremely fond of its grapes; as the Latins had their *vinum apianum*, ſo called, *ab apibus*, from the bees which fed on it.

The way of making *muſcadine* at Frontignac is as follows: They let the *muſcadine* grapes grow half dry on the vine; as ſoon as they are gathered, they tread and preſs them immediately, and tun up the liquor, without letting it ſtand, and work in the fat; the lee occaſioning its goodneſs.

MUSCLE *, MUSCULUS, in anatomy, a fleſhy, fibrous part of the body of an animal, deſtined to be the organ or inſtrument of motion. See MOTION.

* The word is derived from the Greek μυς, or the Latin *mus*, a mouſe; on account of the reſemblance it is ſuppoſed to bear to a ſkinned mouſe.—Dr. Douglas will have it from μυειν, to ſhut or contract; that being the proper office of a *muſcle.*

The *muſcle* is a bundle of thin, parallel plates; and is divided into a great number of faſciculi, or little *muſcles*, each incloſed in its proper membrane, from the internal ſurface whereof, paſs an infinite number of tranſverſe filaments, which interſect the *muſcle* into ſeveral diſtinct areas, filled with their reſpective faſciculi of fibres.—See *Tab. Anat.* (*Myol.*) *fig.* 1, 2, 3, 5, 7, *&c.* See alſo the article FIBRE.

A *muſcle* is uſually divided into three parts, the *head*, the *tail*, and the *belly*.—The *head* and *tail*, which are alſo called *tendons*, are the two extremes of the *muſcle*; whereof the firſt is fixed to the ſtable part, and the latter to the part intended to be moved. See TENDON.

The *venter* or *belly* is the body of the *muſcle*, being a thick, fleſhy part, into which are inſerted arteries and nerves, and out of which iſſue veins and lymphæducts.

All theſe parts of a *muſcle*, the belly, and the tendons, are compoſed of the ſame fibres: Their only difference conſiſts in this, that the fibres of the tendons are more cloſely and firmly bound together than thoſe of the belly, which are more looſe. Hence in the belly there is room for a ſufficient quantity of blood to give them an appearance of redneſs; and the whiteneſs of the tendons only proceeds from the blood's being in ſome meaſure excluded by the tightneſs of their contexture.—The difference then between the belly and the tendons ſeems to be the ſame as between a ſkein of thread, and a cord made of the ſame thread.

All the *muſcles* act by having their bellies inflated or ſwell ed: for by that means they are ſhortened, ſo as to draw, or preſs the ſolid bodies to which they are faſtened, according to the direction of their fibres.—All the difficulty then in *muſcular* motion, is, to aſſign their fabric, and the cauſe of their ſwelling.

Every ſimple *muſcle*, then, conſiſts of one fleſhy belly, and two tendons; but may be again divided into others ſimilar, though leſs; and thoſe again into others ſtill leſs, yet ſtill ſimilar to the great one: Which diviſion may be carried on to a degree of ſubtility that exceeds all imagination; though it is reaſonable to think it muſt have an end.—That laſt, therefore, being ſimilar to the firſt, muſt, in like manner, have its *belly* and *tendons*; and this is what we ordinarily call a *muſcular fibre*, in an aſſemblage or union of ſeveral whereof, a *muſcle*, properly ſo called, conſiſts. See FIBRE.

Some take the *muſcular fibres* to be productions of the arteries and veins, or the capillaries of thoſe veſſels inoſculated with, and continued to each other; by the intumeſcence of whoſe contents, the extremities are drawn nearer each other, and by conſequence, the bone to which the moveable part is fixed, approximated to the other.—But that they are, in truth, neither venous, nor arterious, nor lymphatic veſſels, is evident from the laſt obſervation. Whether they are veſicular; or whether they only conſiſt of ſingle threads, may be ſtill a queſtion!

Dr. Boerhaave, from a conſideration that the nerves enter every *muſcle* along with its veins and arteries, and that there laying aſide their outer integument, they are ſo diſtributed through the whole body of the *muſcle*, as that no one point can be aſſigned wherein a part of them is not found; that thoſe nerves terminated here; and that in other parts of the body the extremities of the nerves are expanded, as it were, into membranes; concludes, that the *muſcular fibres* are nothing elſe but extremely ſlender expanſions of the nerves ſtript of their integument, hollow within, and of the figure of a *muſcle*, and full of a ſpirit communicated by the nerve from its origin in the brain or cerebellum, by the continual action of the heart. See NERVE.

Of theſe fibres united, are formed faſciculi or bundles; which, again, have each their ſeveral membrane, wherein they are involved, and kept diſtinct from others. This membrane is extremely ſlender and porous within, full of oil, which is accumulated in time of reſt, and ſpent in motion, furniſhed by the arteries; and this oil, in conjunction with a ſmooth mucous juice ſecreted by ſmall mucilaginous glands, interſperſed among theſe faſciculi, ſerves to lubricate the parts, and preſerve the faſciculi from fretting on each other.

Now, beſides the nerves, there are arteries alſo carried into the *muſcles*, and thoſe in ſuch abundance, and of ſuch contexture, that a man might be inclined to think the whole body of the

the *muſcle* compoſed of them.—Theſe are principally diſtributed among the faſciculi, and the membranes that ſeparate them, and perhaps alſo in the external ſurface of each fibrilla, where they terminate in reticular plexus's, in little oily ſecretories, ſmall lymphatics, and perhaps in hollow fibrillæ like nerves ; which fibrillæ may again either terminate in the cavity of the nervous muſcular fibres, or make others like them.—This, at leaſt, is clear, that every branch of an artery in the *muſcles* has its correſponding little vein, which united to the other, increaſes its bulk ; whence the blood-veſſels of the *muſcles* are alſo lymphatics.

Of two ſuch *muſcles* as have been deſcribed, faſtened in oppoſite ſituations to each other, moſt of the *muſcles*, or pairs of *muſcles* we know of, conſiſt.

It has been already obſerved, that the tendon of a *muſcle* conſiſts of the ſame number of fibres with the *muſcle* itſelf ; with this difference, that the cavities of the muſcular fibres diminiſhing, and loſing of their former diameter, form one compact, hard, rough, dry, narrow body, which is but little vaſcular.—From what has been ſaid then it appears, that the redneſs of a *muſcle* is owing to the blood ; and its bulk to the fulneſs of the arteries, veins, oily cells, and lymphatics.—Hence we ſee, why in old age, leanneſs, conſumptions, atrophies, conſtant heat, and hard labour, their redneſs as well as bulk are ſo diminiſhed ; and yet in old age, leanneſs, *&c.* the motion remains. This may be effected, when the *muſcles* have no redneſs left ; as appears in inſects, whoſe fleſh is not perceivable.

The fibres, faſciculi, arteries, and nerves, may be ſeparated from each other in a live or a dead body, without breaking : They are always in a degree of tenſion, and endued with a contractive force ; ſo that when cut aſunder, the ends fly back from each other ; and then they become ſhorter, their bulk is leſſened, and they contract themſelves into an undular kind of ſurface, and throw off their proper juices. Hence it appears that they are always in a ſtate of violence, are ever oppoſing their elongation, ever endeavouring to ſhorten themſelves, but more in a live body than in a dead one ; and therefore require antagoniſts.

If the brain be ſtrongly compreſſed, or have any violent contuſion ; if it be ſuppurated, obſtructed, or torn, the voluntary action of all the *muſcles* immediately ceaſes ; as well as all ſenſe and memory : however the ſpontaneous action of the *muſcles* in the heart, lungs, the viſcera, and vital parts, remains.—Theſe ſame alterations being made in the cerebellum, the action of the heart, lungs, and life itſelf, ceaſes ; when yet the vermicular motion continues a long time after in the ſtomach and inteſtines.

The nerve of any *muſcle* being compreſſed, tied up, corrupted, or cut, all the motion of that *muſcle*, both vital and voluntary, immediately ceaſes ; and if a nervous trunk ſending branches to ſeveral *muſcles*, be thus bound up, cut, *&c.* they are all affected in the ſame manner.—The ſame things being done in any part of the ſpinal marrow, the action of all the *muſcles* whoſe nerves ariſe from the part affected, is deſtroyed : And, the ſame thing being done to the artery which carries blood to one or more *muſcles*, the effect is the ſame.

The tendon of a *muſcle* in action, does not undergo any ſenſible alteration, but the belly ſhortens, becomes hard, pale, ſwoln, protuberant ; the tendons are approached nearer, and the more moveable part faſtened to the tendon, is drawn towards the other leſs moveable : which action of a *muſcle* is called its *contraction*, which is much greater and ſtronger than that inherent contraction obſerved under the firſt phænomenon ; and therefore is not natural, but ſuperadded.—The tendon of a *muſcle* not in action, is ſtill the ſame ; but the belly ſofter, redder, laxer, longer, and flatter : and this ſtate of a *muſcle* is called its *reſtitution*, though it is uſually owing to the contrary action of its antagoniſt ; for that being fruſtrated, the contraction of the other continues, as not being balanced by the action of an antagoniſt.

If one antagoniſt remain at reſt while the other is in action, the member in that caſe will be bent ; if both act at the ſame time, it will be fixed and immoveable ; if neither act, it will be indifferent, and ready to be moved whither the leaſt exceſs ſhall carry it.

All which changes are performed in the ſmalleſt moment of time, and in the whole *muſcle* at once ; ſo that they can paſs and repaſs reciprocally without leaving any trace in the body behind them.

By injecting warm water into the artery of a quieſcent *muſcle*, even that of a dead carcaſs ; its contraction is reſtored ; and that long after death.—The bulk of a *muſcle* is increaſed rather than diminiſhed by every experiment of its contraction.

A limb being bent, by ſome external force, againſt the will, the flexor *muſcle* of that member aſſumes a ſtate of contraction, as if acted by its proper motion ; though not altogether ſo ſtrenuouſly.—The will remaining indifferent, all the voluntary *muſcles*, and all their veſſels, are equally full, and moved by the blood and ſpirits equably conveyed to them, and that throughout the whole body at once.

For the application of this ſtructure of the *muſcles*, in accounting for the great phænomenon of muſcular motion, ſee Muscular *motion*.

As to the muſcular fibres, or, which comes to the ſame, the faſciculi of muſcular fibres, have not always the ſame ſituation with regard to each other, nor run in the ſame direction, but ſometimes run parallel to themſelves and their tendons ; and are ſometimes diſpoſed obliquely both to their tendons and to each other : hence there ariſe two different kinds of *muſcles*. The one direct, and parallel ; which ſome call *ſimple* Muscles. The other inclined, or oblique ; called *compound* Muscles.

Under the firſt of theſe kinds are included ſeveral other ſpecies : For, firſt, Either the fleſhy fibres run ſtrait from one extreme to the other, as in the *ſartorius*, *&c.* or are turned into a circle, as in the *ſphincters* of the bladder, and anus ; or twiſted into a ſpiral, as in the *oeſophageus :* And hence they come to be called *recti*, *orbiculares*, and *ſpirales.* See Recti, Sphincter, Orbicularis, *&c.*

The ſecond kind alſo includes various ſpecies, according to the various angles which the oblique fibres make with the tendons ; ſome inclining equally to each tendon, ſo as to form a rhombus, or acute angled parallelogram with them, whence the *muſcles* are called *rhomboidales* ; others riſing from two parallel tendons, are inſerted obliquely into one common tendon, as in the biceps of the hand ; laſtly, others ariſing from the periphery of the circle, concur in a centre, and form *muſcles* called *radiæi.* See Rhomboides, Radiæus, *&c.*

There are divers other ſpecies, and diviſions of *muſcles.*—Some authors diſtinguiſh them into *muſcles of voluntary*, and of *involuntary*, or *neceſſary motion.*

Muscles *of involuntary*, or *neceſſary motion*, have their contracting and extending powers within themſelves, and have no antagoniſt : ſuch are the heart and lungs ſuppoſed to be. See Heart, and Lungs.

Muscles *of voluntary motion*, which we more peculiarly denominate *muſcles*, and which are thoſe we have here chiefly regard to, have each of them their antagoniſt muſcles, which act alternately in a contrary direction ; the one being ſtretched and extended, while the other is contracted at the inſtance of the will. See Motion.

The *muſcles* have alſo different names from their different actions, ſituations, forms, *&c.* Thoſe which ſerve to move the ſame members contrary ways, are called *antagoniſts* ; and thoſe that concur to the ſame action, *fellows*, or *pairs.*

Digaſtric Muscles, are thoſe which have two bellies.—*Trigaſtrics*, thoſe with three. See Digastric, and Biventer.

Sphincter Muscles, are thoſe deſtined to ſhut ſeveral apertures and paſſages in the body ; as the *muſcle* at the neck of the bladder, and that of the anus, which have the ſame effect with the ſtring of a purſe to cloſe thoſe parts. See Sphincter.

Some *muſcles* have two or three heads, called *bicepes* and *tricepes.* See Biceps, Triceps, *&c.*

We call *elevators*, thoſe which lift up or raiſe the parts ; *depreſſors*, thoſe which move them downwards. See Elevator, *&c.*

Flexors, thoſe which bend them ; *extenſors*, thoſe which ſtretch them out ; *adductors*, thoſe which move the parts inwards ; *abductors*, thoſe which move them outwards ; *rotators*, thoſe which move them round. See Flexor, Extensor, Abductor, Adductor, Rotator, *&c.*

Muſcles have alſo different names from their different figure ; ſome reſembling a bat ; ſome a lizard ; and ſome a turbet : Some are triangular, others ſquare, others ſcalenous, others pentagonal, others pyramidal, round, *&c.* Whence the names of *deltoides*, *rhomboides*, *ſcalenus*, *trapezius*, &c. See Deltoides, Scalenus, Ttapezius, *&c.*

Anatomiſts are not agreed on the number of *muſcles* in the human body ; ſome reckon five hundred and twenty-nine ; ſome four hundred and forty-ſix ; and others only four hundred and thirty-five.—The calculus, according to theſe laſt, is as follows. Two of the forehead ; two of the occiput ; ſix of the eyelids ; twelve of the eyes ; ſeven of the noſe ; eight of the external ear ; four of the internal ear ; thirteen of the lips ; eight of the tongue ; four of the palate ; fourteen of the larynx ; ſeven of the pharynx ; ten of the os hyoides ; twelve of the under-jaw ; fourteen of the head ; eight of the neck ; eight of the omoplates ; eighteen of the arms ; twelve of the elbows ; eight of the radii ; twelve of the carpi ; forty-eight of the fingers ; fifty-ſeven of uſe in reſpiration ; ſix of the loins, ten of the abdomen ; two of the teſticles ; one of the bladder ; four of the penis ; four of the anus ; thirty of the thighs ; twenty-two of the legs ; eighteen of the feet ; forty-four of the toes.

The following table of the names and offices of the ſeveral *muſcles* in the body, is taken from Dr. Keil.

Frontales, ſerve to pull the ſkin of the forehead upwards.

Occipitales, pull the ſkin of the hind-head upwards.

Attolens }
Deprimens } *auricularum.*

Internus malleoli, diſtends the tympanum.

Externus malleoli, relaxes the tympanum.

Obliquus malleoli.

Muſculus ſtapedis, moves the ſtirrup.

Corrugator ſupercilii.
Rectus palpebræ ſuperioris, lifts up the upper eye-lid.
Orbicularis palpebrarum, ſhuts both eye-lids.
Attollens
Deprimens } *oculorum*
Abductor
Adductor
Obliquus major, pulls the eye forwards, and obliquely downwards.
Obliquus minor, pulls the eye forwards, and obliquely upwards.
Atolens
Dilatans } *nares.*
Deprimens
Inciſivus, pulls the upper lip upwards.
Triangularis, pulls it downwards.
Caninus
Elevator labii inferioris } pull the lower lip upwards.
Quadratus, pulls it downwards.
Zygomaticus, draws both lips obliquely to either ſide.
Orbicularis, draws both lips together.
Buccinator, thruſts the meat between our teeth.
Temporalis
Maſſeter } pull the jaw upwards.
Pterygoidæus internus, draws the jaw to either ſide.
Pterygoidæus externus, draws the jaw forwards.
Quadratus, pulls the jaw and the cheeks downwards.
Digaſtricus, pulls the jaw downwards.
Periſtaphylinus internus, pulls the uvula forwards.
Periſtaphylinus externus, pulls the uvula backwards.
Styloglоſſus, draws the tongue upwards.
Genioglоſſus, pulls it out of the mouth.
Ceratoglоſſus, pulls it into the mouth.
Geniohyoidæus, pulls the os hyoides and tongue upwards and forwards.
Sternohyoidæus, pulls the os hyoides downwards.
Milohyoidæus, pulls it obliquely upwards.
Coracohyoidæus, pulls it obliquely downwards.
Stylohyoidæus, pulls it to either ſide, and ſomewhat upwards.
Stylopharingæus, pulleth up, and dilateth the pharynx.
OEſophagæus, ſtreightens the pharynx.
Sternothyroidæus, pulls the thyroides downwards.
Hyothyroidæus, pulls the thyroides upwards.
Cricothyroidæus.
Cricoarytænoidæus poſticus.
Cricorytænoidæus lateralis.
Thyroarytænoidæus, dilates the glottis.
Arytænoidæus, contracts the glottis.
Splenius
Complexus } move the head backwards.
Rectus major
Rectus minor } nod the head backwards.
Obliquus inferior
Obliquus ſuperior } perform the ſemi-circular motion of the head.
Maſtoidæus
Rectus internus major
Rectus internus minor } nod the head forwards.
Rectus lateralis, nods the head to one ſide.
Intercoſtales interni & externi
Subclavius
Serratus anticus major } pull the ribs upwards in inſpiration.
Serratus poſticus ſuperior
Triangularis
Serratus poſticus inferior
Sacrolumbaris } make the motion of the ribs downward in expiration the ſwifter.
Diaphragma, uſed in inſpiration and expiration.
Obliquus externus
Obliquus internus
Tranſverſalis } compreſs the parts contained in the lower belly; aſſiſt the motion of the ribs downwards in expiration; and help to bend the vertebræ of the loins forwards.
Rectus
Pyramidalis
Longiſſimus dorſi, keeps the body erect.
Tranſverſalis dorſi, moves the body obliquely backwards.
Interſpinalis, draws the acute proceſſes near one another.
Quadratus lumbrorum, draws the vertebræ of the loins to one ſide.
Longus
Scalenus } bend the vertebræ of the neck.
Pſoas parvus, helps to bend the vertebræ of the loins.
Cremaſter, draws up the teſticles in the act of generation.
Erectores penis.
Tranſverſales penis.
Acceleratores urinæ.
Erectores clitoridis.
Sphincter veſicæ, contracts the neck of the bladder, that the urine may not run continually.
Levatores ani, draw up the anus.
Sphincter ani, ſhuts the anus.
Serratus anticus minor, draws the ſhoulder-blade forwards.
Trapezius, moves it upwards, backwards, and downwards.
Rhomboides, pulls it backwards.
Levator ſcapulæ, pulls the ſhoulder-blade upwards.
Deltoides
Supra-ſpinatus } lift the arm upwards.
Coracobrachialis
Teres major
Latiſſimus dorſi } pull the arm downwards.
Pectoralis, moves the arm forwards.
Infra ſpinatus
Tranſverſalis } draw the arm backwards.
Subſcapularis
Biceps
Brachiæus internus } bend the fore-arm.
Longus
Brevis
Brachiæus externus } extend the fore-arm.
Anconæus
Rotundus
Quadratus } perform the motion of pronation, or turn the palm of the hand downwards.
Longus
Brevis } perform the motion of ſupination, or turn the palm of the hand upwards.
Cubitæus internus
Radiæus internus } bend the wriſt.
Cubitæus externus
Radiæus externus } extend the wriſt.
Palmaris, helps the hand to graſp any thing cloſely.
Palmaris brevis, makes the palm of the hand concave.
Sublimis
Profundus } bend the fingers.
Extenſor digitorum communis.
Lumbricales, aſſiſt in bending the firſt joint of the fingers.
Interoſſei interni, draw the fingers to the thumb.
Interoſſei externi, draw the fingers from the thumb.
Flexor pollicis longus.
Flexor pollicis brevis.
Extenſor primi.
——— *ſecundi.*
——— *tertii internodii pollicis.*
Thenar, draws the thumb from the fingers.
Antithenar, draws the thumb to the fingers.
Abductor indicis.
Extenſor indicis.
Hypothenar, draws the little finger from the reſt.
Extenſor auricularis.
Pſoas
Iliacus } bend the thigh.
Pectinæus
Glutæus major
Glutæus medius } extend the thigh.
Glutæus minor
Triceps, pulls the thigh inwards.
Pyriformis
Gemini } move the thigh outwards.
Quadratus
Obturator internus
Obturator externus } help to move the thigh obliquely and circularly.
Seminervoſus
Semimembranoſus } bend the leg.
Biceps
Gracilis
Rectus
Vaſtus externus } extend the leg.
Vaſtus internus
Cruræus
Sartorius, makes the legs croſs one another.
Poplitæus, turns the leg ſomewhat inwards.
Membranoſus, turns it a little outwards.
Tibialis anticus
Peronæus anticus } bend the foot.
Gaſtrocnemii
Solæus } extend the foot.
Plantaris
Tibialis poſticus, moves the foot inwards.
Peronæus poſticus, moves the foot outwards.
Profundus
Sublimis } bend the four leſſer toes.
Lumbricalis
Longus
Brevis } extend the four leſſer toes.
Flexor pollicis.
Extenſor pollicis.
Thenar, draws the great toe from the reſt.
Antithenar, draws it to the reſt.
Flexor pollicis longus.
——— *brevis.*
Abductor minimi digiti
Interoſſei interni } draw the toes toward the great toe.
Interoſſei externi, draw them from the great toe.
Tranſverſalis, brings all the toes cloſe to one another.

MUSCOVITE *bible*. See the article BIBLE.

MUSCOVITE *coinage*. See the article COINAGE.

MUSCOVITE *coins*. See the article COINS.

MUSCOVITE *meaſures*. See the article MEASURE.

Muſcovite *moneys.* See the article Money.

MUSCULAR, or **Musculous**, ſomething that relates to the muſcles; or that partakes of the nature thereof. See Muscle.

In which ſenſe we ſay, *muſcular fibre*, *muſcular coat*, *muſcular fleſh*, *muſcular veins*, *muſcular arteries*, &c.

Muscular *arteries*, two *arteries* proceeding from the ſubclavians, and driſtributed among the hind-muſcles of the neck.

The ſame denomination is alſo given by ſome to certain arteries of the loins: Theſe are divided into *upper* and *under*.—*Muſculares ſuperiores*, the *upper-muſculars*, proceed from the large artery, and loſe themſelves in the fleſh.

The *under-muſculars*, *muſculares inferiores*, are branches of the inner illiac arteries. See Artery.

Muscular, *muſcularis*, is alſo a name given to two arteries of the thigh, the one called the *internal-muſcular*, as being diſtributed among the inner muſcles of the thigh; the other the *external-muſcular*, becauſe it proceeds to the outer part.

Muscular *fibres* are the fine threads, or fibres, already deſcribed, whereof the body of muſcles is compoſed. See Muscle.

Anatomiſts are exceedingly divided as to the nature of theſe fibres. Some will have them blood-veſſels, *viz.* veins and arteries; others nerves, &c. See Artery, Nerve, &c.

Some reſtrain *muſcular* fibres to the longitudinal and red, called alſo *fleſhy fibres*: The tranſverſe, and ſpiral ramifications wherewith the former are bound about, they call *nervous fibres*. See Fibre.

Dr. Morgan endeavours to prove, that all the fibres which enter the ſtructure and compoſition of a muſcle, are endued with an intrinſic elaſticity, ſpring, or power of contracting or reſtoring themſelves, as a given weight or force, by which they may be ſtretched; and that this elaſticity, or contractive reſtitutive power being a natural inherent property of the fibres themſelves, does not depend on the mixture, rarefaction, or effervescence of any fluids, or humours whatſoever. See Muscular *motion*.

Muscular *fleſh*. See *muſcular* Flesh.

Muscular *membrane*, *membrana* Musculosa, is a membrane ſuppoſed to inveſt the whole body, immediately under the adipoſe membrane; called alſo *panniculus carnoſus*, and *membrana muſculorum communis*. See Panniculus *carnoſus*, and Membrana *communis*.

Muscular *motion*, is the ſame with voluntary or ſpontaneous motion; thus called, becauſe effected by means of the contraction and dilatation of the muſcles. See Motion, Muscle, &c.

The mechaniſm of a *muſcle* we have delivered at large; but how this mechaniſm is employed to produce motion in animals, is matter of endleſs doubt.—The generality of writers ſuppoſe the belly of the *muſcle* to be ſwelled, and thus its extremes brought nearer; and conſequently the part it is fixed to, moved.

The ſtructure of a *muſcle* we have ſhewn to be ſuch as renders it capable of being ſwelled and contracted, and by that means of having its extremities brought nearer each other, which is its proper action: But how the contraction is effected, is the point in diſpute!

The generality account for it from the influx of ſome fluid into the muſcular fibres.—Others ſolve it from the natural elaſticity of thoſe fibres.—And the retainers to a fluid, are ſub-divided as to the particular fluid employed for this purpoſe.

From the ſtructure and phænomena of the *muſcles* above laid down, we may gather the properties of the hidden cauſe that moves the *muſcles*; *viz.* 1*ſt*, That it may either be preſent or abſent in a *muſcle*; and therefore, 2*dly*, May enter into it, and go out again: *i. e.* 3*dly*, It is derived to it from ſome other place, and paſſes from it elſewhere: And, 4*thly*, All this, by an inſtantaneous direction of the will: 5*thly*, And in the ſame moment of time, wherein the *muſcle* is contracted, muſt paſs from within outwards to every point of the ſurface of the *muſcle*; that is, 6*thly*, It muſt be at once equally diſtributed throughout the whole belly of the *muſcle*: And therefore, 7*thly*, fill and dilate the membranes of the fibres, change them from an oblong into a more ſpherical figure, lengthen their leſs diameter, and diminiſh their longer, and ſo draw the tendons nearer each other: *Laſtly*, That it muſt have its riſe from the cerebrum and cerebellum, the origin of the nerves, and be powerful enough to overcome thoſe obſtacles which here ſtrongly reſiſt it.—On the whole then, it muſt be a moſt fluid, ſubtile, active body, and be applied with ſome energy within the *muſcle*.

Now all the fluids in the body that have any pretenſions to theſe properties, that are any way qualified to produce the phænomena above, or that have been alledged as the cauſe of *muſcular motion*, are the *animal ſpirits*, (or, as our later writers call it, the *nervous juice*) and the *blood*: but as each of theſe ſingly ſcarce appears adequate to the effect, our authors have ſuppoſed them to mix in the *muſcles*, and each to contribute to the action of the other.—But the animal ſpirits ſeem to have the greateſt number of advocates, though their exiſtence was never yet fully proved; beſides that the manner of their action, as aſſigned by authors, ſeems to be arbitrary and precarious.

Some, with the learned Dr. Willis, make the tendons a receptacle for the ſpirits, which are raiſed at the inſtigation of the will, and ſent thence into the belly of the *muſcle*; where meeting with the active particles of the blood, they ferment, and cauſe an intumeſcence, and ſo contract the *muſcle*.

Others, among whom Des Cartes and his followers, allow no receptacle for them but the brain, and ſend them thence through the nerves like lightening at every ſummons of the will; becauſe they cannot allow the tendons to be a proper lodgment, on account of the cloſeneſs of their contexture, nor can believe that the animal ſpirits ſhould remain there unactive.

Others, among whom M. du Verney, imagine this intumeſcence may be without fermentation, by the animal ſpirits, and a juice from the arteries running into the tendons and fleſhy fibres, and extending them; as ropes, &c. ſwell in moiſt weather.

Dr. Chirac, and others, maintain, that every muſcular fibre, beſides its vein, artery, and nerve, has alſo from ſpace to ſpace, ſeveral little cavities, or pores of an oblong figure, when the *muſcle* is ſlack or flaccid; and that the blood circulating thro' the *muſcle*, is continually depoſiting into thoſe pores a ſulphurous recrement, abounding with alkaline ſalts; which meeting with the ſpirits that flow by the nerves into thoſe ſame oval pores, their nitro-aerial particles ferment with the ſaline ones of the ſulphurous recrement, and, by a kind of exploſion, ſo diſtend the pores, as to change the long oval figure into a round one: and thus the *muſcle* is contracted.

Borelli takes the fibres of a *muſcle* to conſiſt of a chain of rhombus's or lozenges, whoſe areas are enlarged or contracted as the nervous juice, with the lympha and blood, are let into, or forced out of them, at the inſtance of the ſoul.

Dr. Croon ſuppoſes every fleſhy fibre to conſiſt of a chain of little bladders, or globules, communicating with each other; into which the nutritious juice, and one or two more liquors entering, do, by means of the natural heat, make an efferveſcence; by which the body of the *muſcle* is extended, &c.

Dr. Cheyne takes the ſmall fibrillæ of the *muſcles* to be ſo many ſlender elaſtic canals, bound about by ſmall tranſverſe parallel threads, which divide the hollow fibrillæ into ſo many elaſtic cyſtes or veſiculæ, which are orbicular, being formed of two concave ſegments of a ſphere; into every one of which veſiculæ, an artery, vein, and nerve enter; the two firſt to carry and bring back the blood, the laſt to carry thither the liquidum nervoſum, or nervous juice, which mingling in the veſiculæ with the blood, does, by its acid pointed particles, prick and break the globules of the blood, ſo as to let out the impriſoned elaſtic air (contained in the globules) into thoſe little veſiculæ; whereby the elaſtic cells of the fibres will be blown up, and thereby their longitudinal diameters from cell to cell ſtraitned: and this muſt contract the length of the whole fibre, and ſo move that organ to which one of the tendons is fixed.

Dr. Keil, not contented with this theory, ſets up another, wherein the ſame ſtructure of the *muſcle* is ſuppoſed, and the ſame fluid; *viz.* the blood and nervous juice, the agents or inſtruments of contraction: but inſtead of the pungent particles of the nervous juice piercing the globules of blood, and ſetting at liberty the impriſoned elaſtic aura, he reſolves the whole into the power of attraction. See Attraction.

According to this author, the diſtenſion of the veſicles of the fibres is not owing to their being filled with a greater quantity of blood and animal ſpirits than before their contraction; but to a rarefaction ariſing from the mixture of thoſe two fluids, by means whereof they come to poſſeſs a greater ſpace.

To account for this rarefaction of the blood and ſpirits in the veſicles of the muſcular fibres, he ſuppoſes a ſmall globule of air between the particles of a fluid, which particles have a ſtrong attractive force, whereby they endeavour to come together: By preſſing every way equally on the globule of air, they will hinder its eſcape from between them. But the force whereby they endeavour to come together being vaſtly greater than that of gravity, the globule of air muſt be conſiderably condenſed; but the force of elaſticity being proportional to that of its condenſation, the force wherewith the airy globule endeavours to expand itſelf, will likewiſe be vaſtly great: ſo that if the niſus of the particles of the fluid to come together ſhould be taken off, the air between them would expand itſelf with a conſiderable force. Now, if upon the mixing of another fluid, the particles of the firſt fluid be more ſtrongly attracted to the particles of this other fluid, than they were before to one another, their niſus to one another will then ceaſe, and give the incloſed globule of air liberty to expand itſelf; ſo that the whole fluid will take up a greater ſpace than it did before: But when the particles of the two globules come to be united together, they will again incloſe the globule of air that lies between them, and, by their mutual attraction, ſoon bring it to its former ſtate of condenſation.

Now, that the blood contains a great number of globules of air, is evident from the great quantity it yields in the air-pump; and that the particles of the blood have a ſtrong attractive force, cannot well be denied.—Upon the meeting, then, of theſe two fluids in the veſicles of the fibres, the nervous juice, conſiſting of ſmaller particles than the blood, muſt, from what Sir I. Newton has proved of the rays of light, attract the particles whereof they are compoſed more ſtrongly than thoſe do one another; and conſequently the *niſus* of thoſe particles to one another ceaſing, the condenſed globule of air will expand itſelf with a conſiderable force; whereby each veſſel of the fibre will be diſtended, and conſequently, therefore, ſhortened; *i. e.* the whole *muſcle* will be contracted: but when the particles of the blood are well mixed with the nervous fluid, they will both together incloſe the globule of air again, and compreſs it into as ſmall a ſpace as it was before: And the contraction of the *muſcle* muſt immediately ceaſe, till freſh blood and ſpirits, ſtill ſucceeding one another, continue the inflation of the veſicles. But when a *muſcle* has been ſtrongly attracted for ſome time, the quantity of ſpirits ſpent being more than can be prepared in the ſpace of time by the glands which ſupply its nerves, the inflation of the veſicles muſt fall, and the *muſcle* grow feeble and weak.—And thus that ingenious author conceives the veſicles to be diſtended without any ebullition or efferveſcence; and their diſtenſion to ceaſe without any precipitation, or flying-off of the aerial globules through the pores of the *muſcles*.

He proceeds to ſhew how artfully the mechaniſm of the fibres is contrived for contraction.—It is a known experiment, that a bladder blown up and diſtended as to its capacity, but contracted as to length, will raiſe a weight to ſome determined height. Two bladders, therefore, thus blown up, and communicating with each other, he argues, will raiſe the weight double the height, and three bladders thrice the height, *&c.* So that if there were a ſtring of bladders joined together, of equal bulk, and like figures, the ſpace through which the weight would riſe, would be proportionable to the number of bladders, *i. e.* to the length of the ſtring.—Now each fibre of a *muſcle* conſiſting of an infinite number of ſmall veſicles, reſembles a chain or ſtring of bladders; ſo that the contraction of the *muſcle* is always proportionable to the length of its fibres. Farther, the veſicles whereof the fibres conſiſt being very ſmall, though one large bladder might raiſe a weight as high as ſeveral ſmall ones, yet the quantity of elaſtic fluid uſed in the inflation would in that caſe be much greater than where the weight is raiſed by a ſtring of ſmall ones.

For, ſuppoſing two bladders of ſimilar figures, but the diameter of the one triple that of the other; then will the one require twenty-ſeven times the quantity of elaſtic fluid to expand it that the other does, and will alſo expand to twenty-ſeven times the ſpace; and yet three of the leſs bladders joined together, (he goes on) will raiſe the weight to the ſame height that the bigger one does; but with nine times leſs expence of elaſtic fluid, and take up but a ninth part of the ſpace.—By diminiſhing, therefore the bigneſs of the veſicles, and increaſing their number, the force required to diſtend them, and the diſtenſion itſelf, may be diminiſhed in any given proportion, and come at laſt to be inſenſible. Suppoſe a bladder, *v. gr.* of a determinate bigneſs, can raiſe a weight a foot; a hundred bladders, whoſe diameters are each a hundredth part of the former, being blown up, will raiſe the weight to the ſame height; but the force required to inflate them, and the ſwelling of all put together, will be ten thouſand times leſs than of the large one.

Again, if a weight of a determined bigneſs can be raiſed to a certain height by a bladder, or one ſtring of bladders, to which the weight is tied; twice that weight may be raiſed by two ſuch bladders, or ſtrings; thrice by three, *&c.* and, conſequently, the weight a *muſcle* can raiſe, will be always as the number of its fibres, *i. e.* as its thickneſs, ſuppoſing the diſtenſion of the veſicles equal, and the abſolute ſtrength of one *muſcle* to that of another, as their bulks.—Thus much for the once flouriſhing ſyſtem of the chain of bladders; which being liable to very great difficulties as to the geometricity of it, has of late given way to others.

Dr. Boerhaave finding all the requiſites before laid down, for the action of the *muſcles* in the nervous juice, or animal ſpirits, and in no other fluid in the body, thinks it needleſs to have recourſe to a mixture of ſeveral liquors where one will do; and therefore makes no ſcruple to attribute the whole buſineſs to it alone.—The manner of action he conceives thus:

Suppoſe the ſpirit, from any cauſe, to be moved more ſwiftly from the origin of ſome one nerve, than through the reſt; the influx will here be greater into the *muſcular* fibre open to this nerve than into another: This will therefore be more dilated; and the other phænomena mentioned above, will ſucceed. The ſame cauſe continuing, the effect will be increaſed, ſo that in a moment of time, the whole will be ſwelled up; and while the ſame determination laſts, will remain contracted: And this obtaining in an infinite number of fibrillæ at once, the whole muſcle will be inflated.

Hence it neceſſarily follows, that as the celerity is increaſed in one nerve, the motion will be leſs in another; this therefore being relaxed, the effort in contraction will be the ſtronger. For which reaſon, all the turgid fibres of a muſcle will compreſs the intermediate ſpaces and blood with a great force; whence the veins will be emptied, and the arteries being compreſſed, will repell the groſſer, that is, the red parts of the blood, but will drive the more ſubtile parts by the force of the heat and their own, into the moſt minute canals; and thus the cruor being expelled, the whole body of the muſcle will be found to act by a ſubtile humour concurring from the nerves and arteries.

Thus are all the phænomena accounted for; without any other aſſumption than an accelerating force in the origin of the nerves; which is common to all hypotheſes, and which cannot be traced any further.

All other ſyſtems, therefore, Boerhaave abſolutely rejects; nor makes the leaſt account of Galen's incorporeal power inflating the muſcles; the nitrous ſpirit of the nerves mixing with the oil of the blood, and ſo rarifying it; the acid parts of the nervous juice mixing with the alcalious ones of the blood; the ebullition of the air, and the arterious juice; and the increaſe or diminution of attractive force of the minute corpuſcles of the humours, as repugnant to ſenſe, experience, the laws of matter, and of mixture, and to the phænomena of the muſcles.

Dr. Aſtruc has gone a good way towards proving the nervous juice alone concerned in *muſcular motion*; and that the blood has no ſhare in it; by the following experiment, which he tried ſeveral times with the ſame ſucceſs.

Cutting open the abdomen of a live dog, and removing the inteſtines out of the way, he bound up the aorta where it divaricates into the iliac arteries, with a thread, ſo as to conſtringe each iliac and the hypogaſtric artery very cloſely; then ſewing up the epigaſtric muſcles, he found the ſenſation and motion ſtill as briſk and vivid in the dog's poſteriors, as before. So that when once ſet at liberty, he ſtood on all four, and walked with his uſual eaſe and firmneſs; though it is certain there could not be one drop of blood conveyed to thoſe hind parts.

Aſtruc, however, differs from Boerhaave in the manner wherein this nervous juice acts; nor will allow that celerity, wherewith the muſcles act at the command of the will to be owing to the velocity of the juice ſent through the nerve, but to an impreſſion given to one extremity of the thread, and communicated through all the intermediate parts to the other extremity; ſuppoſing the nerves in their natural ſtate to be turgid, and full of ſpirits: ſo that if the extremity in the ſenſory be ever ſo little preſſed by the acceſſion of any new ſpirit, as much will be inſtantly expelled at the other extreme; and *vice verſa*, a ſmall impreſſion given to the outer extremity of the nerve, will immediately move the other extreme open to the ſenſory, ſo that part of it will drop out: Which accounts for ſenſation as well as *muſcular motion*. See SENSATION.

Laſtly, Dr. Lower, and Mr. Cowper, and after them, Dr. Morgan, and other of the lateſt writers on that ſubject, ſetting aſide all adventitious fluids, account for *muſcular motion* from the intrinſic elaſticity of the nervous fibrillæ contracting and reſtoring themſelves againſt the ſtretching force of the circulating blood.

This ſyſtem, Morgan endeavours to evince from the following conſiderations.—1°. All the veſſels in an animal, conſiſting of flexible, diſtractile fibres, are in a ſtate of tenſion; *i. e.* are both ſtretched tranſverſly and longitudinally by their contained fluids: Thus, *e. gr.* let a vein, or artery be cut, and the oppoſite ſides of the veſſel will contract, and come nearly to a contact about the axis; while the two ends receding both ways, leave a chaſm: which ſhews that the veſſel, while in its natural ſtate, was diſtended both ways; and, conſequently, that contraction, in all their dimenſions, is the natural intrinſic action of the veſſels or fibres.

And the ſame might be deduced, *à priori*, from the growth of animals; for by the increaſed quantity of the accumulated blood, the veſſels muſt neceſſarily be enlarged every way. Now, againſt this diſtending power of the fluids, the ſolid *muſcular* fibrillæ continually exert a contractive, or reſtitutive force, by which they are kept in their proper ſtate of tenſion.

2°. That this contractive power of the *muſcular* fibres is a natural intrinſic property of the fibres themſelves, and does not depend on any mixture, or mutual action of fluids, is evident from hence, that theſe fibres retain the ſame property, after they are taken out of the body and dried; as we ſee in thongs, cat-gut, and other ſuch like cords or ſtrings cut out of the *muſcular* coats and ſkins of animals, which may be ſtretched out to a conſiderable length beyond their natural ſtate; and when the ſtretching force or weight is taken off, they will immediately contract again by their native ſpring.

3°. While a muſcle contracts, the blood is ſqueezed out, and during its ſtate of contraction, it is more hard and ſolid than before; that is, contains leſs blood when contracted, than when ſtretched; which ſhews, that the contraction cannot be by the addition of another fluid from the nerves mixing with the blood in the muſcles.

4°. No ſuch fluid in the nerves could ever be found, as being mixed with the blood, would occaſion ſuch fermentation or expanſion. But ſuppoſing the *muſcular* cells thus inflated, no ſuch effect could follow as ſhortening the muſcle in length, and ſwelling it in thickneſs: But the conſequence muſt be, that the muſcle would be lengthened as well as thickened; that is, it muſt increaſe its dimenſions proportionably every way, which is the proper action of fluids on the ſolids.

If then it be ſaid, that theſe bladders, when the muſcle is ſtretched, are drawn into oblong ſpheroids; and when inflated, by the mixture of the nervous fluid, reduced to a ſpherical figure, by which means their axes are ſhortened, and their conjugate diameters enlarged: It is anſwered, that thoſe ſmall veſicles are ſoft, flexible, diſtractile, and equally yielding every way; and ſince an included expanſive fluid muſt preſs its containing veſſels equally yielding every way, and equally expanſive; a veſſel, notwithſtanding ſuch diſtenſion, muſt retain its natural figure, and be equally ſtretched in all directions.

Again, Since the blood circulates freely through theſe *muſcular* cells, it is plain, that as ſoon as they begin to inflate, it muſt be immediately puſhed forward with an increaſed velocity in the courſe of its circulation, which muſt prevent any ſuch inflation in the muſcles. Before theſe veſicles, therefore, can be diſtended in the manner ſuppoſed, the exit of the fluid muſt be hindered; that is, the circulation muſt be ſtopped. If any one doubt of this, let him try whether he can blow up a bladder, or other veſſel, that is open at both ends, and where the expanſive fluid has as free an egreſs as ingreſs.

Thus much premiſed, the natural action of a muſcle will be eaſily explained. From its ſtructure, it follows, that on the contraction of its tranſverſe and ſpiral fibres, which are the ramifications of the nerves, the longitudinal, red, and fleſhy fibres, or blood-veſſels, which conſtitute the body of the muſcle, muſt be ſqueezed and drawn together, as being compelled to follow the motion of theſe elaſtic cords; by which means the blood being compreſſed, muſt be forced, with ſome impetuoſity, through the muſcle, and propelled forward in the courſe of its circulation.

Now if the blood ſhould hereupon ſtop, and return no more to the muſcle, it is plain the muſcle muſt for ever remain in this contracted ſtate, as its proper and natural ſtate of quieſcence to which it tends, and where it would reſt: But the blood having received a freſh impetus by the contraction, and returning upon the muſcle in the courſe of its circulation, again ruſhes into the blood-veſſels, which being inlarged in all their dimenſions by the force of the returning blood, the tranſverſe and ſpiral nervous fibres muſt be hereby ſtretched, and the muſcle extended: till by this means the blood-veſſels being brought to their natural extent, and conſequently the diſtending force of the blood ceaſing, the contractive power of the nerves begins to act again, and reſtore them with the ſame force by which they were extended; till the returning blood re-enters the muſcle, and ſtretches it again.

Muscular *conſumption.* See the article Consumption.

Muscular, is alſo an appellation given to ſeveral veins; two whereof come from the ſkin and the hind-muſcles of the thigh, and terminate in the ſubclavians. See Vein.

There are three others in the loins alſo called *muſculares*, and diſtinguiſhed into *upper*, *middle*, and *under*; the firſt terminates in the trunk of the vena cava, and the two others open into the external iliac vein.

Musculi *aliformes*.	See	Aliformes.
Musculi *amatorii*.		Amatorii.
Musculi *annuentes*.		Annuentes.
Musculi *vermiformes*, *&c.*		Vermiformes, *&c.*

MUSCULOUS. See the article Muscular.

MUSEUM, ΜΟΥΣΕΙΟΝ, was originally uſed to ſignify a place in the palace of Alexandria, which took up at leaſt a fourth part of the city; ſo called, as being deſtined and ſet apart to the *muſes*, and the ſciences. See Muse.

Here were lodged and entertained a great number of learned men, who were divided into companies or colleges, according to the ſciences or ſects whereof they were profeſſors.—And to each houſe or college was allotted a handſome revenue.—This eſtabliſhment is attributed to Ptolemy Philadelphus, who here fixed his library. See Library.

Museum has hence paſſed into a general denomination; and is now applied to any place ſet apart as a repoſitory for things that have ſome immediate relation to the arts, or the muſes. See Repository, Cabinet, *&c.*

The Museum *at Oxford*, called the *Aſhmolean muſeum*, is a noble pile erected at the expence of the univerſity, for the promoting and carrying on ſeveral parts of curious and uſeful learning.—It was begun in 1679, and finiſhed in 1683; at which time a valuable collection of curioſities was preſented to the univerſity by Elias Aſhmole, Eſq; and the ſame day there repoſited, and afterwards digeſted and put in a juſt order by Dr. Plott, who was conſtituted firſt keeper of the *muſeum*.

Divers conſiderable acceſſions have been ſince made to the *muſeum*; as of hieroglyphics, and other Egyptian antiquities, by Dr. Huntingdon; and of an entire mummy by Mr. Goodyear; of a cabinet of natural rarities by Dr. Liſter; alſo of divers Roman antiquities, altars, medals, lamps, *&c.*

Over the entrance of the *muſeum* is this inſcription; MUSEUM ASHMOLEANUM, SCHOLA NATURALIS HISTORIÆ, OFFICINA CHYMICA.

MUSES *, Musæ, ΜΟΥΣΑΙ, fabulous divinities of the antient heathens, who were ſuppoſed to preſide over the arts, and ſciences. See God, *&c.*

The antients admitted nine *muſes*, and made them the daughters of Jupiter and Mnemoſyne, or Memory. At firſt, indeed, their number was but three; *viz.* Melete, Mneme, and Aæde; Greek words ſignifying memory, ſinging, and meditation. But a certain ſculptor of Sicyon having orders to make three ſtatues of the three *muſes* for the temple of Apollo, and miſtaking his inſtructions, made three ſeveral ſtatues of each *muſe*; theſe however were found ſo beautiful, that they were all ſet up in the temple, and from that time they began to reckon nine *muſes*: To whom Heſiod afterwards gave names; viz. *Calliope*, *Clio*, *Erato*, *Thalia*, *Melpomene*, *Terpſichore*, *Euterpe*, *Polyhymnia*, and *Urania*.

Each of theſe were ſuppoſed to preſide over their reſpective art; Calliope over heroic poetry; Clio over hiſtory; Melpomene over tragedy; Thalia over comedy; Euterpe over wind-muſic, Urania over aſtronomy; Terpſichore over the harp; Erato the lute; Polyhymnia rhetoric.

They are painted young, handſome, and modeſt, agreeably dreſſed and crowned with flowers. Their uſual abodes were about mount Helicon in Bœotia, and mount Parnaſſus in Phocis. Their buſineſs was to celebrate the victories of the gods, and to inſpire and aſſiſt the poets; and hence the cuſtom of invoking their aid at the beginning of a poem. See Invocation.

It muſt not, however, be imagined, that the deities thus invoked, are conſidered even by the antient poets themſelves as divine perſons, from whom they expect any real help. Under the name of *muſe* they pray for the genius of poetry, and all the talents and circumſtances neceſſary for a happy execution of their undertaking.

Their addreſſes to the *muſes* are mere allegories, and manners of expreſſing themſelves poetically; as when they make gods of ſleep, of fame, of revenge, and other natural and moral things. See God.

Accordingly, the *muſes* are of all ages, countries, and even of all religions. There are chriſtian as well as heathen *muſes*, Latin, Greek, Engliſh, and French *muſes*. There are alſo *new muſes*, which appear every day in favour of thoſe who, diſdaining things too trite and common, chuſe to ſtrike out of the road.

When Virgil wrote his eclogues, he invoked the Sicilian *muſes*, becauſe he imitated Theocritus; and the Sicilian poet having ſucceeded, the Roman begged for a genius as happy as that of this iſlander.

The *muſes* of the poet Lucretius had never inſpired any perſon before him. It is plain, from the doctrine of his book, what kind of divinity it was he invoked. He addreſſes himſelf to Venus, but at the ſame time tells us, that none of the deities trouble themſelves with human affairs. His *muſes* therefore muſt of neceſſity be mere allegories.

MUSHROOM, or Mushrom, in natural hiſtory, a plant, of a form and ſtructure very different from that of all other plants; having neither ſeeds nor flowers that have ever yet been diſcovered. See Plant, Seed, *&c.*

There are various kinds of *muſhrooms*; and the vulgar call by this name all that come under the general head of fungus's; by the Greeks called μυκητες.

They are all uſed with ſome ſuſpicion, though ſome are more harmleſs, as well as more delicious, than others. Thoſe uſed among us, are *muſhrooms of the wood*, called *morilles*; and *of the meadows*, called *champignons*; which are gathered in autumn, and eſteemed for their whiteneſs above, their carnation underneath, and the ſweetneſs of their ſmell.

Mr. Bradley mentions a hundred kinds of *muſhrooms*, which he has ſeen in England; beſides thoſe very numerous ſmall ones, which conſtitute the mouldineſs of liquors, fruits, *&c.* which laſt are ſuch quick growers, that they arrive at perfection in leſs than twelve hours. See Mouldiness.

The fungoides only differs from a *muſhroom* in its external form; the coralloides are of the ſame ſpecies, though of a different name, as being branched like coral; and truffles come under the ſame kind. See Truffles, *&c.*

Matthiolus mentions *muſhrooms* which weighed thirty pounds each, and were as yellow as gold. Fer. Imperatus tells us he ſaw ſome which weighed above a hundred pounds; and, to add no more, the *Journal des ſcavans* furniſhes us with an account of ſome growing on the frontiers of Hungary which made a full cart load.

The origin and production of *muſhrooms* has extremely puzzled the botaniſts. How a plant ſhould be produced without a ſeed, is a myſtery; and yet the beſt microſcopes are not able to diſcover any appearance of a ſeed; and the manner of cultivating this plant, ſeems to make it ſtill more probable that it has not any. See Seed.

M. Tournefort gives a very curious account of their culture, in the *Memoirs of the royal academy*, with the ſubſtance of which we ſhall here preſent the reader.—All the ſecret of bringing up *muſhrooms* ſpeedily and in abundance, conſiſts in ranging balls of horſe-dung about the bigneſs of the fiſt, in lines, at the diſtance of about three feet from each other, and at the depth of one foot under ground, and covering theſe over with mould, and that again with horſe-dung.

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* The word, according to Phornutus, is derived from the Greek, μωσθαι, which ſignifies the ſame with ζητειν, to ſearch: Others derive it from ὁμωυσιος, ſimilar, or alike; all the ſciences being bound and united together: Euſebius derives it from μυεω, to initiate, to inſtruct: Plato and Scaliger from μαιωθαι, *obſtetricare*, becauſe to them are attributed the invention of arts; and it is they who produced them. Laſtly, Heinſius and Voſſius derive it from the Hebrew, מושר muſar, ſcience, *diſciplina.*—The *muſes* are called by various names; *Camenæ*, *Heleconiades*, *Parnaſſides*, *Aonides*, *Pierides*, *Pegaſides*, *Aganippides*, *Theſpiades*, *Libethrides*, and *Caſtalides*.

If this be done in April, in the beginning of Auguſt the pieces of dung will begin to whiten, and grow mouldy, being covered all over with little hairs, or fine white threads, branched, and woven about the ſtraws whereof the dung is compoſed. The dung now loſes its former excrementitious ſmell, and ſpreads an admirable odour of *muſhrooms*.

According to all appearance, theſe white threads are no other than the opened ſeeds or buds of *muſhrooms*, which ſeeds were before incloſed in the dung, but in ſo ſmall a compaſs, that they could not be perceived till after they had ſhot themſelves into little hairs. By degrees the extremity of theſe hairs grows round into a kind of button, which ſwelling by little and little, at length opens itſelf into a *muſhroom*, whereof the lower part is a kind of pedicle bearded in the place where it enters the ground, and at the other end loaden with a roundiſh capital or head, in the manner of a calotte, which expands itſelf without producing either ſeeds or flowers that are ſenſible; the bottom is ſpread with laminæ, which proceeding from the centre to the circumference, may be called the *leaves of the muſhrooms*.

At the foot of each *muſhroom* are found an infinite number of little ones not bigger than the head of a pin, when the others are at their growth. The buds of the *muſhrooms*, or the white hairs of the dung, preſerve themſelves a long time without rotting, if kept dry; and if laid again on the ground, will produce new *muſhrooms*.

Muſhrooms, then, are nothing elſe but the produce of what we call the *mouldineſs of horſe-dung*: But what analogy is there between theſe two things? Or how ſhould ſo artful and delicate a ſtructure as this of a plant reſult from the mere fortuitous concourſe of a few juices, differently agitated?

It ſeems paſt doubt then, that *muſhrooms*, like all other plants, have their origin in ſeeds: Now we know that the ſeeds of plants cannot vegetate every where; there are firſt required certain juices proper to penetrate their coats, to excite a fermentation, and to join themſelves to the little parts thereof, and increaſe them. Hence ariſes that infinite diverſity of places, wherein different ſpecies of this plant are produced. There are ſome which will only grow on ſome other particular plants, whoſe trunk, bark, or roots, alone have the juices proper for them.

What M. Tournefort mentions from Meſſ. Lemery and Mery, is ſtill more ſurprizing: There is a ſpecies of *muſhrooms* which grow on the fillets and bandages applied to the fractures, *&c.* of the patients in the Hotel-Dieu. After which, it will not be at all ſurprizing that horſe-dung prepared in the manner M. Tournefort mentions, ſhould be a ſoil or matrix capable of making common *muſhrooms* grow.

Hence it ſeems to follow, that the ſeeds of *muſhrooms* ſhould be ſpread in an infinite number of places where they do not vegetate, and in a word throughout the whole earth; and the ſame may be ſaid of a great number of other plants. See Seed, and Semination.

It muſt be owned, the imagination is ſhocked at ſuch a prodigious multitude of different ſeeds thrown every where at random, and in many places to no purpoſe; but a little reaſoning will put the matter of fact paſt doubt.

Dioſcorides tells us, he was aſſured that pieces of the bark of the poplar-tree being laid in the ground over horſe-dung, there would grow out of them very good *muſhrooms*. Ruel ſays, that by boring the trunk of a white poplar-tree near the root, and waſhing it with leven ſteeped in water, *muſhrooms* ſpring out of it, as it were, inſtantly. He adds, that the hillocks produce ſeveral kinds of *muſhrooms*, if the ſtubble be burnt on them in the rainy ſeaſon.

M. Tournefort tells us, on his own knowledge, that where the ſtubble is burnt, as in Provence, Languedoc, and the iſlands of the Archipelago, there ariſe great quantities of black poppies in the firſt autumnal rains, which diſappear the year following; ſo that they are never found but on burnt lands. And we know that after the burning of London, the ground as far as the fire reached, ſhot up with vaſt quantities of eryſimum latifolium majus glabrum. One of the chief reaſons, if not the only one, why mountains produce plants different from the plains or valleys, and places become fenny, from the ſame places when they were dry; is the difference in the nutricious juices found in thoſe places. Without this, how ſhall we account for the orign of miſletoe or hypocyſtus, which are never known to grow in the earth, at leaſt without adhering to ſome other plant; but the one grows on trees, and the other to the root of the cyſtus? Why do the ivy and vine of Canada, pellitory, polypody, the ſpecies of capillaries, grow only on the trunks of trees, on walls, and in the clefts of rocks, unleſs it be that the juices of thoſe places are the beſt adapted to them.

These and other inconteſtable facts prove plainly both the vaſt multitude of ſeeds diſperſed every where, and the neceſſity of certain circumſtances to make them vegetate.

If to this ſpeculation on the inviſible ſeeds of plants, we join that of the inviſible eggs of inſects, which muſt be allowed equal thereto, the earth will be found full of an inconceivable infinity of animals and vegetables, perfectly formed, and deſigned, as it were, in miniature, and only waiting for certain favourable circumſtances to enable them to make their appearance in large. How rich then muſt the hand be that has ſown with ſo much profuſion? See Insect, Animalcule, *&c.*

We have been the more particular on this head, on account of the odneſs of the phænomena; and becauſe what is here ſaid of *muſhrooms* will give light into the generation of all other vegetables, *&c.* whoſe ſeeds are yet undiſcovered. See Plant, and Vegetation.

Dr. Liſter, indeed, thinks he has found out the ſeeds of *muſhrooms*. He inſtances particularly in the fungus poroſus craſſus magnus I. B. the texture of whoſe gills is like a paper pricked full of pin-holes. Theſe gills, he makes no doubt, are the very flower and ſeed of this plant; when it is ripe, the gills are eaſily ſeparable from the reſt of the head, each ſeed being diſtinct from other, and having its impreſſion in the head of the *muſhroom*, juſt as the ſeed of an artichoke hath in the bottom of it: the bigger end of the ſeeds is full and round, and they are diſpoſed in a ſpiral order like thoſe of the artichoke: And the ſame he thinks will hold of all other *muſhrooms*, however differently figured. If it happen that theſe, when ſown, prove ſterile, and do not produce their kind, it is no wonder; there being whole genus's of plants that come up, and flower, and ſeed, yet their ſeed was never known to produce plants of their kind, being no more than a barren volatile duſt, as that of all the orchides, or bee-flowers, is ſaid to be.

MUSIC, ΜΟΥΣΙΚΗ, the ſcience of ſound, conſidered as capable of producing melody, or harmony: or, the art of diſpoſing and conducting ſounds, conſidered as grave and acute; and of proportioning them among themſelves, and ſeparating them by juſt intervals, pleaſing to the ſenſe. See Sound.

* The word is ſuppoſed originally formed from *muſa*, muſe; the muſes being ſuppoſed to be the inventors thereof. Kircher, however, will have it take its name from an Egyptian word, as ſuppoſing its reſtoration after the flood to have begun there, by reaſon of the reeds, *&c.* on the banks of the Nyle.—Heſychius tells us, the Athenians gave the name *muſic*, μουσικη, to every art.

Mr. Malcolm defines *muſic*, a ſcience that teaches how ſounds under certain meaſures of tune, and time, may be produced, and ſo ordered or diſpoſed, as either in conſonance, or ſucceſſion, or both, they may raiſe agreeable ſenſations.

Muſic naturally divides itſelf into *ſpeculative* and *practical*.

Speculative Music is the knowledge of the *materia muſica*, or how to produce ſounds in ſuch relations of tune, and time, as ſhall be agreeable in conſonance, or ſucceſſion, or both:

By which, we do not mean the actual production of theſe ſounds by an inſtrument or voice, which is merely the mechanical or effective part; but the knowledge of the various relations of tune and time, which are the principles, out of which the pleaſure ſought derives. See Tune.

Practical Music is that which ſhews how theſe principles are to be applied; or how ſounds, in the relations they bear to *muſic* (as thoſe are determined in the ſpeculative part) may be ordered, variouſly put together in ſucceſſion and conſonance, ſo as to anſwer the end.

And this we call the art of *compoſition*, which is properly the practical part of *muſic*. See Composition.

Some add a third branch, *viz. inſtrumental muſic*, or the knowledge of inſtruments; but as this depends altogether on the firſt, and is only an application or expreſſion of it, it cannot come regularly under the definition, and conſequently is no part of the diviſion of the ſcience.

The *firſt* branch, which is the contemplative part, divides itſelf into theſe two, *viz.* the knowledge of the *relations and meaſures of tune*, and the *doctrine of time*.

The former is properly what the antients call *harmonica*, or the doctrine of harmony in ſounds, as containing an explication of the grounds, with the various meaſures and degrees of the agreement of ſounds, in reſpect of their tune. See Harmonica.

The latter is what they called *rhythmica*, becauſe it treats of the numbers of ſounds or notes with reſpect to time; containing an explication of the meaſures of long and ſhort, or ſwift and ſlow, in the ſucceſſion of ſounds. See Rhythmica.

The *ſecond* branch, or the practical part of *muſic*, as naturally divides into two parts, anſwering to the parts of the firſt.

That correſponding to the harmonica, the antients called *melopœia*, becauſe it contains the rules of making ſongs, with reſpect to tune, and harmony of ſounds; though we have no reaſon to think the antients had any thing like compoſition in parts.

That which anſwers to the rhythmica, they call *rhythmopœia*, containing rules for the application of the numbers and time. See Rhythmopoeia.

We find a ſtrange diverſity in the antient writers, as to the nature, office, extent, diviſion, &c. of *muſic*.

Hermes Triſmegiſtus defines *muſic* to be the knowledge of the order of all things; which is alſo the doctrine of the Pythagorean ſchool, and of the Platoniſts, who teach, that every thing in the univerſe is *muſic*.—Agreeable to which wide ſenſe, ſome divide *muſic* into *divine* and *mundane*.

Divine Music is that reſpecting the order and harmony which obtains among the celeſtial minds.

Mundane Music is that which reſpects the relations and order of every thing elſe in the univerſe.

Though Plato, by *divine muſic* underſtands that which exiſts in the divine mind, *viz.* thoſe archetyphal ideas of order and ſymmetry, according to which God formed all things.—And as this order exiſts in the mundane creatures, he calls it *mundane muſic*.

This laſt ſpecies the antients again ſub-divided into four, *viz.*

Elementary Music, or the harmony of the elements of things.

Celeſtial Music, or the *muſic of the ſpheres*; comprehending the order and proportions in the magnitudes, diſtances and motions of the heavenly bodies, and the harmony of the ſounds reſulting from thoſe motions.

Human Music, which conſiſts chiefly in the harmony of the faculties of the human ſoul, and its various paſſions; and is alſo conſidered in the proportion, temperament and mutual dependance of the parts of the body.—Laſtly,

Music, *properly ſo called*, which has for its object, motion, conſidered as under certain regular meaſures and proportions, by which it affects the ſenſes in an agreeable manner. See Motion.

Now as motion belongs to bodies, and as ſound is the effect of motion, and cannot be without it, but all motion does not produce ſound; hence this laſt branch of *muſic* became farther ſub-divided.

Where the motion is without ſound, or as it is only the object of ſight, it was either called *muſica orcheſtica*, or *ſaltatoria*, which contains the rules for the regular motions of dancing.—Or *muſica hypocritica*, which reſpects the motion and geſtures of the pantomimes. See Dance, and Pantomime.

When the motion is perceived only by the ear, *i. e.* when ſound is the object of *muſic*, there were three ſpecies; *viz.* *Harmonica*, which conſiders the differences and proportions with reſpect to grave and acute.—*Rhythmica*, which reſpects the proportion of the ſounds as to time, or the ſwiftneſs and ſlowneſs of their ſucceſſions.—And *Metrica*, which belongs properly to the poets, and reſpects the art of making verſes. See Harmonica, &c.

Ariſtides Quintilianus, Bacchius, and ſome other antient writers, define *muſic* the knowledge of ſinging, and of the things belonging thereto; which they explain by the motions of the voice and body: as if the ſinging conſiſted only in the different tones of the voice. See Singing.

The ſame Ariſtides, conſidering *muſic* in the largeſt ſenſe of the word, divides it into *contemplative* and *active*. The firſt, he ſays, is either *natural* or *artificial*.—The *natural* is either *arithmetical*, which conſiders the proportion of numbers; or *phyſical*, which examines the order of the things of nature.

The artificial he divides as above, into *harmonica*, *rhythmica*, and *metrica*.

The *active*, which is the application of the *artificial*, is either *enuntiative*, (as in oratory;) *organical* (or inſtrumental performance;) *odical* (for voice and ſinging;) *hypocritical*, in the motions of the pantomimes.—To which ſome add *hydraulical*, though in reality no more than a ſpecies of the organical; in which, water is uſed, for the producing or modifying of ſound. See Hydraulicks.

Porphyry makes another diviſion of *muſic*, taking it in the limited ſenſe, as having motion both dumb and ſonorous for its object; and without diſtinguiſhing the ſpeculative and practical, he makes its parts theſe ſix, *viz.* *Rhythmica*, for the motions of dancing; *metrica*, for the cadence and recitation; *organica*, for the practice of inſtruments; *poetica*, for the numbers and feet of verſes; *hypocritica*, for the geſtures of the *pantomimes*; and *harmonica*, for ſinging.

The *muſical faculties*, as they call them, are *melopœia*, which gives rules for the tones of the voice or inſtrument; *rhythmopœia*, for motions; and *poeſis*, for making verſes. See Poetry.

Muſic appears to have been one of the moſt antient of arts: And of all others, *vocal muſic* muſt undoubtedly have been the firſt kind.—For man had not only the various tones of his own voice to make his obſervations on, before any other art or inſtrument was found out, but had the various natural ſtrains of birds, to give him occaſion to improve his own voice, and the modulations of ſounds it was capable of. See Vocal.

Of many antient authors who agree in this conjecture, we ſhall only mention Lucretius, who ſays,

> *At liquidas avium voces imitarier ore,*
> *Ante fuit multò quam levia carmina cantu,*
> *Concelebrare homines poſſent, aureiſque juvare.*

The firſt invention of ſtringed inſtruments the ſame poet aſcribes to the obſervation of the winds whiſtling in the hollow reeds.

As for other kinds of inſtruments, there were ſo many occaſions for cords or ſtrings, that men could not be long in obſerving their various ſounds, which might give riſe to ſtringed inſtruments. See Chord.

And for the pulſatile inſtruments, as drums and cymbals, they might ariſe from the obſervation of the hollow noiſe of concave bodies. See Drum, Cymbal, &c.

Plutarch, in one place, aſcribes the firſt invention of *muſic* to the God Apollo, and in another to Amphion, the ſon of Jupiter and Antiope. This laſt, however, is pretty generally allowed to have been the firſt who brought *muſic* into Greece, and to have been the inventor of the lyre.—The time he lived in, is not agreed upon. See Lyra.

To him ſucceeded Chiron, the demi-god; Demodocus; Hermes Triſmegiſtus; Olympus; Orpheus, whom ſome make the firſt introducer of *muſic* into Greece, and the inventor of the lyra; to whom add Phemius, and Terpander, who was contemporary with Lycurgus, and ſet his laws to *muſic*. To him ſome attribute the firſt inſtitution of *muſical* modes, and the invention of the lyre: Laſtly, Thales; and Thamyris, who is ſaid to have been the firſt inventor of inſtrumental *muſic* without ſinging.

Theſe were the eminent muſicians before Homer's time. Others of a later date, were Laſus Hermionenſis, Melnippides, Philoxenus, Timotheus, Phrynnis, Epigonius, Lyſander, Simmicus, and Diodorus; who were all conſiderable improvers of *muſic*.—Laſus is ſaid to have been the firſt author who wrote on *muſic* in the time of Darius Hyſtaſpes; Epigonius invented an inſtrument of forty ſtrings, called the *epigonum*: Simmicus alſo invented an inſtrument, called *ſimmicium*, of thirty-five ſtrings: Diodorus improved the *tibia*, by adding new holes; and Timotheus the *lyre*, by adding a new ſtring; for which he was fined by the Lacedemonians.

As the accounts we have of the inventors of *muſical* inſtruments among the antients are very obſcure; ſo are alſo the accounts what thoſe inſtruments were; we ſcarce knowing any thing of them beſides the bare name.

The general diviſion of inſtruments, is into *ſtringed inſtruments*, *wind inſtruments*, and the *pulſatile kind*.—Of *ſtringed inſtruments*, we hear of the *lyra* or *cithara*, the *pſalterium*, *trigonum*, *ſambuca*, *pectis*, *magas*, *barbiton*, *teſtudo*, *epigonium*, *ſimmicium*, and *pandoron*, which were all ſtruck with the hand, or a *plectrum*; and which ſee in their places. Lyre, Cithara, &c.

Of *wind inſtruments*, we hear of the *tibia*, *fiſtula*, *hydraulic organs*, *tubæ*, *cornua*, and *lituus*. See Fistula, Flute, &c.

The *pulſatile inſtruments*, were the *tympanum*, *cymbalum*, *crepitaculum*, *tintinnabulum*, *crotalum*, and *ſiſtrum*. See Tympanum, Cymbalum, &c.

Muſic has ever been in the higheſt eſteem in all ages, and among all people. Nor could authors expreſs their opinion of it ſtrongly enough, but by inculcating, that it was uſed in heaven, and was one of the principal entertainments of the gods, and the ſouls of the bleſſed.

The effects aſcribed to it by the antients, are almoſt miraculous; by means hereof, diſeaſes are ſaid to have been cured, unchaſtity corrected, ſeditions quelled, paſſions raiſed and calmed, and even madneſs occaſioned.—Athenæus aſſures us, that antiently all laws divine and civil, exhortations to virtue, the knowledge of divine and human things, lives and actions of illuſtrious men, were written in verſe, and publickly ſung by a chorus to the ſound of inſtruments; which was found the moſt effectual means to impreſs morality, and a right ſenſe of duty on the mind.

Muſic made a great part of the diſcipline of the antient Pythagoreans, and was uſed by them to draw over the mind to laudable actions, and ſettle in it a paſſionate love of virtue: It was their doctrine, that the ſoul itſelf conſiſts of harmony; and therefore by *muſic*, they pretended to revive the primitive harmony of its faculties.—By this primitive harmony, they meant that which, according to their dogma, was in the ſoul, in its pre-exiſtent ſtate in heaven. See Pythagorean and Pre-existence.

Dr. Wallis has endeavoured to account for the ſurpriſing effects aſcribed to the antient *muſic*; and charges them principally on the novelty of the art, and the hyperbola's of the antient writers: Nor does he doubt but the modern *muſic*, cæteris paribus, would produce effects at leaſt as conſiderable as the antient.—The truth is, we can match moſt of the antient ſtories of this kind in the modern hiſtories. If Timotheus could excite Alexander's fury with the Phrygian mode, and ſooth him into indolence with the Lydian; a more modern muſician is ſaid to have driven Eric king of Denmark into ſuch a rage, as to kill his beſt ſervants. Dr. Niewentiit tells us of an Italian, who by varying his *muſic* from briſk to ſolemn, and ſo *vice verſa*, could move the ſoul, ſo as to cauſe diſtraction and madneſs. And Dr. South has founded his poem, called *Muſica incantans*, on an inſtance he knew of the ſame thing.

Muſic, however, is not only found to exert its force on the affections, but on the parts of the body alſo; witneſs the Gaſcon knight, mentioned by Mr. Boyle, who could not contain his water at the playing of a bag-pipe; the woman, mentioned by the ſame author, who would burſt out in tears at the hearing

ing of a certain tune, with which other people were but little affected.—To ſay nothing of the trite ſtory of the tarantula: We have an inſtance in the hiſtory of the academy of ſciences, of a muſician's being cured of a violent fever, by a little concert occaſionally played in his room. See TARANTULA.

Nor are our minds and bodies alone affected with ſounds, but even inanimate bodies.—Kircher tells us of a large ſtone, that would tremble at the ſound of one particular organ-pipe; and Morhoff mentions one Petter, a Dutchman, who could break rummer-glaſſes with the tone of his voice. Merſenne alſo tells us of a particular part of a pavement, that would ſhake and tremble, as if the earth would open, when the organs played. Mr. Boyle adds, that ſeats will tremble at the ſound of organs; that he has felt his hat do ſo under his hand, at certain notes both of organs and diſcourſe; and that he was well informed, every well-built vault would anſwer ſome determinate note.

There is a great diſpute among the learned, whether the antients, or moderns beſt underſtood and practiſed *muſic?* Some maintain that the antient art of *muſic*, by which ſuch wonderful effects were performed, is quite loſt; and others, that the true ſcience of harmony is now arrived to much greater perfection, than was known or practiſed among the antients.

This point ſeems no other way to be determinable but by comparing the principles and practice of the one with thoſe of the other.—As to the theory or principles of harmonics, it is certain we underſtand it better than the antients; becauſe we know all that they knew, and have improved conſiderably on their foundations.—The great diſpute then lies on the practice. With regard to which it may be obſerved, that among the antients, *muſic*, in the moſt limited ſenſe of the word, included *harmony*, *rhythmus*, and *verſe*; and conſiſted of verſes ſung by one or more voices alternately or in choirs, ſometimes with the ſound of inſtruments, and ſometimes by voices only. Their muſical faculties, we have already obſerved, were *melopœia*, *rhythmopœia*, and *poeſis*. The firſt whereof may be conſidered under two heads, *viz.* *Melody* and *ſymphony*. As to the latter, it ſeems to contain nothing but what relates to the conduct of a ſingle voice, or making what we call *melody:* The antients do not appear to have ever thought of the concert, or harmony of parts; which is a modern invention, for which we are beholden to Guido Aretines, a Benedictine friar.

We would not, however, be underſtood to mean, that the antients never joined more voices or inſtruments than one together in the ſame ſymphony; but, that they never joined ſeveral voices ſo as that each had a diſtinct and proper melody, which made among them a ſucceſſion of various concords, and were not in every note uniſons, or at the ſame diſtance from each other as octaves.—This laſt indeed agrees to the general definition of the word *ſymphonia*; yet it is plain that in ſuch caſes, there is but one ſong, and all the voices perform the ſame individual melody.—But when the parts differ, not by the tenſion of the whole, but by the different relations of the ſucceſſive notes, this is the modern art, which requires ſo peculiar a genius, and on which account the modern *muſic* ſeems to have much the advantage of the antient. For further ſatisfaction on the ſubject, ſee Kircher, Perrault, Dr. Wallis, Mr. Malcolm, the jeſuit Cerceau, and others; who unanimouſly agree, that after all the pains they have taken to know the true ſtate of the antient *muſic*, they could not find the leaſt reaſon to think there was any ſuch thing in their days as *muſic* in parts. See SYMPHONY, SYNAULIA, HARMONY, *&c.*

The antient muſical notes are very myſterious and perplexed: Boethius and Gregory the Great firſt put them into a more eaſy and obvious method.—In the year 1204, Guido Aretine, a benedictine of Arezzo in Tuſcany, firſt introduced the uſe of a ſtaff with five lines, on which, with the ſpaces, he marked his notes by ſetting a point up and down upon them, to denote the riſe and fall of the voice; though Kircher mentions this artifice to have been in uſe before Guido's time. See NOTE, STAFF, *&c.*

Another contrivance of Guido's was to apply the ſix muſical ſyllables *ut*, *re*, *mi*, *fa*, *ſol*, *la*, which he took out of the Latin hymn,

UT*queant laxis* RE*ſonare fibris*
MI*ra geſtorum* FA*muli tuorum*
SOL*ve polluti* LA*bii reatum.*
O Pater Alme.

Beſides his notes of *muſic*, by which, according to Kircher, he diſtinguiſhed the tones, or modes, and the ſeats of the ſemitones, he alſo invented the ſcale, and ſeveral muſical inſtruments, called *polyplectra*, as ſpinets and harpſicords. See NOTE, GAMUT, *&c.*

The next conſiderable improvement was in 1330, when Joannes Muria, or de Muris, doctor at Paris, (or as Bale and Geſner make him, an Engliſhman) invented the different figures of notes, which expreſs the times, or length of every note, at leaſt their true relative proportions to one another, now called *longs*, *breves*, *ſemi-breves*, *crotchets*, *quavers*, &c. See CHARACTER.

The moſt antient writer of *muſic*, we have already obſerved, was Laſus Hermionenſis; but his work, as well as thoſe of many others both Greek and Roman, are loſt. Ariſtoxenus, diſciple of Ariſtotle, is the eldeſt author extant on the ſubject; after him came Euclid, author of the elements: Ariſtides Quintilianus wrote after Cicero's time. Alypius ſtands next; after him Gaudentius the philoſopher, and Nicomachus the Pythagorean, and Bacchius.—Of which ſeven Greek authors, we have a fair copy, with a tranſlation and notes, by Meibomius.

Ptolemy, the celebrated mathematician, wrote in Greek of the principles of harmonics, about the time of the emperor Antoninus Pius. This author keeps a medium between the Pythagoreans and Ariſtoxenians. He was ſucceeded at a good diſtance by Manuel Bryennius.

Of the Latins, we have Boethius, who wrote in the time of Theodric the Goth; and one Caſſiodorus, about the ſame time: Martianus, and St. Auguſtin not far remote.

Of the moderns, are Zarlin, Salinas, Vincenzo Galileo, Doni, Kircher, Merſenne, Paran, De Caux, Perrault, Wallis, Des Cartes, Holder, Malcolm, *&c.*

Diatonic MUSIC.	See the article	DIATONIC.
Recitative MUSIC.		RECITATIVE.
Academy of MUSIC.		ACADEMY.
Characters in MUSIC.		CHARACTERS.

MUSICAL *faculties.*	See the article	MUSIC.
MUSICAL *notes.*		NOTE.
MUSICAL *proportion.*		PROPORTION.
MUSICAL *ſound.*		SOUND.
MUSICAL *ſtring.*		STRING.

MUSK *, MOSCHUS, a kind of perfume, of a very ſtrong ſcent; only agreeable when moderated by the mixture of ſome other perfume. See PERFUME.

* The word comes from the Arabic, *moſcha*, *muſk:* whence was formed the common Greek, μοσχος, *muſk.*

Muſk is found in a kind of bag, or tumour growing about the bigneſs of a hen's egg under the belly towards the genital parts of a wild beaſt of the ſame name; and appears to be nothing elſe but a kind of bilious blood there congealed, and almoſt corrupted.

The animal is pretty common in the kingdoms of Boutan, Tonquin, and ſome others, as Cochin-China, *&c.* But the moſt eſteemed are thoſe in the kingdom of Tibet.

They inhabit the woods and foreſts, where the natives hunt them down: when the beaſt is killed, they cut out the bladder under the belly, ſeparate the coagulated blood, and dry it in the ſun, where it is reduced into a light friable ſubſtance almoſt of the nature of a powder, of a duſky reddiſh colour; and acquires a very ſtrong and diſagreeable ſmell. It is then tied up again in bladders, and exported to other countries; and this is the *muſk* which we uſe.

What the antients have wrote of it, is fabulous, *viz.* that it comes from the teſticles of a caſtor, which, to ſtop the purſuit of the hunter, caſtrates itſelf. The occaſion of their error may be owing to this, that among the Indians the *muſk* animal goes by the name of *caſtor*. See CASTOREUM.

Muſk is in conſiderable uſe among the perfumers and confectioners; though much leſs now than formerly. It is ſuppoſed to fortify the heart and brain; and is good againſt deafneſs; but is little uſed in medicine, as being apt to occaſion the vapours.

MUSKET, or MUSQUET, a fire-arm borne on the ſhoulder, and uſed in war; to be fired by the application of a lighted match. See FIRE-*arm.*

The length of the *muſket* is fixed to three feet eight inches from the muzzle to the touch-pan, and its bore is to be ſuch as may receive a ball of ſixteen in a pound.

Muſkets were antiently borne in the field by the infantry: at preſent they are little uſed ſave in the defence of places; fuſees, or fire-locks, having taken their place.

MUSKETOON, a *muſket* ſhorter, though thicker, than the ordinary muſket.—It is fired by the colliſion of a ſteel and flint in the lock; whereas the muſket is fired by a match. Its bore is a thirty-eighth part of its length; and carries five ounces of iron, or ſeven and a half of lead, with an equal quantity of powder.

MUSLIN, or MUSSLIN, a fine ſort of cloth, wholly cotton; ſo called, as not being bare, but having a downy nap on its ſurface reſembling moſs, which the French call *mouſſe*.

There are various kinds of *muſlins* brought from the Eaſt-Indies; chiefly Bengall; betelles, tarnatans, mulmuls, tanjeebs, terrindams, doreas, *&c.*

MUSSA *mora.* See the article MOOR.

MUSSLIN. See the article MUSLIN.

MUSSULMAN *, or MUSULMAN, a title by which the Mahometans diſtinguiſh themſelves; ſignifying, in the Turkiſh language, *true believer*, or *orthodox.* See MAHOMETANISM.

* In Arabic, the word is written *moſlem*, *moſleman*, or *moſolman.*

The appellation was firſt given to the Sarazens; as is obſerved by Leunclavius.—There are two kinds of *muſſulmans*, very averſe to each other; the one called *Sonnites*, and the other *Shiites.* —The Sonnites follow the interpretation of the alcoran

ran given by Omer; the Shiites are the followers of Ali. The ſubjects of the king of Perſia are Shiites; and thoſe of the grand ſignor, Sonnites. See Sonna, and Alcoran.

Some authors will have it, that the word *muſſulman* ſignifies *ſaved*, that is, predeſtinated; and that the Mahometans give themſelves the appellation, as believing they are all predeſtinated to ſalvation.—Martinius is more particular as to the origin of the name; which he derives from the Arabic מסלים *muſalam*, ſaved, ſnatched out of danger: the Mahometans, he obſerves, eſtabliſhing their religion by fire and ſword, maſſacred all thoſe who would not embrace it, and granted life to all that did, calling them *muſſulmans*; q. d. *erepti è periculo*, whence the word, in courſe of time, became the diſtinguiſhing title of all thoſe of that ſect, who have affixed to it the ſignification of *true believer*.

MUST, Mustum, ſweet wine newly preſſed from the grape; or the new liquor preſſed from the fruit before it has worked or fermented. See Wine.

MUSTARD, a preparation of a ſeed of that name, ground or beaten up with vinegar, or the *muſt* of wine; whence its name.

Mustard-*ſeed*, in Latin *ſinapi*, a warm biting ſeed, which gives the denomination to a ſpecies of topical medicines called *ſinapiſms*. See Sinapism.

Muſtard-ſeed is alſo uſed in preparing ſhagreen. See Shagreen.

MUSTER *, a review of a body of military forces under arms, in order to take account of their numbers, condition, accoutrements, arms, *&c.*

* The word is formed of the French, *mouſtre*, ſpecimen. See Review.

Falſe-Muster. See the article False.

Muster-*maſter general*, or *commiſſary general of* Musters, is an officer in the army, who takes account of every regiment, their number, horſes, arms, *&c.* See Commissary.

Muster-*rolls*, are liſts of the ſoldiers in every troop, company, regiment, *&c.* delivered by the captains to the commiſſary: by which they are paid, and the ſtrength of the regiment known. See Roll.

MUSTERED *of record*, (*Stat.* 18. *Hen.* 6.) denotes a being enrolled in the number of the king's ſoldiers. See Roll.

MUTABILITY. See the article Immutability.

MUTARE *arma*. See the article Arma.

MUTATION, the act of changing: or, ſometimes, the change itſelf. See Change, Permutation, and Transmutation.

It is one of the laws of nature, that the *mutation* of motion is ever proportional to the moving force impreſſed. See Nature, and Motion.

Mutation, in the antient muſic, is applied to the changes, or alterations that happen in the order of the ſounds which compoſe the melody. See Music.

Ariſtoxenus repreſents *mutation* as a kind of paſſion in the order of the melody. See Melody.

The changes are, 1°. in the genera; when the ſong begins in one, as the chromatic, and paſſes into another, as the diatonic. 2°. In the ſyſtem; as when the ſong paſſes out of one tetrachord, as meſon, into another, as diazeugmenon; or more generally, when it paſſes from a high place of the ſcale to a lower, or contrarily; *i. e.* part of it is ſung high, and part low. 3°. In the mode or tone, as when the ſong begins in one, as the Doric; and paſſes into another, as the Lydian. 4°. In the melopœia, that is, when the ſong changes the very air, ſo as from gay and ſprightly, to become ſoft and languiſhing; or from a manner that expreſſes one paſſion or ſubject, to the expreſſion of ſome other.

MUTE, *dumb*, denotes a perſon that cannot ſpeak, or has not the uſe of ſpeech. See Dumbness.

Mutes ond dwarfs make their fortune in the grand ſignor's ſeraglio. The *mutes* ſerve as executioners to take off perſons of the firſt rank.

Mute, in law, is he that ſtands dumb, or ſpeechleſs; when he ought to anſwer, or plead.

A priſoner may ſtand *mute* two ways: 1°. When he ſpeaks not at all: In which caſe it is enquired, whether he ſtand *mute* of malice, or by the act of God: If by the latter, then the judge, *ex officio*, ought to enquire whether he be the ſame perſon; and of all other pleas, which he might have pleaded if he had not ſtood *mute*. 2°. When he pleads not directly, or will not put himſelf upon the inqueſt to be tried.—The puniſhment of ſtanding *mute*, is preſſing, even to death. See Paine *fort & dure*.

Mute, in grammar, a letter which is not ſounded, or heard in the pronunciation: or, a letter which yields no ſound of itſelf and without a vowel. See Letter.

The conſonants are ordinarily diſtinguiſhed into *mutes*, and *liquids* or ſemi-vowels. See Consonant, Liquid, *&c.*

The *mutes* in the Engliſh alphabet are eleven, *viz.* B, C, D, F, G, J, K, P, Q, T, V. They are called *mutes*, becauſe a liquid cannot be ſounded in the ſame ſyllable before them, as *rpo*; but a *mute* may be pronounced in the ſame ſyllable before a liquid, as *pro*.

MUTILATED *corniche*. See the article Corniche.

Mutilated *medals*. See the article Medal.

Mutilated *roof*. See the article Roof.

MUTILATION, the retrenching, or cutting away any member of the body. See Member, *&c.*

The uſe of the word is alſo extended to ſtatues, and buildings, where any part is wanting, or the projecture of any member, as a corniche, or an impoſt is broke off. See Statue, *&c.*

Mutilation is ſometimes alſo uſed in a more immediate manner for *caſtration*. See Castration.

MUTUAL, a relative term, denoting ſomething that is reciprocal between two or more perſons. See Reciprocal.

Thus we ſay *mutual aſſiſtance*, *mutual averſion*, &c.—There are *mutual*, or reciprocal duties, offices, *&c.* between ſuperiors, and inferiors; the king and his ſubjects; the maſter and his ſervants, *&c.*

Vaugelas makes a diſtinction between *mutual* and *reciprocal*: *Mutual*, according to him, is underſtood of what is between two only; and *reciprocal* of what is between more than two: But this deciſion is little regarded in common uſe.

Mutual *teſtament*, is that made by two perſons who leave their effects reciprocally to the ſurvivor.

MUTULE, Mutulus, in architecture, a kind of ſquare modillion in the doric frieze. See Modillion.

The chief difference between *mutule* and modillion conſiſts in this, that the former is uſed in ſpeaking of the Doric order, and the latter in the Corinthian, *&c.* See Doric, *&c.*

The *mutules* in the Doric anſwer to the triglyphs, which are under them; whence ſome make *guttæ*, or drops to hang. See Guttæ.

MUTUUM, in the civil law, is a loan ſimply ſo called; or a contract introduced by the law of nations, whereby a thing conſiſting in weight, as ſuppoſe bullion; in number, as money; or in meaſure, as corn, timber, wine, *&c.* is given to another, upon condition that he ſhall return another thing of the ſame quantity, nature, and value on demand.

This, therefore is a contract without reward: So that where uſe or intereſt ariſes, there muſt be ſome particular article in the contract whereon it is founded. See Interest.

MUZZLE-*ring*, of a gun, the moulding, or circle, which incompaſſes, and ſtrengthens the mouth of it. See Cannon, *&c.*

MY.—*Per* My *& per tout*. See the article Per *my*.

MYLOGLOSSUM, in anatomy, a pair of muſcles, thus called becauſe ariſing about the backſide of the molares, or grinding-teeth, and inſerted into the ligament of the tongue; helping to pull it upwards. See Tongue.

Theſe are the ſame with what Mr. Cowper calls *ſtylogloſſum*. See Styloglossus.

MYLOHYOIDEUM, in anatomy, a broad, but ſhort muſcle lying immediately under the biventer muſcle of the jaw, and which ſpringing from the lower margin on each ſide the under jaw, is inſerted into the baſis of the os hyoides. See Hyoides.

Beſides the common uſe aſcribed to this muſcle, which is to move the hyoides, the tongue, and the larynx both upwards, inwards, and ſide-ways; its ſeries of tranſverſe fibres have a further uſe when it is at reſt; and that is to compreſs the glands under the tongue, and by this means promote the diſcharge of ſaliva into the mouth from the lower ſalival ducts. Whence it is we uſe this muſcle when we want ſaliva in the mouth.

MYOCEPHALON *, in medicine, a little part of the tunica uvea, protended over the ſight of the eye; occaſioned by an ulceration of the part: ſo called, as reſembling the head of a fly. See Uvea.

* The word is Greek *μυοκεφαλον*, formed of *μυια*, fly, and *κεφαλη*, head.

MYOLOGY *, in anatomy, a deſcription of the muſcles; or the knowledge of what relates to the muſcles of the human body.—See *Tab. Anat.* (*Myol.*) See alſo Muscle.

* The word is formed of *μυς*, *μυος*, a muſcle, and *λογος*, diſcourſe.

MYOMANCY, a kind of divination, or method of foretelling future events, by means of mice. See Divination.

Some authors hold *myomancy* one of the moſt antient kinds of divination; and think it is on this account that Iſaiah, lxvi. 17. reckons mice among the abominable things of the idolaters. But beſide that it is not certain that the Hebrew word עכבר uſed by the prophet, ſignifies a *mouſe*; it is evident it is not divination by that animal, be it what it will, is here ſpoke of; but eating it.

MYOPS *, Myopis, a perſon who is ſhort-ſighted; or, as we popularly call it, *purblind*. See Sight.

* The word is Greek, *μυωψ*, compounded of *μυς*, mouſe; and *ωψ*, eye: by reaſon, we ſuppoſe, the ſame confirmation of the eye is obſerved in mice.

Myopes are properly ſuch as ſee remote objects confuſedly, and near ones diſtinctly. See Myopia.—Thoſe who labour under the oppoſite defect, are called *presbytæ*. See Presbyta.

The defect of *myopes* is not in the optic nerve, the pupil, or the like; but in the form of the cryſtalline, or the diſtance of the retina from the ſame. The cryſtalline being rounder, or more convex than ordinary, the rays will be rendered more convergent than ordinary in paſſing through the ſame. (See Refraction); by this means they will be brought to meet, or concur at the leſs diſtance from the cryſtalline; ſo that it the retina be at its uſual diſtance, they will concur e'er they reach it. It is the too great nearneſs, then, of the retina to the cryſtalline, that conſtitutes the *myopia*. See CHRISTALLINE, RETINA, *&c.*

MYOPIA, or MYOPIAS, *ſhort-ſightedneſs*, a confuſion or obſcurity of ſight, when directed to remote objects. See MYOPS, VISION, SIGHT, *&c.*

The *myopia* is owing to the too great convexity of the ball of the eye, and particularly of the cryſtalline; whence it happens that the viſual rays concur before they reach the retina. For this reaſon, to ſee an object diſtinctly, they muſt either apply it cloſe to the eye, or uſe a concave glaſs. See CONCAVE.

The *myopia* wears off by time, the eye growing flatter and flatter as perſons draw towards old age. See EYE.

MYOTOMY, MYOTOMIA, an anatomical diſſection, or demonſtration of the muſcles. See MUSCLE.

MYRIAD, the number of ten thouſand.—Whence *myriarcha*, a captain, or commander of ten thouſand men.

MYRMECIA, in medicine, a kind of wart, by Latin writers called *formica*. See FORMICA.

MYRMIDONS, MYRMIDONES, in antiquity, a people of Theſſaly, fabled to have aroſe from ants, or piſmires, upon a prayer put up for that purpoſe by king Æacus to Jupiter, after his kingdom had been diſpeopled by a ſevere peſtilence.—In Homer, and Virgil, the *myrmidons* are Achilles's ſoldiers.

MYRMILLONES *, a kind of gladiators in antient Rome; called alſo *murmuliones*. See GLADIATOR.

* Turnebus derives the name from the *myrmidons*.

MYROBALANS *, MYROBALANI, a kind of medicinal fruit, brought from the Indies; much more uſed in the Arabic than the Greek pharmacy; and more among the antients than the moderns; and ſtill more abroad than in England.

* The word comes from the Greek μυρον, unguent; and βαλανος, acorn; as being in form of acorns, and uſed in medicine.

There are five kinds of *myrobalans*, or *purging Indian plumbs*: the firſt called *citrini*, of a yellowiſh red, hard, oblong, and the ſize of an olive.—The ſecond called *black* or *Indian myrobalans*, the bigneſs of an acorn, wrinkled, without ſtone.—The third, *chebuli myrobalans*, the ſize of a date, of a yellowiſh brown, pointed at the end.—The fourth *emblici*, round, rough, the ſize of a gall, of a dark brown.—The laſt called *bellerici*, hard, yellow, round, the ſize of an ordinary prune, leſs angular than the reſt.—*Myrobalans* of each kind are ſlightly purgative, and aſtringent.

MYRRH *, MYRRHA, a kind of gum, or reſin iſſuing, by inciſion, and ſometimes ſpontaneouſly, from the trunk, and larger branches of a tree growing in Arabia, Egypt, and eſpecially Abyſſinia. See GUM.

* The word comes from μυῤῥα, of μυρω, I run, or trickle.

Authors are not agreed about the tree which produces this gum: It is true, they all make it ſmall and thorny; but diſagree about the form of its leaves.

The inciſions are made twice a year, and the *myrrh* oozing out is received on ruſh-mats, diſpoſed underneath.

The druggiſts ſell two kinds of *myrrh*, viz. *myrrh in tears*, which they call *ſtacte*; the other *ungulata*, or in nails. See STACTE, *&c.*

Of the firſt kind, the beſt is in bright, yellow, tranſparent drops, friable, light, of a ſtrong diſagreeable ſmell: But this is very rare; and moſt of that in uſe is the *naild myrrh*, ſo called from little white ſpots obſerved thereon, much like thoſe on the nails of the fingers.

The beſt is in little maſſes, or tears, red, and tranſparent; which, when broke, contain a kind of unctuous liquor, the moſt precious part of the *myrrh*, and the real *ſtacte* of the antients.

This gum enters a great number of medicinal compoſitions. Its bitterneſs renders it good for the ſtomach, and againſt worms; it is chewed to prevent infection from contagious diſeaſes. Dr. Quincy ſays it is excellent to cleanſe and ſtrengthen the womb, and againſt tickling rheums; a good detergent; and as ſuch much added externally in unguents for the healing of wounds; and makes the principal ingredient in embalming. The chymiſts draw from it oils, ſpirits, tinctures, *&c.* to which they attribute extraordinary virtues.

MYRRHINE *veſſels*.—*Vaſa* MYRRHINA. See MURRHINE.

MYRTIFORM *glands*. See the article GLAND.

MYRTIFORMIS *carunculæ*, in anatomy, little caruncles, or fleſhy knots adjoining to, or rather in the place of the hymen in women.—See *Tab. Anat.* (*Splanch.*) *fig.* 9. *lit. ſ. ſ.* See alſo CARUNCLE.

They are about the bigneſs of myrtle-berries, whence they take their name; and are ſuppoſed by ſome to be largeſt in maids, and by degrees to grow leſs through the uſe of venery. Others, and with more probability, derive them from the broken membrane of the hymen, whoſe fragments ſhrunk up, they take them to be. See HYMEN.

MYRTLE-*berries*, the fruit of a ſhrub well known under the name of *myrtle*, *myrtus*, growing common in Spain, eſpecially in the mountains of Sierra Morena, *&c.*

There are two kinds of *myrtle*, male and female; the latter whereof produces the beſt berries, and in the greateſt quantity. The fruit is at firſt green, but becomes black gradually within; it is a white ſeed in form of a creſcent, ſolid, hard, and of an aſtringent taſte; while the fruit continues on the trees, it is ſucculent and ſmooth, and only becomes hard and wrinkled, becauſe dried in the ſun for the convenience of carriage.

Myrtle-berries are rough and aſtringent, and are chiefly uſed in the way of ſyrup, as a ſtrengthner againſt fluxes and abortion. They are alſo an ingredient in ſeveral of the ſtrengthening plaiſters.

The perfumers likewiſe uſe them in their perfumes, and draw an eſſence from them. The German dyers make a blue colour from them. In England the leaves and branches are alſo uſed in the tanning of leather.

MYSTERY *, MYSTERIUM, ſomething ſecret, or hidden; impoſſible, or difficult to be comprehended. See ACATALEPSY.

* The word comes from the Greek μυϛηριον; and that, according to ſome etymologiſts, from μυω, *claudo*, *taceo*, I ſhut, I am ſilent; and ϛομα, mouth; but then whence comes the *r*? Muſt the *m* of ϛομα be converted into an *r*? The word ſeems derived with more propriety from the Hebrew סתר *ſator*, to hide; whence is formed מסתר *miſtar*, a hidden thing.

Myſtery is primarily uſed in ſpeaking of certain truths revealed in ſcripture; into the full underſtanding whereof human reaſon cannot penetrate.—Such are the doctrines of the *trinity*, the *incarnation*, &c. See TRINITY, *&c.*

We have an epitome of the *myſteries of faith*, or the *myſteries of chriſtianity*, in the ſymbols, or creeds, compiled by the apoſtles, the council of Nice, and St. Athanaſius. See CREED.

In all theſe, mention is made of the *myſtery* of the trinity; the *myſteries* of the incarnation of the ſon of God, his death and paſſion, and his deſcent into hell for the redemption of mankind: Of his reſurrection the third day, his aſcenſion to heaven, his ſitting at the right hand of God, and his coming again to judge the world: Of the divinity, and co-equality of the Holy Ghoſt with the Father and the Son: Of the unity of the church: Of the community of ſaints; the participation of the ſacraments; and the general reſurrection.—Such are the principal *myſteries* of faith; which the church declares neceſſary to be known and believed, in order to ſalvation.

From the earlieſt ages there have been particular feſtivals inſtituted in honour of theſe *myſteries*; to return thanks to God for having revealed them, and to oblige the miniſters and paſtors to inſtruct the people therein. See FEAST.

Such are the feaſt of the *myſtery of the incarnation*, called alſo *Chriſtmas*; thoſe of the *circumciſion*, *paſſion*, *reſurrection*, &c. See INCARNATION, CIRCUMCISION, EASTER, EPIPHANY, *&c.*

The heathens too had their *myſteries*, particularly thoſe of Ceres, the bona Dea, *&c.* See ELEUSINIA.—The Egyptian prieſts concealed the *myſteries* of their religion and philoſophy under hieroglyphics. See HIEROGLYPHIC.—Thoſe who revealed the *myſteries* of the bona Dea were ſeverely puniſhed; and none were truſted with them but thoſe ſolemnly initiated, and ſworn to ſecrecy.

But theſe were not called *myſteries*, as being incomprehenſible, or raiſed above the ken of reaſon; but becauſe they were covered, and diſguiſed under types, and figures, to raiſe the greater veneration in the people.—The *myſteries* of paganiſm were celebrated in caves and grotto's, fitter to conceal crimes than to celebrate religious *myſteries* in. See INITIATED, ORACLE, *&c.*

MYSTERY, in ſcripture-language, is uſed with ſome latitude.—Sometimes it denotes any thing not to be known without divine revelation. See REVELATION.

In this ſenſe we are to underſtand thoſe texts: "He that reveals ſecrets, (or *myſteries*) makes known to thee what ſhall come to paſs; *Dan.* ii. 29. "There is a God in heaven that reveals *myſteries*," *ib.* v. 28.

MYSTERY is alſo uſed to denote the ſecret things, which God has diſcovered by his miniſters the prophets, Jeſus Chriſt, and the apoſtles.

In which ſenſe it is St. Paul ſays,—"We ſpeak the wiſdom of God in a *myſtery*, which God had reſolved before all ages to reveal for our glory, 1 *Cor.* ii. 7. We are to be accounted as miniſters of Chriſt, and diſpenſers of the *myſteries* of God, 1 *Cor.* iv. 1. Though I underſtand all *myſteries*, and have the knowledge of all things, if I have not charity, I am nothing, 1 *Cor.* xiii. 2. Behold I ſhew you a *myſtery*, 1 Cor. xv. 51. By reading my epiſtle, you may underſtand my knowledge in the *myſtery* of Chriſt, *Epheſ.* iii. 4." And in the following verſes he adds, that this *myſtery* is, that the Gentiles are fellow-heirs, and make but one body with the Jews, being ſharers with them in the promiſes of God in the goſpel. "Holding the *myſtery* of the faith in a pure conſcience, 1 *Tim.* iii. 9. "When the ſeventh angel begins to ſound his trumpet, the *myſtery* of God ſhall be finiſhed, as he has declared to his ſervants the prophets, *Revel.* x. 7."

Additions of MYSTERY. See the article ADDITION.

MYSTES. See the article HYDROMYSTES.

MYSTICAL, ΜΥΣΤΙΧΩΣ, MYSTIC, ſomething *myſterious*, or allegorical. See MYSTERY, ALLEGORY, *&c.*

The commentators on the ſcripture, beſides a literal, find alſo a *myſtical*, and a moral meaning.—The bible, they contend, is a book written both within-ſide, and without-ſide.—Within-ſide, in reſpect to the *myſtical*, internal, ſublime, and hidden ſenſe; and without-ſide, in reſpect to the literal and grammatical ſenſe, immediately expreſſed by the words.

In effect, ſeveral of the antient fathers, and doctors of the church, underſtand the books mentioned in Ezech. ii. 10. and in the Apocalypſe, v. 1. *which were wrote both within-ſide, and without*, of the ſcriptures: and take the literal and *myſtical* ſenſe to be here fairly intimated. See Allegorical, Type, *&c.*

The ſenſe of ſcripture, ſay they, is either that immediately ſignified by the words and expreſſions in the common uſe of language: or it is mediate, ſublime, typical, and *myſtical*; wherein the things themſelves ſignified, are made to ſignify ſtill other and further things, according to the particular deſign, and intention of God, and of the prophets and apoſtles inſpired by him. See Typical.

The literal ſenſe they again divide into *proper* literal, which is contained in the words taken ſimply and properly:

And *metaphorical* literal, where the words are to be underſtood in a figurative and metaphorical ſenſe: as, *where the right-eye is commanded to be plucked out*, &c.

Wherever the proper literal ſenſe contains any thing abſurd or indecent, there recourſe muſt be had to the metaphorical literal ſenſe.

All ſcripture has a true literal ſenſe, but not always a *myſtical* one. We muſt ever underſtand it in the literal ſenſe, when it ſpeaks immediately of any of the laws of nature, of charity, of doing good, when it gives us inſtructions for the conduct of life, for regulating our manners, and, when it relates any matter of fact, or point of hiſtory.

The ſame paſſage of ſcripture has ſometimes ſeveral ſenſes, expreſſed and ſignified immediately by the words taken in their proper, and their figurative ſenſe, and which appear to have been all intended by the inſpired perſon who ſpoke them, as having been ſo underſtood by others likewiſe inſpired.—As thoſe words in Pſalm ii. *Thou art my ſon, this day have I begotten thee*; which St. Paul underſtands according to the ſtrict letter in Heb. i. of the generation of Jeſus Chriſt in time: And in Acts xiii. 33. he takes them in a metaphorical ſenſe, and applies them to our Saviour's reſurrection.—Thus in Hoſea xi. 1. the words of the prophecy, *I have called my ſon out of Egypt*, are underſtood literally of the children of Iſrael whom God brought out of Egypt under the conduct of Moſes; and yet in Matth. ii. 15. they are underſtood metaphorically of Jeſus Chriſt. See Prophecy.

The *myſtical ſenſe* of ſcripture is that which the things expreſſed by the words do further ſignify; or it is a ſecond ſignification held forth or ſignified by the firſt: this ſecond being expreſſed immediately by the firſt, and mediately by the words themſelves.

Writers allow of three kinds of *myſtical* ſenſes in the word of God: The firſt correſponding to faith, and called *allegorical*; the ſecond to hope, called *anagogical*; and the third to charity, called the *tropological ſenſe*. See Anagogical.

The four ſenſes, and their applications are included in the Latin diſtich,

Litera geſta docet, quid credas allegoria,
Moralis quid agas, quo tendas anagogia.

Sometimes the ſame word in ſcripture is to be taken in all the four ſenſes.—Thus the word *Jeruſalem* literally ſignifies the capital of Judæa; allegorically, the church militant; tropologically and morally, a believer; and anagogically, heaven. So, that paſſage in Geneſis, *Let there be light, and there was light*; ſignifies, according to the letter, corporeal light; by allegory, the meſſiah; in the tropological ſenſe, grace; and anagogically, beatitude, or the light of glory.

MYSTIC *theology*, denotes a refined and ſublime kind of divinity, profeſſed by the *myſtics*. See Mystics, and Theology.

It conſiſts in a knowledge of God, and divine things, not acquired in the common way, but infuſed immediately by God, and which has the power to move the ſoul in an eaſy, calm, devout, affective manner; to unite it intimately to God; to illumine the underſtanding, and warm and enliven the will in an extraordinary manner.

Among the writings attributed to Dionyſius the areopagite, is a diſcourſe of *myſtic theology*. Several others have wrote on the ſame ſubject, both antients and moderns.

MYSTICS, Mystici, a kind of religious ſect, diſtinguiſhed by their profeſſing pure, ſublime, and perfect devotion, with an intire diſintereſted love of God, free from all ſelfiſh conſiderations. See Quietism, *&c.*

The *myſtics*, to excuſe their fanatic extaſies, and amorous extravagancies, alledge that paſſage of St. Paul; *The ſpirit prays in us by ſighs and groans that are unutterable.* Now, if the ſpirit, ſay they, pray in us; we muſt reſign ourſelves to its motions, and be ſwayed, and guided by its impulſe, by remaining in a ſtate of mere inaction.

Paſſive contemplation is that ſtate of perfection to which the *myſtics* all aſpire. See Contemplation.

MYTHOLOGY *, ΜΥΘΟΛΟΓΙΑ, the hiſtory of the fabulous gods, and heroes of antiquity; with the explanation of the myſteries or allegories couched therein. See God, Hero, Fable, Theogony, *&c.*

* The word is Greek, and ſignifies a diſcourſe or deſcription of fables; from μυθος, *fabula*; and λογος, *ſermo*, diſcourſe.

MYURUS *, ΜΥΟΥΡΟΣ, in medicine, a pulſe which is continually weakening by inſenſible degrees; ſo that the ſecond beat is fainter than the firſt; the third than the ſecond, *&c.* See Pulse.

* The word is compounded of μυς, mouſe, and ουρα, tail; the diminution of the pulſe being ſuppoſed like that of the thickneſs of the tail of that animal, which grows leſs from the root to the tip.

N.

N, A liquid conſonant, and the thirteenth letter of the Greek, Latin, Engliſh, *&c.* alphabets. See **Letter** and **Alphabet**.

The *N* is a naſal conſonant: Its ſound is that of a d, paſſed through the noſe; ſo that when the noſe is ſtopped by a cold, or the like, it is uſual to pronounce d for *n*. M. l' Abbe de Dangeau obſerves, that in the French, the *n* is frequently a meer naſal vowel, without any thing of the ſound of a conſonant in it.—He calls it the Sclavonic vowel. The Hebrews call their *N*, *Nun*, which ſignifies child, as being ſuppoſed the offspring of M; partly on account of the reſemblance of ſound, and partly on that of the figure.—Thus from the m, by omitting the laſt column, is form'd n: and thus from the capital *N*, by omitting the firſt column, is form'd the Greek minuſcule ν.—Hence for Biennius, *&c.* the Latins frequently uſe Bimus, *&c.* And the ſame people convert the Greek ν at the end of a word into an m; as, φαρμαχον, pharmacum, *&c.* See M.

N before p, b, and m, the Latins change into m, and frequently into l and r, as in-ludo, illudo; in-rigo, irrigo, *&c.*—in which they agree with the Hebrews, who in lieu of Nun, frequently double the following conſonant; and the Greeks do the ſame, as when for Manlius, they write Μαλλιος; *&c.* The Greeks, alſo, before κ, γ, χ, ν, changed the ν into γ: in which they were followed by the ancient Romans, who for Angulus wrote Aggulus; for anceps, agceps, *&c.*

The Latins retrench the *n* from Greek nouns ending in ων; as λεων, leo; δρακων, draco.—On the contrary, the Greeks add it to the Latin ones ending in *o*; as Κατων. Νερων, for Cato, Nero.

N, among the ancients, was a numeral letter, ſignifying 900; according to the verſe in Baronius,

N, quoque Nongentos numero deſignat habendos.

And when a line was ſtruck over it, $\overline{N}$, nine thouſand.

Among the ancient lawyers, *N. L.* ſtood for non liquet, *i. e.* the cauſe is not clear enough to paſs ſentence upon.

N. or N°, in commerce, *&c.* is uſed as an abbreviation of numero, number.—Thus alſo in medicine, caryophyllorum, N° vi. ſignifies ſix cloves.

NAAM, Namium, in law, the taking, or diſtraining another man's moveable goods. See **Distress**.

This is either *lawful*, or *unlawful*, and prohibited.

Lawful NAAM, is a reaſonable diſtreſs, proportionable to the value of the thing deſtrained for; and was anciently call'd either *vif* or *mort*, as it was made of quick, or dead chattel. Lawful *Naam*, is ſo either by the common law; as when a man takes another's beaſts doing damage in his ground; or by a man's particular fact, as on account of ſome contract, *&c.*

Unlawful NAAM, *Vetitum Namium.* See **Namium**, and **Vetitum**.

NABONASSAR. The Æra of Nabonassar is famous: We know but little of the hiſtory of the man; only that he was king of Babylon, and was alſo call'd Beleſus; tho' ſome will have him the Baladan mention'd in Iſaiah xxxix. 1. and 2 Kings xx. 12. Some even conjecture that he was a Mede; and that he was ſet on the throne by the Babylonians, upon their riſing and ſhaking off the ſubjection of the Medes.

The beginning of this prince's reign is of great importance in chronology; by reaſon Ptolemy aſſures us, there were aſtronomical obſervations made by the Chaldeans from Nabonaſſar to his time: and Ptolemy, and the other aſtronomers, account their years from that epocha. See **Astronomy**.

From the obſervations quoted by Ptolemy, it follows, that the firſt year of this æra is the 747th year before Jeſus Chriſt; and the 3967th of the Julian period. See **Epocha**.

The years of this epocha are Egyptian years, of 365 days each; commencing on the 29th of February, and reckon'd, according to the computation of aſtronomers, from noon. See **Year**.

NADIR,* in aſtronomy, a point in the heavens diametrically oppoſite to the Zenith. See **Zenith**.

* The word is pure Arabic, where it ſignifies the ſame.

The *Nadir* is that point directly under our feet; or a point in a right line drawn from our feet through the center of the earth, and terminating in the under-hemiſphere.

The Zenith and *Nadir* are the two poles of the horizon, each 90° diſtant from it, conſequently each in the meridian. See **Horizon**.

Sun's Nadir, is the axis of the cone projected by the ſhadow of the earth; thus call'd, in regard that axis being prolonged, gives a point in the ecliptic diametrically oppoſite to the Sun.

NÆVI, or Nevi, in the animal oeconomy, marks made on the fœtus, by the imagination of the pregnant mother, in longing for any thing. See theſe accounted for under the article **Monster**. See alſo **Foetus** and **Imagination**.

NAIADS,* or Naids, Naiades, a ſort of nymphs, or heathen divinities, ſuppoſed to preſide over fountains, and rivers. See **Nymph** and **God**.

* The word comes from the Greek, ναω, fluo, I flow; or from ναιω, I inhabit, abide.

Strabo ſays, the *Naiades* were prieſteſſes of Bacchus.

NAIANT, or Natant, q. d. ſwimming; a term in heraldry, uſed in the blazoning of fiſhes, when drawn in an horizontal poſture, feſs-wiſe, or tranſverſely, a-croſs the eſcutcheon; that being their ſwimming poſture. See **Fish**.

NAILING *of cannon*, the driving of a nail, or iron ſpike, by force, into the touch-hole of a piece of artillery; ſo as to render it for ſome time uſeleſs to the enemy. See **Cannon**.

NAILS, in the animal body, a kind of horny excreſcences, growing over the ends of the fingers, and toes of men, and ſeveral other animals; much of the ſame nature with the hoofs of others. See **Finger** and **Toe**.

Hoofs being nothing elſe but a number of ſmall husks, anſwer to ſo many papillæ of the ſkin; it may be concluded, that *Nails* are no more but the covers, or ſheaths of the papillæ pyramidales of the ſkin, on the extremities of the fingers and toes, which dry, harden, and lie upon one another. See **Papillæ**.

Their uſe is to ſtrengthen and defend the ends of the fingers in handling any hard, and rugged bodies; that part being exceedingly ſenſible, by reaſon of the great number of nerves which terminate here for the ſenſation of feeling. See **Feeling**.

The *Nails* are formed, and grow after the ſame manner as the reſt of the body; their nouriſhment they receive from their roots, as is eaſily obſervable from the white ſpecks ſometimes ſeen on them, and which conſtantly recede from the root.

The Romans were very curious in the cutting their *Nails*, and had it done by artiſts, who made an employment of it.

The Chineſe doctors and literati pique themſelves on the exceſſive length of their *Nails*. F. le Compte ſays, ſome of them wear *Nails* near as long as their fingers. See **Circumcision**.

Nails, in building, *&c.* are little metalline members, ſerving to bind, or faſten the parts together, *&c.* See **Iron**, *&c.*

The ſeveral kinds of *Nails* are very numerous.—As *Back* and *Bottom Nails*; made with flat ſhanks to hold faſt, and not open the wood.—*Clamp Nails*, thoſe proper to faſten the clamps in buildings, *&c.*—*Claſp Nails*, whoſe heads claſping and ſticking into the wood, render the work ſmooth, ſo as to admit a plane over it: They are of two kinds, viz. *long*, proper for fine buildings of fir, *&c.* and *ſtrong*, fit for oak, and other hard wood.—*Clench Nails*, thoſe uſed by boat, barge, *&c.* builders; proper for boarded buildings, that are to be taken down, becauſe they will drive without ſplitting, and draw without breaking.—*Clout Nails*, thoſe ordinarily uſed for nailing on of clouts to axle-trees.—*Deck Nails*, thoſe proper for faſtening of decks in ſhips, doubling of ſhipping, and floors laid with planks.—*Dog Nails*, proper for faſtening of hinges to doors, *&c.*—*Flat Points*, are of two kinds, viz. *longs*, much uſed in ſhipping, and proper where there is occaſion to draw, and hold faſt, yet no neceſſity of clenching.—*Jobent Nails*, thoſe commonly uſed to nail thin plates of iron to wood.—*Lead Nails*, uſed to nail lead, leather, and canvas to hard wood.—*Port Nails*, commonly uſed to nail hinges to the ports of ſhips.—*Pound Nails*, are four-ſquare in the ſhank; much uſed in Norfolk, Suffolk and Eſſex, though ſcarce elſewhere, except for paling.—*Ribbing Nails*, uſed to faſten the ribbing, to keep the ribs of ſhips in their place in building.—*Roſe Nails*, are drawn four-ſquare in the ſhank, and commonly in a round tool.—*Rother Nails*, chiefly uſed to faſten rother-irons to ſhips.—*Round-head Nails*, proper to faſten on hinges, or other uſes, where a neat head is required.—*Scupper Nails*, much uſed to faſten leather and canvas to wood.—*Sharp Nails*, much uſed, eſpecially in the Weſt-Indies, made with ſharp points, and flat ſhanks.—*Sheathing Nails*, uſed to faſten ſheathing-boards to ſhips: the rule for their length, is to have them full three times as long as the board is thick.—*Square Nails*, of the ſame ſhape as *Sharp Nails*; chiefly uſed for hard woods.—To which may be added *Tacks*; the ſmalleſt ſerving to faſten paper to wood; middling, for wool-cards and oars; larger, for Upholſterers, and pumps.

In lathing, 500 *Nails* are ordinarily allow'd to a bundle of five-foot laths.—In flooring, 200, i. e. 240 are allow'd for a ſquare of flooring.

Nails are ſaid to be toughned, when too brittle, by heating them in a fire-ſhovel, and putting ſome tallow or greaſe among them. See TEMPERING.

NAIL is alſo a ſort of long meaſure, chiefly uſed in the commerce of cloths; containing the ſixteenth part of a yard. See YARD and MEASURE.

NAIRANGIA, * a kind of divination, in uſe among the Arabs, drawn from ſeveral phænomena of the ſun and moon. See DIVINATION.

* The word is form'd from the Arabick *Nairan*, the plural of *Nair*, light.

NAISSANT, in heraldry, is applied to a lion, or other animal, ſhewing only the head, ſhoulders, fore-feet, and legs, with the tip of the tail; the reſt of the body lying hid under the ſhield, or ſome charge, or ordinary thereon; from which it appears to be iſſuing or ariſing.—See *Tab. Herald. fig.* 28.

Naiſſant differs from Iſſuant, in that the animal in the former caſe iſſues out at the middle, and in the latter, at the bottom, of the ſhield, or charge. See ISSUANT.

F. Meneſtrier ſays, *Naiſſant* is only uſed for animals, which ſhew the bare head as ariſing out of the extremity of the chief, or from above the feſſe.

NAKED, in architecture. NAKED of a wall, *&c.* is the ſurface, or plain, from whence the projectures ariſe; or which ſerves as a ground to the projectures. See *Tab. Archit. fig.* 24. lit. r. See alſo PROJECTURE.

Thus, we ſay, a pilaſter ought to exceed the *Naked* of the wall by ſo many inches; and that the foliages of a capital ought to anſwer to the *Naked* of the column. See COLUMN, *&c.*

NAKED *Fire*, is a term uſed by chymiſts for an open fire; or one where the containing veſſel is immediately expoſed to the fire. See FIRE and HEAT.

NAKED *Seeds*, in botany, are ſuch ſeeds of plants as are not incloſed in any pod, or caſe. See PLANT and SEED.

NAMATION, NAMATIO, in law, the act of diſtraining, or taking a diſtreſs. See DISTRESS, and NAAM.

In Scotland, the word is particularly uſed for impounding. See POUND.

NAME, denotes a word, whereby men have agreed to expreſs ſome idea; or which ſerves to denote, or ſignify a thing, or ſubject ſpoken of. See WORD.

This the Grammarians uſually call a *Noun*, *Nomen*, though their *Noun* is not of quite ſo much extent as our *Name*. See NOUN.

Seneca, Lib. II. *de Beneficiis*, obſerves, that there are a great number of things which have no *Name*; and which, therefore, we are forced to call by other borrowed *Names*. *Ingens eſt*, ſays he, *rerum copia ſine nomine, quas cum propriis appellationibus ſignare non poſſumus, alienis accommodatis utimur:* Which may ſhew why, in the courſe of this dictionary, we frequently give divers ſenſes to the ſame word.

It was Adam that firſt gave things their names, Gen. ii. 19. *Formatis, igitur, Dominus Deus, de humo cunctis animantibus terræ, & univerſis volatilibus cœli, & omnibus beſtiis terræ, adduxit ea ad Adam, ut videret quid vocaret ea; omne enim quod vocavit Adam animæ viventis ipſum eſt nomen ejus.* Ver. 20. *Appellavitq; Adam nominibus ſuis cuncta animantia, & univerſa volatilia cœli, & omnes beſtias terræ.*

Names are diſtinguiſhed into *proper* and *appellative*.

Proper **NAMES**, are thoſe which repreſent ſome individual thing, or perſon; ſo as to diſtinguiſh it from all other things of the ſame ſpecies.—As, Socrates, which repreſents a certain philoſopher. See PROPER.

Appellative, or *General* **NAMES**, are thoſe which ſignify common ideas; or which are common to ſeveral individuals of the ſame ſpecies,—As, horſe, animal, man, oak, *&c.*

Proper Names are either called *Chriſtian*, as being given at baptiſm; or *Surnames:* the firſt, impoſed for diſtinction of perſons; anſwering to the Roman prenomen. See PRENOMEN.

The ſecond, for the diſtinction of families, anſwering to the nomen of the Romans, and the patronymicum of the Greeks. See SURNAME.

Originally every perſon had but one *Name*; as among the Jews, Adam, *&c.* among the Egyptians, Buſiris; among the Chaldees, Ninus; the Medes, Aſtyages; the Greeks, Diomedes; the Romans, Romulus; the Gauls, Divitiacus; the Germans, Arioviſtus; the Britains, Caſſibelan; the Engliſh, Hengiſt, *&c.* And thus of other nations, except the ſavages of mount Atlas, whom Pliny and Marcellinus repreſent as anonymi, nameleſs.

The Jews gave the *Name* at the circumciſion, viz. eight days after the birth: The Romans to females the ſame day, to males the ninth; at which time they held a feaſt, call'd *Nominalia*. See LUSTRAL and LUSTRIC.

Since chriſtianity has obtained, moſt nations have followed the Jews, baptizing, and giving the *Name* on the eighth day after the birth; except our Engliſh anceſtors, who, till of late baptized, and gave the *Name* on the birth-day. See BAPTISM.

The firſt impoſition of *Names* was founded on different views, among different people; the moſt common was to mark the good wiſhes of the parents, or to intitle the children to the good fortune a happy *Name* ſeemed to promiſe.—Hence, Victor, Caſtor, Fauſtus, Statorius, Probus, *&c.*

Accordingly, we find ſuch *Names*, by Cicero called *Bona Nomina*, and by Tacitus, *Fauſta Nomina*, were ſtill firſt enrolled, and ranged in the Roman muſters; firſt called to ſerve at the firſt ſacrifices in the foundation of colonies, *&c.* —And, on the contrary, Livy calls Atrius Umber, *abominandi ominis nomen:* And Plautus, on occaſion of a perſon named Lyco, i. e. Greedy Wolf, ſays;

> *Voſmet nunc facite conjecturam cæterum*
> *Quid id ſit hominis, cui* Lyco *nomen ſiet.*

Hence, Plato recommends it to men to be careful in giving happy *Names*; and the Pythagoreans taught expreſsly, that the minds, actions, and ſucceſſes of men, were according to their *Names*, genius, and fate.—Thus, Panormitan, *ex bono nomine oritur bona præſumptio*; and the common proverb, *Bonum nomen bonum omen:* And hence the foundation of the Onomomantia. See ONOMOMANTIA.

Hence Camden takes it for granted, that the *Names*, in all nations and languages, are ſignificative, and not ſimple ſounds, for meer diſtinction ſake.—This holds not only among the Jews, Greeks, Latins, *&c.* but even the Turks; among whom, Abdalla ſignifies God's ſervant; Soliman, peaceable; Mahomet, glorified, *&c.* And the Savages of Hiſpaniola, and throughout America, who, in their languages, *name* their children, Gliſtering Light, Sun Bright, Fine Gold, *&c.* And they of Congo, by the *Names* of precious ſtones, flowers, *&c.*

To ſuppoſe *Names* given without any meaning, however by the alteration of languages their ſignification may be loſt, that learned author thinks, is to reproach our Anceſtors; and that contrary to the ſenſe of all ancient writers. —Porphyry notes, that the barbarous *Names*, as he calls them, were very emphatical, and very conciſe: And accordingly, it was eſteemed a duty to be φερωνυμοι, or *ſui nominis homines:* as Severus, Probus, and Aurelius, are called *ſui nominis imperatores.*

And it was the uſual way of giving *Names*, to wiſh the children might diſcharge their *Names*.—Thus when Gunthram, king of France, named Clotharius at the font, he ſaid, *Creſcat puer, & hujus ſit nominis executor.*

The ancient Britains, Camden adds, generally took their *Names* from colours, becauſe they painted themſelves; which names are now loſt, or remain hid among the Welch.—When they were ſubdued by the Romans, they took Roman *Names*; ſome of which ſtill remain, corrupted; though the greateſt part are become extinct, upon the admiſſion of the Engliſh Saxons, who introduced the German *Names*, as Cridda, Penda, Oſwald, Edward, *&c.*—The Danes, too, brought with them their *Names*; as Suayne, Harrold, Knute, *&c.*

The Normans, at the conqueſt, brought in other German *Names*, as originally uſing the German tongue; ſuch as Robert, William, Richard, Henry, Hugh, *&c.* after the ſame manner as the Greek *Names*; Aſpaſius, Boethius, Symmachus, *&c.* were introduced into Italy, upon the diviſion of the empire.—After the conqueſt, our nation, which had ever been averſe to foreign *Names*, as deeming them unlucky, began to take Hebrew *Names*; as Matthew, David, Sampſon, *&c.*

The various *Names* anciently, or at preſent obtaining among us, from what language or people ſoever borrowed, are explained by Camden in his Remains.—As to the period when *Names* began to be multiplied, and *Surnames* introduced, *&c.* See SURNAME.

Of late years it has obtained among us to give *Surnames* for *Chriſtian Names*; which ſome diſlike, on account of the confuſion it may introduce.—Camden relates it as an opinion, that the practice firſt began in the time of Edward VI. by ſuch as would be godfathers, when they were more than half fathers. Upon which, ſome were perſuaded to change their *Names* at confirmation; which, it ſeems, is uſual in other countries.—Thus, two ſons of Henry II. of France, chriſten'd Alexander and Hercules, changed them at confirmation into Henry and Francis.

In monaſteries, the religious aſſume new *Names* at their admittance; to ſhew they are about to lead a new life, and have renounced the world, their family, and even their *Name:* v. g. Siſter Mary of the incarnation, Brother Henry of the holy ſacrament, *&c.*

The Popes alſo change their *Name* at their exaltation to the pontificate; a cuſtom firſt introduced by Pope Sergius, whoſe *Name*, till then, as Platina informs us, was Swine-ſnout. But Baronius refers it to Pope Sergius I. and Onuphrius to John XII. or XIII. and at the ſame time, adds a different reaſon for it from that of Palatina, *viz.* that it was done in imitation of St. Peter and St. Paul, who were firſt called Simon and Saul.—Indeed pope Marcellus, of late, refuſed to change his *Name*.

In Italy, 'tis frequent to join the *Name* of ſome ſaint, in a kind of devotion, to the chriſtian *Name*; as Joannes Baptiſta Spinoſa, &c.

Among the Ancients, thoſe deified by the heathen conſecrations, had new *Names* given them; as Romulus was called Quirinus; Melicertes, Portunus, or Portumnus, &c. See CONSECRATION.

New *Names* were alſo given in adoptions, and ſometimes by teſtament; thus L. Æmilius, adopted by Scipio, took the *Name* of Scipio Africanus; and thus Auguſtus, who at firſt was called C. Octavius Thurinus, being adopted by the teſtament of Julius Cæſar into his name and family, took the name of Caius Julius Cæſar Octavianus. See ADOPTION.

Names were alſo changed at enfranchiſements into new cities. —Thus Lucumo, at his firſt being made free of Rome, took the *Name*, Lucius Tarquinius Priſcus, &c. and ſlaves, when made free, uſually aſſumed their maſters *Names*. See FREEDOM, SLAVE, &c.

Thoſe called to the equeſtrian order, if they had baſe *Names*, were always new named, *Nomine ingenuorum veterumq; Romanorum*.—And among the primitive Chriſtians, it was the practice to change the *Names* of the catechumens: thus the renegado Lucianus, till his baptiſm, was called Lucius.

Of the NAME, is a phraſe, frequent among hiſtorians, and genealogiſts, to denote perſons of the ſame quality, and *Name*.—It is near nine hundred years ſince the emperors of the weſt firſt began to diſtinguiſh themſelves in this manner by their number; and in the *Italia Sacra* of Ughellus, we meet with a charter of the emperor Louis le Debonnaire, anno 818. wherein he ſtyles himſelf the firſt *of the Name*. Le Blanc mentions a charter of the year 1084. wherein the emperor Henry III. ſtyles himſelf king of Italy, the fourth *of the Name*; and emperor, the third *of the Name*.

Some French writers obſerve, that in a manuſcript preſerved in the king's library, their Louis XI. is only ſtyled the ninth *of the Name*; Louis the Debonnaire, and Louis the Stammerer, not being then reckon'd in the number, by reaſon they were emperors, as well as kings of France: On which footing, the preſent king, inſtead of the fifteenth, ſhould only be the thirteenth *of the Name*.

NAMIUM, NAAM, in Law. See NAAM.

NAMIUM *Vetitum*, or *Prohibited* NAAM, is an unjuſt taking the cattle of another, or driving them to an unlawful place, pretending damages done by them. See NAAM.

In ſuch caſe, the owner of the cattle may demand ſatiſfaction for the injury, which is call'd *Placitum de namio vetito*. See VETITUM.

NAPE, is uſed for the hind-part of the neck; by reaſon, perhaps, of the ſoft ſhort hair growing thereon, like the nap of a cloth. See NECK and NUCHA.

NAPELLUS, See the article ACONITE.

NAPHTHA,* Ναφθα, a kind of liquid bitumen, very oily and inflammable; exuding out of the earth in ſeveral Places in Chaldæa; particularly the place where ſtood the ancient Babylon: and found alſo in ſome provinces of Italy and France, particularly Auvergne, and near Raguſa. See SULPHUR and BITUMEN.

* The word in the original Chaldee, ſignifies *ſtillare*, to ooze, or drop; *Naphtha*, according to Pliny, running like a kind of bitumen.

Naphtha is found ſwimming on the ſurface of the water of ſome ſprings. It is uſually of a black colour; though that found in certain ſprings about Babylon is ſaid to be whitiſh.

That of France is ſoft and black, like liquid pitch, and of a fœtid ſmell; that of Italy is a kind of petrol, or a clear oil, of various colours, oozing out of a rock, ſituate on a mountain in the dutchy of Modena. See PETROL.

Naphtha is eſteemed penetrating, reſolutive, and vulnerary; but its virtues are little known in medicine: its chief uſe is in lamps, &c. on account of its inflammability.

The Turks call the *Naphtha*, *carab ſakiz*, black maſtic, to diſtinguiſh it from pitch. Voſſius has an expreſs treatiſe on *Naphtha*, ancient and modern: He ſays, it is a flower of bitumen, of more virtue than any other bitumen.

NAPIERS, or NEPERS *Bones*. See NEPERS *Bones*.

NARCOTICS,* in medicine, opiates, or medicines that excite drowſineſs, and ſleep. See Opiates.

* The word comes from the Greek, ναρκωτικὸς, of ναρκωσις, drowſineſs.

Narcotics, call'd alſo *Hypnotics*, and *Soporifics*, act by calming, and diminiſhing the motion of the blood, and ſpirits. See HYPNOTICS and SOPORIFIC.

Authors are of various opinions, as to the manner wherein *Narcotics* operate: The Ancients tell us, it is by their being cold in nature, whereby they ſtupify and deaden the ſenſe. Etmuller, after Willis, takes the animal ſpirits to be compoſed of a fluid, volatile ſalt; and thinks they are diſſolved by the mixture of ſulphurs and oils, wherewith *Narcotics* abound.—M. Andry's opinion is, that the ſalt of *Narcotics* diſſolves in any liquor whatever, and that their ramous branches becoming thus diſengaged from the ſalts, are embarraſſed among one another, and thus ſtop the courſe of the blood and ſpirits.—Others think, that *Narcotics* cloſe the orifices of the nerves, and thus block up the paſſage of the ſpirits.—Laſtly, Linden, in his treatiſe *de Venenis*, thinks, that the operation of *Narcotics* is not the ſame in all; drowſineſs being producible from a great variety of different cauſes. See SLEEP.

NARRATION, in oratory and hiſtory, a recital, or rehearſal of a fact as it happened, or as it is ſuppoſed to have happened.

This is of two kinds: either *ſimple*, and *hiſtorical*; as where the auditor or reader is ſuppoſed to hear or read of a tranſaction at ſecond hand.—or *artificial* and *fabulous*, as where their imaginations are raiſed, and the action, as it were, reacted before them.

The *Narration*, according to the writers of rhetoric, makes the ſecond part of a juſt ſpeech, or harangue; *viz.* that immediately following the exordium. See ORATION.

It makes the whole of a hiſtory; abating for the occaſional reflections, epiſodes, and digreſſions. See HISTORY.

Cicero requires four virtues in a *Narration*, *viz.* perſpicuity, probability, brevity, and ſweetneſs.

The *Narration* is rendred perſpicuous, by obſerving the order of time, by uſing none but proper and known terms, and by reciting the action uninterruptedly. See OBSCURITY.

It is rendred probable, by the credibility of the narrator, by the ſimplicity and openneſs of the *Narration*, by avoiding every thing far remote from the common ſenſe and opinion of mankind, and by a preciſe detail of circumſtances. See PROBABILITY.

It is rendred brief, by taking it up no higher than is juſt neceſſary; nor fetching it back, as that impertinent author in Horace, *Qui gemino bellum trojanum orditur ab ovo*: And by avoiding trivial circumſtances.

Laſtly, it is rendred ſweet, by uſing ſmooth, numerous, and well-ſounding words; by arranging them, ſo as to avoid any hiatus, or claſhing. By the greatneſs, novelty, and unexpectedneſs of the things related; and by enriching it with tropes and figures: as, frequent admirations, exclamations, interrogations, expectations, ſuſpences, ſurprizing events; by grief, joy, fear, &c. See NUMBERS, CADENCE, and TROPE.

NARRATION, in poetry, is uſed more particularly for the action, or event, that makes the ſubject of an epic poem. See ACTION.

F. Boſſu obſerves, that the actions in poetry are equally ſuſceptible of the two kinds of oratorial *Narration*; and that each conſtitutes a particular ſpecies of poetry.

Thoſe under the artificial, or active form, are now called *Dramatic*. See DRAMA.

And thoſe only related by the poet, who here perſonates an hiſtorian, are called *Epic*. See EPOPEA.

In the drama, the *Narration* is the whole of the piece; in the epopea, it is only a part, though in effect it is the principal part, and the body of the poem.—It is preceded by the propoſition and invocation, which Boſſu calls the preludes; and is frequently interrupted by the poet's ſpeaking in perſon, demanding pardon, favour, &c. See INVOCATION, &c.

The *Narration* includes the whole action, epiſodified, with all its circumſtances and its ornaments. See EPISODE.

It is in this part that the action is to be begun, carried on, and ended. It is this, is to ſhew the cauſes of all that is related: in this the difficulties are to be propoſed and reſolved, and the perſons, both human and divine, are here to ſhew their intereſts, their manners, and their qualities, by their actions and their diſcourſe: and all this is to be deſcribed with the beauty, the majeſty, and force of verſe, ſtyle, ſentiments, compariſon, and other ornaments proper to the ſubject in general, and to each thing in particular. See STYLE.

The qualities of the epic *Narration* are, that it be agreeable, probable, moving, ſurprizing, and active.

Horace ſpeaks of the utile and dulce as on the ſame footing. Boſſu looks on the utile as an eſſential property; and the dulce as no more than an additional quality.

NASAL, ſomething belonging to the noſe, *naſus*.—As, the noſe-piece of a helmet, anciently called *Naſale*.

NASAL, in grammar, &c. is applied to thoſe ſounds, or letters, in whoſe formation the noſe is the principal organ; and particularly where the ſound formed is paſſed through the noſe. See LETTER.

In moſt Engliſh words, the ſounds expreſſed by the characters an, en, in, on, un, are ſimple ſounds, and proper *Naſal* vowels. See M, N, &c.

NASALIA, in medicine, a ſort of remedies to be taken by the noſe; called alſo *errhines*. See ERRHINES.

NASI *Os*, in anatomy, a thin bone, making the upper part of the noſe. See NOSE.

NATALIS, NATALIS *Dies*, or NATALITIUM, properly ſignify a man's birth-day. See NATIVITY.

The word was firſt uſed among the Heathens, to ſignify the feaſt held on the anniverſary of the birth of an emperor; whence it came, in time, to ſignify any ſort of feaſt. And, accordingly, in the Faſti, we meet with *Natalis Solis*, *Natalis Invicti*, &c. See FEAST.

The primitive Chriſtians, finding the word thus eſtabliſhed, uſed it in the ſame manner; and hence we meet in the ancient martyrologiſts with *Natalis Calycis*, for the feaſt of the ſupper, or Maunday-Thurſday: *Natalis Cathedræ*, for the pontificate of St. Peter: *Natalis*, or *Natalitium*, of ſuch a church, for the feaſt of the dedication. See DEDICATION.

The Word Genethlion is uſed by the Greeks in the ſame ſenſe as *Natalis*, or *Natalitium*, among the Latins.

Ludi NATALITII, NATAL *Games*, were games introduced on the anniverſaries of the birth-days of great men. See GAME.

NATAL *Ring*, *Annulus* NATALITIUS, was a ring only wore on the birth-day. See RING.

NATES, in anatomy, a term expreſſing thoſe two fleſhy poſterior parts of the body, popularly called the *buttocks*: by the Latins *Clunes*, or *Nates*.

NATES *Cerebri*, are two circular protuberances of the brain, ſituate on the back-ſide of the medulla oblongata near the Cerebellum. See BRAIN, and MEDULLA.

NATION, a collective term, uſed for a conſiderable people, inhabiting a certain extent of ground, encloſed within fixed limits, and under the ſame government.

Each *Nation* has its particular character: It is proverbially ſaid, Light as a Frenchman, Waggiſh as an Italian, Grave as a Spaniard, Wicked as an Engliſhman, Fierce as a Scotchman, Drunken as a German, Idle as an Iriſhman, Deceitful as a Greek, *&c.* See CHARACTER.

NATION is alſo uſed in ſome univerſities, for a diſtinction of the ſcholars, and profeſſors of colleges. See UNIVERSITY.

The faculty of Paris conſiſts of four *Nations*; viz. that of France, that of Normandy, that of Picardy, and that of Germany; which are again, excepting that of Normandy, diſtinguiſhed into tribes; each tribe has its deacon.

The German *Nation* comprehends all foreign *Nations*, Engliſh, Italian, *&c.*

When the procureur of the French *Nation* ſpeaks in publick, his ſtyle is, *Honoranda Gallorum Natio:* He of Picardy ſays, *Fideliſſima Picardorum Natio:* He of Normandy, *Veneranda Normannorum Natio:* He of the nation of Germany, *Conſtantiſſima Germanorum Natio.*

NATIONAL *Synod*. See the articles SYNOD, and COUNCIL.

NATIVE, is applied to a perſon conſidered as born in a certain place; or deriving his origin therefrom.

The more accurate writers diſtinguiſh between a *Native* of a place, and being *born* there. Born ſignifies no more than the having been there produced, or brought into the world, whether that were the proper country, or habitation of the parents, or whether they were there only by accident, as ſtrangers, *&c.*—Whereas *Native* refers to the proper manſion, or reſidence of the parents and the family; and where the perſon has his education.

And hence a perſon may be a *Native* of one place, and born at another: Thus Jeſus Chriſt is called a Nazarite, and Galilean, as a *Native*; though he were born at Bethlehem in Juda.

NATIVE, NATIVUS, in our ancient law-books, ſignified a perſon who was born a ſlave or villain. See SLAVE, *&c.*

By which he differed from one who had ſold himſelf, or became a ſlave by his own deed, who was called *bondman.* See VILLAIN.

NATIVE *Tenentes*, in our old law-books, are freemen, who hold *Native* land; *i. e.* land ſubject to the ſervices of *Natives*. Spelm.

NATIVI *de Stipite*, were villains or bond-men by birth or family.—There were alſo *Nativi conventionarii*, who were villains by contract or covenant. *Servi enim alii natura, alii facti, alii emptione, alii redemptione, alii ſua vel alterius datione.* LL. Hen. I. cap. 76.

In Cornwall it was a cuſtom, that if a freeman married *Nativam* (that is a neif) and brought her *ad liberum tenementum & liberum thorum*, and had two daughters, one of them was free, and the other a villain. Bract. l. 4. c. 21. See NEIF.

NATIVITY, NATIVITAS, or *Natal-Day*; the day of one's birth. See NATALIS.

The term is chiefly uſed in ſpeaking of ſaints, *&c.* The *Nativity* of St. John Baptiſt, *&c.*—When we ſay abſolutely the *Nativity*, it is underſtood of that of Jeſus Chriſt, or the feaſt of Chriſtmas. See FEAST, CHRISTMAS, *&c.*

It is commonly held, that pope Teleſphorus was the firſt who decreed the feaſt of the *Nativity* to be held on the 25th of December. John, Archbiſhop of Nice, in an epiſtle upon the *Nativity* of Jeſus Chriſt, relates, that at the inſtance of St. Cyril of Jeruſalem, pope Julius procured a ſtrict inquiry to be made into the day of our Saviour's *Nativity*; which being found to be on the 25th of December, they began thenceforth to celebrate the feaſt on that day. See INCARNATION.

NATIVITY, *Nativitas*, in ancient law-books, ſignifies bondage, or ſervitude. See VILLENAGE.

NATIVITY, in aſtrology, the theme, or figure of the heavens, and particularly of the twelve houſes, at the moment when a perſon was born: called alſo *Horoſcope*. See HOROSCOPE.

Caſting the *Nativity*, or by calculation ſeeing to know how long the queen ſhould live, *&c.* was made felony. An. 23. Eliz. c. 2.

NATRON, or ANATRON, in natural hiſtory, a browniſh kind of ſalt, taken out of a lake of ſtagnant water, in the deſert of Nitria, in Egypt. See SALT.

It is much of the nature of nitre, whence it is called Egyptian nitre, and is even ſuppoſed to be the proper nitre of the Ancients. See NITRE.

It is a popular error, that all bones or ſtones thrown into this lake, are by degrees converted into *Natron.*—It makes a great ebullition, when mixed with acids; whence it is ranked as of the alkali kind. See ACID and ALKALI.

It is uſed in the whitening of linnen; but burns them, if not corrected by a mixture of aſhes. See BLEACHING.

The *Natron* of Egypt, as deſcribed by Pliny, Matthiolus, and Agricola, is an alkali ſalt perforated in manner of a ſponge, and of a lixivial taſte.

Its principles, Dr. Leigh takes to be chiefly two; *viz.* a ſea-ſalt, and an urinous ſalt. The firſt, he takes it for granted, it receives from the earth; the ſecond, from the air.

Dr. Huntington, who was on the ſpot, ſays the *Natron* is thought to riſe from the bottom of the lake; where, by the heat of the ſun, it is condenſed, and hardened into the form we ſee it in: But his opinion is, that it is rather ſeparated by the ſun from the water.

M. de la Chambre adds, that three or four days before the Nile begins to overflow, there falls a certain dew, of a fermentative virtue, inſomuch as to leaven a paſte expoſed to it; and that at the ſame time the *Natron* riſes.

Hippocrates, Galen, Matthiolus, Dioſcorides, *&c.* mention it as of uſe in phyſic; and M. de Cloſs is even of opinion, that all the mineral waters of France are impregnated with this kind of nitre; and that it is hence they derive their medicinal virtues.

It is of ſingular efficacy in fertilizing of ground; which Dr. Leigh accounts for, by ſuppoſing its volatile particles heated by ſome ſubterraneous fire, or by the warmth of the ſun; and thus readily made to aſcend up the minute tubes of plants, and carry with them the juices of the earth.

Pliny derives the invention of glaſs from ſome of this *Natron* accidentally melted down into the ſand, where it ran into ſtreams of glaſs. See GLASS.

This nitre is diſtinguiſhed from the modern nitre, or ſaltpetre, by its fermenting with acids, which ſaltpetre will not do; by its volatile ſpirit, its lixivial ſmell, the clammy inſipid ſubſtance it yields, *&c.*—It agrees with ſaltpetre, in that, by dropping ſpirit of ſulphur upon it, it ſhoots into pyramidal cryſtals. Dr. Leigh thinks it comes nearer ſal armoniac than ſaltpetre. See SALTPETRE.

Dr. Liſter conjectures, that moſt of the ſalt water of the lakes of Egypt, having paſſed through the bodies of thoſe vaſt animals wherewith they are ſtocked, as crocodiles, hippopotami, *&c.* muſt of conſequence be rendred urinous, or ſalino-urinous; which is a part of the compoſition of ſal armoniac. See ARMONIAC.

NATTA,* or NATA, in medicine, a large fleſhy excreſcence, or tumor ariſing in ſeveral parts of the body.

* The word is alſo written *Naſa*, *Naſda*, and *Napta*.

Blancard defines it, a large, ſoft, painleſs, colourleſs, tumor, ariſing uſually on the back, ſometimes on the ſhoulders, and other parts.—Its root is very ſmall; yet it grows ſo prodigiouſly, that it ſometimes equals a melon, or gourd.

Nattæ, ofteneſt appear on the neck, much after the manner of talpæ. See TALPA.

They are of the oedematous kind, and are to be extirpated by inciſion, and their return prevented by red precipitate, vitriol, or burnt allom ſtrewed on the place.

Bartholine mentions a lady, who cured herſelf of a *Natta*, by biting it off.

NATURAL, ſomething that relates to nature; that ariſes from a principle of nature; or is conformable to the ordinary courſe and order of nature. See NATURE.

When a ſtone falls downwards, we vulgarly ſay it does it by a *Natural* motion; but if it be thrown upwards, its motion is ſaid to be violent. See MOTION.

Water ſuſpended in a ſucking pump, is ſaid to be out of its *Natural* place: Cures wrought by medicines, are *Natural* operations; but the miraculous ones wrought by Chriſt, *Supernatural.* See MIRACLE, *&c.*

NATURAL *Children*, are thoſe born out of lawful wedlock. See BASTARD.

NATURAL *Horizon*, is the ſenſible or phyſical horizon. See HORISON.

NATURAL *Law*. See *Law of* NATURE.

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TAB. NATURAL HISTORY.

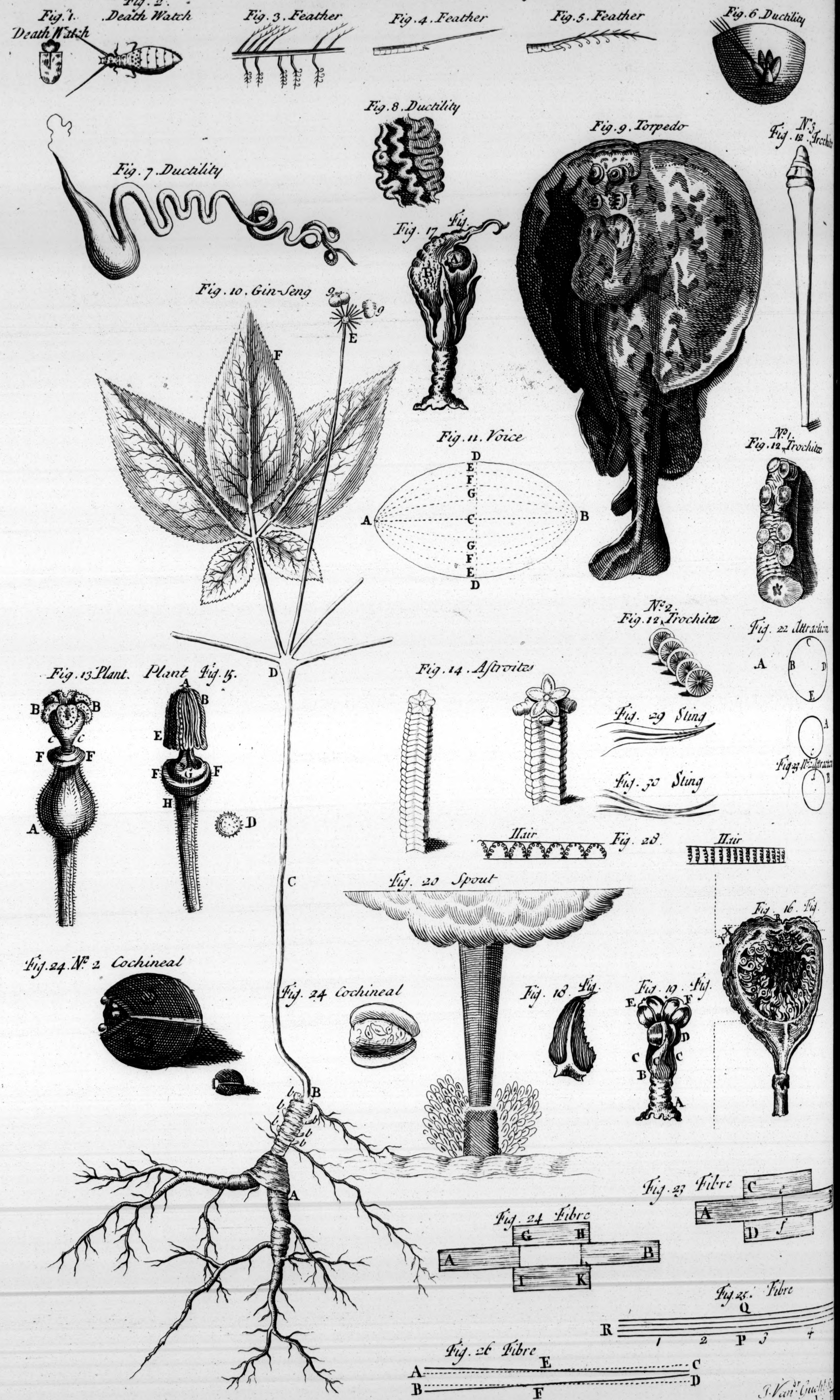
Fig. 1. Death Watch
Fig. 2. Death Watch
Fig. 3. Feather
Fig. 4. Feather
Fig. 5. Feather
Fig. 6. Ductility
Fig. 7. Ductility
Fig. 8. Ductility
Fig. 9. Torpedo
No. 3. Fig. 12. Trochitæ
Fig. 17. Fig.
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Fig. 11. Voice
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Fig. 22. Attraction
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Fig. 13. Plant.
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Fig. 14. Astroites
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Fig. 30. Sting
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Fig. 24. No. 2 Cochineal
Fig. 24. Cochineal
Fig. 18. Fig.
Fig. 19. Fig.
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Fig. 24. Fibre
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Fig. 25. Fibre
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Fig. 26. Fibre
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J. Van^dr Gucht Sc.

NATURAL *Day*, } See the article { DAY.
NATURAL *Year*, } YEAR.

NATURAL *Faculty*. See the article FACULTY.

Quincy defines *Natural Faculty* to be that power, ariſing from the blood's circulation, which is conſpicuous in all the ſecretions performed within the body; that ſecretion alone excepted, which is made at the origin of the nerves. See SECRETION, SPIRIT, NERVE, *&c.*

NATURAL *Functions*, in the animal oeconomy, are thoſe actions whereby things taken into the body are changed, and aſſimilated, ſo as to become parts of our body. See FUNCTION.

Theſe are the actions of the viſcera, the veſſels that receive, retain, move, change, mix, ſecern, apply, excern, and ſpend the humours of the body. See DIGESTION, NUTRITION, *&c.*

NATURAL *Inclinations*, are thoſe tendencies, or motions of the mind, towards things ſeemingly good, which are common, in a greater or leſs degree, to all mankind.

Natural Inclination, according to F. Malebranche, is the ſame thing with regard to minds, that motion is with regard to bodies; and as all the varieties in the material world ariſe from the ſeveral motions of bodies, ſo do all thoſe of the intellectual world from inclinations; and as all motions are the reſults of impreſſions immediately communicated by the finger of the creator, ſo all inclinations are certainly nothing elſe but continual impreſſions of the will of the creator on that of the creature; and muſt therefore of neceſſity be agreeable to his; and therefore can naturally have no principal end but his glory; nor any ſecondary one, but their own preſervation, and that of others: both ſtill with regard to his will who gave them being.

Now, as, properly ſpeaking, there is but one love in God, *viz.* that of himſelf; ſo he only impreſſes one love or deſire in us, which is that of good in the general. It is this general love, or deſire, is the principle of all our particular ones; as, in effect, it is the will itſelf: the will being defined to be a continual impreſſion of the author of nature, which carries the mind of man to good in general. See WILL.

But the impreſſion towards good in the general, doth not only proceed from God, but alſo all our inclinations to particular goods; as, *v. g.* Self-preſervation, *&c.* See PASSION.

NATURAL *Hiſtory*, a deſcription of the natural products of the earth, water, or air; *v. g.* beaſts, birds, fiſhes, metals, minerals, and foſſils; together with ſuch extraordinary phænomena, as at any time appear in the material world; as meteors, monſters, *&c.* See HISTORY.

Beſides *General Natural Hiſtories*, as thoſe of Pliny, *&c.* there are *particular* ones; and that of two kinds.—The firſt, thoſe which only conſider one kind of things; ſuch as the Hiſtory of Shells, by Dr. Liſter; of Fiſhes, by Willoughby; that of Birds, by the ſame; that of Plants, by Ray; thoſe of Inſects, by Swammerdam, and Mouffet; that of Animals, by Geſner; that of Foſſils, by Agricola, Mercatus, *&c.*

The ſecond, thoſe which conſider the ſeveral kinds of natural things found in particular countries, or provinces; as the *Natural Hiſtory* of Dauphiné, by Chorier; the *Natural Hiſtory* of the Antilles, by F. du Tertre, and M. Lonvillers de Poincy; thoſe of Oxfordſhire and Staffordſhire, by Dr. Plott; that of Lancaſhire, by Leigh; of Northamptonſhire, by Morton; and that of the ſame county, expected from Mr. Bridges; that of the weſtern Iſlands, by Martin, *&c.*

NATURAL *Philoſophy*, that ſcience which conſiders the powers of nature, the properties of *Natural* Bodies, and their mutual action on one another: otherwiſe called *phyſics*. See PHYSICS, and NATURE.

NATURAL *Magic*, is that which only makes uſe of natural cauſes. See MAGIC.

NATURAL *Cauſe*. See the article CAUSE.

NATURAL, in heraldry, is uſed where animals, fruits, flowers, *&c.* are blazoned with the colours they naturally have, though different from the common colours of heraldry: and this is to prevent the armories being accus'd of falſity, when blazon'd with the names of colours unknown in heraldry. See COLOUR and BLAZON.

NATURAL, in muſic, is ſometimes uſed for diatonic. See DIATONIC.

NATURAL is alſo ſometimes for phyſical.—In which latter ſenſe, *Natural Muſic* is that performed by *Natural* organs, *i. e.* vocal muſic; in contradiſtinction to artificial, or inſtrumental. See MUSIC.

NATURAL *Harmony*, is that produced by the natural, and eſſential chords of the mode. See HARMONY.

NATURAL *Note* is uſed in oppoſition to flat and ſharp notes, which are called *artificial notes*. See NOTE, SCALE, *&c.*

NATURAL is alſo uſed for ſomething coming immediately out of the hands of nature.—In which ſenſe it ſtands oppoſed to factitious, or artificial, which ſignifies ſomething wrought by art. See ARTIFICIAL.

Biſhop Wilkins obſerves, that there appears a world of difference between *Natural* and artificial things when viewed with microſcopes; the firſt ever appear adorned with all imaginable elegance and beauty; the latter, though the moſt curious in their kind, infinitely rude and unhewn: The fineſt needle appears a rough bar of iron; and the moſt accurate engraving, or emboſſment, as if done with a mattock or trowel.

NATURALIST, a perſon who has ſtudied nature, and is well verſed in natural bodies, eſpecially what relates to metals, minerals, ſtones, vegetables, and animals. See ANIMAL, PLANT, MINERAL, *&c.*

Ariſtotle, Ælian, Pliny, Solinus, and Theophraſtus, were the greateſt *Naturaliſts* among the ancients; but they fell into abundance of errors, which have been corrected by the happy induſtry of the moderns.—Aldrovandus is the moſt copious and complete of the modern *Naturaliſts*; his work is in thirteen volumes in folio.

NATURALIZATION, in Law, the act of naturalizing an alien, or putting him into the condition of a natural-born ſubject, and entitling him to the rights and privileges thereof. See ALIEN and DENIZEN.

In France, *Naturalization* is the king's prerogative, in England, it is only done by act of parliament.

In France, Swiſs, Savoyards, and Scots, need not any *Naturalization*, being reputed regnicoles, or natives.

NATURALS, *Res* NATURALES, in medicine.—In every animal, howſoever ſick and diſeaſed, there is ſtill remaining ſome degree of life, and ſtrength; and the cauſes and effects of each.—Theſe are called *Naturals*, natural things, or things according to nature; and ſometimes barely nature; in contradiſtinction to *Non-Naturals*. See NON-NATURAL.

NATURE, NATURA, is a term variouſly uſed. Ariſtotle has a whole chapter wrote expreſly to enumerate the various acceptations of the Greek word, φυσις, rendered in Engliſh, *Nature*: and among Latin writers, the different acceptations are ſo many, that a certain author reckons up fourteen, or fifteen. Mr. Boyle, in a preciſe treatiſe of the vulgarly received Notion of *Nature*, gives us eight principal ones.

NATURE, then, is ſometimes uſed for the ſyſtem of the world; the machine of the univerſe; or the aſſemblage of all created beings. See UNIVERSE, and SYSTEM.

In which ſenſe we ſay, the author of *Nature*; the Sun is called the Eye of *Nature*, becauſe he illumines the univerſe, and the Father of *Nature*, becauſe he warms the earth, and makes it fruitful. And thus we ſay of the phœnix, or a chimæra, that there is no ſuch thing in *Nature*.

Inſtead of the word *Nature* in this ſenſe, Mr. Boyle, to avoid ambiguity, and abuſe of the word, wiſhes to have *world*, or *univerſe* ſubſtituted. See WORLD.

NATURE, in a more confined ſenſe, is applied to each of the ſeveral kinds of being, created and increated; ſpiritual and corporeal. See ENS.

In which ſenſe, we ſay, human *Nature*, meaning all men together who poſſeſs the ſame ſpiritual, reaſonable ſoul. Angelical *Nature*; the divine *Nature*, &c.

In this ſenſe, the ſchool divines ſay, *natura naturans*, & *natura naturata*, ſpeaking of God, who is the *natura naturans*, as giving being and *Nature* to all others; in oppoſition to the creatures, who are the *natura naturata*, as receiving their *Nature* from the hands of another.

NATURE, in a ſtill more reſtrained ſenſe, is uſed for the eſſence of a thing; or that which the ſchoolmen call the quiddity thereof, that is, the attribute which makes it what it is. See QUIDDITY.

In which ſenſe, the Carteſians ſay, it is the *Nature* of the ſoul to think; and that the *Nature* of matter conſiſts in extenſion. See SOUL, MATTER, EXTENSION, *&c.*

And here the word *eſſence*, Mr. Boyle would have obtain, in lieu of *Nature*. See ESSENCE.

NATURE is more particularly uſed for the eſtabliſhed order, and courſe of material things; the ſeries of ſecond cauſes; or the laws which God has impoſed on the motions impreſſed by him. See CAUSE, LAW, and MOTION.

In which ſenſe it is we ſay, phyſics is the ſtudy of *Nature*. *Nature* makes the night ſucceed the day; *Nature* has rendered reſpiration neceſſary to life, *&c.*

Thus St. Thomas defines *Nature* a kind of divine art, communicated to beings, which carries them to the end they are determined for.—In which ſenſe, *Nature* is nothing elſe but that concatenation of cauſes and effects, or that order and oeconomy which God has eſtabliſhed in the parts of his creation. See CONCATENATION, *&c.*

In this ſenſe too we ſay, miracles are effects above the powers of *Nature*: Art is ſaid to force or ſurpaſs *Nature*, by means of machines; in regard theſe produce effects which exceed what we find in the common courſe of things. See ART, MIRACLE, *&c.*

NATURE, again, is taken for an aggregate of powers belonging to any body, eſpecially a living one.

In which ſenſe phyſicians ſay, *Nature* is ſtrong, weak, or ſpent; or, that in ſuch a diſeaſe, *Nature* left to herſelf, will perform the cure.

NATURE, is ſtill more ſtrictly uſed for the action of providence, the principle of all things; or, that ſpiritual power, or being, which is diffuſed throughout the creation, and moves and acts in all bodies, and gives them certain properties, and produces certain effects. See PROVIDENCE.

In this, which Mr. Boyle conſiders as the moſt uſual ſenſe, *Nature* is nothing elſe but God, acting himſelf, and according to certain laws he himſelf has fixed. See GOD.

This ſeems pretty agreeable to the opinion of many of the ancients, who made *Nature* the God of the univerſe, the Το Παν, who preſides over, and governs all; though others owned this an imaginary being, and by *Nature* meant no more than the qualities, or virtues, which God has given his creatures, and which their poets and orators took occaſion of perſonifying.

F. Malebranche ſays, the *Nature* ſo much talked of in the ſchools is fit for nothing but to lead us back to idolatry; the ancient heathens hereby underſtanding ſomething, which, without being God, acts continually throughout the univerſe. Thus the idol *Nature* muſt be an actual principle, which, in concurrence with God, is the next and immediate cauſe of all the changes which befal matter. Which ſeems to fall in with the opinion of the *Anima mundi*; as if *Nature* were a ſubſtitute of God, or a collateral cauſe with God, or a middle being between God and created things. See ANIMA MUNDI.

Ariſtotle defines *Nature*, *Principium & cauſa motus & ejus in quo eſt primo per ſe & non per accidens:* A definition ſo obſcure, that none of his commentators, with all their gloſſes, have been able to render it intelligible.

This principle, which the Peripatetics called *Nature*, they ſuppoſed to act neceſſarily; and was therefore deſtitute of knowledge, or liberty. See NECESSITY.

Thus alſo the Stoics conceived *Nature* as a certain ſpirit or virtue diffuſed throughout the univerſe, which gave every thing its motion; ſo that all muſt be dragged away by the invariable order of a blind *Nature*, and an inevitable neceſſity. See FATE.

In ſpeaking of the action of *Nature*, no more is to be underſtood, but that bodies act on one another, in a manner agreeable to the general laws of motion which the creator has eſtabliſhed.

In this lies the myſtery of that great word, which is only a compendious way of expreſſing the action of all bodies: but the mechaniſm of bodies would, perhaps, better expreſs what is here meant by *Nature*. See MECHANISM.

Some, Mr. Boyle obſerves, will have the *Nature* of a thing to be only the law that it receives from the creator, and according to which it acts on all occaſions—But this is an improper, and figurative expreſſion.

The ſame author propoſes a notion of *Nature* as more fit than any yet given, to paſs for the principal one of *Nature*; with regard to which many axioms and expreſſions relating to that word, may be conveniently underſtood. In order to this, he diſtinguiſhes between *general* and *particular Nature*.

General **NATURE** he defines the aggregate of the bodies which make up the world in its preſent ſtate, conſidered as a principle, by virtue whereof they act and ſuffer, according to the laws of motion preſcribed by the author of things.

Particular **NATURE** of any ſubordinate, or individual, conſiſts in the general *Nature* applied to a diſtinct portion of the univerſe.—Or it is a convention of the mechanical properties (as magnitude, figure, order, ſituation, and local motion) of parts convenient and ſufficient to conſtitute or entitle to, its particular ſpecies or denomination, the particular body they make up; the concourſe of all theſe being conſidered as the principle of motion, reſt, &c.

Laws of **NATURE**, are axioms, or general rules of motion, and reſt, obſerved by natural bodies in their actions on one another; and in all the changes which befal them in their natural ſtate. See LAW.

The *Laws of Nature*, and *of motion*, are, in effect, the ſame; cuſtom, indeed, has made ſome difference, and we find authors call the particular caſes of motion, laws of motion; which ſee under MOTION: the more general, or catholick ones, and thoſe from which, as from axioms, the others are deduced, they call *Laws of Nature*.

Of theſe, Sir Iſaac Newton has eſtabliſhed three.

1. That every body perſeveres in the ſame ſtate, either of reſt, or uniform rectilinear motion; except ſo far as it is forced to change that ſtate by ſome foreign force.

Thus projectiles perſevere in their motions, except ſo far as they are retarded by the reſiſtance of the air, and the cauſe of gravity; and thus a top, whoſe parts, by their coheſion, are continually drawing one another out of their rectilinear motion, only ceaſes to run round becauſe reſiſted by the air, and the friction of the plane whereon it moves. And thus the larger bodies of the planets and comets preſerve their progreſſive and circular motions a long time undiminiſhed in regions void of all ſenſible reſiſtance. See VIS *Inertiæ*, RESISTANCE, and MEDIUM.

2. The change of motion is ever proportional to the moving force whereby it is effected, and in the direction of the right line wherein that force is impreſſed.

If a certain force produce a certain motion; a double force will produce double the motion; a triple force triple the motion; whether it be impreſſed all at once, or ſucceſſively, and by degrees. And this motion, (ſince it is ever directed to the ſame point with the generating force) if the body were in motion before, is either to be added to it, as if the motions conſpire; or ſubtracted from it, as where contrary; or *added obliquely, as where oblique; and is compounded with it, according to the determinations of each. See COMPOSITION.

3. Reaction is always contrary and equal to action; or the actions of two bodies upon one another are always mutually equal, and directed contrary ways.

Whatever preſſes, or pulls another, is equally preſſed or pulled thereby. Thus, if I preſs a ſtone with my finger, the finger is equally preſſed by the ſtone. If a horſe draw a weight by a rope, the horſe is equally drawn back towards the weight; for the rope being equally ſtretched each way, will, with an equal endeavour to relax itſelf, drive the horſe toward the ſtone, and the ſtone towards the horſe; and will hinder the progreſs of the one, as much as it promotes that of the other.

Again, if any body, by ſtriking on another, do in any manner change its motion, it will, itſelf, by means of the other, undergo an equal change in its own motion, by reaſon of the equality of the preſſure.

In theſe actions the changes are equal; not thoſe, we mean, of the velocities, but thoſe of the motions, the bodies being ſuppoſed free from any other impediments. For the changes of velocities, which are likewiſe made contrary ways, in as much as the motions are equally changed, are reciprocally proportional to the bodies. See REACTION.

This law alſo obtains in attractions. See ATTRACTION.

NATURE, in proſody.—A ſyllable is ſaid to be long or ſhort by *Nature*, to ſignify that it is ſo originally, and independently of any rule of grammar which might render it ſo by poſition, or otherwiſe. See QUANTITY and PROSODY.

NAVAL, ſomething relating to ſhips, or navigation. See SHIP and NAVIGATION.

In this ſenſe we ſometimes ſay, *Naval* ſtrength, a *Naval* combat, &c.

NAVAL *Crown*, *Corona Navalis*, among the ancient Romans, a crown adorned with figures of prows of ſhips, conferred on perſons who in ſea-engagements firſt boarded the enemy's veſſel. See CROWN.

Though A. Gellius ſeems to ſpeak in the general, where he ſays, the *Naval Crown* was adorned with prows of ſhips, Lipſius diſtinguiſhes two kinds of *Naval Crowns*; the one he calls *ſimple*, the other *roſtrated*.

The firſt he ſuppoſes plain, and given to the common ſoldiers, &c.—The latter, much more glorious, adorned with prows of ſhips, and only given to generals, or admirals, who had gained ſome important victory at ſea.

NAVE,* in architecture, NAVIS *Eccleſiæ*, denotes the body of a church; or the place where the people are placed; reaching from the rail, or balluſter, of the choir to the chief door. See CHURCH.

> * Baldus derives the word from the Greek ναὸς, temple; which Salmaſius brings farther from ναυς, ſhip; by reaſon the vault or roof of a church bears reſemblance to a ſhip.

The ancient Greeks called the *Nave*, *Pronaos*; the Latins frequently *Cella*. See PRONAOS.

The *Nave* of the church belongs to the pariſhioners; it is they are to repair it, &c. See REPARATION.

NAVEL, a part in the middle of the belly, by anatomiſts called *Umbilicus*.—See *Tab. Anat.* (Splanch) *fig.* 3. *lit.* c. *fig.* 16. *lit.* e. See alſo UMBILICUS.

NAVEL-*String*, by anatomiſts is called *Funiculus Umbilicalis*. See UMBILICAL.

NAVICULARE * *Os*, in anatomy, the third bone in the foot, between the aſtragalus, and the oſſa cuneiformia.

> * It is thus called from *Navis*, a ſhip, to which it bears ſome reſemblance; for which reaſon likewiſe it is ſometimes called *Cymbiforme*, from *Cymba*, a boat; and *Scaphoides*, from a Greek word of the like import. See FOOT.

The *Os Naviculare* has behind it a large ſinus, which receives the anterior convex head of the firſt bone; and before it is convex: it is divided into three heads, which are received into the ſinus's of the oſſa cuneiformia.

NAVIGATION, the art, or act of ſailing, or of conducting a veſſel from one place to another, the ſafeſt, ſhorteſt, and moſt commodious way. See SHIP and SAILING.

This art, in the full latitude of the word, comprehends three parts: 1° The art of conſtructing and building ſhips. 2° The loading of ſhips. And, 3° The conducting and guiding of ſhips through the ſea, which is in a peculiar ſenſe called *Navigation*, or ſailing. See SAILING.

In this reſtrained ſenſe of the word, *Navigation* is either *common*, or *proper*.

Common NAVIGATION, uſually called *Coaſting*, is where the ports are on the ſame, or very neighbouring coaſts; and where the veſſel is ſeldom out of ſight of land, or out of reach of ſounding. See COASTING.

In this, little elſe is required, but an acquaintance with the lands, the compaſs, and ſounding-line; each of which ſee in its place, COMPASS and SOUNDING.

Proper NAVIGATION, is where the voyage is long, and out in the main ocean.

In this, beſides the requiſites in the former, are likewiſe required the uſe of Mercator's chart, azimuth and amplitude compaſſes, log-line, and other inſtruments for celeſtial obſervations, as quadrants, foreſtaffs, &c. See each inſtrument, &c. in its place. See CHART, QUADRANT, &c.

Navigation turns principally on four things; two whereof being known, the reſt are eaſily found from them by the tables, ſcales, and charts.

Theſe four things are, the difference of latitude, difference of longitude, the reckoning or diſtance run, and the courſe, or rhumb ſailed on.

The latitudes are eaſily found, and with ſufficient accuracy. See LATITUDE.

The courſe and diſtance, are had by the log-line, or dead reckoning, and the compaſs. See LOG, COMPASS, COURSE, and DISTANCE.

Nor is there any thing wanting to the perfection of *Navigation*, but to determine the longitude.—The mathematicians of many ages have applied themſelves with the utmoſt aſſiduity to ſupply this grand deſideratum, but hitherto in vain; notwithſtanding the magnificent rewards of ſeveral princes and ſtates to the diſcoverer.——

For the various methods that now occaſionally obtain at ſea for this purpoſe. See LONGITUDE.

The poets refer the invention of the art of *Navigation* to Neptune, ſome to Bacchus, others to Hercules, others to Jaſon, others to Janus, who is ſaid to have made the firſt ſhip. See SHIP. Hiſtorians aſcribe it to the Æginetes, the Phœnicians, Tyrians, and the ancient inhabitants of Britain. Some will have it, the firſt hint was taken from the flight of the kite; others, as Oppian de Piſcibus, lib. I. from the fiſh called Nautilus: Others aſcribe it to accident.—Scripture refers the origin of ſo uſeful an invention to God himſelf, who gave the firſt ſpecimen thereof in the ark built by Noah under his direction. For the raillery the good man underwent on account of his enterprize ſhews evidently enough, the world was then ignorant of any thing like *Navigation*, and that they even thought it impoſſible. See ARK.

However, hiſtory repreſents the Phœnicians, eſpecially thoſe of their capital Tyre, as the firſt navigators; being urged to ſeek a foreign commerce by the narrowneſs and poverty of a ſlip of ground they poſſeſſed along the coaſts; as well as by the conveniency of two or three good ports; and by their natural genius to traffic.

Accordingly, Lebanon, and the other neighbouring mountains, furniſhing them with excellent wood for ſhip-building, in a ſhort time they were maſters of a numerous fleet, which conſtantly hazarding new *Navigations*, and ſettling new trades, they ſoon arrived at an incredible pitch of opulency and populouſneſs: inſomuch as to be in a condition to ſend out colonies; the principal of which was that of Carthage, which keeping up their Phœnician ſpirit of commerce, in time not only equalled Tyre itſelf, but vaſtly ſurpaſſed it; ſending its merchant-fleets through Hercules's Pillars, now the ſtraights of Gibraltar, along the Weſtern coaſts of Africa and Europe; and even, if we believe ſome authors, to America itſelf; the diſcovery whereof ſo many ages afterwards, has been ſo glorious to the Spaniards. See COMMERCE.

Tyre, whoſe immenſe riches and power are repreſented in ſuch lofty terms both in ſacred and profane authors, being deſtroyed by Alexander the Great; its *Navigation* and commerce were transferred by the conqueror to Alexandria, a new city, admirably ſituated for thoſe purpoſes, propoſed for the capital of the empire of Aſia, which Alexander then meditated.—And thus aroſe the *Navigation* of the Egyptians, which was afterwards ſo cultivated by the Ptolemys, that Tyre and Carthage (which laſt, after having a long time diſputed empire with the Romans, was at length ſubdued) were quite forgot.

Egypt being reduced into a Roman province after the battle of Actium, its trade and *Navigation* fell into the hands of Auguſtus; in whoſe time Alexandria was only inferior to Rome: and the magazines of the capital of the world were wholly ſupplied with merchandizes from the capital of Egypt.

At length, Alexandria itſelf underwent the fate of Tyre and Carthage; being ſurprized by the Saracens, who, in ſpite of the emperor Heraclius, overſpread the Northern coaſts of Africa, &c. whence the merchants being driven, Alexandria has ever ſince been in a languiſhing ſtate, though ſtill it have a conſiderable part of the commerce of the Chriſtian merchants, trading to the Levant.

The fall of Rome, and its empire, drew along with it, not only that of learning, and the polite arts, but that of *Navigation*; the Barbarians, into whoſe hands it fell, contenting themſelves with the ſpoils of the induſtry of their predeceſſors.

But no ſooner were the more brave among thoſe nations well ſettled in their new provinces, ſome in Gaul, as the Franks; others in Spain, as the Goths; and others in Italy, as the Lombards; but they began to learn the advantages of *Navigation* and commerce, and the methods of managing them, from the people they ſubdued; and this with ſo much ſucceſs, that in a little time ſome of them became able to give new leſſons, and ſet on foot new inſtitutions for its advantage.

Thus it is to the Lombards we uſually aſcribe the invention and uſe of banks, book-keeping, exchanges, rechanges, &c. See BANK, EXCHANGE, &c.

It does not appear which of the European people, after the ſettlement of their new maſters, firſt took themſelves to *Navigation* and commerce.—Some think it began with the French; though the Italians ſeem to have the juſteſt title to it, and are accordingly ordinarily looked on as the reſtorers hereof, as well as of the polite arts, which had been baniſhed together, from the time the empire was torn aſunder.

It is the people of Italy then, and particularly thoſe of Venice and Genoa, who have the glory of this reſtoration; and it is to their advantageous ſituation for *Navigation*, they in great meaſure owe their glory.

In the bottom of the Adriatic were a great number of marſhy iſlands, only ſeparated by narrow channels, but thoſe well ſcreened, and almoſt inacceſſible, the reſidence of ſome fiſhermen, who here ſupported themſelves by a little trade of fiſh and ſalt, which they found in ſome of theſe iſlands.—Thither, then, the Veneti, a people inhabiting that part of Italy along the coaſts of the Gulph, retired, when Alaric, king of the Goths, and afterwards Attila, king of the Huns, ravaged Italy.

Theſe new iſlanders, little imagining that this was to be their fixed reſidence, did not think of compoſing any body politic; but each of the ſeventy-two iſlands of this little Archipelago, continued a long time under its ſeveral maſters, and each made a diſtinct common-wealth.—When their commerce was become conſiderable enough to give jealouſy to their neighbours, they began to think of uniting into a body: And it was this union, firſt begun in the ſixth century, but not completed till the eighth, that laid the ſure foundation of the future grandeur of the ſtate of Venice.

From the time of this union, their fleets of merchantmen were ſent to all the parts of the Mediterranean; and at laſt to thoſe of Egypt, particularly Cairo, a new city, built by the Saracen princes on the Eaſtern banks of the Nile, where they traded for their ſpices, and other products of the Indies.

Thus they flouriſhed, increaſed their commerce, their *Navigation*, and their conqueſts on the terra firma, till the famous league of Cambray in 1508, when a number of jealous princes conſpired to their ruin; which was the more eaſily effected by the diminution of their Eaſt-India commerce, of which the Portugueſe had got one part, and the French another.

Genoa, which had applied itſelf to *Navigation* at the ſame time with Venice, and that with equal ſucceſs, was a long time its dangerous rival, diſputed with it the empire of the ſea, and ſhared with it the trade of Egypt, and other parts both of the Eaſt and Weſt.

Jealouſy ſoon began to break out, and the two republics coming to blows, it was three centuries almoſt continual war, ere the ſuperiority was aſcertained; when towards the end of the fourteenth century, the fatal battle of Chioza ended the noble ſtrife: The Genoeſe, who till then had uſually the advantage, having now loſt all, and the Venetians almoſt become deſperate, at one happy blow, beyond all expectation, ſecured to themſelves the empire of the ſea, and ſuperiority in commerce.

About the ſame time that *Navigation* was retrieved in the Southern parts of Europe, a new ſociety of merchants was formed in the North, which not only carried commerce to the greateſt perfection it was capable of till the diſcovery of the Eaſt and Weſt Indies, but alſo formed a new ſcheme of laws for the regulation thereof, which ſtill obtain under the name of *Uſes and Cuſtoms of the Sea*. See USES.

This ſociety is that famous league of the Hans towns, commonly ſuppoſed to have begun about the year 1164. See HANS *Towns*.

For the modern ſtate of *Navigation* in England, Holland, France, Spain, Portugal, &c. See COMMERCE, COMPANY, &c.

We ſhall only add, that in examining the reaſons of commerce's paſſing ſucceſſively from the Venetians, Genoeſe, and Hans-Towns, to the Portugueſe and Spaniards; and from thoſe again to the Engliſh and Dutch; it may be eſtabliſhed as a maxim, that the relation between commerce and *Navigation*, or, if we may be allowed to ſay it, their union, is ſo intimate, that the fall of the one, inevitably draws after it the other; and that they will always either flouriſh or dwindle together.

Hence ſo many laws, ordinances, ſtatutes, *&c.* for its regulation; and hence particularly that celebrated act of *Navigation*, which an eminent foreign author calls the Palladium, or tutelar deity of the commerce of England; which is too important not to be here mentioned; as it is the ſtanding rule, not only of the Engliſh among themſelves, but alſo of other nations with whom they traffic.

Act of Engliſh NAVIGATION, is a ſtatute whereby the parliament of England have ſettled divers matters relating to the *Navigation* and commerce of the kingdom.

Till this act, all nations were at liberty to import into England all kinds of merchandizes, whether of their own growth, or laden elſewhere, and that on their own veſſels.

Cromwell firſt perceiving the prejudice this liberty did to the Engliſh commerce, which was now almoſt wholly in the hands of foreigners, chiefly the Dutch, whom he hated, animated the Engliſh, by ſeveral acts of parliament, to reſume their trade into their own hands; and particularly paſſed an act prohibiting the Dutch from importing any merchandizes, except thoſe of their own growth or manufacture, which were very few.

Upon the reſtoration, the firſt parliament Charles II. called, diſtinguiſhing, in Cromwell, the politician from the parricide, condemned the memory of the one, and followed the plan of the other with regard to *Navigation* and commerce; by paſſing that celebrated Bill or Act for the encouraging and increaſing of ſhipping, and of *Navigation*, which ſtill ſubſiſts in its full latitude, and its ancient vigour. Its date is from the firſt of December, 1660. 12 Car. II. c. 18.—Its chief articles follow.

1. That no goods or commodities ſhall be imported or exported to or from any of the Engliſh colonies in Aſia, Africa, or America, but on veſſels built within the dominions of England, or really belonging to Engliſhmen, and whoſe maſters, and at leaſt three-fourths of the crew are Engliſh,* on pain of forfeiture of the goods and veſſel.

* Under the name *Engliſh*, here, are comprehended all the king's ſubjects of England, Ireland, and the Plantations; as was explained in a ſubſequent Act 13 and 14 Car. II. c. 11.

2. That no perſon born out of the ſubjection of England, or not naturalized, ſhall exerciſe any commerce in thoſe colonies for himſelf, or others.

3. That no merchandizes of the growth of Aſia or America, ſhall be imported into any of the dominions of England on any other than Engliſh veſſels.

4. That no goods of foreign growth or manufacture that ſhall be brought into England, Wales, Ireland, iſlands of Jerſey or Guernſey, or town of Berwick on Tweed, in Engliſh built ſhipping, or other ſhipping belonging to the foreſaid places, and navigated by Engliſh mariners as aforeſaid, ſhall be ſhipped or brought from any other place or country, but only from thoſe of the growth or manufacture thereof.

5. That all kinds of dried and ſalted ſea-fiſh, train-oils, blubber, and whale-fins, not caught by Engliſh veſſels, imported into England, ſhall pay double duties.

6. That the commerce from port to port in England and Ireland ſhall be carried on wholly by Engliſh veſſels, and Engliſh merchants: the crew to be always three-fourths Engliſh.

7. That none but Engliſh veſſels ſhall reap the benefit of the diminutions made, or abatements to be henceforth made, in the cuſtoms.

8. All veſſels are prohibited importing into England and Ireland any of the commodities of Muſcovy, or even any maſts, or other timber, foreign ſalt, pitch, roſin, hemp, raiſins, prunes, oil of olive, any kind of corn, or grain, ſugars, aſhes, and ſoap, wine, vinegar, or brandy, except veſſels, whereof Engliſh are owners or part-owners, and where the maſter and three-fourths of the mariners are Engliſh.—And that no currants, or other commodities, the growth or manufacture of the Turkiſh empire, ſhall be imported, but in veſſels of Engliſh build, and navigated as aforeſaid; except only ſuch veſſels as are of the build of the country or place whereof ſuch commodities are the growth or manufacture, or of ſuch part where ſuch goods are uſually ſhipped for tranſportation, and unleſs the maſter and three-fourths of the crew be natives of the country where they are laden.

9. All timber, maſts, boards, ſalt, pitch, tar, roſin, hemp, flax, raiſins, figs, prunes, olive oils, corn, or grain of any kind, ſugar, potaſhes, brandies, and wines, and all goods of the growth and manufacture of Muſcovy, all currants and Turkiſh goods imported into England, *&c.* in other than ſuch ſhipping, and ſo navigated, ſhall be deemed aliens goods, and pay accordingly.

10. That to prevent frauds in buying and diſguiſing foreign veſſels, the proprietors ſhall take an oath, that they really belong to them, and that no alien has any part in them.

11. That Engliſh veſſels, and navigated by Engliſh, may import into the dominions of England, any merchandizes of the Levant, though not taken up in the places where they grow, or are manufactured: Provided it be in ſome part of the Mediterranean beyond the ſtraights of Gibraltar. And the ſame is underſtood of commodities brought from the Eaſt-Indies; provided they be taken up in ſome port beyond the Cape of Good-Hope: And thoſe from the Canaries, and other colonies of Spain; and the Azores, and other colonies of Portugal, which are allowed to be ſhipped, the one in Spaniſh ports, the other in Portugueſe.

12. Theſe penalties, prohibitions, and confiſcations, not to extend to goods taken by way of repriſal from the enemies of England, nor to fiſh caught by the Scots, or their corn, and ſalt, which may be imported into England by the Scotch built ſhips.

13. Five ſhillings *per* ton duty is impoſed on every French veſſel arriving in any port of England, ſo long (and even three months longer) as 50 ſols *per* ton lies on the Engliſh veſſels in France.

Laſtly, That ſugars, tobacco, and other commodities of the growth of the Engliſh colonies, ſhall not be imported into any other part of Europe, but the dominions of England. And that veſſels going out of the ports of the ſame crown for the Engliſh colonies, ſhall give 1000 *l.* ſecurity, if under one hundred tons, and 2000 *l.* if above, ere they depart, that they will import their cargo into ſome port in the ſaid dominions; and the like, ere they quit thoſe colonies, that they will land their whole cargo in England.

NAVIS, *Argo* NAVIS, or the ſhip *Argo*, in aſtronomy, a conſtellation of the Southern hemiſphere. See ARGO.

NAUMACHIA, * NAUMACHY, a ſpectacle, or ſhew, among the ancient Romans, repreſenting a ſea-fight.

* The word comes from the Greek ναυς, ſhip, veſſel, and μαχη, *pugna*, fight.

NAUMACHIA is alſo uſed for a circus incompaſſed with ſeats and porticos; the pit whereof, ſerving as an arena, was filled with water, by means of pipes; for the exhibiting of ſea-fights. See CIRCUS.

There were ſeveral of theſe *Naumachias* at Rome; three built by Auguſtus, one by Claudius, and another by Domitian. Nero's *Naumachia* ſerved for the reverſe of his medals.

NAUSEA, * Ναυτια, in medicine, a retching, or propenſity and endeavour to vomit; ariſing from a loathing of food, excited by ſome viſcous humour that irritates the ſtomach, and urges it to diſcharge itſelf; and accompanied with anxiety about the præcordia, and ſalivation of the mouth. See ANOREXY.

* The word is Latin, formed from the Greek ναυσια, of ναυς, *Navis* ſhip: In regard, people, at the beginning of their voyages, are uſually liable to this diſorder.

A *Nauſea* is when the thoughts or ſight of proper food create a ſickneſs in the ſtomach, or a tendency to vomit.

Nauſea and vomiting only differ from one another, as more or leſs violent.—The *Nauſea* is properly the effort the ſtomach makes to vomit, which has not always the effect. See VOMITING.

Boerhaave defines a *Nauſea* anatomically, to be a retrograde ſpaſmodic motion of the muſcular fibres of the oeſophagus, ſtomach, and inteſtines; attended with convulſions of the abdominal muſcles, and the ſeptum tranſverſum.

The uſual cauſes of a *Nauſea*, and anorexia, are hard drinking, great heat, a fever, conſumptions, laxneſs of the ſtomach occaſioned by tea, *&c.* alſo narcotics, as tobacco, paſſions of the mind, ſuppreſſion of evacuations inducing a plethora, foul ſtomach, tenacious humours lodged therein, and certain ſwimming or undulatory motions.

NAUTICAL *Planiſphere*, a deſcription of the terreſtrial globe upon a plane, for the uſe of mariners. See PLANISPHERE and *Sea*-CHART.

NAUTICAL *Chart*. See the article *Sea*-CHART.

NAUTICAL *Compaſs*. See the article COMPASS.

NAUTICUS, in anatomy, a muſcle, called alſo *Tibialis poſticus*. See TIBIALIS.

NAUTILUS, * Ναυτιλος, a ſpecies of turbinated ſea ſhell, of a compreſſed figure, and having the whirl or volute latent, or hid within the body; frequently dug up at land, and often found petrified. See SHELL, FOSSIL, *&c.*

* It takes its name from a teſtaceous animal, whoſe habitation it was, called *Nautilus*, or the ſailor; of which naturaliſts diſtinguiſh divers ſpecies.

NAVY, the fleet, or ſhipping, of a prince, or ſtate. See FLEET.

The direction of the *Navy Royal* of England is in the lord high-admiral, and under him in the principal officers and commiſſioners, who hold their places by patent. See ADMIRAL.

Principal Officers of the NAVY are four, *viz.* The *Treaſurer*, whoſe buſineſs is to receive monies out of the exchequer, and to pay all the charges of the *Navy*, by warrant from the principal officers.—*Comptroller*, who attends and comptrolls all payment of wages, is to know the rates of ſtores, to examine and audite all accounts, *&c.*—*Surveyor*, who is to know the ſtate of all ſtores, and ſee wants ſupplied, to eſtimate repairs, charge boatſwains, *&c.* with what ſtores they receive; and at the end of each voyage, to ſtate and audite accounts.—*Clerk of the Acts*, whoſe buſineſs is to record all orders, contracts, bills, warrants, *&c.*

Commiſſioners of the NAVY, are five.—The firſt executes that part of the comptroller's duty which relates to the victuallers accounts. The ſecond, another part of the ſaid comptroller's duty relating to the accounts of the ſtore-keepers of the yard. The third has the direction of the *Navy* at the port of Portſmouth. The fourth has the ſame at Chatham.

The *Navy* was anciently victualled by contract; but the victualling is now under commiſſioners, who keep their office on Tower-Hill. See VICTUALLING-*Office*.

The ordinary expences of the *Navy* in a year of peace, continuing in harbour, is ſo well regulated, that it amounts to ſcarce 130000 l. per annum.

The number of ſhips and veſſels in the *Navy*, as it ſtood in the year 1710, was 7 firſt-rates, 13 ſecond-rates, 48 third-rates, 65 fourth-rates, 68 fifth-rates, 40 ſixth-rates, 5 fire-ſhips, 7 bomb-veſſels, 18 yachts, 1 advice-boat, 2 brigantines, 7 ſloops, 4 ſtore-ſhips, 13 hulks, 26 hoys, 2 ſmacks. See RATE.

NAZAREATE, or NAZARITESHIP, the ſtate and condition of a Nazarite, or Nazarean among the Jews. See NAZARITE.

The *Nazareate* was a ſtate of ſeparation from the reſt of mankind; particularly in three things; 1. In that the perſons devoted hereto drank no wine. 2. In that they did not ſhave their heads, but let the hair grew. 3. In avoiding the touch of dead people, which they held a defilement.

The *Nazareate* was of two kinds; the one temporary, or for a certain number of days; the other for life.—The rabbins enquire what the term of the temporary *Nazareate* was, and determine it by the Cabbala: for ſince, in ſcripture, Numbers vi. 5, where it is ſaid, *Domino ſanctus erit*, the Hebrew verb, יהיה *erit*, conſiſts of four letters; the firſt and third whereof taken as numeral letters, do each make 10, and the reſt each 5, altogether 30; the term of the *Nazareate*, ſay they, was 30 days. See CABBALA.

NAZARITE,* or NAZARENE, in the Old Teſtament, is uſed for a perſon diſtinguiſhed and ſeparated from the reſt, by ſomething extraordinary, either his ſanctity, dignity, or vows. See NAZAREATE.

* The word comes from the Hebrew נזר Nazar, to diſtinguiſh, ſeparate; in which it differs from Nazarean, an inhabitant of the country called *Nazareth*, which comes from נצר natzar, or netzer, to ſave, preſerve.

In the book of Numbers, ch. vi. we find the vow of a *Nazarite* deſcribed; *i. e.* the vow whereby a man or woman ſeparated themſelves to the Lord; and the conditions, or effects thereof as to abſtinence, *&c.*

NAZARITES, NAZARENES, or NAZAREANS, were likewiſe a kind of ſectaries in the church, in the firſt ages thereof.

S. Epiphanius tells us the *Nazareans* were the ſame with the Jews in every thing relating to the doctrine and ceremonies of the *Old Teſtament*; and only differed from them in this, that they added Chriſtianity thereto; profeſſing to believe that Jeſus Chriſt was the Meſſiah.

There were two kinds of *Nazareans*; the one *pure*, who kept the law of Moſes and Chriſtianity together; the other, real Ebionites. See EBIONITES.

Eccleſiaſtical writers tell us, that St. Matthew preached the goſpel to the Jews at Jeruſalem, and the reſt of Paleſtine, in their own language; and that accordingly they had his goſpel written in the Hebrew of that time. And S. Epiphanius adds, that this goſpel was preſerved entire among the *Nazareans*; only he doubts whether they might not have retrenched the genealogy of Jeſus Chriſt, which was not in the copy of the Ebionites. S. Jerome, who tranſlated it out of Hebrew into Greek and Latin, ſays, a great many people took the Hebrew goſpel uſed by the *Nazareans* and Ebionites, to be the original of S. Matthew.

Hence Baronius in his Annals ſays, if the vulgate Latin verſion were to be reformed; it ſhould rather be done by the Hebrew original, than by the Greek, which is but a copy.

Caſaubon treats this opinion of Baronius as impious; as not being able to conceive how the authority of the Greek verſion ſhould depend on a text quite loſt.—He adds, That it was never uſed by any but the *Nazareans*, Ebionites, and ſome other Heretics; and that it was full of fables, as having been altered and corrupted by thoſe heretics.

NE ADMITTAS, a writ directed to the biſhop, in behalf of the plaintiff, or defendant in a cauſe where a quare impedit, or aſſize of darrein preſentment is depending; when either party fears that the biſhop will admit the others clerk during the ſuit between them.

NEALING, or rather ANNEALING, a term uſed for the preparing of ſeveral matters by heating or baking them in an oven, or the like. See ANNEALING.

NEALING *of Glaſs*, is the baking of glaſs, to dry, harden, and give it the due conſiſtence, after it has been blown, and faſhioned into the proper works. See GLASS.

This is uſually performed in a kind of tower, called the *Leer*, built over the melting-furnace. See FURNACE.

NEALING *of Glaſs*, is alſo uſed for the art of ſtaining glaſs with metal colours. See PAINTING *on Glaſs*.

NEALING *of Steel*, is the heating it in the fire to a blood-red heat; and then taking it out, and letting it cool gently of itſelf. See STEEL.

This is done to make it ſofter, in order to engrave or punch upon it. See TEMPERING, ENGRAVING, *&c.*

NEAP, or NEEP *Tides*, are thoſe tides which happen when the moon is in the middle of the ſecond and fourth quarters. See TIDE.

The *Neap Tides* are low tides, in reſpect of their oppoſites the ſpring-tides. See SPRING-*Tide*.

As the higheſt of the ſpring-tides is three days after the full or change, ſo the loweſt of the *Neap* is four days before the full or change.—On which occaſion the ſeamen ſay, That it is *deep Neap*.

NEAPED, when a ſhip wants water, ſo that ſhe cannot get out of the harbour, off the ground, or out of the dock; the ſeamen ſay, *She is Neaped*, or *beneaped*.

NEAT, or NET *Weight*, the weight of a commodity alone, clear of the caſk, bag, caſe, and even filth. See NET and WEIGHT.

NEBULOUS, *Cloudy*, in aſtronomy, a term applied to certain of the fixed ſtars, which ſhew a dim, hazy light; being leſs than thoſe of the ſixth magnitude; and therefore ſcarce viſible to the naked eye, to which, at beſt, they only appear like little duſky ſpecks or clouds.

Through a moderate teleſcope, theſe *Nebulous* ſtars plainly appear to be congeries's, or cluſters of ſeveral little ſtars. See STAR.

In the *Nebulous* ſtar called *præſepe* in the breaſt of cancer, there are reckoned 36 little ſtars, three of which, Mr. Flamſtead gives us in his catalogue. See CANCER.

In the *Nebulous* ſtar of orion are reckoned 21. F. le Compte adds, that in the pleiades are 40; 12 in the ſtar in the middle of orion's ſword; in the extent of two degrees of the ſame conſtellation, 500; and 2500 in the whole conſtellation. See ORION, *&c.*

NEBULY, NEBULEE, in heraldry, when a coat is charged with ſeveral little figures, in form of clouds, running within one another, or, when the out-line of a bordure, ordinary, *&c.* is indented or waved; as repreſented in *Tab. Herald. fig.* 32.

NECESSARY, in a philoſophical ſenſe, that which cannot but be, or cannot be otherwiſe. See NECESSITY.

The ſchoolmen make a great many kinds, or diviſions hereof: As,—*Neceſſary in cauſing*: when there is a cauſe from which an effect muſt neceſſarily follow: *Neceſſary in predicating*: *Neceſſary in being*, &c.

There is alſo a *logical Neceſſary*: *phyſical Neceſſary*: *metaphyſical*, and *moral Neceſſaries*.

NECESSITY, what is done by a neceſſary cauſe, or a power that is irreſiſtible. See POWER and CAUSE.

In which ſenſe it ſtands oppoſed to liberty. See LIBERTY.

Neceſſity is uſually confounded with conſtraint; yet, in God, the *Neceſſity* of being good is not any conſtraint, but a perfection.—In effect, *Neceſſity*, according to Rochefocault, differs from conſtraint in this, that the former is joined with the pleaſure and inclination of the will, to which conſtraint is contrary. See WILL.

Simplicius, after Plato and Epictetus, diſtinguiſhes two kinds of *Neceſſity*: the one *violent* or *coactive*, which is oppoſite to liberty; the other *ſpontaneous* or *voluntary*, very conſiſtent with it: This latter, adds he, is that which neceſſitates all things to act according to their nature, as being connatural to them; ſince αυτοκινητον, a thing that is ſelf-moved muſt of *Neceſſity* be moved according to its own nature, *i. e.* ſpontaneouſly.—This diſtinction is admitted by many of the divines, particularly S. Auguſtine, who urges it againſt the Pelagians, as is ſhewn by Janſenius.

The ſchools diſtinguiſh a *phyſical Neceſſity*, and a *moral Neceſſity*; a ſimple, *abſolute Neceſſity*, and a *relative* one.

Phyſical NECESSITY, is the want of a principle, or of a natural means neceſſary to act; which is otherwiſe called a *phyſical* or *natural impotence*. See IMPOTENCE.

Moral NECESSITY, is only a great difficulty; ſuch as that ariſing from a long habit, a ſtrong inclination, or violent paſſion.

Simple, or *abſolute* NECESSITY, is that which has no dependance on any ſtate, or conjuncture, or any particular ſituation of things, but is found every where, and in all the circumſtances in which the agent can be ſuppoſed.

Such is in a blind man the *Neceſſity* he is under of not diſtinguiſhing colours.

Relative NECESSITY, is that which places a man in a real incapacity of acting, or not acting, in thoſe circumſtances, and that ſituation he is found in; though in other circumſtances, and another ſtate of things, he might act, or not act.

Such, in the opinion of the Janſeniſts, is the *Neceſſity* of doing evil in a man, who, with a violent paſſion, has only a feeble grace to reſiſt it; or the *Neceſſity* of doing well in a man, who having grace of ſeven or eight degrees of ſtrength, has only concupiſcence of two or three degrees to withſtand.

All theſe kinds of *Neceſſity* are oppoſite to liberty; ſince even in the laſt, it is as impoſſible for the man to act, or not act, as if he were in a ſtate of *abſolute*, *ſimple*, and *phyſical Neceſſity*.

The ſchoolmen admit other ſpecies of *Neceſſity*; *antecedent*, *concomitant*, *conſequent*, &c.

Antecedent NECESSITY, is that ariſing from an antecedent cauſe, neceſſarily operating.—Such is the *Neceſſity* of the ſun's riſing to-morrow morning.

Concomitant NECESSITY ariſes from an antecedent and neceſſary cauſe, but depends on the circumſtances of the effect; the effect all the while being free.—Thus it is neceſſary Peter ſit, ſuppoſing he is ſitting.

NECK, a part in the human body, and in that of ſeveral other animals, between the head and the thorax, or trunk of the body.—See *Tab. Anat.* (Oſteol. *fig.* 3. n. 1. 1. *fig.* 7. n. 14. 14. See alſo BODY, HEAD, *&c.*

All animals have *Necks* which have lungs and voice, excepting frogs, and one claſs of fiſhes, whoſe characteriſtic it is, vocem aliquam emittere.

The upper part before is called the *Throat*; and the lower part the *Pomum Adami.*—The hole between the two clavicles is called the *Jugulum*, by the Greeks σφαγη, murther; it being very eaſy to kill in this part.—The hind part of the *Neck* is called *Cervix*; and the hole between the firſt and ſecond vertebra, the *Nape*; that underneath, *Epomis*. See POMUM, JUGULUM, *&c.*

Its lateral parts commence from the bottom of the ears, and are called *parotides*. See PAROTIDES.

The inner parts of the *Neck* are ſeven vertebræ, the trachea, larynx, jugular veins, carotid arteries, the intercoſtal nerve, that of the eighth pair, with the recurrent, and ſeveral muſcles. See each part under its proper article.

The NECKS *of Quadrupeds*, Mr. Derham obſerves, are always equal to the length of their legs; to enable them to reach the ground for their food, without ſtooping the body. See QUADRUPED.

Indeed, the elephant is an exception from the rule; its *Neck* is very ſhort; but then it has a peculiar proviſion by a proboſcis, or trunk. See PROBOSCIS.

Another thing remarkable in the *Necks* of graminivorous quadrupeds, is a ſtrong, tendinous and inſenſible aponeuroſis, or ligament, braced from the head to the middle of the back; by means whereof they are enabled conſtantly to hold down the head, though very heavy, to gather their food without pain or labour.

NECROLOGY, * NECROLOGIUM, a book anciently kept in churches, and monaſteries; wherein were regiſtered the benefactors to the ſame, the time of their deaths, and the days of their commemoration; as alſo the deaths of the priors, abbots, religious, canons, *&c.*

* The word comes from the Greek νεκρος, dead, and λογος, diſcourſe, enumeration.

This was otherwiſe called *calendar*, and *obituary*. See CALENDAR, OBITUARY, *&c.*

NECROMANCY, * the art, or act of communicating with devils, and doing ſurpriſing feats by their aſſiſtance; particularly calling up the dead, and extorting anſwers from them. See MAGIC.

* The word is formed from νεκρος, dead, and μαντεια, enchantment, divination.

NECROSIS, * in medicine, a compleat mortification of any part; called alſo *ſideratio*, and *ſphacelus*. See MORTIFICATION and SPHACELUS.

* The word is Geek, νεκρωσις, where it has the ſame ſignification.

NECTAR, Νεκταρ, among the ancient poets, the drink of the fabulous deities of the heathens. See AMBROSIA.

NEEDLE, a very familiar little inſtrument, or utenſil, made of ſteel, pointed at one end, and pierced at the other; uſed in ſewing, embroidery, tapeſtry-work, *&c.*

Needles make a very conſiderable article in commerce; and the conſumption thereof is almoſt incredible—The ſizes are from N° 1, the largeſt; to N° 25, the ſmalleſt.

There is ſcarce any commodity cheaper than *Needles*; which will appear ſomething extraordinary to the reader, after he has been ſhewn the great number of operations they undergo ere brought to perfection.

Manufacture of NEEDLES. German and Hungary ſteel is of moſt repute for *Needles*. The firſt thing, is to paſs it through a coal fire, and under a hammer, to bring it out of its ſquare figure into a cylindrical one. This done, it is drawn through a large hole of a wire-drawing iron; returned into the fire, and drawn through a ſecond hole of the iron, ſmaller than the firſt: and thus ſucceſſively from hole to hole, till it have acquired the degree of fineneſs required for that ſpecies of *Needles*; obſerving every time it is to be drawn, that it be greas'd over with lard to render it the more manageable. See WIRE-DRAWING.

The ſteel thus reduced into a fine wire, is cut in pieces of the length of the *Needles* intended. Theſe pieces are flatted at one end on the anvil, in order to form the head and eye. They are then put in the fire, to ſoften them farther, and thence taken out, and pierced at each extreme of the flat part, on the anvil, by force of a punchion of well tempered ſteel, and laid on a leaden block, to bring out, with another punchion, the little piece of ſteel remaining in the eye.

The corners are then filed off the ſquare of the heads, and a little cavity filed on each ſide the flat of the head. This done, the point is formed with a file; and the whole filed over.

They are then laid to heat red-hot, on a long, flat, narrow iron, crooked at one end, in a charcoal-fire; and when taken out thence, are thrown into a baſon of cold water to harden.—On this operation, a good deal depends; too much heat burns them; and too little leaves them ſoft; the medium is only to be learnt by experience.

When hardened, they are laid in an iron-ſhovel, on a fire more or leſs brisk, in proportion to the thickneſs of the *Needles*; taking care to move them from time to time. This ſerves to temper them, and take off their brittleneſs; care, here, too, muſt be taken of the degree of heat.

They are then ſtreightned one after another with the hammer; the coldneſs of the water uſed in hardning them having twiſted the greateſt part of them.

The next proceſs is the poliſhing. To do this, they take twelve or fifteen thouſand *Needles*, and range them in little heaps againſt each other on a piece of new buckram, ſprinkled with emery duſt. The *Needles* thus diſpoſed, emery duſt is thrown over them, which is again ſprinkled with oil of olives. At laſt, the whole is made up into a roll, well bound at both ends.

This roll is then laid on a poliſhing table, and over it a thick plank loaden with ſtones, which two men work backwards and forwards a day and half, or two days ſucceſſively. By which means, the roll thus continually agitated by the weight and motion of the plank over it, the *Needles* within ſide being rubbed againſt each other with oil and emery, are inſenſibly poliſhed.

In Germany, inſtead of hands, they poliſh with water-mills.

After poliſhing, they are taken out, and the filth waſhed off them with hot water and ſoap: then wiped in hot bran a little moiſtened, placed, with the *Needles*, in a round box ſuſpended in the air by a cord, which is kept ſtirring till the bran and the *Needles* be dry.

The *Needles* thus wiped in two or three different brans, are taken out and put in wooden veſſels to have the good ſeparated from thoſe whoſe points or eyes have been broken either in poliſhing or wiping; the points are then all turned the ſame way, and ſmoothed with an emery-ſtone turned with a wheel.

This operation finiſhes them; and there remains nothing but to make them into packets of two hundred and fifty each.

Chirurgeons NEEDLES, are crooked, and their points triangular. They are of different ſizes, and bear different names, according to the purpoſes they are uſed for.

The largeſt are *Needles for amputation*; the next, *Needles for wounds*; the fineſt *Needles for ſutures.*—They have others very ſhort and flat, for tendons; others, ſtill ſhorter, and the eye placed in the middle, for the tying together of veſſels, *&c.* See SUTURE, *&c.*

Magnetical NEEDLE, in Navigation, denotes a *Needle* touched with a load-ſtone, and ſuſtained on a pivot or centre, on which, playing at liberty, it directs itſelf to certain points in, or under the horizon. See MAGNET.

Magnetical *Needles* are of two kinds, *viz. Horizontal* and *Inclinatory.*

Horizontal NEEDLES, are thoſe equally balanced on each ſide the pivot which ſuſtains them; and which, playing horizontally, with their two extremes point out the North and South points of the horizon.—For their application and uſe, ſee COMPASS.

Conſtruction of an Horizontal NEEDLE. A piece of pure ſteel is provided, of a length not exceeding ſix inches, leſt its weight impede its volubility; very thin, to take its verticity the better; not pierced with any holes, or the like, for ornament ſake, which prevent the equable diffuſion of the magnetic virtue.

A perforation is then made in the middle of its length, and a braſs cap or head ſoldered on, whoſe inner cavity is conical, ſo as to play freely on a ſtyle or pivot, headed with a fine ſteel point.

The North point of the *Needle* in our hemiſphere is made a little lighter than the Southern, the touch always deſtroying

ing the balance if well adjuſted before; and rendring the North end heavier than the South, and thus occaſioning the *Needle* to dip. See Dipping-*Needle*.

Now to give the *Needle* its verticity, or directive faculty, it is to be rubbed leiſurely on each pole of a magnet, from the South pole towards the North; firſt beginning with the Northern end, and going back at each repeated rub, towards the South.—A rub in a contrary direction takes away the power communicated by the former. See Pole and Touching.

If after touching, the *Needle* be out of its equilibrium, ſomething muſt be filed off from the heavier ſide, till it balance evenly.

Needles in ſea-compaſſes are uſually made of a rhomboidal, or oblong form.—See their ſtructure under the article Compass.

A *Needle*, on occaſion, may be prepared without touching it on a load-ſtone: For a fine ſteel *Needle*, gently laid on the water, or delicately ſuſpended in the air, will direct itſelf to the North and South.

Thus, alſo, a *Needle* heated in the fire, and cooled again in the direction of the meridian, or even only in an erect ſituation, acquires the ſame faculty. See Magnetism, Pole, *&c.*

The *Needle* is not found to point preciſely to the North, except in very few places; but deviates from it, more or leſs, in different places, and that too at different times; which deviation is called the *Declination*.

Declination of the Needle, is the variation of the horizontal *Needle* from the meridian; or the angle it makes with the meridian, when freely ſuſpended in a horizontal plane. See Declination.

Cleopatra's Needles. See Porphyry.

Inclinatory, or *Dipping-Needle*. See Dipping-*Needle*.

NEEP *Tides*. See the article Neap *Tides*.

NEFASTUS, a Latin term.—The Romans uſed the appellation *dies nefaſti*, for thoſe days wherein it was not allowed to adminiſter Juſtice, or hold courts; nor for the pretor to pronounce the three ſolemn words or formula's of the law, *do*, *dico*, *addico*, I give, I appoint, I adjudge. See Fastus.

Theſe days were diſtinguiſhed in the calendar by the letter N, or by N. P. *Nefaſtus Primo*, as when the day was only *Nefaſtus* for the firſt part thereof. See Day.

NEGATION, in logic, an act whereby the mind ſeparates one idea from another; or affirms the one to be indifferent from the other. As, the ſoul is not the body. See Affirmation.

NEGATIVE, a term that denies, or implies a denial of any thing. See Affirmative.

Logicians, *&c.* ſay, A *Negative* cannot be proved but by converting it into an affirmative.

Negative *Heretics*, in the language of the inquiſition, are thoſe, who being accuſed of hereſy, by witneſſes whoſe evidence they do not deny, ſtill keep on the negative, make open profeſſion of the Catholic doctrine, and declare their abhorrence of hereſy. See Inquisition.

There are alſo *Negative Schiſms*, as well as poſitive ones.—In the *Negative*, it is ſufficient to reject the errors of a church without ſeparating from it, or ſetting up a diſtinct ſociety. See Schism.

Negative *Penalties*, the laws whereby certain perſons are excluded from honours, dignities, *&c.* without inflicting any direct, and poſitive pains on them.

Negative *Quantities*, in algebra, thoſe affected with the ſign—and which are ſuppoſed to be leſs than nothing. See Quantity.

Negative quantities are the effects of poſitive ones; where poſitive end, there *Negative* ones commence. See Positive.

Negative *Pregnant*, in law, a *Negative* which implies or brings forth an affirmative.

As if a man being impleaded to have done a thing on ſuch a day, and in ſuch a place, denies he did it, *modo & forma declarata*; which implies nevertheleſs that he did it in ſome ſort. See Form.

NEGATIVELY, Negative, in the ſchool-philoſophy, is variouſly uſed in contradiſtinction to poſitively. See Positive.

NEGRO'S, a kind of black ſlaves, which make a conſiderable article in the modern commerce. See Black and Slave.

The *Negro's*, alſo called *Blacks* and *Moors*, are a people of Africa, whoſe country extends on each ſide the river *Niger*, and is called *Nigritia:* Though, whether the people communicated their name to the river, *&c.* or received it therefrom, is not eaſily determined!

The origin of *Negro's*, and the cauſe of that remarkable difference in complexion from the reſt of mankind, has much perplexed the naturaliſts; nor has any thing ſatisfactory been yet offered on that head. See Reticular.

They are brought from Guinea, and other coaſts of Africa, and ſent into the colonies in America, to cultivate ſugar, tobacco, indigo, *&c.* and in Peru and Mexico to dig in the mines.

This commerce, which is ſcarce defenſible on the foot either of religion, or humanity, is now carried on by all the nations that have ſettlements in the Weſt-Indies; particularly the Engliſh, Dutch, Spaniards, and Portugueſe.

The Spaniards, indeed, have few *Negro's* at firſt hand, but have always treated with other nations to furniſh them therewith: Thus they were formerly furniſhed by the company of the Grilles, eſtabliſhed at Genoa: ſince by the Aſſiento in France; and ſince the peace of Utrecht, by the Engliſh South-ſea company. See Assiento and Company.

The beſt *Negro's* are brought from Cape Verd, Angola, Senegal, the kingdom of Joloffes, that of Galland, Damel, the river Gambia, *&c.*

A *Negro* between 17 or 18 and 30 years of age, was anciently only valued at about 45 *s.* in the commodities proper for that country, which are brandies, iron, linnen, paper, braſs-pots, baſons, *&c.*—But their value is now much enhanced, and it is ſeldom they meet with a good *Negro* for five pounds: They frequently give ſeven or eight.

There are various ways of procuring them: Some, to avoid famine, ſell themſelves, their wives, and children, to their princes, or great men, who have wherewithal to ſubſiſt them. Others are made priſoners in war; and great numbers ſeized in excurſions made for that very purpoſe by the petty princes upon one another's territories; in which it is uſual to ſweep away all both old and young, male and female.

The *Negro's* make a frequent practice of ſurprizing one another while the European veſſels are at anchor, and dragging thoſe they have caught to them, and ſelling them in ſpight of themſelves; and it is no extraordinary thing to ſee the ſon ſell, after this manner, his father or mother, and the father his own children, for a few bottles of brandy, and a bar of iron.

As ſoon as the ſhip has its complement, it immediately makes off; the poor wretches, while yet in ſight of their country, falling into ſuch deep grief and deſpair in the paſſage, that a great part of them languiſh, fall into ſickneſs, and die: others of them diſpatch themſelves by refuſing their food; others by ſtopping their breath, in a manner peculiar to themſelves, by turning and folding their tongue, which immediately ſtrangles them; others daſh out their brains againſt the ſhip; and others jump over-board.

The only ſure means to preſerve them, is to have ſome muſical inſtrument play to them, be it ever ſo mean. But this exceſſive love for their country abates as they get farther off.

At their arrival in the colonies, each *Negro* is ſold for 38 or 40 pounds. They make the chief riches of the inhabitants of the iſlands, *&c.* A man, *v. g.* who has twelve *Negro's*, is eſteemed a rich man.

NEIF, *Nativa*, in our ancient cuſtoms, a bond-woman, or ſhe-villain, born in ones houſe. See Native, and Villain.

Anciently, Lords of manors ſold, gave, or aſſigned their *Neifs*, and natives. See Slave, Villain, *&c.*

Writ of Neifty, is an ancient writ, whereby the lord claimed ſuch a woman for his *Neif*.

NE INJUSTE *vexes*, a writ which lies for a tenant againſt the lord, forbidding him to diſtrain on the tenant, who has formerly prejudiced himſelf by doing or paying more than he needed.

NEMÆAN, or Nemean *Games*, one of the four great kinds of games, or combats, celebrated among the ancient Greeks. See Games.

Some ſay, they were inſtituted by Hercules, on occaſion of his killing the *Nemæan* lion; and that it was hence they took their name, as alſo the place of celebration, the foreſt of *Nemæa*.

Others relate, that the ſeven chiefs ſent to Thebes, under the conduct of Polynices, being extremely pinched in their journey with thirſt, met with Hypſipyle of Lemnos, who had in her arms Opheltes, ſon of Lycurgus, prieſt of Jupiter, and Eurydice. They begging her to ſhew them ſome water, ſhe laid the child down on the graſs, and conducted them to a well. In her abſence, a venomous ſerpent killed the child; upon which the nurſe, out of an exceſs of grief, grew deſperate. The chiefs, at their return with her, killed the ſerpent, buried the young Opheltes, and to divert Hypſipyle, inſtituted the *Nemæan Games*.

Ælian ſays, it was indeed the ſeven chiefs going to the ſiege of Thebes, that inſtituted them; but adds, that it was in favour of Pronax.

Pauſanias refers the inſtitution of them to Adraſtus, and their reſtoration to his deſcendants.

Laſtly, Hercules, on his victory over the *Nemæan* lion, augmented the games, and conſecrated them to Jupiter Nemæus.

The games were opened with ſacrificing to *Nemæan* Jove, appointing him a prieſt, and propoſing rewards for ſuch as ſhould be victors in the games.

They were held every three years, in the month called

Panemos by the Corinthians, and *Boedromion* by the Athenians.

The Argians were the judges, and ſat clothed in black, to expreſs the origin of the games. As they were inſtituted by warriors, none at firſt were admitted to them but military men, and the games themſelves were only equeſtrian and gymnic; at length they were open to the people, and other kinds of ſports introduced.

The conquerors were crowned with olive, 'till the time of the war with the Medes; when, a blow they received in that war, occaſioned them to change the olive for ſmallage, a funeral plant. Though others maintain, that the crown was originally ſmallage, on account of the death of Opheltes, otherwiſe called *Archemorus*; this plant being ſuppoſed to have received the blood which run from the wound made by the ſerpent.

NEMINE *Contradicente*, *i. e.* none contradicting it, a term chiefly uſed in parliament, when any matter is carried with univerſal conſent of all the members.

NENIA,* or NÆNIA, in the ancient poetry, a kind of funeral ſong, ſung to the muſic of flutes, at the obſequies of the dead. See FUNERAL.

* The word comes from the Greek, *νηνια*; on which Scaliger obſerves, that it ſhould be wrote in Latin *Nenia*, not *Nænia*.

Authors repreſent them as ſorry compoſitions, ſung by hired women-mourners, called *præficæ*. The firſt riſe of theſe *Nenia* is aſcribed to the Phrygians.

Guichart notes, that *Nenia* was anciently the name of a ſong, ſung by nurſes to lull children aſleep; and conjectures it to come from the Hebrew נין *nin*, child.

In the heathen antiquity, the goddeſs of tears and funerals was called *Nenia*, whom ſome ſuppoſe to have given that name to the funeral-ſong; and others to have taken her name from it.—Some will have the one, and ſome the other formed by Onomatopœia, from the ſound or voice of thoſe that weep.

NEOMENIA, in chronology, *&c.* a term uſed for the new moon. See MOON.

Some ſay, the Jews reckoned two kinds of *Neomenia*, or new moons; the firſt on the day of her conjunction with the ſun; the ſecond on that of her apparition or phaſis; and add, that they celebrated two paſſovers, by reaſon of the uncertainty which of theſe days it ſhould be held on.

F. Hardouin, on the contrary, maintains, they had no other *Neomenia* but that of the moon's conjunction with the ſun; which it was eaſy to aſcertain by aſtronomical calculation: whereas the other was liable to miſtakes; the moon ſometimes not ſhewing herſelf till four or five days after her conjunction. See PASSOVER.

NEOPHYTES. * Νεοφυτοι, in the primitive church, were new chriſtians; or the heathens newly converted to the faith. See CATECHUMEN.

* The word ſignifies a new plant; being formed of the Greek *νεος*, new, and *φυω*, I produce, *q. d.* newly born; baptiſm, whereby they commenced *Neophytes*, being a kind of new birth. See BAPTISM.

The fathers never diſcovered the myſteries of their religion to the *Neophytes*. See MYSTERY.

The term *Neophyte* is ſtill applied to the converts which the miſſionaries frequently make among the infidels.—The Japoneſe *Neophytes*, in the latter end of the ſixteenth, and beginning of the ſeventeenth century, are ſaid to have ſhewn prodigies of courage and faith, equal to any known in the primitive church.

NEOPHYTES has formerly likewiſe been uſed to denote new prieſts, or thoſe firſt admitted into orders; and ſometimes, the novices in monaſteries. See NOVICE.

NEPENTHE,* or NEPENTHES, in antiquity, a kind of magic potion, which made perſons forget all their pains and misfortunes.

* The word is Greek, Νηπενθης, formed of the privative, *νη*, non, or abſque, and *πενθος*, luctus, ſorrow.

The *Nepenthe* mentioned in ancient authors, was the juice or infuſion of a plant, now unknown: Homer ſays it was a plant of Egypt; and adds, that Helena made uſe of it to charm her hoſts, and make them forget their pains.

Some authors ſay it was the plant we call *Helenium*; others, *Bugloſs*, whoſe juice infuſed in wine has this effect.—M. Petit has a diſſertation on the ancient *Nepenthe*.

NEPENTHE, in pharmacy, is a name given to a kind of opiate, contrived by Theo. Zwingerus; from the great opinion he had of its giving eaſe in all manner of pain.

NEPER's, NAIPER's, or NAPIER's *Bones*, an inſtrument, whereby multiplication and diviſion of large numbers are much facilitated and expedited; ſo called from its inventor J. Neper, baron of Merchiſton in Scotland.

Conſtruction of NEPER's *Bones*. Five rods, plates, or lamellæ, are provided of wood, metal, horn, paſtboard, or other matter, (*Tab. Algebra, fig.* 11.) of an oblong form, and divided each into nine little ſquares; each of which is reſolved into two triangles by diagonals.

In theſe little ſquares are wrote the numbers of multiplication table; in ſuch manner as that the units, or right hand figures, are found in the right-hand triangle; and the tens, or the left-hand figures, in the left-hand triangle: As in the figure.

Uſe of NEPER's *Bones in multiplication*. To multiply any given number by another; diſpoſe the lamellæ in ſuch manner, as that the top figures may exhibit the multiplicand; and to theſe, on the left-hand, join the lamella of units; in which ſeek the right-hand figure of the multiplicator; and the numbers correſponding thereto, in the ſquares of the other lamellæ, write out, by adding the ſeveral numbers occurring in the ſame rhomb together, and their ſums.—After the ſame manner write out the numbers correſponding to the other figures of the multiplicator; let them be diſpoſed under one another as in the common multiplication: and laſtly, add the ſeveral numbers into one ſum.

For example ſuppoſe the multiplicand 5978, and the multiplicator 937. From the outermoſt triangle on the right-hand (*Tab. Algebra, fig.* 12.) which correſponds to the right-hand figure of the multiplicator 7, write out the figure 6, placing it under the line. In the next rhomb, towards the left, add 9 and 5; their ſum being 14, write the right-hand figure, *viz.* 4, againſt 6; carrying the left-hand figure, 1, to 4 and 3, which are found in the next rhomb. The ſum 8, join to 46, already put down; after the ſame manner, in the laſt rhomb, add 6 and 5, the latter figure of the ſum 11, put down as before, and carry 1 to the 3 found in the left-hand triangle; the ſum 4 join as before on the left of 1846: Thus will you have the factum of 7 into 5978; and after the ſame manner will you have the factum of the multiplicand, into the other figures of the multiplicator: The whole added together gives the whole product.

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   5978
    937
  —————
  41846
 17934
53802
———————
5601386
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Uſe of NEPER's *Bones in diviſion*.—Diſpoſe the lamellæ ſo, as that the uppermoſt figures may exhibit the diviſor; to theſe, on the left-hand, join the lamella of units. Deſcend under the diviſor, till you meet thoſe figures of the dividend, wherein it is firſt required, how oft the diviſor is found, or at leaſt the next leſs number, which is to be ſubſtracted from the dividend; the number correſponding to this, in the place of units, write down for a quotient. By determining the other parts of the quotient after the ſame manner, the diviſion will be completed.

For example. Suppoſe the dividend 5601386, and the diviſor 5978; ſince it is firſt asked how often 5978 is found in 56013, deſcend under the diviſor, (*Tab. Algeb. fig.* 12.) till in the loweſt ſeries you find the number 53802, approaching neareſt to 56013; the former whereof is to be ſubſtracted out of the latter, and the figure 9 correſponding thereto in the lamella of units write down for the quotient. To the remainder 2211, join the following figure of the diviſor 8; and the number 17934 being found, as before, to be the next leſs number thereto, the correſponding number in the lamella of units, 3, is to be wrote down for the quotient; and the ſubſtraction to be continued as before. After the ſame manner the third and laſt figure of the quotient will be found to be 7; and the whole 937.

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5978)5601386(937
     53802
     —————
      22118
      17934
      —————
       41846
       41846
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       00000
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NEPHEW,* a term relative to uncle and aunt; ſignifying a brother's or ſiſter's ſon, who, according to the civil law, is in the third degree of conſanguinity; and according to the canon law, in the ſecond. See AGNATION and COGNATION. See alſo BROTHER.

* The word is formed from the Latin *Nepos*; which in the corrupt ages of that language ſignified the ſame: though anciently and properly it denoted a grandſon.

NEPHRITIC,* NEPHRITICUS, ſomething that relates to the kidnies. See KIDNEY.

* The word is Greek, Νεφριτικος, formed of *νεφρος*, rein, kidney.

NEPHRITIC *Colic*, is a ſort of colic, or pain ariſing from a ſtone or gravel in the reins, *&c.* See NEPHRITIS.

This is the moſt cruel of all *colics*. See COLIC.

NEPHRITIC *Wood*, *Lignum* NEPHRITICUM, a kind of medicinal wood growing in New Spain, chiefly in the kingdom of Mexico; called by the Indians *Coult* and *Tlapalcypatly*, as being reputed ſovereign againſt *Nephritic* pains. See WOOD.

It muſt be choſen well cleared of its bark and rind; it is of a bitter taſte, and a reddiſh yellow colour: but when infuſed in cold water, gives it a ſky-blue tincture, when viewed by a falſe light, and a gold colour by a true one: A little of any acid being mixed with the tincture, both colours diſappear, but a little oil of Tartar reſtores its ſky-blue. See COLOUR. Some ſubſtitute ebony, and others red Braſil wood for *Lignum Nephriticum*, but the deceit becomes apparent by infuſing it in water.

NEPHRITIC *Stone*, *Lapis* NEPHRITICUS, a ſort of precious ſtone; ſo called from its extraordinary virtues againſt the ſtone and gravel in the kidneys. See STONE.

It is a ſpecies of jaſper, commonly of an uniform dusky green colour; but ſometimes variegated with white, black, or yellow.—It ſeems only to differ from jaſper in its being harder, and always without any thing of red. See JASPER.

It is brought chiefly from New Spain, where it is ſometimes found in pieces large enough to make moderate cups. There is ſome likewiſe found in Old Spain and Bohemia.

This ſtone is very dear, by reaſon of the wonderful virtues aſcribed to it. A cup made of it was ſold for 1600 crowns in the time of the emperor Rudolphus II.—The beſt for medicinal uſe is of a bluiſh grey, fat and unctuous, as talc of Venice.

The Indians of New Spain, who firſt diſcovered its uſe, and taught it the Europeans, wear it hung about their neck, after having cut it in various figures, chiefly beaks of birds: Whence ſome Charletans take occaſion to counterfeit it, by cutting jada, and other ſtones, into like figures; and ſell them at great prices to thoſe who have an opinion of their *Nephritic faculty.*

NEPHRITICS, Νεφριτικα, medicines proper for diſeaſes of the kidneys, particularly the ſtone. See STONE, *&c.*

Such particularly are the roots of althæa, dog's graſs, aſparagus, ſago, pellitory of the wall, mallows, pimpinella, red chich-peas, peach-kernels, turpentine, lapis nephriticus, and lignum nephriticum, which ſee.

NEPHRITIS, * or NEPHRITICUS *Dolor*, in medicine, a name given to a painful diſeaſe occaſioned by the ſtone or gravel in the kidneys. See STONE.

* The word is Greek, νεφριτις, *q. d.* diſeaſe of the reins, formed from νεφρος, rein. See KIDNEY.

The Greeks alſo give the name νεφριτις, to the firſt vertebra of the loins, from its neighbourhood to the kidneys. See VERTEBRA.

NEPOTISM, a term uſed in Italy, in ſpeaking of the authority which the popes nephews and relations have in the adminiſtration of affairs, and of the care the popes take to raiſe and enrich them.

Many of the popes have endeavoured to reform the abuſes of *Nepotiſm*: at preſent *Nepotiſm* is ſaid to be aboliſhed. Leti has wrote expreſsly on this ſubject, *Il Nepotiſmo.*

NEPTUNALIA, feaſts held among the ancients in honour of Neptune. See FEAST.

The *Neptunalia* differed from the conſualia, in that the latter were feaſts of *Neptune*, conſidered particularly as preſiding over horſes, and the manage. See CONSUALIA.

Whereas the *Neptunalia* were feaſts of Neptune in general, and not conſidered under any particular quality.—They were celebrated on the 10th of the calends of Auguſt.

NEREIDS, NEREIDES, ſea-nymphs; or fabulous deities of the ancients, ſuppoſed to inhabit the ſea. See NYMPH and GOD.

The *Nereids* were fifty in number; all the daughters of Nereus, by the nymph Doris.—Their names and genealogies are deſcribed by Heſiod.

NERVE, NERVUS, in anatomy, a round, white, long body, like a cord, compoſed of ſeveral threads, or fibres; deriving its origin from the brain, or the ſpinal marrow; and diſtributed throughout all parts of the body: ſerving for the conveyance of a peculiar juice, by ſome called *animal ſpirits*, for the performance of ſenſation, and motion. See SENSATION, MUSCULAR *Motion*, &c.

Origin of the NERVES.—From every point of the cortex of the brain, there ariſe minute medullary fibres; which, in their progreſs uniting together, at length become ſenſible; and thus conſtitute the medulla of the brain, and the ſpine. See BRAIN, MEDULLA, *&c.*

Hence they are continued, and in their farther progreſs, become diſtinguiſhed or ſeparated by coats which are detached to them from the dura and pia mater, into ſeveral diſtinct faſciculi, or *Nerves*; reſembling, in the poſition of their component fibrillæ, ſo many horſes tails, wrapped up in a double tunic. See FIBRE.

It is probable that the medullary fibres of the cerebellum, riſing up towards the fore-parts of the medulla oblongata, do, part of them, join the *Nerves* ariſing thence, but ſo as ſtill to retain their ſeparate origin, progreſs, and functions. The reſt of the fibres of the cerebellum are ſo mixed with thoſe of the brain, as that there is, perhaps, no part of the whole medulla oblongata, or ſpinalis, where there are not found the fibres of each kind; and thus, to conſtitute the body of each *Nerve*, both kinds of fibres contribute, though the end and effect of each be quite different. See CEREBELLUM, *&c.*

The *Nerves* thus formed, and ſent from the medulla oblongata and ſpinalis, while within the cranium, are ten pair; though very improperly ſo accounted; inaſmuch as moſt of them do in reality conſiſt of ſeveral diſtinct, very large *Nerves.*

From the ſpinal marrow, continued without the cranium, there ariſe, after the like manner, thirty pair; to which may be added another pair ſent from the vertebræ of the neck, augmented in its progreſs by branches from the ſecond and third pair, and at laſt joined to the eighth pair.

All theſe, while within the medulla, are pulpous; as ſoon as they quit it, they acquire a ſheath, or caſe, wherewith being defended, they proceed to the dura mater, which is perforated into an open vagina, reaching as far as the foramina of the cranium, deſtined for the tranſmiſſion of the *Nerves*; where the nine firſt pair, and the acceſſory pair, aſſuming this vagina or caſe, paſs ſafely out of the cranium.

The other thirty and one pair deſcend through ſpaces between the commiſſures of the apophyſes of the vertebræ; whence, firm, hard, and well clothed as they are, they are diſperſed through all, even the ſmalleſt points of the ſolid parts of the body yet known. See SOLID.

The coats, or covers, of theſe *Nerves* are every-where inveſted with blood-veſſels, lymphatics, and other veſicles of a very tight texture, which ſerve to collect, ſtrengthen, and contract the fibrillæ; and from which many of the phænomena of the *Nerves*, and of diſeaſes, are accountable.

As ſoon as the laſt extremities of the *Nerves* are about to enter the parts to which they belong, they again lay aſide their coats, and become expanded either into a kind of thin membranula, or into a ſoft pulp. See MEMBRANE and FLESH.

Now, upon conſidering, firſt, that the whole vaſcular medulla of the brain goes to the conſtituting of the fibrillæ of the *Nerves*; nay, is wholly continued into, and ends in them; ſecondly, that upon compreſſion, tearing, diſperſion, putrefaction, *&c.* of the medulla of the brain, all the actions uſed to be performed by the *Nerves* ariſing thence, are immediately aboliſhed, even though the *Nerves* continue entire and untouched; thirdly, that the *Nerves* themſelves are every-where found lax, pendulous, crooked, retrograde, and oblique, yet effect motion and ſenſation almoſt inſtantaneouſly; fourthly, that when cloſe bound or compreſſed, though in all other reſpects entire, they loſe all their faculty in thoſe parts between the ligature and the extremes to which they tend, without loſing any in thoſe parts between the ligature and the medulla of the brain, or cerebellum: it evidently appears, that the nervous fibrillæ do continually take up a humour or juice from the medulla of the brain, and tranſmit it by ſo many diſtinct canals to every point of the whole body; and by means hereof alone perform all their functions in ſenſation, muſcular motion, *&c.* See SENSATION and MUSCLE.—Which humour is what we popularly call *animal ſpirits*, or the *nervous juice.* See ANIMAL and SPIRIT.

Nor does there appear any probability in that opinion maintained by ſome; *viz.* That the *Nerves* perform all their action by the vibration of a tenſe fibrilla; which is inconſiſtent with the nature of a ſoft, pulpous, flaccid, crooked, wavy *Nerve*, and with that nice diſtinctneſs wherewith the objects of our ſenſes are repreſented, and muſcular motions performed.

Now, after the ſame manner as the arterial blood is perpetually carried into all the parts of the body furniſhed with thoſe veſſels; ſo we conceive a juice prepared in the cortex of the brain and cerebellum, conveyed thence every moment through the *Nerves* to every point of ſolid body. The ſmallneſs of the veſſels in the cortex, as exhibited in Ruyſch's injections, which yet are only arterious, and therefore incredibly thicker than the laſt emiſſary derived thence, ſhew how ſlender theſe hollow *Nervous* ſtamina muſt be. But the great bulk of the brain, compared with the exceeding ſmallneſs of each fibrilla, ſhews, that their number muſt be great beyond the limits of all imagination. See STAMINA.

And again, the great quantity of juice conſtantly brought hither, and violently agitated, will occaſion a conſtant plenitude, openneſs, and action of theſe little canals.

But, as freſh juice is every moment prepared, and the laſt is continually protruding the former; as ſoon as it has done its laſt office, it ſeems to be driven out of the laſt filaments into the ſmalleſt lymphatic venulæ, both about the glands, and elſewhere; thence into the lymphatics ſomewhat larger; and again from theſe to the common lymphatic veſſels with the valves of veins, and at length into the veins and the heart; and thus like the other juices of the body, does it make its circuit round the body. See CIRCULATION *of the Spirits.*

Upon the whole, if we conſider the great bulk of the brain, cerebellum, medulla oblongata, and medulla ſpinalis, with regard to the bulk of the reſt of the ſolids of the body; the great number of *Nerves* diſtributed hence throughout the whole body; that the brain and carina, that is, the ſpinal marrow, are the baſis of an embryo, whence, according to the great Malpighi, the other parts are afterwards formed; and laſtly, that there is ſcarce any part of a body, but what feels or moves; it will appear very probable, that all the ſolid parts of the body are wove out of nervous fibres, and conſiſt wholly of them. See STAMINA and SOLIDS.

The Ancients only allowed of ſeven pairs or conjugations of *Nerves*, proceeding from the brain; which, with their functions, they compriſed in theſe two Latin verſes:

Optica prima, oculos movet altera, tertia guſtat.
Quartaq; quinta audit, vaga ſexta eſt, ſeptima linguæ.

But the moderns, as before obſerved, reckon ten, which are as follow.

Nerves *of the brain, or cerebrum,* are the

Auditory Nerves. See ſeventh pair.

Olfactory Nerves, *par olfactorium,* which ariſe in the fore-part of the brain, juſt below the os frontis: theſe being pretty thick near the os cribroſum, are there called *proceſſus papillares,* which Dr. Drake takes to be a properer name in that place, than that of *Nerves*; they appearing rather productions of the medulla oblongata, whence the olfactory *Nerves* ariſe, than diſtinct *Nerves.* As ſoon as they have made their way through the os cribroſum, they are diſtributed throughout the membranes of the Noſe. Their uſe is in the ſenſation of ſmelling.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* h h. See alſo Smelling and Olfactory.

Optic Nerves. Theſe paſs the skull through two perforations in its baſis, a little above the ſella equina, and are thence conveyed to the tunics of the eye; whereof the retina, ſuppoſed to receive the objects of viſion, is an extenſion of the inner or medullary part alone.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* i i. See alſo Vision, Retina, Optic, and Thalami.

Nerves *which move the eyes, oculorum motorii,* ariſe from the crura of the medulla oblongata, near the annular protuberance; whence they march out between two branches of the cervical artery; and paſſing out of the skull at an irregular oblong hole, immediately under the former, are ſpent on thoſe muſcles of the eyes called *attollent*, *depriment*, *adducent*, and *obliquus inferior*; except ſome ſmall fibres ſpent in the muſcles of the upper palpebra.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* k k. See alſo Eye.

Pathetic Nerves, ariſe behind the teſtes, and paſſing out of the skull at the ſame foramen with the former pair, ſpend themſelves wholly on the trochlear muſcle.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* m m.

Fifth pair of Nerves, the largeſt of all thoſe coming from the brain has its uſe as well as diſtribution more extenſive; ſerving both for ſenſe and motion, for touch and taſte.—It ſends branches not only to the eyes, noſe, palate, tongue, teeth, and moſt parts of the mouth and face, but alſo to the breaſt, lower venter, præcordia, *&c.* by means of the intercoſtals, which are partly compoſed of branches of this *Nerve*; whence ariſes a conſent or ſympathy between thoſe ſeveral parts of the body.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* n n. See alſo Consent *of parts.*

It ariſes from the annular protuberance, near the proceſſus cerebelli, and is at its origin very large, but before its egreſs from the dura mater is divided into two branches, each conſiſting of innumerable nervous fibres, whereof thoſe of one branch are pretty tough and firm; the other ſoft and lax. A little beyond the ſella, it forms a plexus called *Ganglioformis*, near which, each *Nerve* is divided into an *interior* and *poſterior* branch.

The *anterior* or fore-branch, after a few twigs ſent to the dura mater, enters the receptacle on each ſide the ſella; whence it ſends off one or two twigs to the intercoſtal; and as ſoon as it emerges thence, is again ſubdivided into three nearly equal branches. The *uppermoſt* paſſing the foramen lacerum into the orbit of the eye, is immediately ſubdivided into three leſs branches: the *firſt* of which, after ſending twigs to the tunica adnata, glandula lacrymalis, the muſcles that draw up the noſe, and the orbicular muſcles, running over the muſcle which draws up the upper eye-lid, is ſpent on the muſcles of the forehead, and the common integuments of the fore-part of the head.

The *ſecond* branch running over the pathetics and motorii, is divided into two; whereof the outer and ſmaller ſends off ſeveral fibrillæ into the fat that envelopes the optic *Nerve*; and joining with others from the third pair, forms a ſort of plexus on the trunk of the optic *Nerve*; whence fibrillæ are detached into the muſculus deprimens, adducens, and the tunica ſclerotica. The inner and bigger ſlip is ſubdivided into four twigs; the firſt running over the optic *Nerve*, enters the ſclerotica, and is ſpent in that membrane. The ſecond, returning into the skull by a peculiar perforation, pierces the dura mater, and, ſometimes turning back again, paſſes out of the skull through one of the holes of the cribriforme, and is diſtributed into the interior membrane of the noſe. The third twig is ſpent partly on the eye-lids and their orbicular muſcles, the external integument of the noſe, and the muſcles which draw it upwards. The fourth is diſtributed by ſeveral twigs into the eye-lids and orbicular muſcles. The third ſlip of the upper branch is ſpent on the glandula innominata and tunica adnata.

The *inferior* branch, ere it leave the skull, enters the orbit of the eye, and running along the outſide of the muſculus abducens, goes out again at a little perforation peculiar to it; after which it divides into ſeveral fibres, ſome of which go to the integuments of the cheeks; the reſt to the muſcles that raiſe the upper lip. As ſoon as it quits the skull at the third foramen, it is ſubdivided into three little branches, the firſt of which, after ſome twigs beſtowed on the maſſeter, the teguments of the face, the gums and upper teeth, enters a peculiar ſinus of the bone making a lower part of the orbit, and goes out at a hole peculiar to it; after which it divides into ſeveral fibrillæ which go to the teguments of the face, the upper lip, the muſcle that draws the lower part of the noſe laterally, and the inner muſcle of the noſe.

The *ſecond ſmall* branch running downwards behind the ducts which go from the noſe to the fauces, is divided into two; the upper whereof is diſtributed by many twigs into the membrana pituitaria. The lower, paſſing a peculiar hole on the hind and lateral part of the bone of the palate, is diſtributed into that ſpongy fleſh that lines the palate, and the tough membrane that covers it.

The *third little* branch is ſpent on that part of the membrana pituitaria that lines the fauces upon the uvula and muſcles thereabouts, and upon the tonſils.

The *poſterior*, or *greater* branch, after ſending a few twigs to the dura mater, paſſes the skull through the fifth foramen; and having ſent off ſome twigs to the buccinator, maſſeter, and the muſcles of the lower jaw, is divided into three conſiderable branches.

The *firſt* paſſes to the root of the tongue, and thence proceeding forwards, ſends ſeveral branches to the maxillary glands. It ſends others along the inner ſubſtance of the tongue, which end in capillaries at its extremity; and joining every-where with the branches of the ninth pair, ſerve both the muſcles and the papillary glands, and contribute to the taſte, as well as the motion of the tongue.

The *ſecond*, or middle branch, after diſtributing a twig into the maxillary glands, and the muſcles ſtylogloſſus, and mylogloſſus, enters the ſinus of the lower jaw, along which it runs accompanied with branches of the carotid arteries and little veins, which return to the internal jugulars; and beſides ſending off a twig to each tooth, with the membranes of the foreſaid veſſels, contributes to form a membrane which lines the whole ſinus. At the fourth grinder it divides it into two; the leſs whereof runs to the joining of the jaw; the bigger, paſſing out at a peculiar perforation, is divided into ſeveral fibres, which are diſpoſed into the muſcles of the lower lip and chin.

The *third* or exterior branch, is ſpent on the parotid glands.

Sixth pair of Nerves, or the *Guſtatorii*, riſe from the medullary tracts of the centrum ovale, below the annular proceſs, and proceeding forwards, enter the ſame receptacle, or ſinus of the skull, on the ſide of the ſella, as the fifth pair does; whence ſending off a twig to join thoſe of the fifth pair, in their paſſage to the intercoſtals, it goes out of the skull at the ſame hole with the motorii oculorum, and ends in the abducent muſcles of the eye; ſending withal ſome twigs to the tongue.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* o o. See alſo Tongue.

The ſeventh pair, or auditory Nerves, ariſing from the medullary tract of the fourth ventricle, and paſſing out of the skull through a hole of the os petroſum, divides into two branches, or portions, a *hard* and a *ſoft* one.

The *hard* portion entring a little ſinus in the upper part of the bone that conſtitutes the barrel of the ear; ſends off a twig which diſtributes itſelf into the dura mater, except ſome ſmall twigs which go to the membrane that lines the ear, to the internal muſcles that line the ear, and the fine membrane that clothes the inſide of the cavity of the apophyſis mamillaris. After this, the hard branch ſends off two other twigs, one to the eighth pair, the other to the tympanum, whoſe chord it forms; whence creeping over the malleolus, it goes out of the ear, and ſends a ramification to the tongue.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* p p.

The ſame hard branch, coming out of the proceſſus mamillaris, ſends ſome twigs to the maſſeter, and others to the glands about the ear; where it divides into two other ramifications; the interior beſtowed on the glands, the cheek, and the upper lips, the reſt on the lower palpebra, and the external part of the face. The exterior ramification, beſtowing ſome fibrillæ on the glands, out of which it iſſues, divides into two; the upper diſtributed into the quadratus and outer parts of the under jaw; the lower ſpent on the integuments of the fore and lateral part of the neck, ſome muſcles of the lower jaw, and the maſtoidal muſcle.

The *ſoft* and larger portion of this pair divides into three ramifications; the *upper* whereof paſſes through a ſmall foramen into the concha, where expanding, it forms a fine membrane which lines its inner ſurface. The *ſecond* and *third* ramifications are alſo ſpent on the inner parts of the concha and ſemicircular ducts, which they furniſh with membranes, the immediate organs of hearing. See Hearing and Auditory.

Eighth pair of Nerves, or the *par vagum*, ſprings from the medulla oblongata, a little above the olivaria corpora, and paſſes out of the skull through the ſame perforations with the lateral ſinus's of the dura mater.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* q q.

This, in its progreſs, is joined by the par acceſſorium, and a little further by a twig of the hard part of the ſeventh pair, and at the ſecond vertebra of the neck, by the *Nerves* that iſſue from the cervical marrow; and detaches ſeveral twigs to the muſcles of the larynx, gula, neck, &c. particularly from a ganglioform plexus, formed by its union with a branch of the intercoſtal. Hence deſcending to the thorax, it makes another plexus under the clavicle, whence ariſes the recurrent *Nerve* on the right ſide, as on the left it has its riſe from the trunk of the *Nerve* itſelf. The right recurrent is reflected at the axillary artery; the left at the deſcending branch of the aorta; each running aſide the trachea, impart ſome twigs to it, and terminate in the muſcles of the larynx. Their uſe is in the formation and modulation of the voice. See VOICE.

Againſt the origin of the aorta it ſends off a branch towards the heart; which dividing into two, the leſſer twiſts about the pulmonary vein; the bigger proceeds to the pericardium, and heart, after having ſent off a twig, which, with others from the intercoſtals, make the plexus cardiacus ſuperior: proceeding ſtill farther, it ſends out ſeveral ramifications, which, meeting together, make the plexus pneumonicus, whence ariſe fibres that conſtringe the veſſels and veſicles of the lungs. In its paſſage downwards, it diſtributes ſeveral branches to the oeſophagus, along which it runs.

About the lower vertebræ of the neck, the trunk divides into two branches, the external and internal, communicating all along by ſeveral ramifications, and at length reuniting. The reſt of this pair joins with the intercoſtals in the formation of ſeveral plexus's in the lower venter, and in them ſeems to terminate. See PLEXUS.

Along with theſe, and wrapped up in the ſame coat from the dura mater, paſſes the

Acceſſory NERVES, *par Acceſſorium*, has its origin from the medulla contained in the vertebræ of the neck. Soon after its return out of the ſkull, it leaves the par vagum again, and is diſtributed into the muſcles of the neck and ſhoulders.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* r r. See alſo ACCESSORY.

Intercoſtal NERVES, conſiſt of nervous filaments, derived partly from the brain, *viz.* the branches of the fifth and ſixth pair; and partly from the ſpinal marrow, by thoſe branches they receive from the vertebral *Nerves*.

In each trunk of theſe *Nerves*, ere it arrives at the thorax, are two cervical plexus's; the upper whereof receives a branch from each trunk of the par vagum; the under ſends out ſeveral ramifications to the oeſophagus, and aſpera arteria, and particularly a large one to the recurrent *Nerve*. From the ſame plexus deſcend two other ramifications to the cardiac plexus; which are joined a little lower by a third, from which the intercoſtal *Nerve* deſcending to the clavicles, divides into two, and embraces and conſtringes the ſubclavian artery; thence entering the thorax, it receives three or four twigs from the upper vertebral *Nerve*, together with which it conſtitutes the intercoſtal plexus; and thence deſcending along the ſides of the vertebræ, and receiving a nervous twig from each of them, to the os ſacrum; and entering the abdomen, it forms ſeveral conſiderable plexus's, *viz.* the lienaris, hepaticus, the two renales, meſentericus magnus, and two little ones in the pelvis. See PLEXUS.

Ninth pair of NERVES, *motorii linguæ*, ariſe from the middle of the centrum ovale, by three or four ſmall twigs, and go out of the ſkull near the proceſs of the occiput; and ſend their branches to the tongue.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* ſ ſ.

They may be likewiſe called *Guſtatorii*, as they contribute, together with the branches of the fifth and ſixth pair, to the ſenſation of taſting. See TASTING.

Tenth pair of NERVES, ariſes by two or three branches from the medulla oblongata, juſt below the corpora pyramidalia and olivaria, or rather, at the beginning of the medulla ſpinalis; whence reflecting a little backwards, it goes out of the ſkull between the firſt vertebra of the neck, and the proceſs of the occiput.—See *Tab. Anat.* (Oſteol) *fig.* 5. *lit.* t t.

It is ſpent on the external muſcles of the head and ears. See EAR, &c.

NERVES *from the ſpinal marrow.*—The *ſpinal* NERVES, (*i. e.* thoſe ſpringing from the medulla after its egreſs out of the ſkull, where it lays aſide the name *oblongata*, and aſſumes that of *ſpinalis*) are thirty pair: Of which, ſome are reckoned as belonging to the neck, as having their origin thence, and called *cervical Nerves*; others to the dorſum, or back, and called *dorſal Nerves*; others to the loins, called *lumbal Nerves*, and the reſt to the os ſacrum. — See *Tab. Anat.* (Oſteol) *fig.* 6. *lit.* b b. See alſo SPINAL.

Cervical NERVES. Of theſe there are ſeven pair: The firſt pair ariſe between the firſt and ſecond vertebra of the neck, and, contrary to the reſt, come out before and behind; whereas the other ſix pair come out laterally from the junctures of the vertebræ, through particular perforations near the tranſverſe proceſſes. They go to the muſcles of the head and ear.—See *Tab. Anat.* (Oſteol) *fig.* 6. *lit.* d d.

The ſecond pair contributes the main branch towards the formation of the diaphragmatic *Nerves*, which, according to Vieuſſens, ſpring only from the fourth and ſixth pair. See PHRENETIC.

The three laſt pair of the neck joining with the two firſt of the dorſum, or thorax, make the *brachial Nerves*.

All the *cervical Nerves* ſend innumerable branches to the muſcles, and other parts of the head, neck, and ſhoulders. See CERVICAL.

Dorſal NERVES are in number twelve. Theſe, excepting what the two upper pair contribute to the *brachial Nerves*, are generally diſtributed into the intercoſtal and abdominal muſcles, the pleura and external parts of the thorax.—See *Tab. Anat.* (Oſteol) *fig.* 6. *lit.* f f.

Lumbal NERVES, are five pair: The firſt of which ſends two branches to the lower ſide of the diaphragm. The ſecond, ſome twigs to the genital parts; and others, as well as the three following, to give the firſt roots to the *crural Nerves*. The reſt of the branches of the *lumbal Nerves* are diſtributed into the muſcles of the loins and adjacent parts.—See *Tab. Anat.* [Oſteol) *fig.* 6. *lit.* g g.

NERVES *of the os ſacrum*, are ſix pair; the firſt three or four pair whereof are beſtowed wholly on the *crural Nerves*; the reſt on the muſcles of the anus, veſica, and genital parts.

Brachial NERVES, are the offspring, partly of the cervicals, and partly of the dorſals. Theſe, after the ſeveral branches whereof they are compoſed have been variouſly complicated and united, run but a little way in a trunk ere they divide again into ſeveral branches, variouſly diſtributed into the muſcles of the ſkin and arms.—See *Tab. Anat.* (Oſteol) *fig.* 6. *lit.* e e.

Diaphragmatic NERVES, are likewiſe the offſprings of the cervicals. Theſe, after joining in a trunk, run through the mediaſtinum undivided, till they arrive near the diaphragm, into which they ſend off ſeveral branches; ſome into the muſcular, others into the tendinous part of it.

Crural NERVES, conſiſt of an union of ſix or ſeven pair, *viz.* the three laſt of the lumbal, and three or four firſt of the os ſacrum. Theſe, after having ſpent their upper branches on the muſcles of the thigh and ſkin, as far as the knee, proceed in a trunk downwards, which ſends its branches to the extremities of the toes, ſupplying, as it goes, the muſcles and ſkin of the leg and foot. This is the largeſt and firmeſt nervous trunk in the body.

Capillaments of the NERVES. See the article CAPILLAMENT.

NERVES, in botany, are long, tough ſtrings, running either a-croſs, or length-wiſe of the leaves of plants. See LEAF.

NERVES, in architecture, denote the mouldings of projecting arches of vaults; or thoſe ariſing from the branches of ogives, and croſſing each other diagonally in gothic vaults; ſerving to ſeparate the pendentives. See VAULT, OGIVE, &c.

NERVINES. See the article NEURITICS.

NERVOSA *Corpora*, in anatomy. See CAVERNOSA *Corpora*.

NERVOUS *Colic*. See the article COLIC.

NERVOUS *Spirit*, or *juice*, denotes a pure, ſubtile, volatile humour, better known by the name of *animal ſpirits*; ſecreted from the arterious blood in the cortical part of the brain, collected in the medulla oblongata, and thence driven, by the force of the heart, into the cavities of the nerves; to be conveyed by them throughout the body, for the purpoſes of ſenſation and animal motion. See SPIRIT, and MUSCULAR SENSATION, NERVE, &c.

NEST. See the article NIDUS.

NESTORIANS, a ſect of ancient heretics; ſtill ſaid to be ſubſiſting in ſome parts of the Levant; whoſe diſtinguiſhing tenet is, that Mary is not the mother of God. See MOTHER *of God*.

They take their name from Neſtorius, who, of a monk, became a prieſt, and celebrated preacher, and was at length, after the death of Siſinnius in 428, raiſed by Theodoſius, to the ſee of Conſtantinople.

At firſt he ſhewed a world of zeal againſt hereſy, in his ſermons before the emperor; but at length taking the liberty to ſay, that he found in ſcripture, that Mary was the mother of Jeſus, but that he no where found, that Mary was the mother of God, his auditory was ſhocked, and a great part of them retired from his communion.

His writings were ſoon ſpread though Syria and Egypt; where he made many converts, notwithſtanding the vigorous oppoſition of St. Cyril.

His capital tenet was, that there are two perſons in Jeſus Chriſt; and that the Virgin was not his mother as God, but only as man. See PERSON.

This doctrine was condemned in the council of Epheſus, at which aſſiſted above 200 biſhops; and Neſtorius was anathematized and depoſed from his ſee.

Neſtorius was not the author of this error; but borrowed it at Antioch, where he had ſtudied. Theodorus Mopſueſtanus had taught the ſame before him.

It is ſomething difficult to determine whether or no the Chaldee Chriſtians, who ſtill profeſs *Neſtorianiſm*, have preciſely the ſame ſentiments with Neſtorius, whom they ſtill eſteem as their patriarch! They have made ſeveral re-unions with the Romiſh Church, but none of them have ſubſiſted long. The moſt conſiderable was that under the pontificate of Paul V.

Till the time of pope Julius III, they acknowledged but one patriarch, who aſſumed the quality of patriarch of Babylon. — but a diviſion ariſing among them, the patriarchate became divided, at leaſt for a time; and a new patriarch was appointed by that pope, who made his reſidence at Caremit in Meſopotamia; whoſe ſucceſſor, however, unable to withſtand the power of the patriarch of Babylon, was obliged to retire within the confines of Perſia.—Thus matters ſtood till the pontificate of Paul V. under whom there was a ſolemn re-union with the Romiſh Church, whom their patriarch ſolemnly owned for the mother, *&c.* of all churches; ſending his miniſters to Rome to negotiate the union, and compoſing an explication of the articles of religion, wherein their diſputes with the Romiſh church were repreſented as only verbal, *&c.*

NET, NEAT, in commerce, ſomething pure, and unadulterated with any foreign mixture.

Thus, wine is ſaid to be *Net* when not falſified or balderdaſhed; and coffee, rice, pepper, *&c.* are *Net* when the filth and ordures are ſeparated from them. See NEAT.

A diamond is ſaid to be *Net* when it has no ſtains or flaws; a cryſtal, when tranſparent throughout.

NET is alſo uſed for what remains after the tare has been taken out of the weight of any merchandize; *i. e.* when it is weighed clear of all package. See TARE.

Thus we ſay, a barrel of cochineal weighs 450 pounds; the tare is 50 pounds, and there remains *Net* 400 pounds.

NET-PRODUCE, a term uſed to expreſs what any commodity has yielded, all tare and charges deducted.

The merchants ſometimes uſe the Italian words *Netto proceduto*, for *Net produce*.

NET-MASONRY. See the article MASONRY.

Tramel-NET. See the article TRAMEL.

NETE *Hyperboleon*,* in the ancient muſic, the name of the higheſt and moſt acute of the chords of the lyre, or the ancient ſcale, or diagramma. See DIAGRAMMA.

* The word is Greek, compoſed of *νητη*, and *ὑπερβολεων*, *q. d.* the laſt of the higheſt, where is underſtood the word, *chords*.

It anſwered to the A, mi, la, of the third octave of the organ, or the modern ſyſtem.

NETE *Diazeugmenon*,* in the ancient muſic, was one of the chords of the lyre, or ſyſtem of the ancients. See DIAGRAMMA.

* The word comes from the Greek, *νητη* and *διαζευγμενων*, laſt of the ſeparate; where is underſtood the word, *chords*.

It anſwers to the E, ſi, mi, of the third octave of the organ, or modern ſyſtem.

NETE *Synemmenon*,* in the ancient muſic, the name of the higheſt chord of a tetrachord of the Greek ſyſtem, added to make the b mollis fall between the meſe and parameſe, *i. e.* between la and ſi. See DIAGRAMMA.

* The word comes from the Greek *νητη* and *συνημμενων*, the laſt of theſe added; where is underſtood the word, *chords*.

The chord had the ſame ſound with the *Paranete Diazeugmenon*, or our la by b mollis.

NETHER *vert*. See the article VERT.

NEVELLI *Teſta*. See the article TESTA.

NEURITICS,* or NERVINES, in medicine, remedies proper for diſeaſes of the nerves, and nervous parts, as the membranes, ligaments, *&c.*

* The word is formed from the Greek *νευρον*, nervus.

Such are betony, lavender, roſemary, ſage, laurel, marjoram, and others among the cephalics. See CEPHALIC.

NEUROGRAPHIA, in anatomy, a deſcription of the nerves. See NERVE.

Raim. Vieuſſens, a phyſician of Montpellier, has an excellent treatiſe in Latin, under the title, *Neurographia Univerſalis*, where he ſhews, that there are more ramifications of the nerves in the skin, than in the muſcles, and all the other parts. See SKIN.

Duncan, another phyſician of the ſame place, has alſo a treatiſe called *Neurographia Rationalis*. See NEUROLOGY.

NEUROLOGY, Νευρολογια, a diſcourſe of the nerves. See NERVE.

Neurology ſeems to be of leſs extent than *Neurography*; in as much as the latter may be underſtood, not only of diſcourſes on the nerves, but alſo of figures and engravings, repreſenting them; whereas the former is reſtrained to diſcourſing alone.—Willis has given a fine *Neurology*, in his *Anatome Cerebri*.

NEUTER, a perſon indifferent, who has eſpouſed neither party, and is neither friend, nor foe.

A Judge ought to be *Neuter* in the cauſes he judges; in queſtions, where reaſon appears *Neuter*, a man ſhould ever incline to the ſide of the unhappy.

NEUTER, in grammar, denotes a ſort of gender of nouns, which are neither maſculine, nor feminine. See GENDER.

The Latins have three kinds of genders, maſculine, feminine, and *Neuter*. In Engliſh, and other modern tongues, there is no ſuch thing as *Neuter* nouns. See NOUN.

Verbs NEUTER, by ſome grammarians called *intranſitive verbs*, are thoſe which govern nothing, and that are neither active nor paſſive. See VERB.

When the action expreſſed by the verb has no object to fall upon, but the verb alone ſupplies the whole idea of the action; the verb is ſaid to be *Neuter*: as, I ſleep, thou yawneſt, he ſneezes, we walk, ye run, they ſtand ſtill.

Some divide *Verbs Neuter* into, 1ſt, Such as do not ſignify any action, but a quality; as *albet*, it is white; or a ſituation, as *ſedet*, he ſits; or have ſome relation to place, as *adeſt*, he is preſent; or to ſome other ſtate or attribute, as *regnat*, he rules, *&c.*

And, 2dly, thoſe that do ſignify actions, though thoſe ſuch as do not paſs into any ſubject different from the actor; as *to dine*, *to ſup*, *to play*, &c.

But this latter kind ſometimes ceaſe to be *Neuter*, and commence active; eſpecially in Greek and Latin, when a ſubject is given them; as *vivere vitam*, *ambulare viam*, *pugnare pugnam*. Thus the old French poets ſay, *Soupirer ſon tourment*; the Engliſh, to *ſigh his woes*, &c.

But this is obſerved only to obtain where ſomething particular is to be expreſſed, not contained in the verb; as *vivere vitam beatam*, to live a happy life; *pugnare bonam pugnam*, to fight a good fight, *&c.*

According to the abbot de Dangeau, *Verbs Neuter* may be divided into *active* and *paſſive*; the firſt thoſe that form their tenſes in Engliſh by the auxiliary verb *to have*; in French by *avoir*. The ſecond thoſe that form them in Engliſh with the verb *to be*; in French, *etre*.

Thus, to ſleep, to yawn, dormir and eternuer, are *Neuters active*.—To come, and to arrive, are *Neuters paſſive*.

NEUTRAL *Salts*, among chymiſts, are a ſort of intermediate ſalts between acids and alcalies; partaking of the nature of both. See SALT, ACID, and ALCALY.

Mr. Boyle alſo gives the appellation *Neutral* to a ſort of ſpirits, differing in divers qualities both from vinous, acid, and urinous ſpirits.—Theſe he alſo calls *anonymous* and *adiaphorous* ſpirits. See ADIAPHOROUS.

NEUTRALITY, the ſtate of a perſon, or thing, that is *Neuter*. See NEUTER.

NEW. See the articles ANCIENT, MODERN, *&c.*

NEW *Algebra*. See the article ALGEBRA.

NEW *Aſtronomy*. See the article ASTRONOMY.

NEW *Moon*, *Neomenia*, that ſtate of the moon a little before, and a little after her conjunction with the ſun. See MOON and CONJUNCTION.

NEW *Style*. See the article STYLE.

NEW *Tables*. See the article TABLES.

NEWEL, in architecture, the upright poſt, which a pair of winding ſtairs turn about; being that part of the ſtair-caſe which ſuſtains the ſteps. See STAIR.

The *Newel* is properly a cylinder of ſtone, which bears on the ground, and is formed by the ends of the ſteps of the winding-ſtairs.

There are alſo *Newels* of wood, which are pieces of timber placed perpendicularly, receiving the tenants of the ſteps of wooden-ſtairs into their mortices, and wherein are fitted the ſhafts and reſts of the ſtair-caſe, and the flights of each ſtory.

NEWTONIAN *Philoſophy*, the doctrine of the univerſe, and particularly of the heavenly bodies; their laws, affections, *&c.* as delivered by Sir Iſaac Newton. See PHILOSOPHY.

The term *Newtonian Philoſophy*, is applied very differently; whence divers confuſed notions relating thereto.

Some authors, under this philoſophy, include all the corpuſcular philoſophy, conſidered as it now ſtands corrected and reformed by the diſcoveries, and improvements made in ſeveral parts thereof, by Sir Iſaac Newton.

In which ſenſe it is that Graveſande calls his elements of phyſics, *Introductio ad Philoſophiam* Newtonianam.

And in this ſenſe the *Newtonian* is the ſame with the new philoſophy, and ſtands contradiſtinguiſhed to the carteſian, the peripatetic, and the ancient corpuſcular. See CORPUSCULAR, PERIPATETIC, CARTESIAN, *&c.*

Others, by *Newtonian Philoſophy*, mean the method or order which Sir Iſaac Newton obſerves in philoſophizing; *viz.* the reaſoning, and drawing of concluſions directly from phænomena, excluſive of all previous hypotheſes; the beginning from ſimple principles; deducing the firſt powers and laws of nature from a few ſelect phænomena, and then applying thoſe laws, *&c.* to account for other things. See *Law of* NATURE.

And in this ſenſe, the *Newtonian Philoſophy* is the ſame with the experimental philoſophy; and ſtands oppoſed to the ancient corpuſcular. See EXPERIMENTAL, *&c.*

Others, by *Newtonian Philoſophy*, mean that wherein phyſical bodies are conſidered mathematically; and where geometry, and mechanics are applied to the ſolution of phænomena.

In which ſenſe, the *Newtonian* is the ſame with the mechanical, and mathematical philoſophy. See MECHANICAL.

Others, again, by *Newtonian Philoſophy*, underſtand that part of phyſical knowledge, which Sir Iſaac Newton has handled, improved, and demonſtrated, in his *Principia*.

Others, laſtly, by *Newtonian Philoſophy*, mean, the new principles which Sir Iſaac Newton has brought into philoſophy; the new ſyſtem founded thereon; and the new ſolutions of phænomena thence deduced; or that which characterizes, and diſtinguiſhes his philoſophy from all others.—Which is the ſenſe wherein we ſhall chiefly conſider it.

As to the hiſtory of this philoſophy we have but little to ſay: It was firſt made public in the year 1686, by the author, then a fellow of Trinity-college, Cambridge; and in the year 1713, republiſhed with conſiderable improvements.—Several other authors have ſince attempted to make it plainer; by ſetting aſide many of the more ſublime mathematical reſearches, and ſubſtituting either more obvious reaſonings, or experiments, in lieu thereof; particularly Whiſton in his *Prælect. Phyſ. Mathemat.* Graveſande in *Element. & Inſtit.* and Dr. Pemberton in his *View.*

Notwithſtanding the great merit of this philoſophy, and the univerſal reception it has met with at home, it gains ground very ſlowly abroad; *Newtonianiſm* has ſcarce two or three adherents in a nation; but *Carteſianiſm*, *Huygenianiſm*, and *Leibnitzianiſm* remain ſtill in the chief poſſeſſion.

The *Philoſophy* itſelf is laid down principally in the third book of the *Principia*. The two preceding books are taken up in preparing the way, and laying down ſuch principles of mathematicks as have the moſt relation to philoſophy: Such are the laws, and conditions of powers. And theſe, to render them leſs dry and geometrical, the author illuſtrates by ſcholia in philoſophy, relating chiefly to the denſity and reſiſtance of bodies, the motion of light, and ſounds, a vacuum, *&c.*

In the third book he proceeds to the *Philoſophy* itſelf; and from the ſame principles deduces the ſtructure of the univerſe, and the powers of gravity, whereby bodies tend towards the ſun and planets; and from theſe powers, the motions of the planets and comets, the theory of the moon and the tides.

This book, which he calls *de Mundi Syſtemate*, he tells us, was firſt wrote in the popular way: But conſidering, that ſuch as are unacquainted with the ſaid principles, would not conceive the force of the conſequences, nor be induced to lay aſide their ancient prejudices; for this reaſon, and to prevent the thing from being in continual diſpute, he digeſted the ſum of that book into propoſitions, in the mathematical manner; ſo as it might only come to be read by ſuch as had firſt conſidered the principles. Not that it is neceſſary, a man ſhould maſter them all. Many of them, even the firſt-rate mathematicians, would find a difficulty in getting over. It is enough to have read the definitions, laws of motion, and the three firſt ſections of the firſt book; after which, the author himſelf directs us to paſs on to the book *de Syſtemate Mundi.*

The ſeveral articles of this *Philoſophy*, are delivered under their reſpective heads in this dictionary; as SUN, MOON, PLANET, COMET, EARTH, AIR, CENTRIFUGAL *Force*, RESISTANCE, MEDIUM, MATTER, SPACE, ELASTICITY, *&c.* A general idea, or abſtract of the whole, we ſhall here gratify the reader withal; to ſhew in what relation the ſeveral parts ſtand to each other.

The great principle on which the whole philoſophy is founded, is the power of gravity. This principle is not new: Kepler, long ago, hinted it in his *Introduct. ad Mot. Martis.* He even diſcovered ſome of the properties thereof, and their effects in the motions of the primary planets: But the glory of bringing it to a phyſical demonſtration was reſerved to the Engliſh philoſopher, See GRAVITY.

His proof of the principle from phænomena, together with the application of the ſame principle to the various other appearances of nature, or the deducing thoſe appearances from that principle, conſtitute the *Newtonian* ſyſtem; which, drawn in miniature, will ſtand thus.

1°. The phænomena are, 1. That the ſatellites of Jupiter do, by radii drawn to the centre of the planet, deſcribe areas proportional to their times; and that their periodical times are in a ſeſquiplicate ratio of their diſtances from its centre: in which all obſervations of all aſtronomers agree. 2. The ſame phænomenon holds of the ſatellites of Saturn, with regard to Saturn; and of the moon with regard to the earth. 3. The periodical times of the primary planets about the ſun, are in a ſeſquiplicate ratio of their mean diſtances from the ſun. But, 4. the primary planets do not deſcribe areas any way proportional to their periodical times, about the earth; as being ſometimes ſeen ſtationary, and ſometimes retrograde with regard thereto. See SATELLITES, PERIOD, *&c.*

2°. The powers whereby the ſatellites of Jupiter are conſtantly drawn out of their rectilinear courſe, and retained in their orbits, do reſpect the centre of Jupiter, and are reciprocally as the ſquares of their diſtances from the ſame centre. 2. The ſame holds of the ſatellites of Saturn with regard to Saturn; of the moon with regard to the earth: And of the primary planets with regard to the ſun. See CENTRAL *Force.*

3°. The moon gravitates towards the earth, and by the power of that gravity is retained in her orbit: And the ſame holds of the other ſatellites with reſpect to their primary planets; and of the primaries with reſpect to the ſun. See MOON.

As to the moon, the propoſition is thus proved: The moon's mean diſtance is 60 ſemidiameters of the earth; her period, with regard to the fixed ſtars, is 27 days, 7 hours, 43 minutes; and the earth's circumference 123249600 Paris feet. Now, ſuppoſing the moon to have loſt all its motion, and to be let drop to the earth, with the power which retains her in her orbit; in the ſpace of one minute ſhe will fall 15 $\frac{1}{12}$ Paris feet; the arch ſhe deſcribes in her mean motion at the diſtance of 60 ſemidiameters of the earth being the verſed ſine of 15 $\frac{1}{12}$ Paris feet. Hence, as the power, as it approaches the earth, increaſes in a duplicate ratio of the diſtance inverſly; ſo, as at the ſurface of the earth, it is 60 x 60 greater than at the moon: A body falling with that force in our region muſt, in a minute's time, deſcribe the ſpace of 60 x 60 x 15 $\frac{1}{12}$ Paris feet; and 15 $\frac{1}{12}$ Paris feet in the ſpace of one ſecond.

But this is the rate at which bodies fall, by gravity, at the ſurface of our earth; as Huygens has demonſtrated, by experiments with pendulums. Conſequently, the power whereby the moon is retained in her orbit, is the ſame with that we call gravity: For if they were different, a body falling with both powers together, would deſcend with double the velocity, and in a ſecond of time deſcribe 30 $\frac{1}{6}$ feet. See DESCENT *of Bodies.*

As to the other ſecondary planets, their phænomena with reſpect to their primary ones, being of the ſame kind with thoſe of the moon about the earth; it is argued by analogy, they depend on the ſame cauſes: It being a rule or axiom which all philoſophers agree to, that effects of the ſame kind, have the ſame cauſes. Again, attraction is always mutual, *i. e.* the reaction is equal to the action. Conſequently, the primary planets gravitate towards their ſecondary ones; the earth towards the moon, and the ſun towards them all. And this gravity, with regard to each ſeveral planet, is reciprocally as the ſquare of its diſtance from its centre of gravity. See ATTRACTION, REACTION, *&c.*

4°. All bodies gravitate towards all the planets; and their weights towards any one planet, at equal diſtances from the centre of the planet, are proportional to the quantity of matter in each.

For the law of the deſcent of heavy bodies towards the earth, ſetting aſide their unequal retardation from the reſiſtance of the air, is this; that all bodies fall equally in equal times: But the nature of gravity or weight, no doubt, is the ſame on the other planets, as on the earth. See WEIGHT.

Suppoſe, *e. gr.* ſuch bodies raiſed to the ſurface of the moon, and together with the moon deprived at once of all progreſſive motion, and dropped towards the earth: It is ſhewn, that in equal times they would deſcribe equal ſpaces with the moon; and, therefore, that their quantity of matter is to that of the moon, as their weights to its weight. Add, that ſince Jupiter's ſatellites revolve in times that are in a ſeſquiplicate ratio of their diſtances from the centre of Jupiter, and conſequently at equal diſtances from Jupiter their accelerating gravities are equal; therefore, falling equal altitudes in equal times, they will deſcribe equal ſpaces; juſt as heavy bodies do on our earth. And the ſame argument will hold of the primary planets with regard to the ſun. And the powers whereby unequal bodies are equally accelerated, are as the bodies; *i. e.* the weights are as the quantities of matter in the planets. And the weights of the primary and ſecondary planets towards the ſun, are as the quantities of matter in the planets and ſatellites. And hence are ſeveral corollaries drawn relating to the weights of bodies on the ſurface of the earth, magnetiſm, and the exiſtence of a vacuum. Which ſee under the articles VACUUM, WEIGHT, and MAGNETISM.

5°. Gravity extends itſelf towards all bodies, and is in proportion to the quantity of matter in each.

That all the planets gravitate towards each other, has been already ſhewn; likewiſe, that the gravity towards any one conſidered apart, is reciprocally as the ſquare of its diſtance from the centre of the planet: conſequently, gravity is proportional to the matter therein. Farther, as all the parts of any planet, A, gravitate towards another planet, B; and the gravity of any part is to the gravity of the whole, as the matter of the part, to the matter of the whole; and reaction equal to action: the planet B will gravitate towards all the parts of the planet A; and its gravity towards any part, will be to its gravity towards the whole, as the matter of the part to the matter of the whole.

Hence, we derive methods of finding and comparing the gravities of bodies towards different planets; of finding the quantities of matter in the ſeveral planets, and their denſities; ſince the weights of equal bodies revolving about planets, are as the diameters of their orbits directly, and as the ſquares of the periodical times, inverſly; and the weights at any diſtance from the centre of the planet are greater or leſs in a duplicate ratio of their diſtances, inverſly: And ſince the quantities of matter in the planets are as their powers at equal diſtances from their centres: And, laſtly, ſince the weights of equal and homogeneous bodies towards homogeneous ſpheres, are, at the ſurfaces of the ſpheres, as the diameters of thoſe ſpheres; and, conſequently, the denſities of heterogeneous bodies are as the weights at the diſtances of the diameters of the ſpheres. See DENSITY.

6°. The common centre of gravity of the ſun, and all the planets, is at reſt: And the ſun, though always in motion, yet never recedes far from the common centre of all the planets.

For, the matter in the ſun being to that in Jupiter as 1033 to 1; and Jupiter's diſtance from the ſun to the ſemidiameter of the ſun in a ratio ſomewhat bigger; the common centre of gravity of Jupiter and the ſun will be found a point a little without the ſun's ſurface. And, by the ſame means, the common centre of Saturn and the ſun will be found a point a little within the ſun's ſurface: And the common centre of the earth, and all the planets will be ſcarce one diameter of the ſun diſtant from the centre thereof. But the centre is always at reſt: Therefore, though the ſun will have a motion this and that way, according to the various ſituations of the planets, yet it can never recede far from the centre. So that the common centre of gravity of the earth, ſun, and planets, may be eſteemed the centre of the whole world. See SUN and CENTER.

7°. The planets move in ellipſes that have their foci in the centre of the ſun; and deſcribe areas proportional to their times.

This we have already laid down à poſteriori, as a phænomenon: And now, that the principle of the heavenly motions is ſhewn, we deduce it therefrom à priori. Thus: Since the weights of the planets towards the ſun are reciprocally as the ſquares of the diſtances from the centre of the ſun; if the ſun were at reſt, and the other planets did not act on each other; their orbits would be elliptical, having the ſun in their common umbilicus; and would deſcribe areas proportional to the times: But the mutual actions of the planets are very ſmall, and may be well thrown aſide. Therefore, *&c.* See PLANET and ORBIT.

Indeed, the action of Jupiter on Saturn is of ſome conſequence; and hence, according to the different ſituations and diſtances of thoſe two planets, their orbits will be a little diſturbed.

The ſun's orbit too is ſenſibly diſturbed by the action of the moon: And the common centre of the two deſcribes an ellipſis round the ſun placed in the umbilicus; and with a radius drawn to the centre of the ſun, deſcribes areas proportional to the times. See EARTH and SATURN.

8°. The aphelia and nodes of the planets are at reſt. Excepting for ſome inconſiderable irregularities ariſing from the actions of the revolving planets and comets.—Conſequently, as the fixed ſtars retain their poſition to the aphelia and nodes, they, too, are at reſt. See NODE, STAR, *&c.*

9°. The axis, or polar diameter of the planets, is leſs than the equatorial diameter.

The planets, had they no diurnal rotation, would be ſpheres, as having an equal gravity on every ſide: But by this rotation, the parts receding from the axis endeavour to riſe towards the equator, which, if the matter they conſiſt of be fluid, will be effected very ſenſibly. Accordingly Jupiter, whoſe denſity is found not much to exceed that of water on our globe, is obſerved by the aſtronomers to be conſiderably leſs between the poles, than from eaſt to weſt. And on the ſame principle, unleſs our earth were higher at the equator than towards the poles, the ſea would riſe under the equator, and overflow all near it. See SPHEROID.

But this figure of the earth Sir Iſaac Newton proves likewiſe à poſteriori; from the oſcillations of pendulums being ſlower, and ſmaller, in the equatorial, than the polar parts of the globe. See PENDULUM.

10°. All the moon's motions, and all the inequalities in thoſe motions, follow from theſe principles: *E. gr.* Her unequal velocity, and that of her nodes, and apogee in the ſyzygies and quadratures; the differences in her eccentricity, and her variation, *&c.* See MOON, QUADRATURE, SYZYGY, *&c.*

11°. From the inequalities in the lunar motions, we can deduce the ſeveral inequalities in the motions of the ſatellites. See SATELLITES.

12°. From theſe principles, particularly the action of the ſun and moon upon the earth, it follows, that we muſt have tides; or that the ſea muſt ſwell and ſubſide twice every day. See TIDES.

13°. Hence likewiſe follows the whole theory of comets; as, that they are above the region of the moon, and in the planetary ſpaces; that they ſhine by the ſun's light reflected from them; that they move in conic ſections, whoſe umbilici are in the centre of the ſun; and by radii drawn to the ſun, deſcribe areas proportional to the times; that their orbits, or trajectories, are very nearly parabolas; that their bodies are ſolid, compact, *&c.* like thoſe of the planets, and muſt therefore acquire an immenſe heat in their perihelia; that their tails are exhalations ariſing from them, and encompaſſing them like atmoſpheres. See COMET.

The objections raiſed againſt this philoſophy are chiefly aimed at the principle, gravity; which ſome condemn as an *occult quality*, and others as a *miraculous*, and præter-natural cauſe; neither of which have longer any room in ſound philoſophy. Others, again, ſet it aſide, as deſtroying the notion of vortices; and others, as ſuppoſing a vacuum. But theſe are all abundantly obviated under the articles GRAVITY, ATTRACTION, VORTEX, VACUUM, QUALITY, *&c.*

NEXUS *of Matter*. See the article COHESION.

NICHE,* in architecture, a cavity, or hollow place, in the thickneſs of a wall; to place a figure, or ſtatue in. See STATUE.

* The word comes from the Italian *nicchia*, ſea-ſhell; in regard the ſtatue is here incloſed in a ſhell; or, perhaps, by reaſon of the ſhell wherewith the tops of ſome of them are adorned.

The *larger Niches* ſerve for groups of figures; the ſmall ones for ſingle ſtatues, ſometimes only for buſts.

Great care muſt be taken to proportion the *Niches* to the figures; and that the pedeſtals of the figures be proportioned to the *Niches*.

Niches are ſometimes made with ruſtic-work, ſometimes with ſhell-work, and ſometimes of crailed, or arbor-work.

Round **NICHE**, is that whoſe plan and circumference are circular.

Square **NICHE**, that where they are ſquare.

Angular **NICHE**, that formed in a corner of the building.

Ground **NICHE**, that which, inſtead of bearing on a maſſive, has its riſe from the ground; as the *Niches* of the portico of the pantheon at Rome.—Their ordinary proportion is to be two diameters in height, and one in width.

Capital of a **NICHE**. See the article CAPITAL.

Cul de four of a **NICHE**. See the article CUL.

NICHED *Column*. See the article COLUMN.

NICHILS. See the article NIHILS.

Clerk of the **NICHILS**. See the article CLERK.

NICOLAI *Catholicon*. See the article CATHOLICON.

Argonauts of St. **NICOLAS**. See ARGONAUTS.

NICOLAITANS, or NICOLAITES, one of the moſt ancient ſects in the Chriſtian church; thus denominated from Nicolas, a perſon ordained a deacon of the church of Jeruſalem together with St. Stephen.

The diſtinguiſhing tenet of the *Nicolaitans*, as repreſented by eccleſiaſtical hiſtorians, is, that all married women ſhould be common; to take away all occaſion of jealouſy.

Other authors tax Nicolas with other impurities; but Clemens Alexandrinus imputes them all to his diſciples, who, he ſays, abuſed their maſter's words.

Nicolas, it ſeems, having a very beautiful wife, was ſuſpected by the apoſtles as jealous of her, and as being a laſcivious man.—To remove this ſuſpicion, he called his wife; and to ſhew he was not at all attached to her, offered any of them the liberty of eſpouſing her. This is confirmed by Euſebius, who adds, that Nicolas never had more than one wife.

Other things charged on the *Nicolaitans*, are, that they made no ſcruple of eating meats offered to idols: that they maintained that the father of Jeſus Chriſt was not the creator: that ſome of them adored one Barbelo, who inhabited the eighth heaven, and who proceeded from the father, and was the mother of Jaldabaoth; or, according to others, of Sabaoth, who had forcibly taken poſſeſſion of the ſeventh heaven. Others of them gave the name Prounicos to the mother of the heavenly powers; but all aſcribed infamous actions to her, and with hers authorized their own impurities. Others ſhewed books, and pretended revelations under the name of Jaldabaoth.

Irenæus and Epiphanius relate theſe and other extravagancies; and repreſent the *Nicolaitans* as authors of the ſect of Gnoſtics. See GNOSTICS.

Cocceius, Hoffman, Vitringa, and Maius, take the name *Nicolaitan* to be coined, to ſignify a man addicted to pleaſure and debauchery; adding, that it has nothing to do with Nicolas one of the ſeven deacons. And, as the doctrine of the *Nicolaitans* is mentioned in the Apocalypſe, immediately after mention made of Balaam, and his doctrine, they compare the two names *Balaam* and *Nicolas*, which, in their originals, the one in Greek, the other Hebrew, have nearly the ſame ſignification, *viz. prince, or maſter of the people.*

Maius adds, it was probable enough the *Nicolaitans* might value themſelves on being the diſciples of one of the ſeven deacons; but that it was without any ground: notwithſtanding what the Ancients, ever too credulous, have repreſented to the contrary.

NICOTIANA, or *Herba Nicotiana*, a term given to tobacco; from Nicot the French ambaſſador at the court of Portugal, who firſt ſent it into France in 1560, and gave it his own name, as he himſelf tells us in his dictionary. See Tobacco.

NICTITATING *Membrane*, in anatomy, a thin membrane which covers the eyes of ſeveral creatures, and ſhelters them from duſt, or too much light; yet is ſo thin, that they can ſee indifferently well through it. See Eye.

The *Nictitating Membrane* is chiefly found in the bird and fiſh kind. See Bird and Fish.

This *Membrane*, in the eagle's eye, is remarkably cloſe and firm, inſomuch as to be accounted as a ſecond eye-lid: And hence that remarkable firmneſs of the eagle's ſight in viewing the ſun. See Eagle.

NIDUS,* *Neſt*, a repoſitory, wherein certain animals, particularly fowls, inſects, and reptiles lodge their eggs, for incubation; and wherein, when hatched, they nurſe their young till they become able to ſhift for themſelves. See Egg and Animal.

* The word is Latin, and ſuppoſed to be derived from *nidor*, a rank, or ill ſmell; in regard the neſts of animals uſually ſtink.

Mr. Derham ſays, he has often wondered how waſps, hornets, and other inſects that gather dry materials (as the duſt of wood ſcraped off for that purpoſe) ſhould find a proper matter to cement and glue their combs, and line their cells: but he adds, that in all probability it is in their own bodies: as in the tinea veſtivora, the cadworm, &c.

Goedart obſerves of his eruca that fed on leaves, that it made its cell of leaves glued together with its own ſpittle.

NIECE, a term relative to uncle, and aunt; ſignifying a brother's or ſiſter's daughter; which, in the civil law, is the third degree of conſanguinity, and in the canon law, the ſecond. See Degree.

NIENT *Compriſe*, in law, an exception taken to a petition as unjuſt; becauſe the thing deſired is not in that act or deed whereon the petition is grounded.

Thus, a perſon deſiring of the court to be put in poſſeſſion of a houſe formerly adjudged to him among other lands.—The adverſe party pleads that this petition is not to be granted; by reaſon though the petitioner had a judgment for certain lands and houſes, yet this houſe is *nient compriſe*, not comprized therein.

NIGHT, that part of the natural day, during which the ſun is underneath the horizon. See Day.

Or *Night*, is that ſpace of time wherein the ſun is out of our hemiſphere. See Sun.

Under the equator, the *Nights* are always equal to the days. —Under the poles, the *Night* holds half the year.

The ancient Gauls and Germans divided their time not by days, but *Nights*; as appears from Tacitus and Cæſar. And the people of Iceland and the Arabs do the ſame at this day.

The ſame is obſerved of our Saxon anceſtors.

Thus, in the council of Cloveſhoe, anno 824, we read, *Ibi finita & proſcripta contentione coram epiſcopo poſt* 30 Noctes, *illum juramentum ad Weſtminſter deductum eſt.*—Whence our cuſtom of ſaying, *ſeven-night*, *fortnight*, &c.

Signals by Night. See the article Signals.

Third-Night-*awn-kind*. See the article Third.

NIGHT-Mare,* a popular name for a diſeaſe by the Greek phyſicians called *Ephialtes*, and the Latins, *Incubus*; to which people lying aſleep on their backs, and having their ſtomach charged with heavy food difficult of digeſtion, are very liable. See Incubus.

* The ſleeping patient appears to himſelf as if oppreſſed with a huge weight on the breaſt; and frequently imagines ſome ſpectre, or fantom, ſtopping his breath: whence the appellations, *Night-mare*, and *Hag-ridden*.

The diſeaſe does not ariſe, as was anciently imagined, from groſs vapours filling the ventricles of the brain; but rather from a too great repletion of the ſtomach, which prevents the motion of the diaphragm, and, of conſequence, the dilatation of the breaſt neceſſary to reſpiration.—Though others take it to be produced by a convulſion of the muſcles of reſpiration. See Ephialtes.

The Arabs, Etmuller obſerves, call this diſeaſe a *nocturnal epilepſy*; ſince upon its prevailing much, it degenerates into an epilepſy; and is in effect the prodromus hereof in young people, as in old ones of an apoplexy.

NIHIL, Nihilum, *Nothing*, among the ſchool philoſophers, is, what has no real eſſe, and which is only conceived negatively, and denominated by a negative. See Nothing.

Nihil *Capiat per Billam*, or *per Breve*, is a form uſed when judgment is given againſt the plaintiff, ſo as to bar his action, or overthrow his writ, or bill.

Nihil *Dicit*, is a failing of a defendant to put in an anſwer to the plaintiff's plea by the day aſſigned: on which omiſſion judgment is given againſt him of courſe, *quod nihil dicit*, becauſe he alledges nothing to the contrary.

NIHIL, or **NIHILI** *Album*. See the article Pompholyx.

NIHILS, or Nichils, iſſues, which the ſheriff that is appoſed in the exchequer ſays are nothing worth, and illeviable; for the inſufficiency of the parties that ſhould pay them.

Clerk of the Nichils, *Nihilorum Clericus*, is an officer of the exchequer who makes a roll of the ſums which are *Nichiled* by the ſheriffs. See Exchequer.

NILOMETER,* or Niloscope, an inſtrument uſed among the Ancients, to meaſure the heighth of the water of the *Nile*, in its over-flowings.

* The word comes from the Greek νειλος, Nile, (and that from νεα ιλυς, *new mud*, or, as others will have it, from νεω, *I flow*, and ιλυς, *muddy*) and μετρον, *meaſure*.—The Greeks more ordinarily call it Νειλοσκοπιον.

In the French King's library is an Arabic treatiſe on *Nilometers*, entitled *Neil ſi alnal al Nil*; wherein are deſcribed all the overflowings of the *Nile* from the firſt year of the Hegira to the 875th.

Herodotus mentions a column erected in a point of the iſland Delta, to ſerve as a *Nilometer*: And there is ſtill one of the ſame kind in a moſque of the ſame place.

As all the riches of Egypt ariſe from the inundations of the Nile, the Egyptians uſed to ſupplicate them at the hands of their Serapis, and committed the moſt execrable crimes, as actions, forſooth, of religion, to obtain the favour. This occaſioned Conſtantine expreſly to prohibit theſe ſacrifices, &c. and to order the *Nilometer* to be removed into the church; whereas till that time it had been in the temple of Serapis. Julian the apoſtate had it replaced in the temple, where it continued till the time of the great Theodoſius. See on the ſubject of *Nilometers*, the *Acta Eruditorum Lipſ.* anno 1686. p. 147.

NIMBUS, in antiquity, a circle obſerved on certain medals, around the heads of ſome emperors; anſwering to the aureolæ, or circles of light, drawn around the images of ſaints. See Aureola.

The *Nimbus* is ſeen on the medals of Maurice, Phocas, and others, even of the upper empire.

NIMETULAHITES, a kind of religious among the Turks; ſo called from *Nimetulahi* their inſtitutor.

When a Turk would be admitted into the order, he is to ſhut himſelf up cloſe in a chamber forty-days, tied down to four ounces of food *per* day. The term expired, the *Nimetulahites* take him by the hand, and lead him a Mooriſh dance, accompanied with an infinity of ridiculous geſticulations; till the violence of the exerciſe, with his former regimen, throw him down on the ground. This fall is conſtrued an extaſy, during which he is ſuppoſed to have a viſion.

The *Nimetulahites* meet every Monday in the night-time, and ſing hymns to God, &c.

Ninth *pair of Nerves*. See the article Nerve.

NIPPLE. See the articles Papilla and Breasts.

NISI PRIUS, in law, a writ judicial, which lieth in caſes where the jury being impannelled and returned, before the juſtices of the bank, one of the parties requeſts to have ſuch writ, for the eaſe of the country, whereby to will the ſheriff to cauſe the inqueſt to come before the juſtices in the ſame country, at their coming thither.

It is called a writ of *Niſi Prius*: and its effect is, that the ſheriff is hereby commanded to bring to Weſtminſter the men impannelled at a certain day, before the juſtices, *Niſi Prius juſtic. domini regis ad aſſiſas capiendas venerint*, that is, unleſs the juſtices go before that day into ſuch county to take aſſizes. See Justice.

NITRE, Νιτρον, in natural hiſtory, a ſulphureous, inflammable, bitter ſort of ſalt; thus called by the Ancients; by the Moderns, more uſually, *Saltpetre*. See Saltpetre.

Naturaliſts differ as to the point whether our ſaltpetre be the *Nitre* of the Ancients. G. C. Schelhammer has a particular treatiſe on the ſubject, *de Nitro, tum veterum tum noſtro, commentarius*. See Natron.

Moſt authors hold the ancient *Nitre* to have been mineral or foſſil; whereas our ſaltpetre is in great meaſure artificial.—Serapion ſays, the ancient mines of *Nitre* were like thoſe of common ſalt, and that it was formed out of running water congealed in its progreſs into a ſort of ſtone: He adds, that their *Nitre* was of four kinds, diſtinguiſhed by the countries whence it came; *viz.* the *Armenian*; *Roman*; *African*, called *Aphronitre*, and by *Avicenna*, *Baurach*; and the *Egyptian*, which was the moſt famous, giving name to all the reſt; itſelf denominated from *Nitria*, a province in Egypt, where it was found in great abundance. He aſſures us, too, that their *Nitre* was of divers colours, *viz.* white, red, and livid; that ſome was cavernous, like a ſpunge; others cloſe and compact; others tranſparent like glaſs; and others ſcaly.

Schelhammer gives a different account: The Ancients, he obſerves, diſtinguiſhed between Νιτρον, *Nitre*, Αφρονιτρον, *aphronitre*, and Αφρος νιτρου, *ſpuma Nitri*, or *ſcum of Nitre*. He adds, that Agricola, &c. is miſtaken in aſſerting that there were anciently mines in Lydia, Magneſia, Caria, &c.

out of which *Nitre* was dug like ſtones out of a quarry: And that the *Nitre* uſed by the Ancients was brought out of ſeveral countries mentioned by *Pliny*, *l.* xxxi. *c.* 10.—A lake in Macedonia, whoſe waters were *Nitrous*, and in the middle whereof, however, was a ſpring of freſh water, furniſhed the greateſt quantity and the beſt: It was called *Chalaſtricum* from a neighbouring cape in the gulf of Theſſalonica, and was formed like a cruſt on the ſurface of the water during the dog-days. The waters of the lake Aſcanius in Bithynia, and thoſe of certain ſprings near Chalcis, were ſweet and potable towards the ſurface, yet *nitrous* at bottom. There was alſo *Nitre* gathered on the ground near Philippi, in Thrace; but it was little, and of no great value.

The valleys of Media alſo furniſhed ſome. And there were *Nitre*-pits in Egypt, as there are ſalt-pits among us. See NATRON.

The chief virtue the Ancients aſcribe to their *Nitre*, is, that of drying, deterging, and attenuating; and, as ſuch, it was uſed in ulcers, diſorders of the eyes, the itch, the bites of ſerpents, gout, *&c.* They alſo took it inwardly to reſolve and attenuate viſcid humours: But its cooling quality, whereof the modern phyſicians make ſo much uſe, they were unacquainted withal.—It is found excellent in diſeaſes of the heart, accompanied with a propenſity to vomit.

Aerial NITRE. Many of our phyſicians are full of the notion of a *volatile Nitre* abounding in the air; and a world of phænomena they account for from the operation of the particles thereof. See AIR.

That the atmoſphere abounds with ſaline particles, is moſt certain; for being filled continually with effluvia from the earth and ſea, it muſt needs have from both a great quantity of ſaline corpuſcles; and theſe will be of different kinds, according to the variety of thoſe ſalts from whence they are derived. See SALT.

But why theſe ſhould be moſtly ſuppoſed of a *Nitrous* nature, is not ſo eaſy to prove; for ſaltpetre is by no means found in greater quantity than the other ſalts, eſpecially common ſalt; nor is it of a much more volatile nature than they, nor capable of being raiſed more eaſily, or by a leſſer heat. But ſince ſoot, and that which produces it, ſmoke, is found to abound very much with a truly volatile ſalt; and ſince ſuch a kind of ſalt is produced frequently by the putrefaction of animal and vegetable bodies; it is probable the air may abound with ſalts of this kind, among many other decompounded ones of different natures and names. See ATMOSPHERE, *&c.*

Diaphoretic NITRE *of Antimony*. See ANTIMONY.

Fixed NITRE. See the article FIXED.

Spirit of NITRE. See the article SPIRIT.

NOBILIARY, a collection, or hiſtorical account of the noble families of a province, or nation. See NOBILITY, PEER, *&c.*

Chorier has publiſhed a *Nobiliary* of Dauphine; and Caumartin, another of Provence. The Germans are particularly careful of their *Nobiliaries*, to keep up the purity of their families. See GENEALOGY.

NOBILISSIMUS, in antiquity, a title, or quality given to the princes of the Imperial family. See TITLE.

F. Doucine advances, that the title *Nobiliſſimus* was firſt given under the emperor Juſtin; others find the title *Nobilis Cæſar*, or *N. C.* that is, *Nobiliſſimus Cæſar*, on medals long before that time, even as early as Trajan. Spanheim and Joubert ſet this title on medals no higher than the time of Philip the younger: though it appears earlier in ſome inſcriptions: ſo that even M. Tillemont is miſtaken where he ſays, the quality of *Nobiliſſimus* is not to be found in hiſtory before the time of Conſtantine the great, who firſt gave it to his two brothers; after which it was attributed to ſuch of the emperors children as were not Cæſars. See CÆSAR.

Triſtan adds, that the Cæſars bore the title of *Nobiliſſimi* in all ages; but that the *Nobiliſſimate* firſt became a diſtinct independent dignity in the time of Conſtantine the great.

NOBILITY, a quality that dignifies, or renders a thing noble; particularly, that raiſes a perſon poſſeſſed thereof above the rank of a peaſant or commoner. See NOBLE.

In England, indeed, the term *Nobility* is reſtrained to degrees of dignity above knighthood. See KNIGHT.—Every where elſe, *Nobility* and gentility, or gentry, are the ſame. See GENTLEMAN.

Some refer the origin of *Nobility* in Europe to the Goths; who, after they had ſeized a part of Europe, rewarded their captains with titles of honour, and called them *nobles*; *nobiles*, to diſtinguiſh them from the common people.

Nobility, in England, is only conferred by the king, and that by patent, in virtue whereof it becomes hereditary. In other countries there are other ways of acquiring it.

Thus, in France, *v. gr.* there are ſeveral offices which convey perfect *Nobility*, and ſuch as deſcends to poſterity. Such are all offices of the crown, thoſe of counſellor of eſtate, *&c.* Others they have which only communicate an acceſſory, or perſonal *Nobility*, which dies with the perſon. Thus, a counſellor in parliament enjoys all the rights and exemptions of *Nobility*; yet his ſon is never reputed noble; unleſs there have been a ſucceſſion of them, and both father and grandfather have been noble; which they call *patre & avo conſulibus.* See OFFICE.

They have a third kind of *Nobility*, called *Nobility of the Bell, de la Cloche*; which is what the mayors and ſheriffs of certain cities, as Lions, Bourges, Rochel, Poitiers, *&c.* acquire in virtue of their magiſtracy.

The *Nobility* of England is called the *Peerage of England.* See PEERAGE.

Its degrees are only five, *viz.* that of a duke, marquiſs, earl or count, viſcount, and baron. See each under its proper article, DUKE, MARQUISS, *&c.*

The privileges of the Engliſh *Nobility* are very conſiderable: They are all eſteemed as the king's hereditary counſellors; and are privileged from all arreſts, unleſs for treaſon, felony, breach of peace, condemnation in parliament, and contempt of the king. No ſupplicavit can be granted againſt them; no capias, or exigent, ſued againſt them for action of debt, or treſpaſs; no eſſoin lies againſt them: In criminal caſes, they are only to be tried by a jury of peers, who are not put to their oath; but their verdict upon their honour ſuffices. In their abſence, they are allowed a proxy to vote for them; and in all places of truſt are allowed to conſtitute deputies, by reaſon of the neceſſity the law ſuppoſes them under of attending the king's perſon.

Guillim obſerves, that if an appeal of murther, or felony, be ſued by a commoner, againſt a peer, he ſhall be tried by commoners, not peers. See APPEAL.

No peer may go out of the kingdom without the king's leave: If any have leave, he is to return upon the king's writ, or to forfeit goods and chattels.

Anton. Matthæus obſerves, that *Nobility* among the Romans was a quite different thing from what it is among us. The nobles among the Romans were either thoſe raiſed to the magiſtrature, or deſcended from magiſtrates: There was no ſuch thing as *Nobility* by patent.

Bartoli ſays, that doctors, after they have held a profeſſor's chair in an univerſity for twenty years, become *noble*; and are entitled to all the rights of counts. See COUNT.

But this claim is not admitted at court, *&c.* though Bartoli's ſentiments be backed with thoſe of ſeveral other authors, particularly Chaſſanæus in his *Conſuetudin. Burgundiæ*; Boyer *ſur la Coutume de Berry*; Faber C. *de dig. def.* 9. *&c.* which laſt, however, reſtrains Bartoli's rule to doctors in law, and princes phyſicians. See DOCTOR.

By an edict of the French king, in 1669, it is declared, that trade ſhall not derogate from *Nobility*, provided the perſon do not ſell by retail. See COMMERCE.

In Bretagne, by ancient cuſtom, a *nobleman* loſes nothing by trading even in retail: But he reaſſumes all his rights as ſoon as he ceaſes traffic; his *Nobility* having ſlept all the time.

In Germany, a woman, not *noble* by birth, doth not become *v. gr.* a counteſs, or baroneſs, by marrying a count, or baron. A lady of the higher degree, indeed, becomes a princeſs by marrying a prince; but this doth not hold of a lady of the lower *Nobility*. See MARRIAGE.

On the coaſt of Malabar, children are only capable of being *noble* by the mother's ſide; it being allowed them to take as many husbands as they pleaſe, and to quit them when they think good.

NOBLE,* NOBILIS, a perſon who has a privilege which raiſes him above a commoner, or peaſant, either by birth, by office, or by patent from his prince. See NOBILITY.

* The word comes from the Latin, *nobilis*, formed from the ancient *noſcibilis*, diſtinguiſhable, remarkable.

In England, the word *Noble* is of a narrower import, than in other countries, being confined to perſons above the degree of knights; whereas, abroad, it comprehends not only knights, but what we ſimply call *Gentlemen.* See KNIGHT, GENTLEMAN, *&c.*

The *Nobles* of England are alſo called *Pares Regni*, as being nobilitate pares, though gradu impares. See PEER.

The Venetian *nobleſſe* is famous: It is in this that the ſovereignty of the ſtate reſides. It is divided into three claſſes: the firſt only comprehends 24 families.

The ſecond includes the deſcendants of all thoſe who were entered in the golden book, in 1289, and deſtined to govern the ſtate, which then began to be ariſtocratic.

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Semi-NOCTURNAL *Arch of the Sun*, is that portion of a circle he paſſes over between the lower part of our meridian, and the point of the horizon wherein he riſes; or between the point of the horizon wherein he ſets, and the lower part of our meridian.

NOCTURNAL, NOCTURLABIUM, is more particularly uſed for an inſtrument, chiefly uſed at ſea, to take the altitude or depreſſion of ſome of the ſtars about the pole, in order to find the latitude, and the hour of the night.

There are *Nocturnals* of various contrivances, ſome of them projections of the ſphere; ſuch as the hemiſpheres, or planiſpheres, on the plane of the equinoctial: Thoſe ordinarily uſed by the ſeamen are two; the one adapted to the polar ſtar, and the firſt of the guards of the little bear; the other to the pole-ſtar, and the pointers of the great bear.

Conſtruction of the NOCTURNAL.—The inſtrument conſiſts of two circular plates, (*Tab. Navigation, fig.* 13.) applied on each other. The greater, which has a handle to hold the inſtrument, is about 2 ¼ Inches diameter, and is divided into 12 parts, agreeing to the 12 months; and each month ſubdivided into every fifth day: And ſo, as that the middle of the handle correſponds to that day of the year, wherein the ſtar here regarded has the ſame right aſcenſion with the ſun.

If the inſtrument be fitted for two ſtars, the handle is made moveable. The upper left circle is divided into 24 equal parts, for the 24 hours of the day, and each hour ſubdivided into quarters, as in the figure. Theſe 24 hours are noted by 24 teeth; to be told in the night. Thoſe at the hours 12, are diſtinguiſhed by their length. In the centre of the two circular plates, is adjuſted a long index A, moveable upon the upper plate. And the three pieces, *viz.* the two circles and index, are joined by a rivet which is pierced through the centre, with a hole two inches in diameter for the ſtar to be obſerved through.

Uſe of the NOCTURNAL. Turn the upper plate till the longeſt tooth marked 12, be againſt the day of the month on the under plate; then bringing the inſtrument near the eye, ſuſpend it by the handle, with the plane nearly parallel to the equinoctial; and viewing the pole-ſtar through the hole of the centre, turn the index about, till, by the edge coming from the centre, you ſee the bright ſtar or guard of the little bear (if the inſtrument be fitted to that ſtar) then that tooth of the upper circle, under the edge of the index, is at the hour of the night on the edge of the hour circle: which may be known without a light, by accounting the teeth from the longeſt, which is for the hour 12.

NOCTURNAL *Pollution*. See the article POLLUTION.

NOCUMENTI *Aſſiſa*. See the article ASSISA.

NODATED *Hyperbola*, a kind of hyperbola, which, in turning round, decuſſates or croſſes itſelf. See CURVE and HYPERBOLA.

NODE, NODUS, in chirurgery, denotes a tumour ariſing on the bones; uſually proceeding from ſome venereal cauſe. See TUMOR and BONE.

Node amounts to the ſame with what is otherwiſe called *exoſtoſis*. See EXOSTOSIS.

It ſeems generated of a thick, cold, viſcid humour, which is often found very difficult to reſolve.—They frequently apply to it a leaden plate covered with mercury.

The cure is commonly attempted by *emplaſt. de ranis cum mercurio*; which failing, ſome mercurial unguent is now and then rubbed on them; and afterwards mercurial plaiſters made of cinnabar, *&c.* applied.

Some give the denomination *Nodes* to all tumours formed by a coagulation of vicious matter in the external parts of the body.

NODE is more particularly applied to the tumours, or protuberances ariſing on the joints of old gouty people; called alſo *tophi*. See TOPHUS.

They are ſuppoſed to be formed of a thick, crude, heavy, viſcid indigeſted matter, mixed with a hot, ſharp, bilious juice, the groſſer and more terreſtrial part whereof being detained, grows into a ſtony ſort of concretion. See GOUT.

NODES, in aſtronomy, the two points wherein the orbit of a planet interſects the ecliptic. See ORBIT and ECLIPTIC.

Such are the two points C and D, (*Tab. Aſtron. fig.* 33.)—whereof the *Node* C, where the planet aſcends Northwards above the plane of the ecliptic, is called the *aſcending Node*, the *Northward Node*, and the *head of the dragon*, and thus marked ☊. See ASCENDING.

The other *Node* D, where the planet deſcends to the South, is called the *deſcending Node*, the *Southward Node*, or the *dragon's tail*; thus marked ☋. See DRAGON's *Head* and *Tail.*

The right line DC, wherein the two circles interſect, is called *the line of the Nodes*. See LINE.

It appears from obſervation, that the line of the *Nodes* of all the planets conſtantly changes its place, and ſhifts its ſituation *in antecedentia*; *i. e.* from Eaſt to Weſt, contrary to the order of the ſigns.—See RETROGRADATION.

Thus, by a retrograde motion, the line of the moon's *Nodes* finiſhes its circuit in 19 years; in which time, after having receded from any point of the ecliptic, it returns to the ſame. See MOON.

When the moon is in the *Nodes*, ſhe is alſo in the ecliptic, *viz.* twice in each period; when ſhe is at her greateſt diſtance from the *Nodes*, *viz.* in the points E, F, ſhe is ſaid to be in her limits. See LIMIT.

The moon muſt be in one of the *Nodes* when there is an eclipſe, either of the ſun or moon. See ECLIPSE, PLANET, *&c.*

out of which *Nitre* was dug like ſtones out of a quarry: And that the *Nitre* uſed by the Ancients was brought out of ſeveral countries mentioned by *Pliny*, *l.* xxxi. *c.* 10.—A lake in Macedonia, whoſe waters were *Nitrous*, and in the middle whereof, however, was a ſpring of freſh water, furniſhed the greateſt quantity and the beſt: It was called *Chalaſtricum* from a neighbouring cape in the gulf of Theſſalonica, and was formed like a cruſt on the ſurface of the water during the dog-days. The waters of the lake Aſcanius in Bithynia, and thoſe of certain ſprings near Chalcis, were ſweet and potable towards the ſurface, yet *nitrous* at bottom. There was alſo *Nitre* gathered on the ground near Philippi, in Thrace; but it was little, and of no great value.

The valleys of Media alſo furniſhed ſome. And there were *Nitre*-pits in Egypt, as there are ſalt-pits among us. See NATRON.

The chief virtue the Ancients aſcribe to their *Nitre*, is, that of drying, deterging, and attenuating; and, as ſuch, it was uſed in ulcers, diſorders of the eyes, the itch, the bites of ſerpents, gout, *&c.* They alſo took it inwardly to reſolve and attenuate viſcid humours: But its cooling quality, whereof the modern phyſicians make ſo much uſe, they were unacquainted withal.—It is found excellent in diſeaſes of the heart, accompanied with a propenſity to vomit.

Aerial NITRE. Many of our phyſicians are full of the notion of a *volatile Nitre* abounding in the air; and a world of phænomena they account for from the operation of the particles thereof. See AIR.

That the atmoſphere abounds with ſaline particles, is moſt certain; for being filled continually with effluvia from the earth and ſea, it muſt needs have from both a great quantity of ſaline corpuſcles; and theſe will be of different kinds, according to the variety of thoſe ſalts from whence they are derived. See SALT.

But why theſe ſhould be moſtly ſuppoſed of a *Nitrous* nature, is not ſo eaſy to prove; for ſaltpetre is by no means found in greater quantity than the other ſalts, eſpecially common ſalt; nor is it of a much more volatile nature than they, nor capable of being raiſed more eaſily, or by a leſſer heat. But ſince ſoot, and that which produces it, ſmoke, is found to abound very much with a truly volatile ſalt; and ſince ſuch a kind of ſalt is produced frequently by the putrefaction of animal and vegetable bodies; it is probable the air may abound with ſalts of this kind, among many other decompounded ones of different natures and names. See ATMOSPHERE, *&c.*

Diaphoretic NITRE *of Antimony*. See ANTIMONY.

Fixed NITRE. See the article FIXED.

Spirit of NITRE. See the article SPIRIT.

NOBILIARY, a collection, or hiſtorical account of the noble families of a province, or nation. See NOBILITY, PEER, *&c.*

Chorier has publiſhed a *Nobiliary* of Dauphine; and Caumartin, another of Provence. The Germans are particularly careful of their *Nobiliaries*, to keep up the purity of their families. See GENEALOGY.

NOBILISSIMUS, in antiquity, a title, or quality given to the princes of the Imperial family. See TITLE.

F. Doucine advances, that the title *Nobiliſſimus* was firſt given under the emperor Juſtin; others find the title *Nobilis Cæſar*, or *N. C.* that is, *Nobiliſſimus Cæſar*, on medals long before that time, even as early as Trajan. Spanheim and Joubert ſet this title on medals no higher than the time of Philip the younger: though it appears earlier in ſome inſcriptions: ſo that even M. Tillemont is miſtaken where he ſays, the quality of *Nobiliſſimus* is not to be found in hiſtory before the time of Conſtantine the great, who firſt gave it to his two brothers; after which it was attributed to ſuch of the emperors children as were not Cæſars. See CÆSAR.

Triſtan adds, that the Cæſars bore the title of *Nobiliſſimi* in all ages; but that the *Nobiliſſimate* firſt became a diſtinct independent dignity in the time of Conſtantine the great.

NOBILITY, a quality that dignifies, or renders a thing noble; particularly, that raiſes a perſon poſſeſſed thereof above the rank of a peaſant or commoner. See NOBLE.

In England, indeed, the term *Nobility* is reſtrained to degrees of dignity above knighthood. See KNIGHT.—Every where elſe, *Nobility* and gentility, or gentry, are the ſame. See GENTLEMAN.

Some refer the origin of *Nobility* in Europe to the Goths; who, after they had ſeized a part of Europe, rewarded their captains with titles of honour, and called them *nobles*; *nobiles*, to diſtinguiſh them from the common people.

Nobility, in England, is only conferred by the king, and that by patent, in virtue whereof it becomes hereditary. In other countries there are other ways of acquiring it.

Thus, in France, *v. gr.* there are ſeveral offices which convey perfect *Nobility*, and ſuch as deſcends to poſterity. Such are all offices of the crown, thoſe of counſellor of eſtate, *&c.* Others they have which only communicate an acceſſory, or perſonal *Nobility*, which dies with the perſon. Thus, a counſellor in parliament enjoys all the rights and exemptions of *Nobility*; yet his ſon is never reputed noble; unleſs there have been a ſucceſſion of them, and both father and grandfather have been noble; which they call *patre & avo conſulibus*. See OFFICE.

They have a third kind of *Nobility*, called *Nobility of the Bell, de la Cloche*; which is what the mayors and ſheriffs of certain cities, as Lions, Bourges, Rochel, Poitiers, *&c.* acquire in virtue of their magiſtracy.

The *Nobility* of England is called the *Peerage of England.* See PEERAGE.

Its degrees are only five, *viz.* that of a duke, marquiſs, earl or count, viſcount, and baron. See each under its proper article, DUKE, MARQUISS, *&c.*

The privileges of the Engliſh *Nobility* are very conſiderable: They are all eſteemed as the king's hereditary counſellors, and are privileged from all arreſts, unleſs for treaſon, felony, breach of peace, condemnation in parliament, and contempt of the king. No ſupplicavit can be granted againſt them; no capias, or exigent, ſued againſt them for action of debt, or treſpaſs; no eſſoin lies againſt them: In criminal caſes, they are only to be tried by a jury of peers, who are not put to their oath; but their verdict upon their honour ſuffices. In their abſence, they are allowed a proxy to vote for them; and in all places of truſt are allowed to conſtitute deputies, by reaſon of the neceſſity the law ſuppoſes them under of attending the king's perſon.

Guillim obſerves, that if an appeal of murther, or felony, be ſued by a commoner, againſt a peer, he ſhall be tried by commoners, not peers. See APPEAL.

No peer may go out of the kingdom without the king's leave: If any have leave, he is to return upon the king's writ, or to forfeit goods and chattels.

Anton. Matthæus obſerves, that *Nobility* among the Romans was a quite different thing from what it is among us. The nobles among the Romans were either thoſe raiſed to the magiſtrature, or deſcended from magiſtrates: There was no ſuch thing as *Nobility* by patent.

Bartoli ſays, that doctors, after they have held a profeſſor's chair in an univerſity for twenty years, become *noble*; and are entitled to all the rights of counts. See COUNT.

But this claim is not admitted at court, *&c.* though Bartoli's ſentiments be backed with thoſe of ſeveral other authors, particularly Chaſſanæus in his *Conſuetudin. Burgundiæ*; Boyer *ſur la Coutume de Berry*; Faber C. *de dig. def.* 9. *&c.* which laſt, however, reſtrains Bartoli's rule to doctors in law, and princes phyſicians. See DOCTOR.

By an edict of the French king, in 1669, it is declared, that trade ſhall not derogate from *Nobility*, provided the perſon do not ſell by retail. See COMMERCE.

In Bretagne, by ancient cuſtom, a *nobleman* loſes nothing by trading even in retail: But he reaſſumes all his rights as ſoon as he ceaſes traffic; his *Nobility* having ſlept all the time.

In Germany, a woman, not *noble* by birth, doth not become *v. gr.* a counteſs, or baroneſs, by marrying a count, or baron. A lady of the higher degree, indeed, becomes a princeſs by marrying a prince; but this doth not hold of a lady of the lower *Nobility*. See MARRIAGE.

On the coaſt of Malabar, children are only capable of being *noble* by the mother's ſide; it being allowed them to take as many huſbands as they pleaſe, and to quit them when they think good.

NOBLE,* NOBILIS, a perſon who has a privilege which raiſes him above a commoner, or peaſant, either by birth, by office, or by patent from his prince. See NOBILITY.

* The word comes from the Latin, *nobilis*, formed from the ancient *noſcibilis*, diſtinguiſhable, remarkable.

In England, the word *Noble* is of a narrower import, than in other countries, being confined to perſons above the degree of knights; whereas, abroad, it comprehends not only knights, but what we ſimply call *Gentlemen*. See KNIGHT, GENTLEMAN, *&c.*

The *Nobles* of England are alſo called *Pares Regni*, as being nobilitate pares, though gradu impares. See PEER.

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Nocturnal *Pains*, are a frequent concomitant of venereal diſorders, which can only be palliated with narcoticks: nothing but a mercurial courſe, or a long continued uſe of diet-drinks can entirely remove them. See Venereal.

Nocturnal *Arch*, in aſtronomy, the arch of a circle deſcribed by the ſun, or a ſtar, in the night. See Arch.

Semi-Nocturnal *Arch of the Sun*, is that portion of a circle he paſſes over between the lower part of our meridian, and the point of the horizon wherein he riſes; or between the point of the horizon wherein he ſets, and the lower part of our meridian.

Nocturnal, Nocturlabium, is more particularly uſed for an inſtrument, chiefly uſed at ſea, to take the altitude or depreſſion of ſome of the ſtars about the pole, in order to find the latitude, and the hour of the night.

There are *Nocturnals* of various contrivances, ſome of them projections of the ſphere; ſuch as the hemiſpheres, or planiſpheres, on the plane of the equinoctial: Thoſe ordinarily uſed by the ſeamen are two; the one adapted to the polar ſtar, and the firſt of the guards of the little bear; the other to the pole-ſtar, and the pointers of the great bear.

Conſtruction of the Nocturnal.—The inſtrument conſiſts of two circular plates, (*Tab. Navigation*, *fig.* 13.) applied on each other. The greater, which has a handle to hold the inſtrument, is about 2 ¼ Inches diameter, and is divided into 12 parts, agreeing to the 12 months; and each month ſubdivided into every fifth day: And ſo, as that the middle of the handle correſponds to that day of the year, wherein the ſtar here regarded has the ſame right aſcenſion with the ſun.

If the inſtrument be fitted for two ſtars, the handle is made moveable. The upper left circle is divided into 24 equal parts, for the 24 hours of the day, and each hour ſubdivided into quarters, as in the figure. Theſe 24 hours are noted by 24 teeth; to be told in the night. Thoſe at the hours 12, are diſtinguiſhed by their length. In the centre of the two circular plates, is adjuſted a long index A, moveable upon the upper plate. And the three pieces, *viz.* the two circles and index, are joined by a rivet which is pierced through the centre, with a hole two inches in diameter for the ſtar to be obſerved through.

Uſe of the Nocturnal. Turn the upper plate till the longeſt tooth marked 12, be againſt the day of the month on the under plate; then bringing the inſtrument near the eye, ſuſpend it by the handle, with the plane nearly parallel to the equinoctial; and viewing the pole-ſtar through the hole of the centre, turn the index about, till, by the edge coming from the centre, you ſee the bright ſtar or guard of the little bear (if the inſtrument be fitted to that ſtar) then that tooth of the upper circle, under the edge of the index, is at the hour of the night on the edge of the hour circle: which may be known without a light, by accounting the teeth from the longeſt, which is for the hour 12.

Nocturnal *Pollution*. See the article Pollution.

NOCUMENTI *Aſſiſa*. See the article Assisa.

NODATED *Hyperbola*, a kind of hyperbola, which, in turning round, decuſſates or croſſes itſelf. See Curve and Hyperbola.

NODE, Nodus, in chirurgery, denotes a tumour ariſing on the bones; uſually proceeding from ſome venereal cauſe. See Tumor and Bone.

Node amounts to the ſame with what is otherwiſe called *exoſtoſis*. See Exostosis.

It ſeems generated of a thick, cold, viſcid humour, which is often found very difficult to reſolve.—They frequently apply to it a leaden plate covered with mercury.

The cure is commonly attempted by *emplaſt. de ranis cum mercurio*; which failing, ſome mercurial unguent is now and then rubbed on them; and afterwards mercurial plaiſters made of cinnabar, &c. applied.

Some give the denomination *Nodes* to all tumours formed by a coagulation of vicious matter in the external parts of the body.

Node is more particularly applied to the tumours, or protuberances ariſing on the joints of old gouty people; called alſo *tophi*. See Tophus.

They are ſuppoſed to be formed of a thick, crude, heavy, viſcid indigeſted matter, mixed with a hot, ſharp, bilious juice, the groſſer and more terreſtrial part whereof being detained, grows into a ſtony ſort of concretion. See Gout.

NODES, in aſtronomy, the two points wherein the orbit of a planet interſects the ecliptic. See Orbit and Ecliptic.

Such are the two points C and D, (*Tab. Aſtron. fig.* 33.)—whereof the *Node* C, where the planet aſcends Northwards above the plane of the ecliptic, is called the *aſcending Node*, the *Northward Node*, and the *head of the dragon*, and thus marked ☊. See Ascending.

The other *Node* D, where the planet deſcends to the South, is called the *deſcending Node*, the *Southward Node*, or the *dragon's tail*; thus marked ☋. See Dragon's *Head* and *Tail*.

The right line DC, wherein the two circles interſect, is called *the line of the Nodes*. See Line.

It appears from obſervation, that the line of the *Nodes* of all the planets conſtantly changes its place, and ſhifts its ſituation *in antecedentia*; *i. e.* from Eaſt to Weſt, contrary to the order of the ſigns.—See Retrogradation.

Thus, by a retrograde motion, the line of the moon's *Nodes* finiſhes its circuit in 19 years; in which time, after having receded from any point of the ecliptic, it returns to the ſame. See Moon.

When the moon is in the *Nodes*, ſhe is alſo in the ecliptic, *viz.* twice in each period; when ſhe is at her greateſt diſtance from the *Nodes*, *viz.* in the points E, F, ſhe is ſaid to be in her limits. See Limit.

The moon muſt be in one of the *Nodes* when there is an eclipſe, either of the ſun or moon. See Eclipse, Planet, &c.

NODULE, NODULUS, in pharmacy, a bag of medicinal ingredients put into beer, or wine, to give its tincture thereto. See SACCULUS.

Nodules are ſometimes alſo parcels of odoriferous ſimples, tied up in a piece of ſilk, for the patient to be frequently ſmelling to.

NODUS, KNOT. See the article KNOT.

NODUS *in Poetry*, *&c.* See INTRIGUE, and PLOT.

NODUS, or NODE, in dialing, denotes a point, or hole in the gnomon of a dial, by the ſhadow, or light whereof, either the hour of the day in dials without furniture, or the parallels of the ſun's declination, and his place in the ecliptic, *&c.* in dials with furniture, are ſhewn. See DIAL, *&c.*

NODUS is alſo uſed for a hole in the cieling of a room, or in the window, for the making of a dial on the floor, wall, or the like.

NOETIANS, a ſect of ancient heretics, diſciples of Noetius, an Epheſian, the maſter of Sabellius.

They only allowed of one perſon in the godhead; *viz.* the father; and accordingly taught, that it was God the father that ſuffered on the croſs.—An error, ſays Epiphanius, who wrote an hundred years after Noetius, never heard of before; though it is certain there had been other Patripaſſians in the church before him. See PATRIPASSIAN.

Being reprehended by his ſuperiors, Noetius made them this anſwer: What harm have I done? I adore only one God; I own none but him. He was born, ſuffered, and is dead.

NOLI *me tangere*, *q. d. touch me not*, a malignant eruption in the face; occaſioned by an extremely ſharp, corroſive humour: thus called, either becauſe it infects thoſe who touch it, or becauſe the more it is touched, the worſe it grows, and the farther it ſpreads.

The *Noli me tangere* is a ſpecies of herpes exedens; by ſome referred to the cancer, by others to the lepra. See HERPES, CANCER, and LEPROSY.

NOLI *me tangere*, is chiefly uſed among us for an external ulcer in the alæ of the noſe; proceeding often from a venereal cauſe, though ſometimes the effect of a ſcrophulous conſtitution. See ULCER.

It does not always confine itſelf to the alæ, but will ſpread and corrode the very ſubſtance of the noſe. The cure is difficult, eſpecially when it riſes from a bad conſtitution.

NOLI *me tangere*, among botaniſts, a plant denominated from a ſingular property it has, of darting out its ſeed when ripe, upon the firſt approach of the hand to touch its pods. See SEMINATION.

NOMADES, * Νομαδες, a name given, in antiquity, to ſeveral nations, or people, whoſe whole occupation was to feed and tend their flocks; and who had no fixed place of abode, but were conſtantly ſhifting, according to the conveniencies of paſturage. See HAMAXOBII.

* The word comes from the Greek νεμω, paſco, I feed.

The moſt celebrated among the *Nomades* were thoſe of Africa, who inhabited between Africa, properly ſo called, to the Eaſt, and Mauritania to the Weſt.—They are alſo called *Numidæ*, or *Numidians*.—Salluſt ſays, they were a colony of Perſians brought into Africa with Hercules.

The *Nomades* of Aſia inhabited the coaſts of the Caſpian ſea.—The *Nomades* of Scythia were the inhabitants of little Tartary; who ſtill retain the ancient manner of living.

NOMANCY, * a name given to the art of divining the fates of perſons by means of the letters that form their names. See NAME.

* The word is a compound of the Latin, *nomen*, name, and μαντεια, divination. See ONOMOMANCY.

Nomancy, or, as it ſhould rather be called, *Nominomancy*, or *Onomatomancy*, ſeems to be nothing elſe but the cabbaliſtic gematria. See CABBALA.

NOMARCHA, in antiquity, the governor or commander of a nome, or nomos.

Egypt was anciently divided into ſeveral regions, or quarters, called *Nomes*, from the Greek νομος, taken in the ſenſe of a diviſion; and the officer who had the adminiſtration of each *Nome*, or *Nomos* from the king, was called *Nomarcha*, from νομος, and αρχη command.

NOMBRIL *Point*, in heraldry, is the next below the feſs-point; or the very centre of the eſcutcheon. See Point.

Suppoſing the eſcutcheon divided into two equal parts below the feſs; the firſt of theſe diviſions is the *Nombril*; and the lower the baſe. See ESCUTCHEON.

NOME, or NAME, in algebra, denotes any quantity with a ſign prefixed, or added to it, whereby it is connected with ſome other quantity; upon which the whole becomes a binomial, trinomial, or the like. See QUANTITY.

Thus $a+b$ is a binomial, whoſe *Names*, or *Nomes*, are a and b; and $a+b+c$ a trinomial, whoſe *Names* are a, b, and c, *&c.* See BINOMIAL, TRINOMIAL.

NOMEN. See the articles PRÆNOMEN, NAME, and AGNOMEN.

NOMENCLATOR, or NOMENCULATOR, among the Romans, was uſually a ſlave, who attended perſons that ſtood candidates for offices, and prompted or ſuggeſted to them the names of all the citizens they met, that they might court them, and call them by their names; which among that people was the higheſt piece of civility. See CANDIDATE.

NOMENCLATOR *of the Roman Church*, was an officer, whoſe buſineſs was to call the perſons whom the pope invited to dinner.

He alſo liſtened to thoſe who were admitted to audience, in the ſame manner as thoſe now retained by the cardinals, called *Auditors*.

NOMENCLATURE, NOMENCLATURA, a catalogue of ſeveral of the more uſual words in any language, with their ſignifications; compiled in order to facilitate the uſe, and retaining of ſuch words to thoſe who are to learn the tongue.

We have Latin, Greek, French, *&c.* *Nomenclatures.* See DICTIONARY and VOCABULARY.

NOMINA *Villarum*, an account of the names of all the villages, and the poſſeſſors thereof, in each county, drawn up by the ſeveral ſheriffs, at the inſtance of king Edward II. and returned by them into the exchequer; where it is ſtill preſerved.

NOMINAL *Characters*. See the article CHARACTER.

NOMINALS, or NOMINALISTS, a ſect of ſchool-philoſophers, the diſciples and followers of Occam, or Ocham, an Engliſh Cordelier in the 14th century.

The *Nominaliſts* were great dealers in words; whence they were vulgarly denominated *word-ſellers*.

They had the denomination *Nominaliſts*, becauſe in oppoſition to the *Realiſts*, they maintained, that words, not things, were the object of dialectics. See REALISTS, *&c.*

This ſect had its firſt riſe towards the end of the eleventh century, and pretended to follow Porphyry and Ariſtotle; but it was not till Ocham's time that they bore the name.

The *Nominals* were the founders of the univerſity of Leipſic: There are many yet abroad, who pique themſelves on being *Nominals*.

The *Nominals*, with the Stoics, admit the formal conceptions, or ideas of things, as the ſubject and foundation of univerſality; but to this they add names, which repreſent and ſignify, after the ſame univocal manner, and without any diſtinction, a great variety of ſingle things alike in genus and ſpecies.

Whence it is they are called *Nominals*; as pretending, that to become learned, it is not enough to have juſt ideas of things, but it is likewiſe required to know the proper names of the genera, and ſpecies of things, and to be able to expreſs them clearly and preciſely, without confuſion, or ambiguity.

NOMINATION, the act of naming, and appointing a perſon for ſome function, employ, or benefice.

The word is chiefly uſed for the right of preſenting to a benefice, *&c.* See BENEFICE, *&c.*

In common law, however, there is a difference between *Nomination*, and preſentation; the former being properly a power which a man has, by virtue of a manor, or otherwiſe, to appoint, or name a clerk to a patron of a benefice, to be by him preſented to the ordinary. See PRESENTATION and COLLATION.

NOMINATIVE, in grammar, the firſt caſe of nouns which are declinable. See CASE.

The ſimple poſition, or laying down of a noun, or name, is called the *Nominative caſe*, yet is it not ſo properly a caſe, as the matter or ground whence the other caſes are to be formed, by the ſeveral changes and inflexions given to this firſt termination. See NOUN.

Its chief uſe is to be placed in diſcourſe before all verbs, as the ſubject of the propoſition, or affirmation, as, *Dominus regit me*, the Lord governs me; *Deus exaudit me*, God hears me. See VERB.

NOMINATOR, he who names, or preſents a perſon to an office, or benefice. See NOMINATION.

Hence *nominee*, the perſon named or preſented.

Errard obſerves, there are ſome cuſtoms where the *Nominator* is reſponſible for the ſolvibility of the nominee.

NOMINIS *Identitate*. See the article IDENTITATE.

NOMOCANON, * a collection of canons, and of imperial laws, relative, or conformable thereto. See CANON.

* The word is compounded of the Greek νομος, *lex*, law; and κανων, *canon*, rule.

The firſt *Nomocanon* was made by Johannes Scholaſticus in 554.—Photius, patriarch of Conſtantinople in 883, compiled another *Nomocanon*, or collation of the civil laws with the canons: This is the moſt celebrated.—Balſamon wrote a commentary on it in 1180.

NOMOCANON, alſo denotes a collection of the ancient canons of the apoſtles, councils, and fathers; without any regard to imperial conſtitutions.

Such is the *Nomocanon* publiſhed by M. Cotelier.

NOMOCANON is ſometimes alſo uſed for a penitential book of the Greeks. See PENITENTIAL.

NON-ABILITY, in law, an exception taken againſt the plaintiff in a cauſe, on ſome juſt ground why he cannot commence a ſuit in law: as, præmunire, outlawry, being profeſſed in religion, excommunicate, or a ſtranger born. See DISABILITY. This laſt holds only in actions real, and mixed; and not in perſonal, except he be both a ſtranger and an enemy. The civilians ſay, that ſuch man hath not *perſonam ſtandi in judicio*.

NON-ADMITTAS. See the article NE-ADMITTAS.

NON-APPEARANCE, a default in not appearing in a court of judicature. See APPEARANCE.

NON-CLAIM, in law, the omiſſion, or neglect of him who challenges not his right within the time limited by law: as, within a year and a day, where continual claim ought to be made. See CLAIM.

By ſuch neglect he is either barred of his right; as upon *Non-claim* within five years after a right accrued to him; or of his entry by deſcent, for want of a *claim* within five years after the diſſeiſin.

NON-COMPOS *mentis*, a phraſe denoting a perſon not to be of ſound memory, or underſtanding. See NON-SANÆ *memoriæ*.

Of this, in common law, there are ſaid to be four kinds.—Firſt, an idiot born; ſecondly, he that by accident loſeth his memory, and underſtanding; thirdly, a lunatic, that has *lucida intervalla*, ſometimes underſtanding, and ſometimes not; fourthly, he that by his own act, for a time, depriveth himſelf of his right ſenſes, as a drunkard.—But this laſt kind ſhall give no privilege to him, or his heirs. See IDIOT, LUNATIC, *&c.*

A deſcent takes away the entry of an idiot, though the want of underſtanding were perpetual.

NON-EST *Culpabilis*, NON-CUL. *q. d. he is not guilty*, in law, the general plea to an action of treſpaſs, whereby the defendant abſolutely denies the fact charged on him by the plaintiff: whereas, in other ſpecial pleas, the defendant grants the fact to be done, but alledges ſome reaſons in his defence, why he lawfully might do it. See TRESPASS.

As *Non-Cul.* is the general anſwer in an action of treſpaſs, *i. e.* a criminal action civilly proſecuted; ſo is it in all actions criminally followed, either at the ſuit of the king, or others, wherein the defendant denies the crime objected to him.

NON EST *factum*, in law, an anſwer to a declaration, whereby a man denieth that to be his bond or deed whereupon he is impleaded.

NON-JURIDICI *Dies*. See the article DIES.

NON-LIQUET, *it does not appear*, a verdict given by a jury, when a matter is to be deferred to another day of trial. See VERDICT, and JURY.

The ſame phraſe was uſed among the Romans: after hearing a cauſe, ſuch of the judges as thought it not ſufficiently clear to pronounce upon, caſt a ballot into the urn with the two letters *N. L.* for *Non Liquet*.

NON-MOLESTANDO, a writ which lies for him who is moleſted contrary to the king's protection granted him.

NON-OBSTANTE, *notwithſtanding*, in law, a clauſe frequent in ſtatutes, and letters patent; importing a licence from the king to do a thing, which at common law might be lawfully done; but, being reſtrained by act of parliament, cannot be done without ſuch licence.

All grants of ſuch penſions, and every *Non obſtante* therein contained, ſhall be void.—Henry III. took up the clauſe, *Non obſtante*, (firſt introduced by the pope) in his grants.

NON-OBSTANTES, in the Romiſh canon law, make the third part of the proviſions of the court of Rome beginning with *Non obſtantibus* and compriſing abſolutions from cenſures, rehabilitations, and neceſſary diſpenſations for the enjoyment of benefices. None inferior to the pope can uſe the clauſe *Non obſtante*.

NON-OMITTAS, a writ which lies where the ſheriff having delivered a writ or proceſs to a bailiff of a franchiſe in which the party it is to be ſerved on dwells, and the bailiff having refuſed or neglected to ſerve it, upon the ſheriff's returning that he delivered it to the bailiff, this ſecond writ ſhall be directed to the ſheriff, charging him to enter the franchiſe, and execute the king's command, either by himſelf or officer.

NON-PLEVIN, *Non plevina*, a default in not replevying of land in due time. See REPLEVIN.

In *Hengam magna*, it is ſaid, that the defendant ſhould be ſure to replevy his lands ſeized by the king, within fifteen days. And that if he neglects, then, at the inſtance of the plaintiff at the next court-day, he ſhall loſe his ſeiſin, *ſicut per defaltam poſt defaltam*.—But, by *Stat.* 9 Edward III. it was enacted, that no perſon ſhould loſe his land thenceforward becauſe of *Non-Plevin*.

NON-PONENDO *in Aſſiſis, & Juratis*, a writ granted on divers occaſions to men for freeing them from ſerving on aſſizes, and juries; as by reaſon of old age, charter of exemption, or the like. See JURY, *&c.*

NON-PROCEDENDO *ad Aſſiſam Rege inconſulto*, a writ to ſtop the trial of a cauſe appertaining to one who is in the king's ſervice, *&c.* till the king's pleaſure be farther known.

NON-RESIDENCE, in law, is applied to ſuch ſpiritual perſons as are not reſident on, but do abſent themſelves, for one month together, or two at ſeveral times of the year, from their benefices, or dignities. See BENEFICE.

Regularly, perſonal reſidence is required of eccleſiaſtical perſons upon their cures; though there are ſome exceptions in favour of particular perſons, as king's chaplains, biſhops, *&c.* See RESIDENCE.

NON-RESIDENTIA *pro Clericis Regis*, is a writ directed to the ordinary, charging him not to moleſt a clerk employed in the king's ſervice, on account of his *Non-Reſidence*.

NON SANÆ *Memoriæ*, or NON *ſane Memorie*, is an exception taken to an act declared to be done by another, importing that it was done at a time when the party that did it was mad, or not in his wits. See NON-COMPOS.

NON-SUIT, in law, the dropping or letting fall a ſuit or action. *Nonſuit* is a renunciation of a ſuit, by the plaintiff or demandant; moſt commonly upon the diſcovery of ſome error, or defect, when the matter is ſo far proceeded in, as that the jury is ready at the bar, to deliver their verdict.—The civilians term it *Litis renunciatio*.

NON SUM *Informatus*. See INFORMATUS *non ſum*.

NON-TENURE, a plea in bar to a real action, whereby the party urges that he holdeth not the land mentioned in the count, or at leaſt ſome part of it.

Weſt diſtinguiſhes *Non-Tenure* into *general* and *ſpecial*. The *firſt*, where one denies himſelf ever to have been tenant to the land in queſtion.—The *ſecond*, where he only alledges that he was not tenant the day whereon the writ was purchaſed.

NON-TERM, the time of vacation between term and term. See VACATION.

It was anciently called *the time or days of the king's peace*. See PEACE *of God and the church*.

Among the Romans it was called *Feriæ*, or *Dies Nefaſti*. See FERIÆ and NEFASTI.

NON-ENTITY, whatever has no real being, or is only conceived negatively, or claims only a negative denomination. See ESSE, ESSENCE, *&c.*

NON-ESSENTIAL *Modes*. See the article MODES.

NON-NATURALS, in medicine, *res non naturales*, are the cauſes and effects of diſeaſes, whether near or remote. See DISEASE.

Phyſicians have digeſted all the cauſes of diſeaſes into ſix claſſes, which they call the ſix *Non-naturals*.—Theſe are, 1. Air. 2. Meat and drink. 3. Motion and reſt. 4. The paſſions of the mind. 5. Excretions and retentions. 6. Sleep and waking. See each under its proper article, AIR, FOOD, DRINK, *&c.*

They are thus called, becauſe, by their uſe, or abuſe, they become either good, *naturals*, or evil, *contra-naturals*. See NATURALS.

But the diviſion, in effect, is of no great uſe; the cauſes of diſeaſes being much more commodiouſly laid down otherwiſe. See DISEASE.

NONÆ and *Decimæ* were payments anciently made to the church by thoſe who were tenants of church-farms.

The *Nonæ* were a rent or duty claimed for things belonging to huſbandry: the *Decimæ* were claimed in right of the church. See TITH.

NONAGE, in law, an incapacity of doing certain things from a want of age. See AGE.

The term of *Nonage* is different, with regard to different things.—In matters of inheritance, a man is in his *Nonage* till twenty-one years; for marriage till fourteen, *&c.* See MINORITY.

NONAGE, NONAGIUM, alſo denotes the ninth part of a man's moveable goods, anciently paid in the nature of a mortuary; being claimed by the clergy upon the death of thoſe of their pariſh. See MORTUARY.

At firſt it was a third part of the goods, and was called *Tertiagium*; till by a bull of Clement VI. it was reduced to a ninth.

NONAGESIMAL, in aſtronomy, the ninetieth degree of the ecliptic, reckoned from its Eaſtern term, or point. See ECLIPTIC.

The altitude of the *Nonageſimal* is equal to the angle of the Eaſt, and if continued paſſes through the poles of the ecliptic: whence the altitude of the *Nonageſimal*, at a given time, under a given elevation of the pole, is eaſily found. See ALTITUDE.

If the altitude of the *Nonageſimal* be ſubſtracted from 90°, the remainder is the diſtance of the *Nonageſimal* from the vertex.

NONAGON, a figure having nine angles and ſides. See POLYGON.

NONCONFORMISTS, the name of a religious ſect, or rather number of ſects, in England. See SEPARATIST.

The term was anciently confined to the Puritans, or rigid Calviniſts; at preſent it extends to all who diſſent from the eſtabliſhed church, the Romaniſts alone excepted. See DISSENTER, PURITAN, PRESBYTERIAN, INDEPENDENT, *&c.*

The word is ſaid to have had its riſe from a declaration of king Charles I. who appointed that all the churches of England and Scotland ſhould have the ſame ceremonies and diſcipline; the acquieſcence wherein, or diſſenting from which, determined *conformity*, and *nonconformity*.

NONE, or NONES, NONÆ, one of the ſeven canonical Hours, in the Romiſh church. See HOUR.

None, or the ninth hour, is the laſt of the leſſer hours, that is ſaid before Veſpers; and anſwers to three a-clock in the afternoon. See VESPERS.

The ſingle office, and that for the dead, ends at *Nones*, which father Roſweyd obſerves, was anciently the hour for the breaking up of the ſynaxis, or uſual meetings at church of the primitive chriſtians.

The hour of *None* was alſo the uſual time for taking the repaſt on faſt-days; though ſome would keep the faſt till night. See FAST.

NONES,* NONÆ, in the Roman Calendar, the fifth day of the months January, February, April, June, Auguſt, September, November, and December; and the ſeventh of March, May, July, and October: Theſe four laſt months having ſix days before the *Nones*, and the others only four. See CALENDS.

* The word apparently has its riſe hence, that the day of the *Nones* was nine days before the ides, and might be called *Nono-Idus*. See IDES.

March, May, July, and October had ſix days in their *Nones*; by reaſon theſe alone, in the ancient conſtitution of the year by Numa, had 31 days apiece; the reſt having only 29, and February 30.—But when Cæſar reformed the year, and made other months contain 31 days, he did not likewiſe allot them ſix days of *Nones*. See CALENDAR, YEAR, MONTH, *&c.*

NOMUS *Humeri Placentini*, in anatomy, a muſcle, called alſo *Rotundus minor*. See ROTUNDUS.

NORMANNORUM *Terra*. See the article TERRA.

NORMAL *Line*, in geometry, is uſed for a perpendicular Line. See PERPENDICULAR and SUBNORMAL.

NORROY, *North Roy*, *q. d.* Northern king; the title of the third of the three kings at arms, or provincial heralds. See KING *at Arms*, and HERALD.

His juriſdiction lies on the North ſide of Trent, whence his name; as Clarencieux, on the South. See CLARENCIEUX.

NORTH, in coſmography, one of the four cardinal points of the horizon, being that interſection of the horizon and meridian which is neareſt our pole. See CARDINAL *Point* and HORIZON.

NORTH *Latitude of the Moon*. See LATITUDE.

NORTH *Company*. See the article COMPANY.

NORTH *Dial*. See the article DIAL.

NORTH *Eaſt*, a rhumb, or point, in the middle between the Eaſt and North. See RHUMB and POINT.

NORTH *North Eaſt*, *North Eaſt and by Eaſt*, are ſubdiviſions of the compaſs between the *North* and Eaſt. See WIND.

NORTH *Pole*. See the article POLE.

NORTH *Sea*. See the article SEA.

NORTH-*Star*, the laſt in the tail of the little bear; called alſo the *Pole-Star*. See POLE-*Star*.

NORTH *Wall*. See the article WALL.

NORTH *Weſt*, is a point, or rhumb, in the middle between the *North* and Weſt. See WEST, *&c.*

NORTH *Wind*. See the article WIND.

NORTHERN *Aſpect*, or *Expoſure*. See EXPOSURE.

NORTHERN *Light*, or *Aurora Borealis*. See AURORA *Borealis*.

NORTHERN *Ocean*. See the article OCEAN.

NORTHERN *Signs*, are thoſe ſix on the *North* ſide of the equator. See SIGN.

NORTHERN *Hemiſphere*. See the article HEMISPHERE.

NORTHING, in navigation, the difference of latitude, which a ſhip makes in ſailing towards the *North* pole. See SAILING, LATITUDE, *&c.*

NOSE, the *external* organ of ſmelling; or that part in men which ſtands prominent, in the middle of the face. See FACE.

The *Noſe* is uſually divided by anatomiſts into *external* and *internal*; a diviſion of very little ſervice.

It is farther ſubdivided into ſeveral parts which make up its external figure.—Firſt is the *dorſum*, or ridge, running along the whole length of it; one part whereof, about the middle, more prominent than the reſt, is called the *Spine*; and the extreme, which in many is turned round, *Orbiculus*—The ſides are called the *Alæ*, or *Pinnæ*.

The teguments of the *Noſe* are common to the reſt of the face. Under theſe appear the muſcles of the *Noſe*, which are three pair, *viz.* the *Elevatores Alæ Naſi*, ſerving to pull the alæ upwards, and turn them outwards; the *Dilatatores Alæ Naſi*, which draw them from each other, and widen the external apertures of the noſtrils; and the *Conſtrictores Alæ Naſi*, which draw them downwards nearer each other; and at the ſame time the upper lip alſo downwards. See each muſcle deſcribed under its proper head ELEVATOR, DILATATORES, *&c.*

The frame of the *Noſe* is chiefly ſupported by two bones, which end in cartilages of a triangular figure, and are divided in the middle by a third, called *Septum*, into two partitions, called the *Nares*, or *Noſtrils*. See NOSTRIL.

This ſeptum likewiſe ends in a cartilage; by means of which cartilages, the lower part of the *Noſe* is rendered moveable, which the upper being perfectly oſſeous, is not. The cartilages of the alæ are tied to the others by ligaments, which looſe connexion renders them moveable.

The bones of the *Noſe* are either *proper*, or *common*.—The firſt of the *proper*, are the two external ones that conſtitute the dorſum, and are joined to the oſſa frontis, the fourth bone of the upper jaw, and to each other, uſually *per harmoniam*. See DORSUM *Naſi*.

In the concave of the arch of theſe two bones, at their union internally, is placed the bony part of the ſeptum. Its upper part joins the os ethmoides; but in adults is continued ſo as the ethmoides, and its proceſs, called *Criſta Galli*, appear of a piece with the ſeptum. The ſeptum is thinneſt in the middle, and divides the right noſtril from the left; though its poſition is ſeldom perpendicular. It is capped with another thin bone, from its figure called *Vomer Aratri*, and is joined to the fourth bone of the upper jaw, and to the oſſa palati. See VOMER.

The other proper bones are the turbinata, or ſpongioſa, two of which are uſually found in each noſtril ſometimes three, one over the other.—The middlemoſt, when there are three, is ſo placed as to ſhelter the perforation of the antrum maxillæ ſuperioris into the noſtril, and prevent the ſudden ruſhing in of air from the noſtril into the antrum. They are all very porous, and turned, not unlike the ſhell concha veneris. In quadrupeds, theſe bones are very numerous. See CRIBROSUM.

The *common* bones of the *Noſe* are ſuch as make fences for the foramina narium, and help to compoſe the parts adjacent. The largeſt of theſe is the fourth bone of the upper jaw, which has the greateſt ſhare in framing the foramina. See MAXILLA.

Theſe fourth bones, with the ſeptum and oſſa turbinata, chiefly frame the internal paries of the foramina. In the upper part, a portion of the os frontis, the inſide of the os unguis, the os cribroſum, with part of the ſphenoides; and backwards towards the fauces, the oſſa palati, help to compoſe the foramina.

Beſides the cavities circumſcribed by the bones now mentioned, the foramina have ſeveral collateral cavities that open into them: The largeſt is that called *Antrum Genæ*; by Dr. Highmore, *Antrum maxillæ ſuperioris*, framed in the fourth bone of the upper jaw, near two inches long, and an inch broad; the bony parts of which, with the ſphenoides, make the foramen lacerum externum. Its lower ſurface makes a thin covering for all the roots of the molares, and canini, which frequently upon drawing a tooth, to which it ſticks, is taken along with it, whereby this cavity is opened into the alveolus, and conſequently into the mouth.

All theſe cavities of the *Noſe* and cheek, as alſo the oſſa turbinata, ſeptum, *&c.* are inveſted with a membrane furniſhed with large arteries from the carotides; and veins, which empty themſelves into the jugulars; and nerves, from the fifth pair, as well as the olfactory nerves.

In this membrane are a great number of ſmall glands, placed very near each other, from whence flows all that pituita, commonly diſcharged at the noſtrils.

By means of this mucus or pituita is the membrane kept ſoft, and defended from the injuries of extraneous bodies, eſpecially thoſe of the air, which muſt paſs this way in inſpiration when the mouth is ſhut. See MUCUS.

By this means, the olfactory nerves, here diffuſed, are rendered capable of the perception of odoriferous effluvia; which the drineſs of the part would be apt to deſtroy. See SMELLING.

Beſides this uſe of the *Noſe*, which is the principal, nature has made it, as it were, a diverticulum to the eyes; there being a conſiderable paſſage into each noſtril that empties itſelf under the middle os turbinatum, ariſing from two apertures, called *Puncta Lachrymalia*, at the great canthus.

By this way, the ſuperfluous moiſture of the eyes is carried off, which would otherwiſe incommode the cheeks; as in effect it does, when thoſe parts are affected with any diſorder; as in the ægilops, and fiſtula lacrymalis. See FISTULA, LACHRYMALIA *Puncta*, *&c.*

The diſeaſes to which the *Noſe* is ſubject, are a coryza, ozæna, polypus, ſarcoma, and noli me tangere, beſide ſneezing, and a loſs of ſmelling. See each in its place.

Amb. Paré, in his 23d book, mentions an Italian chirurgeon, who had the art of reſtoring loſt *Noſes*, or making them come again after they were cut off. His method was to make an aperture in the patient's arm, and there to engraft the mutilated *Noſe*; the arm being bound up for 24 days, the *Noſe* took root in the wound, and glued itſelf with the fleſh of the arm, and grew to its bulk; which done, he cut off the fleſh of the arm, and faſhioned the *Noſe* to his liking, applied it in its place, and healed the wounds at leiſure.

This operation we ſee burleſqued in *Hudibras:* So learned Taliacotius, from—*&c.* and alſo in the *Acta Eruditorum Lipſii, anno* M.DC.LXXXII.

Hagarup, a Dane, maintains, that the *Noſe* is in ſome meaſure fitted for an organ of ſight, and that a man may ſee through it; grounding his opinion on the authority of Smetius, who, in his fifth book of *Medicinal Miſcellanies*, relates of his own knowledge, that a youth, quite blind in other reſpects, could ſee the light, and was able to diſcern the whiteneſs of flowers by the *Noſe*.

But, for our part, we ſhould rather account for theſe ſenſations from the faculties of feeling and ſmelling, than thoſe of ſeeing: Not but there is a very great reſemblance between the various organs of ſenſe, enough to give ground to the opinion, that they only differ as more or leſs delicate; for which reaſon we do not abſolutely reject the inſtance given by Grimaldi, of a man who could diſtinguiſh colours by his feeling. See SENSE.

The nerves, whoſe texture and conſtitution, for any thing we know, is the ſame throughout the whole body, are confeſſedly the vehicles of all ſenſations from without; and thoſe are all depoſited in the ſame ſenſory, whether they be brought from the eye, the ear, or the *Noſe*, &c. and that ſingular apparatus, obſervable in each organ, ſeems rather intended for the bene eſſe, than the eſſe of that ſenſe; rather to ſtop and detain the tranſient effluvia, to collect them where too ſcanty, diſperſe them where too copious, ſoften them where too rude, and break their force where too violent, and by this means to proportion them to the ſeveral degrees of fineneſs, tenſion, *&c.* of the nerves of the reſpective organs, in order to render the ſenſations adequate to the ends; than to produce them. See SENSATION.

In Tartary, the greateſt beauties are thoſe who have the leaſt *Noſes*. Ruybrock mentions the wife of the great Jinghischan, the mother of Tamerlane, as a celebrated beauty, becauſe ſhe had only two holes for a *Noſe*. In moſt other countries, China excepted, great *Noſes* are in honour.

The Crim-Tartars break the *Noſes* of their children while young, as thinking it a great piece of folly to have their *Noſes* ſtand before their eyes.

NOSOCOMIUM, Νοσοκομειον, an hoſpital, or infirmary, for the reception of the diſeaſed. See HOSPITAL, LAZAR, *&c.*

NOSOLOGY,* Νοσολογια, a diſcourſe, or treatiſe of diſeaſes; otherwiſe called *Pathology*. See PATHOLOGY.

* The word is compounded of νοσος, malady, diſeaſe, and λογος, diſcourſe, reaſon.

NOSTRILS, *Nares*, the two apertures, or cavities of the noſe, through which the air paſſes, and which ſerve to convey odours, and to carry off the pituita ſeparated in the ſinus of the baſe of the cranium. See NOSE and MUCUS.

The *Noſtrils* are ſeparated by a cartilage, called *ſeptum Narium*, and lined with a very ſenſible membrane. See SMELLING.

Cicero obſerves, that the ſituation of the *Noſtrils* ſo near the mouth is very convenient; as the judging of the ſmells of meats and drinks, is a great part of their office: He adds, that their erect poſition argues the Creator's wiſdom, in regard all odours riſe from below upwards.

NOT *Guilty*, the general iſſue, or plea of the defendant, in any criminal action. See NON *eſt Culpabilis*.

NOT *putrid Fever*. See the article FEVER.

NOT *vital Action*. See the article ACTION.

NOTABILIA *Bona*. See the article BONA.

NOTARICON, the third part, or ſpecies of the Jewiſh cabbala. See CABBALA.

Rabbi Nathan, in his great *Aruch*, ſays, that *Notaricon* is when a ſingle letter is taken for the ſign of a thing, *i, e.* for a whole name.—He adds, that the word comes from the Latin *Notarius*, a perſon who writes in notes, or ſhort-hand. And R. Elias Levita gives the ſame account in his *Theſbites*, except that in lieu of one letter for a word, he mentions two, or three. See ABBREVIATURE.

But after all, neither the one nor the other ſeems alone ſufficient: For as a ſingle letter frequently makes a word; ſo in the *Notaricon*, a whole word ſometimes ſtands for a ſingle letter.

There are therefore two principal kinds of *Notaricon:* The firſt is, when by aphæreſis, or apocope, the firſt or laſt letters of ſeveral words are joined to make a ſingle word, or phraſe; which therefore is of two kinds, the one initial, the other final; and each is done ſeveral ways, *viz.* either by taking the letters the common way, or backwards: Though there is alſo a third kind made, as the Rabbins call it, by leaps, *i. e.* by ſkipping over ſome letters. The firſt of theſe kinds, which the Rabbins call *Raſche Theboth*, appears very ancient; and is ſuppoſed by ſome, well verſed in the Hebrew, to have taken its origin from the pſalms, and other places of ſcripture, proceeding alphabetically, *i. e.* the firſt verſe beginning with א, the firſt letter of the alphabet; the ſecond with ב, the ſecond letter, *&c.* See ABECDARY.

The ſecond kind is alſo very common, and called *Sophe Theboth, i. e.* the end of words. For inſtance, by telling the laſt letters of the words, מה שמו מה לי, *Mihi quodnam nomen eſt. Quodnam?* they find the name of God, Jehovah. This becomes ſtill more puerile, when they take the letters backwards.

The third kind is more modern, more groſs, and perplexed: Here a letter gives a whole word, inſtead of a word's only giving a letter; ſo that a word ſhall furniſh a whole phraſe.

Thus, for an example, in the firſt word of Geneſis, בראשית, *Bereſchit*, is found, he created the heaven and the earth, the ſea, the abyſs, *&c.*

NOTARY, NOTARIUS, primarily denotes one who takes notes, or ſhort draughts, of contracts, or other inſtruments. See NOTE and PROTHONOTARY.

From the 44th novel of Juſtinian, it appears, that contracts were firſt wrote in notes, or abbreviatures, by the *Notaries*, or clerks of the tabelliones; and were not yet obligatory.—Afterwards they were engroſſed, or wrote at length by the tabellio himſelf, and then ſigned and ſealed. See TABELLIO.

NOTARY, is more particulary uſed for an officer, who draws, and keeps notes, and minutes of contracts, obligations, and other inſtruments, executed before him, and delivers out authentic copies, *&c.* thereof.

Rageau diſtinguiſhes between *Notarii*, and *Tabelliones: Notaries*, he ſays, in ſeveral cities, are only to receive and paſs the minutes of contracts, and to deliver them to the parties in brief; being obliged to carry them to the tabelliones to be kept, and to have engroſſed copies delivered out to the parties.

He adds, that the *Notaries* were anciently clerks of the tabelliones; and that ſeparating, by degrees, from their maſters, they at length erected offices of their own; and at laſt took place of the tabelliones, who were ſuppreſſed.

They had their name *Notarii*, from *notæ*; becauſe anciently they wrote in notes, or ſhort-hand.

Notaries are now little uſed among us, except in mercantile affairs; though in France they ſtill ſubſiſt in their legal capacity.—The *Notaries* of the chatelet are called the king's counſellors, and note-keepers.

NOTARY *Public*, among us, is a perſon who draws, and publickly atteſts deeds, or writings, between merchants, to make them authentic in another country.

Notaries have the drawing, paſſing, keeping, iſſuing, *&c.* of all deeds, contracts, charter-parties, *&c.* in the mercantile world. In their books are regiſtered proteſts, remonſtrances, *&c.*

Eccleſiaſtical NOTARIES, were officers in the firſt ages of the church, whoſe buſineſs was to collect, and preſerve the acts of the martyrs. See ACT, MARTYR, and MARTYROLOGY.

They are ſuppoſed to have been firſt inſtituted by St. Clement. Their number was ſeven, and they were diſpoſed in the ſeven quarters or regions of Rome.

Pope Fabian, judging the ſhort-hand of the *Notaries* too obſcure for common uſe, added ſeven ſub-deacons to them, to tranſcribe at length what the *Notaries* drew in ſhort.

At length theſe *Notaries* were laid aſide, and two other kinds eſtabliſhed in their ſtead, *viz. Apoſtolical Notaries*, and *Epiſcopal Notaries*; whoſe buſineſs lies in ſpiritual, and beneficiary inſtruments. See DEACON, CARDINAL, *&c.*

NOTATION, in arithmetic, the art of characterizing numbers, or of repreſenting them by proper figures. See CHARACTER.

The choice of arithmetical characters is arbitrary: Hence, in various nations, they are various. But perhaps there are none ſo commodious as thoſe commonly uſed in Europe, uſually ſaid to have been invented by the Arabs, and thence called *Arabic Characters*; though Dr. Wallis obſerves, that Altepedi, an Arab, refers the invention to the Indians. See *Numeral* CHARACTER.

The Greeks, Hebrews, and other Eaſtern nations, as alſo the Romans, expreſſed numbers by the letters of their common alphabet. See *Literal* CHARACTER.

NOTATION, in algebra, is the repreſenting of quantities by letters of the alphabet; or calling them by thoſe names. See QUANTITY, CHARACTER, *&c.*

NOTE, NOTA, is uſed for a character, or abbreviature, ſerving to denote, or expreſs ſomething in a little compaſs. See CHARACTER, SYMBOL, ABBREVIATURE, and NOTATION.

The ancient Notaries wrote all in *Notes*, or ſhort-hand; whence they were ſometimes denominated *Curſores, quia notis curſim verba expediebant*. See NOTARY.

NOTES in muſic, are characters which mark the tones, *i. e.* the elevations, and fallings of the voice, or ſound; and the ſwiftneſs, or ſlowneſs of its motions. See SOUND.

In the general, under *Notes* are comprehended all the ſigns, or characters uſed in muſic, for the making harmony of ſounds. See CHARACTER.

But, in propriety, the word only implies the marks which denote the degree of gravity, or acuteneſs, to be given each ſound. See GRAVITY.

The Greeks uſed the common letters of their alphabet for muſical *Notes*; and in regard more *Notes* were needed than they had letters, the defect was ſupplied by the different ſituation of the letters, *viz.* by placing them upright, inverted, *&c.* and by cutting off, or doubling ſome ſtrokes.

Thus the ſame letter *Pi*, expreſſed different *Notes* in all the following forms, Π, Ⲡ, ⊏, ⊐, Γ, ꓶ. For every ſeveral mode they had no leſs than 18 ſigns.

Now, Alipius gives us ſigns for 15 different modes, which, with the differences of the genera, and the diſtinction between voice and inſtrument, Mr. Malcolm obſerves, makes in all 1620 *Notes.* Not that they had ſo many diſtinct characters; but the ſame character has different ſignifications, on different occaſions. Thus Φ in the Diatonic genus is lycanos hypaton of the Lydian mode; and hypate meſon of the Phrygian.

The Latins, in the time of Boethius, had eaſed themſelves of ſo needleſs a burthen; and only uſed the firſt 15 letters of their alphabet for *Notes.* Theſe, pope Gregory conſidering that the octave was the ſame in effect with the firſt, and that the order was the ſame in the upper and lower octave of the gamut, reduced to ſeven; which were to be repeated in a different character.

At length, in the 11th century, a Benedictine, one Guido Aretine, in lieu of the letters, ſubſtituted the ſix ſyllables *ut, re, mi, fa, ſol, la*; placing them on different lines, and marking them with points. Laſtly, it was thought proper to add *Notes* likewiſe in the ſpaces. See GAMUT.

Of the ſeven muſical *Notes*, ut, re, mi, fa, ſol, la, ſi, the firſt ſix are aſcribed to Aretine, who is ſaid to have invented them at Pompoſa in the dutchy of Ferrara. The ſeventh, *viz. ſi*, was added, according to ſome, by Vander Putten; according to others, by de Muris. It ſerves very good purpoſes, in avoiding the difficulty of the diviſions remaining in Guido's ſcale.

Indeed Voſſius will not allow Guido the honour of inventing any of them; but ſhews that the Egyptians had uſed them long before him; in which he is confirmed by the teſtimony of Halicarnaſſeus: However, common fame aſcribes to him not only the *Notes*, but alſo the lines, letters, or clefs, flats, and ſharps.

The *Notes* ut, re, mi, *&c.* he is ſaid to have taken from a hymn, in the veſpers of St. J. Baptiſt, *Ut queant laxis reſonare fibris*, &c. See MUSIC.

Hitherto, the *Notes* only ſerved to expreſs the degrees of tune: They were all of equal value as to time, till about the year 1330, when John de Meurs, or de Muris, a doctor of Paris, gave different figures to the ſeveral points, to expreſs the quantity of time each was to be dwelt upon. See TIME.

There are three things to be conſidered in theſe *Notes.* 1. The *quantity*, *i. e.* the ſize and figure of the head. 2. The *quality*, *i. e.* the colour of the head, whether it be white or black, full or open. 3. The *properties*, as the Italians expreſs themſelves, *viz.* whether the *Note* is accompanied with a virgula, or comma, or not. It muſt likewiſe be conſidered whether the *Notes* be ſeparate and diſtinct, or bound together.

The ſeveral muſical *Notes*, are, the *large*, which contains 8 meaſures, though Merſennus makes it 12; (ſee its figure under CHARACTER;) the *long*, containing 4 meaſures; the *breve*, containing 2; the *ſemibreve*, containing 1; the *minim* $\frac{1}{2}$; the *crotchet* $\frac{1}{4}$; the *quaver* $\frac{1}{8}$; the *ſemiquaver* $\frac{1}{16}$; and the *demiſemiquaver* $\frac{1}{32}$.

Uſually we only diſtinguiſh ſix principal *Notes*, repreſented by as many different characters, *viz.* the *ſemibreve*, equal to two minims; the *minim*, equal to two crotchets; the *crotchet*, equal to two quavers; the *quaver*, equal to two demiquavers; and the *ſemiquaver*, equal to two demiſemiquavers. See each under its proper article, SEMIBREVE, MINIM, CROTCHET, *&c.*

The Mathematicians compute, that one may make 720 changes, or varieties with ſix *Notes*, without ever repeating the ſame twice; and that of the *Notes* of each octave, one may make 40320 different tunes, or ſongs. See CHANGE, COMBINATION, *&c.*

NOTE is alſo uſed for a mark made in a book, or writing, where there occurs ſomething remarkable, and worthy of particular notice.

NOTE, is alſo uſed for an obſervation, or explication of ſome paſſage in an author, added in the margin, at the bottom of the page, or elſewhere, by an editor. See GLOSS.

In this ſenſe, *Note* ſtands contradiſtinguiſhed to text. See TEXT.

The *Notes* make the principal difference in the editions of claſſic, *&c.* authors.—We have Virgil, Horace, Terence, *&c.* with Ruæus's *Notes*, the Dauphin's *Notes*, Dacier's *Notes*, Bentley's *Notes*, Hare's *Notes*; with *Notis Variorum*, &c. See VARIORUM.

NOTE is alſo a minute, or ſhort writing, containing ſome article of buſineſs. See MINUTE.

In which ſenſe we ſay, a *Promiſſory Note*, a *Note under hand*, a *Bank Note*, &c. See BILL, BANK, *&c.*

To NOTE *a Bill*, is when a public Notary goes as a witneſs, or takes notice, that a merchant will not accept or pay it. See BILL, and PROTEST.

NOTE *of a Fine*, is a brief of a fine made by the chirographer, before it be ingroſſed. See FINE and CHIROGRAPHER.

NOTÆ *Maternæ*, *Mother's Spots.* See NÆVUS.

Natural NOTE. See the article NATURAL.

NOTHÆ *Coſtæ*, in anatomy, denote the five loweſt ribs on each ſide. They are called *baſtard*, or *ſpurious* ribs, in regard they do not join with the breaſt-bone, as the other ribs do, nor are they, as the others are, bony, but cartilaginous. See RIBS.

NOTHING, *Nihil*, *Nihilum*, or *Non Ens.* See NIHIL.

The ſchoolmen diſtinguiſh between *Nothing* taken *ſtrictly*, which is what is impoſſible, or implies a contradiction; and *Nothing* taken more *generally*, which is both applied to what is poſſible, and impoſſible. See POSSIBLE.

Again, they diſtinguiſh nothing into *negative*, which is the abſence of reality in any ſubject; and *privative*, which is the abſence of reality in a ſubject capable thereof, or wherein it ought to be found.

NOTHUS, Νόθος, a Latin term, properly ſignifying *baſtard*, or a perſon of ſpurious birth. See BASTARD.

Hence it is applied figuratively by phyſicians, *&c.* ~~to~~ ſuch diſeaſes as though, in reſpect of a ſimilitude of ſymptoms, *&c.* they have the ſame denomination as ſome others; yet are of different origin, ſeat, or the like, from the ſame. See PERIPNEUMONY, EMPYEMA, *&c.*

NOTHUS, is ſometimes alſo uſed for the back part of the cheſt, or thorax. See THORAX.

NOTION, NOTIO, in logic, an idea, or repreſentation of any thing, in the mind. See IDEA and PRENOTION.

M. Leibnitz is very accurate in the diſtinction of *Notions*, in the *Acta Erudit. Leipſ. Anno.* 1684.

A *clear Notion*, he defines to be ſuch a one as ſuffices us to recollect the object; *v. gr.* that a given figure is reckoned in the number of triangles.

An obſcure NOTION, is that which doth not ſuffice to recollect the object; ſuch, *v. gr.* is that of a plant, which upon ſeeing, you are in doubt whether or no it be the ſame you had ſeen elſewhere, and which is called by this or that name.

Diſtinct NOTION, is that wherein you are able to aſſign the very marks, or characters by which you recollect the thing; *v. gr.* That a circle is a figure terminated with a curve line returning into itſelf, the ſeveral points whereof are equally diſtant from one and the ſame intermediate point. See the article DISTINCT.

A confuſed NOTION, is that wherein you are not able to aſſign the very marks or characters whereby you recollect the object; though it be reſolvable into them. Such, *v. gr.* is the *Notion* of red colour.

An adequate NOTION, that wherein you have diſtinct *Notions* of the marks or characters whereof it is compoſed; ſuch, *v. gr.* is the *Notion* of a circle above inſtanced, where you have diſtinct *Notions* of the curve returning into itſelf, of the intermediate point, and of the equal diſtance and termination. See the article ADEQUATE.

An inadequate NOTION, that wherein you have only a confuſed *Notion* of characters that enter a diſtinct one.

Some confuſed *Notions* are admitted into mathematics; *viz.* ſuch whoſe reſolution is of no great conſequence to any demonſtrations.

Thus, Euclid does not reſolve the *Notion* of equality, though it enter the *Notion* of an equilateral triangle, a rhombus, *&c.* inaſmuch as the propoſitions for whoſe demonſtration it ſhould be uſed, are eaſily granted without ſuch a detail; as, *v. gr.* that things equal to the ſame third, are equal to one another, *&c.* But no *Notions* are admitted into the number of mathematical definitions, except diſtinct ones, and thoſe too as adequate as poſſible, or as occaſion requires. See DEFINITION.

The ſchoolmen diſtinguiſh *Notions* into *formal*, and *objective*; and each of theſe they ſubdivide into *firſt*, and *ſecond.*

A firſt formal NOTION, is the knowledge we have of any thing according to what it is, or has in itſelf; as the knowledge of fire, *quatenus* fire; of a light body, *quatenus* light, *&c.*

A firſt objective NOTION, is the thing itſelf known, according to what it is, or has in itſelf; as the fire known as fire, *&c.*

Second formal NOTION, is the knowledge of a thing according to what it receives from the underſtanding; as, of fire, that it is the ſubject, and not the predicate.

Second objective NOTION, is what agrees to the thing by means of the operation of the intellect, or what it receives from the intellect.

Common NOTIONS, called alſo *Prenotions*, προληψεις, and κοιναι εννοιαι, are certain principles ſuppoſed to be innate, and which therefore are ſelf-evident, *i. e.* appear, or are known by their own light, without the intervention of any medium, or proof; being impreſſed, as it were, by the finger of God; to ſerve as the foundations of all our concluſions in the ſciences, which are to be demonſtrated hereby. See *Innate* IDEA, KNOWLEDGE, *&c.*

Theſe *common Notions*, conſidered as the foundations of ſciences, are called *Axioms.* See AXIOM.

They are called *common*, not as if ſo actually and neceſſarily perceived by every perſon, that no body could be ignorant of, or deny them; but becauſe they are judged to be true, and certain by all perſons of ſound reaſon. For the ſame reaſon as we ſay, ſuch a food is wholeſom; not that it is ſo to all men, but to all that are of a ſound body, and conſtitution. Ariſtot. *Topic.* c. 4.

There are two kinds of *common Notions*, viz. *Theoretical*, which lay the ground-work for ſpeculation; ſuch are, every thing either is, or is not; nothing can be made by itſelf; the whole is greater than a part; equal things being added to equal, the ſums are equal: And *practical*, which lay the foundation for honeſty, and good morals; ſuch are, God is to be beloved and worſhipped; our parents to be honoured; to give every body their due; to do as we would be done by.——

Some philoſophers, however, and thoſe of beſt note, deny the reality of any innate, or *common Notions*; urging, that the mind does not need any actual *Notions* to prepare it to think, but that an innate faculty of thinking may ſuffice; as appears in an infant, from its perception of pain, taſte, colour, *&c.* They add, that the common organs of ſenſe, if they have but objects preſented to them, and the faculty we have of reflecting on, and variouſly combining or ordering the ideas received thereby, are ſufficient to furniſh us with all the ſtock of knowledge we have. See KNOWLEDGE.

NOTIONAL *Quantity.* See the article QUANTITY.

NOTITIA, NOTICE, ſomething that has come under a perſon's knowledge, or obſervation. See KNOWLEDGE.

Hence *Notification*, the action of giving notice, *&c.*

NOTITIA is alſo the title of certain books, compoſed for giving a particular knowledge of the places, roads, *&c.* of a province, kingdom, dioceſe, or the like.

Such is the *Notitia Imperii*, &c. M. Valois has given a *Notitia Galliarum*, being a collection of the ſeveral names which the cities and provinces of that kingdom have bore at different times.

The *Notitiæ Dignitatum Imperii*, both Eaſtern and Weſtern, are of the utmoſt uſe both in the Roman, and in eccleſiaſtical hiſtory; yet are they of little ſervice, at leaſt to young people, without good notes; ſuch are thoſe of Pancirollus, *&c.* And unleſs the text, which is ſtrangely corrupted and mutilated, be ſupplied.

NOTORIOUS, ſomething known, manifeſt, and public. —Hence,

Ars NOTORIA, a chimerical kind of art, or ſcience, whereby it is pretended a perſon may arrive at the knowledge of all things, all ſciences, *&c.* And this by infuſion, without any labour, or trouble, beſide that of performing a few ceremonies.

NOTRE *Dame*, *Our Lady*, a term frequently uſed for the Holy Virgin.—Hence, feaſts of *Notre Dame*; the office of *Notre Dame*; congregations, nunneries, orders of *Notre Dame.* See VIRGIN.

NOVALE,* in our ancient cuſtoms, denotes land newly ploughed, and converted into tillage; and which had not been tilled within the memory of man, before.

* *Quod* Novale *ſemel fuit, ſemper erit* Novale *quoad decimarum retentionem vel ſolutionem.* What was once, *Novale*, will ever remain ſo, as to the paying, or non-paying of tithes. *Excepta decima* Novalium *cujuſdam terræ quam de novo excoluerunt.* Pat. 6 Edward III.

NOVALE is ſometimes alſo uſed for fallow land, *i. e.* land which has been ploughed for two years, and reſts, or lies fallow one more; or that lies fallow every other year. See FALLOW.

NOVATIANS,* NOVATIANI, a ſect of ancient heretics, ſo called from *Novatus*, an African biſhop; or from *Novatianus*, a prieſt of Rome.

* They were called alſo *Cathari*, from καθαρος, pure, *q. d.* Puritans.

Novatian firſt ſeparated from the communion of pope Cornelius, on pretence of his being too eaſy in admitting to repentance thoſe who had fallen off in times of perſecution.

Novatus, coming to Rome, joined himſelf to the faction of *Novatian:* and both maintained, that there was no other admiſſion into the church but by the repentance in baptiſm; grounding their opinion on that of St. Paul: It is impoſſible for thoſe once enlightened, and who have taſted the heavenly gift.—If they fall away, to renew themſelves by repentance.

Not that they denied but a perſon fallen into any ſin, how grievous ſoever, might obtain pardon by repentance; for they themſelves recommended repentance in the ſtrongeſt terms. But their doctrine was, that the church had it not in its power to receive ſinners into its communion; as having no way of remitting ſins but by baptiſm, which, once received, could not be repeated. See BAPTISM.

In proceſs of time the *Novatians* ſoftened and moderated the rigour of their maſter's doctrine; and only refuſed abſolution to very great ſinners. See ABSOLUTION.

The two leaders were proſcribed, and declared heretics, not for excluding penitents from communion, but for denying that the church had a power of remitting ſins.

NOVATION, *Innovation*, in the civil law, a change, or alteration of an obligation, whereby it becomes extinguiſhed, or annihilated.

Thus when an obligation is diſcharged without receiving any money; but a ſimple promiſe is accepted in its ſtead; this occaſions a *Novation.*

There are two kinds of *Novations*; the one *voluntary*, the other *neceſſary* and conſtrained.

Neceſſary NOVATION is that made in conſequence of a ſentence, or decree of juſtice.

Voluntary NOVATION is made three ways, *viz.* by changing the cauſe of the obligation without the intervention of any other perſon; by changing the nature of the obligation, and by delegation, as when the debtor makes over a debt to the creditor for his ſatisfaction.

In all theſe caſes there is a will to innovate: Accordingly Juſtinian ſays, *Voluntate non lege novandum.*

NOVEL, NOVELLA, in juriſprudence, a term uſed for the conſtitutions of ſeveral emperors, *viz.* Juſtin, Tiberius II. Leo, and particularly Juſtinian. See CONSTITUTION and LAW.

Moſt of Juſtinian's *Novels* were originally Greek; and afterwards tranſlated into Latin. Their number is 165, comprized in nine collections, or chapters. See CIVIL *Law.*

They had their name *Novel*, either from their making a great alteration in the face of the ancient law; or, as Cujas rather thinks, becauſe made on new caſes, not yet conſidered, and after the reviſal of the code, compiled by order of the emperor. See CODE.

Wherever Accurſius ſpeaks of *Novels*, he means thoſe publiſhed in Greek by Juſtinian; the Latin verſion of them made in the time of Bulgarus, he calls *Authentics*, by reaſon of its exactneſs and fidelity. See AUTHENTIC.

NOVEL *Aſſignment*, in an action of treſpaſs, is an aſſignment of time, place, or the like, in a declaration, otherwiſe or more particularly than it was in the writ.

NOVEL *Diſſeiſin.* See ASSISE *of Novel Diſſeiſin.*

NOVEMBER, the eleventh month in the Julian year; but the ninth in the year of Romulus; whence its name. See MONTH, and YEAR.

NOVEMSILES, in mythology, a ſpecies of gods worſhipped among the ancient Romans. See GOD.

The *Dii Novemſiles*, were the gods of the Sabins, adopted by Romulus, and a temple built to them in conſequence of a vow by king Tatius.

Some antiquaries take the name to have been given to thoſe which were laſt placed among the number of the gods; as Hercules, Veſta, Sanctity, Fortune, *&c.*

NOVEMVIRI, an order of magiſtrates at Athens, nine in number.

The *Novemviri* were the chief magiſtrates of the city: their office only held for one year. Their chief was called *Archon*, whoſe name was recorded in the Athenian feaſts; as, at Rome, that of the conſuls. See ARCHON.

The ſecond bore the title of *Baſileus*, the third *Polemarcha*, *i. e.* chief of the troops, and the remaining ſix, *Theſmothetes.*

NOVENDIALE,* or NOVEMDIALE, in antiquity, a ſolemn ſacrifice among the Romans, held on occaſion of any prodigies appearing to menace them with ill fortune. See SACRIFICE.

* It had its name from the term of its celebration, *viz.* *Novem dies*, nine days.

NOVICE, a perſon not yet ſkilled, or experienced in an art, or profeſſion. See APPRENTICE, TYROCINIUM, *&c.*

In the ancient Roman militia, *Novicii*, or *Novitii*, were the young raw ſoldiers, diſtinguiſhed by this appellation from the veterans. See VETERAN.

In the ancient orders of knighthood, there were *Novices*, or clerks in arms, who went through a kind of apprenticeſhip ere they were admitted knights. See KNIGHT.

NOVICE is more particularly uſed in monaſteries for a religious yet in his, or her, year of probation, and who has not made the vows. See NOVICIATE.

In ſome convents the ſub-prior has the direction of the *Novices.*—In nunneries, the *Novices* wear a white veil; the reſt a black one. See VEIL.

A *Novice* is not eſteemed dead in law, but is capable of inheriting till the time of actual profeſſion; nor can his benefices be given away, during the year of probation, without his conſent. See PROFESSION.

The council of Trent prohibits a *Novice* from aſſigning over his benefices, till two months before the expiration of his year of probation; and he may even reſume them if the profeſſion be null.

A *Novice* is not allowed to make any donation to his ſuperior, by reaſon of the dependance he is under.—*Novices* may either quit the convent during their *Noviciate*, or may be turned off by the convent.

NOVICIATE, a year of probation, appointed for the trial of religious, whether or no they have a vocation, and the neceſſary qualities for living up to the rule; the obſervation whereof they are to bind themſelves to by vow. See PROBATION.

The *Noviciate* laſts a year at leaſt; in ſome houſes more. It is eſteemed the bed of the civil death of a *Novice*, who expires to the world by profeſſion. See VOW and PROFESSION.

NOVICIATE is alſo uſed for the houſes, or places where *Novices* are inſtructed.

In this ſenſe, the *Noviciate* is frequently a cloiſter ſeparate from the grand dormitory.

NOUN, NOMEN, in grammar, a name or word which expreſſes the ſubject ſpoke of; or expreſſes a ſubject whereof ſomething is, or may be, affirmed: as man, food, whiteneſs, Henry, *&c.* See WORD and NAME.

A *Noun* therefore, in language, anſwers to an idea in logic. See IDEA.

The generality of ſubjects ſpoke-of, have particular names; yet there are others, which, without being attached to the ſame particular ſubject, are yet real *Nouns*.

Thus, beſide the particular name, which each perſon bears, and whereby others denote him, he gives himſelf another when he ſpeaks of himſelf; as, *I*, or *my ſelf*.

It is only the more particular names that in grammar have retained the quality of *Nouns*; the more general ones are called *Pronouns*. See PRONOUN.

Nouns, again, are to be viewed in another light, *viz.* as divided into *Nouns ſubſtantive*, and *Nouns adjective*.

They are called *ſubſtantives*, when the objects they deſign are conſidered ſimply in themſelves, and without any regard to their qualities. See SUBSTANTIVE.

They are called *adjectives*, when their objects are conſidered as clothed with any qualities. See ADJECTIVE.

Thus, when I ſay ſimply, *the heart*, the word *heart* is called a *Noun ſubſtantive*, inaſmuch as it does not expreſs any of its qualities: But if I ſay, the *generous heart*, or the *perfidious heart*, I then conſider the heart as accompanied with the quality of *generous*, or the quality *perfidious*. For this reaſon, the words *generous* and *perfidious* are called *Nouns adjective*, becauſe they add a quality to the object.

But, in effect, the object is alone deſigned by the *Nouns* ſubſtantive; which, in this view, are alone the proper *Nouns*.

Adjectives, at bottom, are only modificatives of *Nouns*; though in one view they may be conſidered as *Nouns*; *viz.* as they do not ſo much repreſent a quality or circumſtance of the object, as the object itſelf, clothed with that quality or circumſtance. Nor muſt it be omitted, that a *Noun* adjective frequently becomes a ſubſtantive: For as its nature is to expreſs the quality of an object, if that quality happen to be the object itſelf ſpoke of, then, according to our firſt definition, it becomes a ſubſtantive.

Thus, if I ſay a *good intention*, the word *good* is here an adjective, repreſenting the intention as clothed with the quality of goodneſs; but if I ſay, *the good is to be choſen*, it is evident that *good* is here the ſubject ſpoke of, and of conſequence is a *Noun* ſubſtantive. Nor are there caſes wanting wherein *Nouns* ſubſtantives become adjectives.

It is true, in the common uſe of grammar, *Nouns* that are really adjectives are not reckoned as ſuch; none being eſteemed adjectives but thoſe which without any, or at leaſt any conſiderable, change in their inflexion and termination, are joined indifferently to *Nouns* ſubſtantives of different genders.

Nouns are again divided into *proper* and *appellative*.

Nouns Proper, are thoſe which expreſs a particular thing or perſon, ſo as to diſtinguiſh it from all other things of the ſame kind; as, Socrates. See PROPER.

Nouns Appellative, are thoſe common to ſeveral individuals of the ſame kind; as, man, angel, *&c.* See APPELLATIVE.

Heterogeneous NOUNS, are ſuch as are of one gender in the ſingular number, and of another in the plural. See HETEROCLITE.

NOURISHING *Clyſters*. See the article CLYSTER.

NOURISHMENT. See the article NUTRITION.

NOWED, NOWE', *i. e. Knotted*, in heraldry, is applied to the tails of ſuch creatures as are very long, and ſometimes repreſented in coat-armour as if tied up in a knot.

NUBECULA, *little Cloud*, in medicine, a term ſometimes uſed for a diſeaſe in the eye, wherein objects appear as through a cloud, or miſt.

The *Nubecula* ſeems to ariſe from certain groſs particles detained in the pores of the cornea, or ſwimming in the aqueous humour, and thus intercepting the rays of light.

NUBECULA, or NUBES, is alſo uſed for what we otherwiſe call *Albugo* and *Pannus*. See ALBUGO and PANNUS.

NUBECULA is alſo uſed for a matter in form of a cloud, ſuſpended in the middle of the urine.—This they ſometimes alſo call *Enæorema*. See URINE.

NUBILES *Anni*. See the article ANNI.

NUCHA, the hinder part, or nape of the neck; called alſo *Cervix*. See CERVIX and NECK.

NUCIFEROUS, an appellation given by botaniſts to trees which bear nuts. See TREE and NUT.

NUCKIANÆ * *Glandulæ*, in anatomy, a number of ſmall glands, ſituate in that part of the ſkull wherein the orbits of the eyes are, between the abducent muſcle of the eye, and the upper part of the os jugale. See GLAND and CRANIUM.

* They were thus denominated from their inventor, Ant. *Nuck*, profeſſor of phyſic at Leyden.

The ſame author gave his name to a ſalival duct, *Ductus Nuckianus*. See SALIVAL and AQUOSE.

NUCLEUS, a Latin word, literally denoting the kernel of a nut, or ſtone fruit; or, more ſtrictly the edible part contained within the skin of the kernel. See FRUIT.

NUCLEUS is alſo uſed by botaniſts, in a larger ſenſe, for any fruit or ſeed contained within a husk, or ſhell.

NUCLEUS is alſo uſed by Hevelius, and ſome other aſtronomers, for the body of a comet, which others call its *head*, in contradiſtinction to its tail, or beard. See COMET.

NUCLEUS is alſo applied by ſome to the central parts of the earth, and other planets; as ſuppoſing them to be looſe from the exterior part, which they conſider as a cortex, or ſhell. See MAGNETISM, EARTH, *&c.*

NUCLEUS, in architecture, denotes the middle part of the flooring of the ancients; conſiſting of a ſtrong cement, over which they laid the pavement, bound with mortar.

NUDE *Compact*, NUDUM *Pactum*, a bare contract, engagement, or promiſe of a thing without any conſideration: *Ex quo*, ſay the lawyers, *non oritur actio*. See CONTRACT, COVENANT, and PACT.

NUDE *Matter*, denotes a bare allegation of a thing done. See MATTER.

NUDITIES, in painting, and ſculpture, denote thoſe parts of a human figure not covered with any drapery; or thoſe parts where the carnations appear. See CARNATION.

NUEL, or rather *Newel* of a ſtair-caſe. See NEWEL and STAIR-*Caſe*.

NULLITY, the quality of a thing null, that is void, and of no effect, by reaſon of ſomething contrary to law, cuſtom, or form. See ANNULLING.

There are two kinds of *Nullities* to invalidate a contract, or other inſtrument, *viz.* *de facto*, and *de jure*.—The former where the thing commences *Null*, *ipſo facto*, as ſoon as the thing is proved: In the latter, the act does not immediately become *Null*, but a handle is given thereby to have it intirely annulled or ſet aſide. See DE FACTO, *&c.*

NUMBER, in arithmetic, a collection, or aſſemblage of ſeveral units, or ſeveral things of the ſame kind. See UNIT.

Stevinus chuſes to define *Number* as that whereby the quantity of any thing is expreſſed: Agreeably to which, Sir Iſaac Newton conceives *Number* to conſiſt, not in a multitude of units, as Euclid defines it, but in the abſtract ratio of a quantity of any kind to another quantity of the ſame kind which is accounted as unity. And on this view he divides *Number* into three kinds, *viz.* *Integers*, *Fractions*, and *Surds*. See each under its proper article, INTEGER, FRACTION, and SURD.

Wolfius defines *Number* to be ſomething which refers to unity, as one right line refers to another.—Thus, aſſuming a right line for unity, a *Number* may likewiſe be expreſſed by a right line.

A leſs general definition of *Number*, that author thinks will not comprehend the ſeveral kinds of whole *Numbers*, fractions, rationals, and ſurds.

The ſchoolmen, keeping to Euclid's definition, hold *Number* to conſiſt of *matter* and *form*: The *matter* is the things numbered; *e. gr.* coins: The *form*, the idea whereby comparing the ſeveral pieces, we bring them into one ſum, as ten: So that *Number* depends altogether on the mind of the perſon that numbers; whence changing the idea at pleaſure, an hundred men ſhall only be called one, or it ſhall be two, or four, *&c.*

Hence, ſay they, the form of a *Number* is not any thing added to the things numbered; for the idea is a mere mode of the mind, not any thing ſuperadded to the things. And hence, though there may be ſome efficacy in *Number*, conſidered with reſpect to the matter, as when we ſay, A triple rope is not eaſily broke; yet there is none in reſpect to form: For what alteration ſhould my idea make? And hence the folly of the philoſophy of *Numbers*.

The ſame philoſophers call *Number a diſcrete Quantity: Quantity*, as it admits of more and leſs; and *diſcrete*, ſince the ſeveral unites it conſiſts of are not united, but remain diſtinct. See QUANTITY and DISCRETE.

For the manner of deſigning, or characteriſing NUMBERS. See NOTATION.

For that of expreſſing or reading thoſe already characterized. See NUMERATION.

For the meaſure of a NUMBER. See the article MEASURE.

Mathematicians, conſidering *Number* under a great many circumſtances, different relations, and accidents, make many kinds of *Numbers*.

A determinate NUMBER, is that referred to ſome given unit; as a ternary, or three: which is what we properly call a *Number*.

Indeterminate NUMBER, is that referred to unity in the general; which is what we call *quantity*. See QUANTITY.

Homogeneal NUMBERS, are thoſe referred to the ſame unit. See HOMOGENEAL.

Heterogeneal NUMBERS, thoſe referred to different units.

For every *Number* ſuppoſes ſome determinate unit, which is determined by the notion to which we have regard in numbering. *e. gr.* it is a diſtinguiſhing property of a ſphere, that the ſeveral points of its ſurface are equidiſtant from its centre: If then, this be laid down as a note of unity, all bodies to which it agrees will have the nature of unity; and are the ſame units, *quatenus* contained under this notion. But if ſpheres be diſtinguiſhed, *e. gr.* with regard to the matter they are compoſed of, then thoſe which before were the ſame units, commence different. Thus, ſix golden ſpheres and three golden ſpheres are *homogeneal Numbers* among themſelves; and three braſs ſpheres and four ſilver ones are *heterogeneous Numbers*. See HETEROGENEOUS.

Whole NUMBERS, called alſo *natural Numbers*, and *integers*, or ſimply *Numbers*, are all the various aſſemblages of unity, or the ideas we have of ſeveral multitudes; or, according to Wolfius, all thoſe which, in the manner of expreſſing, refer to unity, as a whole does to a part.

Broken NUMBERS, or *Fractions*, are thoſe conſiſting of ſeveral parts of unity; or thoſe which refer to unity as a part to the whole. See FRACTION.

Rational NUMBER, is that commenſurable with unity. See COMMENSURABLE.—*Rational whole Number*, is that whereof unity is an aliquot part.—*Rational broken Number*, that equal to ſome aliquot part or parts of unity.—*Rational mixed Number*, that conſiſting of a whole *Number* and a broken one, or of unity and a fraction. See RATIONAL.

Irrational NUMBER, or *Surd*, a *Number* incommenſurable with unity. See SURD.

Even NUMBER, that which may be divided into two equal parts, without remainder or fraction; as 4, 6, 8, 10, *&c.* The ſum, as alſo the difference, and the factum or produce of any number of even *Numbers*, is always an even *Number*. See EVEN.

An *even Number*, multiplied by an *even Number*, produces an *evenly even Number*.

An *even Number* is ſaid to be *evenly even*, when it may be meaſured or divided without any remainder by another *even Number*. See EVENLY.

Thus, twice four being eight, eight is an *evenly even Number*.

A *Number* is ſaid to be *unevenly even*, when it may be equally divided by an *uneven Number*; as 20, which may be divided by 5.

Uneven NUMBER, that which exceeds an *even Number* at leaſt by unity; or which cannot be divided into two equal parts. Such are 3, 5, 9, 11, *&c.*

The ſum, or the difference, of two *uneven Numbers*, makes an *even Number*; but the factum of two makes an *uneven* one.

If an *even Number* be added to an *uneven* one, or if the one be ſubſtracted from the other; in the former caſe, the ſum, in the latter the difference, is an *uneven Number*. But the factum of an *even* and *uneven Number*, is even.

The ſum of any even *Number* of *uneven Numbers*, is an even *Number*; and the ſum of any *uneven Number* of *uneven Numbers*, is an *uneven Number*.

Primitive or *prime* NUMBER, is that which is only diviſible by unity; as 5, 7, 11, *&c.* See PRIME and INCOMPOSITE.

Prime NUMBERS *among themſelves*, are thoſe which have no common meaſure beſide unity; as 12 and 19.

Compound NUMBER, is that diviſible by ſome other *Number* beſides unity; as 8, diviſible by 4, and by 2. See COMPOUND.

Compound NUMBERS *among themſelves*, thoſe which have ſome common meaſure beſides unity; as 12 and 15.

Perfect NUMBER, that whoſe aliquot parts added together, make the whole *Number*; as 6, 28, *&c.* The aliquot parts of 6, being 3, 2, and 1=6. And thoſe of 28, being 14, 7, 4, 2, 1. which together make 28. See PERFECT.

Imperfect NUMBERS, thoſe whoſe aliquot parts added together make either more or leſs than the whole, whereof they are parts. See IMPERFECT.

Imperfect Numbers, are diſtinguiſhed into *abundant* and *defective*.

Abundant NUMBERS, are thoſe whoſe aliquot parts added together, make more than the *Number* whereof they are parts; as 12, whoſe aliquot parts, 6, 4, 3, 2, 1, make 16. See ABUNDANT.

Defective NUMBERS, are thoſe whoſe aliquot parts added together, make leſs than the *Number* whoſe parts they are; as 16, whoſe aliquot parts, 8, 4, 2, and 1, only make 15.

Plain NUMBER, that ariſing from the multiplication of two *Numbers*; *e. gr.* 6. which is the product of 3 multiplied by 2. The *Numbers*, which thus multiplied produce a *plain Number*, as here, 2 and 6, are called the *ſides* of the plane. See PLAIN.

Square NUMBER, the product of any *Number* multiplied by itſelf; thus 4, the factum of 2, by 2, is a *ſquare Number*. See SQUARE.

Every *ſquare Number* added to its root, makes an even *Number*. See ROOT and POWER.

Cubic NUMBER, the product of a ſquare *Number*, multiplied by its root; *e. gr.* 8, the product of the ſquare *Number* 4, multiplied by its root 2. See CUBE and SOLID.

All *cubic Numbers*, whoſe root is leſs than 6, *v. gr.* 8, 27, 64, 125, being divided by 6, the remainder is their root itſelf. Thus 8 being divided by 6, 2, the remainder of the diviſion, is the cube root of 8. For the *cubic Numbers* beyond 125; 216, the cube of 6, divided by 6, leaves no remainder; 346, the cube of 7, leaves a remainder 1, which added to 6, gives the cube root of 343. And 512, the cube of 8, divided by 6, leaves 2, which added to 6, makes the cube root of 512. So that the remainders of the diviſions of the cubes above 216, divided by 6, being added to 6, always give the root of the *cubic Number* divided; till that remainder be 5, and of conſequence 11 the cube root of the *Number* divided: But the *cubic Number* above this, being divided by 6, there remains nothing, the cube root being 12. Thus, if you continue to divide the higher cubes by 6, you muſt not add the remainder of the diviſion to 6, but to 12, the firſt multiple of 6; and thus coming to the cube of 18, the remainder of the diviſion muſt not be added to 6, nor to 12, but to 18: and ſo *in infinitum*.

Monſ. de la Hire, from conſidering this property of the *Number* 6, with regard to *cubic Numbers*, found that all other *Numbers* raiſed to any power whatſoever, had each their diviſor, which had the ſame effect with regard to them, that 6 has with regard to cubes. And the general rule he has diſcovered, is this: If the exponent of the power of a *Number* be even, *i. e.* if that power be raiſed to the 2d, 4th, 6th, *&c.* power, it muſt be divided by 2; and the remainder, if there be any, added to 2, or to a multiple of 2, gives the root of the *Number* correſponding to its power, *i. e.* the 2d or 6th root, *&c.* But if the exponent of the power of the *Number* be uneven, *i. e.* if it be raiſed to the 3d, 5th, 7th, *&c.* power, the duple of that exponent will be the diviſor, which ſhall have the property here required.

Polygonous NUMBERS, the ſums of arithmetical progreſſions beginning with unity. Theſe, where the common difference of terms is 1, are called *triangular Numbers*. See TRIANGULAR. where 2, *ſquare Numbers*; where 3, *pentagonal Numbers*; where 4, *hexagonal Numbers*; where 5, *heptagonal*. See HEPTAGONAL and POLYGONAL, *&c.*

Pyramidal NUMBERS. The ſums of polygonous *Numbers*, collected after the ſame manner as the polygons themſelves are gathered out of arithmetical progreſſions, are called *firſt pyramidal Numbers*.

The ſums of the firſt pyramidals, are called *ſecond pyramidals*. The ſums of the ſecond pyramidals, are called *third pyramidals*, &c.

In particular, they are called *triangular pyramidal Numbers*, if they ariſe out of *triangular Numbers*. *Firſt pentagonal pyramidals*, if they ariſe out of *pentagons*, &c. See PYRAMID and PYRAMIDAL.

Cardinal NUMBERS, thoſe which expreſs the quantity of units; as 1, 2, *&c.* See CARDINAL.

Ordinal NUMBERS, thoſe which expreſs their order or rank; as 1ſt, 2d, 3d, *&c.* See ORDINAL.

Abſolute NUMBER. See the article ABSOLUTE.

Abſtract NUMBERS. See the article ABSTRACT.

Amiable NUMBERS. See the article AMIABLE.

Artificial NUMBERS. See the article ARTIFICIAL.

Binary NUMBER. See the article BINARY.

Circular NUMBERS. See the article CIRCULAR.

Concrete NUMBERS. See the article CONCRETE.

Linear NUMBERS. See the article LINEAR.

Mixt NUMBER. See the article MIXT.

Similar NUMBERS. See the article SIMILAR.

Golden NUMBER, in chronology. See GOLDEN *Number*.

M. Caſſini defines the *Golden Number* by the number of years elapſed ſince that which had the new moon on its firſt day; as that of the year 1500, whoſe *Golden Number* was 0; which he takes for his epocha.

Golden NUMBER is alſo uſed with ſomewhat leſs propriety, for a period of 19 years, invented by Meton the Athenian; at the end whereof, the ſame lunations return in the ſame days, though not preciſely in the ſame hour and minute of the day. See PERIOD and LUNATION.

In which ſenſe, *Golden Number* amounts to the ſame with what we otherwiſe call *lunar cycle*, or *metonic year*. See CYCLE and METONIC.

Hence this period, called by the Greeks *Enneadecaeteris*, is not perfectly juſt; there being a proemptoſis, or leap, at the end of each 312 years, *i. e.* in that time, the lunations fall out a day ſooner than the *Golden Number* expreſſes them. See PROEMPTOSIS.

This, among other things, was what engaged pope Gregory XIII. to reform the calendar, to throw out the *Golden Number*, and ſubſtitute the cycle of epacts inſtead of it. For the uſe of the *Golden Number*, which, in the Julian calendar, ſerves to find the new moons, only ſerves in the Gregorian to find the cycle of epacts. See EPACT, CYCLE, and CALENDAR.

This *Number* is ſaid to have had its name, *Golden*, from the greatneſs of its uſe; or becauſe the Athenians received it with ſo much applauſe, that they had it wrote in the publick market in letters of gold. See GOLDEN.

NUMBER, in grammar, is a modification of nouns, verbs, *&c.* to accommodate them to the varieties in their objects, conſidered with regard to number. See NOUN, *&c.*

Nouns or names agreeing to ſeveral things, may be conſidered either as applied to one of thoſe things ſingularly, or to a *Number* of them; and thoſe either conſidered as ſeveral, or as united.—To diſtinguiſh theſe caſes, two *Numbers* have been invented, the *ſingular* and *plural*.

When a noun indicates an object conſidered as ſingle, or alone, or a number of them conſidered as united together, it is ſaid to be of the *ſingular Number:* as, a tree, a troop, a temple. See SINGULAR.

When it indicates ſeveral objects, and thoſe as diſtinct, it is of the *plural Number:* as, trees, or temples.—Thus when I ſpeak of myſelf, as making part of ſeveral others, inſtead of I, I ſay, we, *&c.* See PLURAL.

The Greeks have a third *Number*, which they call the *dual Number*, as ſignifying two.—The Hebrews have ſomething like it; but then it only takes place when the words ſignify a thing double either by nature, as the hands, the eyes, *&c.* or by art, as ſciſſars, tongs, *&c.*

As to common and appellative names, they ſeem all naturally to require a *plural Number*; yet are there ſeveral which have none, as the names of gold, ſteel, *&c.*

The difference of *Numbers* in nouns is expreſſed by a difference of termination, or ending.

In Engliſh, the *ſingular* is uſually converted into *plural*, by adding s; as tree, trees, hand, hands, *&c.* Where the pronunciation requires it, as when the *ſingular* ends in s, or x, ſh, or ch, it is uſually done by the addition of *es* inſtead of s.

The *plurals* of adjectives, though varied from the *ſingulars* in moſt other languages; yet in Engliſh are generally the ſame. See VERB.

NUMBERS, in poetry, oratory, muſick, *&c.* are certain meaſures, proportions, or cadences, which render a verſe, period, or ſong, agreeable to the ear. See VERSE, MEASURE, CADENCE, *&c.*

Poetical and *proſaic Numbers*, are ſomewhat different.

Poetical NUMBERS conſiſt in a certain harmony, in the order, quantities, *&c.* of the feet and ſyllables; which make the piece muſical to the ear, and fit for ſinging; for which all the verſes of the ancients were intended. See RHYTHM.

It is of theſe *Numbers* Virgil ſpeaks in his fourth eclogue.

———*Numeros memini ſi verba tenerem.*

And again, in the ſixth eclogue:

Tum vero in Numerum faunoſque feraſque videres
Ludere———

The *Numbers* are what conſtitute the air and character of a verſe; and denominate it *ſmooth*, or *ſoft*, or *low*, or *rough*, or *ſonorous*. The following lines of Milton furniſh an inſtance of ſoft eaſy *Numbers*.

Then feed on thoughts, which voluntary move
Harmonious Numbers; *as the tuneful bird*
Sings darkling, and in ſhadieſt covert hid,
Tunes her nocturnal note:

How different from the *Numbers* of theſe:

Arms meet with arms, faucheons with faucheons claſh,
And ſparks of fire, ſtruck out from armour, flaſh.

Rhetorical, or *proſaic* NUMBERS, are a ſort of ſimple unaffected harmony, leſs glaring than that of verſe; yet ſuch as is perceived, and affects the mind with pleaſure.

The *Numbers* are that by which the ſtyle is ſaid to be eaſy, free, round, flowing, *&c.* See STYLE.

A fine inſtance of *Numbers* we have in that paſſage of Tully for Marcellus: *Nulla eſt tanta vis, tantaque copia quæ non ferro ac viribus debilitari frangique poſſit.* All the beauty of which would be intirely loſt to any tolerable ear, if the *Numbers* were a little inverted, thus: *Nulla eſt vis tanta, & copia tanta quæ non poſſit debilitari frangique viribus & ferro.*

Numbers are a thing abſolutely neceſſary in all writing, and even all ſpeech. Hence Ariſtotle, Tully, Quintilian, *&c.* lay down abundance of rules as to the beſt manner of intermixing dactyls, ſpondees, anapeſts, iambus's, choraic and dichoraic moloſſus's, *&c.* in order to have the *Numbers* perfect.

The ſubſtance of what they have ſaid, is reducible to what follows. 1. The ſtyle becomes numerous, by the alternate diſpoſition and temperature of long and ſhort ſyllables; ſo, as that the multitude of ſhort ones neither render it too haſty, nor that of long ones too ſlow and languid.—Thus, Tully to Cæſar: *Domuiſti gentes immanitate barbaras, multitudine innumerabiles, locis infinitas, omni copiarum genere abundantes*, &c.

Sometimes, indeed, long or ſhort ſyllables are deſignedly thrown together, without any ſuch mixture; to paint the celerity or ſlowneſs of a thing by that of the *Numbers*; as,

Quadrupedante putrem ſonitu quatit ungula campum.
Æneid. l. 8.

Luctantes ventos, tempeſtateſque ſonoras.
Id. l. 1.

2. The ſtyle becomes numerous by the intermixing words of one, two, and more ſyllables; *e. gr. Vivis & vivis non ad deponendam ſed ad confirmandam audaciam.* Whereas the too frequent repetition of monoſyllables renders the ſtyle pitiful, and grating: *e. gr. Hac in re nos hic non feret.*

3. It contributes greatly to the numerouſneſs of a period, to have it cloſed by magnificent and well ſounding words; as, *Qui locus quietis ac tranquillitatis pleniſſimus fore videbatur, in eo maximæ moleſtiarum, & turbulentiſſimæ tempeſtates extiterunt.*

4. The *Numbers* depend not only on the nobleneſs of the words in the cloſe, but of thoſe in the whole tenor of the period: as in that fine oration of Cicero for Fonteius, brother of one of the veſtal maids. *Nolite pati, judices, aras deorum immortalium, veſtæque matris, quotidianis virginum lamentationibus de veſtro judicio commoveri.*

5. To have the period flow eaſily and equably, the harſh concurrence of letters and words is to be ſtudiouſly avoided, particularly the frequent meeting of rough conſonants; as *ars ſtudiorum, rex Xerxes:* The beginning the firſt ſyllable of a word with the laſt of the preceding; as, *Res mihi inviſæ ſunt:* The frequent repetition of the ſame letter or ſyllable; as in that verſe of Ennius, *Africa terribili tremit horrida terra tumultu:* And the frequent uſe of like-ending words; as *amatrices, adjutrices, præſtigiatrices fuerunt.*

Laſtly, The utmoſt care is to be taken, leſt in aiming at *oratorial Numbers*, you fall into *poetical* ones; and inſtead of proſe, write verſe; which even Cicero himſelf is ſometimes guilty of: witneſs, *Cum loquitur tanti fletus gemituſque fiebant.* See VERSE.

NUMERAL *Letters*, thoſe letters of the alphabet, which are generally uſed for figures; as I, V, X, L, C, D, M. See LETTER.

NUMERAL *Characters.* See the article CHARACTER.

NUMERALS, in grammar, are thoſe words which expreſs *Numbers*; as ſix, eight, ten, *&c.* See ORDINALS.

NUMERATION, in arithmetic, the art of eſtimating or pronouncing any *Number*, or ſeries of *Numbers.* See NUMBER.

The characters whereby numbers are ordinarily expreſſed, are the nine following ones, *viz.* 1, 2, 3, 4, 5, 6, 7, 8, 9. It being the law of the common *Numeration*, that when you are arrived at ten, you begin again, and repeat as before; only expreſſing the number of tens.

Weigelius, indeed, ſhews how to number without going beyond a quaternary, *i. e.* by beginning to repeat at each fourth. And Leibnitz, in what he calls his *binary arithmetic*, begins to repeat at every ſecond; only uſing two characters, 1 and 0. But theſe are rather matters of curioſity than uſe. See BINARY *Arithmetic.*

That the nine numerical notes may expreſs not only units, but alſo tens or decads, hundreds or centuries, thouſands, *&c.* they have a local value given them; ſo, as that when either alone, or when placed in the right-hand place, they denote units; in the ſecond place, tens; in the third, hundreds: in the fourth, thouſands. See NOTATION.

Now, To expreſs any written number, or aſſign the proper value to each character; divide the propoſed number by comma's into claſſes, allowing three characters in each claſs; beginning at the right-hand. Over the right-hand figure of the third claſs, add a ſmall mark or tranſverſe line; over the right-hand figure of the fifth claſs, add two marks or tranſverſe lines; over that of the ſeventh, three, &c. The number to the left of the firſt comma, expreſs by thouſands; that which has over it the firſt tranſverſe line, expreſs by millions; that with two, by billions; that with three, by trillions, &c. Laſtly, the left-hand character of each claſs, expreſs by hundreds; the middle one by tens; and the right-hand one, by units. Thus will the *Numeration* be effected.

E. gr. The following numbers, $2'''$, 125, $473''$, 613, $578'$, 432, 597. is thus expreſſed or read: Two trillions, one hundred twenty-five millions of billions, four hundred ſeventy three billions, ſix hundred thirteen thouſands of millions, and five hundred ſeventy eight millions, four hundred and thirty two thouſand, five hundred and ninety ſeven.

NUMERATOR, in ſpeaking of fractions, ſignifies the number which ſhews how many of thoſe parts which the integer is ſuppoſed to be divided into, are expreſſed by the fraction. See FRACTION.

The *Numerator* is that part of a fraction which is placed over the little bar: by which it is ſeparated from the under number, called the *Denominator*, which ſhews into how many parts the integer is divided. See DENOMINATOR.

Thus, *v. gr.* $\frac{7}{10}$ expreſſes ſeven tenths; where 7 is the *Numerator*, and 10 the denominator. See FRACTION.

NUMERICAL, NUMEROUS, or *Numeral*, ſomething that relates to number. See NUMBER.

NUMERICAL *Algebra*, is that which makes uſe of numbers inſtead of letters of the alphabet. See ALGEBRA.

NUMERICAL *difference*, is the difference whereby one individual is diſtinguiſhed from another. See INDIVIDUAL.

Hence a thing is ſaid to be *Numerically* the ſame, *idem numero*, or *numerice*, when it is the ſame in the ſtricteſt ſenſe of the word. See UNITY and IDENTITY.

NUMERO, in commerce, &c. a term prefixed to any number of things; marked, or abbreviated thus, N°. See BOOK.

De NUMERO, *i. e.* by tale, is uſed in ancient authors for the payment, *e. gr.* of a pound in a certain number of pieces, *viz.* 20 ſhillings.

In contradiſtinction to *Libra penſa*, or a pound weighed out. See POUND.

NUMEROUS *Arithmetic*. See ARITHMETIC.

NUMEROUS *Exegeſis*. See the article EXEGESIS.

NUMISMATOGRAPHIA, a Greek term uſed for the deſcription and knowledge of ancient medals, and coins, whether of gold, ſilver, or braſs. See MEDAL and COIN.

Fulvius Urſinus, Ant. Auguſtinus, biſhop of Saragoſa, Erizzo a noble Venetian, and Sambucus a Poliſh gentleman, have all ſucceeded in the *Numiſmatographia*.—Nor muſt the more modern authors on the ſame ſubject be omitted; *viz.* the two Mezzabarba's, Patin, Spanheim, Hardouin, Morel, Vaillant, Joubert, Baudelot, Beger, and among ourſelves Evelyn.

NUMMUS, or NUMUS, among the Romans, a piece of money, otherwiſe called *Seſtertius*. See SESTERCE.

This was ſometimes alſo called *Numus ſeſtertius.—Decem millia numûm, & decem millia ſeſtertium* were Roman ſums which amounted to the ſame. See MONEY.

NUN,* NONNA, a word anciently uſed for a female religious; and ſtill retained in that ſenſe in our language; and in other languages, particularly the French, but by way of ridicule and burleſque. See RELIGIOUS and PROFESSED.

* The word comes from *nonna, nonnana,* or *nonnanis*; all Latin terms, firſt uſed for penitents, then for religious.—Borel derives it from *nonno*, or *nonna*, which in Italian ſignifies grandfather, or grandmother; and adds, that it was applied by way of honour to the woman, as that of father to the man, religious. See FATHER.

Hence alſo *nunnery*, a monaſtery of female religious. See MONASTERY.

NUNCIO, or NUNTIO, an ambaſſador from the pope, to ſome catholick prince or ſtate; or a perſon who attends, on the pope's behalf, at a congreſs, or an aſſembly of ſeveral ambaſſadors. See EMBASSADOR, &c.

The word *Nuncio* has the ſame import with embaſſador, but is reſtrained in its uſe to the embaſſadors of popes alone; as that of internuncio to their envoys extraordinary.

Branton informs us, that when he firſt came to court, the *Nuncio* had only the title of embaſſador.

The *Nuncio* has a juriſdiction, and may delegate judges in all the ſtates where he reſides, except in France, where he has no authority but that of a ſimple embaſſador.

NUNCUPATIVE, in the ſchools, a term uſed to expreſs ſomething that is only nominal, or has no exiſtence but in name.

Felix of Urgel maintained that Jeſus Chriſt, as man, was only God *Nuncupatively*, *i. e.* nominally. Alcuin, in his anſwer to Felix, maintains, that it is to fall into neſtorianiſm to diſtinguiſh two ſons of God in Jeſus Chriſt, the one natural, the other adoptive; and two Gods, the one real, the other *Nuncupative*. See ADOPTIANI.

NUNCUPATIVE *Will*, denotes a laſt will or teſtament only made verbally, or *viva voce*, and not put in writing. See WILL and TESTAMENT.

NUNDINAL, NUNDINALIS, a name which the Romans gave to the eight firſt letters of the alphabet, uſed in their calendar. See LETTER.

This ſeries of eight letters, A, B, C, D, E, F, G, H, is placed and repeated ſucceſſively from the firſt to the laſt day of the year; one of theſe always expreſſed the market-days, or the aſſemblies called *Nundinæ, quaſi novendinæ*, becauſe they returned every nine days.

The country people, after working eight days ſucceſſively, came to town the ninth, to ſell their ſeveral commodities, and to inform themſelves of what related to religion and government.

Thus the *Nundinal* day being under the letter A, on the 1ſt, 9th, 17th, and 25th days of January, &c. the letter D will be the *Nundinal* letter of the year following.

Theſe *Nundinals* bear a good deal of reſemblance to the dominical letters; which return every eight days, as the *Nundinals* did every nine. See DOMINICAL *Letter*.

NUNTIO. See the article NUNCIO.

NUPER *Obiit*, in law, a writ which lies for a co-heireſs being deforced by her co-parcener of lands or tenements, whereof their common father, or anceſtor died ſeized in fee ſimple. See COPARCENER.

If the anceſtor died ſeized in fee tail, the co-heireſs deforced ſhall have a formedon. See FORMEDON.

NUPTIAL, ſomething that relates to marriage. See MARRIAGE.

NURSERY, in gardening, denotes a ſeminary, or ſeed-plot for raiſing young trees, or plants. See SEMINARY.

Some authors make a difference between *Nurſery* and *ſeminary*, holding the former not to be a place wherein plants are ſown; but a place for the reception and rearing of young plants, which are removed, or tranſplanted hither from the ſeminary, &c. See PLANTING, TRANSPLANTATION, &c.

Mr. Lawrence recommends the having ſeveral *Nurſeries*, for the ſeveral kinds of trees: One for tall ſtandards; *viz.* Apples, aſhes, elms, limes, oaks, pears, ſycamores, &c. Another for dwarfs, *viz.* ſuch as are intended for apricocks, cherries, peaches, plumbs, &c. And a third for ever-greens. See FRUIT.

The *Nurſery* for ſtandards ſhould be in a rich, light ſoil, ſown, with the proper ſeeds, in October, or November. For apples and pears, crab, and wild pear kernels are to be preferred for ſtocks: Elms and lime are to be raiſed from planted ſuckers: Walnuts to be ſown with the green ſhell upon them, to preſerve them from mice. This *Nurſery*, if it be well managed and weeded for two years, the crabs and pears will be fit for grafting and inoculating the third year. See ORCHARD.

Firs and pines are to be raiſed from thoſe little ſeeds, taken out of their large apples.

The *Nurſery* for dwarfs does beſt by itſelf, that it may not be over-topped by taller trees. Stones of apricocks and peaches are not proper to raiſe thoſe trees; but in lieu thereof, ſow the ſtones of the pear-plumb, muſſel or bonum magnum plumb; which prove better and more laſting than the former. For ſtocks for all ſorts of cherries, black cerry-ſtones do beſt. See DWARF.

Mr. Mortimer directs all ſtone-fruit to be ſown quickly after gathering; for that if they be kept, they will be two years ere they come up. Add, that if they have not all the moiſture of the winter to rot the ſhells, the kernel will ſcarce come up at all.

To furniſh the *Nurſery* of ever-greens, the ſeveral ſorts of ſeeds or berries, as yew, holly, juniper, &c. are to be put in ſo many diſtinct pots or boxes, with fine mould over them, and thus buried for a year; after which, they are to be taken out and ſown. See EVERGREEN.

If they were to be ſown when gathered like other ſeeds, they would not come up the firſt year, nor grow ſo kindly. See SEED, and SEMINATION.

NUSANCE,* NOCUMENTUM, in law, is uſed not only for a thing done to the hurt, or annoyance of another, in his fee-lands, or tenements; but alſo for the aſſize, or writ lying for the ſame.

* The word is derived from the French, *nuire*, to hurt.

Manwood makes three kinds of *Nuſances* in the foreſt; the firſt, *common Nuſance*; the ſecond, *ſpecial Nuſance*; the third, *general Nuſance*.

The writ of *Nuſance*, *de nocumento*, is either ſimply *de nocumento*, or *de parvo nocumento*.

Writs of *Nuſances* are now properly termed *Treſpaſſes*, and actions upon the caſe. See TRESPASS, &c.

NUT, NUX, a ſort of fruit, incloſed in a hard cortex, or ſhell; which contains a ſofter edible nucleus, or kernel. See NUCLEUS, &c.

Of theſe we have divers kinds; ſmall nuts, filberds, cheſnuts, walnuts, *&c.* See FILBERD and NUX.

NUTATION, in aſtronomy, a kind of trepidation, or tremulous motion of the axis of the earth; whereby, in each annual revolution, it is twice inclined to the ecliptic; and as often returns to its former poſition. See EARTH.

That the moon has the like motion, is ſhewn by Sir Iſaac Newton, in the firſt book of his *Principia*; but he obſerves withal, that this motion muſt be very ſmall, and ſcarce ſenſible. See MOTION and AXIS.

NUTMEG, *Nux Moſchata*, a delicate kind of aromatic fruit, or ſpice, brought from the Eaſt-Indies; whereof there are two kinds, *male* and *female*. See SPICE.

The *female* is that chiefly uſed among us; its form is round, its ſmell agreeable, and its taſte hot and pungent.

The *male* is a wild nut, of a longiſh form, and without either taſte or ſmell; yet ſometimes put off, while yet in the pod, for the female.

Nutmegs are encloſed in four different covers: The firſt, a thick huſk, ſomething like that of our walnuts. Under this lies a thin reddiſh coat, of an agreeable ſmell, and aromatic taſte, called *Mace*; by others, though improperly, *flower of Nutmeg*. This wraps up the ſhell, and opens in proportion as the pod grows. The ſhell which makes the third cover, is hard, thin, and blackiſh. Under this is a greeniſh film of no uſe: and in this is found the *Nutmeg*, which is properly the kernel of the fruit.—Every *Nutmeg* has a little hole in it, which ſome ignorantly take for a defect.

The beſt *Nutmegs* are thoſe gathered in April. They muſt be choſen heavy, of a whitiſh brown colour, well marbled without ſide, reddiſh within, having a fat unctuous moiſture, and an agreeable ſmell.

As to the mace, it muſt be choſen in large blades of a high colour, like the *Nutmeg* in taſte and ſmell. See MACE.

Nutmegs comfited green, are excellent to fortify the ſtomach, and reſtore the natural heat. They are particularly eſteemed carminative.—The powder called *Duke*, eſteemed a ſovereign againſt rheums, is only *Nutmeg* pulverized with ſugar, and a little cinnamon.—*Nutmegs*, by diſtillation, or expreſſion, yield an oil, ſaid to have wonderful virtues.

The whole commerce of *Nutmegs* is in the hands of the Dutch Eaſt-India company.—The *Nutmeg* tree is propagated after a particular manner: Tavernier tells us, that the birds devouring the *Nutmeg* when ripe, give it back whole by ſtool; and that thus falling down to the ground, beſmeared with a viſcous matter, it takes root, and produces a tree. See MISLETO.

NUTRITION, in the animal oeconomy, the acceſſion or appoſition of new parts to the body, ſimilar to thoſe it already conſiſted of; either for its augmentation, or for the reparation of ſuch as are worn off.

By the continual motion of the fluids in the minute veſſels of the body, and the actions of the muſcles, *&c.* ſmall parcels are of neceſſity wore off from the ſolids, become mixed with the fluids, move with them, and are at length eliminated and exhaled through the pores. See PORE and SOLID.

And at the ſame time, the fluids, diminiſhed as they are by a conſtant attrition, apply to the orifices of the perſpiring veſſels, and vaniſh out of the body. See PERSPIRATION.

Hence the animal body, by the very condition of its frame, becomes ſoon liable to deſtruction. See DEATH.

To preſerve life, therefore, it is neceſſary that a reſtitution be made to the juices and ſolids of the body; equal and ſimilar to what is loſt in thoſe motions: which is what we call the *action of Nutrition*.

Now the loſt juices are eaſily ſupplied by meat, drink, air, *&c.* taken into the ſtomach, digeſted, converted into chyle, then into blood, and thence ſecreted by the proper ducts, and carried by the action of the body, to the proper receptacles; after the manner laid down under the articles DIGESTION, CHYLIFICATION, SANGUIFICATION, and SECRETION.

But the *Nutrition* of the ſolid parts is much more obſcure. This indeed has proved the ſubject of infinite doubts and differences among authors; nor had we any rational or ſatisfactory account of the ſame, till that of the accurate Boerhaave, whoſe doctrine is as follows.

Every ſolid part of the body conſiſts of other leſſer ones, in all reſpects like the larger; veſſels, *v. gr.* of veſicles, and thoſe of others ſtill ſmaller; bones of oſſicles, *&c.* Which ſtructure goes beyond all limits of ſenſe, however aſſiſted by art; as appears by the experiments and obſervations of Malpighi, Ruyſch, Leewenhoeck, and Hook. Yet it is ſcarce poſſible this diviſion and ſubdiviſion ſhould be infinite, as that of foods and juices is.

Again, it appears from microſcopes, injections, ſmall wounds, exſiccations, *&c.* that the ſolid parts of the body are very ſmall, compared with the fluids; and it is almoſt demonſtrable from conſidering the riſe, and generation, of the veſſels, and the reſolution of the greater veſſels into their ſmaller conſtituent ones, that all the ſolid maſs of the body is conſtructed of mere nerves, as its elements. See NERVE, STAMEN, *&c.*

And in effect, all this maſs, an incredibly ſmall particle only excepted, at firſt aroſe out of what was a very ſmall colliquament, much like the nervous juice itſelf; as is abundantly ſhewn by the great Malpighi in his two treatiſes on incubated eggs. For neither does the white of the egg nouriſh, till, by means of the incubation, it have paſſed innumerable degrees of fluidity, from its firſt thickneſs to that exceeding ſubtilty wherein it terminates. But even then, the liquor thus given to the embryo, is exceedingly thick, in compariſon with what it is to be when converted into its veſſels and viſcera. See EGG.

Now the firſt tender ſolids ariſing from this ſubtile humour, do again paſs infinite intermediate degrees, ere they arrive at their utmoſt ſtate and conſiſtence; as is ſhewn by Malpighi in eggs, and by Ruyſch in embryo's and fœtus's. Hence, therefore, it follows, that the ſolids, in their firſt formation out of the liquids whence they ariſe, only differ from them in reſt, coheſion, and figure. Therefore ſuch a particle, now in its fluid ſtate, will become a part of the ſolid to be formed out of it, as ſoon as there happens to be a power to effect its coheſion with the other ſolid parts; howſoever that coheſion be effected.

This coheſion is eaſily produced in a fibre already formed, if there happen to be a proper cavity in the ſolid, left open by ſome loſt particle, and at the ſame time a particle in the fluid, anſwerable thereto in bulk, figure, and nature; and laſtly, a power wherewithal to intrude it into that place, or accommodate it thereto. Thus will ariſe a real *Nutrition* of the ſolids in the minute veſſels, by whoſe union the large ones are formed: that is, in the nerves, or in veſſels ſimilar thereto. Which being impracticable by any other liquid than that brought into theſe veſſels, it appears very evident that the nervous juice, at leaſt a juice perfectly like it, is the immediate matter of *Nutrition*: Whence *Nutrition* appears one of the laſt and moſt perfect actions in the body; ſince to have this laudable, all the precedent actions muſt of neceſſity have been ſo. See SPIRIT.

The chyle therefore, which ſome make the immediate matter of *Nutrition*, is, indeed, fitted to fill the larger veſſels, but cannot nouriſh or reſtore them. This, when attenuated, changed, more intimately mixed in the lungs by means of reſpiration, and thus fitted for the paſſage of certain veſſels, is, indeed, rendred fitter, yet far from being quite fit, to be the matter of *Nutrition*. See CHYLE.

But, by the repeated action of the lungs, the viſcera, veſſels, *&c.* there is formed out of this humour, a ſoft, tenacious, plaſtic, inſipid ſerum, which thickening by the fire, becomes perfectly like the white of an egg. This fluid therefore has in it all the conditions found in that from whence, by ſure experience, we know all the ſolid parts of an animal, ariſe, by meer incubation. It is therefore a ſtep nearer, but is not yet quite diſpoſed for nutriment. Much leſs is the cruor, or red, globular part of the blood ſo. Neither are yet fitted to enter the veſſels; yet both the one and the other are, by different authors, made the nutritive juice. See BLOOD, SERUM, and CRUOR.

But as the heat of incubation, ſo the action of the viſcera and veſſels, on the ſerum, introduces various changes therein; till at length a part of it be rendred ſubtile enough for the purpoſe required. This, when exhauſted, is inſtantly repaired: and thus we have the true immediate matter of *Nutrition*.

But this ſame humour loſing too many of its oily parts, by many repeated circulations, is rendred too ſharp; and being likewiſe ſtripped of its moſt liquid parts, from the ſame cauſe, becomes too denſe; and is thus rendred unfit for this ſecretion. Hence the neceſſity of new chyle, and new food, to keep up *Nutrition*.

The matter of *Nutrition* thus aſcertained; the manner wherein, and the cauſe whereby it is effected, are as follow. A juice being driven directly through a full, conic or cylindric, elaſtic or rigid canal; if its courſe be from a wider to a narrower part, or if it have any thing to oppoſe its motion, will endeavour to ſtretch the ſides of its canal according to the axis of its length. This muſt be the caſe, every where in the body, except, perhaps, in the veins and receptacles. By this niſus, or endeavour, how weak ſoever, continually repeated, the veſſels will be inſenſibly lengthened out; and in lengthening, will be made more and more ſlender. Hence the laſt extremities of the veſſels, which in man are extremely ſmall, are continually ſtretched and rendred leſs and leſs coherent, *i. e.* ſtill nearer and nearer to a diſſolution; and thus at length will they cohere ſo weakly, as ſcarce to differ from fluids.

While ſuch motion goes on, therefore, and the propulſion is continued, there will, of neceſſity, happen theſe two things:

things; Firſt, the outmoſt particles of the minuteſt tubes being torn off, will again be converted into a kind of humour, what part of the body ſoever they ſtick in. Secondly, the ſmalleſt particles, which by their union compoſed the ſlendereſt fibrillæ, will be ſo ſeparated from each other, as to leave open interſtices in thoſe places, where, before, they cohered. Both theſe effects will be produced at all times, and in all parts of the body, ſo long as life continues; eſpecially where nature is ſtrong, and the actions of the body violent. But the ſame humour whereby theſe effects are produced, containing abundance of particles ſimilar to thoſe thus ſeparated and loſt, conveys and applies them to thoſe interſtices, by that very impetus whereby it endeavours to diſtend the canals; and thus intercepted, at length, it forms, adapts, and faſtens them, ſo as to adhere in the ſame manner as the former.

The matter, preparation, application, energy of motion, ſtill remaining the ſame; what from time to time is loſt, is thus preſently reſtored; and the ſolids continue in the ſame ſtate as before, *i. e.* they are perpetually *nouriſhed*, and ſupplied, and preſerved.

In this the Creator's wiſdom is very conſpicuous; in that the ſame power, which inevitably deſtroys, does repair again at the ſame time, and by the ſame action; and that the greater the loſs is, the more copious is the ſupply; and laſtly, that thoſe parts, firſt ſpent in the action of the body, are the firſt reſtored.

Further, it is evident, that the newer, the more tender, and the nearer to the moving cauſe theſe veſſels are, the more eaſily will they be lengthened, diſtended, deſtroyed, and repaired: Our bodies therefore, the nearer to their origin, the more do they grow. For, the action ſtill continuing, the greater veſſels become more extended by their fluid; and at the ſame time the ſmaller, whereof the membranes or coats of the larger are compoſed, are compreſſed, dried, and at laſt concreted, and grow up; whence ariſes a firmneſs, indeed, of the fibres, but a loſs of the veſicles.

Thus, what were formerly veſſels, commence mere hard ligaments; and thus the fluids once fixed, the ſeveral veſſels coaleſce: from the concurrence of theſe cauſes ariſe the ſtrength, hardneſs, rigidity, and thickneſs of the ſolid parts.

Hence the number of veſſels is greateſt in embryo's, and as age comes on, ſenſibly diminiſhes; and hence it is that their weakneſs conſtantly declines, and their ſtrength and firmneſs increaſes. In young people, therefore, the quantity of humours is redundant, and greatly exceeds the ſolids: In old men, the ſolids exceed the fluids. And hence we ſee the reaſon, manner, and appearance of growth, ſtate, declenſion, and at length of death from pure old age. See Death.

A perſon who conſiders this account, and compares it with what is actually obſervable in the body, will find every circumſtance to obtain: Thus the whole cuticula is every where, and at all times, conſtantly deſquammating, peeling off, and again renewing; and thus the hair, nails, teeth, continually rubbed, torn, and wore off, come again; parts taken off from the veſſels, and the bones, ſoon grow again. And the ſordes, or filth, rubbed off from the extremities of the veſſels, when examined by a microſcope, or diluted and viewed in water, appear plainly to conſiſt both of ſolid and fluid parts; and thoſe carried off by waſhing, ſhaving, &c. are the ſame.

Hence, too, we ſee that a general increaſe of the bulk of the body, with regard to habit, as in fat, fleſhy, brawny perſons, does not ariſe from any increaſe of the ſolids, but by their extenſion into larger cavities, crouded with ſtagnant humours. And hence fatneſs becomes hurtful, as it loads, weakens, and ſuffocates. See Corpulency.

Whence ariſes a very conſiderable diſtinction between *Nutrition* and *repletion*; to which a phyſician muſt have ſpecial regard: the one ſtrengthening and condenſing the veſſels, the other weakening, looſening, and extending the ſame. See Plenitude.

Hence, laſtly, we ſee why the fabric of the ſolids is not deſtroyed by the contained fluids; how our machine comes to ſubſiſt ſo long; why, when a nerve is corrupted, the *Nutrition* of that part it belongs to, ceaſes; and why the ſame obtains in an artery: Why in an embryo there are no ſolids, in a fœtus very few, in old men a great deal; and why even the nerves, tendons, arteries, and receptacles, become firſt cartilaginous, then bony? See Solids, &c.

Nutrition *of Plants.* See Vegetation, Sap, Circulation, &c.

Nutrition, in pharmacy, a kind of preparation, conſiſting in the gradual mixture of liquors of different natures, by ſtirring them together till they have acquired a thick conſiſtence.—as, in making butter of Saturn, or unguentum nutritum. See Nutritum.

NUTRITIOUS *Juice.* See the article Nutrition.

NUTRITIVE *Faculty*, See the article Faculty.

NUTRITUM, in pharmacy, is a denomination given to a deſiccative, cooling, unguent, prepared by the agitation and nutrition of litharge of gold with oil and vinegar, or the juice of ſolanum, in a mortar. See Uuguent, and Nutrition.

NUX *Vomica*, the fruit, or, as ſome will have it, the ſtone of the fruit of a tree, growing in ſeveral parts of Egypt, and in the iſlands Timor, and Ceylon; of a ſtrong narcotic quality, ſo as to be ranked in the number of poiſons.

It is round and flat, of a grey mouſe-colour without, and various colours within; ſometimes yellow, ſometimes white, ſometimes brown. The largeſt, whiteſt, neweſt, and cleaneſt, are the beſt.

This drug is ſaid to be an aſſured poiſon for all animals except men. See Poison.—On the contrary, Hermannus, Botanic profeſſor at Leyden, who has wrote expreſly on it, ſays, that the *vomic Nuts* of Timor and Ceylon are excellent ſudorifics, and to be ranked among diuretic medicines.

Nux *Galla.* See the article Galls.

Nux *Indica*, the fruit of a tree called *Cacao.* See Cacao, and Chocolate.

NYCTAGES, * or Nyctazontes, a religious ſect, diſtinguiſhed by their inveighing againſt the practice of waking in the night to ſing the praiſes of God; in regard, ſaid they, the night was made for reſt.

* The word comes from the Greek νυξ, night.

NYCTALOPIA, * or Nyctalops, a diſeaſe which prevents the ſeeing by day, not by night; or an indiſpoſition wherein a perſon ſees better by night than by day.

* The word comes from the Greek νυξ, night, and αλωπηξ, fox; this animal being ſaid to ſee leſs by day, than night.

In which ſenſe the word is uſed by Hippocrates.

The *Nyctalopia* is ſuppoſed to be owing to the ſpirits being too much diſſipated in the day, but collected by night. See Sight.

Boerhaave ſays, the *Nyctalopia* conſiſts in this, that the uvea is immoveable, and at the ſame time very open.

Nyctalopia, is alſo uſed by ſome for a diſeaſe of the eyes, which prevents their ſeeing, when the ſun is ſet, and the light begins to diminiſh. See Blindness.

In which ſenſe it amounts to the ſame with *Nocturna Cæcitas.*

In the general, any diſeaſe which prevents the ſeeing at any particular time, when others ſee, is called *Nyctalopia.*

In the *Philoſophical Tranſactions*, we have an inſtance of a *Nyctalopia*, or *Nocturna Cæcitas*, in a youth of twenty years of age; who had been affected with it as long as he could remember.—Dr. Parham aſſures us, he had a good ſight all day, and diſtinguiſhed objects at all diſtances as well as any body; but when twilight once came, he was quite blind, and ſaw nothing at all; nor could make ſcarce any uſe either of fire, candle, or glaſſes. Yet his eyes, upon examination, ſhewed nothing at all amiſs; nor had he any vertigo, or other diſeaſe of the head. The cloudineſs, as he himſelf told the doctor, uſed to come gradually on him like a miſt, as day-light declined. He always ſaw alike in all aſpects of the moon, felt no pain by fire or candle-light, and was the ſame in ſummer as winter.

Dr. Briggs accounts for the caſe thus: "As vapours are "raiſed in great quantities during the day-time, which be- "ing condenſed by the coldneſs of the evening, fall again, and "render the air, near the earth, the thicker: So, perhaps, "the humours in the eyes of this youth may be affected; "and, in the evening, rendred groſſer, and more turbid. As "we ſee in urines, which frequently grow clear, or turbid, "as heat or cold is applied to them. By ſuch thickneſs or "ſpiſſitude of the humours, the rays being either reflected, or "too much refracted, do not reach the retina, or at leaſt "ſtrike it too feebly.

NYCTELIA * *Orgia*, or feaſts in honour of Bacchus; ſo called, becauſe held in the night-time. See Orgia.

* The word is formed from the Greek νυξ, night, and τελειν, *perficere*, to accompliſh, perform.

A great part of the ceremony conſiſted in running through the ſtreets, with bottle and glaſs in hand, drinking: but there was no impurity unpractiſed in them.

The Athenians celebrated the *Nyctelia* every three years, at the beginning of the ſpring.

NYCTHEMERON, Νυχθημερον, the natural day. See Day.

NYMPH, * Nympha, in mythology, a ſort of heathen divinity, ſuppoſed to preſide over waters, rivers, and fountains. See Goddess.

* The word comes from the Greek, νυμφη, a bride, or woman newly married; and was applied to theſe deities, becauſe repreſented under the figure of young maids. Though others derive *Nymph* from *Lympha*, water, in regard of their inhabiting near the waters.

Some extend the name *Nymph* further, and comprize under it the goddeſſes of the fountains, foreſts, and trees; called particularly *Oreades*, *Dryades*, and *Hamadryades*; as well as thoſe of the ſea, called *Nereides.* See Dryad, Hamadryad, Nereid, &c.

Meurſius is of opinion, the Greeks borrowed their notion of the divinities from the Phœnicians: for *Nympha* in their language ſignifying ſoul, the Greeks imagined, that the ſouls of the ancient inhabitants of Greece were become *Nymphs*. Particularly, that the ſouls of thoſe who had inhabited the woods, were called *Dryades*; thoſe who had inhabited the mountains, *Oreades*; thoſe who had dwelt on the ſea-coaſts, *Nereides*; and laſtly, thoſe who had their place of abode near rivers, or fountains, *Naiades*. See Naiades, &c.

Nympha, among naturaliſts, is ſometimes uſed for the little ſkin wherewith inſects are encloſed; both while they are in the egg, and after they have undergone the firſt apparent tranſformation. See Insect.

Nympha, is uſed by others for the change itſelf of the eruca, or worm, into a flying animal; after having laid aſide its former ſkin: which, as Swammerdam ſhews, is not effected by any proper transformation, but by ſimple accretion, or growth of the parts, whence the ſkin is by degrees ſtretched, and at laſt burſts: as in the caſe, likewiſe, in chickens and frogs.

Nympha is more frequently uſed by naturaliſts for the inſects themſelves, while they have yet only the form of worms, or maggots.

The word properly ſignifies bride, or a new-married woman; it being now, when it has laid aſide its former ſkin, that it begins to ſhew all its parts diſtinctly.—In this change it loſes its motion for a while, as when in the egg: ſo that theſe inſects are twice in their *Nympha* ſtate; firſt, in the egg, which is their firſt *Nympha*; and again in this change, which is their ſecond.

The only difference between the two *Nympha*-ſtates conſiſts in this, that in the latter the members appear more diſtinctly.—Swammerdam calls this latter *Nympha Aurea*, or *Aurelia*, and *Chryſalis*; and the former ſimply *Nympha*.—The *Nymphæ* are otherwiſe diſtinguiſhed into *Vermiformes*, and *Oviformes*.

The eggs of bees firſt change into *Nymphæ* or maggots; theſe maggots incloſed in their alveoli or cells, are transformed into *Nymphæ Aureliæ*; and twelve days afterwards come out bees. See Aurelia and Chrysalis.

—Of caterpillar—Aurelia or cryſalis, ſo called, becauſe the creature here is veiled or covered up from ſight, like a bride.

Nymphæ, in anatomy, are two ſoft, ſpongy, red bodies, deſcending from the tip of the clitoris to the ſides of the urinary paſſage; thus reaching to about the middle of the orifice of the vagina: where they grow leſs and leſs, till they diſappear.—See *Tab. Anat.* (Splanch) *fig.* 9. *lit.* n n. *fig.* 13. *lit.* e e. See alſo Clitoris.

Their breadth is uncertain, uſually in maids half a finger: ſometimes they are larger, and are capable of being diſtended to a great degree; ſo as to hang a good way out of the body: whence, in ſome, theſe, as well as the clitoris, have been forced to be cut. See Nymphotomia.

The uſe of the *Nymphæ* is, by ſwelling in the act of coition, to embrace the penis, and by their ſenſibility to affect the woman, and mutually invite to procreation. See Generation.

Their ſubſtance is very ſpongy, compoſed of membranes, and veſſels looſely cohering, and therefore eaſily diſtendible.

NYMPHEUM,* Νυμφειον, among the ancients, a public hall, or building, magnificently adorned and diſpoſed for banqueting and entertainment; where thoſe who wanted conveniencies at home, held their marriage-feaſts, &c.

* The word comes from the Greek νυμφη, *bride*.

Some authors rather take the ancient *Nympheum* for a grotto, adorned with ſtatues, jets, and other ornaments; and that it had its name by corruption, from *Lymphæum* of *Lympha*, water.—In which ſenſe it muſt have been a public bath.

NYMPHOMANIA, in medicine, the ſame with furor uterinus. See Uterinus.

NYMPHOTOMIA, in chirurgery, the operation of cutting off part of the nymphæ, or of the clitoris by ſome alſo called *Nympha*, when they are ſo large and tumid, as to prevent the conſummation of marriage, or render it very difficult. See Nymphæ.

The Egyptians, Galen obſerves, frequently practiſed the *Nymphotomia*; but in our parts of the world, it is rarely found neceſſary.

When it happens to be ſo, the caſuiſts give their judgment, that the woman is obliged to undergo it.

The *Nymphotomia* is properly the circumciſion of women. See Circumcision.

O.

O, The fourteenth letter of the alphabet; and the fourth vowel. See Letter and Vowel.

The Grammarians call it a cloſe vowel; becauſe pronounced with the mouth ſhut.

Among the Latins, the *O* bore ſo great an affinity with the U, that they frequently confounded them; writing *conſol*, and pronouncing *conſul*. See Gruter's *Inſcript.*

Thus, alſo, they wrote *aequom* for *æquum*, *aorelius* for *aurelius*, *compaſcuos*, *duomvir*, *&c.*

The Greeks had two *O's*, *viz.* omicron, ο, and omega ω; the firſt pronounced on the tip of the lips with a ſharper ſound; the ſecond in the middle of the mouth, with a fuller ſound, equal to *oo* in our language.—The long and ſhort pronunciation of our *O* are an equivalent to the two Greek ones; the firſt, as in ſupp*o*ſe; the ſecond as in *o*bey.

O, among the ancients, was a numerical letter, ſignifying eleven; as in the verſe,

O numerum geſtat qui nunc undecimus extat.

When a daſh was added at the top, as Ō, it ſignified eleven thouſands.

Among the Iriſh, the letter *O* at the beginning of the name of a family, is a character of dignity, annexed to great houſes. Thus in the Hiſtory of Ireland, we frequently meet with the *O Neals*, *O Carrols*, *&c.* conſiderable houſes in that iſland.

Cambden obſerves, that it is the cuſtom of the lords of Ireland to prefix an *O* to their names, to diſtinguiſh them from the commonalty.

A majuſcule *O*, in muſic, is a note of time, called by us *Semibreve*, by the Italians *Circolo*; making what they call *Tempo perfetto.* See Semibreve, Time, *&c.*

The ancients uſed *O* as a mark of triple time; from a notion that the ternary, or number 3, was the moſt perfect of numbers, and therefore properly expreſſed by a circle, the moſt perfect of figures.

O Ni, in the exchequer.—As ſoon as the ſheriff enters into, and makes up his accounts for iſſues, amerciaments, and mean profits; the practice is to mark on his head, *O Ni*, which ſignifies, *Oneratur niſi habeat ſufficientem exonerationem:* and immediately he becomes the king's debtor, and a debet is ſet on his head.—Upon which the parties become debtors to the ſheriff, and are diſcharged to the king. See Sheriff.

OAK. See the article Timber.

Royal **Oak.** See the article Royal.

Scarlet **Oak.** See the article Kermes.

Miſleto of the **Oak.** See the article Misleto.

Oak-*Balls*, **Oak-*Apples***, or **Oak-*Cones***, in natural hiſtory, a kind of galls, or excreſcencies ariſing out of the oak.—For whoſe generation and uſe, See Galls.

OAKHAM, **Ockham**, or **Oakum**, in the ſea-language, denotes the matter of old ropes untwiſted, and pulled out again into looſe hemp, like hurds of flax, to be uſed in the cauking of ſhips. See Cauking.

OAR, in navigation, an inſtrument whereby a boat, barge, galley, *&c.* is rowed, or advanced along the water. See Boat, Galley, *&c.*

In a veſſel with *oars*, the water is to be conſidered as the point of ſupport, or fulcrum; the *oar* as a lever; the boat as the burden to be moved, and the rower's hand as the moving power. See Lever, and Mechanic *Power*.

The burden is to be conſidered as applied to that point of the lever, where the *oar* reſts on the boat.—The greater therefore the diſtance of the hand from that point, and the leſs the diſtance of the water from that point, the greater effect will the *oar* have.

Oar, in natural hiſtory. See the article Ore.

OARISTUS, or **Oaristys**, a term in the Greek poetry, ſignifying a dialogue betwixt a huſband and his wife; ſuch as that in the ſixth book of the *Iliad*, between Hector and Andromache. See Dialogue.

Scaliger obſerves, that the *oariſtus*, is not properly any particular little poem, or entire piece of poetry; but a part of a great one. He adds, that the paſſage now cited in Homer, is the only proper *oariſtus* extant in the ancient poets.

OASY. See the article Oazy.

OATH, *Juſjurandum*, is uſually defined a religious aſſertion, or aſſeveration; wherein a perſon invokes the Almighty, renounces all claim to his mercy, or even calls for the divine vengeance upon himſelf, if he ſpeak falſely. See Affirmation.

Some civilians look on this definition as too lax, ſince it may agree to perjury; and would have this eſſential to an oath, that the thing affirmed be true.—But this is arbitrary. See Perjury.

An *oath* is eſteemed a kind of civil medium, between the perſon that gives it, and him to whom it is given; whereby ſome controverſy, or other matter, which could not otherwiſe be determined, is brought to an iſſue.—Its form, and the ceremonies it is attended withal, are arbitrary, and various, in various countries.

The *oaths* we make to God are called *vows*, and in ſome caſes *ſacraments.* See Vow and Sacrament.

Oath, in a legal ſenſe, is a ſolemn action, whereby God is called to witneſs the truth of an affirmation given before one or more perſons, impowered to receive the ſame.

Legal oaths end with, ſo help me God; anciently with, ſo help me God at his holy dome, *i. e.* Judgment. See Dome.

This, according to our law books, is called a *corporal oath*; becauſe the party, when he ſwears, touches the goſpels with his right hand.

But, in ſome old cuſtoms of Anjou and Maine, it appears that *corporal oath* was anciently a ſimple affirmation, or vow of faith, and fidelity, made by a vaſſal who was no liege, by lifting up his hand; in contradiſtinction to that made by a liege vaſſal, which was made by laying his hand on the goſpel. See Homage, Fealty, Vassal, *&c.*

An *oath* is called *canonica purgatio*, becauſe allowed of by the canons; to diſtinguiſh it from *vulgares purgationes*, *viz.* by battle, fire ordeal, *&c.* which the church always diſcouraged. See Purgation, Ordeal, Combat, Duel, Champion, *&c.*

In ſmall matters, which the plaintiff could not prove, or if he could, if his proof were ſet aſide, the defendant might purge himſelf by his own *oath:* which was called, *jurare propria manu.*

But in matters of more weight, he was to bring other credible perſons, uſually of the ſame quality with the plaintiff, to ſwear that they believed the defendant had ſwore the truth.

Theſe were called *compurgators*, or *ſacramentales*; and their number was greater or leſs, according to the quality of the defendant, and the nature of the thing in queſtion.—Hence, *jurare duodecima manu.*

Oath is alſo uſed for a ſolemn promiſe faithfully to execute, or obſerve ſomething.

Trials at common law depend on twelve, or twenty-four men, who take their *oaths* to declare the truth, as it ſhall appear to them. See Jury and Trial.

In this ſenſe we ſay, *ſtate oaths*; the *oath of ſupremacy*, *oath of allegiance*, *oath of abjuration.* See Allegiance, Supremacy, *&c.*

At the meeting of a new parliament, the commons, all, take the *oaths* of allegiance, ſupremacy, and abjuration. See Parliament.

Kings and princes ſwear to the performance of the treaties they make: though anciently, they did not ſwear of themſelves; but others ſwore in their name. See Treaty.

Thus, in a treaty in 1177, between the emperor Frederic Barbaroſa, Roger king of Sicily, pope Alexander III. and the cities of Lombardy; the count de Dieſſe, by the emperor's order, ſwore, upon the ſoul of that monarch, that he would faithfully obſerve the peace; and, at the ſame time, Romuald Archbiſhop of Salernum, and count Roger, ſwore, on the goſpel, that when the emperor's meſſenger ſhould arrive in Sicily, king Roger ſhould procure ſome of his lords to ſwear for him.

Teſt **Oath.** See the article Test.

OAZY, or **Oasy** *Ground*, a name given by the ſeamen to ſoft, ſlimy, or muddy ground. See Anchorage.

OBEDIENCE, **Obedientia**, is ſometimes uſed in the canon law, for an office, or the adminiſtration of it. See Office.

In our ancient cuſtoms, *obedientia* was uſed in the general, for every thing that was enjoined the monks, by the abbot. See Abbot, *&c.*

Obedientia, in a more reſtrained ſenſe, was applied to the farm belonging to the abbey, to which the monks were ſent *vi ejuſdem obedientiæ*, either to look after the farm, or collect the rents.—Hence, alſo, thoſe rents themſelves were called *obedientiæ.*

OBELISK, * **Obeliscus**, a quadrangular pyramid, very ſlender, and high; raiſed as an ornament, in ſome public place, or to ſhew ſome ſtone of enormous ſize; and frequently charged with inſcriptions, and hieroglyphics. See Monument.

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* Borel derives the word from the Greek ὀϐελὸς, a ſpit, broach, ſpindle, or even a kind of long javelin.—Pliny ſays, the Egyptians cut their *obeliſks* in form of ſun-beams; and that in the Phœnician language the word *obeliſk* ſignifies *ray.*

The Egyptian prieſts called their *obeliſks*, the *ſun's fingers*, becauſe ſerving as ſtyles, or gnomons to mark the hours on the ground.—The Arabs ſtill call them *Pharaoh's needles*: whence the Italians call them *aguglia*, and the Engliſh *Cleopatra's needles*.

The difference between *obeliſks* and pyramids, according to ſome, conſiſts in this, that the latter have large baſes, and the former very ſmall ones.

Though Cardan makes the difference to conſiſt in this, that *obeliſks* are to be all of a piece, or to conſiſt of a ſingle ſtone, and pyramids of ſeveral. See PYRAMID.

The proportions of the heighth and thickneſs are nearly the ſame in all *obeliſks*; that is, their heighth is nine, or nine and a half, ſometimes ten times their thickneſs; and their thickneſs or diameter a-top is never leſs than half, nor greater than three fourths of that at bottom.

This kind of monument appears very ancient; and we are told was firſt made uſe of to tranſmit to poſterity the principal precepts of philoſophy, which were engraven in hieroglyphical characters hereon.—In after-times they were uſed to immortalize the actions of heroes, and the memory of perſons beloved.

The firſt *obeliſk* we know of, was that raiſed by Rameſes, king of Egypt, in the time of the Trojan war. It was 40 cubits high, and, according to Herodotus, employed 20000 men in the building. Phius, another king of Egypt, raiſed one of 45 cubits; and Ptolemy Philadelphus another of 88 cubits, in memory of Arſinoe. See Porphyry.

Auguſtus erected an *obeliſk* at Rome in the Campus Martius, which ſerved to mark the hours on a horizontal dial drawn on the pavement. See DIAL.

F. Kircher reckons up 14 *obeliſks* celebrated above the reſt, *viz.* that of Alexandria, that of the Barberins, thoſe of Conſtantinople, of the Mons Eſquilinus, of the Campus Flaminius of Florence, of Heliopolis, of Ludoviſio, of S. Mahut, of the Medici, of the Vatican, of M. Cælius, and that of Pamphilia.

OBELISK, in grammar, is a character, in form of a dagger, (†) ſerving to refer the reader to ſome note, or other matter in the margin. See CHARACTER.

OBELUS, in antiquity, denotes a little line, or ſtroke, like a needle: whence its name, ὀβελὸς, which ſignifies *needle*.

The word is chiefly uſed in ſpeaking of Origen's *Hexapla*; wherein he diſtinguiſhes with an aſteriſk, or ſtar; the ſupplements he makes to the text of the *Septuagint*, where it falls ſhort of the Hebrew meaning; and with an *obelus*, or lineola (—) thoſe places where the *Septuagint* had any thing not in the Hebrew. See HEXAPLA.

St. Jerom ſays, the *obelus* was only uſed in thoſe places where ſomething was to be retrenched from the *Septuagint*, as ſuperfluous; and the aſteriſk in thoſe that were defective. Theſe marks frequently occur in ancient manuſcripts. Uſually, the *obelus* is accompanied with two dots; the one above, the other underneath, as (÷); and the aſteriſk, is a St. Andrew's croſs, cantoned with four points.

OBESITY, OBESITAS, in medicine, the ſtate of a perſon too much loaded with fat, and fleſh; otherwiſe called *corpulency*. See CORPULENCY.

OBJECT,* in philoſophy, ſomething apprehended, or preſented to the mind, by ſenſation, or by imagination. See SENSATION and IMAGINATION.

* The word is derived from the Latin, *objicere*, to preſent to, to ſet before; which is compoſed of *ob* and *jacio*, I lie againſt.

An *object* is ſomething that affects us by its preſence, that moves the eye, ear, or ſome of the other organs of ſenſe; or, at leaſt, is repreſented to us by the imagination.

The ſchool-philoſophers define *object* to be that about which a power, act, or habit, is employed. Thus, good is the *object* of the will; truth of the underſtanding; ſo colour is the *object* of ſight; ſound of hearing, *&c.* See OBJECTIVE.

Objects are uſually divided into *next*, *proxima*, which are thoſe the power, or habit is immediately employed on; in which ſenſe, colour is the next *object* of ſight.—And *remote*, which are thoſe only perceived by means of the former: In which ſenſe, the wall is the remote *object* of ſight, ſince we only ſee it by means of its colour, *&c.*

Ideas are the immediate *objects* of the mind in thinking: Bodies, their relations, attributes, *&c.* are the mediate *objects*. See IDEA, BODY, *&c.*

Hence it appears that there is a ſort of ſubordination of *objects*. But, note, that a *next object*, with regard to a *remote* one, is properly a ſubject, not an *object*. See SUBJECT.

They alſo diſtinguiſh *objects per ſe*, which are what properly move, or affect our ſenſes: Such as are the ſenſible qualities.—And *objects per accidens*, which are ſubſtances, and only affect us by being inveſted with ſenſible qualities. See QUALITY and SUBSTANCE.

Again, they diſtinguiſh between *common objects*, which are ſuch as affect divers ſenſes; as are motion, figure, *&c.* And *proper objects*, which only affect one ſenſe. See SENSE.

There are ſeveral conditions requiſite to an *object of ſenſe*; as that it be material; that it be within a certain diſtance, of a competent extent, its ſenſible qualities ſufficiently intenſe, *&c.*

It is the *object* that reflects, or emits the rays of light which occaſion viſion. —*Objects* of themſelves are inviſible; we only ſeem to perceive them becauſe the different texture of their ſurface, diſpoſing them to reflect differently coloured rays, occaſion in us ſeveral ſenſations of colour, which we attribute to them. See COLOUR, VISION, *&c.*

The *objects* of the eye, or viſion, are painted on the retina; though not erect, but inverted, according to the laws of optics.—This is eaſily ſhewn from Cartes's experiment of laying bare the vitreous humour on the back part of the eye; and clapping over it a bit of white paper, or the skin of an egg, and then placing the fore-part of the eye to the hole of a darkned room. By this means is had a pretty landskip of the *objects* abroad, painted invertedly on the back of the eye. See RETINA.

How in this caſe, the *objects* which are painted inverted ſhould be ſeen erect, is matter of controverſy. See SEEING.

OBJECT-*Glaſs* of a teleſcope, or microſcope, is the glaſs placed at that end of the tube which is next the *object*. See TELESCOPE, MICROSCOPE, and GLASS.

To prove the regularity and goodneſs of an *object-glaſs*.—Strike two concentric lines on a paper, the one having its diameter the ſame with the breadth of the *object-glaſs*; the other half that diameter: Divide the inner circumference into ſix equal parts, and making ſix fine ſmall holes therein with a needle; cover one ſide of the glaſs with this paper. Then expoſing it to the ſun, receive the rays that paſs through theſe ſix holes, on a plane, at a juſt diſtance from the glaſs; and by withdrawing or approaching this plane, from or to the glaſs, we ſhall find whether the rays that paſs through theſe ſix holes, unite exactly together at any diſtance from the glaſs; if they do, we may be aſſured of the regularity of the glaſs; that is, of its juſt form; and at the ſame time we obtain exactly the glaſs's focal length.

Indeed there is ſcarce any better way of proving the excellency of an *object-glaſs*, than by placing it in a tube, and trying it with ſmall eye-glaſſes at ſeveral diſtant objects; for that *object-glaſs* which repreſents objects the brighteſt, and moſt diſtinct, which bears the greateſt aperture, and moſt convex, and concave eye-glaſs, without colouring or hazineſs, is the beſt.

To prove whether *object-glaſſes* be well centered.—Hold the glaſs at a due diſtance from the eye; and obſerve the two reflected images of a candle; where thoſe images unite or coaleſce, there is the true center. If this be in the middle, or central point of the glaſs, it is truly centred.

OBJECT is alſo uſed for the matter of an art, or ſcience; or that about which it is employed. See ART, SCIENCE, *&c.*

In which ſenſe, the word coincides with *ſubject*. See SUBJECT, *&c.*

The ſchool-philoſophers diſtinguiſh divers kinds of *objects* in the ſame ſcience, *viz.*

***Material* OBJECT**, which is the thing itſelf that is conſidered, or treated of.—And thus it is the human body is the *object* of medicine.

***Formal* OBJECT**, is the manner of conſidering it.—And thus the ſame human body conſidered with a view to the healing it, is the *formal object* of medicine.

OBJECTUM *quod complexum*, of an art, is the aggregative whole; or a collection of all the objective concluſions, or conſequences found in the ſcience.

OBJECTUM *quod incomplexum*, is a collection of all the ſubjects of the objective concluſions.—Thus, therefore air is elaſtic, is the *complex object* of one branch of phyſicks; and air itſelf, or the ſubject of the concluſion, the *incomplex object* of the ſame branch.

OBJECTUM *quo complexum*, is a collection of all the objective antecedents of the ſcience.

OBJECTUM *quo incomplexum*, is a collection of all the mediums, or arguments contained in thoſe antecedents, and whereby thoſe concluſions are proved.

In theſe caſes, the *object* is ſaid to be *complex*, inaſmuch as it includes both an affirmation and negation; and *incomplex*, as it includes neither: *Quod*, as being that which (*quod*) is ſhewn in the ſcience; and *quo*, as being that whereby (*quo*) the concluſions therein are proved.

Schoolmen alſo diſtinguiſh an *object per ſe*, and *per accidens*; *objectum adæquatum*, and *inadæquatum*; *attributionis*, and *attributum*, &c.

OBJECTION, in reaſoning, ſomething urged to overthrow a poſition; or, a difficulty raiſed againſt an allegation, or propoſition of a perſon we are diſputing withal.

The anſwering of *objections* comes under that branch of oratory, or that part of an oration, called *confirmation*, or *confutation*. See CONFIRMATION and CONFUTATION.

***Over-rulling an* OBJECTION.** See OVER-RULING.

OBJECTIVE, OBJECTIVUS, is uſed in the ſchools in ſpeaking of a thing which exiſts no otherwiſe than as an object known. See OBJECT.

The eſſe, or exiſtence of ſuch thing is ſaid to be *objective:*

Others call it *ratio objectiva.* See OBJECT.

OBJECTIVE is alſo uſed for the power, or faculty by which any thing becomes intelligible.—And, for the act itſelf, whereby any thing is preſented to the mind, and known.

Hence a thing is ſaid *to exiſt objectively, objectivè*, when it exiſts no otherwiſe than in being known; or by being an object of the mind. See EXISTENCE.

This, ſome will have to be real eſſe; others deny it. See ESSE.

OBJECTIVE *Evidence.* See the article EVIDENCE.

OBJECTIVE *Line.* See the article LINE.

OBJECTIVE *Notion.* See the article NOTION.

OBJECTIVE *Plane.* See the article PLANE.

OBIIT *Nuper.* See the article NUPER.

OBIT, OBITUS, in our ancient cuſtoms, was a funeral ſolemnity, or office for the dead; commonly performed when the corps lay uninterred in the church. See FUNERAL.

OBIT is alſo an anniverſary-office, or maſs, held yearly in the Romiſh church, on a certain day, in memory of ſome perſon deceaſed. See MASS and ANNIVERSARY.

One of the moſt ancient *obits* in Europe, is that of king *Childebert*, founded in the abby of St. Germains Deſprez; and ſaid on the eve of St. Thomas's day.

The tenure of *obit*, or chantry lands held of the ſubject by ſuch ſervice, is decreed to be extinct with us; by *Stat.* 1. Edward 6. See TENURE, SERVICE, *&c.*

OBITUARY, OBITUARIUM, a funeral regiſter, wherein are wrote the names of the dead, and the days of their burial; for whom obits or anniverſaries are to be performed. See REGISTER and OBIT.

Theſe, in ſome places, are alſo called *mortuaries*; but more frequently *necrologies*, or *calendars.* See NECROLOGY, CALENDAR, *&c.*

OBITUARY is more particularly uſed for a book containing the foundation, or inſtitution of the ſeveral obits in a church or monaſtery. See OBIT.

This is more frequently called *martyrology.* See MARTYROLOGY.

OBLATA, things given, or voluntarily offered, particularly to the king, by any of his ſubjects. See OBLATION.

They are thus called, by reaſon the *oblata*, or offerings to our kings, were ſo ſtrictly looked to in the reigns of king John and Henry III. that they were entered into the fine-roll, under the term *oblata*, and if not paid, put in charge to the ſheriff. See BENEVOLENCE.

OBLATA, in the exchequer, ſignifies old debts; brought, as it were, together from preceding years, and put to the preſent ſheriff's charge.

OBLATI, anciently, were ſecular perſons, who beſtowed themſelves, and their eſtates on ſome monaſtery, and were admitted as lay-brothers. See LAY-BROTHER.

There were ſome of theſe *oblata*, properly called *donati*, who gave their perſons, their families, and effects, and even entered into a kind of ſervitude themſelves and their deſcendants.

They were admitted by putting the bell-ropes of the church around their necks, and, as a mark of ſervitude, a few pence on their heads.

The donati took religious habits, but thoſe different from the monks. See HABIT.

In the archives of the abby of St. Paul de Verdun, is a permiſſion, given in 1360, to a man of that abby to marry a wife, on condition, that of the children ariſing from the marriage, one half ſhould belong to the abby in quality of *oblati*; the other half to the biſhop.—This kind of *oblati* are ſaid to have taken their firſt riſe in the eleventh century.

In the earlier times, thoſe only were called *oblati* whom their parents engaged from their infancy to the monaſtic life.—Thoſe who embraced it themſelves, when at an age capable of choice, were called *converts, converſi.*

The *oblati* made no profeſſion, yet kept the celibate, lived in obedience to the ſuperiors, and did the drudgery of the monaſtery.—Yet they differed from the ſervants of the houſe, who were allowed to marry.

The *oblati* and donati were properly ſervants by devotion, as the others were by condition.

Helyot ſays, the *oblati* differed from *converts*, inaſmuch as the latter made the profeſſion, and wore the habit, which the former did not. See CONVERT.

OBLATI were alſo, in France, a kind of lay-monks, anciently placed by the king in all the abbies, and priories in his nomination; to whom the religious were obliged to give a monk's allowance, on account of their ringing the bells, and ſweeping the church, and the court.

Theſe offices were uſually filled with lame ſoldiers, and invalids, ſome of whom had penſions on benefices without any duty.—But theſe *oblati*, with their penſions, have ſince been all removed to the hotel of the invalids at Paris.

OBLATIONS, OFFERINGS, properly denote things offered to God. See SACRIFICE.

In the canon law, *oblations* are defined to be any things offered by godly Chriſtians, to God, and the church, *i. e.* to the prieſts, whether they be moveables, or immoveables.

Oblations were anciently of various kinds, *viz. Oblationes altaris*, which the prieſt had for ſaying maſs.—*Oblationes defunctorum*, given by the laſt wills of the faithful to the church.—*Oblationes mortuorum*, thoſe given by the relations of the dead, at their burials.—*Oblationes pœnitentium*, thoſe given by penitents.—And *Oblationes pentecoſtales*, or Whitſun-offerings. See PENTECOSTALES.

Till the fourth century, the church had no fixed revenues, nor any other means of ſubſiſtence, but alms, or voluntary *oblations.* See TITHE, REVENUES, ALMS, *&c.*

OBLIGATION, an act whereby a perſon engages, or binds himſelf, or is bound by another, to do ſomething; as to pay a ſum of money, to be ſurety, or the like.

The acceptance of a bill of exchange is a kind of *obligation* to pay it. See EXCHANGE.

The exacting of intereſt on a ſum due by a ſimple *obligation*, is accounted *uſury.* See USURY.

All *obligations* ariſe from contracts, or quaſi-contracts; from crimes, or quaſi-crimes; and in the Roman law, were either civil, or prætorian, *i. e.* either approved by the civil law, or introduced by the prætor.

There are three kinds of *obligations*; *natural, civil*, and *mixt.*

Natural **OBLIGATIONS** are founded on the mere bond of natural equity, without any civil neceſſity, and without producing any action of conſtraint.—Such are the *obligations* a minor is under.

Civil **OBLIGATION**, is that ſupported on civil authority alone, and which induces a conſtraint, without any principle or foundation in natural equity.—Such is the *obligation* on a man condemned unjuſtly.

Mixt **OBLIGATION**, or an *obligation* both natural and civil, is that which being founded in natural equity, is further confirmed and enforced by civil authority.

There are alſo *perſonal obligations, hypothecary obligations, obligations* of goods, body, *&c.*

OBLIGATION, in a more ſtrict ſenſe, denotes a bond, containing a penalty, with a condition annexed, for payment of money at a certain time; or for performance of covenant, or the like.

A bond, or obligation is ſaid to differ from a bill, in that the latter is commonly without a penalty, and without condition.—Yet a bill may be *obligatory.* Coke on Littl. See BILL.

'Till the conqueſt, writings were rendered *obligatory* by certain marks of gold croſſes, *&c.* The Normans firſt introduced the cuſtom of making bills and *obligations* with a print or ſeal in wax ſet to every one's ſignature, atteſted by three witneſſes. See SIGNATURE, SEAL, *&c.*

OBLIQUATION, in catoptricks.—*Cathetus of* OBLIQUATION, is a right line drawn perpendicular to a mirrour, in the point of incidence, or reflexion of a ray. See CATHETUS, MIRROUR, *&c.*

OBLIQUE, in geometry, ſomething a-ſlant, indirect, or that deviates from the perpendicular. See PERPENDICULAR.

OBLIQUE *angle*, in geometry, is an angle that is either acute or obtuſe, *i. e.* any angle, except a right angle. See ANGLE.

OBLIQUE-*angled-triangle* is that whoſe angles are *oblique, i. e.* either obtuſe or acute. See TRIANGLE.

OBLIQUE *Line*, a line which falling on another, makes an *oblique* angle. See LINE.

A line falling *obliquely* on another makes the angle on one ſide obtuſe, and that on the other, acute.

OBLIQUE *Planes*, in dialing, are ſuch as recline from the zenith, or incline toward the horizon. See DIAL and PLANE.

The obliquity, or quantity, of this inclination, or reclination, is eaſily found by a quadrant; it being an arch of ſome azimuth, or verticle circle, intercepted between the vertex of the place and of that plane.—This azimuth, or vertical circle, is always perpendicular to the plane. See DIALING.

OBLIQUE *Percuſſion*, is that wherein the direction of the ſtriking body, is not perpendicular to the body ſtruck; or is not in a line with its centre of gravity. See PERCUSSION.

The ratio an *oblique* ſtroke bears to a perpendicular one, is demonſtrated to be as the ſine of the angle of incidence to the radius.

OBLIQUE *Powers*, or *Forces.* See POWERS, MOTION, DIRECTION, *&c.*

OBLIQUE *Projection*, in mechanicks, is that where a body is impelled in a line of direction which makes an *oblique* angle with the horizontal line. See PROJECTION.

OBLIQUE *Sphere*, in geography, is that whoſe horizon cuts the equator *obliquely*; and one of whoſe poles is raiſed above the horizon, equal to the latitude of the place. See Sphere.

It is this obliquity that occaſions the inequality of days and nights. See Night and Day.

Thoſe who live under an *oblique* ſphere (as we, and all thoſe in the temperate zone, do) never have their days and nights equal; except in the equinoxes. See Equinox.

Oblique *Aſcenſion*, in aſtronomy, an arch of the equator intercepted between the firſt point of Aries, and that point of the equator which riſes together with a ſtar, *&c.* in an *oblique* ſphere. See Ascension.

Oblique *Deſcenſion*, an arch of the equator, intercepted between the firſt point of Aries, and that point of the equator, which ſets with a ſtar, *&c.* in an *oblique* ſphere; and reckoned from Weſt to Eaſt. See Descension.

To find the *oblique aſcenſion* and *deſcenſion* by the globe. See Globe.

Oblique *Sailing*, in navigation, is when the ſhip being in ſome intermediate rhumb, between the four cardinal points, makes an *oblique* angle with the meridian, and continually changes both its latitude and longitude. See Rhumb, and Loxodromic.

Oblique ſailing is of three kinds; *viz. Plain ſailing*, *Mercator's ſailing*, and *great circle ſailing*. See Sailing.

The ſeamen alſo call the application of the method of calculating the parts of *oblique* plain triangles, in order to find the diſtance of a ſhip from any cape, head-land, *&c. oblique ſailing*.

Oblique *Diſtillation*, in chymiſtry. See Distillation.

Oblique *Flank*, in fortification. See Flank.

Oblique *Caſes*, in grammar, are all the caſes of the declenſions of nouns, beſides the nominative. See Case.

OBLIQUE, Obliquus, in anatomy, (ſee Muscle) is applied ſubſtantively, to ſeveral muſcles of the head and eye; particularly, the

Obliquus *Capitis Major*, or *Par* Obliquum *Inferius*, the ſixth muſcle of the head; ſo called, becauſe ſerving to turn the head aſide: though it has neither its origin nor inſertion in the head. See Head.

It riſes fleſhy from the external parts of the ſpine of the ſecond vertebra of the neck, and ſwelling into a fleſhy belly, runs *obliquely* to the tranſverſe proceſs of the firſt vertebra.—This ſome rank among the muſcles of the neck. See Neck.

Obliquus *Capitis Superior*, or *Minor*, or *par obliquum Superius*; the ſeventh muſcle of the head, which ſpringing fleſhy from the tranverſe proceſſes of the ſecond vertebra of the neck, and aſcending *obliquely*, is inſerted laterally into the occiput.

Others will have its origin to be in the occiput, where the common opinion places its inſertion; its inſertion they make in the tranſverſe proceſſes of the firſt vertebra, near that of the ſame ſide.

The two *oblique* muſcles, by pulling the tranſverſe proceſs, give the head a ſemi-circular motion. See Vertebra.

Obliquus *Oculi Superior*, or *Major*, the fifth muſcle of the eye. See Eye.

It has its origin in the upper part of the orbit; whence tending upwards towards the inward canthus of the eye, it paſſes through a cartilage on the bone of the forehead, called *trochlea*; whence alſo the muſcle itſelf is called *trochlearis*; thence it is reflected to its termination in the *ſclerotica*, on the back part of the ball of the eye.

When this muſcle acts, that part of the ball of the eye is drawn downwards towards the trochlea, whereby the pupil is directed downwards, towards the leſſer canthus, and at the ſame time the whole ball of the eye ſomewhat outwards.

Obliquus *Oculi Inferior*, or *Minor*, it riſes from the external margin of the lower part of the orbit, near the inner canthus; whence riſing towards the outward canthus, it terminates near the other.—It draws the ball of the eye outwards, and turns its pupil upward, contrary to the former. See Rotator.

Obliquus *Deſcendens*, or *Declivis*, a very broad pair of muſcles of the abdomen, each covering one half thereof, and part of the thorax; ſo called from the *oblique* courſe of its fibres.—It ariſes from the two laſt true ribs and five ſpurious ones; and is indented with the ſerratus major anticus by five or ſix digitations, each whereof receives a nerve from the interſtices of the rib: It ſprings likewiſe from the margin of the ilium; and ends in a broad tendon in the linea alba.—See *Tab. Anat.* (Myol.) *fig.* 7. n. 19. *fig.* 1. n. 45. and *fig.* 6. n. 31.

Beſides the ordinary uſe aſcribed to it by all anatomiſts, which is to compreſs the inteſtines and bladder; Cowper and Gliſſon attribute to it another, which is to turn the trunk of the body without moving the feet.

Obliquus *Aſcendens*, or *Acclivis*,* lies under the lower part of the former; running with a courſe juſt contrary, from the lower part upwards. Its fleſhy fibres have their origin from the edge of the ilium, and end at the ſpurious ribs. It terminates with a large double tendon in the linea alba; the upper part whereof creeping over the muſculus rectus, and the other creeping under it, and joining together at the linea alba, do, as it were, ſheath the rectus.—See *Tab. Anat.* (Myol.) *fig.* 2. n. 30. *fig.* 1. n. 44.

Its uſe is to ſhut and compreſs the belly, as alſo the cavity of the thorax in reſpiration; and it aſſiſts, with its antagoniſt, the *deſcendens*, in turning the body without moving the legs.

Obliquus *Auris*, lies in the external part of the canal of the aquæduct; whence paſſing upwards and backwards, it enters the tympanum, by a very *oblique* ſinuoſity immediately above the bony circle, to which the tympanum is fixed; and is inſerted into the ſlender proceſs of the malleus.

OBLIQUITY, that which denotes a thing *oblique*. See Obliquity.

The *Obliquity of the ſphere*, is the cauſe of the inequality of the ſeaſons, of nights and days. See Season, *&c.*

Obliquity *of the ecliptic*, is the angle which the ecliptic makes with the equator. See Ecliptic.

Meſſ. Caſſini and de la Hire, make the *Obliquity of the ecliptic*, by their obſervations, 23°, 29′. M. le Chevalier de Louville, from later obſervations, makes it 23°, 28′, 41″.

The ſame author, giving the hiſtory of the ſeveral determinations of this *obliquity*, by all aſtronomers in all ages, obſerves, that they conſtantly diminiſh; and thence takes occaſion to ſuſpect, that the real *obliquity* of the ecliptic itſelf may have been diminiſhed ſince the time of the ancient aſtronomers.

He goes ſo far, as even to fix the proportion of the diminution, which he makes to be at the rate of half a minute in fifty years. According to an ancient tradition among the Egyptians, mentioned by Herodotus, the ecliptic was formerly perpendicular to the equator.

The libration of the ſphere makes ſome alterations in the *obliquity* of the ecliptic; ſo that Wolfius reckons a *great obliquity* of 23°, 53′; a *mean obliquity* of 23°, 41; and a *ſmall one* of 23°, 30′.

OBLONG, in geometry, a figure longer than it is broad. See Figure.

Thus, a rectangled parallelogram, whoſe ſides are unequal, is an *oblong*; ſee Parallelogram: So an ellipſis is alſo an *oblong*. See Ellipsis.

OBLONGATA *Medulla*. See Medulla and Crura.

OBOLATA *Terræ*, in our ancient law-books, is a certain quantity of land, which ſome authors fix at half an acre; though others make it but half a perch.

According to Thomaſius, *obulus terræ* contains ten feet in length, and five in breadth. See Fardingdeal.

OBOLUS,* an ancient ſilver money of Athens, the ſixth part of a drachma; worth ſomewhat more than a penny farthing ſterling. See Drachma, and Coin.

* The word comes from the Greek οϐολος, of οϐελος, ſpit, or broach; either becauſe it bore ſuch an impreſſion; or becauſe, according to Euſtathius, it was in form thereof. But thoſe now in the cabinets of the antiquaries are round.

Obolus was alſo uſed among our anceſtors for half a noble, or florin; where the noble was eſteemed as the penny; and its quarter part a farthing. See Noble.

In effect, in the old hiſtories and accounts of coins, we are to underſtand, by the word *denarius* the whole coin, be it angel, rial, *&c.* by the *obolus* its half; and by *quadrans* its fourth part. See Money, Penny, Denarius, *&c.*

Obolus, in medicine, is uſed for a weight of ten grains, or half a ſcruple. See Weight.

Du Cange ſays the *obolus* weighs three carats, or four grains of wheat: Others divide it into ſix areolæ; and the areola into ſeven minutes. Others into three ſiliquæ, each ſiliqua into four grains, and each grain into a lentil and half. See Grain, *&c.*

Among the Sicilians, *Obolus* alſo denoted the weight of a pound. See Pound.

OBREPTICIOUS, Obreptitius, a quality of letters patent, or any other inſtrument which confers a favour, title, or conceſſion; denoting it obtained of a ſuperior by ſurprize, or by concealing from him the truth, which was neceſſary to have been expreſſed to render it valid.

In which ſenſe the word ſtands oppoſed to *ſurreptitious*, where ſome falſhood has been expreſſed, in order to procure it the more eaſily.—*Obreption* annuls the grant wherever found.

By the canon law, a perſon demanding a benefice, without expreſſing thoſe he is already poſſeſſed of, forfeits, *&c.* by *obreption*.

OBRINE, Knights of Obrine, a military order inſtituted in the thirteenth century, by Conrade duke of Mazovia and Cujavia; whom ſome authors call alſo duke of Poland.

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* Acclivis *is compounded of* ad, to; and clivus, a cliff, a ſcantling, or ſloping.

He firſt gave them the name of *knights of Jeſus Chriſt.* Their firſt grand maſter was Bruno. Their chief end was to defend the country from the Pruſſians, who were yet idolaters, and committed great cruelties.

Duke Conrade putting them in poſſeſſion of fort Obrine; they hence took a new name: And it was agreed between them, that whatever lands they conquered from the Pruſſians, ſhould be equally divided with him.

But the Pruſſians blocking up the fort, ſo that none of the knights could get out; the order became uſeleſs, and was ſoon ſuppreſſed.—Upon this, Conrade called in the Teutonic knights. See TEUTONIC *Order.*

OBSCURA *Camera.* See CAMERA *Obſcura.*

OBSCURA *Clara.* See CLAIR-OBSCURE.

OBSCURE, ſomething that is dark, or that only receives and returns a little light. See LIGHT and SHADOW.

OBSCURE is alſo uſed in a figurative ſenſe, for a thing that is not clear, expreſs, and intelligible; that one does not fully apprehend; or that may be conſtrued in divers ſenſes. See OBSCURITY.

OBSCURE *Notion,* or *Idea.* See NOTION and IDEA.

Clair OBSCURE. See the article CLAIR-OBSCURE.

OBSCURITY, that which denominates a thing obſcure.

Obſcurity is a fault that may either be in the perception, or the diction.

Obſcurity in the perception, ariſes chiefly hence, that we do not conceive things as they are, or as we find them; but as we judge them to be, ere we know them: ſo that our judgment precedes our knowledge, and is made the rule, or ſtandard, of our conceptions.—Whereas nature and reaſon direct, that things ſhould be judged of according as they are known; and that they are to be known, not as they are in themſelves, but only in ſuch manner as God was pleaſed to have them known. See KNOWLEDGE.

Obſcurity in the diction, may ariſe, firſt, from the ambiguity of the ſenſe of words; ſecondly, from the figures or ornaments of rhetoric; thirdly, from the novelty, or obſoleteneſs of the words.

OBSECRATION, OBSECRATIO, in rhetoric, a figure whereby the orator implores the aſſiſtance of God, or man. See FIGURE.

This figure Cicero makes admirable uſe of, for K. Deiotarus, to Cæſar.—*Per dexteram te iſtam oro, quam regi Deiotaro hoſpes, hoſpiti porrexiſti: Iſtam inquam dexteram non tam in bellis & in prœliis, quam in promiſſis & fide firmiorem.*—Thus Virgil:

Quod te per cœli jucundum lumen, & auras,
Per genitorem oro, per ſpem ſurgentis iuli,
Eripe me his invictæ malis——

OBSEQUIES,* funeral ſolemnities, or ceremonies performed at the burials of eminent perſonages. See FUNERAL.

* The word is derived from the Latin *obſequium,* obedience; theſe *obſequies* being the laſt devoirs we can render to the deceaſed.

OBSERVANCE, literally denotes the act of obſerving, or complying with a rule, law, or ceremony.

Hence *obſervance* is ſometimes alſo uſed for a rule, ſtatute, or ordinance to be obſerved. See RULE.

OBSERVANCE, OBSERVANTIA, is particularly underſtood, in a monaſtic ſenſe, of a community of religious, who are tied to the perpetual obſervation of the ſame rule. In which ſenſe the word coincides with *congregation,* or *order.* See ORDER, *&c.*

The Cordeliers denominate themſelves, *religious of the obſervance;* the *great,* and the *leſſer obſervance.* See CORDELIERS.

Among the Bernardins, there are monks of the *ſtrict obſervance,* who eat nothing but fiſh. See BERNARDIN.

OBSERVANTINES, religious cordeliers of the obſervance. —In Spain, there are bare-footed *obſervantines.*

OBSERVATION, in the ſea-language, the taking the ſun's, or any ſtar's, meridian altitude, in order thereby to find the latitude. See MERIDIAN-*Altitude.*

For the method of making an *obſervation.* See LATITUDE. —The finding of a latitude from the meridian-altitude obſerved, they call *working an obſervation.*

OBSERVATIONS, in aſtronomy. See COELESTIAL *obſervations.*

OBSERVATORY, OBSERVATORIUM, a place deſtined for obſerving the heavenly bodies; or, a building uſually in form of a tower, raiſed on ſome eminence, and covered with a terrace, for making of aſtronomical obſervations.

The more celebrated *obſervatories,* are,—1°. The Greenwich *obſervatory,* built in 1676, by order of king Charles II. at the ſolicitation of Sir Jonas Moor and Sir Chriſtopher Wren; and furniſhed with the moſt accurate inſtruments by the ſame; particularly a noble ſextant of ſeven feet radius, with teleſcope-ſights.

The perſon to whom the province of obſerving was firſt committed, was Mr. J. Flamſteed; a man, who, as Dr. Halley expreſſes it, ſeemed born for the employment. For the ſpace of fourteen years, with unwearied pains, he watched the motions of the planets; chiefly thoſe of the moon, as was given him in charge; that a new theory of that planet, exhibiting all her irregularities, being found, the longitude might thence be determined.

In the year 1690, having provided himſelf of a mural-arch of 7 feet diameter, well fixed in the plane of the meridian, he began to verify his catalogue of the fixed ſtars, which hitherto depended altogether on the diſtances meaſured with the ſextant, after a new and very different manner, *viz.* by taking the meridian-altitudes, and the moments of culmination, or the right aſcenſion and declination. See CATALOGUE.

This inſtrument he was ſo pleaſed with, that he laid the uſe of the ſextant almoſt wholly aſide. Thus was the aſtronomer royal employed for thirty years; in the courſe of which time, nothing had appeared in public, worthy ſo much expence and preparation: So that the obſerver ſeemed rather to have been employed for his own ſake, and that of a few friends, than for the public; though it was notorious, the obſervations that had been made were very numerous, and the papers ſwelled to a great bulk.

This occaſioned prince George of Denmark, in the year 1704, to appoint certain members of the Royal Society, *viz.* the honourable Fr. Robarts, Sir C. Wren, Sir I. Newton, Dr. Gregory, and Dr. Arbuthnot, to inſpect Mr. Flamſteed's papers, and chuſe out of them ſuch as they ſhould think fit for the preſs; purpoſing to print them at his own expence: But the patron of the work dying, ere the impreſſion was half finiſhed, it lay ſtill for ſome time; till at length it was reſumed by order of queen Anne; and the care of the preſs committed to Dr. Arbuthnot; and that of correcting, and ſupplying the copy, to Dr. Halley.

Such was the riſe and progreſs of the *Hiſtoria Cœleſtis;* the principal part whereof is the catalogue of fixed ſtars, called alſo the *Greenwich catalogue.* See CATALOGUE.

The *Greenwich obſervatory* is found by very accurate obſervations to lie in 51°, 28', 30', north latitude.

2°. The *Paris obſervatory,* built by the late Louis XIV. in the fauxbourg St. Jaques.—It is a very ſingular, but withal a very magnificent building; the deſign of M. Perrault. It is 80 feet high, and a-top is a terrace.—It is here M. de la Hire has been employed.—The difference in longitude between this and the *Greenwich obſervatory* is 2°, 20', Weſt.

In the *Paris obſervatory* is a cave, or cellar, of 170 feet deſcent, for experiments that are to be made far from the ſun, *&c.* particularly ſuch as relate to congelations, refrigerations, indurations, conſervations, *&c.*

3°. Tycho Brahe's *obſervatory* was in the little iſland Ween, or the Scarlet Iſland, between the coaſts of Schonen and Zeland, in the Baltic.—It was erected and furniſhed with inſtruments at his own expence; and called by him Uraniburgh.—Here he ſpent twenty years in obſerving the ſtars. The reſult is his catalogue. See CATALOGUE.

Mr. Gordon, in *Phil. Tranſ.* obſerves, that this was none of the fitteſt places for ſome kind of obſervations, particularly the riſings and ſettings; as lying too low, and being land-locked on all the points of the compaſs but three; and the land-horizon exceedingly rugged and uneven.

4°. *Pekin obſervatory.* Father Le Compte deſcribes a very magnificent *obſervatory* erected and furniſhed by the late emperor of China, in his capital, at the interceſſion of ſome jeſuit miſſionaries, chiefly father Verbieſt, whom he made his chief obſerver.

The inſtruments are exceedingly large; but the diviſions leſs accurate, and the contrivance, in ſome reſpects, leſs commodious than thoſe of the Europeans. The chief are an armillary zodiacal ſphere of 6 Paris feet diameter, an equinoctial ſphere 6 feet diameter, an azimuthal horizon 6 feet diameter, a large quadrant 6 feet radius, a ſextant 8 feet radius, and a cœleſtial globe 6 feet diameter.

OBSESSION, the action, or rather paſſion, of being beſet by an evil ſpirit; which, without entring the body, torments, and, as it were, beſieges the perſon without. See DÆMONIAC.

In which ſenſe, *obſeſſion* differs from poſſeſſion. See POSSESSION.

The marks of *obſeſſion,* according to ſome, are a being hoiſted into the air, and thrown violently down without being hurt; ſpeaking languages never learnt; having an averſion to all acts and offices of religion, *&c.*

Some phyſicians look on all caſes of *obſeſſion* as natural, and curable by natural medicines, particularly an unguent called *unguentum carriohteri,* with purgatives, or vomitives.

Of this opinion is doctor Gabriel Clauderus, member of the Leopoldine academy, which he confirms with the teſtimony of Fromannus, in his treatiſe *De Faſcinationibus,* and Ganſius de Corallis: Adding, that it has been confeſſed by many witches and ſorcerers, that the plant hypericon, and other ſimples, *&c.* incommode them terribly, and prevent their operations.

He confirms this ſentiment hence, that the devil, in thoſe he thus beſets, makes uſe of the melancholic humour or the atra bilis, and the groſſer impurities of the blood, without always acting immediately of himſelf. For which he refers to the books of Melchior Sebizius, and Jerom Jordan *de Divino in homine*; and gives the proceſs of a cure of a manifeſt *obſeſſion* of a child of a year old at Delitſchebourg, three leagues from Leipſic.

OBSIDIONALIS,* an epithet which the Romans gave to a ſort of crown wherewith they honoured ſuch of their generals as had delivered a Roman army, or fortreſs, beſieged by the enemy; and had raiſed the ſiege, or obliged them to decamp. See CROWN.

* The word comes from the Latin *obſidio*, ſiege.

It was alſo called *graminea*, becauſe made of graſs, or herbs found on the ſpot, or ſoil.

It was the ſoldiery who beſtowed this crown; which, doubtleſs, was the reaſon of its not being of a more precious matter.

OBSTRUCTION, in medicine, a lett, or ſtoppage of the natural paſſages, or cavities of the body; occaſioned either by the exceſſive quantity, or the vicious quality of the humours; as lentor, thickneſs, or the like. See DISEASE.

Obſtructions are ſuppoſed uſually to ariſe from the groſs parts of the blood, detained in the extremities of the capillary veſſels, and thus blocking them up. See CAPILLARY.

Some phyſicians doubt whether there be any ſuch thing as *obſtructions* in the viſcera; and rather attribute the inconveniencies uſually aſcribed to *obſtructions*, to the acrimonies and crudities of the ſtomach.—But their reaſons are not convincing: It is true, *obſtructions* may not perhaps be ſo frequent as is uſually ſuppoſed; and many of the ſymptoms aſcribed to them, are doubtleſs owing to diſorders of the ſtomach; but then there's no denying that there are any *obſtructions* at all in the viſcera, &c. Scirrhus's, and other kinds of tumours are inconteſtable proofs hereof. See TUMOUR, SCIRRHUS, &c.

Obſtructions frequently prove the cauſes of dropſies. See DROPSY.

OBSTRUENTS. See the article DEOBSTRUENT.

OBSTRUXIT. *Quare* OBSTRUSIT. See QUARE.

OBTURATOR, in anatomy, a name given to two muſcles of the thigh; by reaſon of their ſhutting, or covering up, the foramen or aperture between the os pubis, and the hip-bone.

The *obturator internus* and *marſupialis* are the two parts, or diviſions that make the gemini. See GEMINI.

The *obturator externus* ariſes fleſhy from the exterior margin of the os pubis and iſchium, and is inſerted tendinous at the root of the great trochanter.—See *Tab. Anat.* (Myol.) *fig.* 7. n. 25.

OBTUSE literally imports blunt, dull, &c. in oppoſition to acute, ſharp, briſk, &c. See ACUTE, &c.

OBTUSE *Angle*, in geometry, an angle of more than 90 degrees, *i. e.* more than a quadrant of a circle; or an angle greater than a right angle. See ANGLE.

OBTUSE-ANGLED *Triangle*, is a triangle, one of whoſe angles is obtuſe. See TRIANGLE.

OBTUSE *Appui*. See the article APPUI.

OBVENTIONS, OBVENTIONES, in ancient law-books, ſignify the produce of a benefice, or ſpiritual living; including oblations, tithes, rents, and other revenues. See OBLATION, TITHE, BENEFICE, &c.

OCCASIO, in ancient law-writers, denotes a tribute which the lord impoſed on his vaſſals, or tenants, on occaſion of war and other exigencies. See AID.

OCCASIONAL *Cauſe*, &c. See the article CAUSE, &c.

OCCIDENTAL, a term uſed chiefly in commerce, to diſtinguiſh commodities brought from the Weſt-Indies, *i. e.* America, from thoſe brought from the Eaſt-Indies, which are ſaid to be *oriental*. See ORIENTAL.

In this ſenſe we ſay, *occidental bezoard*. See BEZOARD. *Occidental pearl*. See PEARL.

OCCIDENTAL *horizon*. See HORIZON.

OCCIPITAL, in anatomy, a term applied to the parts of the occiput, or of the hinder part of the head. See OCCIPUT.

OCCIPITAL *Bone*. See the article OCCIPITIS *Os*.

OCCIPITALES, or OCCIPITAL *Muſcles*; (ſee MUSCLE,) are a pair of muſcles of the head, whoſe origin is in the ſame place with that of the frontales, *i. e.* in the upper part of the head near the vertex, but which go a quite oppoſite courſe, *viz.* from before, hindwards, and are inſerted into the lower part of the hairy ſcalp, or ſkin of the occiput, which they ſerve to draw upwards.—See *Tab. Anat.* (Myol.) *fig.* 6. n. 1.

Dr. Drake obſerves, that the *occipitalis* and frontalis are one continued digaſtric muſcle on each ſide; that part called the *occipitalis*, after a ſmall aſcent, becomes a thin tendon, and marches over the whole bregma, where it divides; the one part going on to the os jugale, the other, growing fleſhy, acquires the name frontalis. See FRONTALES.

OCCIPITIS *Os*, or *Os proræ*, in anatomy, the fourth bone of the cranium; ſo called from its ſituation in the occiput. —See *Tab. Anat.* (Oſteol.) *fig.* 2. *lit.* g. *fig.* 7. n. 2. See alſo the article OCCIPUT.

It is the hardeſt and thickeſt of all the bones of the cranium. Its figure is triangular. In new-born children it is divided into four; but grows up, and becomes one in time. See CRANIUM.

It is joined to the bones of the ſinciput, at the lambdoidal ſuture; as likewiſe to the petroſa, and os ſphenoides at the ſpenoidal ſuture.

The parts of this bone are either ſolid, or hollow, *i. e.* empty. The ſolid are two proceſſes, called *coronæ*. The hollow parts are either foramina, or ſinus's.

The foramina are either common, or proper: The common are two, one on each ſide common with the oſſa petroſa, affording a paſſage to the nerves, par vagum, and to the internal jugular veins.

The proper foramina are five: The firſt is very large, and through this it is that the ſpinal marrow paſſes. Two others give paſſage to the nerves of the tongue, and the two laſt an entrance to the cervical arteries. See NERVE, &c.

It has two large ſinus's within-ſide, for the reception of the two hemiſpheres of the cerebellum. See CEREBELLUM.

On each ſide the foramina which give paſſage to the ſpinal marrow, is uſually a proceſs lined with a cartilage, articulated with the firſt vertebra of the neck.

In lieu of this, is ſometimes only a prominence of the bone; which, or the proceſs where it is found, receives the inſertions of the muſcles of the head, whereof there are ten, *viz.* the par ſplenium, par complexium, par rectum majus externum, par rectum minus externum, par obliquum ſuperius, obliquum interius, par maſtoideum, rectum internum majus, rectum internum minus, and rectum laterale; each of which ſee in its proper place.

OCCIPUT, the hinder part of the head, or ſkull; or the part wherein is the os occipitis. See HEAD, CRANIUM, OCCIPITIS *Os*, &c.

Scultetus obſerves, that cauterizing the *occiput* is very frequent in many places.

OCCULT, ſomething ſecret, hidden, or inviſible.—The *occult* ſciences are magic, necromancy, cabbala, &c. See MAGIC, CABBALA, NECROMANCY, &c.

Agrippa has ſeveral books of *occult philoſophy*, full of the vaineſt, wildeſt dreams; and Fludd nine volumes of the *cabbala*, or *occult ſcience*, wrapt up under figures, or Hebrew characters.

Weak philoſophers, when unable to diſcover the cauſe of an effect, and unwilling to own their ignorance, ſay it ariſes from an *occult virtue*, an *occult cauſe*, an *occult quality*. See QUALITY, &c.

OCCULT, in geometry, is uſed for a line that is ſcarce perceivable, drawn with the point of the compaſſes, or a black-lead pencil. See LINE.

Occult, or dry lines, are uſed in ſeveral operations; as the raiſing of plans, deſigns of building, pieces of perſpective, &c. They are to be effaced when the work is finiſhed.

OCCULT *Cancers*. See the article CANCER.

OCCULTATION, in aſtronomy, the time a ſtar, or planet, is hid from our ſight, by the interpoſition of the body of the moon, or of ſome other planet. See ECLIPSE.

Circle of perpetual OCCULTATION, is a parallel in an oblique ſphere, as far diſtant from the depreſſed pole, as the elevated pole is from the horizon. See CIRCLE.

Between this line and the pole, all the ſtars contained do never riſe; but lie conſtantly hid under the horizon of the place. See OCULTATION, &c.

OCCUPANT, in law, he that firſt ſeizes and takes poſſeſſion of a thing. See OCCUPATION.

If a tenant hold land, &c. for the term of another's life; and ſuch tenant die firſt, without making any eſtate of it; he that firſt enters to hold that term out, is ſaid to acquire a property, and is called an *occupant*, by reaſon his title comes by the firſt occupation.

So, if a tenant, for his own life, grant over his eſtate to another; if the grantee dies before him, there ſhall be an *occupant*.

OCCUPATION, or OCCUPANCY, in the civil law, denotes the poſſeſſion of ſuch things as at preſent properly belong to no private perſon, but are capable of being made ſo: As, by ſeizing or taking ſpoils in war; by catching things wild by nature, as birds, and beaſts of game, &c. or by finding things before undiſcovered, or loſt by their proper owners. See POSSESSION.

OCCUPATION, is alſo uſed in common law, for the putting a man out of his freehold in time of war.

Occupation amounts to the ſame with diſſeiſin in time of peace; only that the former is deemed not ſo great an offence. See DISSEISIN.

OCCUPATION is alſo uſed for holding, tenure, or poſſeſſion. As, when we ſay, ſuch land is in the tenure, or *occupation* of ſuch a man, that is, in his poſſeſſion. See POSSESSION.

OCCUPATIONS, in the ſtatute *de Bigamis*, denote uſurpations upon the king, by uſing liberties, or franchiſes a perſon is not entitled to. See FRANCHISE.

As an unjuſt entry upon the king into lands and tenements, is called an *intruſion*; ſo an unlawful uſing of franchiſes is called an *occupation*. See INTRUSION.

OCCUPAVIT, in law, a writ which lies for him who is ejected out of his land, or tenement, in time of war: as a novel diſſeiſin lies for one ejected in time of peace. See DISSEISIN.

OCEAN, * the grand ſea, or the vaſt collection of ſalt and navigable water, which encompaſſes the whole earth. See EARTH and SEA.

* The word comes from the Latin *oceanus*, of the Greek ωκεανος, which Euſtathius fetches from ωκεως ναειν, to ſlide ſwiftly: Cthers ſay, the Greeks borrowed it from the Phœnicians, who called the circumference of the *ocean*, *og*, from the Hebrew חוג *hhog*, circuit, ambit.

The *ocean* is that huge body of waters wherein the two grand continents known to us, the new and old, are incloſed like iſlands. See CONTINENT, &c.

By computation it appears, that the *ocean* takes up conſiderably more of what we know of the terreſtrial globe, than the dry land. See TERRAQUEOUS.

Dr. Keil computes the ſurface of the whole *ocean* to be 85490506 ſquare miles; ſo that ſuppoſing the depth of the *ocean* at a medium to be ¼ of a mile, the quantity of water in the whole will be 21372626 ½ cubic miles.

Yet Dr. Burnet computes that all the waters in the *ocean* were not ſufficient to drown or overflow the dry land ſo high as the ſcriptures ſay it was at the deluge: Seven or eight *oceans*, according to him, would ſcarce have ſufficed. See DELUGE.

The *ocean* penetrating the land at ſeveral ſtreights, quits its name of *ocean*, and aſſumes that of *ſea*, or *gulf*; to which are uſually added ſome epithet to diſtinguiſh it; as Mediterranean-ſea, Perſian-gulf, &c. See SEA and GULF.—In very narrow places it is called *ſtreights*, *ſinus*. See STREIGHT.

The *ocean* takes different names according to the divers countries it borders on; as the *Britiſh ocean*, *German ocean*, &c.

According to Maty, the *ocean* may be commodiouſly divided into *ſuperior*, or *upper*; and *inferior*, or *lower*.

Upper OCEAN, which the Ancients called the *exterior*, as environing all the known parts of the world, he ſubdivides, according to the four cardinal points, into the *northern*, *ſouthern*, *eaſtern*, and *weſtern*.

Northern OCEAN, called alſo *glacial*, *frozen*, and *ſcythian*, is that part of the *upper ocean* next the north-pole, bounded on the ſouth with the arctic-circle, and the northern coaſts of Europe and Aſia, and on the north with the unknown lands about the pole.

It is called the *icy*, or *frozen ocean*, becauſe thoſe who have attempted a paſſage through it to China, &c. have always been ſtopped with the ice; and *ſcythian*, becauſe waſhing the coaſts of Scythia.

Weſtern, or *Atlantic* OCEAN, is that part of the grand *ocean* which waſhes the weſtern coaſts of Europe and Africa, extending from the arctic circle to the equinoctial.

Southern, or *European* OCEAN, is that part reaching from the equinoctial to the unknown antarctic lands.

Eaſtern, or *Indian* OCEAN, has its firſt name from its ſituation to the eaſt; as its latter from India, the chief country it waſhes.—It reaches from the coaſt of Ajan to the iſle aux Larrons, *i. e.* of Thieves.

Inferior, or *American* OCEAN, is that vaſt part of the grand *ocean* which waſhes the coaſts of America; unknown, in great meaſure at leaſt, to the Ancients. It is divided into three parts, *viz.*

The *north ſea*, which waſhes the eaſtern coaſts of America, from the arctic-circle to the tropic of capricorn.

The *magellanic ſea*, extending from the tropic of capricorn to the terra auſtralis incognita.

The *ſouth ſea*, or *pacific*, which waſhes the weſtern coaſts of America to the eaſt, as far as the iſle of Thieves; and from ſouth to north from the tropic of capricorn to the land of Jeſſo.

For the ſaltneſs of the OCEAN. See the article SALTNESS.

For the tides obſerved in the OCEAN. See the article TIDES.

Phil. Sachſius, in 1664, printed a diſſertation, entitled, *Oceanus microcoſmicus*, dedicated to Bartholine; wherein he ſhews that there is a circular motion in the waters, like that of the blood in the human body: That they all come from the *ocean*, and return thither again. The thought is Solomon's, *Eccleſ.* ch. 12. See VAPOUR, SPRING, &c.

OCHLOCRATIA, * a form of government, wherein the populace has the whole power and adminiſtration in its own hand. See GOVERNMENT.

* The word comes from the Greek οχλ☉, multitude, and χρατ☉, power, command.

OCTABIS, in law. See the article OCTAVE.

OCTAETERIDES, * in chronology, &c. the ſpace, or duration of eight years.

* The word is formed from the Greek οκταετηρις; compoſed of οκτω, eight, and ετ☉, year.

OCTAGON. See the article OCTOGON.

OCTAHEDRON, or OCTAEDRON, in geometry, one of the five regular bodies, conſiſting of eight equal and equilateral triangles. See REGULAR *Body*.

The *octahedron* may be conceived as conſiſting of two quadrilateral pyramids put together at their baſes. See PYRAMID.

Its ſolidity therefore is had by multiplying the quadrangular baſe of either, by one third of the perpendicular height of one of them; and then doubling the product. See SOLIDITY.

The ſquare of the ſide of an *octahedron* is in a ſubduple ratio of the ſquare of the diameter of the circumſcribing ſphere.

OCTANT, or OCTILE, in aſtronomy, an aſpect, or poſition of two planets, &c. wherein their places are diſtant an eighth part of a circle, or 45 degrees from one another. See ASPECT, and OCTILE.

OCTAPLA, * a term in the ſacred learning, uſed for a kind of ancient polyglot bible, conſiſting of eight columns. See BIBLE and POLYGLOT.

* The word is formed from the Greek οκτω, eight; *q. d.* ſomething with eight rows, or columns.

In the firſt column was the Hebrew text in Hebrew characters; in the ſecond, the ſame text in Greek characters; in the third, the Greek verſion of Aquila; in the fourth, that of Symmachus; in the fifth, the Septuagint; in the ſixth, that of Theodotion; in the ſeventh, that called the *fifth*; the laſt was that called the *ſixth*.

Origen was the author of the *octapla*, as well as of the *tetrapla*, and *hexapla*. See HEXAPLA, &c.

OCTATEUCH, in the ſacred iterature, is uſed for the eight firſt books of the Old Teſtament, *viz.* Geneſis, Exodus, Leviticus, Numbers, Deuteronomy, Joſhuah, and Judges. See BIBLE and PENTATEUCH.—Procopius of Gaza has ten commentaries on the *octateuch*.

OCTAVE, in muſic, an harmonical interval conſiſting of eight tones, or degrees of ſound. See INTERVAL, DEGREE, and SESQUIOCTAVE.

The moſt ſimple perception the ſoul can have of true ſounds, is that of uniſon; in regard the vibrations there begin and end together.—The next to this is the *octave*; wherein the more acute ſound makes preciſely two vibrations, while the graver or deeper makes one; and wherein, by conſequence, the vibrations of the two meet at every vibration of the more grave. See TUNE, GRAVITY, &c.

Hence uniſon and *octave* paſs almoſt for the ſame concord. See UNISON.

Hence alſo the proportion of the ſounds that form the *octave* are in numbers, or in lines, as 2 to 1; ſo that two chords or ſtrings of the ſame matter, thickneſs, and tenſion, one whereof is double the length of the other, produce the *octave*. See CHORD.

The *octave* is called by the Ancients *diapaſan*, becauſe containing all the ſimple tones and concords; all of which derive their ſweetneſs from it, as they ariſe more or leſs directly out of it. See CONCORD.

To be juſt, it muſt contain diatonically 7 degrees, or intervals; and conſequently 8 terms, or ſounds, whence its name, *octave*.

The *octave* containing in it all the other ſimple concords, and the degrees being the differences of theſe concords, it is evident the diviſion of the *octave* comprehends the diviſion of all the reſt. See SYSTEM.

By joining, therefore, all the ſimple concords to a common fundamental, we have the following ſeries:

$$1 : \tfrac{5}{6} : \tfrac{4}{5} : \tfrac{3}{4} : \tfrac{2}{3} : \tfrac{5}{8} : \tfrac{3}{5} : \tfrac{1}{2}.$$

Fund. 3d.l, 3d.g, 4th, 5th, 6th.l, 6th.g, 8ve.

Again, the ſyſtem of *octave* containing all the original concords; and the compound concords being the ſum of *octave*, and ſome leſſer concord; in order to have a ſeries to reach beyond an *octave*, we muſt continue them in the ſame order through a ſecond *octave*, as in the firſt; and ſo on through a third and fourth *octave*. Such a ſeries is called the *ſcale of muſic*. See SCALE.

Though the compoſition of *octaves* may be carried on infinitely, yet three or four *octaves* is the greateſt length we go in ordinary practice. The old ſcales went no further than two, or at moſt three *octaves*, which is the full compaſs of an ordinary voice. And, notwithſtanding the perfection of the *octave*, yet after the third, the agreement diminiſhes very faſt; nor do they ever go ſo far at one movement, as from one extreme to the other of a double or triple *octave*; ſeldom beyond a ſingle *octave*: Nor is either voice or inſtrument well able to go beyond.—To form a fourth *octave*, if the acuter ſtring be half a foot, which is but a ſmall length to give a clear ſound; the longer muſt be eight feet. If then we go beyond the fourth *octave*, either the acute term will be too ſhort, or the grave one too long.

The *octave* is not only the greateſt interval of the ſeven original concords, but the firſt in degree of perfection. As it is the greateſt interval, all the leſs are contained in it: Indeed, the manner wherein the leſs concords are found in the *octave*, is ſomewhat extraordinary; *viz.* by taking both an harmonical and arithmetical mean between the extremes of the *octave*, and then both an arithmetical and harmonical mean between each extreme, and the moſt diſtant of the two means laſt found; *i. e.* between the laſt extreme and the firſt arithmetical, and between the greater extreme and the firſt harmonical mean, we have all the leſſer concords. See CONCORD.

Mr. Malcolm obſerves, that any wind-inſtrument being overblown, the ſound will riſe to an *octave*, and no other concord; which he aſcribes to the perfection of the *octave*, and its being next to uniſon.

From this ſimple and perfect form of the *octave*, ariſes this peculiar property, that it may be doubled, tripled, *&c.* and ſtill be concord, *i. e.* the ſum of two or more *octaves* are concord; though the more compound, gradually, the leſs agreeable. He adds, there is that agreement between its extremes, that whatever ſound is concord to one extreme of the *octave*, is ſo to the other.

Des Cartes, from an obſervation of the like kind, *viz.* that the ſound of a whiſtle, or organ-pipe, will riſe to an *octave*, if forcibly blown, concludes, that no ſound is heard, but its acute *octave* ſeems ſome way to echo or reſound in the ear.

OCTAVE, or OCTABIS, in law, denotes the 8th day after any feaſt, incluſively. which ſpace is alſo called *utas*.

OCTAVE, among the Romaniſts, is uſed for the ſpace, or period of eight days allowed for the celebration of a feaſt, or ſervice in commemoration of ſome ſaint, or on other ſolemn occaſions.

Eaſter, Whitſontide, S. John Baptiſt, S. Lawrence, Epiphany, the Dedication, *&c.* are celebrated with *octaves*.—The office in the *octave* is ſemi-double.

OCTILE, or OCTANT, in aſtrology, an aſpect of two planets when diſtant from each other by an eighth of the zodiac, *i. e.* a ſign and half, or 45°. See OCTANT and TRIOCTILE.

OCTO, *Ad* OCTO. See the article AD OCTO.

OCTOBER, the eighth month of the year, in Romulus's calendar; though the 10th in that of Numa, Julius Cæſar, *&c.* conſiſting of 31 days. See MONTH, CALENDAR, *&c.*

October has ſtill retained its firſt name, in ſpite of all the different names the ſenate, and Roman emperors would have given it.—The ſenate ordered it to be called *Fauſtinus*, in honour of *Fauſtina* the wife of Antoninus the emperor: Commodus would have had it bear the name of *Invictus*; and Domitian made it be called *Domitianus* after his own name.

OCTOGON, or OCTAGON, in geometry, a figure of eight ſides and eight angles. See FIGURE and POLYGON.

When all the ſides and angles are equal, it is called a *regular octogon*, or an *octogon* that may be inſcribed in a circle.

OCTOGON, in fortification, denotes a place that has eight baſtions. See BASTION.

OCTOSTYLE, in the ancient architecture, the face of a building, or ordonnance, containing eight columns.

The eight columns of the *octoſtyle* may either be diſpoſed in a right line, as in the Pſeudodiptere temple of Vitruvius, and in the Pantheon; or in a circle, as in the round Monoptere temple of Apollo Pythius at Delphi, *&c.*

OCTO *Tales*. See the article TALES.

OCULARES *Dentes*, or *Cynodentes*, the eye-teeth. See TOOTH.

OCULUS, in anatomy. See the article EYE.

OCULI CANCRORUM. See the article CRABS-*Eyes*.

OCULI, *Eyes*, in botany, the gemmæ, or buds of a plant juſt putting forth, or the knots out of which the buds ariſe. See GERMEN, PRUNING, ENGRAFTING, *&c.*

Adductor OCULI. See the article ADDUCTOR.

Depreſſor OCULI. See the article DEPRESSOR.

Elevator OCULI. See the article ELEVATOR.

Obliquus OCULI. See the article OBLIQUUS.

ODA, in the Turkiſh ſeraglio, ſignifies a *claſs*, *chamber*, or *order*. See SERAGLIO.

The grand ſignior's pages are divided into five claſſes, or chambers, called *Oda*. See PAGE.

The firſt, which is the loweſt in dignity, is called the *great oda*, from the number of perſons that compoſe it.

Theſe are the juniors, who are taught to read, write, and ſpeak the languages; which are the Turkiſh for this world; the Arabic for paradiſe; and the Perſian for hell, by reaſon of the hereſy of the people that ſpeak it.

The ſecond is called the *little oda*; where, from the age of 14 or 15 years, the youth are trained up to arms, and the ſtudy of ſuch polite learning as the Turks are acquainted withal; *viz.* logic, arithmetic, geometry, and a little aſtrology.

In each of theſe chambers, is a page of the privy chamber who ſuperintends them, as the prefects in the colleges of the jeſuits.

The third chamber, called *kilar-oda*, comprehends two hundred pages; which, beſide their other exerciſes, are commanded by the kilerdgi-bach, for the ſervice of the buttery and fruitery.

The fourth only conſiſts of twenty-four, which, under the khazineda-bachi, take care of the treaſure in the grand ſignior's apartment, where they never enter with any clothes on that have pockets.

The fifth is called *khas-oda*, *i. e.* privy-chamber, and conſiſts of forty pages, which attend the emperor's bed-chamber. The firſt of this chamber is called *oda-bachi*, the ſecond *ſiliktar*, &c.

Eight of theſe pages keep conſtant guard every night in the emperor's bed-chamber. They are poſted in ſeveral places, ſome nearer him, others farther off, according to their degrees in the chamber. They are to take care the light kept conſtantly in the chamber, do not glare in his eyes, and awake him; and if they find him diſturbed with any troubleſom dream, to take care he be awaked by one of the aga's.

ODABACHI, or ODDOBASSI, an officer in the Turkiſh ſoldiery, equivalent to a ſergeant, or corporal among us.

The common ſoldiers, and janizaries, called *oldachis*, after having ſerved a certain term of years, are preferred, and made biquelars; and of biquelars in time become *odabachi's*, *i. e.* corporals of companies, or chiefs of certain diviſions, whoſe number is not fixed, being ſometimes ten, and ſometimes twenty.

Their pay is ſix doubles *per* month, and they are diſtinguiſhed by a large felt, a foot broad, and above a foot long, hanging on the back with two long oſtrich feathers.

ODD. See the articles EVENLY and FOOT.

ODE,* ODA, in the ancient poetry, a ſong; or a compoſition proper to be ſung, and compoſed for that purpoſe; the ſinging uſually accompanied with ſome muſical inſtrument, chiefly the lyre. See SONG and LYRIC.

* The word comes from the Greek *ᾠδὴ*, *cantus*, ſong, or ſinging.

Ode, in the modern poetry, is a lyric poem, conſiſting of long and ſhort verſes, diſtinguiſhed into ſtanza's, or ſtrophes, wherein the ſame meaſure is preſerved throughout.

The *Odes* of the Ancients, Voſſius obſerves, had a regular return of the ſame kind of verſe, and the ſame quantity of ſyllables in the ſame place of every ſimilar verſe: "But there "is nothing, (ſays he) but confuſion of quantities in the mo-"dern *odes*; ſo that to follow the natural quantity of our "ſyllables, every ſtanza will be a different ſong."

He ſhould have obſerved, however, that all the ancient *odes* were not of ſuch kind. But he proceeds: "The "Moderns have no regard to the natural quantity of the "ſyllables, and have introduced an unnatural and barba-"rous variety of long and ſhort notes, which they apply "without any regard to the natural quantity of the ſylla-"bles; ſo that it is no wonder our vocal muſic has no "effect." *de poem. cantu.* See VERSE, VOCAL *Muſic*, QUANTITY.

Among the Ancients, *ode* ſignified no more than a ſong; with us, they are different things.—The ancient *odes* were generally in honour of their gods, as many of thoſe of Pindar and Horace: ſometimes on other ſubjects, as thoſe of Anacreon, Sappho, *&c.*—The Engliſh *odes* are generally compoſed in praiſe of heroes, and great exploits; as thoſe of Dryden, Prior, *&c.*

The diſtinguiſhing character of the *ode* is *ſweetneſs*: The poet is to ſooth the minds of his readers by the variety of the verſe, and the delicacy of words, the beauty of numbers, and the deſcription of things moſt delightful in themſelves. Variety of numbers is eſſential to the *ode*.

At firſt, indeed, the verſe of the *ode* was but of one kind; but for the ſake of pleaſure, and the muſic to which they were ſung, they by degrees ſo varied the numbers and feet, that their kinds are now almoſt innumerable. One of the moſt conſiderable is the pindaric, diſtinguiſhed by the boldneſs and rapidity of its flights. See PINDARIC.

The ancient *ode* had originally but one ſtanza, or ſtrophe; but was at laſt divided into three parts, *ſtrophe*, *antiſtrophe*, and *epode*.—The prieſts going round the altar, ſinging the praiſe of the gods, called their firſt entrance *ſtrophe*, *i. e.* turning to the left: the ſecond, turning to the right, they called *antiſtrophe*, *q. d.* returning. Laſtly, ſtanding ſtill before the altar, they ſung the remainder; which they called *epode*. See STROPHE, ANTISTROPHE, and EPODE.

Alcaic ODE. See the article ALCAIC.

ODEUM, Ωδεῖον, among the Ancients, was a place deſtined for the rehearſal of the muſic to be ſung on the theatre.

ODEUM was ſometimes alſo extended to buildings that had no relation to the theatre.—Pericles built an *odeum* at Athens, where muſical prizes were contended for: Pauſanias ſays, that Herod the Athenian built a magnificent *odeum* for the ſepulchre of his wife.

Eccleſiaſtical writers alſo uſe **Odeum** for the choir of a church. See **Choir.**

ODIO *& Atia*, anciently called *breve de bono & malo*, is a writ directed to the ſheriff, to enquire whether a man, being committed to priſon on ſuſpicion of murder, be committed on juſt ſuſpicion, or only malice, and ill will.

ODONTALGIA,* in medicine, the tooth-ach; one of the moſt common, yet moſt cruel pains the body is ſubject to. See Tooth.

* The word is Greek οδονταλγια, formed from οδος, tooth, and αλγος, pain.

Its cauſe is ſome ſharp ſeroſity, thrown on the membrane that lines the ſockets, or alveoli of the teeth. The liquor is ſometimes ſo very ſharp and corroſive, that it eats away the teeth by little and little, and makes them fall piece-meal.—its more remote cauſes are ſugars, very hot things, and very cold acids, &c.

The diſeaſe is frequently attended with an inflammation, or œdematous tumour of the jaw.—It is ſometimes alſo owing to a worm found in the root of the tooth.

The academiſts *Curioſi Naturæ*, decad II. mention an *odontalgy* cured by a box on the ear given the patient; and add an inſtance of blindneſs and *odontalgy* cauſed by ſhaving a man's beard. The very ſight of a remedy frequently drives away the pain.

ODONTOIDES,* Οδοντοειδης, in anatomy, an apophyſis in the middle of the ſecond vertebra; ſo called from its reſemblance to a tooth. See Pyrenoides and Vertebra.

* The word is formed from the Greek οδος, tooth, and ειδος, form.

Its ſurface is ſomewhat unequal, that the ligament which comes out of it and binds it to the occiput, may take the better hold.

It is alſo encompaſſed with a ſolid ligament, contrived on purpoſe to prevent the ſpinal marrow from being compreſſed by this apophyſis.

ODOR, or **Odour.** See the article Smell.

ODORAMENTUM, in pharmacy, a medicine applied for the benefit of its ſmell, whether it be fetid, or agreeable. See Suffitus.

Such are frequently uſed in hyſteric and hypochondriac diſorders; *e. gr.* aſſa fœtida, camphor, &c. See Nodulus.

ODORIFEROUS *Glands*. See Gland.

ODOROUS, or **Odoriferous** *Things*, are ſuch as exhale a briſk, agreeable ſmell, ſenſible at a diſtance. See Smell.

Such are the jeſſamin, roſe, tuberoſe, &c. See Perfume.

ODYSSEE,* **Odyssea**, an epic poem of Homer, wherein he relates the adventures that befel Ulyſſes in his return to Italy from the ſiege of Troy. See Epic.

* The word is formed from the Greek οδυσσεια, which ſignifies the ſame, of οδυσσευς, Ulyſſes.

The deſign of the *iliad*, F. Boſſu obſerves, is to inſtruct the ſtates of Greece conſidered as united in one body, or as parts of the whole; and that of the *odyſſee*, to inſtruct thoſe ſame ſtates, conſidered in their private capacities. See Iliad.

A ſtate conſiſts of two parts: The head which commands is the firſt; and the members that obey the ſecond. Now, inſtructions are required both for the one and the other; but it is poſſible to have them both conveyed under the ſame perſon.

The fable, then, of the *odyſſee* is as follows.—A prince had been obliged to quit his country, and lead an army of his ſubjects upon a foreign expedition: after having glorioſly executed this, he was upon his return home; but in ſpite of all his endeavours, was detained for ſeveral years by tempeſts which threw him on ſeveral countries very different from one another as to manners, cuſtoms, polity, &c.

In the dangers he had to ſtruggle withal, his companions, neglecting his advice, all periſh, through their own default. In the mean time, the great men of his country, abuſing his abſence, commit ſtrange diſorders in his palace, ſquander his treaſure, lay ſnares for his ſon, and will needs force his wife to chooſe a huſband among them; all this from an opinion he was entirely loſt. But at length he returns; and having diſcovered himſelf to his ſon, and ſome others of his friends who had perſiſted in their allegiance, he becomes an eye-witneſs of the inſolence of his courtiers; puniſhes them as they deſerved, and reſtores that peace and tranquillity to his iſland, which had been baniſhed during his abſence. See Fable.

The truth or model whereon this fable is founded, is, that a perſon's abſence from home, ſo as that he cannot have an eye to his affairs, occaſions great diſorders. Accordingly, the hero's abſence is the principal and moſt eſſential part of the action; and takes up the greateſt part of the poem.

This poem, Boſſu adds, is more calculated for the people, than the *iliad* is, where the ſubjects ſuffer rather from the ill conduct of their princes, than by their own fault. The great names of hero's, Ulyſſes, &c. do not here repreſent the pooreſt peaſants leſs than princes, Cæſars, Alexanders, &c. The meaneſt people are as liable to ruin their eſtates and families by negligence, &c. as the greateſt; and accordingly have as much need of Homer's lectures, and are as capable of profiting by them, as kings themſelves. See Æneid.

Gerard Croes, a Dutchman, in a book intitled ΟΜΗΡΟΣ ΕΒΡΑΙΟΣ, printed at Dort in 1704, endeavours to prove that the ſubjects of Homer's two poems are taken from the ſcriptures: that the action of the *odyſſee*, in particular, is nothing elſe but the adventures of the Iſraelites till the death of Moſes; and that the *odyſſee* was compoſed before the *iliad*, the ſubject whereof is the taking of Jericho. What fancies!

OECONOMICS, **Oeconomica**, that part of moral philoſophy which teaches how to manage the affairs of a family, or houſhold. See Morality and Oeconomy.

OECONOMUS, Οικονομος, a perſon appointed to direct, and manage a vacant church revenue, or that of an hoſpital, or other community.

Oeconomus was alſo anciently uſed for a protector, or advocate, who defended the rights and effects of churches, monaſteries, &c. See Advocate, and Advouee.

Oeconomus was alſo an appellation given to a church-officer, who took care of the buildings, and repairs of the church, and received and diſtributed alms according to the directions of the biſhop.

In which ſenſe, the ſixth council appoints that every church have its *oeconomus*.

OECONOMY, Οικονομια, the prudent conduct, or diſcreet, and frugal management of a man's eſtate, or that of another.

To recommend *oeconomy*, a modern author obſerves, that land as good as moſt in England is let at 20 *s.* an acre *per annum*, and ſold at 20 years purchaſe, or for 20 pounds. Now, in an acre of land are 43560 ſquare feet, and in 20 pounds are 4800 pence: by which dividing 43560, the quotient will be 9, and 360 remaining; which ſhews that one penny will purchaſe 9 ſquare feet and almoſt 13 inches of land, *viz.* a piece 3 feet long and 3 broad, and ſomething more.

Whence it follows, that two ſhillings purchaſes a piece of ground of 216 feet; *viz.* 18 feet long, and 12 feet broad; enough to build a pretty houſe upon, and room for a little garden.

Animal **Oeconomy**, the firſt branch of the theory of medicine; or that which explains the parts of the human body, their ſtructure, and uſe; the nature and cauſes of life and health, and the effects or phænomena ariſing from them. See Medicine.

This is otherwiſe called *phyſiology*, and its objects juſt enumerated are called *naturals*, or *res ſecundum naturam*. See Naturals.

Legal, or *Jewiſh* **Oeconomy** or *Diſpenſation*, is the manner wherein God thought good to guide and govern his people under the miniſtry of Moſes. See Judaism.

This included not only the political and ceremonial laws, but alſo the moral law, inaſmuch as it pronounced a curſe on all thoſe who did not fulfil it perfectly.

Evangelical, or *Chriſtian* **Oeconomy** or *Diſpenſation*, is uſed in oppoſition to the *legal*; and comprehends all that relates to the covenant of grace, which God has made with men by Jeſus Chriſt.

Oeconomy *of the parts of plants*. See Plant.

OECUMENICAL,* ſignifies as much as *general*, or *univerſal*. See General and Universal.

* The word is formed of the Greek, οικουμενικος, of οικουμενη, the habitable earth; or, the whole earth.

In this ſenſe we ſay, an *oecumenical* council, or ſynod; meaning one at which the whole Chriſtian church aſſiſted, or were invited to. See Council.

Du Cange obſerves, that many of the patriarchs of Conſtantinople, aſſumed to themſelves the quality and denomination of *oecumenical* patriarchs; particularly John the Faſter in 590, and Cyril his ſucceſſor.—Gregory the great of Rome, was exceedingly enraged at it; pretending it was a title of pride, and a character of anti-chriſt; as ſuppoſing the title *oecumenical* to imply univerſal biſhop, or biſhop of all the world: whereas, in effect, it implied no more, than the quality of chief of the Eaſtern church; in like manner as the firſt doctor of the church of Conſtantinople was called *doctor oecumenicus*.

The title *oecumenical* biſhop was firſt offered to Leo I. but he refuſed it; nor did his ſucceſſors accept of it for a long time. The fifth council of Conſtantinople gave it to John, patriarch of the city; though ſome of the Romaniſts pretend that the emperor Phocas gave it, by way of preference, to the biſhop of Rome.

But thoſe of Conſtantinople have preſerved it; and ſo late as the council of Baſil, that patriarch uſed the title. But *oecumenical* here is only to be underſtood as of the extent of each patriarchate. See PATRIARCH.

OEDEMA,* Οιδημα, a tumour which appears whitiſh, ſoft, and lax, without any notable change of colour, heat, pain, or pulſation; and which yields to the preſſure of the finger ſo as for ſome time to retain the dent or impreſſion thereof. See TUMOR.

* The word comes from the Greek οιδαω, I ſwell; whence οιδημα, a tumour. Accordingly, Hippocrates uſes the word *oedema* for any tumour in general.

The general cauſe of *oedemas* is vulgarly ſuppoſed to be a *pituita*, as it is called, or a phlegmy humour in the body. Contuſions, fractures, luxations, &c. when of long ſtanding, often give riſe to *oedemas*, eſpecially in dropſical and aged perſons: ſo do irregular living, want of exerciſe, ruptures, diſorders of the lymphatics, defluxions of humours, weakneſs of the joints, &c.

Its chief ſeat is the legs: In a leucophlegmatia, the whole body is *oedematous*. It frequently comes upon other diſeaſes, eſpecially clinics; and is familiar to women with child. It is dangerous when it tends to an abſceſs; when it hardens it becomes ſcirrhous. See OEDEMATOUS.

There are alſo *ſpurious oedemas*; in which caſe the pituitous humour is mixed with other humours; whence the tumor becomes eryſipelatous, ſcirrhous, and ſometimes gypſous; and hence wens, &c.

OEDEMATOUS, in medicine, ſomething that is of the nature of an *oedema*; or ſeized, or afflicted with an *oedema*. See OEDEMA.

Thus we ſay, an *oedematous arm*, *oedematous legs*, &c.—Phyſicians divide tumours into *inflammatory*, *oedematous*, *ſcirrhous*, *ſcrophulous*, *cancerous*, &c. See TUMOR.

Oedematous tumours ſeldom, of themſelves, prove dangerous, or mortal: but when they are of a long continuance, the effect of old age, or a dropſical habit; when they grow hard, ſcirrhous, painful, or come to ſuppurate, the cure is generally tedious and uncertain. Thoſe which attend wounds, fractures, or the like, are leſs difficult to cure.

They are eaſily diſcuſſed in their firſt formation by the external application of ſolutions of bay-ſalt, nitre, crude ſal armoniac, &c. in Spaniſh wine, urine, lime-water, or other lixivious fluids; while the patient ſubmits to a courſe of purgatives, to diſcharge the matter repelled by ſuch applications.

Under the claſs of *oedematous tumors*, are ranked condylomata, criſtæ, rhagades, thymi, talpæ, or natæ, the ganglium and pſydracium. See each under its proper article, CONDYLOMA, CRISTA, &c.

OENELÆUM,* in pharmacy, a mixture of wine and oil; uſually thick black wine, and oil of roſes. See WINE, &c.

* The word is Greek, Οινελαιον, formed of οινος, wine, and ελαιον, oil.

In fractures with wounds, where the bone is not bare, Scultetus orders that the compreſſes, to make them ſtick, be drenched with *oenelæum*, to ſooth the pain, and prevent an inflammation; and the bandages to be every day moiſtened with the ſame, till the inflammation be out of all danger.

OENISTERIA,* in antiquity, ſacrifices, held by the youth of Athens, before the firſt time of cutting the hair, and ſhaving the beard. See BEARD, HAIR, &c.

* The etymology of the word, which comes from οινος, wine, ſhews that the matter here offered was wine.

Theſe ſacrifices were offered to Hercules; and the quantity of what was offered was regulated by law.

OENOPTÆ, a kind of officers or cenſors at Athens, who attended at their feaſts, regulated the number of cups each was to drink, and took care that none drank too much or too little.

Thoſe who would not be kept within the bounds of temperance, were preſented by the *oenoptæ* to the Areopagus.—The *oenoptæ* were alſo called *eyes*, *oculi*.

OESOPHAGÆUS, in anatomy, one of the muſcles of the pharynx, which it encompaſſes round like a ring. See PHARYNX.

It is ſingle, and ſerves to ſqueeze the aliment down, by cloſing the pharynx after the manner of a ſphincter: whence ſome call it the *ſphincter gulæ*; others *deglutitor*, or *ſwallower*. See SPHINCTER, DEGLUTITION, &c.

Dr. Drake will have it no more than a production of the pterygopharyngæus, whoſe fibres ſurround the pharynx from a tendinous line on the back part of it: Though Verheyen makes it a diſtinct pair.

OESOPHAGUS, Οισοφαγος, in anatomy, the gula, or gullet; a membranous pipe or paſſage, whereby our food and drink is conveyed from the mouth to the ſtomach.—See *Tab. Anat.* (Splanch.) *fig.* 2. *lit.* a. See alſo FOOD, &c.

The *oeſophagus* deſcends from the fauces to the ſtomach, between the aſpera arteria and the vertebræ of the neck and back, in a ſtrait line, excepting for a little deflection about the fifth vertebra of the thorax, where it turns a little to the right to make way for the great artery, which runs along with it to the ninth; where turning again towards the laſt, it croſſes the artery, and piercing the diaphragm, ends at the left orifice of the ſtomach. See STOMACH.

It conſiſts of ſeveral coats or membranes, uſually reckoned three; though ſome make four, others five or ſix, allowing the cruſta villoſa to be one: Which laſt diviſion, Dr. Drake follows as moſt accurate.

The firſt coat is membranous, and only deſigned for a covering for the reſt; and ſeems only a continuation of the outward membrane of the ſtomach, derived from the peritonæum; though ſome derive it from the pleura, and others from the diaphragm.

The ſecond is muſcular, conſiſting of ſtrong, fleſhy fibres, like other muſcles; ſo that it ſeems to make the gullet a hollow fiſtulous muſcle. According to Steno and Willis, it conſiſts of two orders of fibres, going from top to bottom in ſpiral lines, contrary to and decuſſating each other. Which deſcription is very exact of the gullet of ruminants, but not ſo of that of men. In men it conſiſts of two fleſhy lamellæ, like two diſtinct muſcles: The outward compoſed of ſtrait longitudinal fibres; the inner of annular fibres, without any obſervable angles. The uſe of this coat is to promote deglutition: The longitudinal fibres, when in contraction, ſhortning the *oeſophagus*, and making its capacity larger to admit of the matter to be ſwallowed; and the annular, on the contrary, contracting the capacity, and cloſing behind the deſcending aliment, preſs it downward. So that the two orders of fibres ſeem to act as antagoniſt-muſcles to each other. See DEGLUTITION.

The next coat, called the *vaſcular*, conſiſts of a double membrane; the outer formed of irregular fibres and innumerable veſſels interwoven; the inner, of ſtrait longitudinal fibres mixed with little glands; whence ſome call it the *glandulous*. This membrane adheres cloſely to another within, called the *nervous-coat*, which is exceedingly fine, and made up of exceſſively ſlender fibres, variouſly diſpoſed. It is continued to that which covers the fauces, mouth, and lips; whence it happens, that tickling the bottom of the fauces by vellicating this membrane, provokes a retching to vomit. See VOMITING.

This membrane has a quick ſenſation; and in this part, as ſome think, is the ſeat of thirſt, or the organ whereby the appetite of drinking is excited. See THIRST.—It is lined inwardly with a villous cruſt, which Dr. Drake takes to be the excretory ducts of the glands, and not unlike the cuticula of the cutis, to defend the ſubjacent membrane. In excoriations, this is ſometimes caſt out at the mouth.

The upper opening of the *oeſophagus*, ſituate at the bottom of the fauces, is called the *pharynx*. See PHARYNX.

OESTRUM *Veneris*. See the article VENERIS.

OESYPE,* or OESYPOS, a kind of fatty mucilage, of the conſiſtence of an unguent; of a greyiſh colour, and a ſickiſh diſagreeable ſmell, drawn from the greaſy wool growing on the throats and between the buttocks of ſheep.

* The word is formed from the Greek, οις, ſheep; and σηπω, I putrify, or corrupt; the *oeſype* being a filthy, and, as it were corrupted matter, drawn from ſheep.

This wool they waſh, boil it in water to ſower, let the lotions or decoctions ſtand for ſome time, and from the top ſkim off a fatty ſubſtance, which being ſtrained through a linnen cloth, and ſet to cool, makes the *oeſype*, much uſed externally to reſolve, ſoften, and appeaſe pain.

OFFA *Alba*, a name which Van Helmont gives to the white coagulum ariſing from a mixture of rectified ſpirit of wine with ſpirit of urine.

Note, The ſpirit of urine muſt be diſtilled from well fermented wine; and that muſt be well dephlegmated: elſe, no *offa* will ariſe.

OFFERING. See OBLATION and HEAVE-*Offering*.

OFFERTORY, OFFERTORIUM, an anthem ſung, or played on the organ, at the time the people are making an offering. See ANTHEM and OBLATION.

Anciently the *offertory* conſiſted of a pſalm ſung with its anthem; though it is ſomewhat dubious whether the pſalm was ſung entire; St. Gregory mentioning, that when it was time, the pope looking at the choir who ſung it, gave the ſign when they ſhould end.

OFFERTORY was alſo a name anciently given to the linnen whereon the offerings were laid.—Dr. Harris ſays, it was properly a piece of ſilk or fine linnen wherein the occaſional oblations or offerings of each church were wrapped up.

OFFICE, OFFICIUM, in a moral ſenſe, denotes a duty; or that which virtue, and right reaſon directs a man to do, See MORAL, MORALITY, ETHICKS, &c.

Virtue, according to Chauvin, is the purpoſe of doing well; the thing which immediately follows, or ariſes from this purpoſe, is obedience; which ſame is alſo denominated *officium*: ſo that an *office* is the object of an obedience to virtue. See VIRTUE.

Cicero, in his diſcourſe of *offices*, cenſures Panætius, who had wrote before him on the ſame, for omitting to define the thing or ſubject on which he wrote ; yet does he himſelf fall under the ſame cenſure. He inſiſts much on the diviſion of *offices* ; but forgets the definition.—In other of his pieces we find him defining *office*, to be an action which reaſon requires to be done : *Quod autem ratione actum ſit, id* officium *appellamus.* De Finib.

The Greeks. he obſerves, made two ſpecies of *office* : *Perfect*, called by them κατορθωμα ; and *common*, or *indifferent*, called καθηκον ; which they define ſo, as, that what is abſolutely right, makes a *perfect office* ; and what we can only give a probable reaſon for, a *common* or *intermediate office*. See REASON.

OFFICE, in a civil ſenſe, denotes the mutual aid, and aſſiſtance, which men owe to one another.

Benevolence inſpires a man with an endeavour to do good *offices* to all mankind. See COMMON *Place*.

OFFICE is alſo a particular charge, or truſt, whereby a man is authorized to do ſomething. See OFFICER.

Loyſeau defines *office* a dignity attended with a public function. See FUNCTION and DIGNITARY.

The word is primarily uſed in ſpeaking of the *offices* of judicature, and policy : as, the *office* of a ſecretary of ſtate, of a juſtice of peace, of a ſheriff, *&c.* See JUSTICE, SECRETARY, *&c.*

Offices are either venal, or not venal.—*Venal offices* are thoſe bought with money.

Venal offices are ſubdivided into two kinds ; *viz. Dominial* and *caſual.*—*Dominial*, or *offices in fee*, are thoſe abſolutely torn off, and ſeparated from the king's prerogative, ſo as not to become vacant by death, but paſſing in the nature of a fee, or inheritance. See FEE.

Of theſe we have but few inſtances among us, which go beyond a firſt reverſion.—Among the French they are more frequent.

Caſual offices are thoſe given for life, by patent, commiſſion, *&c.* and which become vacant, by the officer's death, to the king's benefit ; unleſs the officer have before reſigned, or diſpoſed of it.

The venality of *offices* of judicature is one of the grievances in the French policy. See VENAL.

Alienation OFFICE. See the article ALIENATION.

Alternate OFFICE. See the article ALTERNATE.

Crown OFFICE. See the article CROWN.

Jewel OFFICE. See the article JEWEL.

Victualling OFFICE. See the article VICTUALLING.

OFFICE is alſo uſed for a place, apartment, or board, appointed for the officers to attend in, for the diſcharge of their reſpective duties, or employments.

Such are the *ſecretary*'s *office*, the *ſix clerks office*, the *paper-office*, *ſignet-office*, the *prothonotory*'s-*office*, *pipe-office*, *king*'s *ſilver-office*, *exciſe-office*, *office of ordnance*, &c. See each in its place, SECRETARY, SIX CLERK, PAPER, SIGNET, EXCISE, ORDNANCE, *&c.*

Of ſuch *offices*, ſome are diſtinguiſhed by the name of *boards*, and others of *chambers* ; as the board of green cloth, *&c.* See GREEN *Cloth*, CHAMBER, *&c.*

Where the inquiſition obtains, the tribunal thereof is called the *holy-office*. See INQUISITION.

OFFICE, in the canon law, is uſed for a benefice which has no juriſdiction annexed to it. See BENEFICE.

OFFICE is alſo uſed, in common law, for an inquiſition made to the king's uſe of any thing found by virtue of his office who enquires or makes an inquiſition *ex officio*.

Hence, to traverſe an *office*, is to traverſe an inquiſition taken of *office* before an eſcheator.—To return an *office*, is to return that which is found by virtue of the *office*.

There are two ſorts of *offices* iſſuing out of the exchequer by commiſſion ; *viz.* an *office* to intitle the king in the thing inquired into ; and an *office* of inſtruction.

OFFICE is alſo uſed for divine ſervice celebrated in public. See LITURGY.

St. Jerom is the perſon, who, at the requeſt of pope Damaſus, is ſaid to have firſt diſtributed the pſalms, epiſtles, and goſpels in the order they are now found in the Romiſh *office*.

The popes Gregory and Gelaſius added the prayers, reſponſes, and verſes ; and St. Ambroſe the graduals, hallelujahs, *&c.*

OFFICE, is more particularly uſed in the Romiſh church, for the manner of performing the ſervice ; which varies every day.

Thus they ſay the *office* of Sunday ; the *office* of ſuch a ſaint, *&c.*—The *office* is either *ſingle*, *half double*, or *double*. See SEMI-DOUBLE.

OFFICE, again, is applied to a particular prayer preferred in honour of a ſaint.

When any perſon is canonized, a particular *office* is at the ſame time aſſigned him out of the common *office* of the confeſſors, the virgin, or the like. See SAINT and CANONIZATION.

We ſay, the *office* of the virgin ; of the holy ſpirit ; of the paſſion : the holy ſacrament, *&c.* The *office* of the dead is rehearſed every day, excepting on feaſt-days, among the Carthuſians. The *office* of the holy virgin is alſo added to the *office* of the day, in the order of Bernardins.

OFFICES, with regard to architecture, denote all the apartments that ſerve for the neceſſary occaſions of a great houſe, or palace : as kitchens, pantries, brew-houſes, confectionries, fruiteries, granaries, *&c.* as alſo waſh-houſes, wood-houſes, ſtables, *&c.* See HOUSE, BUILDING, *&c.*

The *offices* are commonly in the baſſecour ; ſometimes they are ſunk under ground, and well vaulted, *&c.*

OFFICER, a perſon poſſeſſed of a poſt or office. See OFFICE.

Great OFFICERS *of the crown, or ſtate*, are the lord high ſteward, the lord chancellor, the lord high treaſurer, the lord preſident of the council, the lord privy-ſeal, the lord great chamberlain, the lord high conſtable, the earl marſhal, and lord high admiral. See each under its proper article, CHANCELLOR, TREASURER, MARSHAL, *&c.*

OFFICERS *of juſtice*, are thoſe who are intruſted with the adminiſtration of equity, and juſtice in the courts thereof. See COURT, JUSTICE, *&c.*

Royal OFFICERS are thoſe who adminiſter juſtice in the king's name.—as the judges, *&c.* See JUDGE.

Subaltern OFFICERS, are thoſe who adminiſter juſtice in the name of ſubjects.—Such are they who act under the earl-marſhal, admiral, *&c.*

OFFICERS *of policy*, are thoſe in whom the government and direction of the affairs of a community are inveſted.—Such are mayors, ſheriffs, *&c.* See POLICY.

OFFICERS *of war*, are thoſe who have command in the forces. See ARMY.

Theſe are either *general*, *field*, or *ſubaltern officers*.

General OFFICERS are ſuch whoſe command is not limited to a ſingle troop, company, or regiment ; but extends to a body of forces compoſed of ſeveral regiments.

Such are the general, lieutenant-generals, major-generals, and brigadiers. See GENERAL, *&c.*

Field OFFICERS are ſuch as have command over a whole regiment ; ſuch are the colonel, lieutenant-colonel, and major.

Subaltern OFFICERS, are the lieutenants, cornets, enſigns, ſergeants, and corporals.—See each *officer* under his proper article, CAPTAIN, COLONEL, *&c.*

Commiſſion OFFICERS are ſuch as are appointed by the king's commiſſion.

Such are all from the general to the cornet incluſive.

They are thus called in contradiſtinction to *warrant*, or *ſtaff officers*, who are appointed by the colonels, or captain's warrant : as quarter-maſters, ſergeants, corporals, and even ſurgeons and chaplains.

Sea-OFFICERS, or *officers of the marine*, are thoſe who have command in ſhips of war. See NAVY.

Flag-OFFICERS, are the admirals, vice-admirals, and rear-admirals. See FLAG, ADMIRAL, *&c.*

OFFICERS *of the houſhold*, are the lord ſteward, treaſurer of the houſhold, comptroller, cofferer, maſter, clerks of the green-cloth, *&c.* The lord chamberlain, vice-chamberlain, gentlemen of the privy and bed chamber, gentlemen-uſhers, grooms, pages, maſter of the wardrobe, of the ceremonies, *&c.* The maſter of the horſe, avenor, equerries, ſurveyors, *&c.* See HOUSHOLD, ſee alſo each *officer* in his proper article.

Staff-OFFICERS are ſuch as in the king's preſence bear a white ſtaff ; and at other times, going abroad, have a white ſtaff borne before them by a footman bare-headed.

Such are the lord ſteward, lord chamberlain, lord treaſurer, *&c.*

The white ſtaff is taken for a commiſſion ; and at the death of the king, the *officers* break their ſtaff over the hearſe made for the king's body, and thereby diſcharge their inferior *officers*.

Municipal OFFICERS. See the article MUNICIPAL.

Reformed OFFICER. See the article REFORMADO.

OFFICERS *of the mint*. See the article MINT.

Signals for OFFICERS. See the article SIGNAL.

OFFICIAL, OFFICIALIS, in the canon-law, the biſhop's deputy, or lieutenant ; or an eccleſiaſtical judge appointed by a biſhop, chapter, abbot, *&c.* with charge of the ſpiritual juriſdiction thereof. See COURT.

Of theſe there are two kinds.—the one, as it were, vicar-general of the church ; exerciſing juriſdiction throughout the whole dioceſe, called by the canoniſts *officialis principalis*, in our ſtatute-law the biſhop's *chancellor*. See CHANCELLOR.

There is no appeal from his court to the biſhop ; his being eſteemed the biſhop's court. See BISHOP'S *Court*.

The other, called *officialis foraneus*, as having his juriſdiction *foris, & extra civitatem*, is appointed by the biſhop when the dioceſe is very large ; having a certain extent of territory aſſigned him, wherein he reſides.

This *official* has but a limited juriſdiction, though he have *univerſitatem cauſarum*, and exerciſe it in the biſhop's name.—Our ſtatute laws call him, *commiſſary*. See COMMISSARY.

The biſhops, eſpecially thoſe of large ſees, finding themſelves oppreſſed with a multiplicity of buſineſs, at firſt, diſcharged a part of it upon their archdeacons and prieſts; to whom they gave commiſſions revocable at pleaſure.—Theſe are called *vicarii*, or *officiales*. See ARCHDEACON and VICAR.

As we do not meet with this term any where before the conſtitutions of the *ſextus decretalium*, it is pretty apparent the cuſtom had not its riſe till the end of the 13th century.

In proceſs of time, the function was divided into two; and the title *official* given to him with whom the biſhop entruſted the exerciſe of litigious juſtice; and that of vicars general, or grand vicars, to thoſe who had the voluntary juriſdiction.

The number of *officials* was ſoon exceſſively multiplied; and not only biſhops, but chapters and archdeacons would have their *officials*.

The *officials*, by degrees, had drawn to their cognizance and juriſdiction, moſt of the civil cauſes; till they were taken out of their hands by appeals, *&c.*

OFFICIAL is alſo uſed in our laws for a deputy appointed by an archdeacon, for the executing of his juriſdiction. See ARCHDEACON.

OFFICIALTY, the court, or juriſdiction, whereof an *official* is head. See OFFICIAL.

The practice of *officialties* is now reduced into a little compaſs; and actions of promiſes, and diſſolutions of marriages, are the principal things tranſacted therein.

OFFICINAL,* in pharmacy, a term applied to ſuch medicines, whether ſimple or compound, as are required to be conſtantly kept in the apothecaries ſhops, ready to be made up in extemporaneous preſcription. See PRESCRIPTION.

* The word is formed of the Latin *officina*, ſhop.

The *officinal ſimples* are appointed, among us, by the college of phyſicians; and the manner of making the compoſitions directed in their diſpenſatory. See DISPENSATORY, COMPOSITION, *&c.*

OFFICIO. *Suſpenſion ab* OFFICIO. See SUSPENSION.

Ex OFFICIO. See the article EX *officio*.

Quod clerici non eligantur in OFFICIO. See QUOD.

OFFING, or OFFIN, in the ſea-language, that part of the ſea a good diſtance from ſhore; where there is deep water, and no need of a pilot to conduct the ſhip into port.

If a ſhip from ſhore be ſeen ſailing out to ſeaward, they ſay ſhe ſtands for the *offing*.—And if a ſhip having the ſhore near her, have another a good way without her, or towards the ſea, they ſay, that ſhip is in the *offing*.

OFF-SETS, in gardening, *&c.* are young ſhoots which ſpring, and grow from roots that are round, tuberous, or bulbous. See ROOT, BULB, *&c.*

The word is alſo applied to the looſe, outer, brown ſkins of tulips, onions, *&c.*

OFF-SETS, in ſurveying, are perpendiculars let fall, and meaſured from the ſtationary-lines, to the hedge, fence, or extremity of the incloſure. See SURVEYING.

OGEE, or OG, in architecture, a moulding, conſiſting of two members, the one concave, the other convex: the ſame with what is otherwiſe called *cymatium*. See *Tab. Archit. fig.* 7. and 24. *lit. f.* x. See alſo CYMATIUM.

Vitruvius makes each member of the *ogee* a quadrant of a circle; Scamozzi, and ſome others, make them ſomewhat flatter, and ſtrike them from two equilateral triangles.

The figure of the *ogee* bears ſome reſemblance to that of an S.

OGIVES, arches or branches of a Gothic vault, which, in lieu of being circular, paſs diagonally from one angle to another, and form a croſs with the other arches which make the ſide of the ſquare, whereof the *ogives* are diagonals. See ARCH, VAULT, and BRANCH.

The middle, where the *ogives* cut or croſs each other, is called the *key*, which is ſometimes carved in form of a roſe, or a cul de lampe.—The members or mouldings of the *ogives* are called nerves, branches, or reins; and the arches which ſeparate the *ogives*, double arches. See VAULT.

OGLIO. See the article OLIO.

OGRESSES, or AGRESSES, in heraldry. See PELLETS.

OIL,* OLEUM, a fatty, unctuous, inflammable matter, drawn from ſeveral natural bodies. See FAT.

* The word is formed from the Latin *oleum*; of *olea*, olive-tree, the fruit whereof abounds in ſuch juice. See OLIVE.

The word *oil* is ſometimes applied to the juices which diſtil naturally from plants and trees; as balm, *&c.* but more ſtrictly to thoſe juices drawn by expreſſion, *&c.* from plants, fruits, grains, or ſeeds; as *oil of olive*, *nut-oil*, &c. See EXPRESSED and EXPRESSION.

The kinds of *oils*, their properties, manners of expreſſion, *&c.* are numerous: For the generality of them, the reader is referred to the proper articles; ſuch as could not be more conveniently inſerted, are as follow.

OIL *of olives*, is the moſt popular, and moſt univerſal of all others; being that chiefly uſed in medicine, in foods, ſallets, and in the manufactures. See SALLET, *&c.*

It is drawn from olives by preſſes or mills made for the purpoſe. The fruit is gathered when at its utmoſt maturity in December and January, as it begins to redden; being put under the mill, as ſoon as gathered, it yields that *oil* ſo very ſweet, and of ſo charming an odour, called *virgin-oil*. But, as the olives newly gathered yield but little *oil*, thoſe who rather regard quantity than goodneſs, leave them on the ground for ſome time, ere they preſs them. See OLIVE.

Neither the ſmell nor taſte of this ſecond *oil* is very agreeable; though there is a third kind ſtill worſe, which is the common *oil* procured by throwing boiling water on the preſſings, and re-preſſing them more ſtrongly.

The conſumption of this *oil* is incredible; the ſouth parts of France, Provence, Languedoc, *&c.* as alſo Candia, ſome parts of Italy, *&c.* yield vaſt quantities. Its uſe every body knows; it being reputed one of the moſt univerſally uſeful things in the whole world.

OIL *of ſweet almonds*, cold drawn, or without fire, is prepared various ways. Some peel the almonds ere they pound them; others pound them without peeling. Some warm them in luke-warm water; others *in balneo mariæ*; ſome only bruiſe them; others beat them into a paſte.—In effect there are as many different ways of preparing this *oil*, as there are perſons who make it their buſineſs to prepare it. See ALMONDS.

In this diverſity, Pomet gives us a method eaſier and leſs expenſive than any of the reſt; which, it ſhould ſeem, we cannot do better than follow.

Method of procuring OIL *of ſweet almonds by expreſſion, without fire.*—Take a pound and a half of ſweet almonds, new and dry; after pounding them in a mortar, paſs them through a coarſe ſieve, lay them in a hair-cloth, and put them under the preſs between two plates of copper, ſteel, or the like; preſs them gently; and when all the unctuous and fluid part is expreſſed, you will have a ſweet *oil* without any ſediments, which is ſcarce avoidable in any of the other manners.

Palm OIL, or OIL *of ſenegal*, a thick unctuous liquor, of a yellow colour, and a violet-ſmell; ſo called becauſe drawn, by ebullition or by expreſſion, from the fruit of a kind of palm-tree, growing in ſeveral places of Africa, eſpecially in Senegal.

The Africans uſe this *oil* as we do butter; and burn it when old. In Europe it is eſteemed a ſovereign remedy againſt cold humours; and is even ſaid to give eaſe in the gout. It is ſometimes counterfeited with wax, *oil* of olives, iris, and turmeric; but the trick is found out either by air or fire. The air alters the colour of the genuine, and leaves the counterfeit unchanged; and on the contrary, fire changes the counterfeit, not the genuine.

OIL *of camomile*, an oil made with the flowers of this plant ſteeped in oil of olives, and expoſed to the ſun in the heat of ſummer: Its colour is blueiſh; ſome add fine turpentine. It is the moſt eſteemed when old. It is uſed for the cure of ſeveral kinds of wounds; and is reputed a kind of balm.

OIL *of aſpic*, or *ſpike*, an inflammable *oil* drawn from the flowers or leaves of a plant frequent in the ſouthern parts of France, reſembling our lavender, and called by botaniſts *lavendula mas*.

It is of a white colour, and an aromatic ſmell; and is reputed the only *oil* that will diſſolve in ſandarach; whence the genuine *oil* is eaſily diſtinguiſhed from the counterfeit, which is *oil* of turpentine mixed with a little petrol.

It is uſed by painters and farriers; and is of ſome uſe in medicine, where it makes a part in ſeveral galenical compoſitions.

OIL *of petrol*. See NAPHTHA, and PETROLEUM.—OIL, *of amber*. See AMBER.—OIL, or *butter of antimony*. See ANTIMONY.—OIL, or *butter of arſenic*. See ARSENIC.—OIL *of balm*. See BALSAM.—OIL *of ben*. See BEEN.—OIL *of beech*. See BEECH.—OIL *of bricks*. See BRICK.—OIL *of camphor*. See CAMPHOR.—OIL *of cinnamon*. See CINNAMON.—OIL *of caſtor*. See CASTOREUM.—OIL *of wax*. See WAX.—OIL *of cummin*. See CUMMIN.—OIL *of nutmeg*. See NUTMEG.—OIL *of cloves*. See CLOVES.—OIL *of neroli*. See ORANGE.—OIL *of black pitch*. See PITCH.—OIL *of roſemary*. See ROSEMARY.—OIL *of ſage*. See SAGE.—OIL *of tartar*. See TARTAR.—OIL *of turpentine*. See TURPENTINE.—*Train* OIL. See *Whale* FISHERY and TRAIN.

Virgin OIL, is underſtood of *oils* expreſſed from olives, nuts, *&c.* freſh gathered, without being heated, too much preſſed, *&c.* See OIL *of olives*, and VIRGIN.

Granulated Oil is that fixed in little grains; this is the beſt, and moſt eſteemed, eſpecially of *oils* of olives.

Oil frequently takes new names from the drugs mixed with it; as *oil of roſes*, which is that mixed with roſes; *oil of jeſſamy*, that perfumed with jaſmin.

Plato obſerves, that *oil* is deſtructive to all plants; and he adds too, to the life of all animals, except that of man, to which it is agreeable, as alſo to the reſt of his body. He adds further, that it is very uſeful to the external parts of the body, but hurtful to the internal. Fernelius obſerves, that *oil* ſoftens, moiſtens, and lubricates the body, and takes off the ſenſe of wearineſs; for which reaſon the Greeks call it *acopum*; it alſo renders the body prompt and agil. Dioſcorides ſays it cures leproſies, *&c.*

Oil, among the chymiſts, is the ſecond of the elements, or hypoſtatical principles; otherwiſe called *ſulphur*. See Element, Principle, and Sulphur.

All natural bodies yield *oil*, either by diſtillation, putrefaction, or liquation, called *per deliquium*: And hence the chymiſts will have it a neceſſary ingredient in the compoſition of all bodies. They make it the principle of odours; and to the diverſities thereof aſcribe all the differences of bodies in reſpect of ſmells. See Smell.

All plants, unleſs diſtilled with water, yield a fetid *oil* at the end of diſtillation; but aromatic ones beſides this yield another *oil*, which riſes after the phlegm, and at the beginning of the diſtillation: This they call an *eſſential oil*, becauſe it retains the natural ſmell of the plant; whereas the ſecond *oil*, even that of aromatic plants, ſtinks intolerably. See Essential.

M. Homberg, from an obſervation that plants which yield the moſt acid, yield likewiſe the moſt *oil*; took occaſion to think that the acid might aſſiſt the *oil* to diſengage itſelf from the body, and to riſe in diſtillation; which he found to anſwer in the experiment. Mineral acids proved to have more force on the *oils* of plants, and put them in a condition of riſing in diſtillation, and in greater quantity by the action of fire, than vegetable ones. Accordingly, whereas the perfumers find a deal of difficulty in raiſing eſſential *oil* of roſes; and ſcarce get an ounce out of an hundred pounds of the flower: M. Homberg, on his principle, got at leaſt one third more; *viz.* by laying the roſes fifteen days in water impregnated with ſpirit of vitriol, before diſtillation.

The chymiſts doctrine of principles, Mr. Boyle ſhews to be very deficient in the article of *oils*: For the characteriſtic of a ſulphur, or that which denominates a thing ſuch, is inflammability: Now, there are at leaſt three ſubſtances manifeſtly different in conſiſtence, texture, or both; which, according to that notion, ought to be referred to ſulphurs: For ſometimes the inflammable ſubſtance obtained from a mixed body by means of fire, appears in form of an *oil* that will not mix with water; ſometimes in form of an inflammable ſpirit, which will readily unite with that liquor; and ſometimes alſo in form of a conſiſtent body almoſt like common ſulphur. *Producib. of Chym. Prin.*

Dr. Slare in *Philoſ. Tranſact.* gives us a ſcheme, or analyſis of *oils*. He diſtinguiſhes *oils* into vegetable, animal, and mineral.

The vegetable he divides into *eſſential*, and not *eſſential*. The *eſſential* again, are either perfect ſtillations made by the analyſis of the chymiſt's fire; where the oleaginous particles are truly ſeparated from all other; as thoſe from the ſeeds of cummin, fennel, and dill: or light and etherial, uſually drawn from the tops of plants, and ſpecifically lighter than water, ſome of them than ſpirit of wine; as thoſe from thyme, wormwood, hyſſop, lavender, roſemary, penny-royal, rue, ſage, ſavin, *&c.* Or ponderous, which commonly ſink in water.

Thoſe *not eſſential*, are imperfect, made by expreſſion; being decompounded of ſeveral parts of the plants; as of almonds, olives, walnuts, lime, rape, *&c.*

The *animal oils* are either thoſe of the ſolid parts, as harts-horn, human-ſkull, hoofs, *&c.* Or thoſe of the fluids, as of human-blood.

Laſtly, the *mineral oils* are thoſe of amber, petroleum, Barbadoes tar, to which ſome add bees-wax.

Of theſe *oils*, there are twelve; that, by a mixture of compound ſpirit of nitre, make an ebullition, exploſion, and flame. Eighteen that make an ebullition and exploſion without flame: And four that produce neither. See Ebullition, Flame, *&c.*

Ætherial Oil. See the article Ætherial.

Cauſtic Oil. See the article Arsenic.

Medullary Oil. See the article Medullary.

Anointing with Oil. See Unction.

Stillatitious Oils. See Stillatitious.

Gilding in Oil. See the article Gilding.

Painting in Oil. See the article Painting.

Oil-Bag, a veſſel in birds, replete with an unctuous ſubſtance, ſecreted by one, ſometimes two, glands for the purpoſe, diſpoſed among the feathers; which being preſſed by the bill or head, emits its *oily* matter, for the dreſſing and preening the feathers. See Feather.

Oil-*Mill*. See the article Mill.

Oily-*Waters*. See the article Waters.

OINTMENT, in pharmacy and ſurgery, *&c.* See Unguent.

OKER, * Ochra, or Ocher, in natural hiſtory, a yellow, dry, foſſil earth; harſh to the touch; found in copper and lead mines, ſometimes in thoſe of ſilver, and ſometimes in mines of its own. See Earth.

* The word comes from the Greek ωχρα, yellow earth; formed of ωχρος, yellow.

Others ſeem more rightly to refer *oker* to the claſs of ſemi-metals, than of earths. It conſiſts, according to them, of earth and a metal, particularly iron, combined. See Metal.

Mr. Boyle aſſures us he has ſeen a piece of *oker* richer in metal than moſt iron-ores; and which was even rendered magnetical by heating, and then cooling it in a perpendicular poſition. See Magnet and Magnetism.

Oker, in effect, is always impregnated with iron, and is what generally gives to the chalybeat ſprings their medicinal virtues; many of which we ſee, upon the water's ſtanding, will depoſit the *oker* at the bottom of the veſſel.

Some authors eſteem *oker* proper to promote the melting of metals, when they are too harſh and brittle; but its chief uſe is in painting.

It is only the yellow *oker* is natural; the red is prepared from the yellow by calcining it in the fire till it have acquired its redneſs.

The beds are uſually from one hundred fifty to two hundred foot deep; and their thickneſs from four to eight inches, between a white ſand which covers them a-top, and a yellow argillous earth underneath.

The beſt *oker* is that of Berry in France. There are ſeveral kinds dug up in England, all bordering on the red; ſome of them uſed in poliſhing looking-glaſſes.

OLD *Age*. See the articles Age and Longævity.

OLD *Aſtronomy*. See the article Astronomy.

OLD *Style*. See the article Style.

OLD *Subſidy*. See the article Subsidy.

OLD *impoſition of Tonnage*. See the article Duty.

OLEAGINOUS, ſomething that partakes of the nature of oil; or out of which oil may be expreſſed. See Oil.

Thus olives, nuts, almonds, *&c.* are *oleaginous* fruits, or fruits out of which oil is expreſſed. See Fruit. Pines, Firs, *&c.* are *oleaginous* woods, yielding roſin, turpentine, *&c.* See Rosin, *&c.*—Of all woods, *oleaginous* ones burn the beſt. See Fuel.—An *oleaginous* urine in malignant fevers is a ſign of death. See Urine.

OLECRANUM, Ωλεκρανον, in anatomy, an eminence behind the bend of the elbow; being the part whereon the arm bears when we reſt on the elbow.—See *Tab. Anat. fig.* 7. *n.* 11. See alſo the article Arm, Elbow, and Ancon.

This eminence is nothing elſe but the poſterior apophyſis of the head of the ulna, which ſtays that bone, and prevents its ſlipping back; ſo as to form an acute angle when the arm is bent. See Ulna.

The *olecranum* is received into the hind ſinus of the lower end of the humerus; and with the fore protuberance of the ulna, which is received into the fore ſinus of the humerus, forms a perfect ginglymus, whereby the two bones move as on a hinge.

OLEOSUM *Sal volatile*. See Sal.

OLERON-*Laws*, or the *Sea-Laws of* Oleron, are a ſet of ancient laws, relating to maritime affairs, made by King Richard I. See Law.

They are thus called, becauſe compoſed in the *Oleron*, an iſland in the bay of Aquitaine, at the mouth of the river Charent.

OLFACTORY *Nerves*, in anatomy, the firſt pair of nerves ſpringing out of the medulla oblongata; ſo called as being the immediate inſtruments of ſmelling.—See *Tab. Anat.* (Oſteol.) *fig.* 5. lit. h h. See alſo Smelling.

The Ancients called them *proceſſus papillares*; which Dr. Drake thinks a more ſuitable name, till their arrival at the os cribroſum; in regard they rather appear productions of the medulla oblongata, than diſtinct nerves; againſt which, their manifeſt cavities, and their communication with the ventricles, argue. See Medulla *oblongata*.

The *olfactory* nerves have their riſe juſt below the os frontis, and are diſtributed among the membranes of the noſe. See Nerve.

OLIBANUM, * in pharmacy, a kind of gum, or reſin, uſually called *male frankincenſe*. See Frankincense.

* It has its name *olibanum, quaſi oleum libani*; becauſe diſtilled in form of an oil, from a tree on mount Libanon.

Olibanum is brought to us in large white tears, bordering a little on the yellow; very heavy, of a ſharp bitter taſte, and a briſk ſmell.

It is diſtinguiſhed from the female, or common frankincenſe, by the largeneſs of the drops.—It is very glutinous, and conſequently ſtrengthening; and partakes enough of the turpentine to render it ſomewhat detergent; It is more uſed in compound ſtrengthening plaiſters, than in inward compoſitions.

OLIGARCHY,* form of government, wherein the adminiſtration is in the hands of a few perſons. See GOVERNMENT.

* The Word is formed from the Greek, ολιγος, few; and αρχη, Command, Government.

The ſtates of *Venice*, and *Genoa*, may be ranked among *oligarchies*.

Oligarchy amounts to much the ſame thing with ariſtocracy; unleſs perhaps the former import a kind of defect or corruption; as if the ſovereign power were monopolized by a few perſons, in prejudice of the rights of a great number. See ARISTOCRACY.

OLIO, or OGLIO, a ſavoury diſh, or food, compoſed of a great variety of ingredients: chiefly found at Spaniſh tables.

The forms of *Olio's* are various; to give a notion of the ſtrange aſſemblage, we ſhall here add one from an approved author.—Take rump of beef, neat's tongues boil'd and dry'd, and Bolonia ſauſages; boil them together, and after boiling two hours, add mutton, pork, veniſon, and bacon, cut in bits; as alſo turnips, carrots, onions, and cabbage, borage, endive, marigolds, ſorrel, and ſpinage; then ſpices, as ſaffron, cloves, mace, nutmeg, &c. This done, in another pot put a turkey or gooſe, with capons, pheaſants, widgeons, and ducks, partridges, teals, and ſtock-doves, ſnipes, quails, and larks, and boil them in water and ſalt. In a third veſſel, prepare a ſauce of white wine, ſtrong broth, butter, bottoms of artichokes and cheſnuts, with colliflowers, bread, marrow, yolks of eggs, mace and ſaffron. Laſtly, diſh the *olio*, by firſt laying out the beef and veal, then the veniſon, mutton, tongues, and ſauſages, and roots over all; then the largeſt fowls, then the ſmalleſt, and laſtly pour on the ſauce.

OLITORY, a kitchen-garden; or a garden of herbs, roots, &c. for food. See GARDEN, SALLET, &c.

OLIVARIA *Corpora*, in anatomy, are two protuberances in the under part of the brain, placed on each ſide the corpora pyramidalia, towards the lower end; having their name from their figure, which reſembles that of an olive. See BRAIN.

OLIVE, OLIVA, a ſtone-fruit, which yields plenty of oil; the produce of the *olea* or olive-tree. See OIL.

There are three kinds of *olives* frequently ſold; different in ſize and goodneſs: viz. thoſe of Verona, which are the beſt; thoſe of Spain; and thoſe of Provence.

The *olives*, while on the tree, are intolerably bitter, without any thing of that delicious taſte, which procures them admittance at the richeſt tables. To fit them for that, they muſt be prepared as follows:

Curing or pickling OLIVES.—In the months of June and July, long ere the *olives* are fit to yield their oil, they are gather'd, and laid to ſteep ſome days in freſh water; when taken out, they are put in a lye made of water prepared with barillia, or kali, with aſhes of *olive* ſtones calcined; or at leaſt with lime.

They are next laid in a liquor of water and ſalt, with which they are put in thoſe little barrels, wherein they are brought to us. To give them the flavour, they throw over them an eſſence uſually compoſed of cloves, cinnamon, coriander, and fennel. This eſſence is a kind of ſecret among thoſe who deal herein; and, in effect, it is in this that all the difficulty of the preparation lies.

Drawing of oil of OLIVES.—The *Olives* being gathered, are laid for ſome time on the ground to drain, and to ripen further; they are then ground into a paſte with a mill-ſtone: The paſte is put in large frails, and boiling water poured over them. Laſtly, the whole is preſſed; by means whereof the oil is eaſily ſeparated, and ſwims a-top of the water.

OLIVE-COLOUR, is a yellow, mingled with black. See COLOUR.

The term is chiefly uſed in ſpeaking of the tincture of the complexion: the Spaniards and Indians are rarely white, generally *olive*-complexioned.

OESTRUM *Veneris*, *extaſy or incentive of love*; an appellation ſometimes given the *clitoris*, from the laſcivious titillations it is capable of. See CLITORIS.

OLYMPIAD, Ολυμπιας, in chronology, a ſpace, or period of four years; whereby the Greeks reckon'd their time. See EPOCHA.

This method of computation had its riſe from the *olympic Games*, which were celebrated every fifth year, near the city *olympia* in Peloponneſus. See OLYMPIC.

The firſt *olympiad* commenced, according to ſome, in the year 3938 of the Julian period; the year from the creation 3174; the year before Chriſt 774; and 24 years before the foundation of Rome: Or rather, as others will have it, in the year of the world, 3251; the year of the Julian period, 3941; and 23 years before the building of Rome.

The Peloponneſian war begun on the firſt year of the 87th *olympiad*. Alexander the Great died the firſt year of the 114th; and Jeſus Chriſt was born the firſt year of the 195th *olympiad*.

The *olympiads* were alſo called *anni Iphiti*, from *Iphitus*, who inſtituted, or at leaſt renewed the ſolemnity of the *olympic games*.

We do not find any computation by *olympiads* after the 364th, which ended with the year of Chriſt 440.—Except that in a charter of our king Ethelbert, the years of his reign are ſaid to be reckoned by *olympiads*.

OLYMPICS, or OLYMPIC Games, were ſolemn games, famous among the ancient Greeks; inſtituted, according to ſome, by Hercules, in honour of Jupiter; and held at the beginning of every fifth year, that is, every 49th month, on the banks of the Alpheus, near Olympia, a city of Elis; to exerciſe their youth in five kinds of combats. See GAMES.

Theſe Games became ſo conſiderable, that the Greeks made them their epocha; diſtinguiſhing their years by the returns of the *olympics*. See OLYMPIAD.

Thoſe who were conquerors in them, were ſo honoured by their countrymen, that at their return, a piece of the wall of the city was pulled down to give paſſage to their chariot.

The prize contended for, was a crown made of a peculiar ſort of wild olive appropriated to this uſe. See OLYMPIONICES.

OLYMPIC *Fire*, is ſometimes uſed for the fire ariſing from the ſun's rays collected in the focus of a burning-glaſs. See FIRE and BURNING-*glaſs*.

Gli OLYMPICI, the title of the academiſts of Vicenza in Italy. See ACADEMY.

OLYMPIONICES, Ολυμπιονικης, in antiquity, an appellation given to thoſe who came off victorious in the *olympic games*. See OLYMPIC.

The *olympionices* were infinitely honoured in their country, as being eſteemed to have done it immortal honour. The Athenians particularly, were ſo laviſh in their preſents to the *olympionices* their countrymen, that Solon found it neceſſary to reſtrain their liberality by a ſpecial law, which imported that the city ſhould give 500 drachma's to the *olympionices*; which amounted to about 58 ounces of ſilver, our weight. No very conſiderable ſum!

OMBRE, a celebrated court-game at cards; play'd by two, by three, or by five perſons; but generally by three. See CARDS and GAME.

The game of *ombre* is borrowed from the Spaniards; and requires all the phlegm and gravity of that people in the playing. The name ſignifies as much as the *game of man*; *ombre*, or *Hombre*, in Spaniſh, ſignifying *man*, in alluſion to the thought and attention required herein.

In *ombre by three*, nine cards are dealt to each party; the whole *ombre* pack being only 40; by reaſon the eights, nines, and tens are thrown aſide: he that wins, muſt take five tricks, or four when the other five are divided ſo as one have two, and the other three.

After the cards are dealt, if none of the parties think their hand ſtrong enough to attempt for the ſtake or game, they all *paſs*; and, after ſomething put down to the former ſtake, deal over again. If any will attempt for it, he henceforth is called the *ombre*; and the other two become leagued together, like two partners at whiſk, to defend it againſt him.—Note, each has the refuſal of being *ombre*, according to his order of ſeniority.

There are two ways of undertaking for the game: In the firſt, which is the moſt uſual, after chuſing what he will have trumps, he *diſcards*, or lays aſide what number of his cards he pleaſes, and in their lieu takes an equal number from the remainder of the pack; the like do the other two.—The other way is, when he dare truſt to his own hand, and therefore declines to diſcard, or change any cards, but leaves that to the others; which is called playing *ſans prendre*: If he gains the point in this latter caſe, he reaps ſomewhat extraordinary, more than in the firſt.

If he fail in either caſe, he is ſaid to be *beaſted*; and the failure is called a *remiſe*, or *repueſte*; and if one of the defenders of the ſtake win more tricks than he, ſuch perſon is ſaid to win *codille*, and takes up the ſtake the *ombre* played for: And in both caſes, the *ombre* is to forfeit the value of the ſtake played for to the board.

If the *ombre* win all the nine tricks, it is called winning the *vole*, and he reaps doubly; and if he attempt it, and miſcarry, he ſuffers proportionably.

The overſights and irregularities committed in the courſe of the game, are called *beaſtes*, and ſubject the perſons chargeable therewith to forfeitures.

As to the order and value of the cards at *ombre*, it is to be obſerved, that the ace of ſpades, called *ſpadille*, is always the firſt or higheſt trump, in whatever ſuit the trump be; the duce of trumps, when trumps is of either of the black colours; or the ſeven, if of the red, is the ſecond trump, and called *manille*; the ace of clubs, called *baſto*, the third; and if either of the red ſuits be trump, the ace of that ſuit, called *punto*, the fourth. The reſt in the black ſuits are valued according to the following order, *viz.* King, Queen, knave, ſeven, ſix, five, four, and three. In the red ſuits they follow thus; King, Queen, knave, duce, three, four, five, and ſix.

The three firſt, or principal trumps, are called *matadores*; which have this privilege, that they are not obliged to attend an inferior trump when it leads; but for want of another ſmall trump, the perſon may renounce trumps, and play any other card.—Add, that if the three *matadores* be in the hands of the *ombre*, in caſe he be beaſted, he is to forfeit for them; or, if he gain his point, he is to have a conſideration for them; but for nothing leſs than three. And it muſt be further noted, that the trumps immediately ſucceeding theſe, *viz.* punto, king, queen, *&c.* if they be found in the ſame hand with the former, are alſo reputed as *matadores*, and to be allowed, or forfeited for like the reſt: And this as low as the ſequence reaches without interruption.

There are ſome varieties in the manner of playing the game of *ombre.*—Sometimes he who has *ſpadille* is obliged to play, let his game be ever ſo bad; which is called *force ſpadille.* Sometimes, when all have paſſed, a perſon undertakes the game on condition of diſcarding, and making up his hand ere he names trump; which is called *gaſcarille.*

In *ombre by five*, which ſome even prefer to that *by three*, as not requiring ſo much attention; only eight cards apiece are dealt; and five tricks muſt be won, otherwiſe the *ombre* is *beaſted.*

Here the perſon who undertakes the game, after naming the trump, calls a king to his aſſiſtance; upon which, the perſon in whoſe hand the king is, without diſcovering himſelf, is to aſſiſt him as a partner, and to ſhare his fate. If between both they can make five tricks, the *ombre* wins; and then the auxiliary king ſhares the ſpoil; and *vice verſa.*

If the *ombre* venture the game without calling in any king; this too is called playing *ſans prendre*; in which caſe the other four are all againſt him, and he muſt win five tricks alone, or be *beaſted.*—The reſt is much the ſame as *by three*; *mutatis mutandis.*

Ombre *de Soleil*, in heraldry, *ſhadow of the ſun*, is when the ſun is borne in armoury, ſo, as that the eyes, noſe, and mouth, which at other times are repreſented, do not appear; and the colouring is thin, ſo that the field may be ſeen through it.

OMELET,* a kind of pancake or fricaſſee of eggs, with other ingredients; very uſual in Spain, and France.

* *Menage* derives the word from the Italian *animella*, little ſoul; which, he ſays, that people uſe for the nice bits among the giblets of fowls, *&c.* uſed for fricaſſees, as livers, hearts, kidneys, gizzards, *&c.* From whence, by reſemblance, is formed the French *amelette*, a fricaſſee of eggs. *Tripod* derives the word from ἁμα, together, and λυειν, to diſſolve, moiſten, mix: And M. de la Mothe le Vayer from the French *oeuf*, egg, and *melez*, mingled.

The forms of *omelets* are various. We meet with farced *omelets*, *omelets* with ſugar, *omelets* of green peaſe, *omelets a la Turq.* &c.

A noted author in this way preſcribes the following one. The eggs, being beaten, are to be ſeaſoned with ſalt and pepper, and then fried in butter made boiling hot: This done, gravy to be poured on, and the whole ſtrewed with chives and parſley ſhred ſmall. When one ſide is fried enough, it is to be turned on the other.

OMEN,* a ſign, or indication of ſomething future, taken from the mouth of a perſon ſpeaking. See Augury, Divination, *&c.*

* *Feſtus* derives the word *omen* from *oremen*, *quod fit ore*, as being a preſage by the mouth. See Presage.

Omen *Prærogativum*, among the Romans, was the vote of the firſt tribe, or century, in their comitia.

When a law, *&c.* was propoſed, or an election to be made, an urn was brought in to the prieſts there preſent, into which were caſt the names of the tribes, or centuries, or curiæ; as the comitia were either tributa, centuriata, or curiata. And the lots being drawn, that tribe, century, *&c.* whoſe name came up firſt, was called *tribus*, or *centuria prærogativa*, becauſe their voices were asked firſt. And ſo much did the Romans depend on this prerogative century, that the reſt generally followed them. Hence a perſon who had the voices of the prerogative, was ſaid to have *omen prærogativum.*

OMENTUM,* in anatomy, a fat, thin membrane ſpread over the inteſtines, and following them in all their ſinuoſities.—See *Tab. Anat.* (Splanch.) *fig.* 2. *lit.* gg. *fig.* 3. *lit.* mm. See alſo Intestines.

* The *omentum* is the ſame with what is otherwiſe called *epiploon*, *caul*, *rete*, *reticulum*, &c.

It reaches from the bottom of the ſtomach (to which it is connected) to the navel, at which it ordinarily terminates; tho' in ſome ſubjects it goes farther, ſo as upon a rupture of the peritonæum, to fall into the ſcrotum. Beſides the ſtomach, it is faſtened to the concave part of the liver, the backſide of the duodenum, part of the colon, the back, and the ſpleen; its other extremity to the ſmall guts.

Its form reſembles that of a pouch or ſachel, which may be inflated with a blow-pipe to the capacity of a gallon.

Its ſubſtance is membranous, conſiſting of two leaves, or coats, between which, and on the ſurfaces of which, are innumerable veins, arteries, nerves, and vaſa adipoſa, or fat veſſels, variouſly interwove, and by their interſections dividing the part into a multitude of little areolæ, reſembling the maſhes of a fine net; whence its name, *rete.*

The fat, in its proper ducts, running along with the other veſſels, renders theſe areolæ very obſcure; while the intermediate ſpaces are filled with a tranſparent membrane, full of ſmall holes; ſo that the whole appears a beautiful kind of net. Its arteries come from the cæliac and meſenterics, and its veins run to the porta, and are called epiploicæ; its nerves from the intercoſtals.

The fat, here, as in the membrana adipoſa, is either brought by the ducts into the adipoſe cells, or delivered from the cells into the ducts; for the fineneſs of the veſſels, *&c.* renders their courſe exceeding difficult to trace: It is even doubted whether or no they be hollow. Malpighi, and many others, incline to the former opinion; and take the *omentum* to be nothing elſe but a large pouch, full of innumerable little ones, filled with fat; they add, that the ductus adipoſi are real veſſels ariſing out of the *omentum*, and ſpreading themſelves, by means of the membrana adipoſa, throughout the whole body; diſtributing fat to every part, in the ſame manner as the arteries diſtribute blood. See Fat and Ductus *Adipoſi.*

The particular uſe of the *omentum* is to promote the periſtaltic motion of the guts, by lubricating them with its oily ſubſtance, which tranſudes through its pores; and by following them in their doublings and windings, to ſerve as a bolſter to ſlide upon; and by filling up their hollows, preventing their being too much diſtended with flatulencies, yet giving way to them when replete with aliment. See Hiſt. Acad. R. Scienc. ann. 1725. p. 12. ſeqq.

The *omentum* is ſingle in all animals, excepting monkeys, in which it is triple, or quadruple.

OMITTAS. See the article Non *Omittas.*

OMNIUM *florum Aqua.* See the article Aqua.

OMOPHAGI,* among the ancient geographers, a name given to certain nations who fed on raw fleſh, as the Scythians, *&c.*

* The word is formed of ωμος, crude, and φαγω, I eat.

OMOPHORIUM,* a little cloak, anciently wore by the biſhops over their ſhoulders; thereby to repreſent the good ſhepherd who brings home the ſtrayed ſheep on his ſhoulders.

* The word is pure Greek, formed from ωμος, ſhoulder, and φερω, I bear.

For this reaſon the *omophorium* was put off at the opening of the goſpels, becauſe then the true ſhepherd Jeſus Chriſt was ſuppoſed preſent in perſon.

Some confound the *omophorium* with the *pallium* wore by the patriarchs: But there was this difference, that the pallium was a long cloak, of purple, and was peculiarly reſerved for patriarchs; though ſince given to ſome biſhops by way of diſtinction. See Pallium.

OMOPLATE,* Ωμοπλατη, in anatomy, is uſed in the general for the ſhoulder; but more particularly for two bones ſituate on the hind part of the upper ribs, one on each ſide; called alſo *ſcapulæ* and *ſhoulder-blades.* See Scapula and Shoulder.

* The word comes from the Greek ωμος, ſhoulder, and πλατυς, broad.

Theſe bones are broad, and eſpecially in the middle; thick in their apophyſes; of a triangular form, concave within, and convex without; and are joined to the clavicles and arms.

OMPANORATE, an appellation given to the prieſts of the iſland of Madagaſcar.

Theſe are the ſchool-maſters of the country, and teach Arabic and writing. They have ſeveral books, but none of them contain more than ſome chapter of the Alcoran, and a few phyſical recipe's.

They are divided into ſeveral orders, bearing ſome reſemblance to our eccleſiaſtical dignities: As *ombiaſſe*, ſecretary or phyſician; *tibon*, ſubdeacon; *mouladzi*, deacon; *faquibi*, prieſt; *catibon*, biſhop; *lamlamaha*, archbiſhop; *ompitſiquili*, prophets or diviners; *ſabaha*, calif, or chief of the religion.

The *Ompanorates* deal much in taliſmans, and other charms, which they call *bitidzi*, and which they ſell to the grandees of the place. They alſo make little ſtatues or images, called *auli*, which they conſult as oracles; and to which they aſcribe various powers; as the making rich, deſtroying enemies, *&c.* They have public ſchools, where they teach their ſuperſtitions and ſortileges.

The *ompitſiquili* practiſe geomancy, and are moſtly conſulted on diſeaſes, and the ſucceſs of affairs; reſolving all queſtions by figures drawn on a little table, covered with ſand.

OMPHACION,* Ομφακιον, in pharmacy, the juice of ſour or unripe grapes.

* The word is derived from the Greek Ομφαξ, unripe grape.

Some have alſo given the name to a kind of oil, pretended to be drawn from olives while yet green and ſour.—But Pomet charges it as an impoſture; adding, that olives yield no oil at all till perfectly ripe. See Oil and Olive.

OMPHALOCELE,* in medicine, a kind of hernia, or tumor in the navel; ariſing like other ruptures from a relaxation, or rupture of the peritonæum; by which either the omentum or the guts fall down. See Hernia.

* The word is Greek, Ομφαλοκηλη, formed of ομφαλος, navel, and κηλη, tumor.—'Tis otherwiſe called *exomphalus.* See Exomphalus.

Its remoter cauſes are violent ſtrains, loud cries, abundance of ſerous humour, difficult delivery, *&c.*

OMPHALO-MESENTERIC, in anatomy.—All *fœtus's* are wrapped in at leaſt two coats, or membranes; moſt of them have a third, called *allantoides*, or urinary. Some, as the dog, cat, hare, *&c.* have a fourth; which has two blood-veſſels, *viz.* a vein and an artery, called *omphalo-meſenterics*, becauſe paſſing along the ſtring to the navel, and terminating in the meſentery. See FOETUS, SECUNDINE, *&c.*

OMPHALOPTER, or OMPHALOPTIC, in optics, a glaſs that is convex on both ſides, popularly called a *convex* lens. See CONVEX.

OMPHALUS. See ENTEROMPHALUS, EXOMPHALUS, and HYDROMPHALUS.

ONANIA, and ONANISM, terms which ſome late empirics have framed, to denote the crime of ſelf-pollution; mentioned in ſcripture to have been practiſed by Onan, and puniſhed in him with death. Some take it for the ſame with what in other places of ſcripture, particularly Levit. ch. xx. is called *giving of ſeed to Moloch*;* for which the puniſhment allotted is ſtoning to death. See POLLUTION.

* This is but ill warranted: The ableſt criticks make them quite different things. Selden is poſitive the Jews, in imitation of their neighbours, actually ſacrificed their children to Moloch.—Others fancy they only made them paſs between two fires, in order to obtain the idol's favour and protection.

ONDEE, or ONDE, in heraldry. See the article WAVY.

ONE *Wheel Plough.* See the article PLOUGH.

ONEIROCRITICA,* Ονειροκριτικη, the art of interpreting dreams; or a method of foretelling future events by means of dreams. See DREAM, DIVINATION, *&c.*

* The word is formed from the Greek ονειρος, dream, and κριτικη, of κρισις, judgment.—Some call it, *oneirocratia*; and derive it from ονειρος, and κρατεω, I poſſeſs, I command.

It appears from ſeveral paſſages of ſcripture, that there was, under the Jewiſh diſpenſation, ſuch a thing as foretelling future events by dreams; but then there was a particular gift, or revelation required for that purpoſe.

It ſhould ſeem hence, that dreams are really ſignificative, and do forebode ſomething to come; and all that is wanting among us is the *oneirocritica*, or the art of knowing what: Yet it is the opinion of many, that dreams are mere chimera's; bearing, indeed, ſome relation to what has paſſed, but none to what is to come.—As to the caſe of Joſeph, it was poſſible for God, who knew all things, to diſcover to him what was in the womb of fate; and to introduce that, he might take the occaſion of a dream: Not but that he might as well have foretold it from any other accident or circumſtance whatever. Unleſs God, to give the matter more weight, ſhould purpoſely communicate ſuch a dream to Pharaoh, in order to fall in with the popular notion of dreams and divination, which then prevailed among the Egyptians. See ONEIROCRITICS.

ONEIROCRITICS,* a title given to interpreters of dreams, or thoſe who judge of events from the circumſtances of dreams. See ONEIROCRITICA.

* The word is formed from the Greek ονειρος, dream, and κρισις, judgment.

There is no great regard to be had to thoſe Greek books called *oneirocritics*; nor do we know why the patriarch of Conſtantinople and others ſhould amuſe themſelves with writing on ſo pitiful a ſubject.

Rigault has given us a collection of the Greek and Latin works of this kind; one attributed to Aſtrampſichus, another to Nicephorus, patriarch of Conſtantinople; to which are added the treatiſes of Artemidorus and Achmet.—But the books themſelves are little but reveries; a kind of waking dreams, to explain and account for ſleeping ones.

The ſecret of *oneirocriticiſm*, according to them all, conſiſts in the relation ſuppoſed to be between the dream, and the thing ſignified: But they are far from keeping to the relations of agreement, and ſimilitude; and frequently have recourſe to others of diſſimilitude, and contrariety.

ONERANDO *pro rata portionis*, a writ which lies for a joint tenant, or tenant in common, when diſtrained for more rent than the proportion of his land comes to.

ONGLEE, or ONGLE, is uſed by the French heralds to denote the talons or claws of beaſts or birds, when of colours different from the body.

ONKOTOMY,* in chirurgery, the operation of opening a tumor, or abſceſs.

* The word is formed from the Greek ογκος, tumor, and τεμνω, I cut. See TUMOUR, *&c.*

ONOMANCY,* or rather ONOMAMANCY, the art of divining the good or evil fortune which ſhall befal a man, from the letters of his name. See NAME.

* The word is ſuppoſed to be formed from the Greek ονομα, name, and μαντεια, divination.—Indeed there is ſomething ſingular in the etymology: For, in ſtrictneſs, *onomancy* ſhould rather ſignify divination by aſſes; being formed from ονος, aſinus, and μαντεια, to ſignify divination by names, it ſhould be *onomatomancy*. See NOMANCY.

Onomantia was a very popular and reputable practice among the ancients: The Pythagoreans taught, that the minds, actions and ſucceſſes of men, were according to their fate, genius, and name; and Plato himſelf ſeems ſomewhat inclinable to the ſame opinion. Auſonius expreſſes it to Probus, thus:

Qualem creavit moribus
Juſſit vocari nomine,
Mundi ſupremus arbiter.

Thus he plays with tippling Meroe, as though her name told ſhe would drink mere wine without water, or, as he calls it, *merum merum*. Thus Hippolitus was obſerved to be torn in pieces by his coach-horſes, as his name imported; and thus Agamemnon ſignified he ſhould linger long before Troy. Priam, that he ſhould be redeemed out of bondage in his childhood. Hitherto may be alſo referred that of Claudius Rutilius:

Nominibus certis credam decurrere mores?
Moribus aut potius nomina certa dari?

It is a frequent obſervation in hiſtory, that the greateſt empires and ſtates have been founded and deſtroyed by men of the ſame name. Thus Cyrus, the ſon of Cambyſes, begun the Perſian monarchy; and Cyrus, the ſon of Darius, ruined it. Darius, ſon of Hyſtaſpes, reſtored it; and again, Darius, ſon of Arſamis, utterly overthrew it. Philip, ſon of Amintas, exceedingly enlarged the kingdom of Macedonia; and Philip, ſon of Antigonus, wholly loſt it. Auguſtus was the firſt emperor of Rome; Auguſtulus the laſt. Conſtantine firſt ſettled the empire of Conſtantinople; and Conſtantine loſt it wholly to the Turks.

It is an obſervation of the like kind, that ſome names are conſtantly unfortunate to princes: As Caius among the Romans; John in France, England, and Scotland; and Henry in France.

One of the great rules of *onomancy* among the Pythagoreans, was, that an even number of vowels in a name ſignified an imperfection in the left ſide of the man; and an odd number, in the right.—Another rule was, that thoſe perſons were the moſt happy, in whoſe names the numeral letters, added together, made the greateſt ſum: For which reaſon, ſay they, it was that Achilles vanquiſhed Hector; the numeral letters in the former name amounting, forſooth, to a greater number than in the latter.

And it was doubtleſs from a principle much of the ſame kind, that the young Romans toaſted their miſtreſſes at their meetings as often as there were letters in their names. Thus Martial,

Nævia ſex cyathis, ſeptem Juſtina bibatur.

Rhodiginus deſcribes a ſingular kind of *onomantia*.—Theodotus, king of the Goths, being curious to know the ſucceſs of his wars againſt the Romans; an *onomantical* Jew ordered him to ſhut up a number of ſwine in little ſtyes, and to give ſome of them Roman, to others Gothic, names, with different marks to diſtinguiſh them; and there to keep them till a certain day; which being come, upon inſpecting the ſtyes, they found thoſe dead, to whom the Gothic, and thoſe alive, to whom the Roman names were given.—Upon which the Jew foretold the defeat of the Goths.

ONOMATOPOEIA,* in grammar and rhetoric, a figure of ſpeech, whereby names and words are formed to the reſemblance of the ſound made by the things ſignified.

* The word is formed from the Greek ονομα, name, and ποιεω, fingo, I make, feign.

Thus is the word *trique-trac*, formed from the noiſe made by moving the men at this game: And from the ſame ſource ariſes the *buz* of bees, the *grunting* of hogs, the *cackling* of hens, the *ſnoring* of people aſleep, the *claſhing* of arms, *&c.* The ſureſt etymologies are thoſe deduced from the *onomatopœia*. See ETYMOLOGY.

ONONYCHITES,* ſomething that has the hoofs, that is, the feet of an aſs.

* The word is formed from the Greek ονος, aſs; and ονυξ, hoof, nail.

ONONYCHITES was an appellation which the heathens, in the firſt century, gave the God of the Chriſtians, becauſe they owned and adored the ſame God with the Jews.—For it was a notion, (howſoever it had its riſe) as appears from Tacitus, *hiſt. lib.* 5. *c.* 3. that the Iſraelites, much afflicted with thirſt, were led to a ſpring by an aſs going to drink; and that in gratitude for the benefit, they worſhipped an aſs: And that the Chriſtians did ſo likewiſe. See Tertull. *Apol.*

ONTOLOGY, or ONTOSOPHY, the doctrine or ſcience *de ente*, that is, of being, in the general, or abſtract. See ENS. *Ontology* coincides with what in the ſchools is more uſually called *metaphyſics*. See METAPHYSICS.

ONYCOMANCY,* or as ſome write it, ONYMANCY, a kind of divination by means of the nails of the fingers. See NAIL.

* The word is formed from the Greek ονυξ, nail; and μαντεια, divination.

The ancient practice was to rub the nails of a youth with oil and ſoot, or wax; and to hold up the nails thus ſmeared againſt the ſun.—Upon them were ſuppoſed to appear figures or characters, which ſhewed the thing required.

Hence, alſo modern chiromancers call that branch of their art, which relates to the inſpection of nails, *onycomancy*.

ONYX,* Ονυξ, in natural hiſtory, a kind of precious ſtone, accounted a ſpecies of opake agat. See PRECIOUS *Stone*, AGAT, &c.

* The word, in the Greek language, ſignifies nail; the poets making this ſtone to have been formed by the parcæ, from a piece of Venus's nails, cut off by Cupid with one of his arrows.

It is of a dark horny colour, in which is a plate of a bluiſh white, and ſometimes of red; the ſeveral colours appearing as diſtinct as if laid on by art.

There are ſome brought from Arabia, mixed with a browniſh hue; which, after taking off one lay or zone, ſhew another underneath, of a different colour.—Whence they take the name Memphitis, or Camehuia, *q. d.* another ſtone. See CAMAIEUX.

White zones or girdles are eſſential to an *onyx*.

Dioſcorides and Galen rank alabaſter among the number of *onyx's*; though this is very remote from the ſentiment of the moderns. See ALABASTER.

OPACITY, in philoſophy, a quality of bodies which renders them opake, that is, impervious to the rays of light. See LIGHT.

The term *opacity* is uſed in oppoſition to *tranſparency*. See TRANSPARENCY.

Opacity, according to the Carteſians, conſiſts in this, that the pores of the body are not all ſtrait, or directly before each other; or rather, not pervious every way.

But this doctrine is deficient; for though it muſt be allowed that to have a body tranſparent, its pores muſt be ſtrait, or rather open every way: Yet how it ſhould happen, that not only glaſs and diamonds, but even water, whoſe parts are ſo very moveable, ſhould have all their pores open and pervious every way; and at the ſame time, the fineſt paper, or the thinneſt gold plate, ſhould exclude the light for want of ſuch pores, is inconceivable. So that another cauſe of *opacity* muſt be found.

Now, all bodies have vaſtly more pores or vacuities than are neceſſary for an infinite number of rays to find a free paſſage through them in right lines, without ſtriking on any of the parts themſelves. For ſince water is nineteen times lighter, *i. e.* rarer than gold; and yet gold itſelf is ſo very rare, that magnetic effluvia paſs freely through it without any oppoſition; and quickſilver is readily received within its pores, and even water itſelf by compreſſion; it muſt have much more pores than ſolid parts; conſequently, water muſt have at leaſt forty times as much vacuity as ſolidity. See PORE.

The cauſe therefore why ſome bodies are opake, does not conſiſt in the want of rectilinear pores, pervious every way; but, either in the unequal denſity of the parts; or in the magnitude of the pores, and being either empty, or filled with a different matter; by means whereof the rays of light, in their paſſage, are arreſted by innumerable refractions and reflexions; till, falling at length on ſome ſolid part, they become quite extinct, and are utterly abſorbed. See RAY and REFRACTION.

Hence cork, paper, wood, &c. are opake; while glaſs, diamonds, &c. are pellucid. For in the confines, or joining of parts alike in denſity, ſuch as thoſe of glaſs, water, diamonds, &c. among themſelves; there ariſes no refraction or reflexion, by reaſon of the equal attraction every way. So that ſuch of the rays of light as enter the firſt ſurface, paſs ſtrait through the body; excepting ſuch as are loſt and abſorbed, by ſtriking on ſolid parts. But in the bordering of parts unequal in denſity; ſuch as thoſe of wood and paper, both with regard to themſelves, and with regard to the air or empty ſpace in their larger pores; the attraction being unequal, the reflexions and refractions will be very great: Thus the rays will be unable to paſs through ſuch bodies, being continually bandied about, till they become extinct. See REFRACTION, &c.

That this interruption, or diſcontinuity of parts, is the chief cauſe of *opacity*, Sir Iſaac Newton argues, does appear hence, that all opake bodies immediately begin to be tranſparent, when their pores become filled with a ſubſtance of equal, or almoſt equal denſity with their parts:—Thus paper dipped in water or oil, the ſtone called *oculus mundi* ſteeped in water, linen-cloth dipped in oil or vinegar, and other ſubſtances ſoaked in ſuch fluids as will intimately pervade their little pores, become more tranſparent than before.

On the contrary, the moſt tranſparent ſubſtances, by emptying their pores, or ſeparating their parts, may be rendered very *opake*.—Thus ſalts, or wet paper, or oculus mundi, by drying; horn, by ſcraping; glaſs by pulverizing or flawing; and water itſelf by being beat into bubbles or froth, are rendered *opake*.

Indeed, to render bodies *opake* and coloured, their interſtices muſt not be leſs than of ſome determinate ſize: For the moſt *opake* bodies that are, if their parts be very minutely divided, as when metals are divided in acid menſtruums, become perfectly tranſparent. See COLOUR, TRANSPARENCY, &c.

OPAL, OPALUS, a precious ſtone, of various colours; changeable according to the different poſition of the ſtone to the light. See PRECIOUS *Stone*.

In it are ſeen the red of the ruby, the purple of the amethyſt, the green of the emerald, beſides yellow, blue, and ſometimes black and white. When the ſtone is broke, moſt of theſe colours diſappear; which ſhews that they ariſe by reflexion from one or two principal ones.

Its form is always either round, or oval; its prevailing colour white. Its diverſity of colours makes it almoſt of equal value with a ſapphire or ruby.

Tavernier ſays, perhaps ſomewhat too poſitively, that there are mines of *opal* in Turkey. Other authors, ancient and modern, ſay, Cyprus, Arabia, Egypt, Bohemia, and Hungary, produce it; whence it is diſtinguiſhed into two kinds, *oriental* and *occidental*. Its figure is always either round, or oval, ſomewhat like a pearl. They poliſh it with tripoli.

Pliny among the ancients, and Porta and Albertus Magnus among the moderns, are very copious on the virtues of the *opal*; forſooth, becauſe it has the colours of all the other precious ſtones, it muſt have all their virtues too. The ancients called it *paideros*, from its promoting love and good-will. Pliny and Solinus mention a ſpecies of *opal*, called *exacontalithus*, which had ſixty colours.

Artificial OPAL.—In the *Philoſoph. Tranſact.* Mr. Colepreſſe gives us an account of the manner of counterfeiting *opal*, as practiſed at Harlem. He ſays, the counterfeit is very lively, and thinks it only performed by the degrees of heat, which produce the colours. When the compoſition is melted, they take out ſome on the point of an iron rod, which being cooled either in the air or water, is colourleſs or pellucid; but being put into the mouth of the furnace on the ſame rod, and there turned by the hand for a little ſpace, hath its little bodies ſo variouſly poſited in various parts of the ſame piece, that the light falling on them, being variouſly modified thereby, repreſents the ſeveral colours ſeen in the natural *opal*. He adds, the colours may be deſtroyed and reſtored, according to the various motions of its particles by heat.

OPALIA, in antiquity, feaſts celebrated at Rome, in honour of the goddeſs Ops.

Varro ſays they were held three days after the expiration of the Saturnalia. According to Macrobius, they were held on the nineteenth of December, which was one of the days of the Saturnalia.—He adds, that thoſe two feaſts were celebrated in the ſame month, becauſe Saturn and Ops were huſband and wife, and that it is to them we owe the invention of corn and fruits: For which reaſon, the feaſt was not held till the harveſt and fruit-time were intirely over.

The ſame author obſerves, that the vows offered to the goddeſs, were made ſitting on the ground; to ſhew that ſhe was earth, the mother of all things.

OPEN *Flank*, in fortification, is that part of the flank which is covered by the orillon. See FLANK.

OPEN *Fire*. See FIRE and REVERBERATORY.

OPEN *Fountain*. See the article FOUNTAIN.

OPEN *Pound*. See the article POUND.

OPENING *a Vein*. See the article PHLEBOTOMY.

OPENING *of Trenches*, is the firſt breaking of ground by the beſiegers, in order to carry on their approaches towards a place. See TRENCH.

OPENING *of Gates*, in aſtrology, is when one planet ſeparates from another, and preſently applies to a third bearing rule in a ſign oppoſite to that ruled by the planet, with which it was before joined.

OPENING *the Mouth*. See the article MOUTH.

OPERA, a dramatic compoſition ſet to muſic, and ſung on the ſtage; accompanied with muſical inſtruments; and enriched with magnificent dreſſes, machines, and other decorations. See DRAMA.

Bruyere ſays, that it is eſſential to the *opera* to keep the mind, the eyes, and ears in an enchantment: St. Evremond calls the *opera* a chimerical aſſemblage of poetry and muſick; where the poet and muſician mutually cramp each other.

The *opera* we derive from the Venetians, among whom it is held one of the principal glories of their carnival. See COMEDY.

While the Engliſh and French comic and tragic theatres were forming, the Venetians invented the *opera*: The abbot Perrin, introductor of embaſſadors to Gaſton duke of Orleans, was the firſt who formed the deſign of introducing it into Paris; and he obtained the king's privilege for the ſame in 1669. And it was not long ere it paſſed thence into England.—The author of the Spectator obſerves, that the French muſic agrees with their accent and pronunciation, much better than the Engliſh; and are at the ſame time better calculated for the gay humour of that people. See RECITATIVE.

At Rome they have a kind of *ſpiritual opera's*, frequent in Lent; conſiſting of dialogues, duo's, trio's, ritornella's, chorus's, &c. The ſubject whereof is taken out of ſcripture, the life of ſome ſaint, or the like.—The Italians call them *oratorio's*: The words are frequently Latin; and ſometimes Italian.

OPERATION, in the general, the act of exerting, or exerciſing ſome power or faculty, upon which an effect follows. See POWER.

The nobleſt *operation* of man is that by the ſchoolmen called *vital*, or *immanent*, viz. the *operation* of the mind; which, with regard to the underſtanding, is threefold; apprehenſion or perception, diſcretion or judgment, and reaſoning or diſcourſe. See APPREHENSION, JUDGMENT, and DISCOURSE.

The directing of theſe makes the object of logic. See LOGIC.

With regard to the will, the immanent *operations* are willing and nilling; to which are referred loving and hating. See WILL.

OPERATION, in medicine, denotes a methodical action of the hand, on the human body; in order to re-eſtabliſh health. See CHIRURGERY.

Bleeding is a very common, but at the ſame time a dangerous *operation*. See PHLEBOTOMY and BLEEDING.

Trepanning is one of the fineſt *operations* in chirurgery. See TREPANNING. The Cæſarean *operation* is the cutting open a woman with child, and drawing out the child through the aperture. See CÆSAREAN.

The other chirurgical *operations*, are Sutures, Tapping, Caſtrating, Cutting for the Fiſtula, Amputation, Extirpation, Cupping, &c. See each in its place, as SUTURE, &c.

High OPERATION. See the article HIGH.

Lateral OPERATION. See LITHOTOMY.

OPERATION is more particularly uſed in medicine, for the manner wherein any remedy produces its ſalutary effect; or that ſeries of actions, mediate and immediate, whereby its remote end is attained. See MEDICINE.

See *the operations of each kind of medicines under the proper heads*, SPECIFICS, PURGATIVES, EMETICS, OPIATES, &c.

OPERATIONS, in chymiſtry, denote the proceſſes, or experiments, by means whereof the proper changes are produced in bodies, and the effects of the art procured. See CHYMISTRY.

The changes chymiſtry produces in bodies are reducible to two kinds, *viz.* an union of parts, and a ſeparation thereof: Thus chymiſtry either ſeparates ſpirits, ſalts, oils, &c. or compounds them together.

A chymical *operation*, then, conſiſts in changing the ſituation of the parts; particularly, either in moving ſome parts, but not the whole, which is called *ſeparating*; or in adding new parts, which is called *uniting*.

All chymical *operations*, therefore, are reducible to two kinds, *viz.* ſuch whereby the parts of bodies before joined or united, are ſeparated, which the ancient chymiſts called *ſolution*; and ſuch whereby the parts before diſ-joined are combined, or united, called *coagulation*. See SOLUTION and COAGULATION.

Some, however, object digeſtion as a third ſpecies of *operation*, not reducible to either of them: But Boerhaave ſhews that it is a compoſition of both. See DIGESTION.

Moſt chymiſts, however, look on this diviſion as ſcarce accurate and minute enough, and ſubdivide the art into a number of particular, or ſubordinate *operations*; as *calcination*, *vitrification*, *diſtillation*, *ſublimation*, *cohobation*, *amalgamation*, *fermentation*, *putrefaction*, &c. See each in its place, CALCINATION, VITRIFICATION, SUBLIMATION, DISTILLATION, FERMENTATION, &c.

OPERATION, in theology, is uſed for the actions both of the word, and the man, in Jeſus Chriſt. See PERSON.

The orthodox teach, that there are two *operations* in Jeſus Chriſt, the one divine, the other human; and not one *theandric operation*, as was the doctrine of the Monothelites and Monophyſites. See THEANDRIC, &c.

OPERATOR, in medicine, &c. a perſon who *operates*, or works with the hand, on the human body, to preſerve, or reſtore its health.

We ſay an *operator for the ſtone*, meaning a lithotomiſt, or a perſon who cuts. See LITHOTOMY.

OPERATOR *for the eyes*, denotes a perſon who couches cataracts, &c. See CATARACT.

OPERATOR *for the teeth*, ſignifies a tooth drawer, &c. See TOOTH.

OPHITES,* Οφιτης, in natural hiſtory, a ſort of variegated marble of a duſky green ground, ſprinkled with ſpots of a lighter green; otherwiſe called *ſerpentine*. See MARBLE and SERPENTINE.

> * It is thus called from the Greek οφις, ſerpent; by reaſon its ſpots reſemble thoſe of that animal.

OPHITES is alſo the name of a ſect of ancient heretics, who ſprung out of the Gnoſtics; ſo called from their worſhipping the ſerpent that ſeduced Eve.

This ſerpent, they taught, was inſtructed thoroughly in all knowledge; and make it the father and author of all the ſciences. —On which principle they built a thouſand chimera's; part of which may be ſeen in St. Epiphanius. See GNOSTIC.

They ſaid this ſerpent was the Chriſt; that he was very different from Jeſus born of the virgin, into whom, ſaid they, the Chriſt deſcended; and that it was this Jeſus, not the Chriſt, that ſuffered.—Accordingly, they made all thoſe of their ſect renounce Jeſus, to follow Chriſt.

The Sethians, or Sethites, mentioned by Theodoret, were either the ſame with the *ophites*, or very little different from them. See SETHIAN.

OPHIUCHUS, in aſtronomy, a conſtellation of the northern hemiſphere; called alſo *ſerpentarius*. See SERPENTARIUS.

OPHTHALMIA,* Οφθαλμια, in medicine, a diſeaſe of the eyes; properly, an inflammation of the tunica adnata, or conjunctiva; accompanied with a redneſs, heat, and pain. See EYE, SCLEROPHTHALMIA, and XEROPHTHALMIA.

> * The word is formed from the Greek οφθαλμος, eye.—Celſus calls the *ophthalmia*, lippitudo, by reaſon of a gum ſticking to the eye-lids in this diſeaſe, which the Latins call *lippa*.

The *ophthalmia* is either *moiſt* or *dry*: In the firſt, there is a ſhedding of tears; in the ſecond none at all.

It ſometimes happens in the *ophthalmia*, that the two eye-lids are ſo diſtorted, that the eye continues conſtantly open, without being able to ſhut; which is called χημωσις; ſometimes the eye-lids are ſo faſtened together, that the eye cannot be opened, which is called φιμωσις, *q. d.* cloſure of things that ſhould be open.

The immediate cauſe of the *ophthalmia*, is the blood flowing in too great abundance in the little veſſels of the adnata, ſo as to ſtagnate therein, and diſtend them. The remote cauſes are the ſame with thoſe of other inflammations.—In ſummer it is frequent to have epidemic *ophthalmia's*.

Snow applied to the afflicted eye, is reputed a good remedy for the *ophthalmia*: The ephemerides of the Leopoldine academy mention an *ophthalmia* cured by applying cows-dung, while hot, between two linen cloths, to the eye. A fox's tongue, and the fat and the gall of a viper, are empirical preſervatives againſt the *ophthalmia*.

The cure of *ophthalmia's*, according to the modern practice, depends chiefly on the due repetition of purgatives. If theſe fail, recourſe is had to veſicatories, iſſues, ſetons, &c. Tho' Pitcairn prefers bleeding; it being his obſervation, that no diſeaſe requires copious bleeding ſo much as the *ophthalmia*.

Pitcairn, and ſome others, diſtinguiſh an *external* and *internal ophthalmia*; the firſt in the adnata, which is that hitherto ſpoke of; the ſecond in the retina.—The ſymptoms or indications of the latter, are muſcæ volitantes, duſt ſeeming to fly in the air, &c. See MUSCÆ, &c.

This, when inveterate, degenerates into a gutta ſerena, or amauroſis. See GUTTA *Serena*, &c.

OPHTHALMICS, medicines proper for diſeaſes of the eyes. See EYE.

Such are *opthalmic* waters. See WATER. *Ophthalmic* powders, ointments, &c.—There is an excellent *ophthalmic* prepared of ſaccharum ſaturni.

OPHTHALMIC *Nerves*. The fifth pair of nerves of the brain, dividing into three branches; the firſt is called *ophthalmic*, becauſe it goes to the eye.—This again ſubdivides into two branches, after ſending out ſeveral twigs which encompaſs the optic nerves, and are diſtributed into the choroides. See NERVE.

OPHTHALMOGRAPHIA,* that branch of anatomy which conſiders the ſtructure, and compoſition of the eye; the uſe of its parts, and the principal effects of viſion. See EYE.

> * The word is formed from the Greek οφθαλμος, eye; and γραφη, deſcription.

Our countryman, Dr. William Briggs, has publiſhed an excellent *opthalmographia*, and Plempius another.

OPHTHALMOSCOPIA, that branch of phyſiognomy which conſiders a perſon's eyes, and looks; to deduce thence the knowledge of his temperament, humour, and manners. See PHYSIOGNOMY.

OPIATE, OPIATUM, in medicine, is ſometimes applied to any confection, or electuary. See CONFECTION.

In which ſenſe it is defined an internal remedy, variouſly compoſed of powders, pulps, liquors, ſugar, or honey, reduced into a ſoft conſiſtence. See ELECTUARY, &c.

The *opiate* of Solomon is a compoſition of great fame, ſo called from one Solomon, a phyſician, its inventor; and firſt publiſhed by Laurence Joubert.

There are a particular kind of *opiates*, called *incarnatives*, for the teeth and gums, made of alum, ſumach, lignum aloes, myrrh, maſtic, &c. reduced into powder.

OPIATE, is alſo uſed for any medicine, given with an intention to procure ſleep. See SLEEP.

In which ſenſe the word is of the ſame import with *narcotic*, *hypnotic*, *ſoporific*, or *pacific*. See NARCOTIC, HYPNOTIC, &c.

OPIATE is more particularly uſed for a compoſition wherein opium is an ingredient. See OPIUM.

The operation of *opiates*, or the manner wherein they produce their effect in the body, Dr. Quincy thus lays down. —All pain is a ſtimulus on the part affected, and is attended with contractions of the pained membranes, which occaſion a greater afflux than ordinary of the nervous juice that way: On the other hand, pleaſure, or a delightful ſenſation in any part, is accompanied with a ſmooth undulation, and eaſy reflux of the nervous juice towards the brain. This is, as it were, the entertainment of the mind; with which being taken up, it doth not determine the ſpirits to the organs of motion; that is, there is ſuch a relaxation of the muſcular fibres, and ſuch a diſpoſition of the nervous fluid, as is neceſſary to ſleep. See PAIN, &c.

Now, it is ſhewn that an agreeable ſenſation produced in the ſtomach, together with a diſtention of its membranes, is the immediate cauſe of that ſleepineſs, to which we are inclinable after eating; the one engaging the mind, the other acting on the body. For pleaſure amuſes the ſoul, and the fullneſs of the veſſels in the brain checks and hinders, in ſome meaſure, the derivation of the nervous juice into the organs.

Now, to apply this; a moderate doſe of an *opiate* uſually tranſports people with a pleaſing ſenſation, to that degree, that, as they often expreſs themſelves, they are in heaven; and though they do not always ſleep, (which proceeds from the preſentation of pleaſing images to the mind ſo ſtrongly, that, like dreams, they over-engage the fancy, and ſo interrupt the ſtate of reſt) yet they enjoy ſo perfect an indolence and quiet, that no happineſs in the world can ſurpaſs the charms of ſo agreeable an extaſy.

Thus we have from theſe medicines, but in a far more eminent degree, all thoſe effects which are obſerved to follow upon that grateful ſenſe in the ſtomach, which a moderate fulneſs produceth. For no bodies are ſo fit and able pleaſingly to affect our ſenſible membranes, as thoſe which conſiſt of volatile parts, whoſe activity is tempered and allayed by the ſmoothneſs of ſome which are lubricating and oily; for they lightly rarify the juices of the ſtomach, and cauſe a pleaſant titillation of its nervous coat, whereby there is induced an agreeable plenitude, and the mind is entertained with ideas of ſatisfaction and delight.

And thus, we eaſily ſee upon what mechaniſm the other virtues of *opiates* depend; for their eaſing pains, checking evacuations, *&c.* proceed not only from the mind's being taken up with a pleaſing ſenſe, whereby it is diverted from a diſagreeable one; but all pain being attended with a contraction of the part, the relaxation of the fibres, which they cauſe, eludes and deſtroys the force of the ſtimulus.

Opiates are found to abate immoderate ſecretions and evacuations, which they do by removing that irritation of the organs, whereby they are occaſioned. And herein lies the incraſſating quality of thoſe medicines, in that the twitching ſenſe upon the membranes of the lungs, bowels, *&c.* being leſſened, the ſharp humour is ſuffered to lodge there in a greater quantity, before it is ſo troubleſom as to be thrown off and expelled; it being all one as if there were no irritation of the part, if the uneaſy ſenſe thereof be not regarded by the mind.

And theſe effects will all be heightened by the mixture of the *opiate* particles with the blood; which is hereupon rarified, and diſtends its veſſels, eſpecially thoſe of the brain; and this does ſtill, to a greater degree, leſſen the influx of the nervous fluid to the parts, by preſſing upon the tubuli, or little canals, through which it is derived. Whence the reaſon of that difficulty of breathing, which *opiates* occaſion; this ſymptom being inſeparable from the rarefaction of the blood in the lungs.

OPINION, OPINIO, denotes a probable belief; or a doubtful, and uncertain judgment of the mind. See FAITH, JUDGMENT, *&c.*

Opinion is better defined the aſſent of the mind to propoſitions not evidently true at firſt ſight; nor deduced, by neceſſary conſequence, from others that are ſo; but ſuch as carry the face of truth. See TRUTH and ERROR.

The ſchools define *opinion*, *aſſenſus intellectus cum formidine de oppoſito*; an aſſent of the underſtanding, with ſome fear or diſtruſt of the contrary being true.

According to logicians, demonſtration begets ſcience, or knowledge; and probable arguments beget *opinion*. See KNOWLEDGE, PROBABILITY, and PROBABLE.

Wherever the mind's acquieſcence in a truth propoſed to it, is accompanied with any doubt, this is what we call an *opinion*. See DOUBTING.

Plato makes *opinion* a medium between knowledge and ignorance; clearer and more expreſs than ignorance; yet more obſcure and unſatisfying than knowledge. See IGNORANCE.

OPISTHOTONOS, * Οπισθοτονος, in medicine, a kind of convulſion, wherein the body is bent backwards, ſo as to form a bow.

* The word is compounded of the Greek, οπισθεν, backward, behind, and τεινειν, tendere, to ſtretch, bend.

In which ſenſe the word ſtands oppoſed to *emproſthotonos*, wherein the body is bent forwards. See CONVULSION.

The *opiſthotonos* ariſes from a tonic motion of the muſcles of the poſterior parts of the body; eſpecially thoſe on the back of the head.

OPIUM, * in pharmacy, *&c.* a narcotic juice, commonly drawn from the head of the white poppy, and afterwards inſpiſſated. See POPPY.

* The word is formed from the Greek, οπος, *ſuccus*, juice.

When the juice flows of itſelf, through inciſions made in the poppy heads, it is properly called *opium*.—When drawn by expreſſion, it ought rather to be called *meconium*. See MECONIUM.

The difference between the qualities and virtues of the two juices is very conſiderable. The former is preferable on all accounts; but it is exceeding rare; the Turks, among whom it is produced, and who make great uſe of it, never allowing it to be exported.—So that it is the latter that is ordinarily uſed among us, and ſold for *opium*.

It is moſtly brought from the Levant, and Cairo; generally very impure; the Levantines, to ſhorten their labour, and to have the more juice, drawing it equally from the heads and the leaves of poppies, by expreſſion, and then reducing it to the thickneſs of an extract by fire.—Though a late traveller into their countries aſſures us, it is drawn by decoction, and afterwards inſpiſſated.—See Mem. Acad. R. Scien. an. 1732. p. 427.

It muſt be choſen dry, the ſmootheſt, and blackeſt poſſible; of a drowſy ſmell, and neither rugged, nor ſticky, nor all in a maſs.

It is a popular error, that there is any ſuch thing as *white opium*; for though the juice as it runs from the heads of the poppies be of a milk-colour, it always becomes of a very deep brown as it thickens.—Wherever it is found yellowiſh or ſoft, it is a ſign the juice has not had fire enough.

Moſt of the *opium* ſold at Conſtantinople is brought from Anatolia, from a place called by the Turks Aphium Carahiſſat; *i. e.* black caule of *opium*.—It is alſo produced in the territory of Thebes in Egypt; but this is held much inferior to the Anatolian *opium*.

Prepared OPIUM is called *laudanum*: of which there are two kinds: the one, ſimple; extracted by means of rain-water, and ſpirit of wine.—The other compound, called *laudanum opiatum*; wherein there enter ſeveral other ingredients. See LAUDANUM.

The uſes of *opium* are to ſooth pain, to excite ſleep, to ſtop vomiting and looſeneſſes.—Its doſe is from half a grain to two grains. Some perſons, who have much habituated themſelves to it, can take 50 or 60 grains. Charas ſays, he has taken 12 grains himſelf; and adds, he knew one who made no ſcruple of 36. And in the *Philoſ. Tranſact.* we have an inſtance of one Mrs. Lovelock, who, in a fever, in three days time, took 102 grains.

Opium raiſes the ſpirits, occaſions agreeable ſenſations, and has much the ſame effect with wine, or ſtrong ſpirits.—The Turks ordinarily take to the quantity of a drachm when they go to battle, or undertake any affair that requires vigour and ſtrength.

Opium ſtops, for a time, all overflowings of humours, fluxes, hæmorrhages, *&c.* probably from the ſmoothneſs and roundneſs of its parts, which, by a kind of titillation, oblige the inteſtines, and other veſſels, to contract themſelves. See OPIATES.

Willis, Sylvius, and Muller, look on *opium* as a coagulating poiſon, which fixes the ſpirits in the nerves.—Wepſer and Pitcairn, on the contrary, maintain it to be a hot diſſolving poiſon, which ſubtilizes the blood, exalts and reduces it into vapours, which bloat up the arteries; and the bloated arteries compreſſing the veins and nerves, ſhut up the paſſage of the ſpirits. See POISON.

By analyſis, *opium* is found to contain a great deal of volatile ſalt.

OPOBALSAMUM, in pharmacy, a whitiſh juice, gum, or reſin, diſtilling from the branches of a tree called *balſamum*, or the *balſam tree*. See BALSAM.

It is whitiſh, pretty thick, tranſparent, of a ſmell approaching turpentine, but much more agreeable.

It is the ſame with the celebrated *balſamum verum*, or balm of the Levant; at leaſt the difference is not viſible, nor can authors fix it. See BALM.

It obtains a place among the Alexipharmics, and is a good ingredient in the Theriaca Andromachi, and mithridate; very ill ſupplied with the expreſſed oil of mace for a ſuccedaneum, which does not at all come up to the ſubtilty and activity of its parts, but is of a much heavier texture.

This, as all other balſams, is ſuppurative, deterſive, and incarnating, applied outwardly to tumours, ulcers, or green wounds.

OPOPANAX, * Οποπαναξ, in pharmacy, a vegetable juice, or gum, yellow without-ſide, white within, fatty, and brittle, of an agreeable taſte, and a very ſtrong ſmell. See GUM.

* The word is formed from the Greek, οπος, juice, and παναξ, the name of the tree which yields it.

The Latins call it *panax Herculeum*, from Hercules, who is ſuppoſed to have invented it, or rather who firſt diſcovered its ſpecific virtues.—It is one of the three celebrated panacea, or univerſal medicines, to which the Ancients attributed ſuch wonderful virtues. The two others are the Aſclepium and Chironium; the firſt found by Æſculapius, the ſecond by Chiron. See PANACEA.

The gum *opopanax* flows by inciſion from a plant growing abundantly in Achaia, Bœotia, Phocis, and Macedonia: while it is liquid, it is white, but as it dries and hardens, it aſſumes a beautiful golden yellow.

There are three kinds imported; that in tears; that in the maſs; and that counterfeited, or flatted.—The firſt is the beſt, and the ſecond is the better, as it has the more tears; the third is a rank ſophiſtication, and good for little.

It is little uſed internally; though Etmuller ranks it among cathartics.—Its chief uſe is in the cure of wounds; whence it enters the compoſition of the unguentum divinum, with the galbanum, ammoniac, and bdellium.

OPPILATION, in medicine, the act of obſtructing, or ſtopping up the ducts, or paſſages of the body, by redundant or peccant humours. See OBSTRUCTION.

The word is chiefly uſed for obſtructions of the lower belly.

Viſcid, heavy foods, difficult of digeſtion, are *oppilative*; do not paſs off well, but ſtop in the mouths of the veſſels.

OPPILATIVE. See the article DEOPPILATIVE.

OPPONENT, a perſon who withſtands, or oppoſes another. See OPPOSITION.

The term is chiefly uſed in ſpeaking of ſcholaſtic or academic diſputes or exerciſes, where a perſon who oppoſes a theſis, or impugns it by his objections, is called *opponens*, opponent.

OPPOSER *Foreign*. See FOREIGN *Oppoſer*.

OPPOSITES, OPPOSITA, among logicians, are ſuch things as differ among themſelves; but ſo, as not to differ in like manner from ſome third.

By which circumſtance, *oppoſites* differ from *diſparates*.

The ſchoolmen reckon four kinds of *oppoſites*; viz. relatively, contrarily, privatively, and contradictorily *oppoſites*.

Either, ſay they, the oppoſition is between ens and non ens: if the former, it is either with a dependent ens, which makes a relative oppoſition, the loweſt of all; or an independent one, which is a contrary oppoſite: if with a non ens, it is either with a non ens ſecundum quid, which is privative; or with a non ens ſimply, which is the higheſt oppoſition. See RELATIVE, CONTRARY, PRIVATIVE, and CONTRADICTORY.

OPPOSITES, *Oppoſita*, complexly taken, are propoſitions that claſh with each other.—As, man is an animal; and man is not an animal. See OPPOSITION.

OPPOSITE *Angles*. See the article ANGLE.

If a line S T. (*Tab.* GEOMETRY, *fig.* 46.) meet two other lines, A P and B R, in different points A and B, but in the ſame direction; the angles u and y, as alſo z and y, hereby formed, are called *oppoſite* angles; particularly u, the *external oppoſite* angle, and z, the *internal oppoſite* angle of y.

OPPOSITE *Cones*, denote two ſimilar cones, vertically *oppoſite*, that is, having the ſame common vertex as well as the ſame axis. See CONE.

OPPOSITE *Sections*, are two hyperbola's made by cutting two *oppoſite* cones by the ſame plane. See HYPERBOLA.

If a cone be cut by a plane through its vertex, and afterwards by a ſecond plane parallel to the former; this latter plane produced through the *oppoſite* cone will there make the *oppoſite* ſections. See CONICS.

OPPOSITION, in geometry, the relation of two things, between which a line may be drawn perpendicular to both.

OPPOSITION, in logic, the quality of diſagreement between propoſitions which have the ſame ſubject, and the ſame attribute. See PROPOSITION.

Oppoſition, is ſaid by logicians to be either *complex*, or *incomplex*.

Incomplex or *ſimple oppoſition*, is the diſagreement of two things, which will not ſuffer each other to be in the ſame ſubject.

Thus *heat* is oppoſed to *cold*; *ſight* to *blindneſs*, &c.—Which *oppoſition* has already been obſerved to be of four kinds. See OPPOSITE.

Complex oppoſition, is defined by Ariſtotle to be the affirming, and denying the ſame predicate of the ſame ſubject, not taken equivocally, but for the ſame, in the ſame manner, and at the ſame time.—As Socrates is learned; and Socrates is not learned.

The later ſchoolmen, deviating from their maſter, define *oppoſition* an affection of enunciations, whereby two abſolute propoſitions, the ſame extremes being ſuppoſed in the ſame order, and number, and underſtood without any ambiguity, of the ſame thing, oppoſe each other, either in reſpect of quantity, or of quality; or of both.

According to the former definition, there are three ſpecies of *oppoſition*, *contrary*, *ſubcontrary*, and *contradictory*: according to ſecond, a fourth ſpecies is admitted, *viz. ſubaltern*.

To know how and wherein, propoſitions are oppoſite, they muſt be compared in quantity and quality, all the ways they can be compared in.—If they be oppoſite both in quality and quantity; i. e. if the one be affirmative, and the other negative; the one univerſal, the other particular; they are ſaid to be contradictory:—*v. gr.* no pleaſure is allowed; ſome pleaſure is allowed. See CONTRADICTORY.

If they be only oppoſite in quality, and not in quantity, they are called *contraries*, if univerſal; and *ſubcontraries*, if particular.—*v. gr.* All uſe of wine is evil; no uſe of wine is evil. Some means of preſerving reputation are allowed; ſome means of preſerving reputation are not allowed. See CONTRARY, &c.

If the propoſitions be only oppoſite in quantity, they are called *ſubalterns*.—*v. gr.* Every man is liable to ſin; ſome man is liable to ſin. But this laſt is no proper *oppoſition*; inaſmuch as the univerſal propoſition always includes the particular one.

Singular propoſitions, which can only be oppoſed in quality, are reducible to contradictory ones.

The eſſential properties of propoſitions conſidered with regard to their *oppoſition*; are, 1. That of two contradictory propoſitions, there is one always true, and another falſe. 2. Two contrary propoſitions can never be both true; but may be both falſe. 3. Sub-contrary propoſitions may be all true at the ſame time; as happens when the attribute is accidental to the ſubject; but when it is eſſential to it, the one is true, the other falſe. 4. Subalterns may be either true or falſe at the ſame time; or the one may be true, the other falſe. If the attribute be eſſential to the ſubject, the ſubaltern affirmatives are true, and the negatives falſe; but if the negatives deny the ſubject an attribute incompatible with the ſubject, they will be both true. When the attribute is accidental to the ſubject, the univerſal ſubaltern is ordinarily falſe, and the particular one true.

OPPOSITION, in rhetoric, denotes a figure, whereby two things are joined together, which appeared incompatible: as when Horace ſays, a *wiſe folly*.

In Bouhours's notion, this figure, which ſeems to deny what it eſtabliſhes, and contradicts itſelf in appearance, is very elegant.

OPPOSITION, in aſtronomy, is that aſpect, or ſituation of two ſtars or planets, wherein they are diametrically oppoſite to each other, or 180°, that is, a ſemicircle, a-part. See CONJUNCTION and SYZYGY.

When the moon is diametrically oppoſite to the ſun, ſo that ſhe ſhews her whole illumined face; ſhe is ſaid, with regard to the ſun, to be in *oppoſition*; and ſhe is then ſaid to be *in her full*, and ſhines all night long. See MOON and PHASIS.

Eclipſes of the moon never happen but when ſhe is in *oppoſition* with the ſun, and when they both meet in the nodes of the ecliptic. See ECLIPSE.

Mars in his *oppoſition* to the ſun is nearer the earth than he is to the ſun. See MARS.

OPSONOMUS, in antiquity, a magiſtrate of Athens, whereof there were two, or three; choſen out of the ſenate, or council. Their office was to inſpect the fiſh-market, and to take care that every thing were done in order, and according to the laws.

OPTATIVE, in grammar, the third mood in the conjugations of verbs, ſerving to expreſs an ardent deſire or wiſh for any thing. See MOOD.

Inſtead of a particular mood, or a particular ſet of inflexions to expreſs this deſire, the Engliſh, Latins, &c. expreſs it by an adverb of wiſhing prefixed to it. The Latins by *utinam*; the French by *plut a Dieu*; and the Engliſh by *would to God*, &c.

In theſe languages, ſetting aſide the adverb, the *optative* is the ſame with the ſubjunctive; the inflections of the verb, which make what we call the moods, being the ſame in both.

Indeed, in the Greek, the wiſh is expreſſed by a particular inflexion, thence called *optative*; and in the French, Spaniſh, and Italian, there is ſomething like it; their triple tenſes ſerving the ſame purpoſe. But the *optative* mood may be ſafely retrenched from the Latin and Engliſh. See SUBJUNCTIVE.

OPTERIA, *, among the ancients, preſents made to a child, the firſt time a perſon ſaw it.

* The word is formed from the Greek οφτομαι, I ſee.

OPTERIA was alſo uſed for the preſents which the bridegroom made his bride when ſhe was conducted to him; this being the firſt time he ſaw her. See Barthol. *de Puerp. vet.*

OPTIC or OPTICAL, ſomething that relates to viſion, or the ſenſe of ſeeing. See the article VISION, &c.

OPTIC *Angle*. See the article ANGLE.

OPTIC *Axis*, is a ray paſſing through the centre of the eye, and the middle of the *optic* pyramid, &c. See AXIS, &c.

OPTIC *Chamber*. See *Camera* OBSCURA.

OPTIC *Glaſſes*, are glaſſes ground either concave or convex; ſo as either to collect, or diſperſe the rays of light; by means whereof viſion is improved, and the eye ſtrengthened, preſerved, &c. See GLASS, &c.

For the manner of grinding and poliſhing *optic glaſſes*, ſee GRINDING, POLISHING, GLASS, &c.—For their phænomena, ſee LENS, MIRROUR, &c.

The principal among *optic glaſſes*, are *teleſcopes*, *microſcopes*, *ſpectacles*, *reading glaſſes*, *magic lanterns*, &c. See the conſtruction and uſe of each under its proper article, TELFSCOPE, MICROSCOPE, SPECTACLE, MAGIC *Lantern*, &c.

OPTIC *Inequality*, in aſtronomy, is an apparent irregularity in the motions of far diſtant bodies; ſo called, becauſe not really in the moving bodies, but ariſing from the ſituation of the ſpectator's eye: ſo that were the eye in the centre, it would always ſee the motions uniform.

The *optical inequality* may be thus illuſtrated.—Suppoſe a body revolving in the periphery of a circle ABDEFGQP, (*Tab.* OPTICS, *fig.* 40.) and moving through equal arches AB, BD, DE, EF, in equal times; and ſuppoſe the eye in the plane of the ſame circle, but at a diſtance from it, viewing the motion of the body from O: when the body goes from A to B; its apparent motion is meaſured by the angle A O B, or the arch H L, which it will ſeem to deſcribe. But in an equal time, while it moves through the arch BD, its apparent motion will be determined by the angle B O D, or the arch L M, which is leſs than the former arch H L. And when arrived at D, it will be ſeen at the

Tab. OPTICKS.

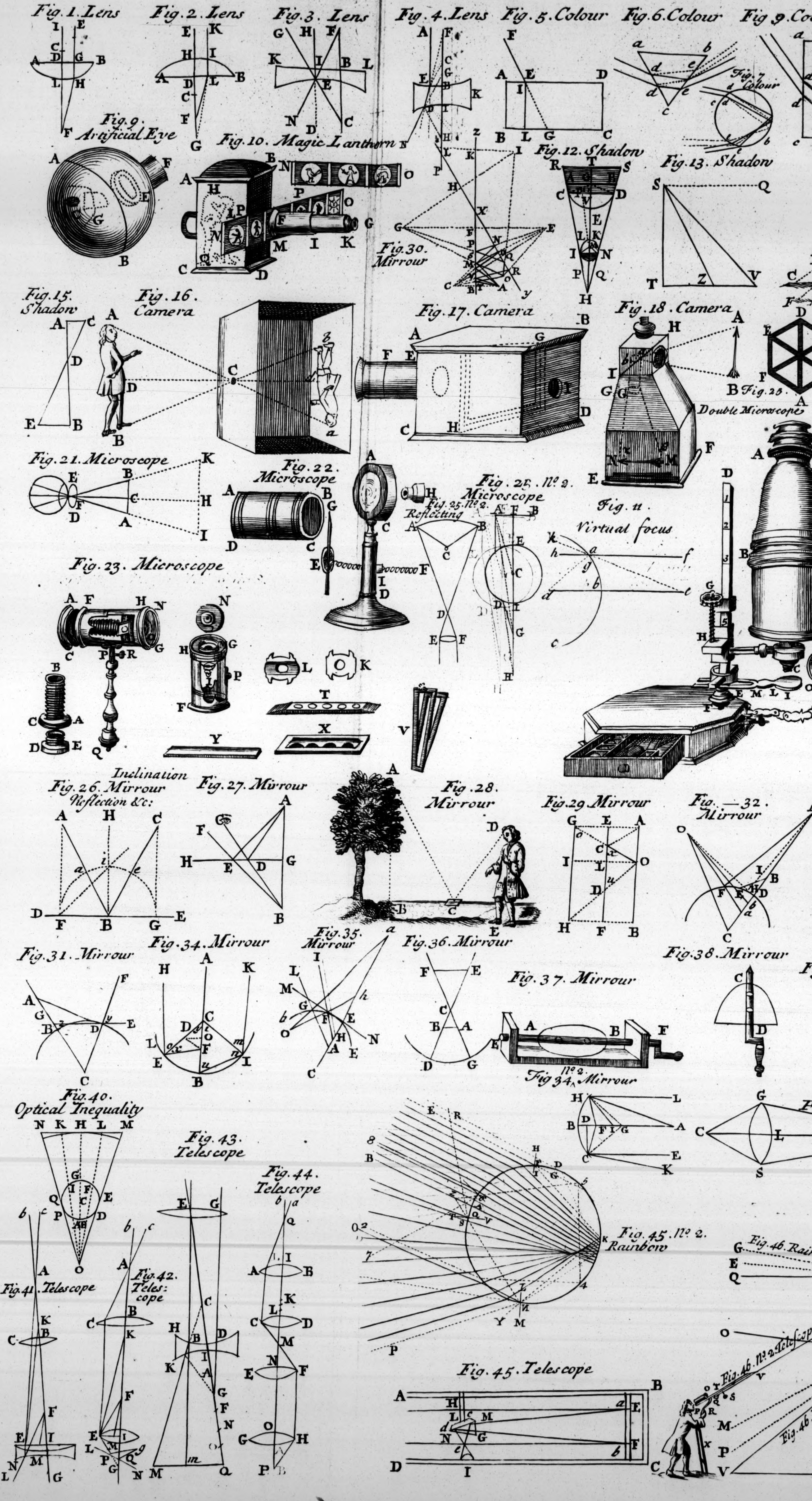
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Fig. 2. Lens
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Fig. 9. Artificial Eye
Fig. 10. Magic Lanthorn
Fig. 12. Shadow
Fig. 13. Shadow
Fig. 30. Mirrour
Fig. 15. Shadow
Fig. 16. Camera
Fig. 17. Camera
Fig. 18. Camera
Fig. 25. Double Microscope
Fig. 21. Microscope
Fig. 22. Microscope
Fig. 25. Nº 2. Microscope
Fig. 25. Nº 2. Reflecting
Fig. 11. Virtual focus
Fig. 23. Microscope
Fig. 26. Inclination Mirrour Reflection &c.
Fig. 27. Mirrour
Fig. 28. Mirrour
Fig. 29 Mirrour
Fig. —32. Mirrour
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Fig. 34. Mirrour
Fig. 35. Mirrour
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Fig. 37. Mirrour
Fig. 38. Mirrour
Fig 34. Nº 2. Mirrour
Fig. 40. Optical Inequality
Fig. 43. Telescope
Fig. 44. Telescope
Fig. 41. Telescope
Fig. 42. Telescope
Fig. 45. Nº 2. Rainbow
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Fig. 45. Telescope
Fig. 46. Nº 2. Telesc
Fig. 46

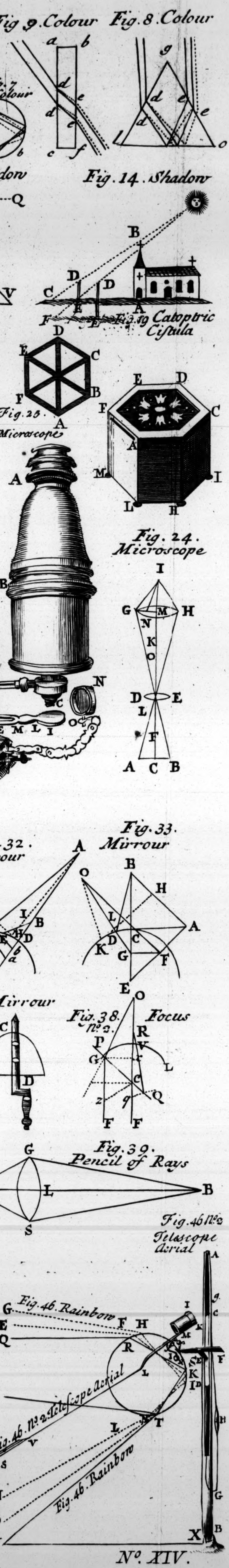
Fig.9. Colour
Fig.8. Colour
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Fig.14. Shadow
Fig.19 Catoptric Cistula
Fig.23.
Microscope
Fig.24. Microscope
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Fig.33. Mirrour
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Fig.38. Nº2. Focus
Fig.39. Pencil of Rays
Fig.46 Nº3 Telescope Aerial
Fig.46. Rainbow
Fig.46. Nº2. Telescope Aerial
Fig.46. Rainbow

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Tab.II. OPTICKS

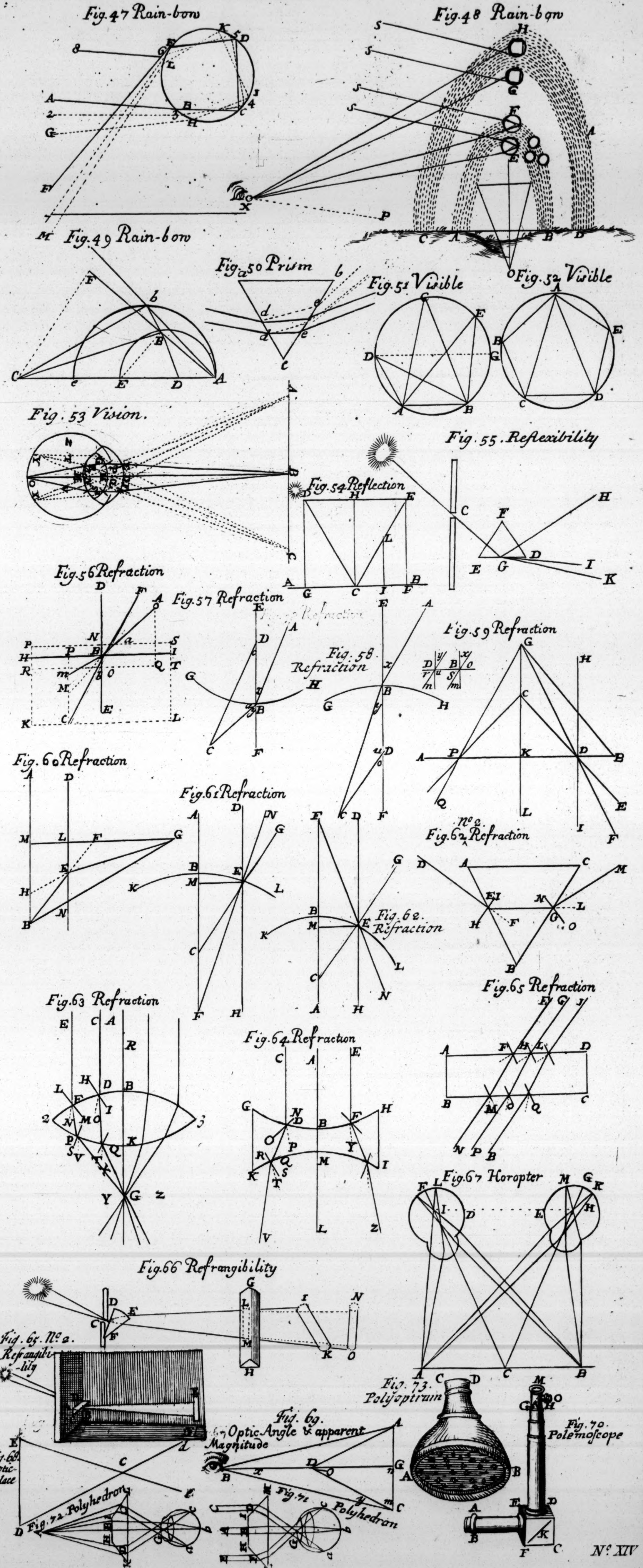
Fig.47 Rain-bow
Fig.48 Rain-bow
Fig.49 Rain-bow
Fig.50 Prism
Fig.51 Visible
Fig.52 Visible
Fig.53 Vision.
Fig.54 Reflection
Fig.55. Reflexibility
Fig.56 Refraction
Fig.57 Refraction
Fig.58. Refraction
Fig.59 Refraction
Fig.60 Refraction
Fig.61 Refraction
Fig.62 Nº2. Refraction
Fig.62. Refraction
Fig.63 Refraction
Fig.64 Refraction
Fig.65 Refraction
Fig.66 Refrangibility
Fig.67 Horopter
Fig.65. Nº2. Refrangibility
Fig.68. Optic-place
Fig.69. Optic Angle & apparent Magnitude
Fig.71 Polyhedron
Fig.72 Polyhedron
Fig.73. Polyoptrum
Fig.70. Polemoscope

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the point M of the line NLM. But it ſpends the ſame time in deſcribing DE, as it does in AB or BD; and when arrived at E, is ſtill ſeen at M; appearing ſtationary in all the ſpace from D to E. When it arrives at F, the eye will ſee it in L; and at G, will appear at H; ſo that it will ſeem to have gone retrograde: and, laſtly, from Q to P, it will again appear ſtationary. See STATION and RETROGRADATION.

OPTIC *Nerves*, the ſecond pair of nerves, ſpringing from the crura of the medulla oblongata, and paſſing thence to the eye. —See *Tab. Anat.* (Oſteol.) *fig.* 5. lit. i i. See alſo the article NERVE.

Theſe nerves approach, by degrees, in their receſs from their origin; and at length meet, in the baſis of the brain, near the infundibulum. Thence they again ſeparate, but without decuſſating; and proceed, one to each eye. See EYE.

They are covered with two coats, which they take from the dura and pia mater; and which, by their expanſions, form the two membranes of the eye, called the *uvea* and *cornea*. See UVEA, *&c.*

The *retina*, which is a third membrane, and the immediate organ of ſight, is only an expanſion of the fibrous, or inner, and medullary part of theſe nerves. See RETINA.

The conſtruction of the *optic* nerve ſeems to be different from that of the other nerves, which all appear to conſiſt of hard fibres: for this, ere it enters the orbit of the eye, is only a coat or cover formed by the pia mater, and including a production of the medulla of the brain, which is eaſily ſeparated from it. At its entrance into the eye, it takes another coat from the dura mater; which two coats are bound together by exceedingly fine filaments: that from the pia mater is continued in the choroides, and that from the dura mater in the uvea.

From their entrance within the orbit, to the ball of the eye, the medulla, encloſed under the two coats, is ſeparated into a number of little cells anſwering to each other. See VISION.

OPTIC *Pencil*, or *Pencil of Rays*, is that aſſemblage of rays by means whereof any point, or part of an object is ſeen. See PENCIL and RADIANT.

Some *optic* writers laugh at the notion of *optic pencils*, and maintain them mere chimera's.

OPTIC *Place* of a ſtar, *&c.* is that point of its orbit in which it appears to be, to our eye. See PLACE.

This is either *true*; as when the eye is ſuppoſed at the centre of the earth, or planet it inhabits; or *apparent*, as when at the circumference. See APPARENT, PLANET, *&c.*—The difference between the two, makes what we call the *parallax*. See PARALLAX.

OPTIC *Pyramid*, in perſpective, is the pyramid ABCO (*Tab. Perſpective, fig.* 1.) whoſe baſe is the viſible object ABC; and its vertex, in the eye O; formed by rays drawn from the ſeveral points of the perimeter to the eye.

Hence alſo may appear what is meant by *optic* triangle.

OPTIC *Rays*, are particularly uſed for thoſe wherewith an *optic* pyramid, or *optic* triangle, is terminated.—As OA, OC, OB, *&c.*

OPTICORUM *Nervorum thalami*. See THALAMI.

OPTICS, OPTICA, is properly the ſcience of direct viſion. See VISION.

OPTICS is alſo uſed, in a larger ſenſe, for the ſcience of viſion, or viſibles in general. See VISIBLE, *&c.*

In which ſenſe, *optics* includes catoptrics, and dioptrics; and even perſpective. See CATOPTRICS, DIOPTRICS, and PERSPECTIVE.

OPTICS in its more extenſive acceptation, is a mixed mathematical ſcience, which explains the manner wherein viſion is performed in the eye; treats of ſight in the general; gives the reaſons of the ſeveral modifications or alterations which the rays of light undergo in the eye; and ſhews why objects appear ſometimes greater, ſometimes ſmaller, ſometimes more diſtinct, ſometimes more confuſed, ſometimes nearer, and ſometimes more remote. See SIGHT, EYE, *&c.*

In this extenſive ſignification, it is conſidered by Sir Iſaac Newton in his admirable work called *optics*.

Optics makes a conſiderable branch of natural philoſophy; both as it explains the laws of nature, according to which viſion is performed; and as it accounts for abundance of phyſical phænomena, otherwiſe inexplicable. For what can be determined about light, colours, tranſparency, opacity, meteors, the rainbow, parhelia, *&c.* but on principles of *optics?* What about the nature of the ſtars? The ſtructure of the mundane ſyſtem? The motions of the planets? The eclipſes of the luminaries? *&c.*—*Optics*, therefore, make a conſiderable part of aſtronomy. See ASTRONOMY.

Euclid has wrote on the ancient *optics* and catoptrics: dioptrics were unknown to them. F. Honorat. Fabri has an abridgment of *optics*, catoptrics, and dioptrics: Father Eſchinard has given a century of problems in *optics*: Vitellio, and Alhazen have performed well on the elements of *optics*. Father Kircher has a large volume on the ſecrets of *optics*, of light, and ſhadow, and their ſurprizing effects, which paſs on the people for magic. We have alſo *l'optique & catoptrique* of F. Merſenne, Paris 1651. *Dioptrique oculaire* of father Cherubin, Paris 1671, fol. Chriſt. Scheineri *optica*, Lond. 1652. Jacobi Gregorii *optices*. Barrovii *Lectiones opticæ*; Lond. 1663. Joh. Bapt. Porta *de refractione optices*, Lond. 1669. *Principe generale de l'optique*, by Mr. Leibnitz, in the Leipſic acts, 1682. *L'Occhiale all'Occhio*, or *Dioptrica Practica*, Carol. Ant. Mancini, Bologna, 1660, 4°. *Phyſico Matheſis de lumine, coloribus & iride*, per F. Mar. Grimaldi, Bononiæ 1665, 4°. *Cogitationes Phyſico-Mechanicæ de Natura Viſionis*, per Joh. Ott. Scaphuſam, Heidel. 1670, 4°. And, which ought to be named firſt, the great Sir Iſaac Newton's *Optics*, Latin and Engliſh, 4° and 8°.

From *optics* likewiſe ariſes *perſpective*; all the rules whereof have their foundation in *optics*. Indeed Tacquet makes perſpective a part of *optics*; though John, archbiſhop of Canterbury, in his *perſpectiva communis*, calls *optics*, catoptrics, and dioptrics by the name *perſpective*. See PERSPECTIVE.

OPTIMATES, in antiquity, one of the diviſions of the Roman people, oppoſed to *populares*. See POPULAR.

According to Tully's deſcription, the *optimates* were the beſt citizens, or thoſe who deſired their actions might be approved by the better ſort: and the populares thoſe, who out of a thirſt of vain-glory, did not ſo much conſider what was right, as what would pleaſe the populace, and get an intereſt in them.

Others rather make the *optimates* to be the vigorous aſſerters of the dignity of the chief magiſtrate, and the ſticklers for the grandeur of the ſtate; who cared not if the inferior members ſuffered, if it were for the advancement of the commanding powers: and the populares thoſe who courted the favour of the populace, and encouraged them to demand larger privileges, to bring matters nearer to a level.

OPTION, the power, or faculty of wiſhing, or chuſing; or the choice a perſon makes of any thing.

When a new ſuffragan biſhop is conſecrated, the archbiſhop of the province, by a cuſtomary prerogative, claims the collation of the firſt vacant benefice, or dignity, in that ſee, according as he ſhall chuſe; which choice is called the archbiſhop's *option*.

OR, in heraldry, *yellow*, or the colour of gold. See COLOUR and METAL.

Without this, or argent, there can be no good armory. See ARGENT, ARMS, *&c.*

In the coats of nobles, it is called *topaz*; and in thoſe of ſovereign princes, *ſol*. It is repreſented in engraving by ſmall points, or dots, all over the field, or bearing; as in *Tab. Herald. fig.* 72.

It is accounted the ſymbol of wiſdom, temperance, faith, force, conſtancy, *&c.*

Toiſon d' OR, See the article TOISON.

ORACLE, an anſwer, uſually couched in very dark and ambiguous terms, ſuppoſed to be given by dæmons of old, either by the mouths of their idols, or by thoſe of their prieſts, to the people who conſulted them on things to come.

The Pythian was always in a rage when ſhe gave *oracles*: Ablancourt obſerves, that the ſtudy or reſearch of the meaning of *oracles*, was but a heartleſs thing; and that they were never underſtood till after the accompliſhment. Hiſtorians relate, that Crœſus was tricked by the ambiguity and equivocation of the *oracle*:

Κροισος Ἁλυν διαϐας μεγαλην αρχὴν καταλυσει.

Thus rendered in Latin:

Crœſus Halym ſuperans magnam pervertet opum vim.

ORACLE, is alſo uſed for the dæmon who gave the anſwer, and the place where it was given. See DÆMON.

The principal *oracles* of antiquity are that of Abæ, mentioned by Herodotus; that of Amphiaraus; that of the Branchidæ at Didymus; that of the camps at Lacedæmon; that of Dodona; that of Jupiter Ammon; that of Nabarca, in the country of the Anariaca, near the Caſpian ſea; that of Trophonius, mentioned by Herodotus; that of Chryſopolis; that of Claros in Ionia; that of Mallos; that of Patarea; that of Pella in Macedonia; that of Phaſelides in Cilicia; that of Sinope in Paphlagonia; that of Orpheus's head, mentioned by Philoſtratus in his life of Apollonius, *&c.*

But of all others, the *oracle* of Apollo Pythius at Delphos, was the moſt celebrated; this was conſulted in the *dernier reſſort*, by moſt of the princes of thoſe ages. See PYTHIA.

M. Bayle obſerves, that at firſt it gave its anſwers in verſe; and that it fell at length to proſe, upon the people's beginning to laugh at the poorneſs of its verſification.

It is a pretty general opinion among the more learned, that *oracles* were all meer cheats, and impoſtures; either calculated to ſerve the avaricious ends of the heathen prieſts, or the political views of the princes.

M. Bayle ſays poſitively, they were meer human artifices, in which the devil had no hand. He is ſtrongly backed by Van Dale, and M. Fontenelle, who have wrote expreſly on the ſubject.

There are two points in diſpute on the ſubject of *oracles*; *viz.* whether they were human, or diabolical machines? and whether or no they ceaſed upon the publication or preaching of the goſpel?

Plutarch has a treatiſe on the ceaſing of ſome *oracles*: and Van Dale, a Dutch phyſician, has a volume to prove they did not ceaſe at the coming of Chriſt; but that many of them ceaſed long before; and that others held till the fall of paganiſm, under the empire of Theodoſius the great; when paganiſm being diſſipated, theſe inſtitutions could no longer ſubſiſt.

Van Dale was anſwered by a German, one Mœbius, profeſſor of theology at Leipſic, in 1685. M. Fontenelle eſpouſed Van Dale's ſyſtem, and improved upon it in his *Hiſtory of Oracles*; and ſhewed the weakneſs of the argument uſed by many writers in behalf of Chriſtianity, drawn from the ceaſing of *oracles*.

F. Balthus, a learned Jeſuit, has anſwered both Van Dale and Fontenelle. He labours to prove that there were real *oracles*, and ſuch as can never be attributed to any artifices of the prieſts or prieſteſſes; and that ſeveral of theſe became ſilent in the firſt ages of the church, either by the coming of Jeſus Chriſt, or by the prayers of the ſaints.

This doctrine is confirmed by a letter from father Bouchet, miſſionary, to father Balthus; wherein it is declared, that what father Balthus ſays of the ancient *oracles*, is experimented every day in the Indies.

It ſeems, according to this miſſionary, that the Devil ſtill gives *oracles* in the Indies; and that, not by idols, which would be liable to impoſture; but by the mouths of the prieſts, and ſometimes of the by-ſtanders: it is added, that theſe *oracles*, too, ceaſe, and the devil becomes mute, in proportion as the goſpel is preached among them.

It was *Euſebius* who firſt endeavoured to perſuade the Chriſtians, that the coming of Jeſus Chriſt had ſtruck the *oracles* dumb; though it appears from the laws of Theodoſius, Gratian, and Valentinian, that the *oracles* were ſtill conſulted as low as the year 385. Cicero ſays, the *oracles* became dumb, in proportion as people, growing leſs credulous, began to ſuſpect them for cheats.

Plutarch alledges two reaſons for the ceaſing of *oracles*: the one was Apollo's chagrin; who, it ſeems, took it in dudgeon to be interrogated about ſo many trifles. The other was, that in proportion as the genii, or dæmons, who had the management of the *oracles*, died, and became extinct, the *oracles* muſt neceſſarily ceaſe. He adds a third, and more natural cauſe for the ceaſing of *oracles*, *viz.* the forlorn ſtate of Greece, ruined and deſolated by wars. For, hence, the ſmallneſs of the gains let the prieſts ſink into a poverty and contempt, too bare to cover the fraud.

Moſt of the fathers of the church took it to be the devil that gave *oracles*; and looked on it as a pleaſure he took to give dubious and equivocal anſwers; in order to have a handle to laugh at them.—Voſſius allows, that it was the devil who ſpoke in *oracles*; but thinks that the obſcurity of his anſwers, was owing to his ignorance as to the preciſe circumſtances of events. That artful and ſtudied obſcurity, wherein the anſwers were couched, ſhewed the embarraſs the devil was under; as thoſe double meanings they uſually bore provided for their accompliſhment. Where the thing foretold did not happen accordingly, the *oracle*, forſooth, was miſunderſtood.

Euſebius has preſerved ſome fragments of a philoſopher, called Œnomaus; who, out of reſentment for his having been ſo often fooled by the *oracles*, wrote an ample confutation of all their impertinences: "When we come to conſult thee, ſays he to Apollo, if thou ſeeſt what is in futurity, why doeſt thou uſe expreſſions that will not be underſtood? doeſt thou not know that they will not be underſtood? if thou doeſt, thou takeſt pleaſure in abuſing us; if thou doeſt not, be informed of us, and learn to ſpeak more clearly. I tell thee, that if thou intendeſt an equivoque, the Greek word whereby thou affirmed that Crœſus ſhould overthrow a great empire, was ill choſen; and that it could ſignify nothing but Crœſus's conquering Cyrus. If things muſt neceſſarily come to paſs, why doeſt thou amuſe us with thy ambiguities; what doeſt thou, wretch as thou art, at Delphos; employed in muttering idle prophecies!"

But Œnomaus is ſtill more out of humour with the *oracle*, for the anſwer which Apollo gave the Athenians, when Xerxes was about to attack Greece with all the ſtrength of Aſia. The Pythian declared, that Minerva, the protectreſs of Athens, had endeavoured in vain to appeaſe the wrath of Jupiter; yet that Jupiter, in complaiſance to his daughter, was willing the Athenians ſhould ſave themſelves within wooden walls; and that Salamis ſhould behold the loſs of a great many children, dear to their mothers, either when Ceres was ſpread abroad, or gathered together.

Here Œnomaus loſes all patience with the God of Delphos: "This conteſt, ſays he, between father and daughter, is very becoming the deities! It is excellent, that there ſhould be contrary inclinations and interests in heaven.—Pure wizzard, thou art ignorant whoſe the children are, that Salamis ſhall ſee periſh; whether Greeks or Perſians? It is certain, they muſt be either one or the other; but thou needeſt not have told ſo openly, that thou kneweſt not which. Thou concealeſt the time of the battle under thoſe fine poetical expreſſions, *either when Ceres is ſpread abroad, or gathered together*: and wouldſt thou cajole us with ſuch pompous language? Who knows not, that if there be a ſea-fight, it muſt either be in ſeed-time or harveſt? It is certain it cannot be in winter. Let things go how they will, thou wilt ſecure thyſelf by this Jupiter, whom Minerva is endeavouring to appeaſe. If the Greeks loſe the battle, Jupiter proved inexorable to the laſt; if they gain it, why then Minerva at length prevailed."

ORACLES of the ſibyls. See the article SIBYL.

ORAL, ſomething delivered by the mouth, or voice. See the article VERBAL.

In this ſenſe, we ſay, *oral law*, *oral tradition*, &c. See TRADITION, *&c.*

ORANGE, * a delicious fruit, of the apple-kind, too well known to need a particular deſcription; yet yielding too many kinds of merchandize, to be paſſed over.

* The Latins call it *aurantium*, *aurantia malus*, or *malus aurea*, golden apple, from its colour.

Oranges are ordinarily brought from Nice, Ciouta, the iſles of Hieres, Genoa, Provence, Portugal, the American iſlands, and even China and the coaſts of India.

Thoſe called *China oranges* were firſt brought into Europe from China, by the Portugueſe; and it is ſaid the very tree, whence all the European *orange*-trees of this ſort were produced, is ſtill preſerved at Liſbon, in the houſe of the count S. Laurent.

Thoſe moſt eſteemed, and that are made preſents of as rarities, in the Indies, are no bigger than a billiard-ball; when ſweetened with a little ſugar, they are eſteemed excellent for diſorders of the breaſt.—The juice is cooling and antiſcorbutic.

Oranges are ordinarily comfited in halves and quarters. They are firſt peeled, then ſcooped and dried in a ſtove.—*Orangeat* is the *orange*-peel cut in pieces and candied. Italy furniſhes a great deal of flower of *oranges*, either dry or liquid.

The water of flower of *oranges*, called *aqua naphæ*, comes moſtly from Provence. To be good, it muſt be very bitter, and not above a year old.

There are various oils drawn from *oranges*: The oil of neroli is the produce of the flowers by diſtillation. That drawn from the ſkin by water and an alembic, is altogether as good. There is alſo an oil drawn from little *oranges*, or *orangelettes*, by ſteeping them five or ſix days in common water, and diſtilling them with the ſame water in an alembic. Theſe oils are all eſteemed good for deſtroying worms in children; but are very apt to be ſophiſticated with oil of ben, or that of ſweet almonds.

ORANGE *Colour*, is a hue or dye, that partakes equally of red and yellow; or is a medium between the two. See COLOUR and DYING.

In heraldry, the term *orange* or *orenge* is given in blazon to all roundles that are tenne or tawney.

ORANGE *flower water*. See the article WATER.

ORANGEADE, a drink made of *orange*-juice, water, and ſugar. See ORANGE and LEMONADE.

Lemery ſays it may be given to people in the height of a fever.

ORANGERY, a gallery in a garden, or parterre, expoſed to the ſouth, but well cloſed with a glaſs window, to preſerve oranges in, during the winter ſeaſon.

The *orangery* of Verſailles is the moſt magnificent that ever was built: It has wings, and is decorated with a Tuſcan order.

ORANGERY is alſo uſed for the parterre, where the oranges are expoſed in kindly weather.

ORATION, a ſpeech, or harangue, framed according to the rules of oratory, and ſpoke in public. See ORATORY and PERORATION.

All the kinds of *orations* may be reduced to three heads: *viz.* *demonſtrative*, *deliberative*, and *judicial*.

To the demonſtrative kind belong, *panegyrics*, *genethliaca*, *epithalamia*, *epicedia*, *euchariſtiæ*, *epinicia*, and *congratulations*. See PANEGYRIC, GENETHLIAC, *&c.*

To the deliberative kind belong, *perſuaſion*, *diſſuaſion*, *exhortation*, and *commendation*.

To the judicial kind belong, *accuſation*, *confirmation*, *confutation*, &c. See each under its proper article CONFIRMATION, *&c.*

Funeral ORATION. See the article FUNERAL.

ORATORY, ORATORIA, the art of ſpeaking well.

In which ſenſe the word amounts to the ſame with *rhetoric*; the difference between the two only conſiſting in this, that the firſt is Latin, the other Greek. See RHETORIC.

ORATORY is alſo uſed among the Romaniſts, for a cloſet, or little private apartment, in a large houſe, near a bed-chamber, furniſhed with a little altar and a book-ſtand, for private devotion.

The ancient *oratories* were little chapels, adjoining to monaſteries, wherein the monks ſaid their prayers ere they had any churches. Several councils and ſynods have condemned the uſe of private *oratories*. See CHAPEL.

In the ſixth and ſeventh centuries, *oratories* were little churches, frequently built in burial grounds; without either baptiſtery, cardinal prieſt, or any public office; the biſhop ſending a prieſt to officiate occaſionally. See COEMETERIUM.

ORATORY is alſo uſed for a ſociety, or congregation of devout perſons, who form a kind of monaſtery, and live in community: but without being obliged to make vows. Hence,

Prieſts of the oratory, a community of ſecular prieſts, who live together in a monaſtic manner, but without vows; firſt eſtabliſhed at Rome, about the year 1590, by S. Philip Neri, a Florentine, under the title of *oratory of Sancta Maria in the Valicella*.

On the model of this, the cardinal Berulle eſtabliſhed a congregation of the *oratory* of Jeſus in 1612, in France; which has ſince increaſed: ſo that there are now 60 houſes of *prieſts of the oratory* in that kingdom.

There is ſome difference, however, between the Italian and French inſtitutions. — S. Philip Neri, to prevent the confuſion which the great number of houſes uſually occaſion in congregations; would have his to be a ſingle houſe. And though others were at liberty to form the like congregations, yet they were to have no dependance on one another.

For this reaſon, the houſes of the *oratory* in Italy and Flanders are all independent: whereas thoſe in France have a relation to each other, and all depend on the ſame chief, who has the quality of ſuperior general; and, with three aſſiſtants, governs the whole congregation. See CONGREGATION.

ORB, ORBIS, in aſtronomy, a ſpherical body, or ſpace, contained under two ſuperficies; the one concave, the other convex. See SPHERE.

The ancient aſtronomers conceived the heavens, as conſiſting of ſeveral vaſt, azure, tranſparent *orbs*, or ſpheres incloſed in one another: or vaſt circles, which in their area included the bodies of the planets; the radii whereof were compriſed between the centre of the earth, and the higheſt point to which the planets riſe; ſuppoſing the earth to be in the centre. See HEAVENS and SPHERE.

There are *orbs concentric*, *i. e.* having the ſame centre; and *orbs excentric*. See CONCENTRIC, *&c.*

The *magnus* ORBIS, or *great* ORB, is that wherein the ſun is ſuppoſed to revolve; or rather that wherein the earth makes its annual circuit. See ORBIT.

ORB, in aſtrology. An *orb* of light is a certain ſphere or extent of light, which the aſtrologers allow a planet beyond its centre.

They ſay, that provided the aſpects do but fall within this *orb*, they have almoſt the ſame effect, as if they pointed directly againſt the centre of the planet. See ASPECT.

The *orb* of Saturn's light they make to be 10 degrees; that of Jupiter 12°, that of Mars 7°, 30, that of the Sun 17°, that of Venus 8°, that of Mercury 7°, that of the Moon 12°, 30′.

ORBICULARE *Os*, ORBICULAR *Bone*, in anatomy, the fourth of the little bones of the inward ear; tied by a ſlender ligament to the ſtapes; and named from its figure, which is round. See EAR.

It was firſt diſcovered by Fran. Sylvius: Its uſe is in the extenſion and relaxation of the tympanum. See TYMPANUM.

ORBICULARIS, or *conſtrictor labiorum*, in anatomy, is one of the muſcles of the lips. See CONSTRICTOR.

The *orbicularis* is ſingle; its fibres make a ring about the mouth, and ſerve to conſtringe and draw up the lips, and by that means to ſhut the mouth, *&c.* It alſo ſerves to advance, or ſtretch them outwards; and has the chief part in the action of kiſſing. Whence it is alſo called *oſculatorius*, or the kiſſing muſcle.

Verheyen will not have it one muſcle, but a pair, whoſe fibres meet, and join at both corners of the mouth; though other authors are unanimous in making it ſingle, and call it a *ſphincter*. See SPHINCTER.

ORBICULARIS, or *deprimens palpebrarum*, is a muſcle ſpringing from each corner of the eye, and anſwered by another of like figure and ſtructure in the lower eye-lid; which are therefore often conſidered as one *orbicular* muſcle.—See *Tab. Anat.* (Myol) *fig.* 1. *n.* 2. See alſo EYE-LID.

Its fibres environ the eye-lids, and are inſerted into them, not unlike the ſphincters of other parts. It is faſtened to that part of the margin of the orbit, towards the noſe, made by the fourth bone of the upper jaw.

ORBIT, ORBITA, in aſtronomy, the path of a planet, or comet; or the line deſcribed by its centre in its proper motion in the heavens. See PLANET, *&c.*

The ſun's, or rather earth's *orbit*, is the curve which it paſſes along in its annual revolution; called the *ecliptic*. See ECLIPTIC.

The *orbit* of the earth, and that of all the primary planets, is an ellipſis; in one of whoſe foci, the ſun is placed: in which ellipſis they move according to this law, that a radius drawn from the center of the ſun to the centre of the planet, always deſcribes areas proportional to the times. See EARTH, SUN, AREA, *&c.*

The ancient aſtronomers made the planets deſcribe circular *orbits*, with an uniform velocity. Copernicus himſelf could not believe they ſhould do otherwiſe; *Fieri nequit*, ſays he *ut cœleſte corpus ſimplex uno orbe inequaliter moveatur.* So that to account for their inequalities, they were obliged to have recourſe to eccentrics and epicycles; from the embarraſs whereof Copernicus himſelf could not entirely diſentangle himſelf. See EPICYCLE, *&c.*

But after him came aſtronomers, who, with a little more phyſics, have made no difficulty of changing theſe circular *orbits* into elliptic ones; and of making them move with different velocities in different parts thereof.

Of theſe elliptic *orbits*, there have been two kinds aſſigned: The firſt, that of Kepler, which is the common ellipſis; to which Seth Ward, tho' he himſelf keeps to it, thinks one might venture to ſubſtitute circular *orbits*, by uſing two points taken at equal diſtances from the centre on one of the diameters, as they do in the foci of the ellipſis. The ſecond is that of M. Caſſini; whoſe character is this, that the products of the right lines drawn from each point of its circumference are every where equal; whereas in the common ellipſis, 'tis the ſum of thoſe right lines that is always the ſame. See ELLIPSIS.

M. Varignon ſhews how inconſiſtent Copernicus's ſentiment is with the mechaniſm of the heavens: Since the forces which planets have to retain them in their *orbits*, muſt almoſt always conſpire to make them move with really different velocities; and that among an infinity of caſes, there is but one wherein they can move uniformly.

The ſemi-diameter of the earth's *orbit*, Dr. Gregory makes 94,696,969 miles Engliſh; and the ſemi-diameter of Saturn's *orbit* about 10 times as great.

The *orbits* of the planets are not all in the ſame plane as the ecliptic, or the earth's *orbit* round the ſun; but variouſly inclined to it, and to one another. But ſtill the plane of the ecliptic interſects the plane of the *orbit* of every planet in a right line, which paſſes through the ſun. See INCLINATION.

The quantities of the inclinations of the planes of the *orbits* of the primary planets to that of the ecliptic, are as follow: That of Saturn, is an angle of 2 degrees ½: That of Jupiter, an angle of 1 deg. 20 min. That of Mars is almoſt 2 deg. Venus is a little more than 3 deg. 20 min. And that of Mercury a little more than 7 degrees. See SATURN, MARS, VENUS, *&c.*

The *orbits of comets*, Caſſini takes to be rectilinear; but Dr. Halley, from Sir Iſaac Newton's theory, ſhews them to be parabolical, having the ſun in one of their foci. See COMET.

ORBITS, in anatomy, the two large cavities, or ſockets, wherein the eyes are placed.—See *Tab. Anat.* (Oſteol) *fig.* 1. *lit. b.* See alſo EYE.

Their figure is pyramidal: They are formed of the proceſſes of the os frontis, and the upper jaw-bone joined together; and are perforated at bottom, to give paſſage to the optic nerves.

ORBITER, in anatomy, a name ſometimes given to two holes or cavities, either from their reſemblance of, or nearneſs to, the orbits of the eyes.

The *orbiter externus*, is a hole in the cheek bone, below the orbit.

The *orbiter internus*, is a hole in the coronal-bone of the ſcull, within the orbit. See CORONAL.

ORCHARD, a ſeminary or plantation of fruit-trees, chiefly apples and pears. See FRUIT-*tree*.

'Tis a rule among gardeners, that thoſe *orchards*, *cæteris paribus*, thrive beſt, which lie open to the ſouth, ſouth-weſt, and ſouth-eaſt; and are ſcreened from the north: the ſoil dry, and deep. See EXPOSURE.

Orchards are ſtocked by tranſplantation; ſeldom by ſemination. See PLANTING, SEMINATION, NURSERY, *&c.*

The ſeaſon for tranſplanting apple-trees into *orchards*, is in the months of October and November. If the leaves be not all off at the time they are removed, they muſt be pulled off. They are likewiſe to be pruned. Trees may be tranſplanted into *orchards* after tree years grafting; and ought not to be ſet at a leſs diſtance than eight yards, nor greater than fourteen: And the richer the land, the greater the diſtance.

The trees are tranſplanted to beſt purpoſe, when young: for trees ten or twelve years old, a narrow trench muſt be dug the November before, deep enough to meet the ſpreading roots, at ſuch a diſtance all around the tree, as the roots are to be cut off at. In making the trench, the roots to be cut off clean, and without ſplitting or bruiſing the bark, and the trench filled up again. This will enable the tree, upon removal, to draw more nouriſhment than otherwiſe it would, and ſo thrive-better in its new manſion. See TRANSPLANTATION, INOCULATION, ENGRAFTING, *&c.*

The ſide branches of all tall *orchard* fruit-trees, are to be cut off till the tree be arrived at the height deſired. If the tree be to ſpread low, ſome are to be left on each ſide; ſo as to form a kind of balance. For the firſt three years, at leaſt, they muſt not grow thick and buſhy headed; this muſt be prevented, by cutting off ſome of the inſide ſhoots, and ſuch as grow croſs each other, or pendant. See PRUNING.

The ſoil, if not rich enough, is to be amended in two or three years; by opening it around the tree, and on the outſide of the ground firſt dug, when the tree was ſet; and in a month's time filling it up again with a proper compoſt or manure. See MANURING: ſee alſo PRUNING and COMPOST.

ORCHESTRA, in the drama, the lower part of the ancient theatre; made in form of a ſemi-circle, and ſurrounded by the ſeats. See THEATER.

It was ſo called, becauſe in the Grecian theatres it was a place where they held their balls; from ορχεομαι, I dance.

The *orcheſtra* among the Greeks made a part of the ſcena; but on the Roman theatres, none of the actors went down to the *orcheſtra*, which was taken up with ſeats for the ſenators, magiſtrates, veſtals, and other perſons of diſtinction; anſwering nearly to the pit in our theatre. See SCENE, *&c.*

ORDEAL,* ORDALIUM, a form of trial, that is, of diſcovering innocence, or guilt; practiſed in England in the time of Edward the Confeſſor, and ſince, as low as king John, and king Henry III. See TRIAL.

It was called *purgatio vulgaris*, or *judicium*, in oppoſition to *bellum*, or *combat*, the other form of purgation. See PURGATION and COMBAT.

The practice of *ordeal* did not only obtain in England, but alſo in France and Germany: It was condemned by pope Stephen II. and aboliſhed by a declaration of Henry III.

The *ordeal* was of various kinds, *viz.* that of fire, that of red-hot iron, that of cold water, that of judicial pottage, that of hallowed cheeſe, that of boiling water, that of the green croſs, and that of dice laid on relicks, covered with a woollen cloth. — There were particular maſſes for each ſpecies of *ordeal*. See MASS.

The more popular kinds of *ordeal* were thoſe of red-hot iron and water: the firſt for freemen, and people of faſhion; the ſecond for peaſants. See JUDICIUM, FIRE, WATER, *&c.*

It is a popular ſtory in our hiſtories, that Emma, mother of Edward the Confeſſor, being accuſed of too much familiarity with the biſhop of Leiceſter, demanded the *ordeal* of red-hot iron; and paſſed bare-footed, and hood-winked, over nine red-hot plough-ſhares, without touching any of them.

ORDEFF, or OREDEF, a word frequently uſed in charters of privileges, for a liberty whereby a man claims the ore found in his own ground. See ORE.

It properly ſignifies ore lying under ground; as, a *delf of coal* is coal lying in veins under ground. See COAL.

ORDER, in architecture, a ſyſtem of the ſeveral members, ornaments, and proportions of a column and pilaſter. — Or, a regular arrangement of the projecting parts of a building; whereof the column is the chief; ſo as to form one beautiful whole.—See *Tab. Archit. fig.* 25, 27, 29, 31, 33. See alſo COLUMN.

Perrault defines *order*, to be that which preſcribes the proportions of entire columns, and determines the figures of certain parts ſuitable to the different characters their different uſes and ends require. See ORDONNANCE.

M. le Clerc defines an *order* to be a column charged with an entablature, and ſupported on a pedeſtal.

The definitions Vitruvius, Barbaro, Scamozzi, *&c.* give of *order*, are ſo obſcure, that it were vain to repeat them: without dwelling, therefore, on the definition of a word, which cuſtom has eſtabliſhed, it is ſufficient to obſerve, that there are five *orders* of columns; three whereof are Greek, *viz.* the *Doric*, *Ionic*, and *Corinthian*; and two Italic, *viz.* the *Tuſcan* and *Compoſite*.

The three Greek *orders* repreſent the three different manners of building, *viz.* the *ſolid*, *delicate*, and *middling*; the two Italic ones are imperfect productions thereof. The little regard the Romans had for theſe laſt, appears hence, that we do not meet with one inſtance in the antique, where they are intermixed. That abuſe the moderns have introduced by the mixture of Greek and Latin *orders*, Daviler obſerves, ariſes from their want of reflection on the uſe made thereof by the ancients.

The origin of *orders* is almoſt as ancient as human ſociety. The rigor of the ſeaſons firſt led men to make little cabins, to retire into; at firſt, half under ground, and the half above covered with ſtubble: at length growing more expert, they planted trunks of trees an-end, laying others a-croſs, to ſuſtain the covering. See ARCHITECTURE.

Hence they took the hint of a more regular architecture; for the trunks of trees, upright, repreſent columns: the girts, or bands, which ſerved to keep the trunks from burſting, expreſſed baſis and capitals; and the ſummers laid a-croſs, gave the hint of entablatures; as the coverings, ending in points, did of pedements. This is Vitruvius's hypotheſis; which we find very well illuſtrated by M. Blondel. See CAPITAL, PEDESTAL, *&c.*

Others take it, that columns took their riſe from pyramids, which the ancients erected over their tombs; and that the urns, wherein they incloſed the aſhes of the dead, repreſented the capitals, whoſe abacus was a brick, laid thereon to cover the urns: but Vitruvius's account appears the more natural. See ABACUS, ACANTHUS, *&c.*

At length, the Greeks regulated the height of their columns on the foot of the proportions of the human body: the *Doric* repreſented a man of a ſtrong, robuſt make; the *Ionic* that of a woman; and the *Corinthian* that of a girl: Their baſes and capitals were their head-dreſs, their ſhoes, *&c.* See BASE, *&c.*

Theſe *orders* took their names from the people, among whom they were invented: Scamozzi uſes ſignificative terms to expreſs their character; when he calls the *Tuſcan*, the *Gigantic*; the *Doric*, the *Herculean*; the *Ionic*, the *Matronal*; the *Compoſite*, the *Heroic*; and the *Corinthian*, the *Virginal*. See each order under its proper articles, TUSCAN, DORIC, *&c.*

To give a general idea of the *orders*; it muſt be obſerved, that the whole of each *order* is compoſed of two parts at the leaſt, *viz.* the column and entablature; and of four parts at the moſt, when there is a pedeſtal under the column, and an acroter, or little pedeſtal, a top of the entablature: that the column has three parts, *viz.* the *baſe*, the *ſhaft*, and the *capital*; the entablature has three likewiſe, *viz.* the *architrave*, the *freeze*, and *cornich*: which parts are all different in the ſeveral *orders*. See each part under its proper article, ENTABLATURE, CAPITAL, *&c.*

Tuſcan ORDER is the firſt, moſt ſimple, and ſolid: its column is ſeven diameters high; and its capital, baſe, and entablature, have but few mouldings, or ornaments. See TUSCAN.

Doric ORDER, is the ſecond, and the moſt agreeable to nature. It has no ornament on its baſe, or in its capital. Its height is eight diameters. Its freeze is divided by triglyphs and metopes. See DORIC.

Ionic ORDER, is the third; and a kind of mean proportional between the ſolid, and delicate manner. Its capital is adorned with volutes, and its cornich with denticles. See IONIC.

Mich. Angelo, contrary to all other authors, gives the *Ionic* a ſingle row of leaves at the bottom of the capital.

Corinthian ORDER, invented by Callimachus, is the fourth, the richeſt, and moſt delicate. Its capital is adorned with two rows of leaves, and eight volutes, which ſuſtain the abacus. Its column is ten diameters high, and its cornich has modillions. See CORINTHIAN.

Compoſite ORDER, the fifth and laſt, (though Scamozzi and Le Clerc make it the fourth) is ſo called, becauſe its capital is compoſed out of thoſe of the other *orders*; having the two rows of leaves of the *Corinthian*, and the volutes of the *Ionic*. It is alſo called the *Roman*, becauſe invented among that people. Its column is ten diameters high; and its cornich has denticles, or ſimple modillions. See COMPOSITE, and ROMAN.

Ruſtic ORDER, is that adorned with ruſtic quoins, boſſages. *&c.* See RUSTIC.

Attic ORDER, is a little *order* of low pilaſters, with an architrave cornich for its entablature; as that of the caſtle of Verſailles over the *Ionic* on the ſide of the garden. See ATTIC.

M. Blondel calls the little pilaſters of attics and mezzanines, *falſe orders*.

Perſian ORDER, is that which has figures of Perſian ſlaves, inſtead of columns, to ſupport the entablature. See PERSIAN.

Caryatic ORDER, is that whoſe entablature is ſupported with figures of women, inſtead of columns. See CARYATIDES.

Gothic ORDER, that which deviates from the ornaments and proportions of the antique; and whoſe columns are either too maſſive, in manner of pillars; or too ſlender, like poles: its capitals out of all meaſure; and carved with leaves of wild acanthus, thiſtles, cabbage, or the like. See GOTHIC.

French ORDER, is a new contrived *order*, wherein the capital conſiſts of attributes agreeing to that people; as cocks-heads, flowers-de-luces, *&c.*

Its proportions are *Corinthian*: ſuch is that of M. le Brun, in the grand gallery of Verſailles; and that of M. le Clerc.

M. le Clerc gives a ſecond *Tuſcan order*, and a *Spaniſh order*, beſides his *French order*. — The *Tuſcan* he ranks between the firſt *Tuſcan* and *Doric*. Its height he makes 23 ſemi-diameters, 22 minutes. The column to have 15, the pedeſtal 5, and the entablature 3, and

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* The word, in the original Saxon, ſignifies *a great judgment*; formed of *Or* great, and *deal*, or *dele*, judgment.

22 minutes: and he propoſes its freeze to be adorn'd with turtles, which are the arms of Tuſcany.

The *Spaniſh order* he places between the *Corinthian* and *Compoſite*. The whole *order* he makes 30 ſemi-diameters, 28 minutes; whereof the column has 9, and 25 min. the pedeſtal 16, and 18-min. and the entablature 4, and 15 min. The horns of the abacus he ſuſtains with little volutes; the middle, in lieu of a roſe, has a lion's ſnout: that animal being the ſymbol of Spain, and expreſſing the ſtrength, gravity, and prudence of that nation.

Greek ORDERS. See the article GREEK.

ORDER, is alſo uſed for a claſs, or diviſion of the members of the body of a ſtate; with regard to aſſemblies, precedence, *&c.* See RANK, PRECEDENCY, *&c.*

In this ſenſe, *order* is a kind of dignity, which, under the ſame name, is common to ſeveral perſons; and which, of it ſelf, does not give them any particular publick authority, but only rank, and a capacity of arriving at honours, and employments.

To abridge this definition; *order* may be ſaid to be a dignity attended with an aptitude for publick employ.—By which it is diſtinguiſhed from an *office*, which is the exerciſe of a public truſt. See OFFICE.

In this ſenſe, nobility is an *order*, &c. The clericate is alſo an *order*, &c. See NOBILITY, *&c.*

ORDER, is alſo the title of certain ancient books, containing the divine office, with the *order*, and manner of its performance. See LITURGY, MASS, ORDINAL, *&c.*

Roman order, is that wherein are laid down the ceremonies which obtain in the Roman church. SEE RITUAL.

ORDER, in aſtronomy, *&c.*—A planet is ſaid to go according to the *order* of the ſigns, when it is direct; proceeding from aries to taurus, thence to gemini, *&c.*—It goes contrary to the *order* or ſucceſſion of the ſigns, when it is retrograde, *i. e.* when it goes back from piſces to aquarius, *&c.* See DIRECTION, RETROGRADATION, SIGN, *&c.*

ORDER, in war, denotes an arrangement of the parts of an army, either by land or ſea; whether for marching, ſailing, or engaging. See ARMY.

ORDER *of battel*, is the placing the battalions and ſquadrons in one, two, or three lines, according as the ground will allow, either in order to engage the enemy, or to be reviewed by the general. See LINE, *&c.*

An ORDER *of march*, is diſpoſed in two or three columns, according to the ground.—The *orders* and evolutions make the ſubject of the ſcience of tactics. See TACTIC.

ORDER is more particularly uſed for the equal diſtance of one rank, or file, from another.

The uſual *order* in files is three foot; in ranks ſix foot. —The open or marching *order* is twice as much. See RANK and FILE.

ORDERS, by way of eminency, or *holy* ORDERS, denote a character peculiar to eccleſiaſtics, whereby they are ſet apart for the miniſtry. See ORDINATION.

This the Romaniſts make their ſixth ſacrament. See SACRAMENT.

In the reformed churches there are but three *orders*; *viz.* biſhops, prieſts, and deacons. In the Romiſh church there are ſeven, excluſive of the epiſcopate: all which the council of Trent enjoins to be received, and believed on pain of anathema. See HIERARCHY.

They are diſtinguiſhed into *petty* or *ſecular orders*; and *major*, or *ſacred orders.*

The petty, or *minor* ORDERS, are four; *viz.* thoſe of door-keeper, exorciſt, reader, and acolyth. See EXORCIST, ACOLYTH, *&c.*

Thoſe in petty *orders* may marry without any diſpenſation: in effect, the petty *orders* are looked on as little other than formalities, and as degrees neceſſary to arrive at the higher *orders.*—Yet the council of Trent is very ſerious about them: enjoins that none be admitted into them, without underſtanding Latin; and recommends it to the biſhops, to obſerve the intervals of conferring them, that the perſons may have a ſufficient time to exerciſe the functions of each *order*: but it leaves the biſhops a power of diſpenſing with thoſe rules; ſo that the four *orders* are uſually conferred the ſame day, and only make the firſt part of the ceremony of ordination. See MINOR.

The Greeks diſavow theſe petty *orders*, and paſs immediately to the ſub-diaconate; the reformed to the diaconate.

Their firſt riſe, Fleury dates in the time of the emperor Juſtinian. There is no call nor benefice required for the four petty *orders*; and a baſtard may even enjoy them without any diſpenſation; nor does bigamy diſqualify.

Sacred, or *major* ORDERS, we have already obſerved, are three; *viz.* thoſe of deacon, prieſt, and biſhop. See DEACON, PRIEST, and BISHOP.

The council of Trent, retrieving the ancient diſcipline, forbids any perſon being admitted to the major *orders*, unleſs he be in peaceable poſſeſſion of a benefice ſufficient for a decent ſubſtance; allowing no ordinations on patrimonies or penſions; except where the biſhop judges it for the ſervice of the church.

A perſon is ſaid to be promoted to *orders per ſaltum*, when he has not before paſſed the inferior *orders*. The council of Conſtantinople forbids any biſhop being ordained without paſſing all the degrees; yet church-hiſtory furniſhes us with inſtances of biſhops conſecrated, without having paſſed the *order* of prieſthood; and Panormus ſtill thinks ſuch an ordination valid.

Military ORDERS, are companies of knights, inſtituted by kings and princes; either for defence of the faith, or to confer marks of honour, and make diſtinctions among their ſubjects. See KNIGHT.

There have been five *orders* purely military in England; *viz.* thoſe of the knights of the garter, knights bannerets, knights of the bath, knights batchelors, and knights baronets. See the inſtitution of each under its proper article, GARTER, BATH, BARONET.

ORDER *of the Thiſtle.* See the article THISTLE.

The French have had five military *orders*, *viz.* that of the *genette*, inſtituted by Charles Martel; but which ſoon fell. —The *order of the virgin Mary*, ſince called the *order of the ſtar*, inſtituted by king John in 1352.—The *order of St. Michael*, inſtituted in 1469, by Lewis IX. — The *order of the Holy Ghoſt*, or the *blue ribbon*; the members of which are firſt to be knights of St. Michael. See HOLY GHOST. —And the *order of St. Louis*, inſtituted by Lewis XIV. in 1693.

The princes of the blood, marſhals of France, admiral, and general, become knights of St. Louis by their office.

ORDER *of Alcantara*,	See	ALCANTARA.
ORDER *of the Band*,		BAND.
ORDER *of Chriſt*,		CHRIST.
ORDER *of the Croſs*,		CROSS.
ORDER *of the Elephant*,		ELEPHANT.
ORDER *of the golden Fleece*,		FLEECE.
ORDER *of the Knot*,		KNOT.
ORDER *of the Roſary*,		ROSARY.
ORDER *of the Star*,		STAR.
ORDER *of the Stole*, &c.		STOLE, *&c.*

Religious military ORDERS, are thoſe inſtituted in defence of the faith, and privileged to ſay maſs; and withal are prohibited marriage, *&c.*

Of this kind are the knights of Malta, or of St. John of Jeruſalem.—Such alſo were the knights Templars, the knights of Calatrava, knights of St. Lazarus, Teutonic knights, *&c.* See each under its proper article, MALTA, TEMPLAR, *&c.* Father Putignani accounts thoſe *military orders* where marriage is not allowed, real *religious orders.*—F. Papebroch ſays, it is in vain to ſearch for *military orders* before the XIIth century.

Religious ORDERS, are congregations or ſocieties of monaſtics, living under the ſame ſuperior, in the ſame manner, and wearing the ſame habit. See RELIGIOUS and CONGREGATION.

Religious orders may be reduced to five kinds, viz. *monks*, *canons*, *knights*, *mendicants*, and *regular clerks*. See each under its proper article, MONK, CANON, *&c.*

Father Mabillon ſhews, that till the IXth century, almoſt all the monaſteries in Europe followed the rule of St. Benedict; and that the diſtinction of *orders* did not commence till upon the re-union of ſeveral monaſteries into one congregation: that S. Odo, abbot of Cluny, firſt began this re-union, bringing ſeveral houſes under the dependance of Cluny: that, a little afterwards, in the XIth century, the Camaldulians aroſe; then, by degrees, the congregation of Vallombroſa; the Ciſtercians, Carthuſians, Auguſtines; and at laſt, in the XIIIth century, the Mendicants. He adds, that Lupus Servatus, abbot of Ferrieres, in the IXth century, is the firſt that ſeems to diſtinguiſh the *order* of St. Benedict from the reſt, and to ſpeak of it as a particular *order*. See BENEDICTINS.

White order denotes the order of regular canons of St. Auguſtine. See AUGUSTIN.

Black order, denoted the order of Benedictines. See BENEDICTINS.

Theſe names were firſt given theſe two *orders* from the colour of their habit; but are diſuſed ſince the inſtitution of ſeveral other *orders*, who wear the ſame colours.

Grey order, was the ancient name of the Ciſtercians; but ſince the change of the habit, the name ſuits them no more. See CISTERCIANS.

ORDER *of Charity.* See the article CHARITY.

ORDER *of St. Saviour.* See the article SAVIOUR.

Third ORDER. See the article THIRD.

ORDER, in the geometry of curves. See GENDER, LINE, and CURVE.

Book of ORDERS. See the article BOOK.

ORDER *Interlocutory*, in law. See INTERLOCUTORY.

ORDINAL, ORDINALE, a book containing the order, or manner of performing divine ſervice. See RITUAL.

Ordinal, in grammar, an epithet given to ſuch numbers as mark the order of things, or in what rank they are placed. See Number.

Thus, firſt, ſecond, tenth, hundredth, &c. are *ordinal* numbers. See Cardinal.

ORDINANCE, or **Ordonnance**, a law, ſtatute, or command of a ſovereign, or ſuperior. See Law, &c.

Ordinance of parliament, is ordinarily uſed in the ſame ſenſe as *ſtatute*, or act of parliament. See Statute.

In the parliament rolls, acts are often called *ordinances of parliament*. — Though in ſome caſes we find a difference made between the two; *ordinances* being only temporary things, by way of prohibition; and capable of being altered by the commons alone: whereas an act is a perpetual law, and cannot be altered but by king, lords, and commons. See Act.

Sir Edward Coke aſſerts, that an *ordinance* of parliament differs from an *act*, as the latter can only be made by the king, and the threefold conſent of the eſtates; whereas the former may be made by one or two of them.

Ordinance of the foreſt, is a ſtatute made in the 34th year of Henry I. relating to foreſt matters. See Forest and Assise.

In the French juriſprudence, *ordonnances* are ſuch laws as are eſtabliſhed by the king's authority alone. All *ordonnances* begin with, *a tous preſens & a venir ſalut.*

Ordinance, or **Ordnance**, is alſo a general term for all ſorts of great guns, or cannon, mortars, &c. uſed in war. See Gun, Cannon, and Mortar.

The parts of a piece of *ordinance* are the outſide, round about the piece, which is called the *ſuperficies of her metal:* the ſubſtance, or whole maſs of metal, called her *body:* the part next us, when ſhe ſtands ready to fire, the *breech* or *coyle*; and the pummel, or round knob at the end of it, the *caſcabell*; by ſome the *caſcabell-dock*. The *trunnions* are the two knobs, or ears, which hold the piece in the carriage. *Maniglions* or *dolphins* in the German guns, are two handles placed on the back of the piece near the trunnions, and near the centre of gravity, to mount and diſmount them more eaſily.

The rings about a piece of *ordinance* are five: the *baſe-ring*, that which is next below the touch-hole: the next above the touch-hole, is called the *reinforced-ring:* the next to that forward, the *trunnion-ring:* the next to that, the *cornice-ring:* that at the mouth, the *muzzle-ring*, or the *freeze.*—All the rings near the mouth are ſometimes called the *freezes.*

As to the internal parts; the whole cavity or bore of the piece is called her *chaſe:* that part of the cavity between the trunnions and the muzzle or mouth, the *vacant cylinder:* that part from the trunnions to the end of the cavity, or ſo much of it as containeth (or is loaded with) the powder and ſhot, is called the *chamber*. The diameter of the mouth, the *caliber:* the ſpace between the ſhot, and the hollow ſuperficies of the piece within, the *vent*; being the difference between the diameter of the ſhot, and the mouth of the piece.

Ordinance in England is diſtinguiſhed into two kinds, *viz. Field-pieces*, which are from the ſmalleſt to twelve pounders. — And *cannon of battery*, which are from a culverin to a whole cannon.

Each of theſe diviſions is again ſubdivided; the firſt into baſe, rabinet, falconet, falcon, minion ordinary, minion largeſt, ſaker leaſt, ſaker ordinary, demi-culverin leaſt, and demi-culverin ordinary. — The ſecond into culverin leaſt, culverin ordinary, culverin largeſt, demi-cannon leaſt, demi-cannon ordinary, demi-cannon large, and royal whole cannon.

The lengths and weights of each whereof, as alſo the weights of the bullets they carry; ſee expreſſed in a particular table under the article Cannon. See alſo each piece under its proper head, Cannon, Culverin, Saker, &c.

The ſtrength and ſerviceableneſs of a piece of *ordinance* depends much on the thickneſs of the metal, eſpecially about its chamber, and breech, which is called its *fortification.*

Of this there are three degrees, both for cannons and culverins. — Such as are ordinarily fortified, are called *legitimate pieces.* Thoſe whoſe fortification is leſſened, are called *baſtard pieces.* Thoſe doubly fortified, are called *extraordinary pieces.*

The fortification of a gun is reckoned from the thickneſs of the metal at the touch-hole, at the trunnions, and at the muzzle, in proportion to the diameter of the bore. The doubly-fortified pieces are a full diameter of the bore in thickneſs at the touch hole, $\frac{11}{16}$ of it at the trunnions, and $\frac{7}{16}$ at the muzzle: the leſſened cannons have but $\frac{3}{4}$, or $\frac{12}{16}$ of the diameter of their bore, in the thickneſs at the touch-hole, $\frac{9}{16}$ at the trunnions, and $\frac{}{1}$ at the muzzle.

All the double-fortified culverins, and all the leſſer pieces of that kind, have a diameter and at the touch-hole, $\frac{15}{16}$ at the trunnions, and $\frac{}{16}$ at the muzzle. And the ordinary fortified culverins are every way as the doubly fortified cannon; and the leſſened culverins as the ordinary cannon, in all reſpects.—The ordinary-fortified cannons have $\frac{7}{8}$ at the touch-hole, $\frac{}{8}$ at the trunnions, and $\frac{3}{8}$ at the muzzle.

Ordinance, in painting. See the article Ordonnance.

Ordinance, or **Ordnance** *Office*, is the ſtanding, grand magazine of arms, habiliments, inſtruments, and utenſils of war, as well by ſea as land; not only for thoſe lodged in the tower, but in all the garriſons, caſtles, forts, &c. in Great Britain: from whence, as occaſion requires, his majeſty's armies, &c. are ſupplied. See Arsenal.

The officers of the *ordinance* are, the *maſter-general*, from whom are derived all orders and diſpatches relating to the ſame, as the ſervice ſhall beſt require. — This poſt has of late been annexed to the office of general and commander in chief.

Under him is a *lieutenant-general of the ordinance*, who receives orders from the maſter-general, and the reſt of the prime officers at the board; ſees them duly executed; orders the firing of the guns on days of rejoicing, and ſees the train of artillery fitted out, when ordered to the field. See Lieutenant, Train, &c.

Next to him is the *ſurveyor-general*, who has the inſpection of the *ordinance*, ſtores, and proviſions of war, in the cuſtody of the ſtore-keepers; he allows all bills of debts, keeps a check on labourers, &c. See Surveyor.

Under theſe is a *clerk of the ordinance*, who records all orders and inſtructions given for the government of the office; with all patents, grants, names of officers, &c. draws all eſtimates for proviſions, and ſupplies all letters, inſtructions, commiſſions, deputations, contracts, &c. ſerves as a check between the two accomptants of the office, the one for money, the other for ſtores. See Clerk.

This office has alſo a ſtore-keeper, who takes into his cuſtody all *ordinance*, ammunition, ſtores, &c. thereto belonging; and indents, and gives in legal ſecurity for the ſafe keeping thereof; and renders an exact account from time to time.

Here is alſo a *clerk of the deliveries*, whoſe duty is to draw up all proviſions, either at the tower, or any other of his majeſty's magazines, to ſee them duly executed, &c.

And laſtly, a *treaſurer*, through whoſe hands paſſes the money of the whole office, as well for payment of ſalaries as debentures.

Spiking up the **Ordinance**. See the article Spiking.

ORDINARII, in antiquity, were a ſort of gladiators; being thoſe appointed to exhibit combats on certain ſtated days, &c. See Gladiator.

ORDINARY, ſomething that happens, or paſſes frequently, uſually. See Extraordinary.

We ſay, the *ordinary* courſe of things, whatever is done without miracles, is done by *ordinary* agents.

Ordinary *Culverin*. See the article Culverin.

Ordinary *Minion*, &c. See the article Minion, &c.

Embaſſador, or *Envoy in* **Ordinary**, he who is ſent to reſide ſtatedly, and for a number of years, in the court of ſome prince or ſtate, to keep up a good underſtanding, and watch the intereſts of his nation. See Embassador, Envoy, Resident, &c.

Ordinary is alſo applied to ſeveral officers and ſervants belonging to the king's houſhold, who attend on common occaſions.—Thus we ſay, phyſician in *ordinary*, &c.

Ordinary, **Ordinarius**, in the civil law, is any judge veſted with authority to take cognizance of cauſes, in his own right, as he is a magiſtrate; and not by deputation. See Judge.

Ordinary, in common and canon law, denotes him who has *ordinary* or immediate juriſdiction in eccleſiaſtical cauſes in ſuch a place.

In which ſenſe archdeacons are *ordinaries.* — Though the appellation be moſt frequently given to the biſhop of the dioceſe, who has the *ordinary* eccleſiaſtical juriſdiction, and the collation to benefices therein. See Bishop, Court, Ecclesiastical, &c.

There are ſeveral chapels, chapters, abbeys, &c. exempted from the juriſdiction of the *ordinary*. See Chapel, Abbey, &c.

The archbiſhop is *ordinary* of the whole province, to viſit and receive appeals from the inferior judicatures.

The Romiſh canoniſts call the pope *ordinary of ordinaries*, ſince by the Lateran council he has uſurped the right of collating, by prevention, to all benefices; in excluſion of the *ordinary* collators. See Collation.

Ordinary *of Aſſizes and Seſſions*, was a deputy of the biſhop of the dioceſe, anciently appointed to give malefactors their neck-verſes, and judge whether they read or not; alſo to perform divine ſervice for them, and aſſiſt in preparing them for death.

Ordinary, or *Honourable* **Ordinary**, in heraldry, a denomination given to certain charges properly belonging to that art. See Charge and Honourable.

The *honourable ordinaries* are ten in number, *viz.* the *chief, pale, bend, feſſe, bar, croſs, ſaltier, chevron, bordure,* and *orle.* See each in its place, CHIEF, PALE, *&c.*

The heralds give ſeveral reaſons for their being called *honourable*; *viz.* 1. Their great antiquity, as having been uſed ever ſince armoury was ſet on foot. And, 2. for that they denote the ornaments moſt neceſſary for noble and generous men: thus the chief repreſents the helmet, wreath, or crown, covering the head: the pale repreſents his lance or ſpear: the bend and bar, his belt: the feſſe, his ſcarf: the croſs and ſaltier, his ſword: the chevron, his boots and ſpurs: and the bordure and orle, his coat of mail.

As to the allotting or diſtributing of theſe *ordinaries*, ſome authors write, that when a gentleman having behaved himſelf gallantly in fight, was preſented to the prince, or general, and a ſuitable coat-armour ordered him; if he were wounded in the head, they gave him a chief; if in the legs, he had a chevron; and if his ſword and armour were diſcoloured with the blood of enemies, a croſs or bordure.

Some heralds have attempted to increaſe the number of *honourable ordinaries* to twenty; adding to thoſe abovementioned, the plain *quarter*, the *giron*, the *eſcutcheon*, *cappe* dexter and ſiniſter, *emmanch* dexter and ſiniſter, *chauſſe* dexter and ſiniſter, and the *point*. But theſe are not yet authorized.

ORDINATE. See the article CO-ORDINATE.

ORDINATES, in geometry and conics, are lines drawn from any point of the circumference of an ellipſis, or other conic ſection, perpendicularly acroſs the axis, to the other ſide. See CONIC *Section*.

The Latins call them *ordinatim applicatæ*.—Such are the lines M M, M M, *&c.* (*Tab. Conics, fig.* 26.)

Half of each of theſe, as the lines E M, E M, *&c.* are properly only *ſemi-ordinates*, though popularly called *ordinates*. See SEMI-*Ordinate*.

In curves of the ſecond order; if any two parallel right lines be drawn ſo as to meet the curve in three points: a right line which cuts theſe parallels ſo, as that the ſum of two parts terminating at the curve on one ſide the ſecant, is equal to the third part terminated at the curve on the other ſide; will cut all other right lines parallel to theſe, and that meet the curve in three points, after the ſame manner; *i. e.* ſo as that the ſum of the two parts on one ſide will always be equal to the third part on the other ſide: — and theſe three parts equal on either ſide, Sir Iſaac Newton calls *ordinatim applicatæ*, or *ordinates of curves of the ſecond order*. See CURVE.

ORDINATE *in a parabola,* See PARABOLA.
ORDINATE *in an hyperbola,* See HYPERBOLA.
ORDINATE *in an ellipſis,* See ELLIPSIS.

ORDINATE *Ratio*, is that wherein the antecedent of the firſt ratio is to its conſequent, as the antecedent of the ſecond is to its conſequent. See RATIO.

ORDINATION, the act of conferring holy orders; or of initiating a candidate into the diaconate, or prieſthood. See ORDERS and RE-ORDINATION.

The *ordination* of biſhops is more properly called *conſecration*. See BISHOP and CONSECRATION.

Ordination has always been eſteemed the principal prerogative of biſhops; and they ſtill retain the function as a kind of mark of ſpiritual ſovereignty in their dioceſe.

In the ancient diſcipline, there was no ſuch thing as a vague, and abſolute *ordination*; but every one was to have a church, whereof he was to be *ordained* clerk, or prieſt. — In the twelfth century, they grew more remiſs, and *ordained* without any title, or benefice. See BENEFICE.

The council of Trent reſtored the ancient diſcipline, and appointed that none ſhould be *ordained* but thoſe who were provided of a benefice ſufficient to ſubſiſt them. — The ſhadow of which practice ſtill obtains among us. See COMMENDAM.

The reformed hold the call of the people the only thing eſſential to the validity of the miniſtry; and teach, that *ordination* is only a ceremony which renders the call more auguſt and authentic.

The council of Rome in 744, orders that no *ordinations* ſhall be held except on the firſt, fourth, ſeventh, and tenth months. —With us, *ordination-days* are the four ſundays immediately following the ember weeks: being the ſecond ſunday in lent, trinity-ſunday, and the ſundays following the firſt wedneſday after September the 14th, and December the 13th.

Pope Alexander II. condemns *ordination per ſaltum*, as they call it; *i. e.* the leaping to a ſuperior order without paſſing through the inferior.

ORDNANCE. See the article ORDINANCE.

ORDONNANCE, or ORDINANCE, in painting, denotes the diſpoſition of the parts of a picture, either with regard to the whole piece, or to the ſeveral parts; as the groups, maſſes, contraſts, aſpects, *&c.* See PAINTING.

In the *ordonnance* there are three things regarded, *viz.* the place, or ſcene, where; the diſtribution how; and the contraſt.

In the firſt, regard is to be had to the *diſpoſition* of things to ſerve as a ground-work; and to the *plan*, or poſition of bodies: under the former whereof, come, 1. The *landſkip*; whether an uninhabited place, where there is a full liberty of repreſenting all the extravagancies of nature; or inhabited, where the marks of cultivation, *&c.* muſt be exhibited. See LANDSKIP.

2. The *building*, whether ruſtic; wherein the painter's fancy is at liberty: or regular; wherein a nice attention is required to the orders. See ORDER, and ARCHITECTURE.

3. The mixture of both; wherein 'tis a maxim to compoſe in great pieces, and make the ground-plot big enough; to neglect ſome little places, in order to beſtow more on the whole maſs, and to ſhew the more conſiderable places with the more advantage; and to make ſome agitation in all the things that move.

As to plans of bodies; they are either ſolid: which again, are either ſo by nature, and which muſt be proportioned to their places; or artificial, where regard is to be had to the rules of geometry, perſpective, architecture, *&c.* — Or they move: which they do, either by a voluntary motion, wherein care muſt be had to proportion them to their ſituation, and to ſtrengthen them by regarding the equilibrium; or by ſome extraordinary power, as machines, *&c.* where the cauſes of their motions muſt appear.—Or they are things at a diſtance. In all which, an even plane muſt ſtill be propoſed to find their preciſe ſituation, and ſettle their place by ſudden breaks and diſtances agreeable to perſpective. See PERSPECTIVE, *&c.*

In placing the figures, regard muſt be had, 1. To the *group*, which connects the ſubject, and ſtays the ſight. In this are to be conſidered the knot, or nodus, which binds the group; and the nearneſs of figures, which we may call the chain, as it holds them together; that the group be ſuſtained by ſomething looſe and diſtinct from it; and by the ſame joined and continued to the other groups: and that the lights and ſhadows be ſo diſpoſed, as that we may at once ſee the effect of all the parts of the compoſition. See GROUP.

2. To the *actions*, wherein forced attitudes are to be avoided, and ſimple nature ſhewn in her moſt advantageous poſtures. In weak and lean figures, the nudities not to be ſhewn; but occaſions of covering them ſought. In all human figures, ſpecial care to be taken, the head be well placed between the ſhoulders; the trunk on the haunches, and the whole on the feet. See ATTITUDE.

3. To the *drapery*; which is to be adjuſted, ſo as it may appear real garments, and not ſtuffs looſely thrown on. The folds to be ſo diſpoſed, as to leave the great parts, wherein the nudity may appear, free; ranging the little folds about the joints, and avoiding them on the relievo of the members. And, laſtly, to diſpoſe the draperies, by raiſing the ſtuff, and letting it fall lightly, that the air ſuſtaining the folds, may let them fall ſoft. See DRAPERY.

Laſtly, in the *contraſt*, are to be conſidered the actions, which vary infinitely: the aſpects, which, in actions of the ſame kind, may, by their difference, make a contraſt: the ſituation, according as they meet above or under the ſight, far or near. And, laſtly, cuſtom; which extends, indeed, to all parts of painting, but is particularly to be regarded in the *ordonnance*; to be managed diſcreetly, however, and ſtiffneſs and formality avoided. See CONTRAST.

ORDONNANCE, in architecture, is nearly the ſame as in painting; *viz.* the compoſition of a building, and the diſpoſition of its parts, both with regard to the whole, and to one another. See BUILDING.

Vitruvius defines *ordonnance* to be that which regulates the ſize or magnitude of all the parts of a building with reſpect to their uſe.

This definition is cenſured by M. Perrault, who takes the *ordonnance* to conſiſt in the diviſion of the plan or ſpot of ground whereon the building is to be raiſed; *i. e.* in the apportioning or laying it out, agreeably to the intended dimenſions of the whole fabric; which Mr. Evelyn expreſſes in fewer words, by "determining the meaſure of what is "aſſigned to compoſe the ſeveral apartments."

On this foundation, *ordonnance* is the judicious contrivance of the plan or model; as when the court, hall, lodgings, *&c.* are neither too large, nor too little: but the court, *v. gr.* affords convenient light to the apartments about it, and is large enough for uſual acceſs. The hall of fit capacity to receive company; the bed-chambers accordingly, *&c.* When theſe diviſions are either too great, or too ſmall with reſpect to the place, as a large court to a little houſe, or a little chamber in a magnificent palace; the fault is in the *ordonnance*.

This the ancients called *taxis*; and diſtinguiſhed it from *diatheſis*, diſpoſition; which is, where all the parts and members of a building are aſſigned their juſt place and ſituation with regard to their quality, office, rank, *&c.* without any regard to the dimenſions, or quantity: as, that the veſtible or porch be before the hall, the hall before the parlor, and that before the withdrawing room, &c. The bed-chambers again, to look to the ſun-riſing; libraries, galleries of paintings, and cabinets of curioſities, &c. to the north.

ORE, in natural hiſtory, the mineral glebe, earth or ſtone, dug out of mines, to be purified, and the metalline parts procured, and ſeparated from the ſame. See Mine and Metal.

The *ore* is frequently called the *mineral*; and ſometimes *marcaſite*; though, on other occaſions, a difference is made; the denomination *ore* being only given where the mineral is rich enough of metal to be wrought.—When it is not, it is denominated *marcaſite*. See Mineral and Marcasite.

Ore, in navigation. See the article Oar.

ORGAL, the lees of wine dried, and uſed by dyers to prepare the cloth for more readily taking their ſeveral colours. See Dying, Colour, Tartar, &c.

ORGAN, Οργανον, is uſed in the general for any thing framed, and deſtined for ſome certain action, uſe, or operation. See Instrument.

Organ, or **Organical** *Part*, in phyſiology, is ſuch a part of the body as is capable of the performance of ſome perfect act, or operation. See Part and Body.

In which ſenſe, all the parts, even the moſt ſimple, may be denominated *organical*.

The *organs* are divided into *primary*, and *ſecondary*.—The *primary* are thoſe compoſed of ſimilar parts, and appointed for ſome one ſingle function.—Such as conſiſt of ſeveral of theſe, though appropriated to one ſingle action, are eſteemed *ſecondary organs*.

Thus the veins, arteries, nerves, and muſcles, are *primary organs*; and the hands, fingers, &c. *ſecondary organs*.

Organ *of ſenſe*, is that part of an animal body by means whereof it perceives external objects. See Sense.

Theſe, ſome divide into *internal*, which is the brain; and *external*, *viz.* the eye, ear, noſe, &c. See Brain, Eye, Ear, Nose, &c.

Organ, in muſic, denotes the largeſt and moſt harmonious of all wind inſtruments; chiefly uſed for playing a thorough baſs, with all its accompanyments. See Music.

The invention of the *organ* is very ancient, though it is agreed it was little uſed till the eighth century. It ſeems to have been borrowed from the Greeks. Vitruvius deſcribes one in his tenth book. The emperor Julian has an epigram in its praiſe. St. Jerom mentions one with twelve pair of bellows, which might be heard a thouſand paces, or a mile; and another at Jeruſalem, which might be heard to the mount of Olives. The ſtructure of the modern *organ* may be conceived as follows.

The *organ* is an aſſemblage of ſeveral rows of pipes. Its ſize is uſually expreſſed by the length of its largeſt pipe: thus we ſay an *organ* of 32 feet, of 16 feet, of 8 feet, and of 2 feet.

Church *organs* conſiſt of two parts, *viz.* the main body of the *organ*, called the *great organ*; and the *poſitive*, or *little organ*, which is a ſmall buffet, uſually placed before the great *organ*.

The *organ* has at leaſt one ſet of keys, when it has only one body; and two or three, when it has a poſitive. The large *organs* have four, ſometimes five ſets. Beſides, the pedals or largeſt pipes have their key, the ſtops or touches whereof are played by the feet. The keys of an *organ* are uſually divided into four octaves; *viz.* the ſecond ſub-octave, firſt ſub-octave, middle octave, and firſt octave. Each octave is divided into twelve ſtops or frets; whereof the ſeven black mark the natural ſounds, and the five white the artificial ſounds; *i. e.* the flats and ſharps. So that the keys uſually contain 48 ſtops, or touches. Some organiſts add to this number one or more ſtops in the third ſub-octave, as well as in the ſecond. Note, in harpſicords and ſpinets, the natural ſtops or keys are uſually marked white, the artificial ones black. The pedals extend to two or three octaves at the pleaſure of the organiſt: ſo that the number of ſtops is indeterminate.

Each key or ſtop preſſed down opens a valve or plug, which correſponds lengthwiſe, to as many holes as there are rows of pipes on the ſound-board. The holes of each row are opened and ſhut by a regiſter or ruler pierced with 48 holes. By drawing the regiſter, the holes of one row are opened, becauſe the holes of the regiſter correſpond to thoſe of the ſound-board. So that by opening a valve, the wind brought into the ſound-board by a large pair of bellows, finds a paſſage into the pipe, which correſponds to the open hole of the ſound-board. But by puſhing the regiſter, the 48 holes of the regiſter, not anſwering to any of thoſe of the ſound-board, that row of pipes anſwering to the puſhed regiſter are ſhut. Whence it follows, that by drawing ſeveral regiſters, ſeveral rows of pipes are opened; and the ſame thing happens, if the ſame regiſter correſpond to ſeveral rows. Hence the rows of pipes become either ſimple, or compound: *ſimple*, when only one row anſwers to one regiſter; *compound*, where ſeveral. The organiſts ſay, a row is *compound*, when ſeveral pipes play upon preſſing one ſtop.

The pipes of the *organ* are of two kinds; the one with mouths like our flutes; the other with reeds. The firſt called *pipes of mutation*, conſiſt,

1. of a foot AABB, (*Tab. Miſcell. fig.* 15.) which is a hollow cone, and which receives the wind that is to ſound the pipe. 2. To this foot is faſtened the body of the pipe BBDD. Between the foot and the body of the pipe is a diaphragm, or partition EEF, which has a little, long, narrow aperture to let out the wind. Over this aperture is the mouth BBCC; whoſe upper lip CC, being level, cuts the wind as it comes out at the aperture.

The pipes are of pewter, of lead mixed with a twelfth part of tin, and of wood. Thoſe of tin are always open at their extremities; their diameter is very ſmall, their ſound very clear and ſhrill. Thoſe of lead mixed, are larger; the ſhorteſt open, the longeſt are quite ſtopped; the mean ones partly ſtopped, and having beſides a little ear on each ſide the mouth, to be drawn cloſer, or ſet further aſunder, in order to raiſe or lower the ſound. The wooden pipes are made ſquare, and their extremity ſtopped with a valve or tampion of leather. The ſound of the wooden and leaden pipes is very ſoft; the large ones ſtopped, are uſually of wood; the ſmall ones of lead. The longeſt pipes give the graveſt ſound; and the ſhorteſt the moſt acute: their lengths and widths are made in the reciprocal ratio's of their ſounds; and the diviſions regulated by their rule, which they call *diapaſan*. But the pipes that are ſhut are of the ſame length as the open ones, which yield the ſame ſound. Uſually, the longeſt pipe is 16 feet; though in extraordinary *organs* it is 32. The pedal tubes are always open, though made of wood and of lead.

A *reed-pipe* conſiſts of a foot AABB, (*Tab. Miſcell. fig.* 16.) which carries the wind into the ſhalot, or reed CD, which is a hollow demi-cylinder, fitted at its extremity D, into a kind of mould II, by a wooden tampion FG. The ſhalot is covered with a plate of copper EEFF, fitted at its extremity FF into the mould by the ſame wooden tampion: its other extremity EE is at liberty; ſo that the air entering the ſhalot, makes it tremble or ſhake againſt the reed; and the longer that part of the tongue which is at liberty FL, is made, the deeper is the ſound. The mould II, which ſerves to fix the ſhalot or reed, the tongue, tampion, &c. ſerves alſo to ſtop the foot of the pipe, and to oblige the wind to go out wholly at the reed. Laſtly, in the mould is ſoldered the part HHKK, called the *tube*, whoſe inward opening is a continuation of that of the reed. The form of this tube is different in the different ranks of pipes.

The degree of acuteneſs and gravity in the ſound of a reed-pipe, depends on the length of the tongue, and that of the pipe CK, taken from the extremity C of the ſhalot, to the extremity K of the tube.

The quality of the ſound depends on the width of the reed, the tongue, and the tube; as alſo on the thickneſs of the tongue, the figure of the tube, and the quantity of wind.

To diverſify the ſounds of the pipes, they add a valve to the port-vent, which lets the wind go in fits or ſhakes.

Hydraulic **Organ**, denotes a muſical machine that plays by means of water. See Water.

Of theſe there are ſeveral in Italy in the grotto's of vineyards. Cteſebes of Alexandria, who lived in the reign of Ptolemy Evergetes, is ſaid to have firſt invented *organs* that plaid by compreſſing the air with water, as is ſtill practiſed. Archimedes and Vitruvius have left us deſcriptions of the *hydraulic organ*. Felibien, *de la Vie des Archit.*

In the cabinet of queen Chriſtina is a beautiful and large medallion of Valentinian, on the reverſe whereof is ſeen one of theſe *hydraulic organs*; with two men, one on the right, the other on the left, ſeeming to pump the water which plays it, and to liſten to its ſound. It has only eight pipes, placed on a round pedeſtal.—The inſcription is PLACEA SPETRI, if it be not wrong copied, which we ſuſpect.

ORGANICAL, in the ancient muſic, was that part performed with inſtruments. See Music.

The *organical* comprehended three kinds of inſtruments; *viz. Wind inſtruments*, as the trumpet, flute, &c. *Stringed inſtruments*, as the lute, lyre, &c. and *Pulſatile inſtruments*, or thoſe played on by beating, as drums, &c. See each in its place, Trumpet, &c.

Organical *Part*, is that part of an animal or plant deſtined for the performance of ſome particular function. See Organ and Part.

Organical *Diſeaſe*, a diſeaſe in an *organical* part of the body, whereby its function is impeded, ſuſpended, or deſtroyed. See Disease, &c.

Organical *Deſcription* of curves, is the method of deſcribing them on a plane, by means of inſtruments. See Curve.

ORGASM, * ORGASMUS, an extaſy, or impetuous deſire of coition, occaſioned by a turgeſcency of the ſeminal veſſels, which are no longer able to reſtrain their contents.

* The word is Greek, οργασμος, denoting violence, or turgeſcency; formed from οργαω, *turgeo*, I ſwell.

The ancients alſo extend *orgaſm* to the other humours, and even excrements, which being accumulated, and coming to ferment, demand excretion.

Dr. Quincy uſes *orgaſm* for an impetuous, or too quick motion of the blood, or ſpirits; whereby the muſcles are diſtended with uncommon force. See SPIRIT, CONVULSION, &c.

ORGIA, * Οργια, in antiquity, feaſts and ſacrifices in honour of Bacchus, inſtituted by Orpheus, and chiefly celebrated on the mountains, by wild, diſtracted women, called *Bacchæ*. See BACCHANALIA.

* Euſebius derives the word απο της οργης, fury, madneſs. Others from ορος, mountain; becauſe Orpheus removed from Thrace to mount Citheron: others from οργας, a place conſecrated to ſome divinity: others from ειργαν, to remove, repulſe; in regard the prophane were to be driven away.

The *orgia* were alſo called *orphica*, from their inſtitutor. —They were held every third year. The chief ſolemnities were in the night time; and were attended with all manner of impurities.

Servius ſays, that at firſt *orgia* was a common name for all kinds of ſacrifices among the Greeks; of the ſame import with the word *ceremoniæ* among the Romans.

ORGUES, in the military art, thick long pieces of wood pointed and ſhod with iron, and hung each by a ſeparate rope over the gateway of a city, ready on any ſurprize or attempt of the enemy to be let down to ſtop up the gate. See PORTCULLICE and HERSE.

ORGUES, is alſo uſed for a machine compoſed of ſeveral harquebuſs or muſquet-barrels, bound together; by means whereof ſeveral exploſions are made at the ſame time; uſed to defend breaches, and other places attacked.

ORGYIA, Οργυια, an ancient Grecian meaſure, containing ſix feet. See MEASURE.

Some repreſent the *orgyia* as the Grecian pace. See PACE.

Heſychius deſcribes it as the ſpace comprehended between the two hands, when the arms are extended: anſwering to the Roman *ulna*, and our fathom. See FATHOM.

ORIENT, ORIENS, in geography and aſtronomy, the eaſt, or eaſt-point of the horizon. See EAST.

It is thus called from the Latin *orire*, to ariſe; becauſe it is in this point the ſun riſes. See RISING.

Equinoctial ORIENT, is uſed for that point of the horizon wherein the ſun riſes when he is in the equator, or when he enters the ſigns Aries and Libra. See SPRING and AUTUMN.

Æſtival ORIENT, is the point wherein the ſun riſes in the middle of ſummer, when the days are longeſt.

Hybernal ORIENT, is the point where the ſun riſes in the middle of winter when the days are ſhorteſt.

ORIENTAL, ſomething ſituated toward the eaſt with regard to us: in oppoſition to *occidental*. See EAST and OCCIDENTAL.

In this ſenſe we ſay, *oriental pearls*, *q. d.* ſuch as are found in the Eaſt-Indies. (See PEARL).—*Oriental languages*, meaning the Hebrew, Syriac, Chaldee, and Cophtic. See LANGUAGE.

ORIENTAL *Bezoard*. See the article BEZOARD.

ORIENTAL *Bibles*. See the article BIBLE.

ORIENTAL *Emerald*. See the article EMERALD.

In aſtronomy, a planet is ſaid to be *oriental*, when it appears in the eaſt before the ſun. See RISING.

ORIENTING, the turning a thing towards the eaſt, or diſpoſing it ſo as it may look towards the eaſt.

In moſt religions, particular care has been taken to have their temples *oriented*.—St. Gregory Thaumaturgus is ſaid to have made a mountain give way, becauſe it prevented the *orienting* of a church he was building.

ORIFICE, ORIFICIUM, the mouth, or aperture of a tube, pipe, or other cavity. See TUBE.

ORIFICE, in anatomy, is particularly applied to the mouths of the ſeveral ducts, veſſels, and other cavities; as of the bladder, uterus, ſtomach, &c.

The upper *orifice* of the ſtomach is the part where hunger is felt; the lower *orifice* is called the *pylorus*. See HUNGER and PYLORUS.

There are ſome operations in chymiſtry, where the *orifices* of the veſſel muſt be ſealed hermetically. See HERMETICAL.

ORIFICE is alſo uſed by extenſion for the aperture of a wound, or ulcer. See WOUND and ULCER.

ORIGENIANS, ORIGENIANI, a ſect of ancient heretics, who even ſurpaſſed the abominations of the Gnoſtics.

St. Epiphanius ſpeaks of them as ſtill ſubſiſting in his time; but in very ſmall number. He ſeems to fix their riſe about the time of the great *Origen*; but does not ſay they took their name from him. On the contrary, he diſtinguiſhes them from the *Origeniſts*, whom he derives from *Origen Adamantius*; adding, indeed, that they firſt took their name from one *Origen*; by which he intimates that it was not the Great. And St. Auguſtine ſays expreſsly it was another.

As to their doctrine, all that modeſty will allow to be ſaid, is, that they rejected marriage; that they uſed ſeveral apocryphal books, as the acts of St. Andrew, &c. and that to excuſe their open crimes, they accuſed the catholics of doing the ſame in private.

ORIGENISTS, in church-hiſtory, followers of the errors of Origen, who maintained that Chriſt is only the ſon of God by adoption; that the human ſoul had a præ-exiſtent ſtate, and had ſinned in heaven before the body was created; that the torments of the damned ſhall not be eternal, but that the devils themſelves ſhall be relieved at laſt.

St. Epiphanius inſiſts very largely on the errors of this father; but as he declares himſelf too warmly againſt him, there may be ſomewhat of exaggeration in what he ſays. Nor do St. Jerom, or Theophilus of Alexandria, ſeem to have kept their zeal within the proper bounds in ſpeaking of Origen. For which reaſon, no doubt, it was that St. Chryſoſtom himſelf was accuſed of being an *Origeniſt*, becauſe not ſo vehemently bent againſt him. *Origeniſm* ſpread itſelf chiefly among the monks of Egypt.

ORIGINAL, a firſt draught, deſign, or autograph of any thing; ſerving as a model, or exemplar, to be imitated, or copied. See DESIGN, MODEL, &c.

Scarce any of the ancient titles, tenures, &c. are now found in the *originals*. They are only vidimus's, or copies collated with the *originals*.

ORIGINAL *Sin*, is that crime we become guilty of at our birth; by the imputation of Adam's diſobedience. See SIN and IMPUTATION.

Father Malebranche accounts for *original* ſin from natural cauſes, thus: Men at this day retain, in the brain, all the traces and impreſſions of their firſt parents. For as animals produce their like, and with like traces in the brain; whence it is that animals of the ſame kind have the ſame ſympathies and antipathies, and do the ſame things on the ſame occaſions; ſo our firſt parents, after their tranſgreſſion, received ſuch deep traces in their brain, by the impreſſion of ſenſible objects, that it was very poſſible they might communicate them to their children.

Now, as it is neceſſary, according to the order eſtabliſhed by nature, that the thoughts of the ſoul be conformable to the traces in the brain; it may be ſaid, that as ſoon as we are formed in the womb, we are infected with the corruption of our parents: For having traces in the brain like thoſe of the perſons who gave us being; it is neceſſary we have the ſame thoughts, and the ſame inclinations with regard to ſenſible objects. Thus, of courſe, we muſt be born with concupiſcence, and *original* ſin. With concupiſcence, if that be nothing but the natural effort the traces of the brain make on the mind to attach it to ſenſible things; and with *original* ſin, if that be nothing but the prevalency of concupiſcence; nothing in effect, but theſe effects conſidered as victorious, and as maſters of the mind and heart of the child. See CONCUPISCENCE.

ORIGINAL *Writs*. See the article WRIT.

ORIGINALIA, in the exchequer, are records, or tranſcripts ſent to the remembrancer's office, out of chancery.

They differ from *recorda*, which contain the judgments and pleadings in ſuits tried before the barons.

ORILLON, in fortification, a ſmall rounding of earth, lined with a wall; raiſed on the ſhoulder of thoſe baſtions that have caſemates; to cover the canon in the retired flank, and prevent their being diſmounted by the enemy.

There are other ſorts of *orillons*, properly called *epaulements*, almoſt of a ſquare figure. See EPAULEMENT.

ORION, * in aſtronomy, one of the conſtellations of the ſouthern hemiſphere. See CONSTELLATION.

* The word is formed from the Greek ουρειν, to make water; the ancients ſuppoſing that it raiſed tempeſts at its riſing and ſetting.

The ſtars in the conſtellation *Orion*, in Ptolemy's catalogue are 37, in Tycho's 62, in the Britannic catalogue 80.—The names, ſituations, magnitudes, longitudes, and latitudes whereof, are as follow:

Names and ſituations of the ſtars.	Signs.	Longitude			Latitude South.			Magn.
		°	′	″	°	′	″	
Preced. and 6th in the lion's ſkin.	♊	7	32	39	15	25	30	4
5th in the lion's ſkin.		8	00	53	13	31	20	4
7th in the lion's ſkin.		7	46	00	16	48	55	4
1ſt and north. in the lion's ſkin.		9	09	15	8	16	07	4 5
3d in the lion's ſkin.		9	22	11	11	09	17	6
5								
4th in the lion's ſkin.		9	14	57	12	24	01	4
8th in the lion's ſkin.		8	09	36	20	02	56	4
2d in the lion's ſkin.		10	00	34	9	06	31	4 5
Laſt and ſouth. in the lion's ſkin.		9	11	42	20	53	51	4 5
Prec. of 2 infor. towards the horn of ♉		12	12	00	7	25	06	5
10								

Names and ſituations of the Stars.	Signs.	Longitude			Latitude South.			Magn.
		°	′	″	°	′	″	
North. in the preced. arm.	♊	12	20	45	14	22	37	6
South. and ſubſeq. in the arm.		12	40	11	13	04	00	6
Subſ. of the inform. tow. the horn of	♉	13	27	34	7	21	32	5
That againſt the preced. ſide.		13	13	48	20	07	24	4 5
That againſt the preced. arm.		14	36	24	11	45	55	6
15								
Bright one in preced. foot called *regel*.		12	30	00	31	10	11	1
More north. over the heel.		13	30	26	29	52	52	4
		14	46	42	20	30	01	6
North. in the prec. ſide under the girdle.		15	13	46	23	31	19	5
Preced. and north. in the ſide.		15	48	42	19	37	39	6
20								
In the preced. ſhoulder.		16	37	33	16	51	30	2
Preced. and ſouth. in the back.		16	12	26	21	21	07	5
S. in the prec. ſide under the girdle.		15	55	49	24	05	24	6
In the hilt of the ſword.		15	49	47	25	34	47	3
In the calf of the preced. leg.		15	13	47	30	57	44	5
25								
Preced. of 4 in the back, as it were,		16	50	50	20	08	18	5
in a right line.)		17	23	22	24	21	29	6
That foll. the ſhoulder to the ſouth.		18	02	50	17	20	25	5
2d of four in the back.		18	01	10	20	00	09	6
Preced. in the girdle.		18	01	38	23	36	07	2
30								
Under the point of the ſword.		17	34	05	30	35	12	4
Preced. in the head.		19	15	51	13	51	19	5
In the back the 3d.		18	51	06	19	34	10	6
In the head the north. of three.		19	22	18	13	25	02	4
South. and ſubſeq. of the head.		19	46	28	14	02	58	5
35								
Prec. of the contig. in the middle of the ſword.		18	38	58	28	43	24	3 4
Preced. of the north. of the contig. in the mid. of the ſword.		18	42	11	28	10	17	5
Subſeq. in the middle of the ſword.		18	40	14	28	45	02	4
South. in the ſword.		18	39	17	29	14	37	3 4
Laſt of the north. in the ſword.		18	46	48	28	11	45	5
40								
Middle of three in the girdle.		19	07	44	24	33	23	2
Laſt of 4 in the line of the back.		20	09	56	19	16	03	5
That under the third of the girdle.		19	45	41	25	58	47	4
Subſ. under the point of the ſword.		19	35	25	30	34	50	5
Third and laſt in the girdle.		20	21	45	25	20	17	2
45								
Preced. in the hind-ſide.		20	57	34	21	56	08	5
		22	32	37	16	59	55	6
In the hind-knee.		22	03	41	33	07	06	3
Preced. of two in the club.		24	22	23	3	11	44	5
Latter of two in the hind-ſide.		23	38	23	21	37	10	6
50								
		24	29	13	3	44	01	6
Glittering ſtar in the hind-ſhoulder.		24	25	00	16	04	26	1
		25	14	10	21	38	50	6
That following the ſide out of form.		25	20	41	22	56	04	6
Preced. of thoſe following the knee.		25	23	32	33	02	04	6
55								
		26	29	13	3	47	31	5 6
In the lower part of the hind-arm.		26	16	05	13	50	01	4
Subſeq. in the club.		26	36	07	3	20	37	5
		26	21	38	18	01	56	6
Laſt of the two ſubſeq. of the knee.		26	12	07	34	04	58	5 6
60								
		26	59	00	19	19	18	6
Prec. of the ſouth. in □ of hind-hand.		27	31	17	8	42	16	4 5
		28	30	25	3	39	59	6
Preced. of the north. in the ſquare.		28	34	14	7	19	30	6
Laſt of the ſouth. in the ſame.		28	34	01	9	14	49	4 5
65								
		29	12	10	4	16	02	6
Laſt of the north.		29	24	09	7	17	31	6
		29	34	49	10	53	13	6
North. in the hind ulna.		29	45	12	11	10	30	6
		29	53	42	29	42	05	4 5
70								
South in the hind ulna.	♋	0	00	00	13	28	25	6
		1	56	47	18	45	41	4
		3	33	13	28	03	05	5
		3	55	48	30	18	32	4
Informes following *orion* between gemini and canis major.		4	09	40	18	23	14	4
75								
		4	09	13	15	54	21	4
		6	02	11	13	13	14	4
		7	48	51	14	56	54	5
		8	27	11	22	32	38	4
	♋	15	11	48	22	46	00	4
80								

ORION's *River*, in aſtronomy, a conſtellation called alſo *Eridanus*. See ERIDANUS.

ORIS *Columna*. See the article COLUMNA.

ORIS *Diſtortor*. See the article DISTORTOR.

ORIS *Speculum*. See the article SPECULUM.

ORLE, * **ORLET**, or **ORLO**, in architecture, a fillet under the ovolo, or quarter-round of a capital.—See *Tab. Archit. fig.* 28. See alſo FILLET.

* The word is French; formed from the Latin, *orletum*, or *orlum*, of *ora*, a border or liſt.

When it is at the top or bottom of the ſhaft, it is called *cincture*. See CINCTURE.

Palladio alſo uſes *orlo* for the plinth of the baſes of columns and pedeſtals. See PLINTH.

ORLE, in heraldry, is an ordinary in form of a fillet, drawn round the ſhield, near the edge or extremity thereof, leaving the field vacant in the middle.

Its breadth is but half that of the treſſure or bordure, which contain a ſixth part of the ſhield; the *orle* only a twelfth: Add, that the *orle* is its own breadth diſtant from the edge of the ſhield; whereas the bordure comes to the edge itſelf. See BORDURE.

There is ſometimes one *orle*, ſometimes two, and ſometimes three.—When there are three, or more, they take up the whole ſhield.—It is ſometimes borne flory, or counterflory like the treſſure. See TRESSURE.

The form of the *orle* is the ſame with that of the ſhield; whence it reſembles an ineſcutcheon: as repreſented in *Tab. Herald. fig.* 73.

If a round of martlets, cinquefoils, *&c.* be placed about any ordinary, in manner of an *orle*, they are ſaid to be *en orle*, or *orle-wiſe*.

ORLOPE, or **ORLOPP**, in the ſea language, the uppermoſt ſpace or deck in a great ſhip, from the main-maſt to the mizen.

In three decked ſhips, the ſecond and loweſt decks are ſometimes alſo called *orlope*.—See *Tab. Ship*, *fig.* 2. *lit.* I. E. F.

ORNAMENTS, in architecture, expreſs all the ſculpture, or carved work, wherewith a piece of architecture is enriched. See SCULPTURE, *&c.*

ORNAMENTS *in Relievo*, are thoſe carved on the contours of mouldings; as leaves, ſhells, ſcrolls, flowers, *&c.*

ORNAMENTS *in Creux*, are thoſe cut within the mouldings; as eggs, flutes, *&c.* See MOULDING.

Vitruvius and Vignola alſo uſe the word *ornament* to ſignify the entablature. See ENTABLATURE.

Diſtribution of **ORNAMENTS**. See DISTRIBUTION.

ORNITHOLOGY, * that branch of natural hiſtory, which conſiders and deſcribes birds, their natures, kinds, *&c.* See BIRD.

* The word is formed from the Greek ορνις, bird, and λογος, diſcourſe.

We have an excellent *ornithology* of Fr. Willughby, Eſq; and another of Mr. Ray, a poſthumous work, which is chiefly an abridgment of the former, with the addition of his *Ichthyology*; and ſeveral kinds wanting in the other.

Willughby, herein, ſpeaks with aſſurance of a ſwan that lived 300 years; and a gooſe that they were obliged to kill at 80, by reaſon of its miſchievouſneſs.

ORNITHOMANCY, a kind of divination, or method of arriving at the knowledge of futurity, by means of birds. See DIVINATION.

ORNITHOMANCY, among the Greeks, was the ſame with *augury* among the Romans. See AUGURY.

ORPHAN, a child, or minor, deſtitute of father; or that has neither father, nor mother.

Hence the Taborites, or followers of Ziſca, finding themſelves, at his death, without chief or conductor, took the appellation of *orphans*. See TABORITE.

ORPHANS *Money*, or *Tax*. See DUTY.

ORPIMENT, *Auripigmentum*, a mineral, or ſemi-metal, uſually found in copper mines; and ſuppoſed to contain particles of gold; which may be extracted by chymiſtry, but which were never found to countervail the expence. See MINERAL and SEMI-METAL.

Orpiment is found in ſtones, or glebes, of ſeveral ſizes, and figures: its colour is always yellow, intermixed with ſhades of other colours; as green, red, orange, *&c.*

Sometimes it is found almoſt quite red; which is the proper ſandaracha of the ancients. See SANDARACHA.

But that uſually called *red orpiment*, or *red arſenic*, is only the yellow *orpiment* heated to a great degree, and put in a crucible, with oil of hemp-ſeed, olives, or nuts.

Painters, farriers, *&c.* make a great conſumption of this mineral; but as it is found a violent corroſive, and even reputed a poiſon, it muſt be uſed with a great deal of precaution.

Orpiment muſt be choſen of a golden yellow hue, eaſy to ſcale, and the ſcales very thin, ſmall, and ſhining like gold.

Some diſtinguiſh three kinds of *orpiment*; *White*, which is the ſame with arſenic: See ARSENIC. *Yellow*, which is the proper *orpiment*; and *red*, which is ſandarach, or realgar. See REALGAR.

The Indians uſe *orpiment*, corrected with juice of lemons, with good ſucceſs againſt fevers.

ORTEIL, in fortification. See the article BERME.

ORTHODORON, Ορθοδωρον, an ancient Greek long meaſure; being the ſpace from the carpus or wriſt to the tips of the fingers: Rated at 11 inches. See MEASURE.

ORTHODOXY,* a ſoundneſs of doctrine, or belief, with regard to all the points, and articles of faith.

* The word is formed from the Greek ορθος, right, and δοξα, opinion, judgment.

Orthodoxy is uſed in oppoſition to *heterodoxy*, or *hereſy*. See HERESY.

ORTHODOXY, or, *Feaſt of* ORTHODOXY, denotes a ſolemn feaſt in the Greek church, inſtituted by the empreſs Theodora; ſtill held on the firſt Sunday in Lent, in memory of the reſtoration of images in churches, which had been taken down by the Iconoclaſtes. See ICONOCLASTES.

ORTHOGONIAL, ORTHOGONIUS, in geometry, denotes as much as rectangular, or right-angled. See RECTANGULAR, &c.

When the term is referred to a plain figure, it ſuppoſes one leg or ſide to ſtand perpendicular to the other: When ſpoken of ſolids, it ſuppoſes their axis to be perpendicular to the plane of the horizon.

ORTHOGRAPHIC *Projection of the Sphere*, is a repreſentation of the ſeveral points of the ſurface of the ſphere on a plane which cuts it in the middle: the eye being placed at an infinite diſtance, vertical to one of the hemiſpheres.

It is thus called, becauſe the perpendiculars from any point of the ſphere, will all fall in the common interſection of the ſphere with the plane of the projection. See PROJECTION.

ORTHOGRAPHY,* in grammar, the art of ſpelling, that is writing words juſtly, and with all the proper and neceſſary letters. See WRITING and SPELLING.

* The word is formed from the Greek ορθος, right, and γραφη, *ſcriptio*, writing.

Orthography makes one of the greateſt diviſions or branches of grammar. See GRAMMAR.

That diverſity found in moſt of the modern languages, eſpecially the Engliſh and French, between the pronunciation and *orthography*, makes one of the principal difficulties in acquiring them; yet does it ariſe from the ſame ſource as the languages themſelves. See LANGUAGE.

The Gauls, *e. gr.* forming a new language from the ancient Latin, took the liberty to model the words to their fancy: at firſt, indeed, 'tis probable they wrote as they pronounced; but, by degrees, finding that words pronounced with all their letters ſounded harſh, they began to pronounce more ſmoothly. Thus, in ſpeaking, they thought fit to ſoften that harſhneſs reſulting from the concurrence and claſhing of conſonants: but as the *orthography*, or writing, did not offend the ear, it ſtill continued on its former footing.

Attempts have been ſince made to reduce the writing to the pronunciation, or to make us write as we ſpeak; which has occaſioned great diſputes. Pelletier of Mans was the firſt who pleaded for the change of the *orthography*; and after him Maigret, Peter Ramus, de Bois, Menage, and others; but in vain.

They have, however, occaſioned a ſchiſm among writers, which has done more harm than the evil they intended to reform: the French writers being now divided into two parties; one of which retains to the *old*, the other to the *new orthography*.—The latter, F. Buffier obſerves, is the more conſiderable body, yet are theſe divided among themſelves; ſome being for carrying the reformation much farther than others.

The chief matters urged in behalf of the ancient *orthography*, are, that by changing it, we ſhould loſe ſight of the origin and etymology of words borrowed from the Greek and Latin, &c. That it does not matter what characters are uſed to expreſs ſounds in writing, provided one know the relation between thoſe characters and the ſounds they repreſent: that by a neceſſary conſequence of ſuch change, the language would in time be all altered, and we ſhould loſe the uſe of our old authors; as ours, in their turn, would likewiſe become unintelligible.

What is alledged for the new *orthography*, is, its being more commodious, natural, eaſy, ſhort, &c.

Some authors take a middle courſe between the two extremes; retrenching the letters where they are abſolutely uſeleſs, as the *s* in a multitude of words; and yet ſtudiouſly retaining all the letters whereon the etymology has any dependance.

In the Engliſh the *orthography* is more vague, and unaſcertained, than in any other language we know of. Every author, and almoſt every printer, has his particular ſyſtem. Nay, it is ſcarce ſo well with us as that: we not only differ from one another; but there is ſcarce any that conſiſts with himſelf. The ſame word ſhall frequently appear with two or three different faces in the ſame page, not to ſay line. See ENGLISH.

The ancients who have wrote treatiſes of *orthography*, are Velius Longus, Marius Victorinus, Flavius Caper, Caſſiodorus, and Beda. Among the moderns, Torelli, Lipſius, Dauſquius, Scoppa, Valla, and Manutius the younger, have treated on the ſame ſubject.

ORTHOGRAPHY,* in geometry, the art of drawing, or delineating the fore-right plan or ſide of any object; and of expreſſing the heights, or elevations of each part.

* It is called *orthography*, from the Greek ορθος, right, and γραφη, deſcription, from its determining things by perpendicular right lines falling on the geometrical plan: or rather, by reaſon all the horizontal lines here are ſtrait and parallel, and not oblique, as in repreſentations of perſpective.

ORTHOGRAPHY, in architecture, is the elevation of a building; ſhewing all the parts thereof in their true proportion. See ELEVATION.

The *orthography* is either *external* or *internal*.

External ORTHOGRAPHY, is a delineation of the outer face or front of a building; exhibiting the principal wall, with its apertures, roof, ornaments, and every thing viſible to an eye placed before the building.

Internal ORTHOGRAPHY, called alſo *ſection*, is a delineation, or draught of a building, ſuch as it would appear, were the external wall removed. See SECTION.

To draw the ORTHOGRAPHY *of a building.*—Draw a right line for a baſis or ground line, (*Tab. Perſpective, fig.* 13.) AB, and at one end erect a perpendicular AD. Upon AB ſet off the widths and diſtances of the gates, windows, &c. On the right line AD, ſet off the heights of the ſeveral parts viſible in the face of the building, *v. gr.* of the doors, windows, the roof, chimneys, &c. and apply a ruler to each point of diviſion. The common interſections of the right lines drawn from three points, parallel to the lines AB and AD, determine the external *orthography* of the building: and after the ſame manner is the internal *orthography* laid down. See PERSPECTIVE.

ORTHOGRAPHY, in fortification, is the profile, or repreſentation of a work; or a draught ſo conducted, as that the length, breadth, height, and thickneſs, of the ſeveral parts are expreſſed; ſuch as they would appear, if it were perpendicularly cut from top to bottom. See PROFILE, FORTIFICATION, and GEOMETRY.

ORTHOPNŒA,* Ορθοπνοια, in medicine, a great difficulty of reſpiration, wherein the patient is obliged to ſit, or ſtand upright, to be able to breathe. See RESPIRATION.

* The word is compounded of ορθος, right, erect, and πνεω, I reſpire or breathe.

An *orthopnœa* is a ſpecies or degree of an aſthma. See ASTHMA.

It may be cauſed from pus, thick or mucilaginous juices, or polypus's in the bronchia; mercurial, and other fumes, hindering the playing of the lungs; ſtoppage of evacuations; cachexies, ill digeſtions, or whatever affords viſcid chyle, or occaſions the blood to run ſlower through the lungs, either by ſtraitening the canals, or thickening the blood, or hindering the motion of the animal ſpirits, ſo that they cannot elevate the breaſt; or that cauſes the blood to be more rarified, or more in quantity, ſo that there is not ſufficient room to receive it into the veſſels of the lungs.

ORTIVE, ORTIVUS, in aſtronomy.—*Ortive* or *eaſtern amplitude*, is an arch of the horizon intercepted between the point where a ſtar riſes, and the eaſt point of the horizon, or point where the horizon and equator interſect. See AMPLITUDE and HORIZON.

ORVIETA, *Penitents of* ORVIETA. See PENITENTS.

ORVIETAN, a celebrated antidote, or counter-poiſon; ſo called, becauſe invented and propagated by an operator from Orvieta in Italy; who made experiments thereof in his own perſon, on the public ſtage, by taking ſeveral doſes of poiſons. See ANTIDOTE and POISON.

In Charas's *Pharmacopœia* is a method of making *orvietan*; where it appears that venice-treacle is one of the principal ingredients. See THERIACA.

OS, in anatomy. See BONE and MOUTH.

Os *Pubis*,		PUBIS.
Os *Sacrum*,		SACRUM.
Os *Iſchium*,	See	ISCHIUM.
Os *Hyoides*,		HYOIDES.
Os *Femoris*, &c.		FEMUR, &c.

OSCHEOCELE,* Οσχεοκηλη, in medicine, a kind of hernia, wherein the inteſtines or omentum deſcend into the ſcrotum. See HERNIA.

* The word is formed from the Greek οσχεον, ſcrotum, and κηλη, tumor.

OSCHOPHORIA,* in antiquity, feaſts inſtituted by Theſeus, in acknowledgment for his having deſtroyed the Minotaur, and by that means freed his country Athens from the tribute of ſeven young men, which were to be ſent every year into Crete, to be devoured by that monſter. See MINOTAUR.

* The word is formed from the Greek οσχη, branch of a vine, loaden with grapes, and φερω, I bear. Plutarch ſays they

were ſo named, becauſe inſtituted by Theſeus at his return to Athens, which happened to be at the time of vintage.

Some ſay the *oſchophoria* were inſtituted in honour of Minerva and Bacchus, who had aſſiſted Theſeus in his enterprize. Others, that they were in honour of Bacchus and Ariadne.

To celebrate the *oſchophoria*, the young people who had fathers and mothers alive, run to the temple of Bacchus, and that of Minerva, with grapes in their hands. He who arrived there firſt, was the conqueror; and was to perform the ſacrifice, by pouring out of a phial a mixture of wine, honey, cheeſe, flower, and oil.

OSCILLATION, in mechanics, *vibration*; or the reciprocal aſcent, and deſcent of a pendulum. See PENDULUM.

Axis of OSCILLATION, is a right line, parallel to the apparent horizontal one, and paſſing through the centre; about which the pendulum *oſcillates*. See AXIS.

If a ſimple pendulum be ſuſpended between two ſemicycloids, whoſe generating circles have their diameter equal to half the length of the thread; all the *oſcillations*, howſoever unequal, will be iſochronal, or equi-diurnal. See ISOCHRONAL.

The time of the entire *oſcillation* through any arch of a cycloid, is to the time of the perpendicular deſcent through the diameter of the generating circle, as the periphery of the circle to the diameter. See CYCLOID.

If two pendulums move in ſimilar arches, the times of *oſcillations* are in a ſubduplicate ratio of their lengths.

The numbers of iſochronal *oſcillations*, performed by two pendulums in the ſame time, are reciprocally as the times wherein the ſeveral *oſcillations* are performed. See CLOCK.

M. Huygens's whole doctrine of *oſcillation* is founded on this hypotheſis; that the common centre of gravity of ſeveral bodies, connected together, muſt return preciſely to the ſame height whence it fell; whether thoſe weights return conjointly, or whether after their fall, they return ſeparately; each with the velocity it had then acquired. See CENTER *of Gravity*.

This ſuppoſition was oppoſed by ſeveral, and very much ſuſpected by others. And others who inclined to believe it true, yet thought it too daring to be admitted into a ſcience, which demonſtrates every thing.

At length M. James Bernoulli demonſtrated it by ſtrict geometry; by referring the weights to a lever. After his death, a more eaſy and natural demonſtration of the centre of *oſcillation* was advanced by his brother. The ſubſtance whereof may be conceived as follows,

A ſimple pendulum of a determinate length and weight, raiſed to a determinate height, whence it is to fall till it recover its vertical line, employs, in that fall, or demi-vibration, a determinate ſpace of time, which can never poſſibly be either greater or leſs. Which time is neceſſarily ſuch, becauſe the agitative force, *i. e.* the force which produces the motion of the pendulum, is determined in every thing that concurs to the formation thereof: So that it can only cauſe one certain effect.

The agitative force of the pendulum ariſes from three things: 1°. The power or moment of gravity. 2°. The maſs or body tied to the end of the inflexible rod. 3°. The diſtance of that body from the point of ſuſpenſion, or, which is the ſame, the length of the rod or the pendulum.

Now, 1°. The power of gravity, be the cauſe what it will, is that power which makes a body fall, and that, *v. gr.* at the rate of fourteen feet, in the firſt ſecond of time. It is viſible, then, that this force is the effect of a quantity which determines thoſe fourteen feet; and that a heavy body would paſs more or leſs ſpace in that ſame firſt ſecond, if the force of gravity were greater or leſs.

2°. As that force is inherent in each point, or infinitely ſmall part of a body, the greater this body is, or the larger its maſs, the greater quantity of motion or force it has.

3°. The diſtance of the moving body from the point of ſuſpenſion, or the length of the rod, is always the radius of a circle, whereof the moving body deſcribes an arch: And of conſequence the greater the radius is, *cæteris paribus*, the larger arch the body deſcribes. And at the ſame time, the greater height it falls from, the greater velocity it acquires.

Now, the agitative force of the pendulum is only that of the body faſtened to the end of the rod. So that it is the product of the force of the weight, of the maſs of that body, and of its diſtance from the point of ſuſpenſion. The force of gravity therefore being always the ſame; and a body or weight faſtened to the end of the rod, always the ſame; it is impoſſible that two ſimple pendulums of a different length ſhould be iſochronal, or ſhould make their vibrations in the ſame time; for by virtue of thoſe different lengths, the velocities will be unequal, and of conſequence, the times of their vibrations.

But if it be ſuppoſed that there are in nature different powers of gravity; it will then be poſſible that two ſimple pendulums of different lengths ſhould be iſochronal; the one animated by the natural weight, the other by the imaginary one. If the imaginary gravity or weight be greater than the natural one, the pendulum imagined iſochronal to the natural one, will neceſſarily deſcribe a larger ſpace or arch in the ſame time; and of conſequence the weight will be faſtened at a greater diſtance from the point of ſuſpenſion. Though to have an iſochroniſm, the two agitative forces of the two pendulums muſt be equal; yet of the three things which compoſe theſe forces, there are already two greater in the imaginary, than the real pendulum: the third, therefore, *i. e.* the maſs or ball, muſt be diminiſhed in the neceſſary proportion. As the ſpace or arch deſcribed by the imaginary pendulum is greater than that by the natural pendulum, in the ſame ratio as the imaginary gravity is greater than the natural one, and a radius of that arch, greater in the ſame ratio; are two things inſeparable: the two gravities will be always to one another, as thoſe two radii, or the two lengths of the two pendulums; which always gives the expreſſion of the imaginary gravity, and by a neceſſary conſequence, that of the diminiſhed maſs or ball of the imaginary pendulum. If the power of gravity be imagined leſs than that of the natural one, it is eaſy to obſerve how it is to be taken; but that were needleſs in our deſign.

If now there be a compound pendulum, charged with two weights or balls faſtened to the ſame rod; M. Bernoulli conceives each of thoſe weights removed to a greater diſtance from the point of ſuſpenſion, than it was before; but both to the ſame; and, diminiſhed in maſs, in a due proportion: ſo as that both together only make one ſimple pendulum, animated with one weight the expreſſion whereof is had, and iſochronal to the natural compound pendulum.

Thus we ſhall have one ſimple natural pendulum iſochronal to the compound natural one, by having a ſimple natural pendulum iſochronal to the ſimple imaginary pendulum before found; which is very eaſy: ſince as the imaginary gravity is to the natural, ſo is the length of the ſimple imaginary pendulum, to the length of the ſimple natural pendulum; and it is there is the center of *oſcillation* required.

Center of OSCILLATION, in a ſuſpended body, is a certain point therein, each vibration whereof is performed in the ſame manner, as if that point or part alone were ſuſpended at that diſtance from the point of ſuſpenſion.

Or, it is a point, wherein, if the whole length of a compound pendulum be collected; the ſeveral *oſcillations* will be performed in the ſame time as before. See PENDULUM.

Its diſtance, therefore, from the point of ſuſpenſion, is equal to the length of a ſingle pendulum, whoſe *oſcillations* are iſochronal with thoſe of the compound one. See CENTER *of Oſcillation*.

OSCITATION, the act popularly called *yawning*. See YAWNING.

OSCULA, in anatomy, a term uſed for the orifices, or openings of the leſſer veſſels. See ORIFICE, VESSEL, *&c.*

OSCULUM, in the new analyſis,—A circle deſcribed on the point C, as a centre, (*Tab. Analyſis, fig.* 12.) with the radius of the evolute MC, is ſaid to *oſculate*, kiſs, the curve deſcribed by evolution, in M; which point M is called by the inventor Huygens, the *oſculum of the curve*. See EVOLUTE.

The line MC is alſo called the *radius of the oſculum*. See RADIUS.

The evolute BCF is the place of the centers of all the circles that *oſculate* the curve AM, deſcribed by evolution. See EVOLUTION.

The doctrine of the *oſcula of curves* is owing to Monſ. Leibnitz, who firſt ſhewed the uſe of Huygens's evolute in meaſuring the curvature of curves. See CURVE.

OSCULUM *pacis*.—Anciently it was a cuſtom in the church, that in the celebration of maſs, after the prieſt had conſecrated the wafer, and ſpoke the words, *pax domini vobiſcum*, the people kiſſed each other, which was called *oſculum pacis*.

When this cuſtom was abrogated, another aroſe; and while the prieſts ſpoke the words, a deacon or ſub-deacon offered the people an image to kiſs; which they called *pacem*.

OSIANDRIANS, a ſect among the Lutherans, ſo called from Andrew Oſiander, a celebrated German divine. See LUTHERAN.

Their diſtinguiſhing doctrine was, that man is juſtified formally, not by the faith and apprehenſion of the juſtice of Jeſus Chriſt, or the imputation of our Saviour's juſtice, according to the opinion of Luther and Calvin; but by the eſſential juſtice of God. See JUSTIFICATION, *&c.*

Semi OSIANDRIANS, were ſuch among the *Oſiandrians*, as held the opinion of Luther and Calvin with regard to this life; and that of Oſiander, with regard to the other: Aſſerting, that man is juſtified here by imputation, and hereafter by the eſſential juſtice of God. See IMPUTATION.

OSSA, in anatomy. See the article BONE.

OSSICLE, OSSICULUM, *little bone*; a diminutive of *os*, bone, See BONE.

In which ſenſe the term is uſed among anatomiſts.

Botaniſts alſo uſe *oſſiculum* for the ſtone of a cherry, plumb, apricot, or other ſtone-fruit. See FRUIT.

OSSIFICATION, in the animal œconomy, the formation of the bones; but more eſpecially, the converſion of parts naturally ſoft to the hardneſs and conſiſtency of bones. See BONE.

Bones, Dr. Drake argues, are formed out of the moſt comminuted or broken part of the blood; ſince we ſee that the blood of old men, which by a long courſe of circulation, becomes in a manner unfit for the common office of nutrition, will however *oſſify*, and convert into bones, many of the tendons and ligaments, and even the coats of the veſſels themſelves, whoſe ſubſtance being next to the bones the moſt compact, admits only of the ſmalleſt particles of the blood; which therefore ſooneſt become *oſſeous*, as they are frequently found. See NUTRITION, BLOOD, *&c.*

OSTENSIO, a tax anciently paid by merchants, *&c.* for leave to ſhew, or expoſe their goods to ſhow and ſale in markets. See SCAVAGE.

OSTENSIVE *Demonſtrations*, ſuch as plainly and directly demonſtrate the truth of any propoſition.

In which they ſtand diſtinguiſhed from *apagogical* ones, or reductions *ad abſurdum*, or *ad impoſſibile*, which prove the truth propoſed, by demonſtrating the abſurdity or impoſſibility of the contrary. See DEMONSTRATION.

Oſtenſive demonſtrations are of two ſorts:—Some barely, but directly, prove the thing to be; which they call ὅτι.—others demonſtrate the thing from its cauſe, nature, or eſſential properties; and theſe are called in the ſchools, διότι.

OSTEOCOLLA, Οϛεοκολλα, in natural hiſtory, *glue-bone*; a white, or aſh-coloured ſparry ſtone, ſhaped like a bone, and by ſome ſuppoſed to have the quality of uniting broken bones; on which account it is ordered in ſome plaiſters.

OSTEOCOPOS,* or OSTOCOPOS, is uſed by ſome for an acute pain, wherein the patient is affected as if his bones were breaking.

* The word is formed from the Greek οϛεον, bone, and κοπτειν, to break, cut, or cleave.

It ariſes from a ſharp humour vellicating the perioſteum, or membrane wherewith the bones are inveſted.—It is particularly incident to ſcorbutic and pocky perſons.

OSTEOLOGY,* Οϛεολογια, that part of anatomy which teaches the nature and fabric of the bones of the human body; their form, diſpoſition, articulation, uſe, *&c.*—See *Tab. Anat. P.* I. Oſteol. See alſo the article ANATOMY.

* The word is formed from the Greek οϛεον, bone, and λογος, diſcourſe.

Dr. Clopton Havers has given us an *oſteology* in good repute. See BONE.

OSTIA, in anatomy, a term uſed indifferently with *oſcula*, *orifices*, &c. for the mouths or apertures of the veſſels of the body: As the *oſtia vaginæ*, &c. See VAGINA, ORIFICE, *&c.*

OSTRACISM,* Οϛρακισμος, a kind of popular judgment, or condemnation among the Athenians; being a ſentence of baniſhment againſt perſons whoſe too great power rendered them ſuſpected to the people; or whoſe merit and credit gave umbrage leſt they ſhould attempt ſomething againſt the public liberty, and their power degenerate into tyranny. See BANISHMENT.

* It had the denomination *oſtraciſm*, in regard the people gave their votes, by writing the name of the perſon to be baniſhed in a ſhell, by the Greeks called οϛρακον, and caſting the ſhells into an urn.

This kind of baniſhment had nothing infamous in it, as not being for any crime; but, on the contrary, was held very honourable, as it was a mark of popularity.

It laſted for ten years, but the baniſhed perſon had the full enjoyment of his eſtate all the time.

Oſtraciſm was null, unleſs there were 6000 citizens in the aſſembly of the people whereby it was enjoined.

OSTRACITIS, Οϛρακιτης, in natural hiſtory, a kind of cruſty ſtone, reddiſh, and in form of an oiſter-ſhell, and, like that, ſeparable into laminæ; found in ſeveral places in Germany; and held of good ſervice in the gravel.

Dr. Home, in the *Philoſ. Tranſact.* ſays, it rather diſſolves the little ſtones than forces them out, as not being remarkably diuretic.—He adds, that he preſcribes it in powder with a third part of flores chamæmeli.—The doſe is from half a drachm to a whole one, in white wine.

OSTRACITIS, is alſo the name of a kind of cadmia, found at the bottom of the furnaces where copper is purified. See CADMIA.

It is very heavy, and in ſtructure reſembles an oiſter ſhell, whence its name.—It is eſteemed aſtringent and deterſive; and is an ingredient in ſeveral unguents.

OTACOUSTIC,* a term applied to inſtruments which aid, or improve the ſenſe of hearing. See HEARING.

* The word is formed from the Greek ους ωτος, ear, and ακουω, I hear. See ACOUSTIC.

OTALGIA,* Ωταλγια, in medicine, denotes a pain in the ear, eſpecially that in the farther parts of the auditory paſſage. See EAR.

* The word is formed from the Greek ους ωτος, ear, and αλγος, pain.

The *otalgia* uſually ariſes from an inflammation; ſometimes from a ſharp ſerous humour, which vellicates the membrane wherewith the canal of the ear is lined. It is ſometimes alſo occaſioned by a wound or ulcer in that part, or from ſome pungent matter gathered within the ear.

The ſmoke of tobacco conveyed into the ear through a pipe, Etmuller recommends as good to aſſuage this pain; as alſo millepedes in a proper vehicle of oil.

The *otalgia* ſometimes alſo ariſes from a worm in the ear; which is to be drawn out alive, or killed within.—Warm milk tempts the worm to come forth; wormwood juice deſtroys it within. See WORMS.

OTIOSI, in the Hebrew cuſtoms. The learned are exceedingly divided about the *decem otioſi*, ten idle perſons ſpoke of in the Jewiſh ſynagogues.

Some ſay, they were the three preſidents and the ſeven readers; others, that they were ten perſons hired to attend conſtantly at the ſynagogue, becauſe, without the number ten, it could be no regular ſynagogue, or legal aſſembly; ſo that the *decem otioſi* were ten idle folks kept in pay, to form, by their preſence, a legal ſynagogue, or quorum. See SYNAGOGUE.

Vitringa, in his *Archi-Synagoga*, refutes this opinion; and will have the *otioſi* to have been ten directors, or officers in the ſynagogue.—He ſhews that each ſynagogue had its directors; that the number was greater or leſs according to the dignity of the ſynagogue; that the ſmalleſt had at leaſt two; that, from the earlieſt times, each ſynagogue had its chief, called *archi-ſynagogus*, who had two collegues, to be preſent at the ceremonies, and other acts of religion, and to take care every thing were done with decency; but that the archi-ſynagogus reſerved to himſelf the power of teaching: That beſides theſe three, the archi-ſynagogus named ſeveral readers who read in the ſynagogue every ſaturday; and that theſe made the *decem otioſi* of the ſynagogue; ſo called, becauſe being diſengaged from all other employment, their whole attendance was on divine ſervice.

OTTER *Hunting*. See the article HUNTING.

OVA, *Eggs*, in natural hiſtory. See EGG.

OVA, in anatomy, *&c.* are little ſpherical bodies, in form of bladders, or bubbles; conſiſting each of two concentric membranulæ, replete with a limpid humour like the white of an egg, found under the external membrane of the ovaries of women, and connected to the minute orifices of the veſicles that compoſe the ſubſtance of the *ovaries* themſelves, by a calix. See OVARY.

After the uſe of venery, the *ova* ſwell ſenſibly, become more and more pellucid, their membranes grow thicker, and at length raiſe that of the ovary, in form of papillæ; till, at laſt, breaking the membrane of the ovary, they are detached from their calix, taken into the cavities of the fallopian tubes, and thence conveyed into the womb; where, being cheriſhed and impregnated with the male ſeed, they commence embryo's; or, for want of that, are again ejected. See CONCEPTION, FALLOPIAN *Tube*, MATRIX, EMBRYO, *&c.*

OVA, in architecture, are ornaments in form of eggs, carved on the contour of the ovolo, or quarter-round; and ſeparated from each other by anchors, or arrows heads. See OVOLO and QUARTER-*Round*.

The Engliſh uſually call theſe ornaments *eggs and anchors.*—Inſtead of eggs, the ancients ſometimes carved hearts; on which foundation it was, that they introduced arrows; to ſymbolize with love.

OVAL, *Ellipſis*; an oblong curvilinear figure, with two unequal diameters: or a figure incloſed with a ſingle curve line, imperfectly round, its length being greater than its breadth; like an egg, whence its name. See OBLONG.

The proper *oval*, or egg-ſhape, is an irregular figure, being narrower at one end than the other; in which it differs from an *ellipſis*, which is the mathematical *oval*, and equally broad at each end.

The common people confound the two together; the geometricians alſo call the *oval*, a *falſe ellipſis*. See ELLIPSIS.

The method of deſcribing an *oval* chiefly uſed among workmen, is, by a cord, or ſtring, as E *f* M, (*Tab. Geomet. fig.*

fig. 48.) whoſe length is equal to the greater diameter of the *oval*, and which is faſtened by its extremes to two points or nails E, *f*, planted in its longer diameter; by which means the *oval* is made ſo much the longer, as the two points or nails are farther apart.

OVAL *Column*. See the article COLUMN.

OVAL *Crown*. See the article CROWN.

OVALE *Foramen*, in anatomy. See FORAMEN *Ovale*.

OVARY, OVARIUM, in anatomy, that part of a female animal wherein the *ova*, or eggs are formed, and lodged.—See *Tab. Anat.* (Splanch.) *fig.* 11. *lit.* h h. See alſo OVA, and EGG.

The *ovaries* in women are alſo called *teſtes muliebres*, female teſticles; from their uſe, which the ancients ſuppoſed analogous to that of the teſticles in men. See TESTICLES.

They are two in number; lying near the ends of the fallopian tubes, two fingers diſtance from the uterus, to which they are connected by a ſtrong ligament, called *vas deferens*, and in ſome meaſure by the fallopian tubes, and the broad ligament about the region of the ilium. They are faſtened to the peritonæum by the ſpermatic veſſels, by which means they are kept ſuſpended about the ſame height with the fundus uteri. See MATRIX.

Their figure is ſemi-oval; their ſurface ſomewhat uneven; their ſize different in the different ſtages of life. At the time of puberty, when largeſt, they uſually weigh a drachm and half.

They are covered with a common membrane from the peritonæum; their ſubſtance is whitiſh, compoſed of a number of little thin membranous and ſlender fibres, interwoven with arteries, veins, and nerves.

Among theſe fibres and veſſels are interſperſed a number of little round bodies, like bladders; full of a limpid ſubſtance, and called *ova*, or eggs, of great uſe in generation. See OVA and GENERATION.

OVATION, OVATIO, in the Roman hiſtory, a leſſer triumph allowed to commanders, for victories won without the effuſion of much blood; or for the defeating of rebels, ſlaves, pyrates, or other unworthy enemies of the republic. See TRIUMPH.

Their entry was on foot, ſometimes on horſeback; but never in a chariot: and they wore crowns of myrtle, called *ovales*; having all the ſenate attending in their retinue.

The denomination *ovatio*, according to Servius, is derived from *ovis*, ſheep; becauſe the conqueror ſacrificed a ſheep on this occaſion to Jupiter; whereas in the greater triumph, they ſacrificed a bull. Others derive it from the ſound or din of the acclamations and ſhouts of joy made by the people in honour of the ſolemnity; the people and ſoldiery, on this occaſion, redoubling the letter *O*, as in the greater triumph they did the words *Io Triomphe*.

The *ovation* was firſt introduced in the year of Rome 250, or 251, in honour of the conſul Poſthumius Tubertus, after his defeating the Sabines.

OVELTY. See the article OWELTY.

OVER-FLOWING, or *Inundation*. See RIVER and DELUGE.

The *over-flowing of lands* uſed by our husbandmen, is chiefly effected by diverting the ſtreams of rivers, brooks, land-floods, or ſprings, or ſome part of them, out of their natural channel.

When the ſtreams lie too low for this. they are made uſe of to turn ſuch engines as may raiſe a ſufficient quantity of water to do it. The moſt uſual engine, on this occaſion, is the Perſian wheel. See PERSIAN *Wheel*.

OVER-RAKE, in the ſea-language.—When a ſhip riding at anchor, ſo over-beats herſelf into a head-ſea, that ſhe is waſhed by the waves breaking in upon her; they ſay, the waves *over-rake* her. See RAKE.

OVER-REACH, in the manage, is when a horſe ſtrikes his hind feet againſt his fore.

The word is alſo uſed for a ſtrain, or painful ſwelling of the maſter-ſinew of an horſe; occaſioned by ſuch *over-reach*.

OVER-RULING *an Objection*, in law, is the rejecting, or ſetting it aſide by the court.

OVER-RUNNING, among printers. See PRINTING, and CORRECTING.

OVERSAMESSA, an ancient fine or penalty, impoſed before the ſtatute of hue and cry, on ſuch perſons, as hearing of a murder or robbery, did not purſue the malefactor. See HUE.

OVERT *Act*,* a term in law, ſignifying an *open act*; or an act capable of being manifeſted. and proved.

* The word is formed from the French, *ouvert*, open.

In which ſenſe it is diſtinguiſhed from an *intentional* act.

OVERT *Pound*. See the article POUND.

OVERT *Word*, denotes a plain open word, not to be miſtaken.

OVERTURE, or OUVERTURE, *opening*, or *preluding*; a term uſed for the ſolemnities at the beginning of a public act, or ceremony; as of an opera, tragedy, concert of muſic, &c.

The *overture* of the theatre, or ſcene, is a piece of muſic, uſually ending with a fugue.

The *overture* of the jubilee, is a general proceſſion, &c.

OVI *Albumen*. See the article ALBUMEN.

OVICULUM, in the ancient architecture, a little *ovum*, or egg. See OVA.

Some alſo uſe the word *oviculum* for *ovolo*. See OVOLO. Baldus will have this to be the Lesbian *aſtragal* of Vitruvius. Daviler. See ASTRAGAL.

OVILIA, or *Septa*, in ancient Rome, a place in the Campus Martius, at firſt railed in, like a ſheep's pen; whence its name.—Afterwards it was mounted with marble, beautified with walks and galleries; as alſo with a tribunal, or ſeat of juſtice.

Within this precinct, or incloſure, the people were called to give their ſuffrages for the election of magiſtrates. See FIELD *of Mars*.

The aſcent into the *ovilia* was not by ſtairs, but by pontes, a ſort of bridges made for the time; every curia, tribe, and century, as the aſſembly was centuriate or tribute, &c. having its proper bridge.—Whence the proverb, *de ponte dejiciendus*, where a perſon is to be barred from giving his vote. See COMITIA.

OVIPAROUS, in natural hiſtory, a term applied to ſuch animals as produce their young, *ab ovo*, from eggs; as birds, inſects, &c. See EGG, INSECT, ANIMAL, &c.)

The *oviparous* kind ſtand in oppoſition to thoſe which bring forth their young alive, called *viviparous* animals; as, man, quadrupeds, &c. See GENERATION, VIVIPAROUS, &c.

Oviparous Animals, may be defined to be ſuch as conceive eggs, which they afterwards bring forth; and from which, by the incubation of the parent, or ſome other principle of warmth and fermentation, at length ariſe animals; which, after they have ſpent the moiſture or humour they were ſurrounded withal, and are grown to a ſufficient bulk, firmneſs, and ſtrength, break their ſhell, and come forth.

The *oviparous* kind, beſide birds, include divers ſpecies of terreſtrial animals; as, ſerpents, lizzards, tortoiſes; crabs, lobſters, frogs, &c. See OVARY.

OUNCE,* UNCIA, a little weight, the ſixteenth part of a pound averdupois; and the twelfth of a pound troy. See WEIGHT and POUND.

* The word is derived from the Latin *uncia*, the twelfth part of any whole, called *as*; particularly in geometrical meaſures, an inch, or the twelfth part of a foot. See INCH and AS.

The *ounce averdupois* is divided into eight drachms, and the drachm into three ſcruples. The *ounce troy* into twenty peny weights, and the peny weight into twenty-four grains. See DRACHM, PENNY *Weight*, &c.

The *ounce*, *once*, makes the eighth part of the French mark, and is divided into three gros, or drachms; the drachm into three peny weights, or ſcruples; and the ſcruple into twenty-four grains: each grain computed to weigh a grain of wheat. See GRAIN, &c.

All precious merchandizes, as gold, ſilver, ſilk, &c. are ſold by the *ounce*. See GOLD, SILVER, STANDARD, &c.

OUNCE *Pearls*, are thoſe too ſmall to be ſold by tale; uſually called *ſeeds of pearl*. See PEARL.

OUNCE *Cottons*, are certain cottons brought from Damaſcus, of a kind and quality ſuperior to the reſt. See COTTON.

OVOLO, OVUM, in architecture, a round moulding, whoſe profile, or ſweep, in the Ionic and Compoſite capitals, is uſually a quadrant of a circle; whence it is alſo popularly called the *quarter-round*. See QUARTER-*Round*.

It is uſually enriched with ſculptures among the ancients, in form of cheſnut-ſhells; whence Vitruvius, and others of the ancients, call it *echinus*, *cheſnut-ſhell*.—See *Tab. Archit. fig.* 5. *fig.* 24. *lit.* a. m. *fig.* 28. *lit.* p. *fig.* 32. *lit.* g. *fig.* 40. *lit.* e. See alſo ECHINUS.

Among us, it is uſually cut with the repreſentation of eggs, and anchors, or arrows-heads, placed alternately; whence its Italian name *ovolo*, Latin *ovum*, and French *oeuf*, q. d. egg. See OVA.

OUR *Lady*. See the article NOTRE DAME.

OUR *Lady of the Thiſtle*. See the article THISTLE.

OURAN, or URAN SOANGUS, the name of a ſect of magicians, in the iſland Gromboccanore, in the Eaſt-Indies.

The word implies *men-devils*; theſe people, it ſeems, having the art of rendering themſelves inviſible, and paſſing where they pleaſe, and by that means, doing infinite miſchief: for which reaſon the people hate and fear them mortally, and always kill them on the ſpot, when they can take them.

In the *Portugueſe* hiſtory, printed 1581, *folio*, mention is made of a preſent made by the king of the iſland, to a Portugueſe officer, named Brittio, conſiſting of twelve of theſe *ourans*; with whom he made incurſions on the people of Tidore, killed great numbers, &c.

To try whether, in effect, they had the faculty aſcribed to them, one of them was tied by the neck with a rope, without any poſſibility of diſengaging himſelf by natural means: yet in the morning it was found he had ſlipped his collar.

But, that the king of Tidore might not complain, Brittio made war on him with devils, it is ſaid he diſmiſſed them at length into their own iſland.

OUSTED, * in our ancient law-books, a being removed, or put out of poſſeſſion.

* The word is formed from the French, oſter, to remove, take away.

OUSTER *le Main*, *amovere manum*, in law, denotes a livery of lands out of the king's hands; or a judgment given for him that traverſed or ſued a monſtrans le droit. See Monstrans *le droit*.

When it appeared upon the matter diſcuſſed, that the king had no right or title to the land he had ſeized; judgment was given in chancery, that the king's hands be amoved.—Hereupon, *ouſter le main*, or *amoveas manum* was awarded to the eſcheator, to reſtore the land, *&c.*

But now all wardſhips, liveries, *ouſter le mains*, *&c.* are taken away and diſcharged by ſtatute, 12 Car. 2.

Ouster *le Mer*, * in law, a cauſe of excuſe or eſſoign; where a man not appearing in court upon ſummons, it is alledged that he is beyond the ſeas.

* The term is compounded of the old French, *oultre*, and *le mer*, q. d. beyond the ſea.

OUTER *Rainbow*. See the article Rainbow.

OUTFANGTHEFE, * a privilege whereby a lord was enabled to call any man dwelling in his fee, but taken for felony in another place, to judgment in his own court.

* The word is formed from the Saxon, *ut*, *extra*, without; *fang*, *capio vel captus*; and *theof*, thief: q. d. *Fur extracaptus*. Spelm.

OUT-LAW, Utlagatus, one deprived of the benefit of the law; or out of the king's protection. See Outlawry.

Bracton ſays, an *out-law* forfeits every thing he has; and that from the time of his *outlawry*, he wears a wolf's head; and any body may kill him *impune:* eſpecially if he defend himſelf, or fly.—But in the beginning of king Edward the third's reign, it was reſolved by the judges, that it ſhould not be lawful for any man, but the ſheriff alone (having lawful warrant therefore) to put to death a man *out-lawed*. See Wolfeshead.

OUTLAWRY, or Utlawry, Utlagaria, the puniſhment of him, who being called into law, and lawfully ſought, does (after an original writ, and three writs of capias, alias & pluries, returned by the ſheriff, with a non eſt inventus, and an exigent with a proclamation awarded thereupon) contemptuouſly refuſe to appear. See Outlaw.

He muſt alſo be called at five county court-days, a month between each one; and if he appear not in that time, *pro ex-lege tenebitur*, *cum principi non obediat*, *nec legi*, *& extunc exlegabitur*; *i. e.* he ſhall be pronounced to be out of the king's protection, and deprived of the benefit of the law.

The effect of which is, if he be *out-lawed* at the ſuit of another, in a civil cauſe, he ſhall forfeit all his goods and chattels to the king; and if on felony, all his lands and tenements, which he has in fee, or for life, and all his goods and chattels.—And then, according to Bracton, he may periſh without law, *&c.*

A minor, or a woman, cannot be *out-lawed*.—A woman is ſaid to be waived, where a man is *out-lawed*. See Waive.

Clerk of the Outlawries. See the article Clerk.

OUT-PARTERS, in our ancient writers, were a ſort of thieves, or highwaymen, on the frontiers of Scotland, who rode about to fetch in ſuch things as they could lay hold on. See Intakers.

OUT-RIDERS, are bailiffs errant, employed by ſheriffs, or their deputies, to ſummons people in the remoteſt parts of their hundreds, to the county or hundred-courts. See Bailiff.

OUTWARD *flanking Angle*. See Angle.

OUT-Works, in fortification, all thoſe works made withoutſide the ditch of a fortified place, to cover and defend it. See Works and Fortification.

Outworks, called alſo *advanced* and *detached works*, are thoſe which not only ſerve to cover the body of the place, but alſo to keep the enemy at a diſtance, and prevent his taking advantage of the cavities and elevations uſually found in the places about the counterſcarp; which might ſerve them either as lodgments, or as rideaux to facilitate the carrying on their trenches, and planting their batteries againſt the place.—Such are, ravelins, tenailles, hornworks, queue d'arondes, envelopes, crown-works. See Tenaille, Hornwork, *&c.*

The moſt uſual of theſe are ravelins, or half-moons, formed between the two baſtions, on the flanquant angle of the counterſcarp, and before the curtin, to cover the gates and bridges. See Ravelin, and Demi-Lune.

OUVERTURE. See the article Overture.

OVUM *Philoſophicum*, or *Chymicum*, is a glaſs body, of an oval form, reſembling an egg; uſed for the ſublimation of mercury.

OWELTY, or Ovelty *of ſervices*, in our law-books, an equality of ſervices; as when the tenant paravail owes as much to the meſn, as the meſn does to the lord paramount. See Service.

OWLER, a maſter of a ſhip, or other perſon, who conveys wool, or other prohibited goods in the night, to the ſea-ſide, in order to ſhip them off, contrary to law. See Running.

The name is derived hence, that, like *owls*, they only ſtir abroad in the night-time.

OWSE, among tanners, is oaken bark beaten, or ground ſmall; to ſerve in the preparation of leather. See Bark and Tanning.

OXGANG, * or Oxgate *of Land*, is ordinarily taken, in our old law-books, for fifteen acres; being as much land as it is ſuppoſed one ox can plough in a year.

* *Bovata terræ*, q. d. *quantum ſufficit ad iter vel actum unius bovis*.

In Lincolnſhire they ſtill corruptly call it *oskin* of land.

OX SPAVIN. See the article Spavin.

OXYCRATE, * Oxycratum, in pharmacy, *&c.* a mixture of water and vinegar.

* The word is Greek, *οξυκρατον*, formed of *οξυς*, ſharp, ſour, and *κεραννυμαι*, I mix.

The uſual proportion is one ſpoonful of vinegar to five or ſix of water.

Oxycrate is proper to aſſwage, cool, and refreſh.—They make fomentations of *oxycrate*, clyſters of *oxycrate*, *&c.*

OXYCROCEUM, * in pharmacy, a preparation much uſed in plaiſters, for fractures, and to form callus's; compoſed chiefly of ſaffron, with gums diſſolved in vinegar.

* The word is formed from the Greek, *οξυς*, ſharp, ſour, and *κροκος*, ſaffron.

OXYGALA, * *Οξυγαλα*, *Sour milk*. See Milk.

* The word is formed from the Greek, *οξυς*, ſharp, ſour, and *καλα*, milk.

The Turks uſe this as a popular drink, and call it *igur*.—Vigenere ſays, they drink ſour milk diluted with water, which is found to cool and nouriſh much better than the milk alone.

OXYGONIUS, Oxygonous, in geometry, *acute-angled*; a figure conſiſting wholly of acute angles, or angles leſs than 90 degrees. See Acute.

The word is chiefly applied to triangles, where the three angles are all acute, or leſs than 90 degrees each. See Triangle.

OXYMEL, * *Οξυμελι*, in pharmacy, a mixture of honey and vinegar, boiled to the conſiſtence of a ſyrup.

* The word is formed from the Greek, *οξυς*, ſour, and *μελι*, *mel*, honey.

There are two kinds of *oxymel*; the one *ſimple*, the other *compound*.

Simple Oxymel is compoſed of two parts of good honey, and one of white-wine vinegar, boiled into the conſiſtence of a ſyrup: proper to incide and ſcour any phlegm adhering to the throat and breaſt.

Compound Oxymel only differs from the *ſimple*, in that to the honey and vinegar, they add the decoction of the five greater opening roots, with the ſeeds of ſmallage, parſley, and fennel. It is uſed to open obſtructions of the liver and ſpleen.

OXYREGMIA, * *Οξυρεγμια*, in medicine, a ſourneſs of the ſtomach-liquor, occaſioning acid belches.

* The word is formed from *οξυς* and *ερευγω*, *ructo*. See Ructation.

OXYRRHODON, * or Oxyrrhodinum, a mixture of two parts of oil of roſes, and one part of vinegar, ſtirred together for ſome time.

* The word is compoſed of the Greek *οξυς*, ſour, and *ροδον*, roſe.

To theſe are ſometimes added diſtilled waters.—It is uſed for inflammations, and to dry up tetters.

Scultetus preſcribes it as follows: two whites of eggs beaten, one ounce and half of vinegar of roſes, four ounces of roſe-water, and two ounces of oil of roſes.

OXYSACCHARUM, * *Οξυσακχαρον*, a liquid medicine compoſed of ſugar and vinegar.

* The word is compounded of *οξυς*, ſour, and *σακχαρον*, ſugar.

The name is more peculiarly given to a ſyrup prepared with vinegar, the juice of ſour pomegranates, and ſugar; uſed to cool, refreſh, and reſiſt the malignity of peccant humours.

OYER, ſeems to have been anciently uſed for what we call *aſſiſes*. See Assise.

OYER *and Terminer*, * a commiſſion directed to the judges and other gentlemen of the county to which it is iſſued, by virtue whereof they are empowered to hear and determine treaſons, and all manner of felonies and treſpaſſes. See JUSTICE, COMMISSION, *&c.*

* The term is French, and literally denotes to hear and determine.—In our ſtatutes it is ſometimes wrote *oyer and determiner*.

It is the firſt and largeſt of the five commiſſions, by which our judges of aſſize do ſit in their ſeveral circuits. See ASSISE.

Anciently it was only in uſe upon ſome ſudden outrage or inſurrection in any place.

OYER *de Record*, is a petition made in court, praying that the judges, for better proof ſake, will be pleaſed to hear, or look upon any record.

In the like ſenſe one may demand *oyer* of a bond, deed, covenant, or the like.

O YES, a corruption of the French, *Oyez*, hear ye; being a term, or formula, whereby the cryers, in our courts, enjoin ſilence, or attention, ere they make proclamation of any thing.

OZÆNA, in medicine, a putrid and ſtinking ulcer, in one or both noſtrils; wherein the humour is very acrid, or corroſive, ſanious, and ſometimes mixed with a bloody mucus. See ULCER.

* The word is Greek, ὀζαινα, which ſignifies the ſame thing.

It ſometimes proceeds from neglected, or ill-managed wounds, contuſions, *&c.* in the noſtrils; eſpecially in ſcorbutic, ſcrophulous, or venereal habits; and ſometimes follows the ſmall-pox.

It often ſpreads and eats through the alæ; and at other times preys into the ſeptum naſi, cartilage, and os palati; eſpecially in venereal caſes. Whence the great danger of the noſe in that diſtemper. See VENEREAL.

* * *

P.

P.

P, A conſonant, and the fifteenth letter in the Engliſh Alphabet, ſee LETTER, CONSONANT, *&c.*

When the *P* is followed with an *H* in the ſame word, it has the ſound of an *F*; thus *Ph*iloſophy is pronounced *F*iloſophy.

P and *B* are ſo like each other, that Quintilian declares, that in the word *obtinuit*, his reaſon required him to put a *b*, but that his ears could hear nothing but a *p*, *optinuit*: hence in antient inſcriptions, and old gloſſaries, it appears, theſe two letters have been often confounded. See *B*.

Several nations ſtill pronounce one for the other, the Germans particularly, who ſay, *ponum vinum*, for *bonum vinum*.

Plutarch obſerves, it was uſual for thoſe of Delphos to ſay βατειν for πατειν, βικρον for πικρον; and among the Latins, as often as an *s* followed, the *b* was changed into a *p* as *ſcribo*, *ſcripſi*.

P, in the Italian muſic, frequently repreſents *piano*; which is what in our muſic we call *ſoft*, i. e. the force of voice or inſtrument is to be diminiſhed, ſo as to make a kind of echo.

P P ſignifies *piu piano*, i. e. more ſoft, or a ſecond echo weaker or more remote than the former: and *P P P* ſignifies *pianiſſimo* ſofteſt of all, or a third echo, the voice being, as it were, loſt in the air.

P M, among aſtronomers, is frequently uſed for *poſt meridiem*, or afternoon; and ſometimes for *poſt mane*, after the morning, *i. e.* after midnight. See MORNING.

P was alſo uſed among the ancients as a numeral letter, ſignifying the ſame with the *G*, *viz.* an hundred; according to the verſe of Ugutio.

> *P ſimilem cum G numerum monſtratur habere.*

Though Baronius thinks it rather ſtood for ſeven— See what has been obſerved, with reſpect to theſe numeral letters in general, under the letter *A*.

When a daſh was added a-top $\overline{P}$, it ſtood for four hundred thouſand.

St. Jerome obſerves, on Daniel, that the Hebrews had no *P*; but that the *ph* ſerved them inſtead thereof: adding, that there is but one word in the whole bible read with a *P*, viz. *apadno*.

P, in medicinal preſcription, is uſed for *Pugil*, or the eighth part of a handful. See PUGIL.

P Æ ſignifies *partes æquales*, equal parts of any ingredients; otherwiſe denoted by *ā* or *ana*. See ANA.

P P ſignify *pulvis patrum*, i. e. Jeſuit's powder, or the cortex peruvianus in powder, which is ſo called, becauſe firſt brought into Europe by thoſe fathers. See CORTEX.

PABULUM is ſometime uſed among naturaliſts for fewel; or that part in combuſtible bodies, which the fire immediately feeds or is ſupported by. See FIRE.

The oily or ſulphurous part of fuels is the only proper *pabulum.* It is that alone, wherein fire can inhere. See FEWEL, SULPHUR, *&c.*

PACALIA, a feaſt held among the ancient Romans, in honour of the goddeſs *Pax* peace. See PEACE.

Alnhelmus, *de Laud. Virgin.* ſpeaking of the impure feſtivals and ceremonies of the heathens calls one of them *pœnalia*; which paſſage Gronovius charges as faulty, alledging, that there was no feaſt of that name, but that it ſhould have been *Pacalia*, or perhaps *Palilia*. See PALILIA.

The antients, who perſonified, and even deified every thing, were not forgetful of peace: ſhe had an altar at Rome, and a ſtately temple; and religious Rites were paid her with great ſolemnity.

PACE, PASSUS, *Step*; a meaſure taken from the ſpace between the two feet of a man in walking. See MEASURE.

The *ordinary Pace* of a man is two foot and a half; though many reckon it a yard: the *geometrical* or *German*, called alſo the *greater Pace*, is five feet. See FOOT.

The ancient Roman and modern Italic mile conſiſts of a thouſand *paces*, *mille paſſus*. The French league is 3000 *paces*, the German 4000. See MILE, LEAGUE, *&c.*

PACE, in the manage, is a certain manner of motion, or progreſſion of a horſe. See HORSE.

The natural paces of a horſe are three, *viz.* the walk, trot and gallop: to which may be added an amble; becauſe ſome horſes have it naturally. See under each its proper article, TROT, GALLOP, *&c.*

For the *artificial paces*, ſee the article AIRS.

Horſes that mix their *paces*, *i. e.* ſhuffle betwixt a walk and amble, *&c.* are ſeldom of any value. The defect proceeds from their fretful, fiery temper: and ſometimes from a weakneſs either in their reins or legs.

PACE is more particularly underſtood of that eaſy low motion wherein the horſe raiſes the two feet of the ſame ſide at a time; called alſo *amble*. See AMBLE.

PACIFIC, ſometimes peaceful, or free from troubles, tumults, *&c.* See PEACE.

Geographers call the South Sea, *mare pacificum*, the *pacific ocean*; as being leſs infeſted with ſtorms than the atlantic. M. Frezier affirms, it does not deſerve that appellation; and that he has ſeen as violent tempeſts therein as in any other ſea: but Magellan happening to have a very favourable wind, and not meeting with any thing to ruffle him, when he firſt traverſed this vaſt ocean in 1520, gave it the name which it has retained ever ſince. Maty, however, adds, that the wind is ſo regular, that the veſſels would frequently go from Acapulco to the Philippine Iſlands, without ſhifting a ſail.

PACIFIC *Letters*, *Literæ* PACIFICÆ, in the ancient church, was a denomination given to all ſorts of letters teſtimonial, given by the biſhop or chorepiſcopus to their prieſts, when they had occaſion to travel abroad; certifying that the bearer was a catholic, and in communion with the church.

The life of pope Sixtus I. taken from the pontifical of pope Damaſus, mentions that pope as the firſt who introduced thoſe letters called *Formatæ*, *Canonicæ*, *Commendatitiæ*, *Communicatoriæ*, *Eccleſiaſticæ*, *&* *Pacificæ*.

PACIFICATION the act of reſtoring, or re-eſtabliſhing the public peace, and tranquillity. See PEACE.

The word is particularly appropriated to the periods put to the religious broils raiſed in France, in the year 1562, by the edict of Nantz; and the civil commotions, between the Engliſh and Scots, ended in 1638. See EDICT.

PACIFICATOR is commonly underſtood in the ſame ſenſe with Mediator, viz. for one who endeavours to reconcile princes, or powers at variance.

Wicquefort makes a difference between Mediator, and *Pacificator.*—The peace being concluded between France and England, in 1621. the inſtruments on each ſide were put in the hands of certain embaſſadors, who had been employed as *Pacificators*, not as Mediators; to be kept till ſuch time as the ratifications had been exchanged.—So the archbiſhop of Piſa, the duke of Tuſcany's embaſſador at Madrid, was never eſteemed a Mediator, though the French Embaſſadors allowed him to be preſent at the conferences held with the commiſſioners of Spain, to act as a *Pacificator* of the differences between them. The grand duke had not offered his mediation; nor would *France* have accepted it. Wicquefort, P. 2. § 11.

PACK in commerce.—A PACK of wool is a horſe's load; containing 17 ſtone and 2 pound; or 240 pound weight. See SARPLAR and WOOL.

PACT*, PACTUM, or PACTION in law, a covenant or convention between two or more parties. See COVENANT.

* Ulpian derives the word from the Latin verb *paciſci*, to bargain, agree, contract: Others with more probability, from *paco*, I appeaſe or pacify; or from *pango*, I fix, eſtabliſh.

The civil lawyers after Ulpian, define the word *Pact* the conſent of two or more parties to the ſame thing— *Duorum aut plurium in idem conſenſus.* L. III. § 2. *ff. de pactis*.

There are two ſpecies of conventions, *viz.* the *Pact* and *Contract.* A *Pact* againſt good manners, againſt publick or natural equity is null.—'Tis a maxim in law, *ex nudo pacto non oritur lex.* See NUDE.

PACTA *Conventa*, in Poland, are the articles agreed on between the king and the republic; and which they mutually oblige each other to obſerve. See CAPITULATION.

PADDOCK or PADDOCK-*Courſe*, a piece of ground, conveniently taken out of a park, ordinarily a milelong, and a quarter of a mile broad, encompaſſed with pales, or a wall; for the exhibiting of races with greyhounds for wagers, plates, or the like. See PARK.

At one end of the *Paddock* is a little houſe, where the dogs are to be entered; and whence they are ſlipped; near which are pens to encloſe two or three deer for the ſport.

The deer, when turned looſe, run all along by the pale; and the ſpectators are placed on the other ſide.

Along the courſe are ſeveral poſts, *viz.* the law-poſt, 160 yards from the dog-houſe and penns; the quarter of a mile poſt, half mile poſt, and pinching poſt; beſide the ditch, a place made to receive the deer, and preſerve them from further purſuit.

Near the ditch, are placed judges or triers. The keeper, to ſlip the dogs fairly, puts a falling collar upon each, to ſlip through a ring; and the deer being turned looſe and put forward by a teazer, as ſoon as it is arrived at the law-poſt, the dog-houſe door is thrown open and the dogs ſlipped.

If, now, the deer ſwerve ſo much, as that his head is judged nearer the dog-houſe than the ditch, before he arrive at the pinching-poſt; it is no match; but muſt be run over again three days after. If there be no ſuch ſwerve, but the deer runs ſtrait as far as the pinching-poſt; then the dog neareſt him, if he chance to ſwerve afterwards, or by any accident, be blanched; or if there be no ſuch ſwerve, *&c.* the dog that leaps the ditch firſt, wins the match.

PADUAN, among medaliſts, a modern medal in imitation of the antique; or a new medal ſtruck with all the marks and characters of antiquity. See MEDAL.

The name is taken from *Paduan*, *Paduanus* a famous Italian painter, who ſucceeded ſo well in the impoſture, if it may be ſo called, that the beſt judges are at a loſs to diſtinguiſh them. This *Paduan* was thus called from the place of his birth Padua; his proper name was Giovanni Cavino; others ſay, Lewis Lee; he flouriſhed in the XVII^th^ century.—Gotheb Rink adds that he had an aſſociate in this forgery, called Alexander Baſſianus.—His ſon Octavian, though born at Rome, was alſo called the *Paduan*.

PADUAN is, properly, applicable to thoſe medals only, which are ſtruck on the matrices of the elder *Paduan*; which are ſtill preſerved—Though it is frequently uſed in the general for all medals of this kind.

Joubert obſerves, that there have been a *Paduan* and *Parmeſan* in Italy, and a *Carteron* in *Holland*, who had the knack of imitating the antique in perfection. The Parmeſan was Laurenrentius Parmeſanus. We may alſo add another Italian who excelled in this Way, *viz*, Valerius Bellus Vicentinus, but his medals are not ſo common as thoſe of the reſt. See COIN, and COINAGE.

PÆAN *, Παιαν, in antiquity, a hymn in honour of Apollo, or ſome other of the gods; chiefly uſed on occaſion of victory, and triumph. See HYMN.

* Feſtus derives the word απο τȣ παιειν, *ferire*, to ſmite, ſhoot: but Heſychius rather takes Apollo to have been denominated *Pæan* from παιω, θεραπευω, I heal, in alluſion to his being the deity of Medicine.

The *Pæan* took its name from Apollo himſelf; who was denominated *Pæon*, becauſe in his combat with the ſerpent Python, his mother Latona encouraged him to make uſe of his arrows, by crying frequently ιη παι, ιη παι, do boy, bravely boy.

PAEAN or **PAEON** is alſo the name of a foot in the ancient poetry; ſo called, as commonly ſuppoſed, becauſe appropriated to the hymn *Pæan*; though Quintilian derives the name from its inventor *Pæon*, a phyſician. See FOOT.

The *Pæon* conſiſts of four ſyllables, one of which is long, and the reſt ſhort.

PÆDO-BAPTISM *, infant-baptiſm, or that conferred on children. See BAPTISM.

*The word is a compound of the Greek παις, παιδος, infant, and βαπτισμος, baptiſm.

PAGAN, PAGANUS, a heathen, gentile, or idolater; one who who adores falſe gods. See IDOLATRY, *&c.*

Baronius derives the word *Paganus*, *a Pagis*, villages, becauſe, when the chriſtians became maſters of the cities, the heathens were obliged by the edicts of Conſtantine and his ſons, to go and live in the country villages, *&c.*— Salmaſius will have the word come from *Pagus*, conſidered as originally ſignifying *Gens* or nation: whence we ſay indifferently *Pagans* or Gentiles. See GENTILE.

The Abbot de Fleury gives another origin of *Pagan:* he obſerves that the emperor Conſtantine going from Antioch againſt Maxentius in 350, aſſembled all his troops, and adviſed ſuch as had not received baptiſm to receive it immediately; declaring withal that ſuch as ſhould be found unbaptized ſhould quit the ſervice, and go home.

Hence, perhaps, ſays the abbot, the name *Pagan* might be given to thoſe who choſe the latter: the Latin word, *Paganus*, properly ſignifying a perſon who does not bear arms: in oppoſition to *miles*, a ſoldier.

And hence it might, in time, extend to all heathens.—Or, continues he, the word might come from *Pagus*, village, in regard the peaſants were thoſe who ſtuck longeſt to the idolatry of the heathens.

PAGANALIA, an antient rural feaſt, thus called, becauſe celebrated in the the villages, in Pagis. See PAGAN.

In the *Paganalia*, the peaſants went in ſolemn proceſſion all around the village, making luſtrations to purify it. They had alſo their ſacrifices, wherein they offered cakes on the altars of the gods. See FEAST.

Halicarnaſſeus and St. Jerom, refer the inſtitution of the *Paganalia* to Servius Tullus. They were held in the month of February.

PAGANISM, the religious worſhip, and diſcipline of *Pagans*; or the adoration of idols and falſe gods. See PAGAN.

The gods of *Paganiſm* were either men, as Jupiter, Hercules, Bacchus, *&c.* or fictitious perſons, as victory, fame, fever, *&c.* or beaſts, as in Egypt, crocodiles, cats, *&c.* or inanimate things, as onions, fire, and water, *&c.* See GOD.

PAGARCHUS *, Παγαρχος, among the ancients, a petty magiſtrate of a *Pagus*, or little diſtrict, in the country, ſeveral times mentioned in the novels.

* The word is formed from *Pagus*, village, and αρχη command.

PAGE *, a youth of ſtate, retained in the family of a prince or great perſonage, as an honourable ſervant to attend in viſits of ceremony, do meſſages, bear up trains, robes, *&c.* and at the ſame time to have a genteel education, and learn his exerciſes.

* The word ſeems formed from the Greek, παις, child, boy.

The *Pages* in the king's houſhold, are various, and have various provinces aſſigned them: as *Pages* of honour, *Pages* of the preſence-chamber, *Pages* of the back-ſtairs, *&c.*

Pages were antiently diſtinguiſhed from the other ſervants in livery, by their wearing drawers in lieu of breeches; and ſleeves turned up with velvet.

Cujas and Gothofred obſerve, that *Pages* in the emperor's families, were called *Pædagogiani Pueri*. Fauchet ſays, the word *Page*, was firſt given to the little boys who attend tilers to bring them their tiles, *&c.* That till the time of Charles VI. or VII. the name was common to the baſeſt ſervants; and it is ſince then, that *Page* is become a term of honour; and the meaner ſervants diſtinguiſhed from them by the names of lacqueys, valets, *&c.* See VALET.

PAGE is particularly uſed in the Turkiſh ſeraglio, for the children of tribute, or, ſlaves who wait on the grand ſignor. They are commanded by the firſt *Aga*; and conſtitute four claſſes, called *Oda's*. See ODA.

PAGE *of a Book*. See the article PRINTING.

PAGEANT, a triumphal car, chariot, arch, or other the like pompous decoration, variouſly adorned with colours, flags, *&c.* carried about in public ſhews, proceſſions, *&c.* See DECORATION, PROCESSION, *&c.*

PAGOD a name which the Portugueſe have given to all the temples of the Indians, and all idolaters of the Eaſt. See TEMPLE.

The *Pagods* of the Chineſe, and Siameſe are exceedingly magnificent. Among others, there is one at Golconda, whoſe nich, that they pray in, conſiſts of a ſingle ſtone, of ſuch prodigious bulk, that they were five years in bringing it to the place: 600 men being conſtantly employed at it all that time; and the machine that brought it, drawn by 1400 oxen.

The revenues of the *Pagod* of Janigrade are ſo great, as to ſubſiſt, every day, from fifteen to twenty thouſand pilgrims.

PAGOD is alſo uſed for the idol adored in the temple. See IDOL. Hence the curious give the name *Pagod* to thoſe little porcelain images brought from China.

PAGOD is alſo the name of a gold coin current in ſeveral parts of the Indies; on the footing of the piece of eight. See COIN, *&c.*

The Engliſh coin *Pagods* at fort St. George, and the Dutch at Palicate.

There are alſo ſilver *Pagods* ſtruck at Narſingua, Biſnagar, *&c.* which uſually bear the figure of ſome monſtrous idol; whence their names. They are of various values.

PAIN, an uneaſy ſenſation, ariſing from a ſudden and violent ſolution of continuity in the nerves, membranes, veſſels, muſcles, *&c.* of the body. See PLEASURE.

Pain, according to ſome, conſiſts in a motion of the organs of ſenſe; according to others, it is an emotion of the ſoul, occaſioned by thoſe organs. See SENSE.

If it be enquired what it is occaſions the *Pain* of a puncture? one may anſwer, that the puncture cannot ſeparate the fibres of the fleſh, without ſhaking the nerves which proceed thence to the brain. If it be further aſked, why we feel pain upon a ſhaking of that part of the brain? we are at a ſtand; there being no neceſſary connection between concuſſions of the brain, and the ſenſation of pain wherewith the ſoul is affected, See BRAIN.

To account, therefore, for *Pain*; F. Malebranche obſerves, we muſt have recourſe to a ſuperior being, who forms an arbitrary connection between the ſhakes of the brain, and the ſenſenſation of pain. See SENSATION.

From the phyſical definition of *Pain*, it follows that whatever may diſtract or ſeparate the parts of the nerves or membranes from one another may cauſe *Pain*; but there is nothing in the compaſs of nature, which may not do that, with whatever figures and properties, it be endued: for ſince ſomewhat may always be applyed, or added to any other body, ſuch body may at length encreaſe into a bulk too big to flow through a canal of a given diameter, and will therefore require more room: wherefore, while the ſides of a canal are thruſt outward beyond what they are uſed to be, that is, the parts compoſing thoſe ſides, before contiguous, become looſened and moved away from one another; if that body ſtrike upon thoſe ſides with a briſk impetus, and that impetus be continually renewed, the ſolution will be conſiderable, or the niſus towards a ſolution violent; that is, there will be *Pain*,—Wherefore the conſtituent parts of fluids being ſufficiently augmented in dimenſion, and propelled with a continually repeated impetus againſt any canal of our body, may occaſion that ſolution, in which conſiſts the eſſence of *Pain*.

For it comes to the ſame thing, whether ſome parts be added to a body; or the parts of that body be, by any cauſe whatſoever, ſeparated to ſo great an interval near the ſides of a canal, as to conſtitute a dimenſion equal to that which aroſe from the addition of a new part; for the bulk may ſo far increaſe both ways, as that the natural capacity of the canal ſhall not be big enough to contain it, without ſome violent dilatation, and a diſtraction of the fibres it is compoſed of: and conſequently *Pain* muſt enſue.

Farther, as there may be always ſomewhat added to another body; ſo from any body may ſomewhat be always taken away; a body ſo diminiſhed in dimenſion, and impelled with a conſiderable impetus will break through the interſtices of the fibres, where it is leſs than the capacity of ſuch interſtices, and moved obliquely: and becauſe the ſuperficies of the fibres are not wont to be contained under geometrical right lines, but to have particles ſtanding out and prominent, theſe it divides from one another. And thus any body, of whatſoever figure, may occaſion in us *Pain*, ſo it be big enough to diſtend the veſſels beyond their wonted meaſure, or ſmall enough to enter the pores in the ſides of a canal, with an impetus in the manner intimated.

And what is thus advanced, with relation to things within the veſſels, may be eaſily applyed to others out of the Veſſels.

PAIN, in medicine, conſidered as a ſymptom of a diſeaſe, makes a conſiderable article in a palliative cure. See PALLIATIVE.

Pain is mitigated, or aſſwaged divers ways; as 1. by diluting and ſoftening acrimonies, with warm water mixed with flower applyed by way of drink, fomentation, clyſter, or bath. 2. By reſolving and waſhing away obſtructions, by the ſame means and reſolvents. 3. By relaxing the nervous veſſels, with drinks, fomentations, baths, relaxants, anodynes, and aperients. 4. By correcting the acrimony itſelf with proper remedies. 5. By freeing the obſtruent, obſtructed, and acrimonious parts from the too great preſſure of the vital humour; and by ſoftening, and ſuppurating, and depurating them. 6. By rebating or deadening the ſenſe by narcoticks, either internally or externally. See NARCOTICK, ANODYNE, *&c.*

PAINE *fort, & dure*, in law, an eſpecial Puniſhment for one, who being arraigned of felony, refuſes to put himſelf upon the ordinary trial of God and his country, and thereby ſtands mute by the interpretation of law. See MUTE.

This is vulgarly called *preſſing to death.*—The proceſs whereof is thus preſcribed:

" He ſhall be ſent back to the priſon, whence he came, " and be laid in ſome low dark houſe; where he ſhall lie naked " on the earth, without any litter, ruſhes, or other cloathing, " and without any raiment about him, but only ſomething to " cover his privy-members; and he ſhall lie upon his back " with his head covered, and his feet; and one arm ſhall " be drawn to one quarter of the houſe, with a cord, and " the other arm to another quarter, and his legs in the ſame " manner: let there be laid upon his Body iron, or ſtone, as " much as he may bear, or more; and the next day following, " he ſhall have three morſels of barley-bread without drink; " and the ſecond day he ſhall have drink three times, as much " at each time as he can drink, of the water next unto the " priſon, except it be running water; without any bread: and " this ſhall be his diet, till he dies."

PAINIM the ſame with Pagans. See PAGAN.

PAINTING, PICTURA, the Art of repreſenting natural bodies, and even giving them an appearance of life, by the duct or draught of lines, and the degrees of colours. See COLOUR, *&c.*

Painting is ſaid to have had its riſe among the Egyptians: and the Greeks, who learned it of them, carried it to its perfection; if we may believe the ſtories related of their Apelles, and Zeuxis.

The Romans were not without conſiderable maſters in this art, in the latter times of the republic, and under the firſt emperors; but the inundation of Barbarians, who ruined Italy, proved fatal to *Painting*, and almoſt reduced it to its firſt elements.

It was in Italy, however, that the art returned to its ancient honour, and in the beginning of the XVth century; when Cimabue, betaking himſelf to the pencil, tranſlated the poor remains of the art, from a Greek painter or two, into his own country.

He was ſeconded by ſome Florentines: the firſt who got any reputation was Ghirlandai, Michael Angelo's maſter; Pietro Perugino, Raphael Urbin's maſter; and Andrea Verocchio, Leonardo Da Vinci's maſter.

But the ſcholars far ſurpaſſed the maſters; they not only effaced all that had been done before them, but carried *Painting* to a pitch from which it has ever ſince been declining.

It was not by their own noble works alone that they advanced *Painting*; but by the number of pupils they bred up, and the ſchools they formed.

Angelo, in particular, founded the ſchool of Florence; Raphael, the ſchool of Rome; and Leonardo, the ſchool of Milan; to which muſt be added, the Lombard ſchool, eſtabliſhed about the ſame time, and which became very conſiderably under Giorgione and Titian. See SCHOOL.

Beſides the Italian maſters, there were others on this ſide the Alps, who had no communication with thoſe of Italy; ſuch were Albert Durer, in Germany; Holbens, in Switzerland; Lucas in Holland; and others in France and Flanders; but Italy, and particularly Rome, was the place where the art was practiſed with the greateſt ſucceſs; and where, from time to time, the greateſt maſters were produced.

To Raphael's School, ſucceeded that of the Caraccios, which has laſted, in its ſcholars, almoſt to the preſent time; wherein the French Painters, by the munificence of the late Louis XIV. ſeem almoſt in a condition to vie with thoſe of Greece or Italy. In Paris they have two conſiderable bodies of painters, the one, the *Royal Academy of Painting and Sculpture*, the other the *Community of Maſters in Painting, Sculpture*, &c. See ACADEMY.

The art of *Painting* is divided, by Freſnoy, into three principal parts; invention, deſigning, and colouring; to which ſome add a fourth, *viz.* diſpoſition.—Felibien divides *Painting* into compoſition, deſigning, and colouring.

M. Teſtling, painter to the late King, divides it, ſomewhat more accurately, into the deſign or draught, the proportion, the expreſſion, the clair-obſcure, the ordonnance, and the colouring; to which his Engliſh tranſlator adds the perſpective. Under each of theſe heads, he gives us the rules and ſentiments of the beſt maſters; which ſee under their proper Articles in this dictionary, DESIGN, PROPORTION, EXPRESSION, CLAIR-OBSCURE, ORDONNANCE, COLOURING, *&c.*

Painting is of various kinds, with regard to the materials uſed; the matter whereon they are applied; and the manner of applying them.—Hence come *Painting* in oil; *Painting* in water-colours, or Limning; *Painting* in freſco; *Painting* on glaſs; *Painting* in enamel; and *Painting* in miniature.

PAINTING *in Oil.* The art of *Painting* in oil was unknown to the ancients; and it was a Flemiſh painter, one John van Eyck, or John de Bruges, who firſt diſcovered, and put it in practice in the beginning of the XIVth century: till him, all the painters wrought in freſco, or in water-colours.

This was an Invention of the utmoſt advantage to the art; ſince, by means hereof, the colours of a painting are preſerved much longer and better, and receive a luſtre and ſweetneſs which the ancients could never attain to, what varniſh ſoever they made uſe of to cover their pieces.

The whole ſecret only conſiſts in grinding the colours with nut-oil or linſeed-oil: but it muſt be owned, the manner of working is very different from that in freſco, or in water; by reaſon the oil does not dry near ſo faſt; which gives the painter an opportunity of touching and retouching all the parts of his figures, as often as he pleaſes: which, in the other kinds, is a thing impracticable.

The figures too are here capable of more force and boldneſs; inaſmuch as the black becomes blacker, when ground with oil than with water; beſides that, all the colours, mixing better together, make the colouring ſweeter, more delicate and agreeable, and give an union and tenderneſs to the whole work, inimitable in any of the other manners.

Painting in Oil is performed on walls, on wood, canvas, ſtones, and all ſorts of metals.

To **PAINT** *on a Wall*—When well dry, they give it two or three waſhes with boiling oil; till the plaſter remain quite greaſy, and will imbibe no more. Over this they apply deſiccative or drying colours, *viz.* white chalk, red oker, or other chalks beaten pretty ſtiff. This layer being well dry, they ſketch out, and deſign their ſubject; and at laſt paint it over; mixing a little varniſh with their colours, to ſave the varniſhing afterwards.

Others, to fortify their wall better againſt moiſture, cover it with a plaſter of lime, marble-duſt, or a cement made of beaten tiles ſoaked with linſeed-oil; and at laſt prepare a compoſition of Greek pitch, maſtic, and thick varniſh boiled together, which they apply hot over the former plaſter: when dry, they lay on the Colours as before.

Others, in fine, make their Plaſter with lime-mortar, tile-cement, and ſand; and this dry, apply another of lime, cement, and iron ſcum; which being well beaten and incorporated with whites of eggs and linſeed oil, makes an excellent plaſter. When dry, the colours are applied as before.

To **PAINT** *on Wood.*—They uſually give their ground a layer of white tempered with ſize; or they apply the oil abovementioned: the reſt as in *Painting* on walls.

To **PAINT** *on Cloth or Canvas.*—The canvas being ſtretched on a Frame, they give it a layer of ſize, or paſte-water. When dry, they go over it with a pumice-ſtone, to ſmooth off the knots. By means of the ſize the little threads and hairs are all laid cloſe on the cloth, and the little holes ſtopped up, ſo as no colour can paſs through.

When the Cloth is dry, they lay on oker, which is a natural earth, and bears a body; ſometimes mixing with it a little white lead to make it dry the ſooner. When dry, they go over it with the pumice-ſtone, to make it ſmooth.

After this, they ſometimes add a ſecond layer compoſed of white lead, and a little charcoal black, to render the ground of an aſh-colour; obſerving in each manner to lay on as little colour as poſſible; that the cloth may not break, and that the colours, when they come to be painted over, may preſerve the better.

In ſome *Paintings* of Titian and Paolo Veroneſe we find they made their ground with water, and painted over it with oil; which contributed much to the vivacity and freſhneſs of their works: for the water ground, by imbibing the oil of the colours, leaves them the more beautiful; the oil itſelf taking away a deal of their vivacity.

As little oil therefore is to be uſed as poſſible, if it be deſired to have the colours keep freſh: for this reaſon ſome mix them with oil of aſpic, which evaporates immediately, yet ſerves to make them manageable with the pencil.

To Paint *on Stones or Metals*, it is not neceſſary to apply ſize, as on cloth; it ſuffices to add a ſlight layer or colours, before you draw your deſign; nor even is this done, on ſtones where it is deſired the ground ſhould appear, as on certain marbles of extraordinary colours.

All the colours uſed in freſco are good in oil, except white of lime and marble-duſt. See Colour.

Thoſe chiefly uſed are white lead or ceruſs, yellow and white maſſicot, orpiment, black lead, cinnaber or vermillion, lacca, blue and green aſhes, indigo, lamp-black, burnt ivory, and verdigreaſe, *&c.* See the preparation, *&c.* of each under its proper article, Ceruss, Orpiment, Vermillion, Lacca, Indigo, *&c.*

As to oils, the beſt are thoſe of walnuts, linſeed, aſpic, and turpentine. The deſiccative or drying oils, are a nut oil boiled with litharge and ſandarach, others with ſpirit of wine, maſtic and gum-lacca.

To have a varniſh that ſhall dry readily, they mix ſpirit of wine with turpentine. See Varnish.

Painting *in Water-Colours.* See Limning.

Painting *in Freſco.* See Fresco.

Painting *in Miniature.* See Miniature.

Painting *on Glaſs.* See Glass.

Painting *in Enamel.* See Enamel.

Painting *in Moſaic.* See Mosaic-Work.

PAIR, Par, a collective term, uſed for two equal and ſimilar things ordinarily joined together; though more frequently for artificial things, than for natural ones. As, a *Pair* of gloves, of ſtockings, of ſhoes, *&c.*

Pair is alſo uſed in compound things, for two parts alike each other, though they only make one whole.—As, a *Pair* of Sciſſars, *&c.*

Pair is alſo uſed for a ſet, or ſyſtem of ſeveral things joined to make another compleat, —as a *Pair* of bagpipes, *&c.*

Pair, again, is uſed by extenſion, for a thing that is ſingle: as, a *Pair* of tables, *&c.*

Pair, Par, in anatomy, denotes an aſſemblage or conjugation of two nerves, having their origin together in the brain or ſpinal marrow; and thence diſtributed into the ſeveral parts of the body, one on the one ſide, and the other on the other. See Nerve.

Thus we ſay, the *firſt Pair*, *ſecond Pair*, *&c.* the *Par vagum*, *Par quintum*, *&c.* ſometimes the *olfactory Pair*, *ophthalmic Pair*, *&c.* See Vagum, *&c.*

PALACE, Palatium, a name generally given to the dwelling houſes of kings, and princes. See House.

Procopius derives the word from a Grecian called *Pallas*, who gave his own name to a magnificent houſe he had built; adding, that Auguſtus after him, gave the name *Palatium* to the houſe of the Roman emperors on the hill which for that reaſon was called the *Palatine* mount.—Others take it the contrary way; and ſay, that Romulus's houſe, wherein Auguſtus lived, was properly called *Palatium*, becauſe ſituate on the *Palatine* mount. Be this as it will, it is certain, *Palatium*, from a proper name, in time, became common to all houſes of kings.

And as the kings uſually heard and determined cauſes in their houſes, in what part of the realm ſoever ſituate; hence alſo *Palatium* became a name for a court of juſtice, which uſage is ſtill retained, eſpecially in France. See Court.

In courſe of time the name *Palace* has alſo been applied to the houſes of other perſons; taking different epithets, according to the quality of the inhabitants; as imperial *Palace*, royal *Palace*, pontifical, cardinal, epiſcopal, ducal *Palace*, *&c.*

PALÆSTRA, Παλαιςρα, among the antient Greeks, a publick building, where the youth exerciſed themſelves in wreſtling, running, quoits, *&c.* See Gymnasium.

Some ſay the *Palæſtra* conſiſted both of a college, and an academy; the one for excerciſes of the mind, the other of the body. But moſt authors rather take *Palæſtra* to be a Xyſtus or mere academy for bodily exerciſes, according to the etymology of the word, which comes from ϖαλη, wreſtling, one of the chief exerciſes among the ancients. See Xystus.

The length of the *Palæſtra* was marked out by Stadia, each equal to 125 geometrical paces; and the name *Stadium* was given to the Arena whereon they ran. See Stadium.

PALÆSTROPHYLAX*, among the ancients, was the director of a *Palæſtra*; and of the exerciſes performed therein. See Palæstra.

* The word is formed from the Greek ϖαλαιςρα, and φυλαξ guardian, keeper.

This officer was alſo called *Xyſtarcha* and *Gymnaſiarcha.* See Xystarcha, *&c.*

PALANQUIN, a kind of chaiſe, or chair bore by men on their ſhoulders; much uſed by the people of China and the Eaſt, as a vehicle for their eaſy conveyance from place to place.

PALATE, Palatum*, in anatomy, the fleſh that compoſes the roof, *i. e.* the upper and inner part of the mouth. See Mouth.

* Du Laurence ſays it has its name from the Latin *pali*; becauſe encloſed with two rows of teeth, reſembling little ſtakes which the Latins call *pali*.

The *Palate* is a little vaulted or concave; it is lined with a glandulous coat, under which are great numbers of pretty conſpicuous glands, ſcattered in the fore-part of it like grains of millet, with many interſtices, whoſe excretory ducts piercing the membrane, open into the mouth; but towards the hinder-part, they lie much thicker; and about the root of the uvula are gathered ſo cloſe together, that they appear to form one pretty large conglomerate gland, called by Verheyen, *glandula conglomerata palatina*.

Towards the bottom of the *Palate*, behind the uvula, is a pretty large perforation, which, a little from its orifice, divides into two, each whereof goes to one of the noſtrils.

Many take the palate to be the organ of taſting. See Taste.

PALATI *Os*, a ſmall ſquare bone, forming the hind-part of the *Palate*, and joined to that part of the os maxillare which forms the fore-part of the *Palate*. See Palate & Maxilla *ſuperior*.

PALATINATE, Palatinatus, a province or ſignory, poſſeſſed by a *Palatine*, and from which he takes his title and dignity. See Palatine.

The *Palatinates* now ſubſiſting, are either thoſe of Germany, or Poland.—Thoſe of Germany are the principalities of the upper, and lower Rhine, *i. e.* of Bavaria, and the Rhine.

The *Palatinates* in Poland, are the provinces and diſtricts of the Poliſh grandees or ſenators, who are the governors thereof.

PALATINE—*Count* Palatine *, *Comes* Palatinus, in ancient cuſtoms was a title given to all perſons who had any office, or employment in the prince's palace. See Count.

* The appellation is derived hence, that anciently the emperors ſent the judges of their palace, whom they called *comites palatini*, or *pals-graves*, to correct the abuſes of the other judges in the provinces of Saxony, Bavaria, Franconia, and the Rhine. See Palsgrave.

Matthæus ſays, that *Palatines* were originally thoſe who had the ſuper-intendance of the palace; the ſame with what the Greeks call *Curopolatæ*, and the French *Maires du Palais*; though in time the name became more general.

The only *Palatine* of this kind, now ſubſiſting, is the prince *Palatine* of the Rhine.

Palatine was afterward a title conferred on thoſe delegated by princes to hold courts of juſtice in the provinces; and on ſuch among the lords as had a palace, *i. e.* a court of juſtice, in their own houſes.

The French writers make the *Palatines* of Champagne to be the firſt who bore the title; which they will have it, the Germans and other people borrowed from them; not they from the Germans.

At preſent, the word *Palatine* is reſtrained to a Prince of Germany, or a lord of Poland poſſeſſed of a *Palatinate*. See Palatinate.

In the code we find a title, *De Palatinis ſacrarum largitionum*, who were a kind of treaſurers of the empire.

Palatine *Games*, *Ludi*-Palatini, among the Romans, were games inſtituted in honour of Julius Cæſar, as ſome will have it, or as others, of Auguſtus. See Games.

It is pretended that Dion calls them *Auguſtalia*; which ſhould ſeem to confirm the ſecond ſentiment. Indeed, it is certain that he ſays Livia inſtituted particular games on the *Palatine* mount, in honour of that prince; but he apparently diſtinguiſhes them from thoſe called *Auguſtalia*. See Augustalia.

The Romans had alſo their *Apollo Palatinus*, a ſurname of that deity, given him in reſpect of the temple erected to him by Auguſtus on the *Palatine* mount, in conſequence of a report of the Aruſpices, which required it to be done: Auguſtus enriched it with a noble library; as is intimated by Horace, Lib. I. Epiſt. III. ỳ. 17.

Palatine *Tribe*, was one of the four tribes, into which Rome was anciently divided by Servius Tullus. See Tribe.

Palatine. See Acolythi.

PALATO-Salpingæus, called alſo *Muſculus tubæ novus Valſalvæ*, and *Pterygoſtaphylinus externus*, a muſcle ariſing broad and tendinous from the edge of the lunated part of the os palati, ſeveral of its fibres being ſpread on the membrane that covers the foramen narium; whence growing into a ſmall thin tendon, it is reflected about the hook-like proceſs of the inner wing of the proceſſus pterygoidæus internus, and is inſerted carnous, into all the membranous, fleſhy, and cartilaginous parts of the tube, which leads from the palate to the ear.

It is uſed to dilate and keep open this tube.

PALATO-STAPHILINUS, in anatomy, a muſcle called alſo *Pterygoſtaphylinus internus.* See Pterygostaphylinus.

PALE, Palus, a little pointed ſtake, or piece of wood, uſed in making encloſures, ſeparations, *&c.* See Palisade.

The pale was an inſtrument of puniſhment and execution among the ancient Romans; and ſtill continues ſo among the Turks.—Hence *Empaling*; the paſſing a ſharp pale through the fundament up the body. See Empaling.

PALE*, in heraldry, is one of the honourable ordinaries of an eſcutcheon; being the repreſentation of a *Pale*, or ſtake, placed upright; and comprehending the whole height of the coat, from the top of the chief to the point. See ORDINARY.

When the *Pale* is ſingle; it is to contain one third of the breadth of the ſhield.

When there are ſeveral, more properly called *Pallets*, they are proportioned ſo, as that two take up two fifths of the ſhield; and three take up three ſevenths: and in thoſe caſes, the number of pieces is ſpecified as well as that of thoſe they are charged withal, *&c.* See PALLET.

Pales are bore various ways, as *wavy*, *crenellé*, *faillis*, *indented*, *ingrailed*, *&c.* They are alſo *cometed*, and *flaming Pale*, which are pointed, ſometimes waved, *&c.*

PALED, **PALE'** in heraldry—A coat is ſaid to be *Paled*, when it is equally charged with pales of metal, and colour.

It is *Counter-Paled* when it is cut, and the two *Demi-Pales* of the chief, though of colours the ſame with thoſe of the point, yet differ in the place where they meet; ſo as if the firſt of the chief be metal, that correſponding to it, underneath, is of colour.

The coat is ſaid to be *Paliſſé*, when the *Pales* are pointed like thoſe uſed in the defence of places.

In PALE, is applied to things born one above another in manner of a *Pale*. See PALES.

Party per PALE is where the ſhield is divided by a ſingle line through the middle, from top to bottom. See PARTY and PALY.

PALED *Flowers*, in botany, are thoſe which have leaves ſet about, or ſurrounding a head, or thrum: as in Marigolds, *&c.*

PALES, or PILES, in carpentry, denote rows of ſtakes drove deep into the ground, to make wooden bridges over rivers. See PALLIFICATION.

* Du Cange derives the word from the Latin name *Palla*, a hanging, or piece of tapeſtry: the ancients gave the name *Pales* to the hangings or linings of walls: thus a chamber was ſaid to be *paled* with cloth of gold, with ſilk, *&c.* as conſiſting of bands or ſtuffs of two colours.—Hence alſo the original of the word *Pale* a ſtake, *&c.* The arms of Arragon are paled *or* and *gules*.

Tertullian obſerves, that the Romans planted *Pales* to ſerve as boundaries of inheritances; and they conſecrated them to the god Terminus, under the name of *Pali Terminales*. Ovid tells us, they were crowned and adorned with flowers, feſtons, *&c.* The god was worſhipped before theſe *Pales*. See TERMINALIA.

Pales ſerve to ſupport the beams which are laid a-croſs them, from one row to another; and are ſtrongly bound together with croſs-pieces.

PALILIA, a feaſt among the ancient Romans in honour of the goddeſs *Pales*. See FEAST.

The *Palilia* by ſome called *Parilia*, were celebrated by the ſhepherds on the firſt of May; to beſeech that goddeſs to take care of their flocks, and preſerve them from wolves, and diſeaſes.

Part of the ceremony conſiſted in lighting heaps of ſtraw, and jumping over them.

PALILICIUM, in aſtronomy, a fixed ſtar of the firſt magnitude, in the Bull's-eye; called alſo *Aldebaran*. See ALDEBARAN.

Its longitude in Mr. Flamſtead's catalogue is 5°. 27'. 00" Its latitude 5°. 29' 49". South.

Pliny gives the name *Palilicium* to the Hyades, of which *Palilicium* is one. See HYADES.

PALINDROMUS*, a verſe, or ſentence, which runs the ſame, read either backwards, or forwards. See RETROGRADE

* The word is Greek, παλινδρομος, *retro currens*, running backward, formed of παλιν again, and δρομος courſe.

Such is the verſe

Roma tibi ſubito motibus ibit amor.

Some people of leiſure have refined upon the *Palindromus*, and compoſed verſes, each word whereof is the ſame backwards as forwards. As that inſtance in Cambden.

Odo tenet mulum, madidam mappam tenet Anna.
Anna tenet mappam madidam, mulum tenet Odo.

PAILING, or PALEING in agriculture, *&c.* a kind of fence-work for fruit-trees, *&c.* planted in fields, *&c.*

It conſiſts of three ſmall poſts driven into the ground, at a foot and a half diſtance; with croſs-bars nailed to each other, near the top.

In fixing the *Pales* in a form of a triangle, room is to be left for the tree to play and bow by the high winds without galling. The trees are to be bound to a ſtake for a year or two; after which fern or ſtraw may be ſtuffed in betwixt the tree, and uppermoſt rails to keep it upright.

If the place be open to deer, rabbets, or the like, a poſt to be nailed to the bar between every two *Pales*.

PALINGENESIA*, Παλιγγενεσια, a new birth, or regeneration. See REGENERATION, REVIVIFICATION, REPRODUCTION, *&c.*

* The word is Greek, formed of παλιν over-again, a-new, and γενεσις *Geneſis*, generation.

PALINGENESIA, is alſo uſed by ſome for the migration or paſſage of the ſoul of a defunct into another body.

The *Palingeneſia* is almoſt the ſame thing with the Metempſychoſis taught by Pythagoras, and ſtill believed by the Brachmans, Banians, and other philoſophers of the eaſt. See METEMPSYCHOSIS.

PALINODY, Παλινωδια, a diſcourſe contrary to a preceding one.

Hence the phraſe *Palinodiam Canere*, to ſing *Palinody*; *q. d.* to make a Recantation. See RETRACTATION.

The word in the original Greek ſignifies *ſinging again*, or a-new. Hence it has paſſed as a general name for any poem, or the like, which contains a retractation in favour of a perſon the poet had before offended.

The poet Steſichorus is ſaid to be the firſt author of the *Palinody*. The ſixth ode of the firſt book of Horace beginning, *O Matre pulchra*, is a true *Palinody*.

PALINTOCIA*, Παλιντοκια, in antiquity, the birth or delivery of a child a ſecond time. See BIRTH, *&c.*

* The word is formed from the Greek παλιν a freſh, a new, and τοκος of τικτω, I bring forth.

Thus the ſecond birth of Bacchus, proceeding out of Jupiter's thigh, was a *Palintocia*.

PALINTOCIA is alſo uſed for the reſtitution of uſury, or the refunding of intereſts. See RESTITUTION.

The Megarians, having expelled their tyrant, ordained the *Palintocia*; that is, they made a law, that all the creditors ſhould return to their debtors the intereſts they had received for monies lent. See INTEREST and USURY.

PALISADE or PALISADO, in fortification, an incloſure of ſtakes, or piles driven to the ground, ſix or ſeven inches ſquare, and eight foot long; three whereof are hid underground. See *Tab. Fortif. Fig.* 18.

Paliſades are uſed to fortify the avenues of open forts, gorges, half-moons, the bottoms of ditches, the parapets of covert-ways; and in general all poſts liable to ſurprize, and to which the acceſs is eaſy, *&c.*

Paliſadoes are uſually painted perpendicularly; though ſome make an angle inclining towards the ground next the enemy, that the ropes caſt over them, to tear them up, may ſlip.

Turning PALISADES, are an invention of M. Coehorn, in order to preſerve the *Paliſades* of the parapet of the covert-way from the beſiegers ſhot.

He orders them ſo, that as many of them, as ſtand in the length of a rod, or in about ten foot, turn up and down like traps; ſo as not to be in ſight of the enemy till they juſt bring on their attack: and yet are always ready to do the proper ſervice of *Paliſades*.

PALISADE, in gardening, denotes a ſort of ornament; being a row of trees which bear branches and leaves from the bottom, cut and ſpread in manner of a wall, along the ſide of an alley, or the like; ſo as to appear like a wall covered with leaves.

Paliſades are made of jeſſamin, phillyrea, *&c.*

PALISSE', in heraldry, a range of *Paliſades* before a fortification repreſented on a feſſe, riſing up a conſiderable height; and pointed a top, with the field appearing through them.—V. *Tab. Herald. Fig.* 31.

PALL, in heraldry, denotes a kind of croſs, repreſenting the *Pallium* or archiepiſcopal ornament ſent from Rome to metropolitans.—See its figure in *Tab. Herald. Fig.* 32.—Which is blazoned thus: He beareth Gules, a *Croſs Pall* Argent.

PALLA, among the old Romans, a mantle which women wore over the gown called *Stola*. See STOLA

It was born on the left Shoulder, whence paſſing to the other ſide, under the right arm, the two ends were bound under the left arm, leaving the breaſt and arm quite bare.

It made a abundance of plaits or wrinkles; whence, according to Varro, it had its name, *viz.* from παλλω, *vibro*, I ſhake, tremble.

Among the Gauls there was alſo a kind of *Palla* wore by the men, called *Gallica Palla*.

PALLADIUM, in antiquity, a ſtatute of the goddeſs Pallas, preſerved in Troy; whereon the fate of that city depended.

The tradition is, that in building a citadel, in honour of Pallas, and a temple in the moſt elevated part thereof; the *Palladium* dropped from heaven, and marked out the place which the goddeſs was pleaſed to poſſeſs.—After this, Apollo gave an oracle, importing, that Troy ſhould never be taken while the *Palladium* was found within its walls: which occaſioned Diomed and Ulyſſes to undertake the ſtealing thereof.

'Tis ſaid, there was anciently a ſtatue of Pallas preſerved at Rome, in the temple of Veſta: which ſome pretended to be the true *Palladium* of Troy, brought into Italy by Æneas: it was kept among the ſacred things of the temple, only known to the prieſts and veſtals.

This ſtatue was eſteemed the deſtiny of Rome; and there were ſeveral others made perfectly like it, to ſecure it from being ſtolen. See ANCYLE.

There was alſo a *Palladium* in the citadel of Athens, placed there by Nicias.

Theſe *Palladiums*, in all probability, were no other than a kind of Taliſmans. See TALISMAN.

PALLET, among painters, a little oval table, or piece of wood, or ivory, very thin and ſmooth; on and round which the painters place the ſeveral colours they have occaſion for, ready for the pencil. See COLOUR.

The middle ſerves to mix the colours on, and to make the teints required in the work. It has no handle, but in lieu thereof, a hole at one end, to put the thumb through to hold it.

PALLET, among potters, crucible-makers, *&c.* is a wooden inſtrument, almoſt the only one they uſe, for forming, beating, and rounding their works. See POTTER.

They have ſeveral kinds; the largeſt are oval, with a handle; others are round, or hollowed triangularly; others, in fine, in manner of large knives, ſerving to cut off what is ſuperfluous on the moulds of their work.

PALLET, in gilding, is an inſtrument made of a ſquirrel's tail; uſed to take up the gold leaves from the pillow, to apply and extend them on the matter to be gilt. See GILDING.

PALLET, in heraldry, is the moiety, or half of the pale; or a ſmall pale, half the breadth of the uſual one. See PALE.

The *Pallet* muſt never be charged with any thing either quick or dead; neither can it be divided into two equal parts: but it may be into four; for one fourth part of the *Pallet*, or $\frac{2}{8}$ parts of the pale, is called an endorſe. See ENDORSE.

If the pale be upon any beaſt, they ſay, the beaſt is *debruiſed* with the pale: but if the beaſt be upon the pale, they ſay he is *ſupported* by it. See DEBRUISED.

PALLET is alſo a part belonging to the ballance of a watch or movement. See WATCH and MOVEMENT.

PALLIATION, the act of mitigating, ſoothing, or diſguiſing a thing.

Hence, in medicine, *Palliation* is uſed for the quieting and aſſuaging of pain, and providing againſt the ſeverer ſymptoms of a diſeaſe, when nothing can be directly levelled againſt the cauſe. See PALLIATIVE.

PALLIATIVE *Indication*, is where the ſymptoms of a diſeaſe give too much trouble, and danger, to have their cure deferred till the diſeaſe whereon they depend, is removed. See INDICATION.

Here, the ſymptoms, themſelves, are to be cured, or mitigated a-part: and hence,

PALLIATIVE *Cure*, is the anſwering of a *Palliative* indication: or the removal, or mitigation of the ſymptoms of a diſeaſe; the cauſe of the diſeaſe ſtill remaining. See CURE.

Boerhaave obſerves, that every mitigation of a ſymptom takes away ſomewhat from the diſeaſe itſelf; ſo that to cure all the ſymptoms together, is almoſt to cure the whole diſeaſe. See SYMPTOM.

The principal ſymptoms which call for ſuch a cure, are thirſt, pain, too much waking, and faintings. See each under its proper article. PAIN, THIRST, WATCHING, *&c.*

PALLIER, or PAILLIER, in building, a landing-place in a ſtair-caſe; or a ſtep, which, being broader than the reſt, ſerves to reſt upon. See STAIR-CASE.

The term is pure French, and not much uſed in Engliſh. In perrons, or large ſtair-caſes, where there are ſometimes ſeveral *Palliers* in the ſame range, or line, they ought to have at leaſt the width of two ſteps. See PERRON.

Thoſe in the turns of ſtair-caſes ought to be as broad as long. Vitruvius calls the *Palliers* or landing-places of the theatres, *Diazomata*.

PALLIFICATION, in architecture, denotes the piling of the ground-work; or the ſtrengthening it with piles, or timber driven into the ground: which is practiſed, when they build upon a moiſt, or marſhy ſoil. See FOUNDATION.

PALLIO *cooperire*.—It was an ancient cuſtom, where children were born out of lawful wedlock, and their parents afterwards intermarried; that thoſe children, together with the father and mother, ſhould ſtand *Pallio cooperti*, under a cloth ſpread over them, while the marriage was a ſolemnizing; which was a kind of adoption, and had the effect of a legitimation.

Thus Robert Groſthead, the famous biſhop of Lincoln, in one of his letters ſays:—*In ſignum legitimationis, nati ante matrimonium conſueverunt poni ſub* pallio *ſuper parentes eorum extento, in matrimonii ſolemnizatione.*

Selden, in his notes on Fleta, adds, that the children of John of Gaunt duke of Lancaſter, by Catherine Swinford, though legitimated by act of parliament, yet were *covered with the Pall* at the time of the marriage of their parents.

PALLIUM or PALL, a pontifical ornament wore by popes, patriarchs, primates, and metropolitans of the Romiſh church over their other garments, as a ſign of their juriſdiction. See PONTIFICALIA, *&c.*

It is in form of a band, or fillet, three fingers broad, and incompaſſes the ſhoulder; whence by ſome authors it is called *Superhumerale*. It has pendants, or ſtrings, about a palm long, both before and behind; with little laminæ of lead rounded at the extremes, and covered with black ſilk, with four red croſſes.

The *Pallium* is made of white wool, ſhorn from off two lambs, which the nuns of St. Agnes offer every year, on the day of her feaſt, at the ſinging of the maſs, *Agnus Dei.*

The lambs are received by the two canons of the church of St. John de Lateran; who deliver them into the hands of the apoſtolical ſub-deacons, to whom belongs the feeding and ſhearing of them in ſeaſon, and who alone have the right of making theſe *Palliums*; which, when made, they lay over the bodies of St. Peter and St. Paul in the grand altar of their church, making prayers over them all night, according to the form preſcribed for that purpoſe in the Roman Ceremonial.

Some, with Euſebius, will have the *Pallium* to have been introduced by pope Linus; adding, that as the Ephod was the mark of the pontifical authority in the Jewiſh ſynagogue, ſo is the *Pallium* in the chriſtian church. See EPHOD.

Others have obſerved, that there is no mention made hereof before the year 336.

Laſtly, others will have it to have been firſt granted by Conſtantine the great, to pope Silveſter; from whence it paſſed to the other patriarchs, and archbiſhops.

The pope pretends to the ſole right of conferring the *Pallium*; though ſome patriarchs have granted it to their ſuffragans; having firſt received it themſelves from the Roman ſee.

Anciently, the pope uſed to ſend the *Pallium*, to certain of his dioceſan biſhops, on whom he laid a good part of his authority, and who were a kind of collaterals to him, as the Patricii were to the emperors.

The firſt, who received it in France, was Vigilius, archbiſhop of Arles, in order, as Paſquier obſerves, to give him the precedency over the other biſhops.

Anciently they went to Rome to ſeek the *Pallium* in perſon; afterwards, it was ſent by the pope's legates. At laſt the cuſtom was introduced of ſending perſons expreſs to demand it, with this form, *Inſtanter, Inſtantius, Inſtantiſſimè.*

By the popiſh canon laws, a metropolitan, till he have received the *Pallium*, cannot conſecrate biſhops, or churches, may not be called archbiſhop, *&c.*—Upon a tranſlation he muſt have the *Pallium* afreſh; and till then cannot hold a ſynod, nor perform any of his archiepiſcopal functions.

The *Pallium* was anciently interred with the perſon.

The uſe of the *Pallium* is reſtrained to certain ſeaſons and occaſions; none but the pope have the right of wearing it always, and in all places.

The pope ſometimes ſends it to biſhops on his own accord; and has ſometimes given the right hereof to particular churches.

Among the Greeks all the biſhops wear the *Pallium.*

In ancient records, we find mention made of another *Pallium*, which was a long garment ſpread over with croſſes. Tertullian ſays it was a diſtinguiſhing garment of the chriſtians; that of the heathens being called *Toga*.

PALM, PALMUS, an ancient long meaſure, taken from the extent of the hand. See MEASURE.

The Roman *Palmus* was of two kinds: the *great Palm*, taken from the length of the hand, anſwered to our ſpan, and contained 12 fingers, digits, or fingers breadths, or 9 Roman inches, equal to about 8 Engliſh inches $\frac{1}{2}$. See DIGIT and SPAN.

The *ſmall Palm*, taken from the breadth of the hand, contained 4 digits or fingers, equal to about two Engliſh inches, 9 tenths.

The Greek *Palm* or *Doron*, was of two kinds. The ſmall contained four fingers, equal to 2 inches $\frac{2}{3}$. The great contained 9 fingers.—The double Greek *Palm*, called *Dichas*, contained in proportion.

The modern *Palm* is different in different places where it obtains.—At Rome it contains 7 inches $\frac{5}{10}$: At Naples, according to Riccioli, 8 inches: at Genoa, according to M. Petit, 8 inches $\frac{8}{10}$: at Morocco and Fez, 7 inches $\frac{2}{10}$: In Languedoc and ſome other parts of France, the *Palm* is 8 inches $\frac{1}{3}$.—The Engliſh *Palm* is 3 inches.

At Leghorn there are two kinds of *Palms*, the one for Soollens, the other for ſilks: the firſt one third ſhorter than the latter.

PALM, PALMA, in anatomy, denotes the inſide of the hand; called alſo *Vola* and *Metacarpion.* See HAND, and METACARPUS.

PALMARIS, in anatomy, a muſcle ſerving to contract the palm of the hand in graſping. See *Tab. Anat.* (Myol) *Fig.* 2. *n.* 25.

It ariſes from the internal protuberance of the humerus, and by a long and ſlender tendon, paſſes above the annular ligament to the palm of the hand; where it expands itſelf into a large aponeuroſis, which cleaves cloſe to the ſkin above, and to the ſides of the metacarpus below, and to the firſt phalanx of the fingers; by which means it makes four caſes for the tendons of the fingers to paſs through.

The muſcle is ſometimes wanting, but the aponeuroſis is always there.

PALMARIS *brevis* or *quadratus*, a muſcle that lies under the aponeuroſis of the firſt. It ariſes from the bone of the metacarpus that ſuſtains the little finger, and from that bone of the carpus which lies above the reſt. It goes tranſverſly, and is inſerted into the eighth bone of the carpus.

It ſerves to draw the palm of the hand into a concave figure.

PALMER, in our ancient writers, is uſed for a pilgrim, and ſometimes for a croiſé, on account of a ſtaff made of the palm-tree which they ever afterwards bore as a badge of their devotion. See PILGRIM, CROISE', CROISADE, *&c.*

PALMISTRY, a kind of divination performed by inſpecting the lines and marks of the hands and fingers: called alſo *chiromancy*. See CHIROMANCY.

PALMS, among botaniſts, white buds ſhooting out of willows, or ſallows, before the leaf; of the expanſions whereof, the leaves themſelves are formed. See BUD and GERMINATION.

PALM-SUNDAY, *Dominica* PALMARUM, the Sunday next before Eaſter-Sunday; or the laſt Sunday in Lent. See LENT.

It has been thus called from the primitive days, on account of a pious ceremony then in uſe, of bearing *Palms* in memory of the triumphant entry of Jeſus Chriſt into Jeruſalem, eight days before the feaſt of the paſſover, deſcribed by St. Matthew, Chap. XXI. St. Mark, Chap. XI. St. Luke, Chap. XIX.

The ancients had other names for this day. For 1°. they called it *Dominica Competentium*; i. e. Sunday of the Competentes; becauſe on that day the catechumens came to aſk the biſhop leave to be admitted to baptiſm, which was conferred the Sunday following. See BAPTISM and CATECHUMEN.

They had alſo, then, given them the ſymbol or credo to get off by heart, to be repeated to the biſhop in the ceremony of Baptiſm. See SYMBOL.

2°. They called it *Capitiluvium*, the Sunday of waſhing the head; by reaſon thoſe, who were to be baptized the following Sunday, were prepared by waſhing their heads on this day.

Some time afterwards they called it *Indulgence Sunday*; by reaſon the emperors and patriarchs uſed to diſtribute gifts on that day. See INDULGENCE.

PALMULARII, more properly called PARMULARII, in antiquity, a ſort of gladiators, who fought armed with a ſort of little buckler called *parma*. See GLADIATOR and PARMA.

PALPABLE, ſomething that may be perceived by the ſenſes, eſpecially the ſenſe of feeling. See SENSE.

Hence, impalbable-powder, See IMPALPABLE and POWDER.

PALPEBRÆ, in anatomy, the eye-lids of thoſe external moveable covers which ſerve to ſcreen and defend the eyes. See EYE.

They conſiſt of a thin muſcular membrane, covered withoutſide with a ſtrong, yet flexible ſkin; and lined within-ſide with a production, as ſome think, of the pericranium. Their edges are fortified with a ſoft cartilage, by means whereof, they are enabled to cloſe the better.

Out of theſe cartilages grow a paliſade of ſtiff hairs called *Cilia*; of great uſe to warn the eye of the approach of danger, either in ſleeping or waking; to keep off motes, flies, *&c.* in the air, and break the two fierce impreſſion of the rays of light. See CILIA.

Theſe hairs, it is obſerved, only grow to a certain convenient length, and never need cutting, as moſt others do; add to this, that their points ſtand out of the way; thoſe of the upper eye-lid being bent upwards, as thoſe of the lower downwards, ſo nice was nature in ſuch ſmall matters.

At the commiſſure, or joining of the upper and under eye-lids are formed two angles called *Canthi*. See CANTHUS.

In the inner of theſe is a gland called *Glandula lachrymalis*; from which proceed two or three ducts, which, opening on the inner ſurface of the eye-lid, ſerve to moiſten the ball of the eye, and keep its membranes from growing harſh and dry. See *Glandula* LACHRYMALIS.

Near the other angle, is a gland called *Innominata*; which helping by ſeveral branches to irrigate the eye, the over-plus is carried to the greater angle, and tranſmitted to the noſe through the puncta lachrymalia. See LACHRYMALIA PUNCTA.

By theſe glands it is, that the humour, called tears, is ſecerned. See TEARS.

The eye-lids are both moveable; eſpecially the upper, which has two muſcles to raiſe and depreſs it, called *Attollens*, and *Deprimens* or *Orbicularis*. See ATTOLLENS, ORBICULARIS, *&c.*

In quadrupeds the lower *Palpebra* is moveable, and the ſmaller; in birds, on the contrary, the lower is immoveable, and the greater. See BIRD, *&c.*

Animals that have hard eyes, as lobſters, and the generality of fiſhes have no *Palpebræ*; as being ſufficiently ſecured without.

In the generality of brutes is a kind of third eye-lid, which is drawn like a curtain, to wipe off the humidity which might incommode the eyes; it is called the *Nictitating Membrane*. See NICTITATING.

The monkey is almoſt the only one that wants it; as being furniſhed, like man, with hands to wipe the eye on occaſion.

PALPITATION, PALPITATIO, in medicine, a præternatural beating, or pulſation of any of the ſolid parts of the body, eſpecially the heart. See PULSE, *&c.*

The *Palpitation* of the heart is an irregularity in the motions of that viſcus, whereby it is driven with violence towards the ribs, in its contraction, attended with a great feebleneſs of pulſe. See HEART.

There are ſeveral degrees of *Palpitation*: ſometimes it is great, ſometimes moderate, ſometimes ſmall; it is ſometimes ſo impetuous, as to be heard and ſeen by the by-ſtanders.

The trepidation or trembling of the heart, differs from the *Palpitation*, or panting. In the former, the pulſations are faint, ſlow, and faltering; in the latter, the ſhakes are immoderate, violent, and convulſive. See TREPIDATION.

The cauſe of the *Palpitation*, according to Boerhaave, is uſually an inordinate and violent influx of the vital ſpirits into the villi of the heart; as in violent paſſions, ſudden fear, hyſteric affections, violent and ſudden motions. Sometimes it is owing to an irritation of the fibres of the heart, occaſioned by ſome ſharp ſtimulus; as an inflammation of the heart or pericardium, or ſome other diſorder thereof from a ſtone, worms, hairs, an aneuryſma, *&c.*

Sometimes it ariſes from a thick, copious, polypous blood: and ſometimes from the arteries being become cartilaginous or bony; or their extremities obſtructed therewith.

In the dictionary de Trevoux, an author, himſelf afflicted with this diſeaſe, makes a particular diſquiſition into its nature, and cauſe.

Anatomy, he obſerves, ſhews us a great number of occaſional cauſes of this diſeaſe: but phyſicians are ſtill at a loſs to determine the efficient cauſe.

The moderns, with better reaſon than the ancients, ſeek for it in the blood of the pulmonary artery, which is ſuppoſed to rebound impetuouſly towards the right ventricle of the heart; by being prevented from purſuing its courſe towards the other veſſels of the lungs, ſtopped by ſome obſtruction, or compreſſed from various cauſes.

In opening the carcaſſes of people dead of this diſeaſe, or ſubject to it while living, worms or polypus's have been found in the pericardium.

In ſome the heart is extrrordinarily big, and the pulmonary artery dilated to double, or quadruple its ordinary capacity, with obſtructions of the pulmonary vein, conſiſting of cartilaginous matters which cram its cavity ſo cloſe, that, as Blancard tells us, in his anatomy, it is ſometimes difficult even to get a pin in.

From theſe obſervations, ſome have concluded, that the capillary, *&c.* veſſels of the lungs, oppoſing an impaſſable dike to the courſe of the thickeſt part of the blood, driven thither by the contraction of the heart, ſo as only a ſmall quantity can find a paſſage through them, the reſt muſt make an effort againſt their ſides, and oblige them to give way, and ſtretch them out in proportion to the quantity of blood impelled againſt them by the contraction of the heart.

But becauſe the pulmonary artery cannot ſtretch wide enough to receive all the blood of the right ventricle driven thither at a contraction; and ſince the blood, by reaſon of obſtructions, cannot continue its progreſſive motion, in proportion to the velocity wherewith it is impelled, by the contraction of the heart; the heart at each contraction fails to expreſs into the pulmonary artery, all the blood it contained in its right ventricle. Thus that part of the blood which remains, receiving the whole ſtock impreſſed by the contraction, returns it again to the heart by reflection, ſtriking impetuouſly againſt its ſides, and making it bound and ſhoot toward the ribs.

The ſame conſequences will ariſe from obſtructions of the aorta, preventing the entire evacuation of the left ventricle; and generally, from all obſtructions or compreſſions of the veſſels, as polypus's, abſceſſes, and dropſies in the parts near the heart.

As to worms, their biting and gnawing the fibrous parts of the heart, muſt occaſion violent refluxes of ſpirits towards the brain, followed with a copious effluvia of other ſpirits into the nerves of the lungs, by the conſent of parts. And by ſuch means violent and convulſive contractions will be occaſioned throughout the whole texture of the lungs, which oppoſing the free paſſage of the blood may occaſion a *Palpitation* of the heart.

The ſame diſeaſe may ariſe from a compreſſion of the lungs, occaſioned by the extraordinary rarefaction of vicious and fermentative juices, ſojourning in the ſtomach and inteſtines; which dilate thoſe parts to that degree, that the diaphragm and lungs being extremely ſtraightened, the blood cannot circulate without abundance of difficulty; a *Palpitation* therefore muſt enſue; which will laſt as long as that rarefaction in the firſt paſſages.

Such, according to modern phyſicians, are the immediate cauſes of the *Palpitation* of the heart: the remote or occaſional cauſes are whatever may occaſion ſuch obſtruction of the pulmonary artery, *&c.*

In the ſame work, another phyſician lays down winds or flatus's, as cauſe of the *Palpitation*; he adds, that the ancients, to a man, looked on that as the moſt ordinary occaſion thereof: In effect, ſays he, from this ſource may be deduced a multitude of cauſes of ſympathetic *Palpitation*, by means of the ventricle, the diaphragm, mediaſtinum, *&c.*

Others will have the ſole cauſe of *Palpitation* to be a viſcid blood; which, by its extraordinary rarefaction, dilating the pulmonary artery, and, by that means, opening the cavity of its capillary veſſels towards their extremes; or, by this dilatation compreſſing the other little veſſels of the lungs, prevents the blood from continuing its circulating motion with freedom; and thus occaſions a *Palpitation* of the heart.

All theſe authors hold the *Palpitation* a dangerous diſeaſe, and Galen obſerves, that thoſe troubled with it, when young, never live to grow old.

According to M. Piſon, a doctor of the faculty at Paris, the *Palpitation* of the heart may ariſe, either from a too abundant ſeroſity ſwelling the proper membrane of the heart; as Galen found to be the caſe in opening a monkey; or from too great a quantity of water contained in the pericardium; by which means, the heart being ſtraightened, and diſabled from moving with its uſual freedom, is obliged to make ſeveral jerks or half beats, inſtead of the regular motions it had before; or, again, from a ſeroſity thrown into the ventricles of the heart, either from the grand veſſels which furniſh the blood, or from the lungs, or from the brain.

Of theſe three cauſes, the moſt ordinary ſeems to be the too great extenſion of the pericardium, by water, as it is found to be in the bodies of moſt of thoſe opened after this diſeaſe. See Pericardium.

The different cauſes have their different ſymptoms. The boiling ſeroſity thrown out of the blood-veſſels into the heart, ſhews itſelf by ſudden beatings of the temples, whizings in the ear, dim ſight, wandering pains in various parts of the body.

In that produced by the abundance of water in the pericardium, or from the humour ſwelling the proper membrane of the heart, the heart ſeems as if ſuffocated in water, the pulſe weak, the *Palpitation* continual, or nearly ſo, together with a feveriſhneſs and a difficulty of breathing. To which may be added, that the diſeaſe comes by little and little.

The *Palpitation* ariſing from the ſeroſity is cured by bleeding, the other by purging.

PALSGRAVE, a term uſed among the Germans, of the ſame import with *palatine*. See Palatine.

It is compounded of the Latin, *palatium*, and the Dutch, *grave*, governor, *q. d.* governor, or ſuperintendant of a prince's palace. See Grave.

PALSY, Paralysis, in medicine, a diſeaſe, wherein the body, or ſome of its parts loſe their motion, and ſometimes their ſenſation, or feeling.

The cauſes of the palſy are an impeded influx of the nervous ſpirits into the villi or the muſcles: or of the arterious blood into their veſſels; which may happen from ſome fault, either in the brain, the nerves, muſcles or their veſſels.

The *Palſy* is ſaid to be *perfect* or compleat, when there is a privation of motion, and ſenſation at the ſame time.

Imperfect, when one of the two is deſtroyed, the other remaining.

The *Palſy* again, is either *univerſal*, *lateral*, or *partial*.

Univerſal Palsy, called alſo *Paraplegia* or *Paraplexia*, is a general immobility of all the muſcles that receive nerves from the cerebrum or cerebellum, except thoſe of the head.—Its cauſe is uſually ſuppoſed to reſide in the ventricles of the brain, or in the root of the ſpinal marrow.

Etmuller makes this a different diſeaſe from the *paralyſis*, which he ſuppoſes to conſiſt in a relaxation of the ligaments and membranes ſerving for motion; but the *paraplegia* in a meer obſtruction of the nerves.

The *paraplegia* is ſeldom a primary diſeaſe, uſually a ſecondary one, attending or following an apoplexy, ſcorbutus, carus, or arthritis. See Paraplegia.

Lateral Palsy, called alſo *Hemiplegia*, is the ſame diſeaſe with the *paraplegia*; only that it affects but one ſide of the body.—Its cauſe is the ſame, only reſtrained to one ſide of the brain, or ſpinal marrow.

Partial Palsy, is where ſome particular part, or member alone is affected; *e. gr.* where the motion of the arm or leg is deſtroyed.

Dr. Quincy obſerves, that a *Palſy* where motion is deſtroyed, ſenſation remaining, may be produced: firſt, by too much humidity ſtretching the muſcular fibres in length. Secondly, from cold things, which thicken the juices. Thirdly, from external compreſſion. Fourthly, from hot things, which ſtraighten the ſupple membranes and veſſels.—All theſe cauſes affect either the blood, or muſcles; the former, by thickening that humour, ſo that it cannot ſuddenly rarify; and the latter, by relaxing the muſcles into too great a length by too much moiſture, or contracting them into too narrow dimenſions by too much heat. But the ſenſation may yet be preſerved, becauſe, notwithſtanding all theſe hindrances, the animal ſpirits and nerves may not be at all affected.

The cauſes of the *Palſy* where ſenſation deſtroyed, motion remaining, he obſerves, may be all thoſe things which ſo far thicken the animal ſpirits in the nerves, ariſing below the cerebellum, that though indeed they may flow into the muſcles through the nerves, and there, by the occurſion of ſome liquor ſecreted from the blood, rarify; yet they cannot alone flow in ſuch quantities into the nerves, as from a very ſlight cauſe to be made to undulate; whence ſenſation will ceaſe without loſing the motion of the part.

The cauſes of this kind are alſo whatſoever render thoſe nerves more lax and moiſt, and ſo leſs apt for lively vibrations; the animal ſpirits flowing in the mean time into the muſcles, from whence motion is performed without ſenſation.

The cure of the *Palſy*, according to Waldſchmidt, does not differ much from that of the venereal diſeaſe. Internally, mercurials, ſudorifics, and decoctions of the woods are good: externally, unctions, particularly of ſpiritous and penetrating things, not on the part affected, but on the ſpinal dorſi.

PALUDAMENTUM, in antiquity, *Chlamys*: a garment wore by the Romans in time of war; being the coat of arms of their principal men, eſpecially the general; who, for that reaſon were diſtinguiſhed by the appellation *paludati*. See Chlamys.

The ſoldiers, having only ſhort coats, were therefore named *ſagati*. See Sagum.

This garment was open on the ſides, with ſhort ſleeves, by ſome reſembled to angels wings, and came down no lower than the navel.

It was either white, or red; Valerius Maximus remarks it was an ill omen to Craſſus, that they gave him a black *Paludamentum: Pullum ei traditum eſt* Paludamentum, *cum in prælium euntibus album aut purpureum dari ſoleret.*

Cornutus ſays, the Romans wore the Toga in peace, and the *Paludamentum* in war.—And hence, *Togam* Paludamento *mutavit.*

PALY, or Pale', in heraldry.—When an eſcutcheon is divided into ſix, eight, or ten diviſions pale-wiſe, *i. e.* by perpendicular lines drawn from the top to the bottom: it is blazoned *Paly* of ſix, eight, or ten, *&c.* pieces. See Pale.

If the number be odd, then the field is firſt named, and the number of the pales ſpecified. See Pale and Bend.

The like is to be underſtood alſo of barry and bendy. See Barry, *&c.*

Paly-Bendy is, when a coat is divided, both pale and bendwiſe: In *Paly-Bendy*, the field is divided by perpendicular lines, which is called *Paly*, and then again by diagonals croſſing the former from the dexter ſide to the ſiniſter, which is the *Bendy*. See *Tab. Herald. Fig.* 30. The field is *Paly-Bendy*, topaz and diamond.

PAMPINIFORME *Corpus*, in anatomy, a ſort of plexus, or knot of blood-veſſels, formed by the ſpermatic veins; which, in their progreſs through the teſtes, conſtitute a body, called *Corpus Varicoſum Pampiniforme*, or *Pyramidale*. See Pyramidale *Corpus*. See alſo Testicle, Spermatic *Vein*, *&c.*

PANACEA*, Πανακεια, an univerſal medicine; or a remedy for all diſeaſes. See Elixir, *&c.*

* The word is formed from the Greek ϖαν all, ακεμα, I cure.

The accurate Boerhaave overturns the notion of *Panacea's*; and ſhews, from the different cauſes, natures, effects, ſeats, *&c.* of diſeaſes, that ſeveral may be cured by one medicine; but all, by none. See Medicine, *&c.*

He obſerves, that the moſt univerſal remedies known, are water, fire, mercury and opium; and adds, that by theſe alone, cautiouſly diſguiſed, ſome have required the reputation of univerſal phyſicians. See Mercury, Opium, *&c.*

PANACEA, Panaces, or Panax, *All-heal*, is alſo applied to ſeveral plants, by reaſon of the extraordinary virtues aſcribed to them.

There are three of theſe *Panacea's* peculiarly famed among the ancients: the *heraclean*, *aſclepian*, and *chironian*; ſo called from their inventors, Hercules, Aſclepias, and Chiron.

The firſt is the *Panax Heraclea vera ficulnea folio*, in Engliſh *true All-heal of Hercules.*— From the root and ſtem of this is drawn, by inciſion, the gum opopanax. See Opopanax.

The *aſclepian*, according to ſome botaniſts, is a kind of ferula, which Gaſ. Bauhin. calls *Libanotis Ferulæ folio & ſemine.*

The *chironian*, according to ſome is a kind of helianthemum: according to Bradley, it is Doria's woundwort.

PANADA*, Panata, or Panatella, a diet, conſiſting of bread boiled in water, to the conſiſtence of a pulp; given to ſick perſons whoſe digeſtion is weak, or to whom ſtronger foods would be improper. See Diet.

* The word is formed from the name of the principal ingredient, *panis*, bread.

It is ſometimes made thin; to ſerve as a drink; and ſometimes likewiſe ſweetened, *&c.* to render it more palatable.

PANAGE or Pannage in our ancient cuſtoms. See Pannage.

PANARIS*, Panaritium, or Paronychia, in medicine, is a painful tumour, or inflammation, ariſing on the extremities of the fingers or toes; popularly called among us *Whitloe.*

* The word in Latin is *Panaritium*, which we find in Apuleius, formed apparently from the Greek ϖαρονυχια, *q. d.* an abſceſs at the root of the nails; of ϖαρα *juxta* and ονυξ *unguis.*

It is occaſioned by a ſharp or ſaline humour, lodged between the bone and perioſteum, and the nerves and tendons.

An infallible remedy for it, is to open it either with the point of a lancet, or with ſome unguent, and then to dip the finger in a lixivium of vine aſhes.

Beſide the mild kind, called *Whitloe*, there is alſo a malignant kind, called a *Fellon.*

The *Panaris* is exceedingly reſtleſs. It ſometimes tends to an impoſthume, but more uſually gangrenes.

For the *Panaris*, after bleeding, and the univerſal remedies, Dr. Burnet orders the patient to hold his finger a good while in rotten egg, or a putrified mouſe. Helmont tells us, he has ſeen a finger as big as an arm by means of a *Panaris*, cured by rubbing it with blood, then wrapping it up in a mole-ſkin. Riverius adds, that to hold the finger affected in a cat's ear, cures a *Panaris* in two hours. Obſervat. 63. Cent. 4.

PANATA, or PANATELIA. See the article PANADA.

PANATHENÆA, Παναθηναια, in antiquity, a feaſt celebrated at Athens, in honour of Minerva, whom the Greeks called *Athenæ.*

Harpocration and Suidas, refers its inſtitution to Erichthonius IV. king of Athens, who lived before Theſeus. Theodoret, alone, ſays the feaſt was eſtabliſhed by Orpheus.

Be this as it will, till Theſeus, this was a particular feaſt of the city of Athens, and was called ſimply *Athenæa:* but that prince uniting all the people of Attica into one republic, they all aſſiſted at the feaſt; whence the name *Panathenæa*, i.e. feaſt of all Attica.

In effect all Attica was preſent; and each people ſent a bullock for the ſacrifices, and for the entertainment of the vaſt multitude of people aſſembled.

If they eat a great deal, it appears they did not drink leſs; witneſs the veſſels they drunk out of, which were called *Panathenaica*, each of which held two congius's and a half. See CONGIUS.

There were two kinds of *Panathenæa;* the *great* celebrated every five years; and the *little*, every year, or every three years; if we may credit the author of the argument of Demoſthenes's oration againſt Midias.

In the *Panathenæa* was held one of the proceſſions which the ancients called *Pompæ*, compoſed of the briſkeſt old men, each whereof bore, in his hand, an olive-branch; whence they were called *Thallophori.*

This was to do honour to Minerva, in quality of inventreſs of the olive-tree; on which account they had likewiſe combats, wherein the victors were rewarded with veſſels of oil, and crowned with olive-crowns. It was a crime in any of the ſpectators to be clad in black.

The ceremonies were the ſame in the *great*, and the *little Panathenæa;* excepting a banner wherein the actions of the goddeſs were repreſented in embroidery performed by maids, with the names of thoſe who had diſtinguiſhed themſelves in the ſervice of the republic; which was only bore at the greater.

PANCARPUS*, in antiquity, a ſort of ſpectacle, or ſhew which the Roman emperors frequently exhibited to the people. See SPECTACLE.

* The word is formed from the Greek, παν all, and καρπος, fruit.—Whence the name was alſo given by the Athenians to a ſacrifice, wherein all kinds of fruits were offered.

The *Pancarpus* was a kind of chace, or hunt: for the performance hereof, a number of beaſts, as hares, deer, bullocks, *&c.* were ſhut up in the circus or amphitheatre; into which trees were frequently tranſplanted, ſo as to form a kind of foreſt, wherein the beaſts were let looſe; whence the *Pancarpus* was alſo called *Sylva.* See CIRCUS and AMPHITHEATRE.

The beaſts were thus abandoned to the people, *i.e.* to all who were diſpoſed to ſhare in the pleaſure of the chace; who purſued, ſhot, killed and cut in pieces all they could lay hold of. Heliogabalus, the Gordians and Probus, gave this diverſion very frequently.

Caſaubon, Cujas, Pithou, *&c.* make the *Pancarpus* and *Sylva* the ſame thing; Salmaſius will have them different. The *Sylva*, according to him, was a diverſion, as that above deſcribed; but the *Pancarpus* a combat, wherein robuſt people, hired for that purpoſe, fought with wild beaſts; which opinion he confirms from Caſſian, Juſtinian, Claudian, Firmicus, Manilius and Caſſiodorus.

PANCHREAS. See the article PANCREAS.

PANCHREATIC. See PANCREATIC *Juice.*

PANCHREST*, PANCHRESTOS, in medicine, a panacea, or remedy for all diſtempers. See PANACEA.

* The word is Greek Παγχρηστος, formed of παν, all, and χρηστος, *utilis*, uſeful.

PANCHYMAGOGUE*, PANCHYMAGOGUM, in pharmacy, an extract of aloes, rhubarb, ſenna, ſcammony, jalap, agaric, coloquintida, and black hellebore. See EXTRACT.

* The word is formed from the Greek παν, all, χυμος *ſuccus*, juice, and αγειν *ducere*, to draw off.

Its name ariſes hence, that being a compoſition of all the kinds of purgatives, it has the virtue of purging all the ſorts of humours of the body at once. See PURGATIVE.

PANCRATIUM*, Παγκρατιον, among the ancients, a kind of intermixed exerciſe, conſiſting of the lucta or wreſtling, and boxing or pugilate.

* The word is compounded of παν, all, and κρατεω, I overcome.

The *Pancratium* was the third gymnaſtic exerciſe, and was not introduced till long after the former. See GYMNASTICE.

The people, who engaged in theſe exerciſes, were called *Pancratiaſtæ;* which name was alſo given to ſuch as did not confine themſelves to one exerciſe, but ſucceeded in ſeveral different ones.

PANCREAS*, Παγκρεας, in anatomy, popularly called *Sweet-bread*, a huge conglomerate gland; or a body compoſed of an infinite number of little glands, tied up in the ſame common membrane; ſituate at the bottom and hind-part of the ſtomach, and reaching from the duodenum to the ſpleen.—See *Tab. Anat.* (Splanch.) *Fig.* 1. *lit.* f. ſee alſo GLAND, STOMACH, *&c.*

* The word is formed of the Greek παν, all, and κρεας, *caro*, fleſh.

The glands it conſiſts of are bound together both by the veſſel and by a membrane proper to each of them; and all together are looſely cloathed with a thin membrane, from the peritonæum.

Its colour is carnation; its form like that of a dog's tongue, 8 or 9 fingers long, 2½ broad, and one thick; its weight 4 or 5 ounces.—Its arteries come from the cœliac; its veins go to the porta; its nerves come from the hepatic plexus.

Each little gland has an excretory duct, which uniting form one common excretory duct, called *Ductus Pancreaticus Virtſungi*, from Wirtſungus, profeſſor of anatomy at Padua, the diſcoverer thereof. See DUCT.

This duct, running along the middle of the *Pancreas*, opens into the cavity of the duodenum, generally by two mouths, the one four or five fingers below the pylorus, ſometimes at the ſame orifice with the ductus choledochus; the other lower. It is of the bigneſs of a raven's quill, near the inteſtines, but leſs, further off. De Graaf obſerves, that it is frequently double.

The *Pancreas* ſerves to ſeparate a peculiar humour from the blood, called the *Pancreatic Juice.* See PANCREATIC *juice.*

PANCREAS *Aſellii*, in comparative anatomy, is a large gland in the middle of the meſentery of ſome brutes, eſpecially dogs; to which, moſt of the lacteals reſort; and whence the chyle is conveyed, by large veſſels, that have their riſe immediately from the inteſtines, and called *Lactea ſecundi Generis.* See MESENTRY.

It has its name from the author who firſt took notice of it, Aſellius. See LACTEAL.—M. Perrault obſerves, that the fiſh, called *Place*, has 440 *Pancreas's;* though it has but five ducts opening into the inteſtines, each of which correſpond to 80 *Pancreas's*, and 2 of them to 100 a-piece.

PANCREATIC *Juice*, an inſipid, limpid juice, or humour ſeparated from the blood, and prepared in the *Pancreas.* See PANCREAS.

This juice is not acid, as moſt authors have ſuppoſed; nor alcaline, as ſome others; but a little ſaline, and much reſembling the ſaliva in its origin, veſſels, and properties.

It is carried by the *Pancreatic* duct into the duodenum, where it ſerves to dilute the chyle, to render it more fluid and fit to enter the mouths of the lacteals; and perhaps to temper and dilute the bile, to change its viſcidity, bitterneſs, colour, *&c.* and make it mix with the chyle, in order to reduce the ſeveral taſtes, odours, and properties of the ſeveral foods into one homogeneus one. See BILE, CHYLE, and CHYLIFICATION.

Janſſon ab Almeloveen will have the *Pancreatic Juice* to have been known to Hippocrates and Galen.—De Graaf, a Dutch phyſician, has found means of collecting a quantity of it for experiments; and has publiſhed a treatiſe expreſs, *de Succo Pancreatico.*

Brunner relates, that the *Pancreatic* duct, in ſeveral dogs having been tried, and cut, they ſtill continued to eat, and drink, and perform all the other functions of life as uſual. One of them ſeemed only to have the better ſtomach for it. See DUCT.

PANDECTS, PANDECTAE, in juriſ-prudence, the digeſt, or collection made by Juſtinian's order, of 534 deciſions, or judgments of the ancient lawyers, on ſo many queſtions occurring in the civil law; to which that emperor gave the force, and authority of law by the epiſtle prefixed to them. See DIGEST.

* The word is Greek Πανδεκται, compounded of παν, all, and δεχομαι *capio*, I take; *q.d.* a compilation, or a book containing all things.—Though others, as Bartoli, will have it formed from παν and δεχομαι; as if theſe books contained the whole doctrine of the law.

The *Pandects*, conſiſt of fifty books, and make the firſt part of the body of the civil law. See CIVIL *Law.*

They were denoted by two ππ; but the copiſts taking thoſe ππ for *ff*, the cuſtom aroſe of quoting them by *ff.*

The *Florentine Pandects*, are thoſe printed from a famous ancient manuſcript at Florence.

Papias extends the denomination of *Pandects*, to the old and new teſtament.

There are alſo PANDECTA *Medicinæ*, *Pandects of Medicine*, a kind of dictionary of things relating to medicine, compiled by Mat. Sylvaticus of Mantua, who lived about the year 1297. Leunclavius has publiſhed *Pandects* of Turkey; and biſhop Beveridge *Pandects* of the cannons, *Pandecta Canonum*.

PANDICULATION, PANDICULATIO, in a general ſenſe, is a violent and tenſive motion of the ſolids which uſually accompanies the act of yawning; and is otherwiſe called *Stretching*. See YAWNING.

PANDICULATION, is alſo uſed in a peculiar ſenſe for that reſtleſſneſs, ſtretching, and uneaſineſs, which uſually accompany the cold fit of an intermitting fever. See INTERMITTING *Fever*.

It is ſuppoſed to ariſe from a convulſive dilatation of the muſcles, whereby nature endeavours to throw off ſomething that diſturbs her.

PANDURA, or PANDORON*, a muſical inſtrument, uſed among the ancients; reſembling the lute. See LUTE.

* The word according to ſome, is formed from the Greek παν, and δωρον, *i. e.* all-gift, all ſorts of gifts. Iſidore derives the name from its inventor *Pandorus*; others from *Pan*, to whom they attribute its invention, as well as that of the flute.

It has the ſame number of ſtrings; but they are of braſs, and of conſequence give a more agreeable ſound than thoſe of the lute. Its frets are of copper, like thoſe of the ciſtre; its back flat like that of the guitarre; and the rims of its table, as well as its ribs, cut in ſemi-circles.

Du Cange obſerves, that Varro, Iſidore, and others of the ancients, mention it as having only three ſtrings; whence it is ſometimes alſo ſpoken of, under the denomination, τειχορδον, *Trichordum*.

PANEGYRIC*, PANEGYRIS, or PANEGYRICUS, an oration in praiſe of ſome extraordinary perſon, or virtue. See ORATION.

* The name is Greek Πανηγυρις, formed of παν, all, and αγειρω, I aſſemble, becauſe anciently held in public and ſolemn aſſemblies of the Greeks, either at their games, their feaſts, fairs, or religious meetings.

The *Panegyric* is ranked among the demonſtrative kind of orations. See DEMONSTRATIVE.

To make their *Panegyrics* the more ſolemn, they uſed to begin with the praiſes of the deity, in whoſe honour the games, *&c.* were celebrated; then they deſcended to the praiſe of the people or country where they were celebrated; then to the princes or magiſtrates who preſided at them; and at length to the champions, eſpecially the conquerors who had gained the prize.

F. de Colonia lays down two methods, or ſeries's obſerved in *Panegyrics*.—The *Artificial*, where, without any regard to the order of time, every thing is reduced to certain heads. Thus, Tully refers the whole praiſe of Pompey to his ſkill in war, his virtue, authority, and felicity.

The other *Natural*, wherein the order and time of hiſtory are obſerved. This ſeries he divides into three periods; the ſpace before the perſon's birth, that wherein he lived, and if he be dead, that which followeth his death. This *natural* ſeries requires much leſs art, genius, *&c.* than the other.

The places, or ſources of *Panegyric* are chiefly the family, country, auguries at his birth, his virtues, the talents of his body and mind, honours, riches, manner of his death, and the conſequences thereof.

PANEGYRIC, Πανηγυρικος, is alſo the name of a church-book, in uſe among the Greeks; ſo called, as conſiſting of *Panegyrics*, or diſcourſes in praiſe of Jeſus Chriſt, and the ſaints. It is found in MS. in moſt churches; but is not the ſame in all; each church having its particular ſaints; and the compilers of this kind of books, uſually ſuiting their collections to the taſte of their own devotion.

They are diſpoſed according to the order of months, and frequently conſiſt of twelve volumes, anſwering to the twelve months of the year.

PANEL, PANELLA, PANELLUM, in law, is derived by Spelman from *Pagella*, a ſchedule, or page: in which ſenſe we ſay, a *Panel* of parchment, a *Counter-pane* of an indenture, *&c.*

PANEL or PANNEL, is more commonly uſed for a ſchedule or roll, containing the names of ſuch Jurors, as the ſheriff returns to paſs upon any trial. See JURY.

Hence, the empanelling of a jury, is the entering of their names, by the ſheriff, into a *Panel*, or little ſchedule of parchment; called alſo the *Panel of aſſiſe*, *Panellum aſſiſæ*. See ASSISE.

Coke on Littleton, will have *Panel* to be an Engliſh word, ſignifying a little part; as being a diminutive of the word *Pane*, part. But Spelman takes this for an over-ſight.

PANEL, in joinery, *&c.* See PANNEL.

PANES, in the ancient theology. See FAUNS and SATYR.

PANIC, or PANIC-*Fear*, a term uſed for a needleſs, or ill-grounded fright.

Polyænus fetches the origin of the phraſe from Pan, one of the captains of Bacchus, who, with a few men, put a numerous enemy to rout, by a noiſe which his ſoldiers raiſed in a rock valley, favoured with a great number of echo's. This ſtratagem making their number appear much greater than it really was, the enemy quitted a very commodious encampment, and fled.—Hence all ill-grounded fears have been called *Panics* or *Panic-fears*; and it was this gave occaſion to the fable of the nymph echo's being beloved by that god.

Others derive the origin of the expreſſion hence, that in the wars of the Titans againſt the gods, *Pan* was the firſt who ſtruck terror into the hearts of the giants.—Theon on Aratus ſays, he did it by the means of a ſea-ſhell which ſerved him for a trumpet, whereof he was the inventor.

PANICULA, PANICLE, in botany, a ſoft, woolly beard, or ſtring, whereon the ſeeds of ſome plants hang, pendulous: as, in reeds, millet, *&c.*

Such are hence called *Paniculated Plants*. See PLANT.

PANIS *& Cereviſiæ Aſſiſa*. See ASSISA.

PANIS *& Cereviſiæ Emendatio*. See EMENDATIO.

PANNAGE, PANAGE or PAWNAGE, are uſed in our law-books *&c.* for the maſt of woods; as of beech, acorns, *&c.* See MAST.

As alſo, for the running, and feeding of ſwine, or other cattel in foreſts.

And for the monies taken by agiſtors for the ſame. See AGISTOR.

PANNAGIUM *liberum*, or *free* PANNAGE, was a liberty of free running of ſwine in certain foreſts or woods, granted by privilege to certain private perſons, and ſeveral religious houſes.

Lindwood defines *Pannagium*, by *paſtus pecorum in nemoribus, & in ſilvis, utpote de glandibus & aliis fructibus arborum ſylveſtrium, quarum fructus aliter non ſolent colligi.*

It is alſo mentioned 20 *Car.* II. *Quiſque villanus habens decem porcos, dat unum porcum de Pannagio*; by which it appears, that one hog in ten was given for *Pannage*.

PANNEL, in law. See the article PANEL.

PANNEL, or PANEL, in joinery, *&c.* a tympan, or ſquare piece of wainſcot, ſometimes carved; framed or grooved in a larger piece, between two mounters or upright pieces, and two traverſes or croſs pieces. See WAINSCOT.

Hence alſo *Panels*, or panes of glaſs, are compartiments or pieces of glaſs of various forms, ſquare, hexagonal, *&c.*

PANNEL in maſonry, denotes one of the faces of a hewn ſtone. See STONE.

PANNELS* *of a Saddle*, are two cuſhions full of hair, or flocks, placed under the ſaddle, one on each ſide, next the horſes back, to prevent the bow from hurting the horſe. See SADDLE.

* The word is formed from the *French*, *Panneau*, of *Pan*, flatſide.

PANNICULUS*, in anatomy, a term frequently uſed for a membrane. See MEMBRANE.

* The word is *Latin*, formed by diminution, from *Pannus*, cloth, *q. d.* a little cloth or fine web.

Hence, *Panniculus adipoſus*, *&c.* is the ſame with *Membrana adipoſa*, *&c.* See ADIPOSA, *&c.*

PANNICULUS *Carnoſus*, is a fleſhy membrane, which the ancient anatomiſts ſuppoſed to be common to the whole body; and to be the fourth integument or covering thereof, after the epidermis, cutis, and the adipoſus. See SKIN.

This *fleſhy Pannicle*, according to them, is a thick membrane, which covers the whole body; and even comes muſculous in ſome parts: but the lateſt anatomiſts deny any ſuch membrane in the human body; maintaining, that what the ancients called the *fleſhy Pannicle*, is only the fatty or adipoſe one.—Dr. Drake makes it a double membrane, one half of which forms the membrana adipoſa, the other half the membrana communis of the muſcles.

The uſe the ancients aſcribed to the *fleſhy Pannicle* was to wrinkle and contract the ſkin; but the truth is, where-ever the ſkin wrinkles, there are particular muſcles for the purpoſe, called *cutaneous muſcles*.

Theſe muſcles the ancients owned; but ſaid their office was confined to particular motions; adding, that there are places where no fat is found between the cutis and the *fleſhy Pannicle*; which is falſe.

Further, even in animals which do move the ſkin, this *Pannicle* is no more than a cutaneous muſcle, as well as the dartos. See DARTOS.

Some of the modern anatomiſts, however, admit the *fleſhy Pannicle*, and deny the adipoſa one; ſuppoſing the latter, in reality only a part of the former. See FAT and FLESH.

PANNIER, in architecture. See CORBEL.

PANNUS*, a Latin word, ſignifying cloth, rag, *&c.*

* The word is derived from πηνος, a web.

PANNUS, (in medicine) a diſeaſe of the eye, popularly called the *Web*.

The *Pannus* is an excreſcence ariſing on the adnata or conjunctiva; leſs hard and membranous than the unguis; and repreſenting a web, or tiſſue of little veins ſwelled with blood. Its cauſe is an obſtruction of the blood in the minute veſſels of that tunic.

Its cure is much the ſame with that of the Ophthalmia.

A chief difference is, that in the *Unguis*, the membranous excreſcence only covers part of the eye, after the manner of a nail; whereas in the *Pannus* it covers the whole. See UNGUIS.

PANTALOON or PANTALON, the name of an ancient garment frequent among our forefathers, conſiſting of breeches and ſtockings all of a piece.

The denominations comes from the Venetians, who firſt introduced this habit, and who are called *Pantaloni*, from St. *Pantaleon*, who was formerly their patron.

PANTALOON, on the theatre, is a buffoon or maſk, who performs high and groteſque dances, and ſhews violent and extravagant poſtures, and airs.

The word is alſo uſed for the habit or dreſs theſe buffoons uſually wear; which is made preciſely to the form of their body, and all of a piece from head to foot.

Hence thoſe who wear a habit of this kind, for conveniency, under their other cloaths, are called *Pantaloons* of Venice.

PANTHEA, Πανθεια, among the ancients were ſingle ſtatues, compoſed of the figures, or ſymbols of ſeveral different divinities combined. See STATUE.

Father Joubert, who calls them *Panthea*, and who has obſerved them on ſeveral medals, ſays their heads are moſt commonly adorned with ſymbols or attributes belonging to ſeveral gods. See ATTRIBUTE.

An inſtance hereof we have in a medal of Antoninus Pius; which at the ſame time repreſents Serapis, by the buſhel it bears; the Sun, by the crown of rays; Jupiter Ammon, by the ram's horns; Pluto, by the large beard; and Æſculapius, by the ſerpent twiſted in his hand. See GOD.

M. Baudelot, in a diſſertation on the Lares, will have the *Panthea* to have had their riſe from the ſuperſtition of thoſe, who taking ſeveral gods for the protectors of their houſes, united them all in the ſame ſtatue, by adorning it with the ſeveral ſymbols, proper to each of theſe deities. See LARES.

PANTHEON *, Πανθεον, in architecture, a temple, or church, of a circular form; dedicated to all the gods, or all the ſaints. See TEMPLE and CHURCH.

* It is thus named from the Greek παν, all, and ϑεος, God.

The *Pantheon* of ancient Rome, is of all others the moſt celebrated, and that whence they all take their name. It was built by Agrippa, ſon-in-law of Auguſtus, in his third conſulate, 25 years before Chriſt. It was dedicated by him to Jupiter ultor, Jupiter the revenger; and had the name *Pantheon*, by reaſon of the great number of ſtatues of the Gods ranged in niches all round; and becauſe built of a circular form, to repreſent heaven, the reſidence of the gods. It has but one door, and one window, receiving all its light from the top of its dome.

The pope obtaining this *Pantheon* of the emperor Phocas, converted it into a church, without any alteration in the building; and dedicated it to the virgin, and all the martyrs.—And it ſtill ſubſiſts at Rome under the title of *Notre Dame della Rotonda*. See ROTONDA.

The *Pantheon of Niſmes*, was a temple in that city, wherein were 12 niches, or ſtatues, ſuppoſed to have been deſtined for the 12 great gods. See GOD.

In the eſcurial, is a magnificent chapel, called *Pantheon*, 35 feet in diameter, and 38 high, from the pavement which is of marble and jaſper inlayed. The whole inſide of the chapel is of black marble, excepting the luthern and ſome ornaments of jaſper and red marble.

In this chapel are depoſited the bodies of the kings and queens: there are only places made for 26: eight of which are already filled. See ESCURIAL.

PAPA, in antiquity. See the article POPE.

PAPAL *Crown*, is a deep cap, or mitre of cloth of gold, encompaſſed with three coronets or circles of gold, adorned with flowers; and the whole enriched with precious ſtones; having a globe at top, finiſhed with a croſs. See CROWN.

PAPER, a thin flexible leaf, uſually white, artificially prepared of ſome vegetable ſubſtance, chiefly to write upon, with ink. See WRITING, INK, *&c.*

* The word is formed from the Greek Παπυρος, *Papyrus*, the name of an Egyptian plant, called alſo βιϐλος, *Biblus*, whereon the antients uſed to write.

Various are the materials, on which mankind in different ages and countries have contrived to write their ſentiments; as on ſtones, bricks, the leaves of flowers, and trees, and their rinds or barks; alſo tables of wood, wax, and ivory; to which may be added plates of lead, linen rolls, *&c.* At length the Egyptian *Papyrus* was invented; then parchment, cotton *Paper*, and laſtly the common or linen *Paper* [a].

[a] *Vid.* Maffei *Iſtor. Diplom.* l. 2. § 3——10 *Bibl. Ital.* T. 2. p. 242. Leo Allat. *Antiq. Hetruſc.* p. 127. ſeq. Hug. *de Scrib. Origin.* Alex. ab Alexand. l. 2. c. 30. Barthol. *Diſſ.* 4. *de Libr. Legend.* p. 90, ſeq.

In ſome places and ages they have even written on the ſkins of fiſhes; in others, on the inteſtines of ſerpents; and in others, on the backs of tortoiſes—Not to mention what Epiphanius relates, that Moſes received the law written on tables of ſapphire; nor what the Cabbaliſts dream, that the ſame was written on a globe of fire; nor laſtly, thoſe military teſtaments ſpoken of by civilians, which were written in the duſt or ſand [b].

[b] *Vid.* Mabill. *de Re diplomat.* l. 1. c. 8. Fabric *Bibl. Ant.* c. 21. § 9. p. 610. ſeq. Raimm. *Idea Syſtem. Antiq. Liter.* p. 309. See alſo the articles, BOOK, PARCHMENT, *&c.*

There are few ſorts of plants but have been uſed for *Paper*, and books: and hence the ſeveral terms, *biblos*, *codex*, *liber*, *folium*, *tabula*, *tillura*, *philura*, *ſcheda*, *&c.* which expreſs the ſeveral parts on which they were written: and though in Europe all theſe diſappeared upon the Introduction of *Papyrus* and parchment, yet in ſome other countries the uſe of divers of them obtain to this day.—In Ceylon, for inſtance, they write on the leaves of the Talipot [a]: The Bramin MSS. in the Tulinga language, ſent to Oxford from Fort St. George, are written on leaves of the Ampana or Palma Malabarica [b]: Hermannus gives an account of a monſtrous palm tree called, *Codda pana*, or *Palma Montana Malabarica*, which about the 35th year of its age, riſes to be 60 or 70 foot high, with plicated leaves nearly round, 20 foot broad; wherewith they commonly cover their houſes; and on which they alſo write; part of one leaf ſufficing to make a moderate book. They write between the folds, making the characters through the outer cuticle [c].

[a] Knox. *Hiſt. Ceyl.* l. 3. Le Clerk. *Bibl. Univ.* T. 23. p 242, [b] *Phil Tranſ.* N° 246. p. 422, ſeq. [c] *Vid. Hort. Ind. Malab.* p. 3. *Phil. Tranſ.* N°. 145. p. 108.

In the Maldivee Iſlands, the natives are ſaid to write on the leaves of a tree called *Macaraquean*, which are a fathom and a half long and a foot broad. And in divers parts of the Eaſt Indies, the leaves of the Muſa Arbor or Plantain Tree dried in the ſun, ſerved the ſame uſe, till of late that the French have taught them the uſe of European *Paper* [d].— Ray, in fine, enumerates divers kinds of Indian and American trees which bear *Paper*; particularly one called *Xagua*, which has ſomething in it extraordinary; its leaves are ſo large, and of ſo cloſe a texture, that they cover a man from top to toe, and ſhelter him from the rain, and other inclemencies of the air like a cloak; from the innermoſt ſubſtance of which leaves, a *Paper* is taken; being a white and fine membrane like the ſkin of an egg, as large as a ſkin of our vellum or parchment, aud nothing inferior for beauty and goodneſs to the beſt of our *Papers* [e].

[d] *Vid.* Savar. D. *de Comm.* T. 2. p. 967. [e] *Vid.* Ray *Hiſt. Plantar.* T. 2. l. 32. *Nouv. Rep. Let.* T. 12. p. 361.

Paper is chiefly made among us of linen or hempen rags, beaten to a pulp in water, and moulded into ſquare ſheets, of the thickneſs required.—But it may alſo be made of nettles, hay, turnips, parſnips, colewort leaves, earth-flax, or any thing that is fibrous; nay it may be made of white woollen rags; though this would not ſerve for writing, becauſe of the harineſs [f].—The Chineſe *Paper* is ſo fine, that many of the Europeans have thought it was made of ſilk; not conſidering, ſays du Halde, that ſilk cannot be beat into ſuch a paſte, as is neceſſary to make *Paper* [g]: Though the ſame author afterwards ſpeaks of a *Paper* or parchment made of the balls of ſilk worms; and the like we are aſſured by others is done ar Cathay [h].

[f] Hought. *Collect.* N° 360. T. 2. p. 418, ſeq. [g] *Deſcript. of Chin.* p. 360, ſeq. [h] *Vid.* Buſbeq. *Legat. Turc. Epiſt.* 4. p. 329.

PAPER, with regard to the mannner of making it, and the materials employed therein, is reducible to divers kinds: *Egyptian*, *European* and *Chineſe Paper*: we alſo find mention of *cotton Paper*, *bark Paper*, and *aſbeſtine or incombuſtible Paper*.

Egyptian PAPER, is that which was principally uſed among the ancients: made of a ruſh called *Papyrus*, or *Biblus*, growing chiefly in Egypt about the banks of the Nile: though it was alſo found in India; and Gualandinus aſſures us, he ſaw in Chaldæa at the confluence of the Tygris and Euphrates, large fens, wherein with his own hands he plucked a *Papyrus* differing in nothing from that of the Nile. Strabo likewiſe ſpeaks of a ſort of *Papyrus* growing in Italy; but we do not find it was ever uſed for making *Paper*.

The deſcription given by Pliny [i] of the *Papyrus*, or *Paper-ruſh*, is ſomewhat obſcure. Its root, according to him, is of the thickneſs of a man's arm, and ten cubits long: from this ariſe a great number of triangular ſtalks 6 or 7 cubits high, each thick enough to be eaſily ſpanned. Its leaves are long like thoſe of the bul-ruſh; its flowers ſtamineous, ranged in cluſters at the extremities of the ſtalks; its roots woody and knotty like thoſe of ruſhes, and its taſte and ſmell near akin to thoſe of the Cyperus [k].

[i] *Vid.* Plin. *Hiſt. Nat.* l. 13. c. 11. [k] *Vid.* Theophr. *Hiſt. Plant.* l. 4. c. 9. and Dalecamp. who gives us a figure of it, *Hiſt.* l. 18. p. 1883.—See alſo Bauhin. l. 18. c. 186. who with Geſner makes it a ſpecies of Cyperus. Grew. *Muſ. Reg. Societ.* p. 2. ſect. 2. p. 225, ſeq. Maffei, *Iſtor Diplom. Bibl. Ital.* T. 2. p. 246.

Beſides *Paper*, they made ſails, ropes, and other naval rigging; as alſo mats, blankets, clothes, and even ſhips, of the ſtalk of the *Papyrus*. Moſes, we are told, when a child, was expoſed on the banks of the Nile, εν ϑιϐη παπυρȣ, *i. e.* in a baſket of *Papyrus*. Add that the Egyptian prieſts wore ſhoes of *Papyrus*.

Guilandinus, a Pruſſian phyſician, has a celebrated work expreſſly on the antient *Papyrus*, by way of commentary on three chapters of Pliny *, wherein is amply, and with great learning, explained all that relates to this ſubject; yet Scaliger has written a ſevere critique on it, in which ſome inaccuracies of Guilandius are pointed out **, which has not hindered Kirchmayer from adopting almoſt Guilandinus's whole book in a diſſertation on the *Papyrus* ***. Add, that the moſt ingenious and learned count Scipio Maffei has lately vindicated Guilandinus againſt the exceptions of Scaliger, as well as of Voſſius and Hardouin.—*Vid. Iſtor. Diplomat.* l. 2. *Bibl. Ital.* T. 2. p. 248.

* *Melch. Guilandini Papyrus*, h. e. *Commentarius in tria C. Plinii Majoris de Papyro capita*, ſc. lib. XIII. c. XI, XII, XIII, firſt publiſhed at Venice in 1572. and afterwards at Amberg in 1613. by Salmuth.— It ſeems Guilandinus intended a commentary on the whole of Pliny's *Natural Hiſtory*; but this ſmall part, not exceeding a moderate page, taking him up full ſix months, 'tis no wonder he was diſcouraged from proceeding with the reſt. In theſe three chapters he has reſtored above twenty paſſages in the text of Pliny, not merely from his own conjecture, or the help of MSS. but from the nature of the things deſcribed, and the teſtimonies of authors of the firſt rank: beſides that, he had been upon the ſpot, where formerly the *Papyrus* was manufactured, and had carefully examined all the ancient Greek and Latin authors who ſpeak of it.

** *Joſ. Juſt. Scaligeri Animadverſiones in Melchioris Guilandini Commentarium in tria C. Plinii capita*, lib. XIII. *Hiſtoriæ Mundi ſive Naturalis, quibus agit de Papyro*, firſt publiſhed in the *Lectiones bibliothecariæ memorabiles*, of Rudolphus Capellus, at Hamburgh in 1682.—Where he follows Guilandinus ſtep by ſtep, finds as many faults in him as his father had done in Cardan, and uſes him altogether as coarſely; every where pointing out his literary miſtakes, and labouring to ſhow, that inſtead of reſtoring Pliny, he has often miſtaken and corrupted him.

*** *M. Seb. Kirchmaieri Uffenhaimenſis Franci Diſſertatio Philologica de Papyro veterum, Wittebergæ* 1666. 4to.———He had done better ſervice, if beſides Guilandinus he had conſulted others, and particularly Scaliger. But as he choſe to follow one rather than many, and that too as the blind follow their guides, his fate has been much the ſame.

The origin of the art of making *Paper* of the *Papyrus* is very obſcure: no doubt it was firſt diſcovered in Egypt. Iſidore fixes it more particularly to the city Memphis.—Orig. l. 6. c. 10. In which he ſeems to be countenanced by Lucan, where he ſays

Nondum flumineas Memphis contexere Biblos
Noverat—————————Pharſal. l. 3. v. 222.

The Æra of this invention is warmly diſputed: Varro the moſt learned of the Romans, fixed it to the time of Alexander the Great, after the building of the city Alexandria by that conqueror; but ſeveral objections of no ſmall weight are brought againſt this deciſion. Pliny recites a paſſage out of a very ancient annaliſt, one Caſſius Hemina, wherein mention is made of *Paper* books found in Numa's tomb 535 years after his Death, which had been buried with him [a]: Now Numa was prior to Alexander by above 300 years. Guilandinus in effect, maintains with great erudition, that the name and uſe of the *Papyrus* were known to the Greeks long before Alexander conquered Egypt; and that the words βιϐλος and βιϐλιον occur in their received ſignification in authors prior to, or at leaſt older than Alexander, particularly Anacreon, Alcæus, Plato the comedian, Ariſtomenes, Cratinus, Antiphanes, Plato the philoſopher, Æſchylus and Ariſtotle. And whereas ſome ſpeak of I know not what, *pſeudo-biblus*, known before the diſcovery of the true ſort, he argues on the contrary, that the *biblus* mentioned by thoſe authors prior to the conqueſt of Alexander, appears from Herodotus, Theophraſtus, and others, to be the very ſame plant with the *Biblus* or *Papyrus*, of which *Paper* was made. Even Homer and Heſiod, the moſt ancient Greek poets, and who, by by Herodotus's teſtimony, lived about 400 years before himſelf, appear to have been no ſtrangers to the *Paprus*, ſince they make expreſs mention of it [b].

[a] *Vid.* Plin. l. 13. c. 13.

[b] Guiland. *Papyr. Membr.* 2. Reimm. *Idea Syſt. Antiq. Liter.* p. 285, ſeq. Kirchman. *Diſſ. de Papyr. Art.* 11. § 2.

To this it may be anſwered, that ſuppoſing the plant *Papyrus* known in Greece long before Alexander's conqueſt of Egypt, it no more follows, that they had then the uſe of *Paper*, than it follows that men had wine immediately on the diſcovery of the Vine: this laſt it is certain was known among them long before they made wine; and to this day, a part of the new world called *Florida* is ſaid to abound with wines, though no uſe have been yet made of them either by the inhabitants or the Spaniards. As it was with the vine, which muſt have been known before wine could be made from it, ſo it is with *Papyrus*, which among the Greeks was long uſed for tying up things, before it came to be written on. In reality, Guilandinus produces teſtimonies from Anacreon and Alcæus, in which the *Papyrus* is employed for binding and not for *Paper*: add, that he ill tranſlates τυφϱεια λυχνον, Ellychnium, ſince λυχνος here is the torch itſelf. Nor does the Poet ſay it was made of *Papyrus*, but tyed up with it. —*Vid.* Scalig. *lib. cit.* Reimm. *ubi ſupra*, p. 305, ſeq.

Some have even doubted whether the art of manufacturing the *Papyrus* was ſo ancient as Alexander's time; chiefly on this ground, that for 200 years after Alexander, men wrote on ſkins, and barks of trees: But this is no-wiſe concluſive. The ſcarcity of the new manufacture may account for it: ſome ages afterwards, even as low as Tiberius, we read of ſuch a ſcarcity of *Paper*, that its uſe even in contracts was diſpenſed with by a decree of the ſenate, and the opinion of the judges. The ſame conſideration may be carried further: *Paper* might have been known in Egypt, Judæa, Syria, and Aſia on this ſide Taurus, long before the Birth of Alexander, though not in common uſe: but it was later ere the Europeans received it; and probably it was by means of Alexander's conqueſt that it firſt became publickly known there.

When the manufacture of the Egyptian *Paper* ceaſed, is another queſtion; for at preſent the *Papyrotechnia Ægyptiaca* may be reckoned among thoſe arts that are loſt. Euſtathius, the learned commentator on Homer, teſtifies, that even in his time, *viz.* in 1170. it was diſuſed [c]; Mabillon indeed maintains that it continued till the eleventh century after Chriſt, and cites one Fridegod, a monkiſh poet of the Xth century, as ſpeaking of it as ſubſiſting in the age before his, that is in the IXth; but that it continued longer, the ſame Mabillon endeavours to evince from ſeveral papal bulls wrote on it as low as the XIth century [d].

[c] *Vid.* Euſtath. *ad* Homer. *Odyſſ.* φ. *Voſſ. de Art. Gramm.* l. 1. c. 37.

[d] *Vid.* Mabill. *de Re deplomat.* l. 1. c. 8. § 6, ſeq. Reimm. *Idea Syſt. Antiq. Liter*, p. 311.

Maffei, on the other hand, maintains with more probability, that the *Papyrus* was generally diſuſed before the Vth century; for we find no authentic records written on it dated ſince that time; thoſe bulls of popes, cited by Mabillon, appearing rather to be written on cotton *Paper* [e]. But this we may obſerve, relates only to the general and legal uſe of the *Papyrus* — For that it ſhould have continued to be made by particular perſons ſeveral hundred years after it firſt began to give way, is not to be wondered at.

[e] *Vid.* Maffei *Iſtor. Diplomat. loc. cit. Bibl. Ital.* T. 2. p. 251.

In reality, a more commodious ſort of *Paper*, made of cotton, having been invented ſome ages before in the Eaſt, and coming to be introduced into Europe, ſeems to have turned the *Papyrus* out of doors.—To which the continual wars with the Saracens, by which the traffick to Alexandria was rendered precarious, might poſſibly contribute.

Yet ſeveral books written on leaves of the *Papyrus* have even continued to our days: Mabillon ſays, he had one of them, and adds, that there is another in the Petavian library, being a volume in ſmall folio, containing ſeveral Sermons of St. Auguſtin; he alſo mentions a third, containing that father's epiſtles, formerly belonging to the church of Narbonne, and now in the cuſtody of Madame de Phirmacon. Beſides the Homilies of Avitus biſhop of Vienne, and divers diploma's or charters all written on the *Papyrus*, which appear not to be leſs than 1100 years old [f]. But the deciſions of this learned father concerning MSS. notwithſtanding all his diplomatic ſkill ſo highly boaſted of, are not always infallible: witneſs his taking the MS. of St. Mark's Goſpel at Venice to be written on Egyptian *Papyrus*, and that of Joſephus at Milan not to be ſo.—Maffei ſhews on the contrary, that the former is cotton *Paper*, and that the latter appears at firſt ſight to be Egyptian: not but the Venetian MS. is very old; but it has been ſo much uſed, that its leaves are as it were transformed into the original paſte from whence they were made [g].

[f] *Vid.* Mabill. *Suppl. ad Libr. de Re diplomat. Journ. des Scav.* T. 32. P. 2. p. 992.

[g] *Vid.* Maffei *lib. cit. Bibl.* T. 2. p. 252.

Manner of making the Egyptian PAPER.—They began with lopping off the two extremes of the *Papyrus*, *viz.* the head and root as of no uſe in this manufacture: the remaining ſtem they ſlit lengthwiſe into two equal parts, and from each of theſe they ſtripped the thin ſcaly coats or pellicles *, whereof it was compoſed, with the point of a penknife **. The innermoſt of thoſe pellicles were looked on as the beſt; and thoſe neareſt the rind or bark the worſt: they were kept apart accordingly, and conſtituted different ſorts of *Paper*.

* Theſe pellicles are called in Pliny by twelve different names, *viz. philura, ramentum, ſcheda, cutis, plagula, corium, tænia, ſubtegmen, ſtatumen, pagina, tabula*, and *papyrus*.

** The generality of criticks, in lieu of a penknife employ a needle to ſeparate the pellicles: in which they are warranted by the common text of Pliny: *Præparantur ex eo chartæ, diviſo acu in prætenues, ſed quam latiſſimas philuras.* But Guilandinus makes a correction here: he had found by experiment, that the pellicles of *Papyrus* cannot be ſeparated by a needle; but that a very ſharp knife is required: for which reaſon inſtead of *diviſo acu*, he reads *diviſo ſcapo* [a]. In which he is followed by Maffei; though Hardouin, Voſſius, Pitiſcus, and others, retain the ancient reading [b].

[a] *Vid.* Guiland. *Papyr. Membr.* 10. § 3. & 5. Maffei *Iſtor. Diplom. ap. Bibl. Ital.* T. 2. p. 247, ſeq.

[b] Voſſ. *de Art. Grammat.* l. 1. c. 37. Pitiſc. *L. Ant.* T. 1. p. 413. *voc. Charta.* Hardou. *ad* Plin. l. 13. c. 12.

As the pellicles were taken off, they extended them on a table: then two or more of them were laid over each other tranſverſely, ſo as that their fibres made right angles; in this ſtate they were glued together by the muddy waters of the Nilus*. Theſe being next preſſed to get out the water, then dried, and laſtly flatted and ſmoothed by beating them with a mallet; conſtituted *Paper:* which they ſometimes poliſhed further by rubbing it with a hemiſphere of glaſs, or the like.—*Vid.* Plin. Guiland. and Maffei *locc. citt.*

There were *Paper* manufactures in divers cities of Egypt: but the greateſt and moſt celebrated, was that at Alexandria, where, according to Varro's account, *Paper* was firſt made. It is certain at leaſt it was from hence that Greece and Italy were furniſhed, on account of the convenient ſituation of that port: and it is more than probable it was this gave the Romans occaſion to conclude the art had been invented there. It was not till late, when Egypt was reduced into a Roman province, that they had much intercourſe or even knowledge of the inland cities of Egypt, where *Paper* was alſo made.—The trade and conſumption of this commodity were in reality incredible. Vopiſcus relates, that the tyrant Firmus who rebelled in Egypt, publickly declared he would maintain an army only with *Paper* and glue, *Papyro & glutine.* This, Caſaubon underſtands as ſpoken of the produce, and revenue of *Paper*; though Salmaſius takes it to be meant of the *Papyrus* itſelf, which could ſupply moſt of the neceſſaries of life.—*Vid.* Montfauc. *Palæogr. Græc.* l. 1. c. 2. p. 14.

We find divers ſpecies of Egyptian *Paper* mentioned in ancient writers: ſome denominated from the places where they were manufactured; as 1° the *Amphitheatrica,* ſuppoſed to have been made in ſome building belonging to an amphitheatre at Alexandria. Though Guilandinus, with more probability, reads it *Athribitica,* from *Athribis,* a city in the middle of the Delta, which was the place of its manufacture. What countenances the correction, is, that we find mention of this *Paper* before there was ſo much as an amphitheatre at Rome, much leſs at Alexandria.—2° *Saitica,* made in the city Sai.—3° *Tæniotica,* or according to others *Taitica,* whoſe place authors are not agreed on. There were other ſorts denominated from the makers; as 1° the *Fanniana,* from the grammarian Rhem. Fannius Palæmon, who kept a *Paper* work. It was ſmall, but finer than the amphitheatrical *Paper*; being firſt wrought at Alexandria, and afterwards finiſhed at Rome.—2° *Claudia,* firſt made by order of the emperor Claudius. This was reputed the beſt of all, in that beſides the two pellicles, in common with the reſt, it had a third.

Others were denominated upon the uſes they were intended for, as 1° *Hieratica,* the firſt or oldeſt ſort, which was appropriated to religious uſes; this was afterwards denominated *Auguſta* and *Liviana,* in complement to the emperor of that name, and his wife; who, according to ſome, improved and made it whiter than before.—2° *Emporetica,* or *Emporica,* a ſmall and coarſe ſort, ſerving ſhop-keepers uſes to tie up goods, *&c.*

The qualities for which the ancient *Papers* were prized, were their thinneſs, cloſeneſs, whiteneſs and ſmoothneſs: though their breadth alſo conſiderably enhanced their value.—That ſort called *Charta Claudia* was thirteen inches wide; the *Hieratica,* eleven; the *Fanniana,* ten; *Amphitheatrica,* nine: for the *Saitica,* it exceeded not the diameter of the mallet it was beaten with[a].

Bark PAPER, if it may be ſo called, was only the *Liber,* or inner whitiſh rind incloſed between the *bark* and the wood of divers trees, as the maple, plane, beech, and elm, but eſpecially the tilia φιλυρα, or linden-tree, which was that moſtly uſed for this purpoſe.—On this, ſtripped off, flatted, and dried, the ancients wrote books; ſeveral of which are ſaid to be ſtill extant[b].

Mabillon and Montfaucon ſpeak frequently of manuſcripts and diploma's on *Bark,* and are very expreſs in diſtinguiſhing between the *Papyrus* uſed by the Egyptians, and the *Liber* or *Bark* in uſe in other countries. The two are alledged to differ in this, that the *Bark Paper* was thicker and brittler than the *Papyrus,* as well as more apt to cleave or ſhiver, by which the writing was ſometimes loſt; as is the caſe in a *Bark* manuſcript in the abbey of St. Germains, where the bottom of the *Paper* remains, but the outer ſurface, on which the letters had been drawn, is in many places peeled off[c].

But Maffei, it muſt not be forgot, combats the whole ſyſtem of *Bark* manuſcripts and charters as a popular error; and maintains that the ancients never wrote diploma's on *Bark*; that the diſtinction between the *Papers* made of the *Papyrus* and of *Cortex* is without foundation; that the only uſe of the *Tilia* or Linden, was for making thin boards or tablets for diptycha or pocket-books, wherein they wrote on both ſides, as is done among us: an advantage which they could not have in the Egyptian *Paper* by reaſon of its thinneſs.

A late French writer on the rules of criticiſm wanders further out of the way; when he ſpeaks of a ſort of *Paper* in Egypt made of the pith of the cyperus: he deſcribes the manner of preparation, which was by reducing this pith to a pulp, and then ſpreading it out in leaves.—*Vid.* Hon. St. Marie *Reflex. ſur les Regl. de la crit.* T. 2. Diſſ. 4. p. 77. not.—But this we ſuſpect for a chimera hatched only in the critick's brain.

Not but there occur divers anomalous ſorts of *Paper,* which antiquaries are not a little puzzled with, what ſpecies to refer them to: ſuch is that of two bulls in the archives of the church of Gironne iſſued by the antipopes Romanus and Formoſus, between the years 891 and 895. They are two ells long, and one broad, conſiſt of two leaves or pellicles glued together tranverſly, and are ſtill legible in moſt places. The conjectures of the French Sçavans are numerous: the abbot Hiraut de Belmont has a diſcourſe expreſs on the occaſion. Some will have them made of the leaves of the *Alga,* or ſeawreck—others of the leaves of a ruſh called *la Boga,* growing in the marſhes of Rouſſillon—others of *Papyrus*—others of *Cotton*—and others of *Bark.* So little certainty there is in theſe things, on which the critics nevertheleſs often lay a great ſtreſs.—*Vid. Mem. de* Trev. *Sept.* 1711. p. 1559, ſeq.

Cotton PAPER, *Charta Bombycina,* Βομβυκινη (thus called from Βομβυξ, a word which anciently ſignified ſilk, though in after times, Βομβυξ and Βαμβαξ came to denote *Cotton*) is a ſort which has been in uſe upwards of 600 years, as is ſhewn by Montfaucon from ſeveral authorities: What is more, *Cotton Paper* appears to have been very common at that time, and conſequently muſt have been invented long before. In the French king's library, are MSS. on this *Paper,* which by the character, and other circumſtances, appear to be of the Xth century. Be this as it will, from the XIIth century, *Cotton* MSS. are more frequent than parchment ones[d].

Incombuſtible PAPER is made of the *lapis aſbeſtos* or *linum vivum,* which will bear burning without being injured. See ASBESTOS. Dr. Bruckmann, profeſſor at Brunſwick, has publiſhed a natural hiſtory of the *Aſbeſtos* or *Incombuſtible Paper*; and what is moſt remarkable, has printed four copies of his book on this *Paper:* they are depoſited in the library of Wolfembuttel.—*Vid. Bibl. Germ.* T. 14. p. 190.

The manner of making this extraordinary *Paper* is deſcribed by Mr. Lloyd from an eſſay made by himſelf.—He pounded a quantity of the aſbeſtos in a ſtone mortar, till it became a downy ſubſtance; then ſifted it through a fine ſearce, and by this means purged it indifferent well from its terrene parts; for that what earth or ſtones he could not pick out of it before, or at the pounding, being reduced to a powder, came through the ſearce, the linum remaining. This done, he brought it to the paper-mill; and putting it in water in a veſſel juſt big enough to make a ſheet with ſuch a quantity, he ſtirred it pretty much, and deſired the workmen to proceed with it in the uſual method, with their writing-paper mould; only to ſtir it about always before they put their mould in; conſidering it as a far more ponderous ſubſtance than what they uſed, and that frequently, if not immediately taken up after it was agitated, it would ſubſide.

The *Paper* made of it proved but coarſe, and too apt to tear: but this being the firſt trial, there is reaſon to believe it might be much improved; nor did the workmen doubt, but in caſe it were pounded in one of their mortars for twenty hours ſpace, it would make good writing-paper.—*V. Phil. Tranſ.* N°166. p. 824.

Linnen or European PAPER, is chiefly made of linnen rags beaten to a pulp with huge hammers, and the ſoil carried off by a continual ſupply of freſh water conveyed among the pulp in little troughs, till it be rendered perfectly white.

Beſides the chief uſe of this *Paper,* which is for writing and printing on, there is a great conſumption of it in packing up goods, and on other occaſions.

The Turks, Buſbequius tells us, have a veneration for *Paper* which approaches to ſuperſtition: they will not profane or proſtitute the leaſt bit to vile uſes; but fold it very neatly, and lay it up ſafe, becauſe the name of God, or ſome text, forſooth, of the alcoran may be written on it.—*Vid.* Buſbeq. *Epiſt.* 1. *Legat. Turc.* p. 50.

Books in *large Paper,* are thoſe which have wider margins than thoſe on ſmall *Paper,* though otherwiſe of the ſame impreſſion. See BOOK, IMPRESSION, *&c.*

The manufacture of *Paper,* has got footing in moſt countries; though France, Holland, and Genoa, are the places where it ſucceeds beſt. In the general, it depends much on the quality of the linnen worn in the country where it is made: where that is fine, or coarſe, and brown, *&c.* the rags, and conſequently the *Paper* made thereof, muſt be ſo too. Hence the whiteneſs of the Dutch and Flemiſh *Papers,* beyond the Italian and French, and much more the German *Papers.* The Engliſh manufacture hitherto has been in no great reputation; but it is every day improving; inſomuch that we now import little of the ordinary ſorts, which were formerly all brought from abroad.

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* In other countries, where the waters of the Nile were not to be had, the pellicles were faſtened together with a paſte made of the fineſt wheat-flower, mixed with hot-water, and a ſprinkling of vinegar.

[a] See further concerning the ancient *Paper* in Nigriſoli *Diſſ. de Charta ejuſque uſu apud antiquos. Ext. in Galler. de Minerv.* T. 3. p. 249. ſeq. Other authors are enumerated in Fabric. *Bibl. Antiq.* c. 21. § 9. p. 609. Pitiſc. *L. Ant. locc. citt.*

[b] *Vid.* Plin. *Hiſt. Nat.* l. 13. c. 11. Hardou. *Not. ad eund.* Suid. *Lex in Vox.* φιλυρα. Iſid. *Orig.* l. 6. c. 13. Alexand. ab Alexand. l. 2. c. 30. Salmuth. *ad Pancirol.* l. 2. tit. 13. p. 252. ſeq.

[c] *Vid.* Montfauc. *Palæogr. Græc.* l. 1. c. 2. p. 15. Mabill. *de Re Diplom.* l. 1. c. 8. Reimm. *Idea Syſt. Antiq. Liter.* p. 311.

[d] *Vid.* Montfauc. *Palæogr. Græc.* l. 1. c. 2. p. 17, ſeq. item l. 4. c. 6. p. 209. Maffei, *lib. cit. Bibl. Ital.* T. 2. p. 252.

Yet paper-mills are of ſome ſtanding among us. We find one erected at Dartford as early as the year 1588, which we believe was the firſt, and which is celebrated by a noted poet of that age, Tho. Churchyard, in a work in verſe, intitled, *A deſcription and diſcourſe of* Paper, *and the benefits it brings; with the ſetting forth of a* paper-mill *built near Dartford, by a High-German, called Mr. Spilman, jeweller to the queen, Lond.* 1588, 4^to^.

In reality; the deficiency of the Engliſh *Paper-manufacture*, does not ſeem owing ſo much to the quality of our rags, as the want of ſkill and attention in the makers. The encouragement given it by the legiſlature, in the high duty laid on foreign *Paper* imported, we hope it will in time deſerve. How conſiderable this is, will appear from the following ſtate. —Genoa royal fine *Paper*, pays *per* ream, 7*s.* 7*d.* ½.—Genoa royal ſecond, 6*s.* 10*d.* ½.—Fine Holland royal 7*s.* 7*d.* ½.—Fine Holland ſecond, 5*s.*—Ordinary royal, 2*s.* 6*d.*—Genoa demy fine, 3*s.* 10*d.* ½.—Genoa demy ſecond, 3*s.* 1*d.* ½.—Dutch printing demy, 3*s.* 4*d.* ½.—Genoa crown fine 3*s.* 1*d.* ½. —Genoa crown ſecond, 2*s.* 4*d*½.—Dutch crown fine, 2*s.* 4*d.* ½.—Dutch crown ſecond, 2*s.*—Genoa fools cap fine, 3*s.* 1*d.* ½.—Genoa fools cap ſecond, 2*s.* 4*d.* ½.—Dutch printing fools cap, 2*s.*—Atlas fine, 28*s.* 10*d.*

When and by whom *Linnen Paper* was invented, is a ſecret, which Polydore Vergil owns he could never trace[a]. Scaliger will have it to have been found out by the Germans[b]: Maffei affirms it certain, that the invention is owing to the Italians[c]. Others aſcribe it to ſome refugee Greeks at Baſil, who took the hint from the manner of making *Cotton-Paper* in their own country[d]. Conringius takes the Arabs to have firſt brought it among us[e]. Perhaps the Chineſe have the beſt title to the invention; who for many ages have made *Paper* much after the ſame manner[f], and even in ſome provinces of the ſame materials, *viz.* hemp, *&c.*[g].

[a] *Vid.* Polyd. Verg. *de Inventor. Rer.* l. 2. c. 8.——[b] *Vid. Secund.* Scaliger. p. 7. Fabric. *Bibl. Antiq.* c. 9. § 21.——[c] *Iſtor. Diplom.* l. 2. *Bibl. Ital.* T. 2. p. 253.——[d] *Vid. Phil. Tranſ.* N° 288. p. 1515.——[e] *Vid.* Conring. *Epiſt. ap. Act. Erud. Lipſ. An.* 1720. p. 94.——[f] Savar. *D. Comm.* T. 2. p. 963.——[g] Du Hald. *Deſcr. Chin.* T. 1. p. 367.

Linnen Paper appears to have been firſt introduced among us towards the beginning of the XIV^th^ century.—The learned Conringius denies that there are any manuſcripts of this *Paper* above 400 years old[h]; with whom agrees the count Maffei, who finds no marks of its uſe before the year 1300[i].

[h] *Vid.* Conring. *Epiſt. ap. Act. erud. Lipſ. An.* 1720. p. 94.
[i] Maffei *Iſtor. Diplom.* l. 2. *Bibl. Ital.* T. 2. p. 253.

Some indeed go much further back; and take the ***Liberi lintei*** mentioned by Livy, and other Roman writers, to have been written on ***Linnen Paper***[k]: But Guilandinus, and after him Allatius and others, have ſufficiently refuted this notion; and ſhewn, that the *Libri lintei* were written on actual pieces of linnen cloth, or canvas, prepared for this purpoſe, ſuch as painters ſtill uſe; and not on *Paper* made of linnen rags[l].

[k] *Vid.* Liv. *Dec.* 1. l. 4. Plin. *Hiſt. Nat.* l. 13. c. 11. Pitiſc. *L. Ant.* T. 2. p. 85. [l] Guiland. *Papyr. Memb.* 25. Salmuth *ad Pancirol.* l. 2. tit. 13. p. 253.

Others run into the contrary extreme, and make *Paper* the invention but of yeſterday. The jeſuit Inchofer, dates its origin about 250 years ago[l]: with whom agrees Milius in his *Hortus Philoſophicus*, who maintains, that the art of making *Paper* was not invented till about the year 1470[m]. Of the ſame opinion ſeems Ray, who tells us the art of making this paper was not known in Guernſey, till the year 1470, and when two perſons, named Anthony and Michael, firſt brought it to Baſle, out of Gallicia in Spain[n]. In effect, if the invention be owing to the refugee Greeks at Baſil, who fled thither after the ſacking of Conſtantinople, it muſt at leaſt be poſterior to the year 1452, when that city was taken[o]. Some add a further argument for the novelty of *Paper*, drawn from the novelty of hempen cloth, which Rabelais, who died in 1553, mentions as firſt found out about an hundred years before him; and which was ſo ſcarce in the time of Charles VII. of France, who died in 1461, that the queen his wife, was the only woman in France that had a couple of ſhifts of it[p].

[l] *Vid.* Mabill. *de Re Diplom.* l. 1. c. 8. Reimm. *Idea Syſt. Antiq. Liter.* p. 313. ſeq. [m] Balbin. *Miſcell. Hiſt. Bohem.* c. 22. *Act. Erud. Lipſ.* 1682. p. 243. [n] Ray *Hiſt. Plant.* l. 22. [o] *Phil. Tranſ.* N° 288. p. 1515. [p] Naudæan. p. 82. *Nouv. Rep. Let.* T. 26. p. 571.

But theſe ſuggeſtions are refuted by Mabillon, from the teſtimonies of writers prior to the time here ſpoken of, and from many manuſcripts about 400 years old, which are written on ***Linnen Paper***[q]. The jeſuit Balbinus produces divers inſtances of *Paper* MSS. written before the year 1340[r]. An ingenious writer of our own country aſſures us, he had a piece of *Paper* which agreed well with a charter dated in 1358, in the 32^d^ year of Edward III. He adds, that in the archives of the library belonging to the dean and chapter of Canterbury, is an inventory of the goods of Henry, prior of Chriſt Church, who died in 1340, written on *Paper*; and that in the Cotton Library there are ſeveral writings on our *Paper* in the times of moſt of our kings and queens as high as the 15^th^ of Edw. III. which coincides with the year 1335[s]. Dr. Prideaux aſſures us he has ſeen a regiſtration of ſome acts of John Cranden, prior of Ely made on *Paper*, which bears date in the 14^th^ year of King Edward II, that is, anno Dom. 1320.

[q] Mabil. *loc. cit.* [r] Balbin. *lib. cit.* [s] *Phil. Tranſ.* N° 288. p. 1515. [t] Prid. *Connect.* p. 1. l. 7. p. 710.

Add, that the invention of *Paper* may appear more modern than it is, by reaſon records were not uſed to be wrote on it, but it was a conſiderable time confined to letters, and other fugacious compoſitions; which is ſo true, that to this day, few inſtruments of any conſequence are written on it, though it have been ſo long in uſe.—It is even alledged, that Peter, the venerable abbot of Cluny, who died in 1157, has a paſſage in his book againſt the Jews, which plainly indicates *Paper* books to have been then known; on the authority whereof Valeſius, in his notes on the panegyric of Berengarius Auguſtus, ſcruples not to make *Paper* upwards of 500 years old.—*Vid.* Mabill. *ubi ſup.* Reim. *loc. cit.*

Father Hardouin even aſſures us, he had ſeen records or diploma's on it prior to the XIII^th^ century.—But this will hardly be credited. Count Maffei aſſures us, that in all his reſearches he could never meet with one more ancient than the year 1367. It is highly probable the learned jeſuit miſtook a Cotton manuſcript for a Linen one: a miſtake eaſily made, as the chief difference between the two conſiſts in the greater thinneſs of the Linnen *Paper*. But it is known we have Linnen *Papers* of very different degrees of thickneſs; and the like may be ſaid of thoſe of Cotton.—*Vid.* Maffei *Iſtor. Diplom.* l. 2. *Bibl. Ital.* T. 2. p. 253, ſeq.

The invention, according to Prideaux, ſeems to have been brought from the Eaſt; for that moſt of the old MSS. in Arabic and other Oriental languages are written on this ſort of *Paper*: ſome of which are certainly much older than any of the dates above-mentioned. This author thinks it moſt probable that the Saracens of Spain firſt brought it out of the Eaſt into that country; from whence it was propagated through the reſt of Europe.—*Vide* Prid. *ubi ſupra.*

Method of making ***Linnen*** PAPER.—The proceſs begins with preparing the rags.—Theſe when brought to the paper-mills are firſt to be ſorted into what they call the ***grobin fine***, ***grobin ſecond***, and ***grobin tres***: for among the reſt will be ſome linſey-woolſey, which the dirt makes indiſcoverable till they are once waſhed.—The way of waſhing, is by putting them in a puncheon with many holes in the bottom, and grates on the ſide made of ſtrong wires. Here are the rags to be often ſtirred, that the dirt may run from them.

When ſufficiently waſhed, they are laid in ſquare heaps, and covered cloſe with pieces of clean ſacking, till they truly ſweat and rot, which is called *fermenting*, and is uſually performed in four or five days; if they be not taken in the due time, they are apt to mildew, diſcolour, and take fire. When duly fermented, they twiſt them in handfuls, then cut them with a ſharp hook ſet faſt in a frame, with the point upwards, and edge from the workman; ſtill drawing them upwards, and cutting them piece by piece about half inch long, or as the fingers will allow.

With the rags thus prepared, they prime or feed the mortars, which are made oval, about half a yard deep, of heart of oak right ſeaſoned. At the bottom of each is an iron plate an inch thick, eight inches broad, and thirty long; ſhaped inward like a mould for a ſalmon with head and tail rounded. In the middle is a waſhing block groved with five holes in it, and a piece of hair ſieve faſtened on the inſide. This keeps the hammers from touching it, and prevents any thing going out except filthy water.

The mortars are ſupplied with water night and day by little troughs, from a ciſtern fed by buckets fixed to the ſeveral floats of a wheel, ſo long as the wheel goes.

In theſe mortars the rags being beaten fit for a remove to the preſſes juſt by, they take them out with little iron hooped pails, out of any of the mortars, whoſe hammer they can ſtop whilſt the others work. This makes what they call the *firſt ſtuff.*

From the mortars, this firſt ſtuff is lodged in boxes of five foot high, made like the corn-chandlers bin, with the bottom board a-ſlant, and a little ſeparation on the front for the water to drain away.—The pulp of rags being in, they take away as many of the front boards as are needful, and preſs the maſs down hard with their hands: the next day they put on another board and more pulp, till the box is full. And here it remains mellowing a week, more or leſs, according to the weather.

In the whole proceſs, there muſt be no iron work where it may be liable to grow ruſty, which would ironmould the ſtuff, and ſpoil the *Paper*.

After this, the ſtuff is again put into clean mortars, beaten afreſh, and removed into boxes as before; in which ſtate it is called the *ſecond ſtuff.*

The like underſtand of the third time, which fits it for the pit mortar, when it is again beaten, till ſome of it being mixed with fair water, and brewed to and fro, appears like flower and water without any lumps in it.

Thus prepared, it is fit for the pit mortar which has flat hammers without nails. Into this, by a trough, runs water continually whilſt they work at the fat; and here the beating and water diſſolves it perfectly: after which it is carried into the fat, and more is brought from the boxes.—And thus they do ſucceſſively.

The fat is primed according to art, when the liquor has ſuch a proportion of the pulp, as that mould dipped in it, will take up as much as will make the ſheet of *Paper* of the thickneſs deſired.

A mould is a ſquare ſieve about an inch deep, bottomed with braſs-wire-cloth, ſupported with ſticks to prevent the wire from bagging down, and keep it perfectly horizontal: for that if it any ways bags, one Part of the ſheet of *Paper* will be thicker than the other.

This mould the maker dips, with a deckle on, into the fat, and takes it out again ſhaking, that the water may run clear from the pulp in the ſieve, and thus delivers it to the coucher, who couches it upon a felt laid on a plank, and lays another felt on it; and ſo ſucceſſively, a ſheet and a felt, a ſheet and a felt, till a poſt, *i. e.* one preſſing, containing ſix quire, be made.—Of poſt *Paper* they may make twenty poſts or more *per* day.—The coucher having done his office, returns the mould to the maker, and the maker to the coucher ſucceſſively.

A poſt being made, either the maker, or coucher whiſtles; upon which four or five men advance, one whereof draws the poſt under the preſs with two little hooks; and the reſt preſs it with great force till no water is left, which is quickly done with two or three pulls.

This being done, the poſt is pulled from the preſs, and ſet on the right ſide by the laying ſtool; then the layer takes off the firſt felt, returns it to the coucher, and lays the firſt ſheet on the laying ſtool, over which he lays the ſecond, then the third very regularly; and thus ſucceſſively till the whole poſt be laid out.—Which done it is ſet by till toward the end of the day; and then the whole day's work is preſſed again, and ſet exactly one on another, ſo that it looks like one ſolid paſte board.

This, after two or three pulls, as before, is taken out again by the dry workman, and carried up into the loft, and hung ſix or ſeven ſheets together upon lines faſtened to a thing called a *Tribble*, each tribble containing thirty lines ten or twelve foot long.

When dried it is taken down, laid on a three footed ſtool, and there rubbed ſmooth with the hands; and afterwards placed in heaps, ſeven or eight foot high, in a very dry place; where it ſtands ſtill ſizing, which is the next operation.

Chuſing a fine, dry, temperate day, they put into a copper two barrels of water; and into this, when juſt warm, ſixty pounds weight of clean parchment or vellum ſhavings; which they boil till it be reduced to a perfect ſize; then ſtrain it through a fine cloth, on which is ſtrewed a due proportion of white vitriol and roch-allom finely powdered, into a tub a foot deep.

Near to this tub are brought four or five reams of the *Paper*; and a full gage, or ſo much as can be taken up with the hands at a time, is dipped into the ſize, being as hot as the hands can well bear it; and by a certain gentle quick management, it is ſo ordered, that every ſheet ſhall be ſized: after which it is put regularly into the preſs, preſſed, moved thence into the drying loft, and hung uſually ſheet by ſheet till dry. But care is taken, that the direct rays of the ſun come not nigh it till it be dry, which would otherwiſe endanger the evaporation of the ſize.

When thoroughly dry it is taken down, ſmoothed with the hands as before, heaped, preſſed hard, and ſo it ſtands all night.

Next morning it is taken out, and carried into the ſtorehouſe, where it is ſorted; what is fit for inſide quires, are laid by themſelves, and the outſide by themſelves; and then it is preſſed again, and ſo commonly ſtands all night.

In the morning it is carried into the ſtorehouſe again, where it is told into quires of 24 or 25 ſheets each, folded, laid by in heaps; and when there is a preſs full, it is preſſed again, double for a while, and then made into reams of twenty quire each [a], and bales of 10 reams to a bale [b].

The broken ſheets are commonly put together, and two of the worſt quires placed on the out-ſides of the ream, called the *Out-ſide* quires; thus being tied up in wrappers made of the ſettling of the fat, it is fit for ſale.

With ſome of the aforeſaid pulp, is alſo made Paſteboard, after the ſame manner as *Paper*, only that it is thicker. See PASTEBOARD.

With a fine ſort of this paſteboard, they alſo make playing cards. See CARDS.

Paper is ſold by the ream, every where we think, except in the paper-works of Auvergne, where it is ſold by weight, at the rate of 14 ounces to the pound; each ream according to its kind, being to weigh a certain number of pounds, preſcribed by authority.—Savar. *loc. cit.*

PAPERS are of various kinds.—With regard to colours, they may be divided into *white*, *brown*, *blue*, *&c.*—With regard to quality into *fine*, *ſecond*, *baſtard*, *ſuperfine*, *&c.*—With regard to uſe, into *writing*, *printing*, *preſſing*, *cap*, *cartridge*, *copy*, *chancery*, *poſt*, *&c.*—With regard to dimenſions, into *demy*, *medium*, *crown*, *fool's-cap*, *pot*, *royal*, *ſuper-royal*, *imperial*, *elephant*, *atlas*, *&c.*—With regard to country, into *Germany*, *Lomard*, *Rochel*, *Genoa*, *Holland*, *&c.*

French *Papers* are divided into *large*, *middle* and *ſmall.*—To the ſmall belong theſe called, *petit Romaine*, *petit Raiſin*, or *Bâton royal*, *petit nom de Jeſus*, and *petit a la main*, all thus nominated from the marks impreſſed on them in making. Alſo the *Cartier* for the backs of playing cards; *Pot* for the figure ſide; *Couronne*, which has commonly the arms of the comptroller general of the finances; *Telliere*; with the arms of the late chancellor *Tellier*, and a double T; and *Champy*, or a *Chaſſis la Serpente*, ſo called from its mark, the ſerpent; which being extremely fine and thin, is uſed by fan-makers.

To the *middling* ſort belong the *grand Raiſin ſimple*, *Carré ſimple*, *Cavalier*, and *Lombart*, the three laſt of which are for printing; *l'Ecu*, or *de compte ſimple*, *carré double*, *l'Ecu double*, *grand Raiſin double*, and *Couronne double*, which three laſt are denominated *double* on account of their ſtrength and thickneſs. Add to theſe the *Pantalon*, or *Paper* with the Dutch arms, and grand *Cornet*, ſo denominated from the impreſſion on it.

To the *large*, belong the *grand Jeſus*, *petite & grande fleur-de-lis*, *Chapelet*, *Colombier*, *grand Aigle*, *Dauphin*, *Soleil*, and *l'Etoile*, which are thus called from the figures they bear, being all proper for printing either at the letter-preſs, or rolling-preſs; alſo for merchants books, and for drawing on. The *grand Monde* is the largeſt of all.—*Vid.* Savar. *D. de Comm.* T. 2. p. 965, ſeq.

We have alſo *Printed*-PAPER, to hang rooms withal.—*Stamp'd Paper*, to write obligations, deeds and contracts upon.—*Ruled Paper* for books of accounts, *&c.*—To which may be added *Cut-Paper*, and *Gilt-Paper* for letters, *&c.*

Blue PAPER, is a ſort uſed by tradeſmen to wrap up goods; as ſugar-loaves, pieces of linnen, *&c.*

Blotting PAPER, is *Paper* not ſized, and in which therefore ink readily ſinks or ſpreads. It is uſed in books of account, *&c.* in lieu of ſand, to prevent blotting and disfiguring the oppoſite pages. The ſame is likewiſe uſed by apothecaries in filtrating juices and other matters, for which the *Manica Hippocratis* is not ſo proper.

Teint, or *Demi-teint* PAPER, for deſigning on, is either *brown*, *blue*, or *biſterd*.

Biſterd PAPER, is white *Paper* waſhed over with a ſpunge dipped in ſoot-water. Its uſe, is to ſave the labour of the crayon in places which are to be ſhadowed the ſame depth with the teint of this *Paper*.—For light places, they are made thereon with white chalk.—*Vid.* Corneil. *Elem. de la Peint. Prat.* c. 15. p. 34, ſeq.

Marbled PAPER, is a ſort variouſly ſtained, or painted as it were with divers colours, made by applying a ſheet on the ſurface of a liquor wherein colours diluted with oil or oxe's gall are ſuſpended. See DYING.

The manner of making it is thus.—A trough is provided of the ſhape and dimenſions of a ſheet of the *Paper* to be marbled, and about four fingers deep, made of lead or wood well joined, and pitched or primed to contain the liquor.—For the liquor, a quarter of a pound of gum tragacanth is macerated four or five days in fair water; this they ſtir from time to time, and add to it daily freſh water, till it be of a conſiſtency ſomewhat thinner than oil; then they ſtrain it into the trough.

The colours to be applied thereon, for blue, are indigo ground up with white lead.—For green, indigo and orpiment, the one ground, and the other tempered; mixed and boiled together with common water.—For yellow, orpiment bruiſed and tempered —For red, the fineſt lake, ground with raſpings of braſil wood which has been prepared by boiling half a day. Into all theſe colours they put a litttle ox or fiſh-gall, which is two or three days old; and if the colours dilate not of themſelves ſufficiently they add more gall.—On the contrary, if they ſpread too much, the gall is over-doſed, and muſt be corrected adding more of the colour without gall.

For the operation of marbling: when the gum is well ſettled in the trough, they extend a ſheet of *Paper*, and plunge it very ſhallow into the liquor, ſuddenly lifting it out again, in order to ſtir up, and raiſe the ſubſiding gum towards the ſurface, and for the more univerſal impregnating of the liquor.

This done, and all the colours ranged in gallipots on the table, where alſo the trough is placed, they begin by dipping a bruſh of hog's hair into any colour, commonly the blue firſt, and ſprinkle it on the ſurface of the liquor: If the colour were rightly prepared, it will dilate itſelf duly therein.—This done, the red is applied in the like manner, but with another pencil.—After this the yellow; laſtly the green: for white, it is made by only ſprinkling fair water, mixed with ox's gall, over the liquor.

When all the colours are thus floating on the liquor, to give them that agreeable cambletting which we admire in *Marble Paper*, they uſe a pointed ſtick, which being applied by drawing it from one ſide of the trough to the other with addreſs, ſtirs up the liquor and fluctuating colours; then with a comb taken by the head with both hands, they comb the ſurface of the

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[a] *Vid.* Hought. *Collect.* T. 2. p. 412, ſeq.

[b] Moor's *Mathem. Comp.* p. 16.

liquor in the trough from one extreme to another, permitting only the teeth to enter: this being performed with a gentle and uniform motion, makes thoſe clouds and undulations whereon much of the beauty of the *Paper* depends.

If it be further deſired to have the colours lye in any other fantaſtical poſture, repreſenting ſerpents or the like, it is effected with the pointed ſtick abovementioned, by drawing it over what has been already combed; but this muſt be done with a dexterous hand, and with a ſhallow dip into the liquor, circling as if you would draw ſome flouriſh, or figured letter.

Laſtly, the colours being in this poſture, the operator diſplays, and applies on them a ſheet of white moiſtened *Paper*; to do which, artiſt-like, requires a ſleight only to be obtained by practice; for that the ſurfaces of the liquor and the *Paper* are to meet equally in all parts: which done, before the colours have time to ſoak through, which, unleſs the *Paper* be very thick, will be in the ſpace of two or three pulſes, he lifts up the *Paper* nimbly, and with an even hand; and then ſpreading it a while on a board, hangs it on a line to dry; which when ſufficiently done, they poliſh it with a marble ſtone, or ivory knob. It muſt be obſerved, that the ſprinkling of the colours is to be renewed, and all the other ceremonies performed with the ſtick and comb at every application of a freſh *Paper*, by reaſon every *Paper* takes off all the colour from the liquor [a].

Some eſſays have been made to enrich the marbling by mixing gold and ſilver with the colours, which ſucceeded well, eſpecially for the French King's library, though the expence has hindered the practice from obtaining.—Savar. *ubi ſupra.*

Chineſe PAPER is of various ſorts; ſome made of the rinds, or barks of trees, eſpecially thoſe abounding in ſap, as the mulberry-tree, and elm, but chiefly of the bambû and cotton tree. In reality, almoſt each province has its ſeveral *Paper:* that of Se-chwen is made of hemp; that of Fo-kyen, of ſoft bambû; that uſed in the northern provinces of the bark of the mulberry-tree: that of the province of Che-kyang, of wheat or rice ſtraw; that of the province of Kyang-nan, of the ſkin found in the ſilk-worms balls. In fine, in the province of Hu-quang, the tree chu, or ko-chu furniſhes the principal material for *Paper*.

For PAPERS *made of the barks of trees*; the manner of their preparation may be exemplified in the inſtance of that of the bambû, a tree of the cane, or reed-kind, being hollow, and divided into joints; but much larger, ſmoother, harder and ſtronger than any other ſort of reed.

For *Paper*, they ordinarily only uſe the ſecond coat or ſkin of the bark, which is ſoft and white; this they beat in fair water to a pulp, which they take up in very large moulds or frames, ſo that they have ſheets ten or twelve feet long, and ſometimes more. They are compleated by dipping them ſheet by ſheet in allom-water, which ſerves inſtead of the ſize uſed among us, and not only hinders the *Paper* from imbibing the ink, but gives it that luſtre, which at firſt ſight makes it look ſilvered, or at leaſt varniſhed over.

The *Paper* thus made, is white, ſoft and cloſe, without the leaſt roughneſs to arreſt the motion of the pencil, or occaſion the riſing of any of its fibres. Though, being made of the bark of a tree, it cracks more eaſily than the European *Paper*· add that it is more apt to take moiſture, that the duſt ſticks to it, and that the worms ſoon get into it; to prevent which laſt inconveniency, they are obliged often to beat their books, and expoſe them to the ſun. Add, that its thinneſs making it liable to be ſoon worn out, the Chineſe are under a frequent neceſſity of renewing their books, by freſh impreſſions taken from their blocks [b].

But the *Paper* of the bambû, it is to be obſerved, is neither the the beſt, nor that moſt uſed in China. In the former of theſe reſpects, it yields the priority to the paper made of the cotton ſhrub, which is the whiteſt and fineſt, and at the ſame time leaſt ſubject to the inconveniences above mentioned; for that it keeps as well, and is as durable as the European *Paper*.—Dr. Grew thinks we have many plants in England, which contain a down that in all probability would make as fine a *Paper* as that made by the Chineſe from their cotton ſhrub.—By which it appears he miſtakenly imagined that the Chineſe *Paper* was made not from the rind of the cotton ſhrub, but from the down or cotton itſelf.—*Vid.* Grew *Muſ. Reg. Soc.* P. 2. § 1. c. 5. p. 215.

But the *Paper* in moſt common uſe in China, is that made of the tree called *Chu-Ku*, or *Ku-Chu*, which du Halde compares, firſt to a mulberry-tree, then to a fig-tree, then to a ſycamore tree, and laſtly, to encreaſe the embarraſs, to a ſtrawberry-tree.—By all which, we know leſs of it than if he had ſaid nothing about it. But this is a way of deſcribing very familiar to that author, who is often ſtrangely jejune in the midſt of the utmoſt prolixity, and is never more confuſed and incoherent, than when he aims moſt at order and exactneſs. But to return to the Ku-Chu.

The method of preparing it for *Paper*, is by firſt ſcraping off lightly the thin outſide of the tree, which is greeniſh: then they take off the inner rind in long thin ſlips, which they blanch in water and the ſun; and afterwards prepare them in the ſame manner as the bambû.

It muſt not be forgot, that in the other trees it is only the inward bark that ſerves for making *Paper*; but the bambû, as well as the cotton ſhrub have this peculiarity, that not only their bark, but their whole ſubſtance may be employed, by means of the following preparations.

Out of a wood of the largeſt bambû's, they ſelect ſhoots of a year's growth, which are about the thickneſs of the calf of a man's leg: theſe they ſtrip of their firſt green rind, and ſplit them into ſtrait pieces of ſix or ſeven foot long: the pieces thus cleft, they ſteep in a pond of muddy water, till they rot and grow ſoft by the maceration. In a fortnight they take them out, waſh them in clean water, ſpread them in a large dry ditch, and cover them with lime for a few days; then take them out again, and having waſhed them a ſecond time, ſlip them into filaments, which they expoſe in the ſun to dry and whiten; then throw them into large coppers, where they are thoroughly boiled: and laſtly reduce them by the ſtrokes of large hammers to a thin paſte, or pulp.

Then they take ſome ſhoots of a plant called *Ko-teng*, ſoak them four or five days in water, till there come out an unctuous ſizy ſort of juice; this they mix with the pulp of which the *Paper* is to be made, ſomewhat in the ſame manner as painters temper their colours; care being taken not to put in too much, nor too little of it, on which the goodneſs of the *Paper* much depends.

When they have mixed the juice of Ko-teng with the cleft bambû, and beaten the whole till it reſembles a thick clammy water; they pour it into a large deep reſervoir, conſiſting of four walls raiſed breaſt high, and the ſides and bottom ſo cemented, that the liquor cannot run out nor ſoak in.

This being done, and the workmen placed at the ſides of the reſervoir, they dip in their moulds, and take up the ſurface of the liquor, which almoſt inſtantly becomes *Paper*; the mucilaginous and glewy juice of the Ko-teng binding the parts, and rendering the *Paper* compact, ſoft, and gloſſy, qualities which the European *Paper* is a ſtranger to when firſt made.

To harden the ſheets, and make them bear ink, they dip them in allom-water: this operation is called ***Faning*** from the Chineſe word ***Fan***, which ſignifies allom. The manner is this.—Six ounces of fiſh-glue cut very ſmall, are put in divers porringers of water, which they afterwards boil up, ſtirring it all the time to prevent lumps: when the whole is reduced to a liquid ſubſtance, they throw into it three quarters of a pound of calcined allom, which they melt and incorporate with it. This mixture is next poured into a wide baſon, acroſs which is laid a ſmall round ſtick: then they ſhut the edge of each ſheet in another ſtick cleft from end to end, and in this manner dip the ſheet, gently drawing it out as ſoon as it is wetted, by ſliding it over the round ſtick. When the whole ſheet has paſſed nimbly through this liquor, which makes it whiter and more compact, the long ſtick that holds the ſheet by the edge, is ſtuck in a hole in the wall, and the ſheet hung up to dry.—For the mould wherewith they take up the ſheet, its frame is ſo contrived that it may be raiſed or lowered at pleaſure; and its bottom is not made with wire, as ours, but with little ſlender ſlips of bambû drawn ſeveral times through holes made in a ſteel plate, whereby they are rendered as fine as wire: they are then boiled in oil till thoroughly ſoaked, that the mould may enter lightly into the water, and not ſink deeper than is requiſite to take up matter enough for a ſheet.

To make ſheets of any extraordinary ſize, care is taken to have a reſervoir and mould large in proportion. This mould is ſuſtained by ſtrings which paſs over the pulley; the moment theſe pull up the frame, the workmen placed aſide the reſervoir, aſſiſt to take the ſheet off; working together in a regular manner. For drying the ſheets when taken off, they have a hollow wall, whoſe ſides are well whitened: at one end hereof is an aperture, through which, by means of a pipe, they convey the heat of a neighbouring furnace: and at the oppoſite end is a ſmall vent to let out the ſmoke. By help of this ſort of ſtove, they dry the *Paper* almoſt as faſt as it is made.

Silvering of *Paper* is another ſecret among the Chineſe, practiſed at a very ſmall charge, and without uſing any ſilver.—In order to this, they take two ſcruples of glue made of neats leather, one of allom, and half a pint of clean water: theſe they ſimmer over a ſlow fire, till the water is conſumed, that is, till no more ſteam ariſes; then on a ſmooth table they ſpread ſome ſheets of *Paper*, and on this, with a pencil, apply two or three layers of the glue: then they take a powder made of talc boiled, and mixed with $\frac{1}{5}$ the quantity of allom: the two are ground together, ſifted, and the powder boiled again in water, then dried in the ſun, and laſtly pounded.—This powder they ſift through a fine ſieve, ſpreading it uniformly on the ſheets prepared as above: after which they hang them in the ſhade to dry; and this effected, lay them again on the table, and rub them gently with clean cotton to take off the ſuperfluous ſious talc, which ſerves a ſecond time for the ſame purpoſe. With this powder diluted in water mixed with glue and allom, they draw any figures at fancy on the *Paper—Vid.* Du Hald, *Deſcrip. Chin.* T. 1. p. 368, ſeq.

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[a] *Vid.* Kirch. *de Luce & Umbra.* l. 10. Par. 2. c. 4. Merr. *Obſerv. on Neri de art. Vitr.* c. 42. p. 312. Hought. *Collect.* T. 2. p. 419, ſeqq.

[b] *Vid. le* Compt. *Nouv. Mem. ſur Chin. Lett.* 7. Kuſt. *Bibl. nov. Libr. An.* 1697. p. 67, ſeq. *Lett. Edif. & Cur.* T. 19. p. 479.

Paper-Clothes became a mode a few years ago in France. M. Flachs has a diſſertation expreſs on the ſubject, wherein he tells us this faſhion ſcarce outlived half a day; and undertakes to ſhew that it is no new thing, but to have been practiſed among the ancients. But then it ſhould be conſidered that the old Egyptian *Paper* was a very different thing from ours; as being likewiſe uſed for ſails, ropes, *&c.—Bibl. Germ.* T. 1. p. 260.

Paper-Mills, See the article Mill. (In the court of king's bench) is where the writings belonging to that court are repoſited.

Paper-Office, (in the palace of Whitehall) is where all the publick writings, matters of ſtate and council, proclamations, letters, intelligences, negotiations of the king's miniſters abroad, and generally all the papers and diſpatches that paſs through the offices of the ſecretaries of ſtate, are lodged, and diſpoſed in the way of library.—It was chiefly from this noble repoſitory that biſhop Burnet had materials for his hiſtory of the reformation. *Vid.* Nicholſ. Eng. Hiſt. Libr. P. 3. c. 1. p. 180.

Paper-Portraits, *and Pictures.*—One Elizabeth Pyberg, who lived at the Hague in 1699, cut in *Paper* not only towns, as Loo and Hounſlerdyke, but faces to an extreme likeneſs. Mr. Ellys aſſures, ſhe did king William and queen Mary better than any limner he had ever ſeen, and refuſed 1000 guilders for the pieces: which were ſo curious, that he could not believe the queen's drapery not be point till he had moſt exquiſitely inquired into it.—*Vid. Phil. Tranſ.* N° 286. p. 1418.

For the *Moving Paper-Work*, or High German *Paper* engine, contrived by Mrs. Vandenhurk, and now expoſed to publick ſhow in London, we can give no particular account of it.

Papers is alſo uſed for writings, eſpecially thoſe relating to a man's eſtate, property, dealings, or the like. See Writing.

In which ſenſe, *Papers* include books of accounts, invoices, orders; alſo deeds, bonds, charters, and the like. See Act, Instrument, Account, Books, Record, Archive, Register, *&c.*

Papers is alſo ſometimes uſed for manuſcript-books. See Book and Manuscript.

Such an author left his *Papers* to *** college. Several of Sir Iſaac Newton's *Papers* have been publiſhed ſince his death.—Tournefort aſſures us, that the heirs of M. de Peireſk warmed themſelves a whole winter with the *Papers* he left in his cabinet. It had been cheaper, adds M. Tournefort, if they had burnt cedar, or aloes wood.—*Vid. Journ. Liter.* T. 12. p. 64.

Papers is more particularly uſed of late days for gazettes, journals, and other public news-writings. See Gazette, Journal, *&c.*

In this ſenſe we ſay, to read the *Papers*: the *Papers* abound with falſhoods: the multitude of *Papers* is become a burthen on coffee-houſes, but an advantage to the revenue.—We have daily *Papers*, weekly *Papers*, morning *Papers*, evening *Papers*, occaſional *Papers*, political *Papers*, literary *Papers*, *Papers* of entertainment, *&c.*

Paper, among bankers and other negociants, is alſo uſed for bills of exchange, bank, and promiſſory notes, *&c.* See Bill, *&c.*

I have no money to give you, but only *Paper*; *Paper* indeed as good as ready money. In the year 1720 multitudes were ruined by changing their money and lands for *Paper*. It is the uſe and effect of credit to repreſent money by *Paper*. See Money.

Subſtituting *Paper* for money, and giving the *Paper* an arbitrary value, was the way of paying debts introduced in France by Mr. Law.—A royal bank was eſtabliſhed, to which people were to carry their money, and receive the value of it in bills, which were to paſs current in trade as ſo much money.—*Vid.* Chevign, *Scienc. des Pers. de la Cour.* T. 2. p. 292, ſeq.—It was made confiſcation of goods, and the gallies, for any man to keep above 40 livres by him of any but *Paper money*. When the regent was told what a rage was ſpirited up againſt him about the arrets for making *Paper* current, and how openly the people threatened him, he anſwered cooly, the French were like watch dogs, they would bark but not bite, *les François reſemblent aux chiens à garde, ils aboyent, mais ne mordent pas.* Miſt. *Miſc. Lett.* T. 4. p. 16.

Paper, among fan-painters. See the article Fan.

PAPILLA, in anatomy, *nipple*; a prominence ariſing from the middle of the breaſt, or mamma. See Breast.

The colour of the *Papilla* is various; in different ſtates, and ſtages of life, it is reddiſh, bluiſh, blackiſh. It is encompaſſed with a pale browniſh circle, called *Areola*.

The lacteal tubes, coming from the ſeveral parts of the breaſts, terminate in the *Papillæ*, with ſeveral nervous, or ſpongious emiſſaries which communicate with each other by anaſtomoſes, through which, in ſucking, the milk is drawn. See Milk.

Papillae *Pyramidales*, are little eminences ariſing from the ſubcutaneous nerves. See Pyramidal.

Under the cutis lies a thick congeries of nerves, wove into a kind of membrane; together with arteries, veins, and lymphaticks: theſe nerves ſtanding out about the level, form little *Papillæ*, which laying aſide the outer coat given them by the dura mater, form the corpus reticulare, firſt obſerved by Malpighi in the feet, hands, and tongue; and ſince ſhewn by Ruyſch, throughout the whole body.—See *Tab. Anat.* (Myol) *Fig.* 8. *Lit. a a*, &c. *b b*. See *alſo* Reticulare.

Theſe *Papillæ* are ſtill moſt numerous and conſpicuous in the places of acute ſenſe, as the tongue, glans of the penis, vagina, labia, œſophagus, ventricle, ſmall inteſtines, and tips of the fingers and toes, where the cutis they are covered withal is extremely thin. See Cutis.

In the other parts of the body the cutis is thicker, and the *Papillæ* much fewer, ſmaller, *&c.*

Theſe *Papillæ* are ſuppoſed to be the immediate organ of *feeling*. See Feeling.

Papillae *of the tongue*, are little eminences of the tongue; ſo called from their reſemblance to the *Papillæ* of the breaſt. See Tongue.

From the papillary tunic of the tongue ariſe numerous nervous *Papillæ*, which, penetrating the viſcous ſubſtance over them, terminate under the ſurface of the tongue. See Papillary.

It is by means of theſe *Papillæ*, that the tongue is ſuppoſed to have its faculty of taſting. See Tasting.

Papillae, or *carunculæ* **Papillares**, of the kidneys, are bundles of little urinary pipes, joined together in the inner ſubſtance of the kidneys. See Kidney and Carunculae.

They end in ſhort tubulous bodies, or larger pipes, anſwering in number to the *Papillæ*, which are uſually 12; and are called *Fiſtulæ Membranaceæ*; being only productions of the membranous cell called the *Pelvis*. See Pelvis.

The *Papillæ* ſerve to diſtill the urine ſeparated from the arteries, and brought them by the urinary pipes, into the pelvis. See Urine.

PAPILLARY, **Papillaris**, in anatomy, an epithet given to a tunic or membrane of the tongue, called *Papillary Tunic*, *Papillary Membrane*, or *Papillary Body*. See Tongue.

The *papillary* tunic, or body, is the third tegument, placed beneath the exterior membrane which lines the tongue, and the viſcous ſubſtance next under the ſame.

It is full of nerves derived from the fifth, and ninth pair. From this tunic ariſe little eminences, called *Papillæ* or *Papillary Eminences*. See Papilla.

The ſalts and juices of bodies, ſtriking againſt theſe prominences, occaſion undulations therein, which are immediately communicated to the ſpirits contained in the nerves, which carry them to the brain, *&c.* See Tasting.

Papillary *Proceſſes*, is a name which the ancients gave to the olfactory nerves, from the place of their origin, to the os cribroſum. See Nerve.

Dr. Drake thinks this name becomes them better in this place than that of nerves, in regard they rather appear as productions of the medulla oblongata, whence the olfactory nerves ariſe, than diſtinct nerves; againſt which their manifeſt cavities, and their communication with the ventricles, argue.

PAPILIONACEOUS, in botany, an appellation given to the flowers of ſome plants, as repreſenting ſomething of the figure of a *papilio* or butterfly, with its wings diſplayed. See Plant.

Papilionaceous Flowers have four petala, or leaves, joined together at the extremities: one in the middle of the flower is larger than the reſt, and by ſome called *vexillum*, or the ſtandard.

The plants, that have this flower, are of the leguminous kind, as peaſe, beans, vetches, *&c.* See Flower.

PAPPUS, in botany, that ſoft light down, which grows out of the ſeeds of ſome plants, as thiſtles, dandelion, hawkweed, *&c.* and which buoys them up ſo in the air, that they may be blown any where about with the wind. See Semination.

This diſtinguiſhes a claſs, or kind of plants, which are hence denominated *Papposæ*, or *Pappiferæ*.

PAR, in commerce, an equality between different monies; or ſo much as a perſon muſt give of one kind of ſpecie, to render it juſt equivalent to a certain quantity of another. See Money.

The *Par*, differs from the courſe of exchange, in this, that the *Par* of exchange ſhews what other nations ſhould allow in exchange; which is certain and fixed, by the intrinſic values of the ſeveral ſpecies to be exchanged: but the courſe ſhews what they will allow in exchange; which is uncertain and contingent, ſometimes more, ſometimes leſs. See Exchange.

Some have charged our merchants with a great error in ſuffering our neighbours to ſettle the *Par* of our exchanges far below what it ought to have been ſettled at: by which means we have been imperceptibly robb'd of the greateſt part of our ſilver, and no ſmall part of our gold.

For inſtance, it hath been reckoned for upwards of 40 years laſt, that 37 Dutch ſchillings, and 4 ninths of their groſs Flemiſh are exactly equal to, or on a *Par* with our pound ſterling or 20 ſhillings: whereas it appears demonſtrable that we loſe between 4 and 7 *per cent.* by every ſuch exchange.—See Sir I. Newton's Eſſays and Calculations on foreign coins.

The French crown of 60 ſols, before the late diminution, was equivalent to 54 pence (now to 31 *d.* $\frac{1}{2}$) ſterl. of England; to

100 deniers groſs of Holland; and to 101 of thoſe of Cologne. To 48 Lubec ſols of Germany and Hambourg. To 88 creuxs of Auſbourg, and 90 of Franckfort, 83 of Bolzam, and 84 of Switzerland. To 8 Julio's and an half of Rome, and as many of Ancona; to 3 Teſtoons of Florence, 58 Soldi of Leghorn, 83 of Geneva, 94 of Milan, 60 of Nova; to 5 lires or livres of Genoa, 4 lires and 10 ſoldi of Lucca, 8 lires of Bergama, 3 lires and 15 ſoldi of Savoy; to 9 carlins of Naples, and as many of Sicily; 21 groats and three fifths of Venice, 24 of Naumbourg; to 372 maravedis of Spain, to 600 rees of Portugal, to 4 tarins and 15 grains of Malta, to 120 aſpers of Conſtantinople, to a demi-honge of gold of Hungary, to two florins of Liege, 3 of Straſbourg, and 20 of Raconis, to 90 groats or groches of Poland, and 24 of Berlin, to 80 marks of copper of Sweden, to 50 grives or grifts of copper of Muſcovy, and laſtly, to 4 hors of Denmark.—Savar.

PAR, (in anatomy.) See PAIR.

PAR *Vagum*, or *the eighth Pair*, is a very notable conjugation of nerves, of the medulla oblongata; thus called from their wide, vague diſtribution throughout the ſeveral parts of the body.—See their origin, courſe, diſtribution, *&c.* under NERVE.

PAR, (a term of nobility.) See PEER.

PARABLE*, ΠΑΡΑΒΟΛΗ, a fable, or allegorical inſtruction founded on ſomething real, or apparent in nature, or hiſtory; from which a moral is drawn, by comparing it with ſome other thing, wherein the people are more immediately concerned.

* The word is formed from the Greek, παραβαλλειν, to oppoſe, compare.

Such are thoſe *Parables* of the ten virgins, of Dives and Lazarus, of the prodigal ſon, *&c.* in the *New Teſtament*. St. Matthew ſays our Saviour never ſpoke to the people but by *Parables*.

Ariſtotle defines *Parable*, a ſimilitude drawn from form to form. Cicero calls it a collation, others a ſimile. F. de Colonia calls it a rational fable.

The Hebrew calls it, משר from a word which ſignifies to predominate, to aſſimilate; whence the proverbs of Solomon are alſo called משר *Parables*, or *Proverbs*. See ÆNIGMA.

Glaſſius defines *Parable* a ſimile wherein a fictitious thing is related as real, and compared with ſome ſpiritual thing, or accommodated to ſignify it. See ACCOMMODATION.

Some make *Parable* differ from fable; Grotius and others uſe the two promiſcuouſly. Kircher derives the uſe of *Parables* from the Egyptians. See FABLE.

In the *New Teſtament*, the word *Parable* is uſed variouſly. In Luke IV. 23. for a proverb, or adage: In Matth. XV. 15. for a thing darkly and figuratively expreſſed: In Heb. IX. 9, *&c.* for a type: In Luke XIV. 7, *&c.* for a ſpecial inſtruction: Matth. XXIV. 32. for a ſimilitude or compariſon.

PARABOLA, in geometry, a figure ariſing from the ſection of a cone, when cut by a plane parallel to one of its ſides. See SECTION.

From the ſame point of a cone, therefore, only one *Parabola* can be drawn; All the other ſections within thoſe parallels being ellipſes; and all without hyperbola's. See CONE.

Wolfius defines the *Parabola* to be a curve wherein $ax=y^2$, that is, the ſquare of the ſemi-ordinate is equal to the rectangle of the abſciſſe, and a given right line called the *parameter* of the axis, or *lacus rectum*. See PARAMETER.

Hence, a *Parabola* is a curve of the firſt order; and as the abſciſſes increaſe, the ſemi-ordinates increaſe likewiſe; conſequently the curve never returns into itſelf.

Hence alſo the abſciſſe is a third proprotional to the parameter and ſemi-ordinate; and the parameter a third proportional to the abſciſſe and ſemi-ordinate; and the ſemi-ordinate a mean proportional between the parameter and abſciſſe.

To deſcribe a PARABOLA—The parameter A B *Tab. Conics Fig.* 8. being given; continue it to C, and from B let fall a perpendicular to N. From centres taken at pleaſure, with the compaſſes open to A, deſcribe arches cutting the right line B V in I, II, III, IV, V, *&c.* And the right line B C in 1, 2, 3, 4, 5, *&c.* Then will B 1, B 2, B 3, B 4, B 5, *&c.* be abſciſſes; and B I, BII, B III, B IV, B V, *&c.* ſemi-ordinaaes. Wherefore if the lines B 1, B 2, B 3, *&c.* be transferred from the line BC to that BN, and in the points 1, 2, 3, 4, *&c.* perpendiculars be raiſed, 1 I = BI, 2 II = BII, 3 III = BIII, *&c.* the curve paſſing through the points, I, II, III, *&c.* is a *Parabola*; and P N its axis.

Every point of the *Parabola* may alſo be determined geometrically; *e. gr.* If it be inquired, whether the point M be in the *Parabola* or not? from M to B N let fall a perpendicular deſcribe a ſemicircle. For if that paſs through M, the point M is in the *Parabola*.

In a *Parabola*, the diſtance of the focus from the vertex, is to the parameter, in a ſubquadruple ratio: and the ſquare of the ſemi-ordinate is quadruple the rectangle of the diſtance of the focus from the vertex, into the abſciſſe. See FOCUS.

To deſcribe a PARABOLA *by a continual Motion.*—Aſſuming a right line for an axis, let fA, *Fig.* 9. $=AF=\frac{1}{4}a$. In A fix a ruler DB cutting the axis fD at right angles. To the extremity of another ruler E C, faſten a thread fixed at its other extreme in the focus E, which is to be $=AD+AF$. If then a ſtyle or point be fixed to the ruler E C, and the ruler be carried firſt to the right then to left, according to the direction of the other DB; the ſtyle will mark out a *Parabola*.—For, F M will be conſtantly $=EM=Pf=x+\frac{1}{4}a$, and conſequently the point M is in a *Parabola*.

Properties of the PARABOLA.—The ſquares of the ſemi-ordinates are to each other as the abſciſſes; and the ſemi-ordinates themſelves, in a ſubduplicate ratio of the abſciſſes.

The rectangle of the ſum of two ſemi-ordinates into their difference, is equal to the rectangle of the parameter into the difference of the abſciſſes: the parameter therefore is to the ſum of the two ſemi-ordinates, as their difference to the difference of the abſciſſes.

In a *Parabola*, the rectangle of the ſemiordinate into the abſciſſe, is to the ſquare of the abſciſſe, as the parameter to the ſemi-ordinate.

In a *Parabola*, the ſquare of the parameter is to the ſquare of one ſemi-ordinate, as the ſquare of another ſemi-ordinate to the rectangle of the abſciſſes.

In a *Parabola*, the ſubtangent is double the abſciſſe, and the ſubnormal ſubduple of the parameter.

Quadrature of the PARABOLA. See QUADRATURE.

Rectification of the PARABOLA. See RECTIFICATION.

Centre of gravity of a PARABOLA. See CENTRE OF GRAVITY.

Centre of oſcillation of the PARABOLA. See OSCILLATION.

PARABOLA'*s of the higher kinds* are algebraic curves, defined by $a^{m-1}\,x=y^{m}$. *E. gr.* by $a^2\,x=y^3$, $a^3\,x=y^4$, $a^4\,x=y^5$, $a^5\,x=y^6$, *&c.* See CURVE.

Some call theſe *Paraboloids*: more particularly, if $a^2\,x=y^3$; they call it a *Cubical Paraboloid*.—If $a^3\,x=y^4$. *&c.* they call it a *Biquadratical Paraboloid*, or a *Surdeſolidal Paraboloid*. See CUBICAL.

And in reſpect of theſe, the *Parabola of the firſt kind*, above explained, they call the *Apollonian*, or *Quadratic Parabola*.

Thoſe curves are likewiſe to be referred to *Parabola's* wherein $ax^{m-1}=y^{m}$. as *e. gr.* $ax^2=y^3$, $ax^3=y^4$, which ſome call *Semi-parabola's*. They are all comprehended under the common equation, a^m, $x^m y^r$, which alſo extends to other curves, *v. gr.* to thoſe wherein $a^2x^2=y^4$, $a^2x^3=y^5$, $a^3x^4=y^7$.

Since in *Parabola's* of the higher kinds, $y^m=a^{m-1}x$; if any other ſemi-ordinate be called v, and the abſciſſe correſponding thereto z, we ſhall have $v^m=a^{m-1}z$, conſequently $y^m : v^m :: a^{m-1}x : a^{m-1}z$. That is $x : z$. It is a common property, therefore, of theſe *Parabola's*, that the powers of the ordinates are in the ratio of the abſciſſes.

But in *Semi-parabola*'s, $y^m : v^m :: ax^{m-1} : z^{m-1} = x^{m-1} : z^{m-1}$. Or; the powers of the ſemi-ordinates are as the powers of the abſciſſes, one degree lower. *E. gr.* In *Cubical Semi-parabola's*, of the ordinates y^3 and v^3 are as the ſquares of the abſciſſes x^2 and z^2. See SEMI-PARABOLA.

Apollonian PARABOLA, is the common, or *Quadratic Parabola of the firſt kind*; ſo called by way of diſtinction from *Parabola's* of the higher kinds: which ſee.

Quadratic PARABOLA, is the ſame with the *Apollonian*. Which ſee.

Pelecoid PARABOLA. See the article PELECOID.

Reſiſtance of a PARABOLA. See the article RESISTANCE.

PARABOLAN, PARABOLANUS, among the ancients, was a ſort of gladiator, called alſo *Confector*. See CONFECTOR.

* The name was gievn them from the Greek, παραβολος, of βαλλω, to throw, precipitate; in regard they threw themſelves on danger and death.

PARABOLANI, or PARABOLARII, is alſo uſed in church-hiſtory, for a ſet of people, eſpecially in Alexandria, who devoted themſelves to the ſervices of churches, and hoſpitals.

The *Parabolani* were not allowed to withdraw themſelves from their function, which was the attendance on the ſick.—They made a kind of fraternity, amounting ſometime to 600 perſons, dependant on the biſhop.

The deſign of their inſtitution was, that the diſeaſed, eſpecially thoſe infected with the plague, might not be without attendance.

PARABOLIC *Conoid*, a ſolid figure generated by the rotation of a parabola about its axis. See CONOID.

The ſolidity of the *Parabolic Conoid*, is $=\frac{1}{2}$ of that of its circumſcribing cylinder.

The circles conceived to be the elements of this figure, are in an arithmetical proportion, decreaſing towards the vertex.

A *Parabolic Conoid* is to a cylinder of the ſame baſe and height, as 1 to 2; and to a cone of the ſame baſe and height, as $1\frac{1}{2}$ to 1.

PARABOLIC *Cuneus*, a ſolid figure formed by multiplying all the DB's, *Tab. Conics*, *Fig.* 10. into the DS's: or which amounts to the ſame, on the baſe APB erect a priſm, whoſe altitude is AS: this will be a *Parabolical Cuneus*, which of neceſſity will be equal to the *parabolical* pyramidoid; inaſmuch as the component rectangles, in one, are ſeverally equal to all the component ſquares, in the other.

PARABOLIC *Pyramidoid*, a ſolid figure, generated by ſuppoſing all the ſquares of the ordinate applicates in the *Parabola*, ſo placed, as that the axis ſhall paſs through all their centres at right angles; in which caſe the aggregate of the planes will form the *parabolic pyramidoid.*

The ſolidity hereof is had by multiplying the baſe, by half the altitude; the reaſon whereof is obvious: for the component planes being a ſeries of arithmetical proportionals beginning from o, their ſum will be equal to the extremes multiply'd by half the number of terms, that is, in the preſent caſe, equal to the baſe multiplied by half the height.

PARABOLIC *Space*, the ſpace or area contained between any entire ordinate, as VV *Tab. Conics*, *Fig.* 8. and the curve of the incumbent *Parabola.* See PARABOLA.

The Parabolic Space is to the rectangle of the ſemi-ordinate into the abſciſſe, as 2 to 3: to a triangle inſcribed on the ordinate as a baſe, the *Parabolic Space* is as 4 to 3.

Every *Parabolical* and *Paraboloidical Space* is to the rectangle of the ſemi-ordinate into the abſciſſe as $r\,x\,y : (m+r)$ to $x\,y$, that is, as r to $m+r$.

Segment of a PABABOLIC *Space*, is that ſpace included between two ordinates. See SEGMENT.

Quadrature of a Parabolical Segment. See QUADRATURE.

PARABOLIC *Speculum* or *Mirrour.* See MIRROUR.

PARABOLIC *Spindle.* See PYRAMIDOID.

PARABOLOIDES, in geometry, Parabola's of the higher kinds. See PARABOLA *of the higher Kinds.*

Quadrature of a PARABOLOID. See QUADRATURE.

Rectification of a PARABOLOID. See RECTIFICATION.

Centre of Gravity of a PARABOLOID. See CENTER.

Quadratic PARABOLOID, *Cubical Paraboloid*, *Surdeſolidal Paraboloids.* See PARABOLA's *of the higher Kinds.*

PARACENTESIS*, ΠΑΡΑΚΕΝΤΗΣΙΣ, an operation in chirurgery, properly called *Tapping.*

* The word is formed from the Greek παρα, with, and κεντειν, *pungere*, to prick.

It conſiſts in opening a little hole in the lower venter, or belly, to let out waters collected in the cavity thereof, or between the teguments, in an aſcites or water dropſy. See DROPSY.

The ancients cut the aperture with a lancet; but the moderns punch it with a kind of ſtillet or bodkin; clapping a cannula or tap into the hole when made, to carry off the water. See CANNULA.

The operation is uſually performed two or three fingers breadth on one ſide the navel, ſometimes a little lower, but always ſo as to avoid the linea alba.

The water is uſually drawn off at ſeveral times, as the patient's ſtrength will allow; and a new puncture is made, every time the belly is thus to be emptied.

The *Paracenteſis* does not often ſucceed, though often repeated; becauſe the root of the diſeaſe, notwithſtanding the carrying off the water by this means, is ſtill left behind.

PARACENTESIS, is alſo a name applied by ſome authors to all operations either with the lancet, the needle, or punch; not excepting the operation of couching for cataracts; founded on the etymology of the word.—Others reſtrain it to apertures made in the head, breaſt, belly and ſcrotum; and others to the ſingle operation of tapping in dropſies. See PUNCTURE, COUCHING, *&c.*

PARACENTRIC *Motion*, in aſtronomy, a term uſed for ſo much as a revolving planet approaches nearer to, or recedes farther from the ſun, or centre of attraction. See ATTRACTION.

Thus if a planet in A, *Tab. Aſtronomy*, *Fig.*24. move to B, then is $SB-SA=bB$, the *Paracentric* motion of that Planet.

PARACENTRIC *Solicitation of Gravity*, amounts to the ſame with the *vis centripeta*, and, in aſtronomy, is expreſſed by the line AL, *Fig.* 24. drawn from the point A parallel to the ray SB (infinitely nearer SA) till it interſect the tangent BL.

PARACLET, a name which the church has given to the holy ſpirit: from the Greek παρακλητος, *q. d.* comforter, advocate. See SPIRIT and TRINITY.

PARACME, Παρακμη, a Greek word ſignifying declenſion, or a thing's being paſt its aim. See PERIOD.

PARACYNANCHE, in medicine. See PARASYNANCHE, and ANGINA.

PARADE, the ſhew, or expoſal of any thing to view, in all its advantages, and ornaments. See SPECTACLE.

Bed of *Parade*, is that wherein a perſon lies in ſtate.

PARADE, in war, the place were troops aſſemble, or draw together in order to go on any ſervice. See PLACE *of arms.*

PARADE is moſt properly the appearance of the officers and ſoldiery at a poſt aſſigned them, to put themſelves under arms, in the beſt order they can; either to mount, or break up the guard, or to form a battalion, or on ſome other occaſion.

PARADE, in fencing, the action of parrying, or turning off any puſh, or ſtroke. See PARRYING.

There are as many kinds of *Parades*, as of ſtrokes, and attacks. *Parade* inward, outward, above, below, feigned, *&c.*

PARADIGM*, PARADIGMA, an example, or inſtance of ſomething ſaid, or done. See EXAMPLE.

* The word is formed of the Greek, παραδειγμα, exemplar, of παρα and δεικνυμι, *oſtendo*, q. d. *juxta oſtendo.*

PARADISE*, a term primarily uſed for the place wherein Adam was ſeated, during his innocence; and from which he was expelled for diſobeying God: called in a ſtricter manner, the *Terreſtrial Paradiſe.*

* The word is formed of the Greek, παραδεισος, orchard, a place ſtored with apples, and all kinds of fruit.—Moſes calls it the *Garden of Eden*, *q. d.* garden of delight, from ηδονη, *voluptas*, pleaſure.

The critics are in diſpute about the preciſe place of *Paradiſe.* Some will have it in Judea, in the place where now is the lake Geneſareth; others, in Syria, toward the ſprings of the Orontes, and Chryſorrhoe: but, in neither of thoſe places do we diſcover any track of the rivers wherewith *Paradiſe*, in Moſes's deſcription was watered. Others place it in the greater Armenia near the mountain Ararat, where Noah's ark was left; and imagine they there diſcover the ſources of the four rivers which watered the garden of Eden, *viz.* Euphrates; Hiddekel, now the Tygris; Gihon, now Araxes; and Piſon, now Phazzo. But ſir J. Chardin aſſures us, in his travels, that the Phazzo ſprings out of the mountains of Caucaſus, northward of the kingdom of Imereti, and far enough from mount Ararat: beſide, that in Armenia, we have no ſigns of the countries of Havilah and Ethiopia, which thoſe rivers waſhed after their departing from Eden.

There are various other opinions, as to this point: Poſtellus will have *Paradiſe* placed under the north-pole; grounding his notion upon an ancient tradition of the Egyptians and Babylonians, that the ecliptic or ſun's way was at firſt at right angles to the equator; and ſo paſſed directly over the north-pole. Others are againſt limiting it to any one place, and contend, that it included the whole face of the earth, which was, as it were, one continued ſcene of pleaſures, till altered upon Adam's tranſgreſſion.

But the moſt common, and probable opinion is that of Hopkinſon, Huet, Bochart, *&c.* who place *Paradiſe* between the confluence of the Euphrates, and Tygris, and their ſeparation. Theſe rivers are two of thoſe wherewith the garden of Eden was watered: Piſon was a branch ariſing out of one of them after their ſeparation; and Gihon another branch ariſing from the other, on the ſide of Armenia or the Weſt: accordingly Ethiopia, one of the countries which theſe rivers waſhed was, inconteſtably, Arabia Deſerta, for Moſes calls his wife, who was of this country, an Ethiopian; and Havilah, the other country, muſt be the Chuſiſtan, in Perſia; where there were anciently found gold, bdellium, the onyx, *&c.* mentioned in Moſes's deſcription.

PARADISUS, among ancient church-writers, denoted a ſquare court, before cathedrals, ſurrounded with piazza's, or portico's for walking under, ſupported by pillars. See PORTICO. Matthew Paris calls it *Parviſus.* See PERVISE.

PARADOX*, ΠΑΡΑΔΟΞΟΝ, in philoſophy, a propoſition ſeemingly abſurd, becauſe contrary to the received opinions; but yet true in effect. See PROPOSITION.

The word is formed from the Greek παρα, *contra* againſt, and δοξα opinion.

The Copernican ſyſtem is a *Paradox* to the common people; the learned are all agreed of its truth. See COPERNICAN.

There are even *Paradoxes* in geometry; a number whereof are collected by the Jeſuit Marius Bettinus: among others is this, that the contained is greater than the containing.

PARADOXI, or PARADOXOLOGI, among the ancients, were a kind of mimes or buffoons, who diverted the people with their drolling. See PANTOMIME.

They were alſo called *Ordinarii*, for this reaſon apparently, that, as they ſpoke without ſtudy or preparation, they were always ready.

They had another denomination, *viz. Nianicologi*, q. d. tellers of children's tales: and, beſide; were called *Aretalogi*, of αρετη, virtue, as talking much of their own rare talents, and qualifications.

PARÆNESIS, ΠΑΡΑΙΝΕΣΙΣ, a Greek term, ſignifying admonition, or exhortation.

* The word is formed of παρα, and αινεω, *laudo*, I praiſe.

PARAGE, PARAGIUM in law, an equality of blood, or dignity; but more eſpecially of land, in the partition of an inheritance between co-heirs. See PEER.

PARAGE, PARAGIUM, is more particularly uſed in ancient cuſtoms, for an equality of condition among nobles, or perſons holding nobly. See PEER and PEERAGE.

Thus when a fief is divided among brothers; in this caſe, the younger hold their part of the elder by *Parage*, *i. e.* without any homage, or ſervice.

This ſtill obtains, in ſome meaſure, in Scotland, where the huſbands of the younger ſiſters are not obliged to any faith or homage to the huſband of the elder; nor their children, to the ſecond degree.

This *Parage* being an equality of duty, or ſervice among brothers and ſiſters, ſome have called it *Fratriage* and *Parentage.*

The cuſtomary of Normandy defines tenure by *Parage* to be, when a noble fief being divided among daughters, the eldeſt does homage to the chief lord for all the reſt, and the youngeſt hold their parts of the eldeſt by *Parage*, i. e. without any homage or fealty. See FRATRIAGE.

Parage ceaſes at the ſixth degree incluſively. It likewiſe ceaſes, when any of the ſharers ſell their part. See HOMAGE.

PARAGOGE, ΠΑΡΑΓΩΓΗ, in grammar, a figure, whereby a word is lengthened out, by adding a ſyllable at the end thereof: as in *dicier* for *dici*. See FIGURE.

PARAGOGIC*, in grammar, denotes ſomething added to a word without adding any thing to the ſenſe thereof.

> * The word is formed of the Greek παραγω, I prolong; compounded of παρα and αγω.

In the Hebrew, the ה is frequently *Paragogic*; as in, אברכה for, אברך I will praiſe.

The uſe of *Paragogic* letters is only to give a more full and agreeable ſound to words, either for the ſake of the verſe, or the period.

PARAGORICKS. See the article PAREGORICKS.

PARAGOUE'. See the article PARAGUAY.

PARAGRAPH, ΠΑΡΑΓΡΑΦΟΣ, a term in juriſprudence, ſignifying a ſection, or diviſion of the text of a law: otherwiſe called an *Article*. See SECTION.

Such a law is ſaid to be divided into ſo many *Paragraphs*. The character of a *Paragraph* in quotation, is §. See CHARACTER.

Among the Greek poets, *Paragraphs*, Παραγραφοι, were a ſpecies of critical notes, ſerving to mark the couplets, ſtrophes, and other diviſions of odes, and other poetical compoſitions.—This *Paragraph*, as deſcribed by the ſcholiaſt of Ariſtophanes, was a ſhort line with a dot at the extremity of it.

PARAGUAY, or PARAGOUE', in natural hiſtory, a celebrated plant of the ſhrub kind, growing in ſome provinces of South-America, eſpecially *Paraguay*, whence its name; though better known among us, under the denomination of *South-Sea Tea*. See TEA.

This plant, which does not riſe above a foot and half high, has very ſlender branches, and leaves like thoſe of ſenna; it may be looked on as a kind of occidental tea, which, like the oriental, is taken infuſed in hot water, to which it communicates a colour and ſmell nearly like thoſe of the beſt tea ſeen in Europe.

There are two kinds of *Paraguay*, the one called ſimply *Paraguay*; the other *Camini*, by the Spaniards, *Yerva-camini*; which laſt is moſt eſteemed, and ſold for a third more than the other.

The firſt the Spaniards call *Yerva con palos*, *i. e.* herb with litte ſticks, becauſe full of broken branches, and is chiefly uſed by domeſticks and ſlaves: the latter is the drink of the richeſt. But both are of ſo much uſe, and eſteemed of ſuch abſolute neceſſity, that no body in that part of *America* will live without them. The works of the mines of Potoſi would ſtand ſtill, but that the maſters take care to ſupply the poor ſlaves that labour therein, with *Paraguay*, which is their conſtant remedy againſt thoſe mineral ſteams wherewith they would otherwiſe be ſuffocated. Nor will a ſervant engage himſelf with any maſter, but upon this among other conditions, that he have nothing but *Paraguay* for drink.

The *Paraguay* makes one of the moſt conſiderable articles of the South American commerce. At Peru, Chily, and Buenos Ayres, there are above two millions worth ſold *per Annum*; which paſſes almoſt altogether through the hands of the Jeſuits.

The uſe of *Paraguay* began lately to obtain in England; where many people ſeemed to like it as well as tea. But foreigners ſay, that their approbation flowed as much from their intereſt as their taſte; in regard they came ſo eaſily by it, by reaſon of their commerce with the Spaniards of South America, and Buenos Ayres, ſince the treaty of Utrecht in 1713.

The preparation of the plant, and the making it into drink is much the ſame with that of tea, except that they infuſe both leaves and wood, that they drink it immediately out of the veſſel it is made in; without letting it have time to infuſe, by reaſon of the black tincture it gives; and that, to prevent leaves and all from coming, they ſuck it through a ſilver, or glaſs pipe, which goes round the company one after another. Frezier.

Beſide all the virtues which the eaſtern people aſcribe to their tea; as to be good in diſeaſes of the head, breaſt, ſtomach, againſt phlegm, and to reſtore ſleep; the Americans attribute to theirs this further of purifying all kinds of water, how foul and corrupt ſoever, by only infuſing it therein, either hot or cold. Thus, having always ſome of it with them, if they meet with none but the worſt waters in the vaſt deſarts to be croſſed in going from Buenos Ayres to Peru and Chily, they are not afraid to drink it, after ſteeping ſome of the plant a little while therein. It is alſo held ſovereign againſt the ſcurvy, and putrid fevers.

PARALEPSIS, ΠΑΡΑΛΕΙΨΙΣ, in rhetorick, a pretence of omitting, or paſſing over a thing, and yet expreſſing it by the way. See FIGURE.

When the imagination is warmed, and reaſons and arguments preſent themſelves in abundance; the orator would willingly lay them all down, in form; but for fear of wearying his audience, only produces ſome of them *en paſſant*, and without dwelling on them: and this is called a *Paralepſis*, by the Latins *Præteritio*, by the Greeks *Apoſcopeſis*. See PRETERITION, *&c.*

For inſtance, I paſs over in ſilence the many injuries I have received, *&c.* I wont inſiſt on his laſt outrage.

PARALIPOMENA*, ΠΑΡΑΛΕΙΠΟΜΕΝΑ, a ſupplement of things omitted, or forgot in ſome preceding work, or treatiſe. See SUPPLEMENT.

> * The word is formed from the Greek, παραλειπω, *prætermitto*, I paſs by.——Some authors uſe the word *Subrelictum* inſtead of *Paralipomenon*.

In the canon of ſcripture, there are two books of *Paralipomena*, called in the Engliſh verſion, *Chronicles*; being a ſupplement to the four books of kings, the two firſt whereof are alſo called *Books of Samuel*.

Quintus Calaber has a work entituled, the *Paralipomena of Homer*.

PARALLACTIC *Angle*, called alſo ſimply, PARALLAX, is the angle made in the centre of a ſtar by two right lines, drawn, the one from the centre of the earth, TB, (*Tab. Aſtron. Fig.* 27.) the other from its ſurface, EB.

Or, which amounts to the ſame, the *Parallactic* angle is the difference of the angles CEA, and BTA, under which the real and apparent diſtances from the zenith are ſeen. See PARALLAX.

The Sines of the *Parallactic* angles ALT and AST, *Tab. Aſtron. Fig.* 30. at the ſame or equal diſtances from the zenith SZ, are in a reciprocal ratio of the diſtances of the ſtars from the centre of the earth TL and TS.

PARALLAX, ΠΑΡΑΛΛΑΞΙΣ, in aſtronomy, an arch of the heavens intercepted between the true place of a ſtar, and its apparent place. See PLACE.

The true place of a ſtar is that point of the heavens, B, *Tab. Aſtronomy, Fig.* 27, wherein it would be ſeen by an eye placed in the centre of the earth, as at T.—The apparent place is that point of the heavens C, wherein the ſtar appears to an eye on the ſurface of the earth, as at E.

Now, as in effect, we view the celeſtial bodies not from the centre, but from the ſurface of our earth, which is a ſemi-diameter diſtant from the centre; we ſee it by a viſual ray, which paſſing through the centre of the ſtar, and proceeding thence to the ſurface of the mundane ſphere, marks out another point C, which is its apparent place.

This difference of places, is what we call abſolutely, the *Parallax*, παραλλαξις, or the *Parallax of Altitude*; by Copernicus called the *Commutation*; which, therefore, is an angle formed by two viſual rays, drawn, the one from the centre, the other from the circumference of the earth, and traverſing the body of the ſtar; and is meaſured by an arch of a great circle intercepted between the two points of true and apparent place C and B.

PARALLAX *of Declination*, is an arch of a circle of declination SI, *Fig.* 28, whereby the *Parallax* of altitude increaſes or diminiſhes the declination of a ſtar. See DECLINATION.

PARALLAX *of right Aſcenſion and Declenſion*, is an arch of the equator D *d*, *Fig.* 28, whereby the *Parallax* of altitude increaſes the aſcenſion, and diminiſhes the deſcenſion. See ASCENSION and DESCENSION.

PARALLAX *of Longitude*, is an arch of the ecliptic T t, *Fig.* 29, whereby the *Parallax* of altitude increaſes or diminiſhes the longitude. See LONGITUDE.

PARALLAX *of Latitude*, is an arch of a circle of latitude SI, whereby the *Parallax* of altitude increaſes or diminiſhes the latitude. See LATITUDE.

PARALLAX is alſo uſed for the angle made in the centre of the ſtar, by two right lines, drawn, the one from the centre, the other from the ſurface of the earth.

This is alſo called *Parallactic Angle*. See PARALLACTIC *Angle*. Hence, the *Parallax* diminiſhes the altitude of a ſtar, or increaſes its diſtance from the zenith, and has, therefore, a contrary effect to the refraction. See REFRACTION.

The *Parallax* of altitude CB, *Fig.* 27, is, ſtrictly, the difference between the true diſtance from the zenith CA, and the apparent diſtance BA. See PARALLACTIC *Angle*.

The *Parallax* is greateſt in the horizon; in the zenith, or meridian, a ſtar has no *Parallax* at all; the true and apparent places, then co-inciding.

The horizontal *Parallax* is the ſame, whether the ſtar be in the true, or apparent horizon.

The fixed ſtars have no ſenſible *Parallax*, by reaſon of their immenſe diſtance, to which the ſemi-diameter of the earth is but a meer point. See STAR and PLANET.

Hence alſo, the nearer a ſtar is to the earth, the greater is its *Parallax*, at an equal elevation about the horizon; Saturn is ſo high, that we have much ado to obſerve any *Parallax* at all. See SATURN.

The *Parallax* increaſes the right and oblique aſcenſion, diminiſhes the deſcenſion; diminiſhes the northern declination, and latitude in the eaſtern part, increaſes them in the weſtern; increaſes the ſouthern in the eaſtern and weſtern part; diminiſhes the longitude in the weſtern part, increaſes it in the eaſtern. The *Parallax*, therefore, has juſt oppoſite effects to the refraction. See REFRACTION.

Hence the *Parallax* of the remoter ſtar S, is leſs than the *Parallax*

rallax of the nearer L, at the ſame diſtance from the zenith; as before obſerved.

The ſines of the *Parallactic* angles M and S, of ſtars equally diſtant from the centre of the earth T, are as the ſines of the diſtances ſeen from the vertex Z M, and Z S.

Hence, as the diſtances from the vertex decreaſe, *i. e.* as the altitudes decreaſe, the *Parallax* decreaſes; and hence, alſo, the *Parallax* affects the altitude of the ſtar, from the horizon to the zenith.

The doctrine of *Parallaxes* is of the utmoſt importance in aſtronomy; both for determining the diſtances of the planets, comets, and other phænomena of the heavens; for the calculation of eclipſes; and for finding the longitude. See PLANET, DISTANCE, LONGITUDE, and ECLIPSE.

Methods of finding the *Parallaxes* of the celeſtial phænomena are various: Some of the principal and eaſier follow.

To obſerve the PARALLAX *of a celeſtial phænomenon.*—Obſerve when the phænomenon is in the ſame vertical with a fixed ſtar which is near it; and meaſure its apparent diſtance from this ſtar. Obſerve again, when the phænomenon and fixed ſtar are in equal altitudes from the horizon; and again meaſure their diſtance.—The difference of thoſe diſtances will be, very nearly, the *Parallax* of the ſtar.

The *Parallax* of a phænomenon may be likewiſe found by obſerving its azimuth, and altitude; and by marking the time between the obſervation, and its arrival at the meridian.

All required to find the *Parallax* of the moon, is the *Parallax* of right aſcenſion: to find the effect of the magnitude of the ſemi-diameter of the earth, with regard to the phænomena of its motion, it is ſufficient to know how far the meridian, to which the eye refers it, deviates from the true meridian. This is what M. Caſſini found and practiſed, with regard to mars; and which M. Maraldi has ſince practiſed, with regard to the moon.—The whole myſtery here conſiſts in having the moon's true motion, which refers to the centre of the earth; and its apparent motion, which refers to the place of obſervation. The difference of theſe, which is greateſt in the horizon, or horary circle of 6 o'clock, gives the horizontal *Parallax*, for that latitude, whence the general *Parallax*, or that under the equator is eaſily found: the *Parallax* of any parallel being to that of the equator, as the ſemi-diameter of this parallel is to that of the equator. See *the practiſe of this method exemplified in finding the* PARALLAX *of mars.*

To obſerve the moon's PARALLAX.—Obſerve the moon's meridian altitude, with the greateſt accuracy, (See ALTITUDE) and mark the moment of time: this time being equated; (See EQUATION) compute her true longitude and latitude; and from theſe find her declination; (See DECLINATION) and from her declination and the elevation of the equator find her true meridian altitude. If the obſerved altitude be not meridian, reduce it to the true altitude for the time of obſervation. Take the refraction from the obſerved altitude, and ſubtract the remainder from the true altitude: the remainder is the moon's *Parallax*.

By this means Tycho in 1583. Oct. d. 12. hor. 5. 19′. from the moon's meridian altitude obſerved, 13°. 38′. found her *Parallax* 54 minutes. See MOON.

To obſerve the Moon's Parallax *in an eclipſe.*—In an eclipſe of the moon, obſerve when both horns are in the ſame vertical circle; in that moment take the altitudes of both horns; the difference of the two being halved and added to the leaſt, or ſubtracted from the greateſt, gives nearly the viſible altitude of the moon's centre. But the true altitude is nearly equal to the altitude of the centre of the ſhadow at that time. Now we know the altitude of the centre of the ſhadow; becauſe we know the ſun's place in the ecliptic, and its depreſſion under the horizon, which is equal to the altitude of the oppoſite point of the ecliptic in which the centre of the ſhadow is. Thus have we both the true and apparent altitude; the difference whereof is the *Parallax*.

From the moon's PARALLAX *AST*, Fig. 30. *and altitude SR, to find her diſtance from the earth.*—By her apparent altitude given, we have her apparent diſtance from the zenith, *i. e.* the angle Z A S; or by her true altitude the angle A T S. Wherefore, ſince, at the ſame time, we have the *Parallactic* angle S; and the ſemi-diameter of the earth AT is reputed as 1; by plain trigonometry we ſhall have the moon's diſtance in ſemi-diameters of the earth, thus: as the ſine of the angle S is to the oppoſite ſide given, ſo is the ſine the other angle T, to the ſide required T S.

Hence, according to Tycho's obſervation, the moon's diſtance at that time from the earth was 62 ſemi-diameters of the earth. Hence alſo, ſince, from the moon's theory, we have the ratio of her diſtances from the earth in the ſeveral degrees of her anomaly; thoſe diſtances being found by the rule of three in ſemi-diameters of the earth, the *Parallax* is thence determined to the ſeveral degrees of the true anomaly.

De le Hire makes the greateſt horizontal *Parallax* 1°. 1′. 25″. the ſmalleſt 54′. 5″. the moon's diſtance, therefore, when in her perigee is $55\frac{97}{100}$, that is almoſt 56 ſemi-diameters; in her apogee $63\frac{57}{100}$, that is, $63\frac{1}{2}$ ſemi-diameters of the earth.

To obſerve the PARALLAX *of mars.*—1. Suppoſe mars in the meridian and equator, in H, *Tab. Aſtronomy, Fig.* 31, and that the obſerver under the equator in A, obſerves him culminating with ſome fixed ſtar. 2. If now the obſerver were in the centre of the earth, he would ſee mars conſtantly in the ſame point of the heaven with the ſtar; and therefore, together with it in the plane of the horizon, or of the ſixth horary. But ſince mars, here, has ſome ſenſible *Parallax*, and the fixed ſtar none; mars will be ſeen in the horizon, when in P, the plane of the ſenſible horizon: and the ſtar, when in R the plane of the true horizon: obſerve, therefore the time between the tranſits of mars and of the ſtar through the plane of the ſixth hour. 3. Convert this time into minutes of the equator; by this means we ſhall have the arch PM, to which the angle PAM, and conſequently the angle AMD is nearly equal, which is the horizontal *Parallax* of mars.

If the obſerver were not under the equator, but in a parallel, I Q, that difference will be a leſs arch, Q M. Wherefore, ſince the little arches, Q M and P M, are as their ſines AD and ID; and ſince ADG is equal to the diſtance of the place from the equator, *i. e.* to the elevation of the pole; and therefore, AD to ID, as the whole ſine to the co-ſine of the elevation of the pole; ſay, as the co-ſine of the elevation of the pole ID is to the whole ſine AD; ſo is the *Parallax* obſerved in I, to the *Parallax* to be obſerved under the equator.

Since mars and the fixed ſtar cannot be commodiouſly obſerved in the horizon; let them be obſerved in the circle of the third hour: and ſince the *Parallax* there obſerved, TO, is to the horizontal one, PM, as IS to ID; ſay, as the ſine of the angle IDS, or 45° (ſince the plane DO is in the middle between the meridian DH and the true horizon DM) is to the whole ſine, ſo is the *Parallax* TO to the horizontal *Parallax* PM.

If mars be likewiſe out of the plane of the equator; the *Parallax* found will be an arch of a parallel; which muſt, therefore, be reduced, as above, to an arch of the equator.

Laſtly, if mars be not ſtationary, but rather direct, or retrograde by obſervations for ſeveral days, find out what his motion is every hour, that his true place from the centre may be aſſigned for any given time.

By this method, Caſſini, to whom we owe this noble invention, obſerved the greateſt horizontal *Parallax* of mars to be 25 ſeconds, or a little leſs. By the ſame method Mr. Flamſtead found it near 30 ſeconds.

By the ſame method the ſame author Caſſini obſerved the *Parallax* of venus.

It muſt be here noted, that the obſervation is to be made with a teleſcope, in whoſe focus are ſtrained four threads cutting each other at right angles A, B, C, D, fig. 45. n° 2, and the teleſcope to be turned about, till ſome ſtar near mars be ſeen to paſs over ſome of the threads, that the threads AB and CD may be parallel to the equator, and therefore, AC and BD may repreſent circles of declination. Thus, by means of the perpendicular threads, the ſituations of the ſtar, and of mars in the meridian, and circle of three o'clock will be determined.

To find the Sun's PARALLAX.—The great diſtance of the *Sun* renders its *Parallax* too ſmall to fall under even the niceſt immediate obſervation: Indeed, many attempts have been made both by the antients and moderns; and many methods invented for that purpoſe. The firſt, that of Hipparchus, followed by Ptolemy, *&c.* was founded on the obſervation of lunar eclipſes; the ſecond, was that of Ariſtarchus, whereby the angle ſubtended by the ſemi-diameter of the moon's orbit ſeen from the ſun, was ſought from the lunar phaſes: but, theſe both proving deficient, aſtronomers are forced to have recourſe to the *Parallaxes* of the planets nearer us, as mars and venus; for from their *Parallaxes* known, that of the ſun, which is inacceſſible by any direct obſervation, is eaſily deduced.

For from the theory of the motions of the earth and planets, we know at any time the proportion of the diſtances of the ſun and planets from us; and the horizontal *Parallaxes* are in a reciprocal proportion to thoſe diſtances: knowing, therefore, the *Parallax* of a planet, that of the ſun may be found from it. Thus, mars, when oppoſite to the ſun, is twice as near as the ſun is: his *Parallax*, therefore, will be twice as great as that of the ſun: and venus, when in her inferior conjunction with the ſun, is ſometimes nearer us than he is; her *Parallax*, therefore, is greater in the ſame proportion.

Thus, from the *Parallaxes* of mars and venus, the ſame Caſſini found the ſun's *Parallax* to be ten ſeconds, which implies his diſtance to be 22000 ſemi-diameters of the earth.

In an obſervation of the tranſit of venus over the ſun, which will be ſeen in May, 1761. Dr. Halley has ſhewn a method of finding the ſun's *Parallax*, and diſtance to a great nicety, *viz.* to a five hundreth part of the whole. See SUN.

The PARALLAX *of the Stars, with regard to the earth's natural orbit.*—The ſtars have no *Parallax*, with regard to the earth's ſemi-diameter; yet, with regard to the earth's annual orbit, it is juſtly expected that ſome *Parallax* be found. See ORBIT.

The axis of the earth in its annual motion deſcribes a kind of cylinder, which being prolonged to the heaven of the fixed ſtars, there draws a circular circumference; each point whereof is the pole of the world for its reſpective day: ſo that the ſituation of the apparent pole, with regard to any of the fixed ſtars, changes very conſiderably in the courſe of a year.

Could this be found by obſervation, it would irrefragably evince the annual motion of the earth round the ſun, and remove that only objection which lyes againſt it, urged by Ricciolus, from no ſuch *Parallax* being obſerved. See EARTH.

Accordingly, Dr. Hook attempted to find it by obſerving the various diſtances of a fixed ſtar from the zenith, in different parts of the earth's orbit; and Mr. Flamſteed, from the acceſs and receſs of a fixed ſtar from the equator at different times of the year; and with ſucceſs, the reſult of his obſervations being, that a fixed ſtar, near the pole, was found 40 or 45 ſeconds nearer it at the winter ſolſtice than at the ſummer one, for ſeven years ſucceſſively.

M. Caſſini the younger allows the obſervations of Flamſteed to agree with thoſe made at the royal obſervatory; but he denies the conſequences: he ſays the variations in the diſtance of the pole ſtar are not ſuch as they ſhould be, ſuppoſing the motion of the earth. Fontenelle accounts for them from a ſuppoſition that the ſtars, like the ſun, turn or revolve on their centres, and that ſome of them have their hemiſpheres unequally luminous: whence, when the more ſhining hemiſphere is turned towards us, the ſtars appears bigger, conſequently nearer the neighbouring ſtars than when the darker is towards us. See STAR.

PARALLAX is alſo uſed in levelling, for the angle contained between the line of true level, and that of apparent level. See LEVELLING.

PARALLEL, in geometry, is applied to lines, figures and bodies, which are every where equidiſtant from each other; or which, though infinitely produced, would never either approach nearer, or recede further from each other.

PARALLEL *Right Lines*, are thoſe which, though infinitely produced, would never meet.

Thus, the line OP, *Tab. Geometry*, *Fig.* 36, is *parallel* to QR. See LINE.

Parallel Lines ſtand oppoſed to lines converging, and diverging. See CONVERGING, *&c.*

Some define an inclining or converging Line, that which will meet another at a finite diſtance; and a *Parallel Line*, that which will only meet it at an infinite diſtance.

A perpendicular, is by ſome ſaid to be the ſhorteſt of all lines that can be drawn to another; and a *Parallel* the longeſt.

But for the orthodoxy of theſe notions of paralleliſm we do not undertake.

Geometricians demonſtrate, that two lines, *parallel* to the ſame third line, are alſo *parallel* to one another; and that if two *Parallels* OP and QR, be cut by a tranſverſe line ST in A and B; 1. The alternate angles *x* and *y* are equal; 2. The external angle *u* is equal to the internal oppoſite one *y*; and thirdly, that the two internal oppoſite ones *z* and *y* are alſo equal to two right ones.

It is ſhewn on the principles of opticks, that if the eye be placed between two *parallel lines*, they will appear to converge towards a point oppoſite to the eye. And if they run to ſuch a length, as that the diſtance between them be but as a point thereto, they will there appear to coincide.

Parallel Lines are deſcribed by letting fall equal perpendiculars, and drawing lines through their extremes, by ſliding the compaſſes open to the deſired width along a line, *&c.*

PARALLEL *Planes*, are thoſe planes which have all the perpendiculars drawn betwixt them equal to each other. See PLANE.

PARALLEL *Rays*, in opticks, are thoſe which keep at an equal diſtance in reſpect to each other, from the viſible object to the eye, which is ſuppoſed to be infinitely remote from the object. See RAY.

PARALLEL *Ruler*, called alſo *Paralleliſm*, an inſtrument conſiſting of two wooden, braſs, or ſteel rulers, AB, and CD; *Fig.* 37, equally broad every where, and ſo joined together by the croſs blades EF, and GH, as to open to different intervals, accede and recede, yet ſtill retain their *Paralleliſm*.

The uſe of this inſtrument is obvious; for one of the rulers being applied to RS, and the other withdrawn to a given point V; a right angle AB, drawn by its edge, through V, is a *parallel* to RS.

PARALLELS, or PARALLEL *Circles*, in geography, called alſo *Parallels of Latitude*, and *Circles of Latitude*, are leſſer circles of the ſphere, conceived to be drawn from weſt to eaſt through all the points of the meridian, commencing from the equator, to which they are *parallel*, and terminating with the poles. See CIRCLE.

They are called *Parallels of Latitude*, *&c.* becauſe all places lying under the ſame *Parallel*, have the ſame latitude. See LATITUDE.

PARALLELS *of Latitude*, in aſtronomy, are leſſer circles of the ſphere *parallel* to the ecliptic, imagined to paſs through every degree and minute of the colures. See LATITUDE.

They are repreſented on the globe by the diviſions of the quadrant of altitude, in its motion round the globe, when ſcrewed over the poles of the ecliptic. See GLOBE.

PARALLELS *of Altitude*, or *Almucanters*, are circles *parallel* to the horizon, imagined to paſs through every degree and minute of the meridian between the horizon, and zenith; having their poles in the zenith. See ALTITUDE.

On the globe, they are repreſented by the diviſions on the quadrant and altitude, in its motion about the body of the globe, when ſcrewed to the zenith. See GLOBE.

PARALLELS *of Declination*, in aſtronomy, are the ſame with *Parallels* of latitude in aſtronomy. See DECLINATION.

PARALLEL *Sphere*, that ſituation of the ſphere, wherein the equator coincides with the horizon, and the poles with the zenith and nadir. See SPHERE.

In this ſphere all the *Parallels* of the equator become *Parallels* of the horizon, conſequently no ſtars ever riſe or ſet, but all turn round in circles *parallel* to the horizon; and the ſun, when in the equinoctial, wheels round the horizon the whole day. After his riſing to the elevated pole, he never ſets for ſix months; and after his entering again on the other ſide of the line, never riſes for ſix months longer.

This poſition of the ſphere is theirs who live under the poles; if any ſuch there be. Their ſun is never above 23°, 30′. high. See POLE.

PARALLEL *Sailing*, in navigation, is the ſailing under a *parallel* of latitude. See SAILING.

Of this there are but three caſes. 1° Given, the departure, and diſtance; required the latitude.—The canon for which is, as the difference of longitude is to the radius, ſo is the diſtance, to the co-ſine of the latitude.

2° Given the difference of longitude between two places under the ſame *Parallel*, required their diſtance.—The canon is, as radius to difference of longitude, ſo is co-ſine of latitude to diſtance.

3° Given the diſtance between two places in the ſame latitude; required their difference of longitude.—The canon is, as the co-ſine of latitude to diſtance, ſo is radius to difference of longitude.

PARALLELEPIPED, in geometry, one of the regular bodies, or ſolids, comprehended under ſix parallelograms, the oppoſite ones whereof are ſimilar, parallel and equal.—As in *Tab. Geom. Fig.* 38. See REGULAR.

A *Parallelepiped*, is by ſome defined a priſm, whoſe baſe is a parallelogram. See PRISM.

Properties of the PARALLELEPIPED.—All *Parallelepipeds*, priſms, and cylinders, *&c.* whoſe baſes and heights are equal, are themſelves, equal.

A diagonal plane divides the *Parallelepiped* into two equal priſms: a triangular priſm, therefore, is half a *Parallelepiped* upon the ſame baſe, and of the ſame altitude. See PRISM.

All *Parallelepipeds*, priſms, cylinders, *&c.* are in a ratio compounded of their baſes, and altitudes: wherefore, if their baſes be equal, they are in proportion to their altitudes; and converſely.

All *Parallelepipeds*, cylinders, cones, *&c.* are in a triplicate ratio of the homologous ſides, and alſo of their altitudes.

Equal *Parallelepipeds*, priſms, cones, cylinders, *&c.* reciprocate their baſes, and altitudes.

To meaſure the ſurface and ſolidity of a Parallelepiped.—Find the areas of the parallelograms ILMK, LMON and OMKP (See PARALLELOGRAM.) Add theſe into one ſum, and multiply that ſum by 2: the factum will be the ſurface of the *Parallelepiped*.

If then the baſe ILMK be multiplied by the altitude MO, the product will be the ſolidity.

Suppoſe *v. g.* LM = 36 MK = 15 MO = 12. Then,

```
LM=36  LM=36  MK=15
MK=15  MO=12  MO=12
-------------------
   180     72     30
  36      36     15
-------------------
LIKM 540 LMON 432 MOKP 180
         LIKM 540
         MOKP 180
         --------
             1152
MO 12           2
-----        ----
  580        2304 Superficies.
 6480 Solidity.
```

PARALLELISM, the quality of a *Parallel*, or that which denominates it ſuch: or it is that whereby two things, *v. gr.* lines, rays, or the like, become equi-diſtant from one another. See PARALLEL and PARALLELOGRAM.

Thus, we ſay remote objects are ſcarce perceptible, by reaſon of the *Paralleliſm* of their rays. See RAY and VISION.

PARALLELISM *of the earth's axis*, in aſtronomy, or, *motion of* PARALLELISM; is that ſituation or motion of the earth's axis, in its progreſs through its orbit, whereby it ſtill looks to the ſame point of the heavens, *viz.* toward the pole ſtar; ſo that if a line be drawn parallel to its axis, while in any one poſition; the axis, in all other poſitions or parts of the orbit, will always be parallel to the ſame line. See Axis.

This *Paralleliſm* is the neceſſary reſult of the earth's double motion; the one round the ſun, the other round its own axis.

Nor is there any neceſſity to imagine a third motion, as ſome have done, to account for this *Paralleliſm*. See Earth.

It is to this *Paralleliſm* that we owe the viciſſitude of ſeaſons, and the inequality of day and night. See Season. See alſo Day, *&c.*

Parallelism *of rows of trees.*—The eye placed at the end of an alley bounded by two rows of trees, planted in parallel lines, never ſees them parallel, but always inclining to each other, towards the further extreme.

Hence mathematicians have taken occaſion to enquire, in what lines the trees muſt be diſpoſed, to correct this effect of the perſpective, and make the rows ſtill appear parallel? parallel they muſt not be, but diverging; but according to what law muſt they diverge? the two rows, in fine, muſt be ſuch, as that the unequal intervals of any two oppoſite or correſponding trees may be ſeen under equal viſual angles.

On this principle, F. Fabry has aſſerted, without any demonſtration, and F. Tacquet, after him, demonſtrated by a long and intricate ſyntheſis, that the two rows of trees muſt be two oppoſite ſemi-hyperbola's.

M. Varignon has ſince, in the memoirs of the royal academy, *an.* 1717, found the ſame ſolution by an eaſy, and ſimple analyſis. But he renders the problem much more general, and requires not only that the viſual angles be equal, but to have them increaſe, or decreaſe in any given ratio: provided the greateſt do not exceed a right angle. The eye, he requires to be placed in any point, either juſt at the beginning of the ranges, or beyond, or on this ſide.

All this laid down, he ſuppoſes the firſt row to be a right line, and ſeeks what line the other muſt be, which he calls the *curve of the range*. This he finds muſt be an hyperbola, to have the viſual angles equal. The ſtraight and hyperbolical rows will be ſeen parallel to infinity; and if the oppoſite ſemi-hyperbola be added, we ſhall have three rows of trees, (the ſtraight one in the middle) and all three parallel.

Nor is it required this ſecond hyberbola be the oppoſite of the firſt, *i. e.* of the ſame kind, or have the ſame tranverſe axis: It is enough if it have the ſame centre, its vertex in the ſame right line, and the ſame conjugate axis. Thus the two hyperbola's may be of all the different kinds poſſible; yet all have the ſame effect. See Hyperbola.

Again, the ſtrait row being laid down as before; if it be required to have the trees appear under decreaſing angles, M. Varignon ſhews, that if the decreaſe be a certain ratio, which he determines; the other line muſt be a parallel ſtraight line. But he goes yet farther; and ſuppoſing the firſt row any curve whatever, he ſeeks for another that ſhall make the rows have any effect deſired, *i. e.* be ſeen under any angles equal, increaſing or decreaſing.

PARALLELOGRAM, in geometry, a quadrilateral right-lined figure, whoſe oppoſite ſides are parallel, and equal to each other. See Quadrilateral.

A *Parallelogram* is generated by the equable motion of a right line always parallel to itſelf. See Figure.

When the *Parallelogram* has all its four angles right, and only its oppoſite ſides equal, it is called a *rectangle*, or *oblong*. See Rectangle.

When the angles are all right, and the ſides equal, it is called a *ſquare*, which ſome make a ſpecies of *Parallelogram*, others not. See Square.

If all the ſides be equal, and the angles unequal, it is called a *rhombus* or *lozenge*. See Rhombus.

If both the ſides and angles be unequal, it is called a *rhomboides*. See Rhomboides.

Properties of the Parallelogram.—In every *Parallelogram*, what kind ſoever it be of, *e. gr.* that A B C D, *Tab. Geometry, Fig.* 41, a diagonal D A divides it into two equal parts; the angles diagonally oppoſite B, C, and A, D, are equal; the oppoſite angles of the ſame ſide C, D, and A, B, *&c.* are, together, equal to two right angles; and each two ſides, together, greater than the diagonal.

Two *Parallelograms* ABCD, and ECDF on the ſame or equal baſe C D, and of the ſame height A C, or between the ſame parallels A F, C D are equal.—And hence two triangles CDA, and CDF on the ſame baſe and on the ſame height, are alſo equal.

Hence, alſo, every triangle C F D is half a *Parallelogram* ACDB upon the ſame or an equal baſe CD, and of the ſame altitude, or between the ſame parallels. Hence alſo a triangle is equal to a *Parallelogram*, having the ſame baſe, and half the altitude, or half the baſe and the ſame altitude. See Triangle.

Parallelograms, therefore, are in a given ratio, compounded of their baſes and altitudes. If then the altitudes be equal, they are the baſes, and converſely.

In ſimilar *Parallelograms* and triangles, the altitudes are proportional to the homologous ſides; and the baſes are cut proportionably thereby. Hence, ſimilar *Parallelograms* and triangles are in a duplicate ratio of their homologous ſides, alſo of their altitudes and the ſegments of their baſes: they are, therefore, as the ſquares of the ſides, altitudes, and homologous ſegments of the baſes.

In every *Parallelogram*, the ſum of the ſquares of the two diagonals, is equal to the ſum of the ſquares of the four ſides.

This propoſition, M. de Lagny, takes to be one of the moſt important in all geometry; he even ranks it with the celebrated 47th of Euclid, and with that of the ſimilitude of triangles; and adds, that the whole firſt book of Euclid is only a particular caſe hereof. For, if the *Parallelogram* be rectangular, it follows that the two diagonals are equal; and, of conſequence, the ſquare of a diagonal, or which comes to the ſame thing, the ſquare of the hypothenuſe of a right angle, is equal to the ſquares of the ſides.

If the *Parallelogram* be not rectangular, and, of conſequence, the two diagonals be not equal; which is the moſt general caſe; the propoſition becomes of vaſt extent: it may ſerve, for inſtance, in the whole theory of compound motions, *&c.*

There are three manners of demonſtrating this problem; the firſt by trigonometry, which requires 21 operations; the ſecond geometrical and analytical; which requires 15. M. de Lagny gives a more conciſe one, in the *Memoirs de l'Acad.* which only requires 7. See Diagonal.

To find the area of the rectangled Parallelogram, ABCD.—Find the length of the ſides AB, and AC; multiply AB into AC, the produce will be the area of the *Parallelogram*. Suppoſe *e. gr.* AB to be 345; AC 123; the area will be 11385.

Hence 1. Rectangles are in a ratio compounded of their ſides AB and AC. 2. If, therefore, there be three lines continually proportional; the ſquare of the middle one is equal to the rectangle of the two extremes: and if there be four proportional lines, the rectangle under the two extremes, is equal to that under the two middle terms. See Rectangle.

Other *Parallelograms*, not rectangular, have their area's found by reſolving them, by diagonals, into two triangles; and adding the areas of the ſeparate triangles into one ſum. See Triangle.

Complement of a Parallelogram. See Complement.

Centre of gravity of a Parallelogram. See Center *of* Gravity, and Centrobaryc *Method.*

Parallelogram, or Parallelism, alſo denotes a machine uſed for the ready and exact reduction or copying of deſigns, ſchemes, prints, *&c.* in any proportion; which is done hereby without any knowledge or habit of deſigning. See Designing.

The *Parallelogram* is alſo called *Pentagraph*. See its deſcription and uſe under the article Pentagraph.

PARALOGISM, ΠΑΡΑΛΟΓΙΣΜΟΣ, in logic, a falſe reaſoning; or a fault committed in demonſtration, when a conſequence is drawn from principles that are falſe, or not proved; or when a propoſition is paſſed over, which ſhould have been proved by the way. See Error, Reasoning, Demonstration, *&c.*

A *Paralogiſm* differs from a *ſophiſm* in this, that the Sophiſm is committed out of deſign and ſubtlety; and the *Paralogiſm* out of miſtake, and for want of ſufficient light, and application. See Sophism.

Yet Meſſeurs du Port-Royal do not ſeem to make any difference between them. None of the pretenders to the quadrature of the circle but have made *Paralogiſms*. See Quadrature.

PARALYSIS*, ΠΑΡΑΛΥΣΙΣ, in medicine, a diſeaſe popularly called *Palſy*. See Palsy.

* The word is formed from the Greek παραλύω, I unbind; this diſeaſe being ſuppoſed to unbind the nerves and muſcles.

The *Paralyſis* only differs from the *pareſis* as the greater from the leſs. See Paresis.

Authors diſtinguiſh the *Paralyſis* into a paraplegia or paraplexia, hemiplegia, and partial *Paralyſis*.

The firſt is a Palſy of the whole body. See Paraplegia.

The ſecond, of one ſide of the body. See Hemiplegia.

The third of ſome particular member; which is the proper *Palſy*, See Palsy.

PARALYTIC, a perſon affected with the *paralyſis*, or *palſy*, See Palsy, *&c.*

PARAMESE*, ΠΑΡΑΜΕΣΗ, in the ancient muſic, the ninth chord, or ſound in the diagramma, or ſcale of muſic. See Diagramma.

* The word is Greek, and ſignifies *juxta mediam*, next to the middle; its ſituation in the firſt ſtate of the ſcale, being next the meſe, or middle chord. See Chord.

PARAMETER, in geometry, a conſtant right line in each of the three conic ſections; called alſo *latus rectum*. See Latus *rectum*.

In a Parabola V B V, *Tab. Conics Fig.* 8, the rectangle of the *Parameter* AB, and an abſciſſe, *e. gr.* B 3, is equal to the ſquare of the correſpondent ſemi-ordinate 3 III. See Parabola.

In an ellipſis and hyperbola, the *Parameter* is a third proportional to the conjugate, and tranſverſe axis. See Ellipsis, and Hyperbola.

PARAMOUNT, in our law, ſignifies the ſupreme lord of the fee. See Lord, Fee, Treason, *&c.*

There may be a tenant to a lord, who holdeth himſelf of another lord; in reſpect whereof, the former lord is called *lord Meſne*; and the latter *lord Paramount*. See Mesne.

All honours which have manors under them, have lord *Paramount*. See Honour and Manor.

But even the term *lord Paramount*, is only comparative: for as one man may be great compared to a leſs, and little, being compared with a greater; ſo none ſimply ſeems to be *lord Paramount* but the king, who is patron *Paramount* to all the benefices in England. See King, Patron, *&c.*

PARANYMPH, Paranymphus, among the ancients, the perſon who waited on the bride, and directed the nuptial ſolemnities; called alſo *pronubus*, and *auſpex*, becauſe the ceremony begun with taking auſpicia. See Marriage.

In ſtrickneſs, however, the *Paranymph*, Παρανυμφος, only officiated on the part of the bridegroom; on the part of the bride, it was a woman officiated, called *Pronuba*.

The Jews had likewiſe a kind of *Paranymphs*, which the talmud and the rabbins call שושבים *Schuſchebim*, *q. d.* companions of the ſpouſe.

The IVth council of Carthage appoints, that, when the married couple come to aſk the prieſt's bleſſing, they be preſented, either by their fathers and mothers, or by their *Paranymphs*.

PARAPET *, *Breaſt-work*, in fortification, a defence or ſkreen, on the extreme of a rampart, or other work, ſerving to cover the ſoldiers, and the cannon from the enemy's fire. See Defence.

> * Borel gives us from Joſ. Maria Subreſius, a curious collection of names, which the ancients and moderns have given to this kind of *Parapets:* the Latins called them *Subarræ*, and *Baſtiæ*, whence the names Baſtion and Baſtile. They alſo called them *Pagineumata*, *Loricæ*, and *Antemuralia*. The Spaniards called them *Barbacanes*; the Italians, *Parapetti*, becauſe of their defending the breaſt, *petto*; whence our *Parapet*.

Parapets are raiſed on all works, where it is neceſſary to cover the men from the enemies fire; both within and without the place, and even the approaches. See Work.

The *Parapet Royal*, or that of the rampart, is to be of earth, cannon-proof, from 18 to 20 foot thick; ſix foot high towards the place, and four or five towards the rampart.—This difference of height makes a glacis or ſlope for the muſketeers to fire down into the ditch, or at leaſt the counterſcarp. See Rampart and Royal.

Pefore the *Parapet* is a banquette, or little eminence, a foot and half high for the ſoldiers to ſtand on. See Banquette.

The *Parapet* of the wall is ſometimes of ſtone.—The *Parapet* of the trenches is either made of the earth dug up; or of gabions, faſcines, barrels, ſacks of earth, or the like.

Parapet, is alſo a little wall, breaſt-high, raiſed on the brinks of bridges, keys, or high buildings; to ſerve as a ſtay, and prevent people's tumbling over.

PARAPH, a particular character, knot, or flouriſh, which people habituate themſelves to make always in the ſame manner at the end of their name, to prevent their ſignature from being counterfeited. See Cipher.

The *Paraph* of the Kings of France is a grate, which the ſecretaries always place before their own, in all letters, *&c.* Menage derives the word from *Paragraphus*. See Paragraph.

PARAPHERNALIA *, or Parapherna, in the civil law thoſe goods which a wife brought her huſband, beſides her dower, and which were ſtill to remain at her diſpoſal, excluſive of their huſband, unleſs there were ſome proviſion made to the contrary to the marriage contract. See Dower and Goods.

> * The word is formed from the Greek ϖαρα, beyond. or over, and φερνη, *dos*, dower.— In his *Rebus quas extra dotem mulier habet & quas Græci* ϖαραφερνα *vocant, nullam, uxore prohibente, vir habeat communionem.* Cod. *de pactis*.

The grand cuſtomary of Normandy, gives a different ſenſe to the word; it calls *Paraphernalia* the moveables, linen, and other female neceſſaries, which are adjudged to a wife, in prejudice of the creditors, when ſhe renounces the ſucceſſion of her huſband.

Some of our Engliſh lawyers give a ſtill different ſenſe to the word *Paraphernalia*, defining it to be ſuch goods as a wife challengeth over and above her dower, or jointure after her huſband's death; as, furniture for her chamber, wearing apparel, and jewels, which are not to be put into the inventory of her huſband's goods.

PARAPHIMOSIS, ΠΑΡΑΦΙΜΩΣΙΣ, in medicine, a diſorder of the penis, wherein the prepuce is ſhrunk, and withdrawn behind the glans, ſo as not to be capable of being brought to cover the ſame. See Prepuce and Glans.

This happens ofteneſt in venereal diſorders, where the humours of a gleet frequently prove ſo ſharp, as to cauſe this retraction. There ſometimes ariſes a neceſſity in this caſe to ſnip, or cut the prepuce open, otherwiſe the humours will be pent up under it, and do a great deal of miſchief. See Phimosis.

PARAPHRASE, ΠΑΡΑΦΡΑΣΙΣ, an explanation of ſome text in clearer and more ample terms, whereby we ſupply what the author might have ſaid or thought on the ſubject. See Text.

Colomeſius looks on Eraſmus's *Paraphraſe* on the New Teſtament, as ſo extraordinary a work, that he makes no ſcruple to declare, he thinks the author to have been divinely inſpired, when he penned it.

Chaldee **Paraphrase**, is a phraſe frequent among the critics and divines.—There are three *Chaldee Paraphraſes* on the pentateuch: that of Onkelos, which ſome take to be the ſame with Aquila, and which others take to have been that Onkelos whom the talmudiſts in the treatiſe *Gittin*, make a nephew of the emperor Titus. See Pentateuch.

The ſecond is the *Paraphraſe* of *Jonathan*.—The third is called the *Targum* of *Jeruſalem*. See Targum.

The *Chaldee Paraphraſe* on the prophets is of Jonathan ſon of Uziel, whom ſome confound with Theodotio.

The author of the *Chaldee Paraphraſe* on the hagiographers is unknown. Some attribute it to one Joſeph, ſurnamed the ſquinter; others to rabbi Akiba. Others ſay, there is ſo much difference in the ſtyle, that no one perſon can have been the author of the whole.

PARAPHRENESIS, or Paraphrenitis, ΠΑΡΑΦΡΕΝΙΤΙΣ, in medicine, a ſecondary kind of phrenzy, ſuppoſed by the ancients, to be owing not to any immediate diſorder of the brain, or meninges, but to an inflammation of the ventricle, the liver, and eſpecially the diaphragm, whereby the brain and meninges come to be affected by conſent of parts. See Phrenitis.

The ancients called it a *Pſeudo-Phreneſis*, falſe phrenzy, to deſtinguiſh it from the true one, which they made to conſiſt in an inflammation of the brain and its meninges.

The moderns do not make any ſuch diſtinction in phrenzies: they all come from the ſame cauſe; but that cauſe is neither an inflammation of the brain, nor of the diaphragma. See Mania, Melancholy, *&c.*

Paraphrenitis, among modern phyſicians, is an inflammation of the mediaſtinum, or pleura about the diaphragm, attended with a continual fever, and exquiſite pain in the parts affected on contracting the abdominal veſſels; as alſo a delirium and a riſing of the hypochondria.

PARAPLEGIA*, or Paraplexia, ΠΑΡΑΠΛΗΓΙΑ, or ΠΑΡΑΠΛΗΞΙΑ, in medicine, a ſpecies of paralyſis, or palſy, uſually ſucceeding an apoplexy. See Palsy and Apoplexy.

> * The word comes the Greek ϖαρα much, and ϖλησσω, or ϖληττω, I ſtrike.

The *Paraplegia* is a general palſy, affecting the whole body, the head alone excepted.—Boerhaave defines it an immobility of all the muſcles below the head, that have nerves from the cerebrum and cerebellum.

Sometimes, all ſenſe as well as motion are deſtroyed hereby, ſometimes only one of them.

Its original is uſually ſuppoſed to be ſome diſorder, or obſtruction in the fourth ventricle of the brain, or in the beginning of the ſpinal marrow.

Etmuller diſtinguiſhes the *Paraplegia* from the *paralyſis*. The paralyſis, according to him, is a relaxation or reſolution of the ligaments and members miniſtring to motion, not from any obſtruction of the nerves, but from a reſolution of the nervous parts.—Whereas the *Paraplegia* ariſes from ſome obſtruction of the nerves.

The latter uſually ſucceeds an apoplexy, epilepſy, convulſions, vertigo's; the former, the ſcorbutus, hypochondriacal diſeaſe, colic, *&c.*

PARAPLEXIA, in medicine. See Paraplegia.

PARASANG *, ΠΑΡΑΣΑΓΓΗΣ, an ancient Perſian meaſure different at different times, and in different places; being uſuſually 30, ſometimes 40, and ſometimes 50 ſtadia, or furlongs. See Measure, Stadium, *&c.*

> * The word according to Littleton, has its riſe from *Paraſch Angarius*, *q. d.* the ſpace a poſt-man rides from one ſtation, *Angaria*, to another.

PARASCENIUM, among the Romans, was a place behind the theatre, whither the actors withdrew to dreſs, undreſs, *&c.* more frequently called *Poſtſcenium*. See Theater.

PARASCEVE, ΠΑΡΑΣΚΕΥΗ, the ſixth day of the laſt week of lent, popularly called *Good-Friday*. See Lent.

St. John ſays our Saviour was crucified on the *Paraſceve* of the Paſſover, *i. e.* on the eve or day of *preparation* of the paſſover: For Iſidore and Papias obſerve, that the word in the original Greek ſignifies *preparation*, and was applied among the Jews to Friday, becauſe on that day they uſed to prepare what was neceſſary for the celebration of the Sabbath. See Passover. Hence what our tranſlation of the New Teſtament renders preparation of the Sabbath, M. Simon, and ſome others, call *Paraſceve*. See Preparation.

PARASELENE *, in phyſiology, *mock-moon*; a meteor, or phænomenon encompaſſing or adjacent to the moon, in form of a luminous ring; wherein is ſometimes obſerved one, ſometimes two apparent images of the moon. See Meteor.

> * The word is formed from the Greek ϖαρα, near, and σεληνη, moon.

The *Paraſelenes* are formed after the ſame manner as the parhelia, or mock-ſuns. See Parhelion.

PARASITE, ΠΑΡΑΣΙΣΟΣ, among the Greeks, was originally a very reputable title; the *paraſites* being a king of prieſts, or at leaſt miniſters of the gods; in the ſame manner, as at Rome were the epulones. See EPULO.

They took care of the ſacred corn; or the corn deſtined for the ſervice of the temples, and the gods, *viz.* ſacrifices, feaſts, *&c.* they had even the intendance over ſacrifices, and took care they were duly performed.

At Athens there was a kind of college of twelve *paraſites*; each people of Attica furniſhing one, who was always choſen out of the beſt families.

Polybius adds, that *paraſite* was alſo an honourable name among the ancient Gauls; and was given to their poets.

PARASITES, or PARASITICAL plants, in botany, a kind of diminutive plants, growing on trees, and ſo called from their manner of living and feeding, which is altogether on others. See PLANT.

Such is moſs, which was anciently ſuppoſed the effect of a diſcompoſure of the texture of the bark; or a kind of ruſt, or at moſt, little filaments ariſing from the bark: but from many obſervations of the moderns, it appears, that moſſes are real plants, whoſe ſeed is exceedingly fine, and incloſed in very little capſulæ; which burſting of themſelves, the ſeed is driven by the wind, and, at length, detained in the inequalities of the barks of trees; where it takes root and is fed at the expence thereof. See MOSS.

Of theſe moſſes M. Vaillant reckons no leſs than 137 ſpecies, all in the neighbourhood of Paris; which, with the lichens and miſletoe's, make the family of *paraſite* plants. See MISLETOE, *&c.*

The moſt pernicious of theſe *paraſites*, to the trees that ſupport them, are the lichens; which appear on the barks of trees, in form of a cruſt, mixed with yellow and a dirty white. See DISEASE *of Plants.*

M. *de Reſſons* gives us a remedy for this diſeaſe, in the French Memoirs of the Acad. Roy. It conſiſts in making an inciſion through the bark to the very wood, from the firſt branches to the earth; the bark cloſes again in a little time, and always preſerves itſelf clean and free from moſſes for the future.

This aperture renders the courſe of the ſap more free, and prevents the forming of thoſe inequalities ſo favourable to the production of moſſes. The inciſion, he adds, is to be made from March to the end of April, and on that ſide turned moſt from the ſun.

PARASOL, a little moveable, in manner of a canopy, bore in the hand to ſcreen the head from the ſun, rain, *&c.* more uſually called *umbrella.*

It is made of leather, taffety, oil-cloth, *&c.* mounted on a ſtick, and opened or ſhut at pleaſure, by means of pieces of whalebone that ſuſtain it.—The Eaſt-Indians never ſtir without a *paraſol.*

The word is French.—That uſed againſt rains is ſometimes called *parapluie.*

PARASTATA, in the ancient architecture, a kind of pier, or piedroit, ſerving as a defence or ſupport to a column or arch. See PIER and PIEDROIT.

Mr. Evelyn makes the *paraſtata* the ſame with pilaſter: Barbaro, and others, the ſame with anta: Daviler, the ſame with piedroit. See PILASTER, ANTA, *&c.*

PARASTATÆ, in anatomy, *Epididymidæ*; or two tuberous, varicoſe bodies, lying upon, and adhering to, the upper part of the teſticles; whereof they properly appear to be a part; though different from the reſt, in form and conſiſtence. See TESTICLE and VARICIFORMES.

The *paraſtatæ* conſiſt, like the teſticles, of a convolution of ſeminal tubuli, mixed with bloody-veſſels; the difference between them lying only in this, that, in the *paraſtatæ*, the tubuli are united into one; the various convolutions of which, being more firmly bound together by a ſtrong membrane, ariſing from the tunica albuginea, it feels more compact than the teſticles. See SEED, SPERMATIC, *&c.*

The *paraſtatæ* and teſticles, are ſaid to be incloſed in three proper membranes; the firſt muſculous, derived from the cremaſter muſcle; the ſecond, called the *vaginalia*; the third, the *albuginea.* See each under its proper article.

PARASYNANCHE*, in medicine, a kind of angina or ſquinancy, wherein the exterior muſcles of the throat are inflamed. See ANGINA and QUINZY.

* The word comes from παρα, συν, αγχειν, to ſuffocate.

PARATHESIS, in the Greek church, the prayer which the biſhop rehearſes over the catechumens, ſtretching his hands over them to give them benediction; which they receive, bowing their head under his hands.

PARATHESIS, (popularly called *Brackets* or *Crotchets*) is alſo the name of a kind of point or mark, as [ ] uſed in writing, chiefly to include ſynonymous, explicatives, and the like matters, not eſſential to the diſcourſe. See PARENTHESIS.

PARATHESIS, in grammar, *appoſition*; or a figure whereby two or more ſubſtantives are put in the ſame caſe. See APPOSITION.

PARATILMUS, in the ancient Greek juriſprudence, a name given to a ſort of puniſhment impoſed on adulterers who were poor, and unable to ſtand the common penalty. See ADULTERY. It conſiſted either in making them run a horſe-radiſh up the anus, which they called αποῤῥαφανιδωσις; or in tearing up by the roots the hair about the pudendum, which they called παράτιλμος of παρατιλλειν, to tear, pluck up.

PARATITLES, PARATITLA, in juriſprudence, ſhort notes, or ſummaries of the titles of the digeſt, and code; which have been made by ſeveral lawyers, in order to compare, and examine the connection of the ſeveral parts with one another. See CODE and DIGEST.

We have *paratitles* of Cujas, of Maran, *&c.* Chaſſaneus has a ſecond comment on the *paratitles* of Cujas

PARAVAIL, PARAVAILE, in law, the loweſt tenant of a fee; or he that is immediate tenant to the land. See TENANT. He is called *tenant paravail*, becauſe it is preſumed he hath profit, and avail by the land.

PARAZONIUM, ΠΑΡΑΖΩΝΙΟΝ, or *Scipio*, among medalliſts a ſcepter, rounded at the two ends in manner of a truncheon, or commander's ſtaff; or a kind of poniard, or ſhort ſword repreſented as wore at the girdle, on ſeveral ancient medals.

Antiquaries are much divided on the explication of the *parazonium*; as, indeed, the form and manner of bearing it are very different.—It is ſometimes thrown a croſs the ſhoulders in manner of a quiver.

PARBOILING, in pharmacy, *&c.* a term applied to fruits, herbs, *&c.* which are boiled a little while, to draw out the firſt juices; in order to be afterwards inſpiſſated, or thickened See BOILING.

PARCÆ, goddeſſes who, according to the ancient Pagan theology, preſide over the periods, or durations of human lives.

Theſe the ancients frequently confounded with the fates, or deſtinies; and, in effect, the *parcæ*, according to Plato, were the daughters of neceſſity, and deſtiny. See FATE and DESTINY.

The *parcæ* were three, Clotho, Lacheſis, and Atropos; becauſe, forſooth, all things have their beginning, progreſs and end. Hence the poets tell us, the *parcæ* ſpun the thread of mens lives; that Clotho held the diſtaff, and drew the thread; Lacheſis twirled the ſpindle, and ſpun it; and Atropos cut it. *Clotho colum retinet, Lacheſis net, & Atropos occat.*

The ancients repreſent the *parcæ* divers ways: Lucian, in the ſhape of three poor old women, having large locks of wool, mixed with daffodils on their heads; one of which holds a diſtaff, the other a wheel, and the third a pair of ſciſſars, wherewith to cut off the thread of life.—Others repreſent them otherwiſe; Clotho appearing in a long robe of divers colours, wearing a crown upon her head adorned with ſeven ſtars, and holding a diſtaff in her hand: Lacheſis in a robe beſet with ſtars, with ſeveral ſpindles in her hand; and Atropos, clad in black, cutting the thread with a large ſciſſars.

The ancients imagined that the *parcæ* uſed white wool for a long and happy life; and black, for a ſhort and unfortunate one.

PARCEL-*Makers*, two officers in the exchequer, who make *parcels* of the eſcheater's accounts, wherein they charge them with every thing they have levied for the king's uſe, within the time of their office, and deliver the ſame to one of the auditors of the court to make their accompts therewith. See ESCHEATOR.

Bill of PARCELS. See the article BILL.

PARCENERS, *quaſi* PARCELLERS. See CO-PARCENERS.

PARCHMENT*, in commerce, *&c.* ſheep or goat's ſkin prepared after a peculiar manner, which renders it proper for ſeveral uſes; particularly for writing on, and covering of books, *&c.* See WRITING and BOOK-BINDING.

* The word comes from the Latin *Pergamena*, the ancient name of this manufacture; which it is ſaid to have took from the city Pergamos, to Eumenes, king whereof, its invention is uſually aſcribed. Though, in reality, that prince appears rather to have been the improver, than the inventor of *Parchment*. For the Perſians of old, according to Diodorus, wrote all their records on ſkins; and the ancient Ionians, as we are told by Herodotus, made uſe of ſheep-ſkins and goat-ſkins in writing, many ages before Eumenes's time. Nor need we doubt that ſuch ſkins were prepared and dreſſed for that purpoſe, after a manner not unlike that of our *Parchment*; though probable not ſo artificially.—*Vide* Diod. Sicul. l. 2. p. 84. Herodot. l. 5. Prid. Connect. part 1. l. 7. p. 708.

Parchment is begun by the ſkinner, and ended by the *parchment-maker.* It conſtitutes a very conſiderable article in the French commerce: it is made in moſt of their cities; and beſides the conſumption at home, they ſend vaſt quantities abroad, particularly to England, Flanders, Holland, Spain, and Portugal.

That called *virgin parchment*, and which ſuperſtitious people believe to be made of a kind of caul, wherein ſome children are incloſed in the womb, is nothing but a ſomewhat thinner and finer ſort than the reſt, proper for certain purpoſes, as fans, *&c.* and made of the ſkin of an abortive lamb, or kid. See the article VIRGIN.

Manufacture of PARCHMENT.—The ſkin having been ſtripped of its wool, and paſſed the lime-pit (after the manner deſcribed under the article SHAMMY) the ſkinner ſtretches it on a kind of frame, conſiſting of four pieces of wood, mortiſed into each other at the four angles, and perforated lengthways from diſtance to diſtance, with holes, furniſhed with wooden pins that may be turned at pleaſure, like thoſe of a violin.

To ſtretch the ſkin on this frame, they make little holes all around it, and through every two holes draw a little ſkewer; to this ſkewer they tie a piece of ſmall packthread, and tie that over the pins; ſo that coming to turn the pins equally, the ſkin is ſtrained tight every way, like that of a drum.

The ſkin being thus ſufficiently ſtretched on the frame, the fleſh is pared off with a ſharp inſtrument for that purpoſe; this done, it is moiſtened with a rag, and a kind of white ſtone or chalk reduced to a fine duſt, ſtrewed over it; then with a large pumice-ſtone, flat at bottom, much after the manner of a mullet for grinding colours, they rub over the ſkin as if about to grind the chalk; and thus ſcower off the remains of the fleſh. They then go over it again with the iron inſtrument; again moiſten it as before, and again rub it with the pumice-ſtone without any chalk underneath; this ſmoothens and ſoftens the fleſh-ſide very conſiderably. They drain it again, by paſſing over it the iron inſtrument as before.

The fleſh-ſide thus drained, they paſs the iron on the wool or hair-ſide; then, ſtretch it tight on the frame by means of the pins, and go over the fleſh-ſide again with the iron: this finiſhes its draining; and the more the ſkin is drained, the whiter it ever becomes.

They now throw on more chalk, ſweeping it over with a piece of lamb-ſkin that has the wool on; this ſmoothens it ſtill further, and gives it a white down or nap. It is now left to dry, and when dried, taken off the frame, by cutting it all round.

The ſkin, thus far prepared by the ſkinner, is taken out of his hands by the parchment-maker; who firſt ſcrapes or pares it dry on the ſummer, with an iron inſtrument like that above-mentioned, only finer and ſharper; with this, worked with the arm from top to bottom of the ſkin, he takes away about one half of its thickneſs. The ſkin thus equally pared on both ſides, they paſs the pumice-ſtone over both ſides, to ſmoothen it. This laſt preparation is performed on a kind of form or bench covered with a ſack ſtuffed with flocks, and leaves the *parchment* in a condition for writing on.

The paring the ſkin dry on the ſummer, is the moſt difficult preparation in the whole proceſs of *parchment-making*; for which reaſon the ſkinners ſeldom dare meddle with it, but uſually leave it to thoſe more experienced in it: the ſummer whereon it is performed, is a calf-ſkin well ſtretched on a frame, ſerving as a ſupport to the ſkin which is faſtened a top of it with a wooden inſtrument that has a notch cut in it. Laſtly, that the iron knife may paſs the eaſier between the ſummer and the ſkin to be pared, they put another ſkin which they call the counter-ſummer. The parings thus taken off the leather, are uſed in making glue, ſize, *&c.* See GLUE, *&c.*

What we call *vellom* is only *parchment* made of the ſkins of abortive calves, or at leaſt of ſucking calves; 'tis finer, whiter, and ſmoother than the common *parchment*, but it is prepared in the ſame manner as that, abating that it is not paſſed through the lime-pit.

Roll of PARCHMENT. See the article ROLL.

PARCO *fracto*, in law, a writ which lies againſt him who violently breaks open a pound, and takes out beaſts thence, which, for ſome treſpaſs done, were lawfully impounded. See PUNDBRECH and POUND.

PARDON, in law, a remiſſion, or forgiveneſs of a felonious, or other offence, againſt the king, or the laws.

This our lawyers make twofold; the one, *ex gratia regis*, the other *per cours de ley*.—The firſt is that which the king out of ſome ſpecial regard to the perſon, or ſome other circumſtance, grants by his abſolute prerogative, or power, either before conviction of the offender, or after.

PARDON *by courſe of law*, is that which the king grants as the law and equity perſuades, for a ſlight offence; as homicide, caſual, *&c.*

Charter of PARDON. See the article CHARTER.

PARDON, *in the canon law*, is an indulgence which the pope grants to ſuppoſed penitents, for remiſſion of the pains of purgatory, which they have merited for the ſatisfaction of their ſins. See INDULGENCE.

The grand time for the diſpenſation of *pardons* is the Jubilee. See JUBILEE.

In this ſenſe, *pardon* is properly the angelic ſalutation ſaid to the virgin at the ſound of three little ſtrokes of a bell, rung in the morning, noon, and night, in order for the perſon to be entitled to indulgences.

PARDONERS, in our ancient cuſtoms, were perſons who carried about the pope's indulgences, and ſold them to the beſt bidders. See INDULGENCE.

PAREGORICKS*, in medicine, remedies which aſſwage pain.—The ſame with what we otherwiſe call *anodynes*, and *opiates*. See ANODYNE and OPIATE.

* The word is Greek, παρηγορικα, formed of παρηγορεω, *lenio*, I appeaſe, mitigate.

PAREIRA BRAVA, the root of a plant growing in the Weſt-Indies, chiefly Mexico and Brazil; eſteemed a ſpecific for the cure of the ſtone and gravel.

The name, which in the original Portugueze, ſignifies wild-vine, or baſtard-vine, bears a good deal of analogy to the plant, which bears branches loaden with leaves perfectly like thoſe of the vine; and which, like them, creep along walls and trees. The Portugueze value this root on an equal footing with the ipecacuanha. Some druggiſts call it, by corruption, *parada prava*. M. Geoffroy attributes the efficacy of this root, in nephritic caſes, to its diſſolving the viſcid matters, whereby the particles of the ſand, *&c.* were cemented together: and hence, he gives it with the ſame intention in jaundices, aſthma's, *&c.* It is adminiſtered in decoction.

The Porteguze hold it alſo a remedy for dyſenteries, quinzies, bites of venomous beaſts, *&c.*

PARELCON, in grammar, a figure, whereby a word or ſyllable, is added to the end of another.

PARELIA, or rather *Parhelia*, in phyſiology. See PARHELIUM.

PARENCHYMA*, in anatomy, a peculiar kind of ſubſtance different from fleſh, whereof ſeveral parts of the body, as the heart, lungs, liver, ſpleen, kidneys, *&c.* were anciently ſuppoſed to be formed. See FLESH.

* It is thus called from the Greek, παρεγχυμα, effuſion, *q. d.* generated by a collection, and condenſation of juice.

Eraſiſtratus firſt uſed the name; as imagining the ſubſtance of theſe parts not to be vaſcular like the reſt, but to conſiſt of a maſs or coagulum of blood, ſtagnated in the veſſels of the parts.—But the moderns reject this opinion: the obſervations made by microſcopes, injections, *&c.* clearly ſhewing, that the heart is a true muſcle (See HEART,) the lungs and ſpleen, cluſters of membranous veſicles, and veſſels (See LUNGS and SPLEEN,) and the liver and kidnies, compoſitions of glands, through which the bile and urine are filtrated. See LIVER and KIDNEY.

PARENCHYMA *of plants*.—Dr. Grew gives the name *parenchyma*, to the pith or pulp, or that inner part of the plant, through which the juice is ſuppoſed to be diſtributed. See PLANT, PITH, *&c.*

This, when viewed with a microſcope, appears to reſemble marrow; or rather a ſpunge; being a porous flexible dilatable ſubſtance. See MEDULLA.

Its pores are innumerable, and exceedingly ſmall; receiving as much humour as is requiſite to fill and extend them; which diſpoſition of pores it is, that is ſuppoſed to fit the plant for vegetation and growth. See VEGETATION.

The *Parenchyma* is white, at firſt, but changes its colour, in proportion as the root grows thicker. Thus it becomes yellow in the root of the baſtard rhubard, and red in that of the ſnake-weed. See PLANT.

PARENT, PARENS, a term of relation, applicable to thoſe from whom we immediately receive our being. See FATHER and MOTHER.

PARENTALIA, in antiquity, funeral obſequies; or the laſt duties paid by children, to their deceaſed parents. See OBSEQUIES, and FUNERAL.

PARENTALIA, is alſo uſed for a ſacrifice or ſolemn ſervice offered annually to the manes of the dead. See MANES.

PARENTELA—*De parentela ſe tollere*, in ancient cuſtoms, ſignified a renunciation of one's kindred and family. See ABDICATION.

This was done in open court, before the judge, and in the preſence of twelve men, who made oath, they believed it was done for a juſt cauſe.

We read of it in the laws of Henry I. after ſuch abjuration, the perſon was incapable of inheriting any thing from any of his relations, *&c.*

PARENTHESIS, in grammar, certain intercalary words inſerted in a diſcourſe, which interrupt the ſenſe or thread, but which ſeem neceſſary for the fuller underſtanding of the ſubject.

* The word is Greek, Παρενθεσις, formed of παρα, *inter*, between, and ενθεσις, poſition, *q. d.* putting between.

The politeſt of our modern writers avoid all *parentheſis*; as keeping the mind in ſuſpence, embarraſſing it, and rendering the diſcourſe leſs clean, uniform, and agreeable: long and frequent *parentheſes* are intolerable, eſpecially in verſe, which they ever render dull, and languid, and like to proſe.

The proper characteriſtic of a *parentheſis* is, that it may be either taken in, or left out, the ſenſe and grammar remaining entire.

In ſpeaking, *parentheſes* are to be pronounced in a different tone; and in writing, are incloſed between ( ); to diſtinguiſh them from the reſt of the diſcourſe.

The character itſelf whereby they are diſtinguiſhed, is alſo called a *parentheſis*. See CHARACTER.

PARERE, in commerce, an Italian term which begins to be naturalized. It ſignifies the advice, or counſel of a merchant, or negotiant; for that ſuch a perſon, being conſulted on any point, introduces his anſwer, in Italian, with *mi pare*, i. e. I think, it ſeems to me.

The method of negotiating, eſpecially, that of bills of exchange, being borrowed from the Italians, moſt trading cities, eſpecially Lyons, retain the uſe of *pareres*; which are the advices or opinions of merchants and negotiants, and which ſerve as acts before notaries, when given by authority of a judge-conſervator, or at a particular conſultation, for maintaining the right of the conſulter.

M. Savary has an excellent treatiſe, entitled, *parere, ou avis & conſeils ſur les plus importantes matieres du commerce*; containing the reſolution of the moſt difficult queſtions relating to bankrupts and failures, bills of exchange, orders without date or expreſſion of value, bank-ſignings, renewing of bills of exchange, thoſe drawn or accepted by women in behalf of their huſbands, or during the minority of the drawer, *&c.*

PARERGA: ΠΑΡΕΡΓΑ, a term ſometimes uſed in architecture, for additions, or appendages, made, by way of ornament, to a principal work.

It is ſometimes alſo uſed in painting for little pieces, or compartiments on the ſides, or in the corners of the principal piece.

PARESIS, ΠΑΡΕΣΙΣ, in medicine, a diſeaſe called alſo *paralyſis* and *palſy*. See PARALYSIS, *&c.*

PARGETING, in building, is uſed for the plaiſtering of walls; ſometimes for plaiſter itſelf. See PLAISTER.

PARGETING is of various kinds; as, 1. White lime and hair mortar laid on bare walls. 2. On bare laths, as in partitioning and plain ceiling. 3. Rendring the inſides of walls, or doubling partition-walls. 4. Rough-caſting on heart-laths. 5. Plaiſtering on brick-work, with finiſhing mortar in imitation of ſtone-work; and the like upon heart-laths.

PARHELIUM*, or PARHELION, in phyſiology, a mock-ſun, or meteor, in form a very bright light, appearing aſide of the ſun; formed by the reflexion of his beams in a cloud properly poſited. See METEOR.

* The word is formed from the Greek, παρὰ, *juxta*, near, and ἥλιος, *ſol*, ſun.

The *parhelia* uſually accompany the coronæ, or luminous circles; are placed in the ſame circumference, and at the ſame height. Their colours reſemble thoſe of the rainbow, the red and yellow on the ſide towards the ſun, and the blue and violet on the other. See RAINBOW.

Though, there are coronæ ſometimes ſeen entire, without any *parhelia*; and *parhelia* without coronæ.

PARHELIA are ſometimes double, triple, *&c.*

In the year 1629, was ſeen at Rome a *parhelion* of five ſuns; and in 1666, another at Arles of ſix.

M. Mariotte accounts for the appearance of *parhelia*, from an infinity of little parcels of ice floating in the air, which multiply the image of the ſun, either by refracting or breaking his rays, and thus making him appear where he is not; or by reflecting them, and ſerving as mirrors. See MIRROR, *&c.*

The known laws of reflection and refraction have given a handle for geometrizing on theſe phænomena; and M. Mariotte has determined the preciſe figure of the little icicles, and their ſituation in the air, the ſize of the coronæ or circles which accompany the *parhelia*, and the colours wherewith they are painted, by a geometrical calculus.

M. Huygens accounts for the formation of a *parhelion*, in the ſame manner as for that of the halo, *viz.* by ſuppoſing a number of ſmall icy cylinders with opaque kernels, carried in the air, neither in a perpendicular nor parallel direction, but inclined to the horizon in a certain angle, nearly half a right one.

To make the effect of theſe cylinders manifeſt, M. Huygens produced to the academy of Paris, a glaſs cylinder a foot long, with an opaque cylinder of wood in the middle, and the ambient ſpace filled with water, and tranſparent ice; which cylinder being expoſed to the ſun, and the eye put in the requiſite ſituation, there were ſucceſſively ſeen all the refractions and reflections neceſſary for the phænomena of the *parhelia*. See HALO.

PARIAN *Marble*. See the article MARBLE.

PARIETALIA *Oſſa*, in anatomy, the third, and fourth bones of the cranium; ſo called, becauſe they form the *parietes*, or ſides of the head. See CRANIUM.

They are alſo denominated *oſſa bregmatis*, and *oſſa ſincipitis*. See BREGMA and SINCIPUT.

Their ſubſtance is finer and thinner than that of the coronal and occipital bones. Their figure is ſquare; their ſize ſurpaſſes that of the other bones of the head; and their ſituation, in the lateral parts, which they poſſeſs entirely.

The ſagittal ſuture connects them at the upper part; the coronal join their fore-part to the os frontis; the lambdoidal joins them by the hind-part to the occipital bone; and, laſtly, the ſquamous ſuture joins them by the lower-part of the oſſa petroſa.

The outer ſurface of theſe bones is very ſmooth and polite; the inner, rough and uneven, full of impreſſions which the arteries of the dura mater have made by their continual pulſation before the bones were oſſified.

PARIETES, in anatomy, a term uſed for the incloſures, or membranes that ſtop up or cloſe the hollow parts of the body; eſpecially thoſe of the heart, the thorax, *&c.* See HEART, THORAX, *&c.*

The *parietes* of the two ventricles of the heart are of unequal ſtrength and thickneſs, the left exceeding the right, becauſe of its office, which is to force the blood through all parts of the body; whereas the right only derives it through the lungs. See VENTRICLE, *&c.*

PARISH*, the precinct, or territory of a parochial church; or the circuit of ground within which the people belonging to any church do inhabit. See CHURCH. See alſo PAROCHIAL, and REGISTER.

* The word comes from the Latin *parochia*, of the Greek ϖαροικια, habitation; compounded of ϖαρα, near, and οικος, houſe. ——Accordingly, Du Cange obſerves, that the name ϖαροικια was anciently given to the whole territory of a biſhop, and derives it from *neighbourhood*; becauſe the primitive chriſtians, not daring to aſſemble openly in cities, were forced to meet ſecretly in neighbour-houſes.

In the ancient church, there was one large edifice in each city, for the people to meet in; and this they called *parochia*, *pariſh*. But the ſignification of the word was afterwards enlarged, and by *pariſh* was meant a dioceſe, or the extent of the juriſdiction of a biſhop, conſiſting of ſeveral churches; unleſs we will ſuppoſe, as ſome do, that thoſe biſhops were only paſtors of ſingle churches. See DIOCESE and BISHOP.

Du Pin obſerves, that country *pariſhes* had not their origin before the IVth century; but thoſe of cities are more ancient. The city of Alexandria is ſaid to have been the firſt that was divided into *pariſhes*. Baronius ſays, that in the time of pope Cornelius, there were 46 *pariſhes* in Rome.

The diviſion of England into *pariſhes*, is attributed to Honorius archbiſhop of Canterbury, in 636. Camden reckons 9284 *pariſhes* in England. Chamberlayn makes, at preſent, 9913.

PARISH-PRIEST, the parſon, or miniſter, who holds a *pariſh* as a benefice. See PARSON.

If the predial tythes be appropriated, the parſon is called *rector*. See RECTOR. If they be impropriated, he is called *vicar*. See VICAR and TITHE.

PARISIS, a French money of account, formerly a real coin ſtruck at Paris, at the ſame time with the tournois ſtruck at Tours. See MONEY and COIN.

The *pariſis* exceeded the tournois by one fourth; ſo that the livre or pound *pariſis* was 25 ſols; and the livre tournois 20. The ſols and derniers *pariſis*, *&c.* in proportion. See LIVRE, SOL, *&c.*

PARK, PARCUS, a large incloſure, privileged for wild beaſts of chaſe, either by the king's grant, or by preſcription.

* The work is originally *Celtic*, where it ſignifies an incloſure, or place ſhut up with walls.

Manwood defines a *park* a place of privilege for beaſts of venery, and other wild beaſts of the foreſt, and of chaſe, *tam ſylveſtres quam campeſtres*.—A *park* differs from a foreſt in that Crompton obſerves, a ſubject may hold a *park* by preſcription, or the king's grant, which he cannot do by a foreſt. See FOREST.

A *park* differs from a chaſe alſo; for that a *park* muſt be encloſed; if it lie open, it is a good cauſe of ſeizing it into the king's hand; as a free chaſe may be, if it be encloſed. Nor can the owner have any action againſt ſuch as hunt in his *park*, if it lye open. See CHASE.

Du Cange refers the invention of *parks* to king Henry I. of England; but Spelman ſhews, it is much more ancient; and was in uſe among the Anglo-Saxons. Zoſimus aſſures us, the ancient kings of Perſia had *parks*.

PARK is alſo uſed for a moveable palliſade ſet up in the fields to incloſe ſheep in to feed, and reſt in during the night. See HURDLES.

The ſhepherds ſhift their *park*, from time to time, to dung the ground, one part after another.

PARK is alſo uſed for a very large net, diſpoſed on the brink of the ſea, with only one hole which looks towards the ſhore; and which becomes dry, after the flood is gone off; ſo that the fiſh has no way left to eſcape.

PARK, in war. PARK *of artillery*, a poſt in a camp out of cannon ſhot of the enemy, and fortified to ſecure the magazines, and ammunition.

Here are the artillery, artificial fireworks, powder, and other warlike proviſions kept, and guarded by pikemen only, to avoid all caſualties that might happen by fire.

Every attack, at a ſiege, has its *park* of artillery. See ARTILLERY.

PARK *of proviſions*, is a place in a camp, on the rear of every regiment, which is taken up by the ſutlers, who follow the army with all ſort of proviſions, and ſell them to the ſoldiers.

PARLEY*, a conference with an enemy, *&c.*

* The word is formed of the French, *parler*, to ſpeak, talk.

Hence to beat or ſound a *parley*, is to give a ſignal for the holding ſuch a conference by beat of drum, or ſound of trumpet. See CHAMADE.

PARLIAMENT, PARLIAMENTUM, a grand aſſembly, or convention of the three eſtates of the kingdom, *viz.* lords ſpiritual, lords temporal, and commons, ſummoned to meet the king, to conſult of matters relating to the common-weal; and particularly, to enact, and repeal laws. See ESTATE, PEER, *&c.*

The two houſes of *Parliament* are the king's grand council. See COUNCIL and COURT.

Till the conqueſt, the great council, conſiſting only of the great men of the kingdom, was called *magnatum conventus*, and *prælatorum procerumque concilium*. The Saxons, in their own tongue, called it *Wittenagemote*, *i. e.* aſſembly of the wiſe.

After the conqueſt, about the beginning of the reign of king Edward I, ſome ſay, in the time of Henry I, it was firſt called *parlementum*, q. d. *ſpeechment*, from the French, *parler*, to ſpeak; though it ſtill only conſiſted of the barons, or great men of the nation; till in the reign of Henry III. according to ſome, the commons were alſo called to ſit in *parliament*, the firſt writs ſent out to ſummon them bearing date 49 Henry III, anno. 1217, though ſir Walter Raleigh in his prerogative of *parliaments*, thinks the commons were firſt called in the 17th of Henry I, and Dr. Heylin fixes the time of their firſt admiſſion to the reign of Henry II.

Indeed, ſir Edward Coke, Dodderidge, Prynn, and others, have ſhewn that the commons of England had ever a ſhare in the legiſlature, and a place in the great aſſemblies; though not on the preſent footing, as making a diſtinct houſe, and as compoſed of knights, citizens, and burgeſſes. See COMMONS.

Parliaments are to be ſummoned, prorogued, and diſſolved by the king alone: nor can a *parliament* begin without the king's preſence, or his commiſſioners. See KING, PROROGATION, *&c.* at firſt, new *parliaments* were called every year: by degrees their term grew longer. In the time of king Charles II. they were held a long time with great interruptions between. Both which methods were found of ſo ill conſequences, that in the beginning of the reign of king William, an act was paſſed whereby the term of all *parliaments* was reſtrained to three ſeſſions, or three years; hence called the *triennial act*. Since that, from other views, the period of *parliaments* is again 3 Georgii I. lengthened to ſeven years.

A *parliament* is called by the king's writ, or letter, directed to each lord, commanding them to appear; and by other writs directed to the ſheriffs of each county, to ſummon the people to elect two knights for each county, and one or two burgeſſes for each borough, *&c.*

Anciently, all the people had votes in the elections; till it was enacted by Henry VI. that none but freeholders, reſiding in the county, and who had a yearly revenue of 40*s.* ſhould be admitted to vote; nor were any to be be elected, that were under 21 years of age.

That the members might attend in *parliament* with more freedom, they, and all their menial ſervants, were privileged from all arreſts, attachments, impriſonments, *&c.* for debts, treſpaſſes, *&c. eundo, morando ad propria redeundo*; but not from arreſts for treaſon, felony, and breach of peace.

The place where the *parliament* meets, is wherever the king pleaſes; of late, it has been in the palace of Weſtminſter; the lords and commons each in a diſtinct apartment. In the lords houſe, the princes of the blood are placed in diſtinct ſeats; the great officers of ſtate, dukes, marquiſſes, and biſhops on benches; and the viſcounts and barons on other acroſs the houſe; all according to their order of creation, place, *&c.* See PRECEDENCY.

The commons ſit promiſcuouſly; only the ſpeaker has a chair at the upper end; and the clerk and his aſſiſtant at a table near him. Before any matters be done, all the members of the houſe of commons take the oaths, and ſubſcribe their opinions againſt tranſubſtantiation, *&c.* which teſt, the lords too, though they do not take the oaths, are obliged to take.

The houſe of lords is the ſovereign court of juſtice of the realm, and the dernier reſort: the houſe of commons is the grand inqueſt, but no court of juſtice. See PEER and COMMONS.

As to the manner of debating and paſſing bills in PARLIAMENT. Any member may move to have a bill brought in for any thing, which, upon a queſtion put, being agreed to by the majority, the perſon with others, are ordered to prepare and bring in that ſame. When ready, a time is appointed for reading: after reading it by the clerk, the ſpeaker reads the abſtract thereof, and puts the queſtion, whether or no it ſhall have a ſecond reading? after a ſecond reading, the queſtion is, whether or no it ſhall be committed? which is either to a committee of the whole houſe, if it be of importance; or to a private committee, any member naming the perſons. See COMMITTEE.

The committee appointed, and a chairman choſen, the chairman reads the bill, paragraph by paragraph, puts every clauſe to the queſtion, fills up blanks, and makes amendments, according to the opinion of the majority. The bill thus gone through, the chairman makes his report at the ſide-bar of the houſe, reads all the additions and amendments, *&c.* and moves for leave to bring up the report to the table; which granted, he delivers it to the clerk, who reads the amendments, *&c.*

The ſpeaker then puts the queſtion, whether they ſhall be read a ſecond time; and, if agreed to, reads them himſelf. To ſo many as the houſe acquieſces in, the queſtion is now put, whether the bill, thus amended, ſhall be engroſſed and writ fair in parchment, and read a third time? the bill engroſſed, the ſpeaker holds it in his hand, and aſks if it ſhall paſs? if the majority be for it, the clerk writes on it, *ſoit baille aux ſeigneurs*. Or, in the houſe of lords, *ſoit baille aux communes*. —If a bill be rejected, it cannot be any more propoſed during that ſeſſion. See BILL.

Forty members conſtitute a houſe of commons, and eight a committee. A member of the commons, to ſpeak, ſtands up, uncover'd, and directs his ſpeech to the ſpeaker only. If what he ſays be anſwered by another, he is not allowed to reply the ſame day, unleſs perſonally reflected on. Nor may any perſon ſpeak more than once to the ſame bill in the ſame day. In the lords houſe they vote, beginning at the puiſne or loweſt baron, and ſo up orderly to the higheſt, every one anſwering apart, content, or not content. In the houſe of commons, they vote by yea's and nay's; and if it be dubious, which is the greater number, the houſe divides. If the queſtion be about bringing any thing into the houſe, the ay's go out; if it be about any the houſe already has, the no's go out. In all diviſions, the ſpeaker appoints four tellers, two of each opinion. In a committee of the whole houſe, they divide by changing ſides, the ay's taking the right, the no's the left of the chair, and then there are but two tellers.

If a bill paſs one houſe, and the other demur to it, a conference is demanded in the painted chamber, where certain members are deputed from each houſe; and here the lord's ſitting covered, the commons ſtand bare, the caſe is debated. If they diſagree, the affair is null; if they agree, this, with the other bills that have paſſed both houſes, is brought down to the king, in the houſe of lords, who comes thither clothed in the royal robes and with the crown on, before whom the clerk of the *parliament* reads the title of each bill, and as he reads, the clerk of the crown pronounces the royal aſſent or diſſent.

If it be a publick bill, the royal aſſent is given by theſe words, *le roy le veut*. If a private one, by *ſoit fait comme il eſt deſire*. If the king refuſe the bill, the anſwer is, *ley roy s'aviſera*. If it be a money bill, the anſwer is, *le roy remercie ſes loyaux ſujets, accepte leur benevolence & auſſi le veut*.

The bill for the king's general pardon has but one reading. The number of members in the houſe of lords is uncertain, as increaſing at the king's pleaſure. The members of the houſe of commons, when full, are 553, *viz.* 92 knights of ſhires; 52 deputies for the 25 cities, London having 4; 16 for the 8 cinque ports; 2 for each univerſity; and, finally, 332 for 180 boroughs, beſides 12 boroughs for Wales, and 45 members for Scotland.

Porter of PARLIAMENT *houſe*. See the article PORTER.

Rolls of PARLIAMENT. See the article ROLLS.

Seſſion of PARLIAMENT. See the article SESSION.

PARLIAMENT is ſometimes alſo uſed for other aſſemblies beſide thoſe of the ſtates of the realm.—Thus we read that the abbot of Croyland was uſed to call *parliaments* of his monks, to conſult of the affairs of the monaſtery.—And, at this day, an aſſembly of the two temples, called to conſult of their common affairs, is called a *parliament*. See TEMPLE.

PARLIAMENTS *of France*, are courts or aſſemblies eſtabliſhed by the kings to judge of the differences between particular perſons, and to pronounce on appeals from ſentences given by inferior judges. See COURT.

There are ten of theſe *parliaments* in France. That of Tholouſe, eſtabliſhed in 1303: that of Dijon, in 1476: that of Grenoble, in 1453: that of Rouen, in 1499: that of Rennes in Bretagne, in 1553: that of Bourdeaux, in 1502: that of Aix, in 1501: that of Metz, in 1633: that of Pau in Bearn, in 1519: and that of Paris.

The *parliament* of Paris is the principal, and that whoſe juriſdiction is of the greateſt extent. This is the chief court of juſtice throughout the realm. It conſiſts of ſix chambets: the grand chamber, where cauſes of audience are pleaded; and five chambers of inqueſts, where proceſſes are adjudged in writing. See CHAMBER.

Under their ſecond race of kings, this *parliament*, like that of England, was the king's council, gave audience to ambaſſadors, and conſulted of the affairs of war and government.

The king's, like ours, preſided in them, without being, at all, maſters of their reſolution. But, in after times, their authority has been abridged, the kings having reſerved the deciſion of the grand affairs of the public to their own councils; leaving none but private ones to the *parliaments*.

PARLIAMENTUM *Indoctorum*, a denomination given to a *parliament* held at Coventry, 6 Henry VI, whereunto, by ſpecial precept to the ſheriffs of the ſeveral counties, no lawyer or perſon ſkilled in the law was to be called.

PARLIAMENTUM *inſanum*, was a *parliament* held at Oxford, anno. 41 Henry III, thus called, ſays our chronicles, becauſe the lords came with great retinues of armed men to it; and many things were violently tranſacted therein, againſt the king's prerogative.

PARLIAMENTUM *diabolicum*, was a *parliamentum* held at Coventry, 38 Henry VI, wherein Edward earl of March, afterwards king, and ſeveral others, were attainted.—The acts paſſed herein, were annulled by the ſucceeding *parliament*.

PARLIAMENTUM *de la bonde*, was a *parliament* in Edward II^d's time, whereto the barons came armed againſt the two Spencers, with coloured bands on their ſleeves for diſtinction.

PARLOUR, **PARLOIR***, in nunneries, a little room, or cloſet, where people talk to the nuns, through a kind of grated window.

* The word is formed from the French *parler*, to talk.

Anciently there were alſo *parlours* in the convents of monks, where the novices uſed to converſe together at the hours of recreation; but there were liſtening places over, from whence the ſuperiors could hear what they ſaid.—Such a one there ſtill ſubſiſts in the abbey St. German de Prez.

In the order of Feuillans, the *parlour* is a little room open on all ſides, placed at each end of the dormitory, where the monks talk together, it not being allowed them to ſpeak in the dormitory. See FEUILLANS.

PARMA, among antiquaries, a kind of ancient buckler. See BUCKLER.

Polybius deſcribes the *parma* as very ſtrong, round, three foot in diameter, and big enough to cover the whole body; yet Servius, on the Æneid, and even Virgil himſelf mention it as a light piece of armour, in compariſon of the clypeus, though bigger than the pelta. See SHIELD, and PELTA.

PARMASITTY, the popular name for *Sperma Ceti*.

PARMESAN. See the article PADUAN.

PAROCHIAL, ſomething belonging to a pariſh. See PARISH, and EXTRAPAROCHIAL.

Every church is either cathedral, collegiate, or *parochial*.

Cathedral is where there is a biſhop's ſee, or ſeat called *cathedra*. Collegiate, conſiſts either of regular clerks, profeſſing ſome religious order; or of a dean and chapter. See CATHEDRAL, COLLEGIATE, *&c.*

Parochial church is that inſtituted for the performing of divine ſervice to the people who dwell within a certain compaſs of ground. See PARISH.

PARODICAL *degrees*, in an equation, the ſeveral regular terms in a quadratic, cubic, biquadratic or other equation, the indices of whoſe powers aſcend or deſcend orderly in an arithmetical progreſſion. See TERM, and EQUATION.

Thus, $Z^3 + Z^2 M + Z^1 r = S$ is a cubical equation where no term is wanting, but having all its *parodic* degrees; the indices of the terms regularly deſcending thus 3, 2, 1, 0. Harris.

PARODY, **PARODIA**, a popular maxim, adage, or proverb. See PROVERB, and ADAGE.

* The word is formed from the Greek παρα and οδος, *via*, way; as being trite, or paſſing among the people.

PARODY, Παρωδια, is alſo a poetical pleaſantry, conſiſting in applying the verſes of one perſon, by way of ridicule, to another; or in turning a ſerious work into burleſque, by affecting to obſerve, as nearly as poſſible, the ſame rhimes, words, and cadences. See BURLESQUE.

The *parody* was firſt ſet on foot by the Greeks; from whom we borrow the name. It comes near to what ſome of our late writers call *traveſtry*. See TRAVESTY, SATYR, *&c.*

PAROEMIA*, ΠΑΡΟΙΜΙΑ, a proverb. See PROVERB.

* The word is formed from the Greek παρα, and οιμη, way; *quaſi* παρα οιμω, *juxta viam*, i. e. *tritam*.

PAROL, **PAROLE**, in law, is ſometimes uſed in ancient writers for a plea in court. See PLEA.

Leaſe-PAROL, or *per* PAROL, is a leaſe by word of mouth; thus called to diſtinguiſh it from one in writing. See LEASE.

PAROLE, in war, *&c.* when a priſoner of war is allowed to go into his own country, or to his own party, upon his word and promiſe to return at a time appointed, if not exchanged, he is ſaid to be out upon *parole*, *i. e.* upon his word.

Paſs-PAROLE. See the article PASS-PAROLE.

PAROLI, in gaming, the double of what was laid at ſtake before.—Hence, to offer the *paroli*, *&c.*

PARONOMASIA*, ΠΑΡΟΝΟΜΑΣΙΑ, in rhetoric, a figure whereby words nearly alike in ſound, but of very different ſenſes, are affectedly or deſignedly uſed.

* The word is formed from the Greek παρα, near, and ονομα, name, *q. d.* proximity or reſemblance of two names.

As, not friends but fiends were here: ſo Tully to Anthony, *cum in gremio mimarum* mentem *&* mentum *deponeres:* and to Atticus, *conſul ipſe* parvo *animo &* pravo, facie *magis quam* facetiis *ridiculus*. And that of P. Chryſologus, *monachorum cellulæ jam non* eremeticæ *ſed* aromaticæ. And in another place, *hoc agant in* cellis *quod angeli in* cœlis.

Among the Greeks the *paronomaſia* was very familiar. Thus Herodotus παθηματα, μαθηματα, *quæ nocent, docent.*

And thus that inſcription of Apollodorus a celebrated painter, on one of his pieces.

Μωμησεται τις μαλλον, η μιμεσεται.

It will be eaſier to deride, than to imitate.

PARONYCHIA*, *whitloe*, in medicine, a painful kind of tumor, or abſceſs, ariſing at the ends of the fingers, and the roots of the nails; otherwiſe called *Panaritium* and *Panaris*. See PANARITIUM.

* The word is derived from the Greek παρα, near, and ονυξ, *unguis*, nail.

The humour, or matter of the *paronychia*, is ſometimes ſo ſharp as to corrode the tendons, nerves, perioſteum, and even the bone itſelf.

It is either lodged between the integuments, or between the perioſteum and bone. The deeper the more dangerous.

PAROTIDES*, ΠΑΡΩΤΙΔΕΣ, in anatomy, two big glands ſituate behind the two ears; and filling all the ſpace between the poſterior angle of the under jaw, and the maſtoidal apophyſis. See GLAND and EAR.

* The word is formed from the Greek παρα, near, and ους, ear.

They are of the conglomerate kind, and by divers excretory ducts, which, at laſt, coaleſce into one trunk, diſcharge a humour ſeparated in them from the arterious blood, called *ſaliva*, into the mouth, by two veſſels formed of ſeveral branches uniting at the iſſue of theſe glands, and which run along the cheek to the third grinder. See SALIVA and SALIVAL.

PAROTIDES, in medicine, tumors, or inflammations ariſing behind the ears, on the *parotid* glands.

Parotides are very frequent after malignant and peſtilential fevers: children are particularly liable to them. They are to be treated like bubo's. See BUBO.

PAROXYSM*, ΠΑΡΟΞΥΣΜΟΣ, in medicine the ſevere fit of a diſeaſe which grows higher, or exaſperates; as of the gout, *&c.* See GOUT.

* The word is formed from the Greek παρα, much, and οξυς, acute.

PAROXYSM is ſometimes alſo uſed for the acceſs, or return of a diſeaſe that intermits; as an ague. See ACCESS.

PARRICIDE, **PARRICIDA**, or **PATRICIDA**, in ſtrictneſs, denotes the murder, or murderer of a father: as matricide does of a mother. See MURTHER.

Though the word *parricide* is alſo ordinarily extended to both.

The Romans for a long time, had no law againſt *parricides*; from an opinion no body could be ſo wicked as to kill his parents. L. Oſtius was the firſt, who killed his father, 500 years after Numa's death; and then the Pompeian law was made, which ordained, that the perſon convicted of this crime, after he had been firſt whipped till the blood came, ſhould be tied up in a leathern ſack, together with a dog, an ape, a cock, and a viper, and ſo thrown into the ſea, or the next river.

PARRICIDE is alſo extended to the murther of any near relation, as a huſband, wife, brother, ſiſter, child, grandchild, uncle, *&c.* and even to that of great ſacred perſons, though no way allied in blood, as a king, *&c.* See FRATRICIDE, and TREASON.

PARRYING in fencing, the action of defending a man's ſelf, or of ſtaving off the ſtrokes, *&c.* offered him by another. See FENCING.

Good fencers puſh and *parry* at the ſame time. See GUARD.—The Spaniards *parry* with the poniard. The ancients *parried* with their bucklers. See PARADE.

PARSON, **PERSONA**, the rector or incumbent of a pariſh church. See CHURCH and PARISH.

He is ſaid, by ſome, to be thus called by way of eminence; the revenues of a church being deſtined to maintain *magnam perſonam*; or, as ſome will have it, becauſe he is bound by virtue of his office, *in propria perſona ſervire deo*, whence *imperſonare*, in old charters, is to put in poſſeſſion of a parſonage, *&c.*—Or as others, becauſe the original *parſons*, *perſonæ*, were, in reality, only dignitaries, and poſſeſſed benefices which gave them ſome perſonal pre-eminences in the church or chapter, but no power.—Or, laſtly, as others, becauſe the *parſon*, for his time, repreſents his church, and ſuſtaineth the perſon thereof, as well in ſuing, as in being ſued in any action touching the ſame. See PARSONAGE.

Some diſtinguiſh between a *rector* and *parſon*: the rector, ſay they, is where the vicarage is endowed; and the *parſon*, *perſona*, where the parſonage is without a vicarage: but the diſtinction, ſeems new, and ſubtle: Bracton apparently uſes *rector*, and *parſon*, as ſynonymus. See RECTOR.

Formerly he who had a church by inſtitution and induction only for his own life, was called *parſon mortal*: but any collegiate, or conventual body, to whom the church was for ever appropriated, was called *parſon immortal*. See APPROPRIATION.

Some again make a diſtinction between *parſon* ſimply, and *parſon imperſonee*, imperſonated.

Parſon imperſonee is the rector or incumbent in poſſeſſion of a pariſh church, whether preſentative or impropriate, and with whom the church is full.

Parſon ſimply, they contend, is properly the patron, or he that has the right of preſentation; called *parſon*, by reaſon, before the Lateran council, he had a right to the tithes, in reſpect of his liberality in erecting or endowing the church, *quaſi ſuſtineret perſonam eccleſiæ*.

It is certain, in the regiſter of writs, *perſona imperſonata* is uſed for the rector of a benefice preſentative: and in Dyer, a dean and chapter are ſaid to be *parſons imperſonee's* of a benefice appropriated to them.—So that *perſonata* ſeems only changed into *imperſonata*, in reſpect of the poſſeſſion of the benefice. See *Coke on Litt. fol.* 300.

PARSONAGE, a *rectory*; or a pariſh church endowed ordinarily with houſe, glebe and tithe, for the maintenance of a miniſter with cure of ſouls within ſuch pariſh. See PARSON, PARISH and RECTORY.

There may alſo be a rectory or *parſonage* without any glebe land, except the church and church yard; and without any tithes, or other fixed income, except an annual payment, or pound rate.

Parsonage in its original, and at this day in other countries, is a benefice which gives ſome prerogative, or pre-eminence in a church or chapter, but without any juriſdiction. See Benefice.

The ancient *Parſonages* gave a little honour, and dignity as to the perſon, but no power: whence, apparently, the name; intimating the effect of the dignity to be reſtrained to the perſon, *perſona*, *parſon*.

Such are ſtill the chantries in ſeveral churches, and the ſub-chantries in others. See Chantor.

Some as Oldrade, *&c.* extend the word *parſonage* to dignity, and comprehend under it the archdeacons, deans, *&c.* in cathedrals; but this ſeems to be ſtraining the ſenſe of the word.

In effect, the canoniſts uſe the term very differently: ſome applying it to all who have any prerogative in the choir, or the chapter, over the other canons, either in options, ſuffrages, elections, or barely in place and proceſſion; thus confounding it with dignity; while others apply it to ſimple rectors, *&c.* See Dignitary.

PART, Pars, a portion of ſome whole, conſidered as divided, or diviſible. See Division.

Quantity is diviſible into an infinite number of *parts*: not equal *parts*, but proportional ones. See Divisibility. Philoſophy is divided into four *parts*, *viz.* logicks, ethicks, phyſicks and metaphyſicks. See Philosophy, *&c.*

The ſchoolmen uſually diſtinguiſh *parts* into *logical* and *phyſical*.

Logical Part, is that referring to ſome univerſal as its whole—in which ſenſe the ſpecies are *parts* of a genus; and individuals, or ſingulars, *parts* of the ſpecies. See Genus.

Phyſical Part is that, which, though it enter the compoſition of a whole, may yet be conſidered a-part, and under its own diſtinct idea—in which ſenſe, a continuum is ſaid to conſiſt of *parts*. See Continuum.

It is controverted in the ſchools, whether the *parts* of a continuum or phyſical whole, *e. g.* water, do exiſt actually before the diviſion be made, or only potentially?

Phyſical parts, again, are of two kinds; *homogeneous*, and *heterogeneous*—the firſt are thoſe of the ſame denomination with ſome other; the ſecond of a different one. See Homogeneous, *&c.*

Parts, again, are diſtinguiſhed into *ſubjective*, *eſſential*, and *integrant*.

Subjective or *potential* Part, is the ſame with *logical part*, *viz.* that contained in ſome univerſal whole, not in act, but only in power—As, man and horſe are in animal: Peter and Paul in man.

Eſſential Part is that, whereby, with the concurrence of ſome other, an eſſential whole is conſtituted.—Thus body and ſoul are eſſential *parts* of man.

Integrant or *Integral* Part is that which is neceſſary to the integrity of the whole—As a head is of a man, *&c.*

Anatomiſts divide the *parts* of the human body into containing and contained; ſimilar and diſſimilar; and the ſimilar, again, into ſpermatic and ſanguineous, *&c.* See Similar, *&c.*

Noble or *eſſential* Parts, are thoſe abſolutely neceſſary to life: as, the heart, lungs, liver, brain, *&c.*

Natural or *genital* Parts, popularly called *privy parts*, are thoſe miniſtring to generation. See Generation.

The fineſt writings of phyſicians are thoſe which treat of the uſe of the *parts*: Galen's work *de uſu partium*, affords infinite arguments of the being and wiſdom of a God.

Nature, we ſay, always diſcharges itſelf on the weak *part*, the diſeaſed *part*, the *part* affected, *&c.*

Conſent of Parts. See the article Consent.

In chymiſtry, bodies are ſaid to be reſolved into their minute *parts*, their compotent *parts*, *&c.* See Chymistry, Analysis, Element, *&c.*

That art is ſaid to ſeparate the homogeneous *parts* from the heterogeneous; volatile, ſubtile, ſulphureous, mercurial, *&c.* *parts*, from the fixed, craſs, earthy, viſcid, *&c.* *parts*. See Volatile, fixt.

Part, in geometry and aſtronomy, is applied to the diviſions of lines and circles.

The ſemi-diameter of the circle, called alſo the radius, and whole ſine, is divided into an hundred thouſand *parts*; the circumference of the circle into 360 *parts*, or degrees; in which two diviſions all the celeſtial computations are made. See Degree, *&c.*

Aliquot Part, is a quantity which, being repeated any number of times, becomes equal to an integer. Thus 6 is an *aliquot part* of 24; and 5 an *aliquot part* of 30, *&c.* See Aliquot, and Multiplication.

Aliquant Part, is a quantity which, being repeated any number of times, becomes always either greater or leſs, than the whole. Thus 5 is an *aliquant part* of 17; and 9 an *aliquant part* of 10, *&c.* See Aliquant.

The *aliquant part* is reſolvible into aliquot *parts*. Thus 15, an *aliquant part* of 20, is reſolvible into 10 a half, and 5 a fourth *part* of the ſame. See Multiplication.

Proportional Part is a *part* or number agreeable and analogous to ſome other *part* or number; or a medium to find ſome number or *part* unknown by proportion and equality of reaſon. See Proportion.

Similar Parts are thoſe which are to one another, as their wholes are to one another. See Similitude, and Similar.

Organical Part. See the article Organical.

Part, in muſic, denotes a piece of the ſcore or partition, wrote by itſelf, for the convenience of the muſician: or it is one or more of the ſucceſſions of ſounds which make the harmony, wrote a-part. See Partition.

Or, the *parts* are the ſounds made by ſeveral perſons ſinging, or playing in concert. See Concert.

Muſic in *parts* was unknown to the ancients; they had but one *part*; all their harmony conſiſted in the ſucceſſion of notes, none in the conſonance. See Music and Symphony.

There are four principal *parts*; the treble, baſs, tenor, and counter-tenor. See Treble, Bass, Tenor, *&c.*

Some compare the four *parts* in muſic, to the four elements: the baſs, repreſents the earth; the tenor water; counter-tenor, air; and treble, fire.

Part, in trigonometry. In a rectangular ſpherical triangle ABC, *Tab. Trigon. fig.* 22, that *part* lying between two others, conſidered as extremes, is called by ſome authors, the *middle part.*—Thus, if AB and BC be the extreme *parts*, the angle B will be the middle *part*.

If the *parts*, conſidered as extremes, be contiguous to the middle *part* and one of the extremes; thoſe are called *conjunct parts*—Thus, if B be the middle *part*, AB and BC will be the conjunct *parts*.

If between the extremes, and the middle *part*, there lye another, beſide a right angle; then the *parts* are ſaid to be disjunct, or ſeparate;—*e. gr.* If B be the middle term, AC and C will be disjunct *parts*; becauſe, between the middle *part* B, and the extreme C, there lyes the hypothenuſe BC; and between the middle part B, and the other extreme AC, beſides the right angle, there lyes the leg AB. See Triangle.

Thoſe *parts*, either joined to the middle *part*, or ſeparated from it, are called *lateral parts*.

Parts *of ſpeech*, in grammar, are all the ſorts of words which enter the compoſition of diſcourſe. See Word and Speech.

The grammarians uſually admit of eight *parts* of ſpeech, *viz.* noun, pronoun, verb, participle, adverb, conjunction, prepoſition, and interjection. See each in its proper place, Noun, Pronoun, *&c.*

Part *of fortune*, in judiciary aſtrology, is the lunar horoſcope; or the point wherein the moon is, at the time when the ſun is in the aſcending point of the eaſt.

The ſun in the aſcendant is ſuppoſed to give life; and the moon diſpenſes the radical moiſture, and is one of the cauſes of fortune.—In horoſcopes, the *part of fortune* is repreſented by a circle divided by a croſs.

Art and Part, in law. See the article Art.

Ex Parte. See the article Ex.

PARTERRE, in gardening, that open part of a garden into which we enter, coming out of the houſe; uſually, ſet with flowers, or divided into beds, encompaſſed with platbands, *&c.* See Garden.

The *Parterre* is a level diviſion of ground, which, for the moſt part, faces the ſouth and beſt front of a houſe, and is generally furniſhed with greens, flowers, *&c.*

There are divers kinds of *parterres*, as bowling-green or plain *parterres*; *parterres* of embroidery; *parterres* cut in ſhell-work, in ſcrollwork, *&c.* with ſand-allies between.

An oblong, or long ſquare is accounted the moſt proper figure for a *parterre*; the ſides whereof, to be as two, or two and a half to one.

PARTI, Party or Parted, in heraldry, is applied to a ſhield, or eſcutcheon, denoting it divided, or marked out into partitions. See Shield, and Escutcheon.

The French heralds, from whom we borrow the word, have but one kind of *parti*, the ſame with our *parti per pale*, which they call ſimply *parti*: but, with us, the word is applied to all the ſorts of partitioning; and is never uſed without ſome addition to ſpecify the particular one intended.

Thus we have *parti* or *parted per croſs*, *per chief*, *per pale*, *per feſs*, *per bend dexter*, *per bend ſiniſter*, *per chevron*, *&c.* See Quartering.

The humour of our anceſtors, Colombiere obſerves, turning much upon exploits of arms and chivalry; they uſed to preſerve their battered and hacked armour as honourable ſymbols of their hardy deeds; and thoſe who had been in the hotteſt ſervice, were diſtinguiſhed by the moſt cuts and bruiſes that appeared on their ſhields. To perpetuate the memory hereof, ſays the ſame author, they cauſed them to be painted on their ſhields, and thus handed down to poſterity.—And when heraldry grew into an art, and officers were appointed to direct the manner of bearing, and blazoning; they gave names to thoſe cuts, anſwerable to the nature thereof; appointing four, from which all the others proceed: theſe are *parti* (in Engliſh, *parti per pale) coupe* (in Engliſh, *parti per feſſe) tranche* (in Engliſh, *party per bend dexter*) and *taille* (in Engliſh, *party per bend ſiniſter.)* See Couped, Tranche, *&c.*

PARTI *per pale*, is when the ſhield is divided perpendicularly into two halves, by a cut in the middle from top to bottom. See PALE, *&c.*

PARTI *per feſſe*, is when the cut is a-croſs the middle, from ſide to ſide. See FESSE.

PARTI *per bend dexter*, is when the cut comes from the upper corner of the ſhield on the right hand, and deſcends athwart to the oppoſite lower corner. See BEND.

PARTI *per bend ſiniſter*, is when the cut coming from the upper left corner, deſcends acroſs to the oppoſite lower one.

From theſe four partitions have proceeded an infinite number of others of various, and extravagant forms.

Spelman, in his Aſpilogia obſerves, that the preſent diviſions of eſcutcheons were unknown in the reign of the emperor Theodoſius; were brought up in the time of Charlemaign, or later; little uſed among the Engliſh in the days of king Henry II, but more frequently under Edward III.

The erect or upright ſection, he obſerves, is called in Latin, *palaris*, from its reſemblance to a *palus*, or ſtake; and two coats are often entire on the ſides, the huſbands on the right, and the wives on the left.—The direct ſection acroſs, being in the place of a belt, is called *baltica*, *&c.*

When the ſhield is *parti*, and *coupée*, it is ſaid to be *ecartelé*. See QUARTERLY and QUARTERING.

It is ſaid to be *parti one from the other*, when the whole ſhield is charged with ſome honourable bearing divided by the ſame line that parts the ſhield.—Here it is a rule, that one ſide be of metal, and the other of colour. Thus he bears ſable *parti* d'argent, a ſpread eagle *parti* from one to the other.

PARTIAL *Cauſe*. See the article CAUSE.

PARTIAL *Eclipſe*. See the article ECLIPSE.

PARTICIPATION, PARTICIPATIO, that which gives us a part or ſhare in any thing, either by right or grace.

In Italy they diſtinguiſh *participating officers*, as prothonotaries, *&c.* which have a real function; from *honorary* ones, which have only a title, without any duty or employ. See OFFICE and OFFICER.

PARTICIPATIONIS *medium*. See the article MEDIUM.

PARTICIPLE, PARTICIPIUM, in grammar, an adjective formed of a verb; ſo called, becauſe it ſtill participates of ſome of the properties of the verb; retaining the regimen and ſignification thereof: whence moſt authors confound it with verb. See VERB.

There are two kind of *participles*, the one called *active*, becauſe expreſſing the ſubject which makes the action of the verb; as *legens*, *audiens*, *reading*, *hearing*.—The other called *paſſive*, becauſe expreſſing the ſubject that receives the action of the verb, as *lectum*, *auditum*, *read*, *heard*.

As our adjectives are not declined, the *participles*, being real adjectives, are not declined neither: in the Latin, *&c.* where the adjectives are declined, the *participles* active are declined likewiſe.—Thus they ſay *audiens*, *audientis*, *audienti*, *&c.* and in the French the *participles* paſſive are declinable like their adjectives, as *J'ay lue*, *elle a lue*, *nous avons lus*, *&c.*

We take this occaſion to obſerve, that declenſion, or the changing or not changing the termination, is a thing perfectly accidental to the ſeveral kinds of words: the Latins, *e. gr.* have indeclinable nouns, as *cornu* and *nequam*, yet both Latins and Italians decline their adverbs, as *fortiter*, *fortiſſime*; *bene*, *beniſſimo*, *&c.* and ſome nations ſcarce conjugate their verbs at all. Indeed the Engliſh do it very little in compariſon with the Latins, Greeks, French, *&c.*

In our language, the *participle* and gerunds are not at all diſtinguiſhable. See GERUND.

PARTICLE, PARTICULA, in phyſicks, the minute part of a body, or an aſſemblage or coalition of ſeveral whereof natural bodies are compoſed. See BODY, and PART.

PARTICLE in the new philoſophy, is frequently uſed in the ſame ſenſe with *atom* in the ancient Epicurean philoſophy; and *corpuſcle* in the latter. See ATOM and CORPUSCLE.

Some of the more accurate writers, however, diſtinguiſh them; making *particle* an aſſemblage or compoſition of two or more primitive, and phyſically indiviſible corpuſcles or atoms; and *corpuſcle* or little body, an aſſemblage, or maſs of ſeveral *particles* or ſecondary corpuſcles. See ELEMENT.

Indeed, the diſtinction is of no great moment; and, as to moſt purpoſes of phyſicks, *particle* may be underſtood as ſynonymous with corpuſcle.

Particles, then, are, as it were, the elements of bodies: it is the various arangement, and texture of theſe with the difference of the coheſion, *&c.* that conſtitute the various kinds of bodies, hard, ſoft, liquid, dry, heavy, light, *&c.* See BODY.

The ſmalleſt *particles* or corpuſcles cohere with the ſtrongeſt attractions, and compoſe bigger *particles* of weaker coheſion; and many of theſe cohering compoſe bigger *particles* whoſe vigour is ſtill weaker; and thus on for divers ſucceſſions, till the progreſſion end in the biggeſt *particles*, whereon the operation in chemiſtry, and the colours of natural bodies depend, and which, by cohering compoſe bodies of ſenſible bulks. See MATTER.

The coheſion of the particles *of matter*, the Epicureans imagined was effected by means of hooked atoms; the Ariſtotelians by reſt, that is, by nothing at all. But Sir Iſaac Newton ſhews it done by means of a certain power whereby the *particles* mutually attract or tend towards each other. See COHESION.

By this attraction of the *particles* he ſhews that moſt of the phænomena of the leſſer bodies are effected; as thoſe of the heavenly bodies are by the attraction of gravity.

For the laws of this attraction of the particles, See ATTRACTION.

All bodies, the ſame great author ſhews, conſiſt of the ſame ſolid perfectly hard *particles* or corpuſcles. See MATTER.

PARTICLE, in grammar, denotes a little indeclinable word, conſiſting of one, or two ſyllables at the moſt. See WORD, *&c.*

Thoſe are properly *particles* which are neither declined nor conjugated.

Brightland calls *particles*, *manners of words*, becauſe rather ſerving to expreſs the circumſtances, and manners of other ideas and objects of the mind, than to repreſent any diſtinct objects of their own.

Particles may be reduced under three heads: the firſt ſhew the manners or qualities of words, by being added to them; called *adverbs*. See ADVERB.

The ſecond denote ſome circumſtances of actions, and join words to words, ſentence to ſentence, *&c.* See CONJUNCTION.

The third expreſs the emotions of the ſoul. See INTERJECTION.

It is in the right uſe of *particles*, Mr. Locke obſerves, that more particularly conſiſts the clearneſs and beauty of a good ſtyle. To expreſs the dependance of his thoughts and reaſonings one upon another, a man muſt have words to ſhew what connexion, reſtriction, diſtinction, oppoſition, emphaſis, *&c.* he gives to each reſpective part of his diſcourſe. This cannot be rightly underſtood, without a clear view of the poſtures, ſtands, turns, limitations, exceptions, and ſeveral other thoughts of the mind. Of theſe there are a great varietty much exceeding the number of *particles*, that moſt languages have to expreſs them by; for which reaſon it happens that moſt of theſe *particles* have divers, and ſometimes almoſt oppoſite ſignifications.

Thus the *particle* BUT in Engliſh, has ſeveral very different ſignifications: as in, *but* to ſay no more, where it intimates a ſtop of mind in the courſe it was going, before it came to the end of it. I ſaw *but* two planets; here it ſhews that the mind limits the ſenſe to what is expreſſed with a negation of all other. You pray, *but* it is not that God would bring you to the true religion, *but* that he would confirm you in your own. The former of theſe intimates a ſuppoſition in the mind, of ſomething otherwiſe, than it ſhould; the latter ſhews that the mind makes a direct oppoſition between that and what goes before. All animals have ſenſe, *but* a dog is an animal: here it ſignifies the connection of the latter propoſition with the former.

PARTICLES is alſo a term in theology, uſed in the Latin church for the crums or little pieces of conſecrated bread, called Μεριδες in the Greek church.

In the Greek church they have a particular ceremony, called των μεριδων, *of the particles*, wherein certain crums of bread not conſecrated, are offered up in honour of the virgin, St. John Baptiſt, and ſeveral other ſaints. They alſo give the name προσφορα, *oblation*, to theſe *particles*.

Gabriel, archbiſhop of Philadelphia, has a little treatiſe expreſs, περι των μεριδων, wherein he endeavours to ſhew the antiquity of this ceremony, in that it is mentioned in the liturgies of St. Chryſoſtom, and Baſil.

There has been a conſiderable diſpute on this head, between the reformed and the catholic divines. Aubertin and Blondel explain a paſſage in the theory of Germanus, patriarch of Conſtantinople, where he mentions the ceremony of the *particles* as in uſe in his time; in favour of the former: Meſſieurs de Port Royal conteſt the explanation: but M. Simon in his notes on Gabriel of Philadelphia, endeavours to ſhew, that the paſſage is an interpolation; not being found in the ancient copies of Germanus: and conſequently that the diſpute is ill grounded.

PARTICLE *out of ſhare*, in aſtronomy. See PARTICULA *exſors*.

PARTICULA *exſors*, in aſtronomy, the difference between the æquatorial triangle L A C, (*Tab. Aſtrom. fig.* 32) and its fellow B L Z. See EQUATION.

To find the *particula exſors*, the menſtrual eccentricity A C, and the annual argument of longitude H A D, being given; from the data in the triangle B C A, find the Hypothenuſe A B to the angle C, and to the angle C A B find the ſubtenſe C B. Multiply C B into half the menſtrual eccentricity A C; the product is the area of the triangle A C B. Find likewiſe the area of a circle deſcribed by the radius of the eccentric B L. Then as the area of the circle is to 360° or 129600″; ſo is the area of the triangle A C B to its value in thoſe ſeconds: which value is the *particula exſors*.

PARTICULAR, PARTICULARIS, a relative term, referring to ſpecies, or individual; and oppoſed to general, or univerſal. See GENERAL, *&c.*

In the ſcools, *particular* is defined to be ſomething included under an univerſal; as man under animal.

Though ſometimes it is alſo taken for an individual, as Peter. See INDIVIDUAL.

There is this difference between *particular* and *ſingular*, that *particular* denotes a thing taken as a part; as Peter in reſpect of mankind.—Whereas ſingular denotes the part taken after the manner of a whole; as Peter conſidered in himſelf.

	See the article
PARTICULAR *Averment*.	AVERMENT.
PARTICULAR *Cauſe*.	CAUSE.
PARTICULAR *Character*.	CHARACTER.
PARTICULAR *Executor*.	EXECUTOR.
PARTICULAR *Geography*.	GEOGRAPHY.
PARTIGULAR *Gravity*.	GRAVITY.
PARTICULAR *Maps*.	MAP.
PARTICULAR *Nature*.	NATURE.
PARTICULAR *Qualities*.	QUALITY.
PARTICULAR *Rheumatiſm*.	RHEUMATISM.
PARTICULAR *Tenant*.	TENANT.
PARTICULAR *Theorem*.	THEOREM.
PARTICULAR *Winds*.	WINDS.

PARTICULARIST, among polemical divines, a perſon who holds for particular grace, *i. e.* teaches, or believes that Chriſt died for the elect only; and not for mankind in general. See GRACE, PREDESTINATION, *&c.*

PARTIES, in law, are thoſe who are named in a deed, or fine, as *parties* to it: *e. gr.* thoſe who levy the fine, and to whom the fine is levied. See FINE.

So, they who make any deed, and they to whom it is made, are called parties to the deed. See DEED.

PARTILE *aſpect*, in aſtrology, an exact and full aſpect of any kind. See ASPECT,

Thus a *partile* conjunction is when two planets are preciſely in the ſame degree of longitude and latitude: if one of them deviate a little to the north, and the other to the ſouth, the aſpect or conjunction is no longer *partile*. See CONJUNCTION.

PARTING, or **DEPARTING**, a method of ſeparating gold and ſilver by means of aqua fortis. See DEPART and REFINING.

PARTITION, the act of parting, dividing, or diſtributing a thing. See DIVISION, DISTRIBUTION, QUADRIPARTITION, and TRIPARTITION.

The denomination *Partitiones oratoriæ*, is alſo given to a dialogue of Cicero's, between him and his ſon; in regard the diſcourſe is, as it were, parted or divided between them.

PARTITION, in law, a dividing of lands deſcended by common law or cuſtom among coheirs, where there are two at leaſt. See COPARCENER.

The *partition* is made four ways; whereof three are by agreement, the fourth by compulſion.

The firſt *partition* by agreement is, when the parceners divide the land equally themſelves into ſo many parts as there are coheirs.

The ſecond, is when each chuſes ſome of their friends to make the diviſion for them.

The third is by drawing lots, thus: having firſt divided the land into as many parts, as there are perſons, they write every part ſeverally in a diſtinct ſcroll, and wrapping it up, throw each into a hat, or ſuch like thing; out of which each one draws according to his ſuperiority; and ſo the land is ſeverally allotted.

The fourth *partition*, which is by compulſion, is, when one or more of the heirs, by reaſon of the refuſal of ſome other, ſues out a writ of *partitione facienda*; by force whereof they ſhall be compelled to divide.

In Kent, where land is of gavel-kind nature, they call their *partition*, ſhifting. See GAVEL-KIND.

Partition alſo may be made by joint-tenants, and tenants in common, by aſſent, by deed, or by writ.

PARTITION, in muſic, the diſpoſition of the ſeveral parts of a ſong, ſet on the ſame leaf; ſo as upon the uppermoſt ranges of lines are found the treble; in another the baſs; in another the tenor, *&c.* that they may be all ſung or played either jointly or ſeparately. See PART, MUSIC, *&c.*

PARTITION, in architecture, that which divides, or ſeparates one room, or apartment from another. See BUILDING, APARTMENT, *&c.*

PARTITION, in heraldry. See the article QUATERING.

PARTIUM *prece*. See the article PRECE.

PARTNER, and **PARTNERSHIP**. See COMPANY, COPARCENER, and FELLOWSHIP.

PAR TOUT. See the article PASS *par tout*.

PARTURITION, the act of bringing forth, or being delivered of young. See DELIVERY.

PARTUS, in medicine and law, the delivery of a woman, or the birth of a child. See DELIVERY and BIRTH.

Cæſareus **PARTUS**, is that where the mother is cut open, and the child taken out at one ſide. See CAESAREAN.

PARTY or **PARTIE**, a faction, intereſt, or power, conſidered as oppoſite to another. See FACTION.

The French, and Spaniards were always of oppoſite *parties*: England has, for upwards of a century, been divided into two *parties*. See WHIG and TORY.

PARTY, in law. See the articles PARTIES and CHARTER PARTY.

PARTY, in the military ſenſe, is uſed for a ſmall body of men, whether cavalry, infantry, or both, commanded out on any expedition.

A *party* of cavalry carried off a great number of cattle. By the French military law, thoſe who go out on *parties* ſhould have an order in writing from the commanding officer, and be at leaſt twenty in number, if foot, or fifteen, if horſe; otherwiſe they are reputed as robbers.

PARTY *Jury*, in law. See MEDIETAS *Linguæ*.

PARTY, in heraldry. See the articles PARTI, PALE, and FESSE.

PARVISE. See the article PERVISE.

PARULIS*, ΠΑΡΟΥΛΙΣ, in medicine, an inflammation of the gums, attended with a violent pain, and an apoſthume: ſometimes ending in an ulcer, and ſometimes in a cancer, fiſtula, gangrene, *&c.*

* The word Greek, formed of ϖαρα, near, and ȣλον, *gingiva*, gum.

Sennertus orders it to be cured by revulſion, derivation, and proper gargariſms. Care is to be taken in the beginning to prevent the apoſthume.

PARVUM *cape*. See the article CAPE.

PASCHAL, PASCHALIS, ſomething belonging to the Jewiſh Paſſover, or the chriſtian Eaſter. See PASSOVER. See alſo EASTER.

The *paſchal* lamb, is a lamb which the Jews eat with a deal of ceremony, in memory of their having been brought out of ſlavery in Egypt. It ſhould be eaten ſtanding, their loins girt, the ſtaff in hand, *&c.*

PASCHAL *canon*. See the article CANON.

PASCHAL *taper*. See the article TAPER.

PASCHAL *rents*, are rents or annual duties paid by the inferior clergy to the biſhop, or arch-deacon, at their Eaſter viſitations.

They are alſo called *Synodals*. See SYNODALS.

PASCHAL *letter*, in church-hiſtory, a circular letter, which the patriarch of Alexandria, firſt, then the pope, anciently wrote to all the metropolitans; to inform them of the day whereon the feaſt of Eaſter was to be celebrated. See EASTER.

PASQUIN, a mutilated ſtatue, ſeen at Rome, in a corner of the palace of the Urſini. It takes it name from a cobler of that city, called *Paſquin*, famous for his ſneers and gibes; and whoſe ſhop was the reſort of a number of idle people, who diverted themſelves with bantering folks as they paſſed by.

After Paſquin's death, as they were digging up the pavement before his ſhop, they found a ſtatue of an ancient gladiator, well cut, but maimed and half ſpoiled. This they ſet up, in the place where it was found, at the corner of the deceaſed maſter Paſquin's ſhop; and, by common conſent, called it by the name of the defunct.

From that time all ſatires, and lampoons are aſcribed to this figure, are put in his mouth, or paſted againſt it; as if they came from *Paſquin redivivus*.—Paſquin uſually addreſſes himſelf to Marforio another ſtatue in Rome; or Marforio to Paſquin, whom they make reply.

The anſwers are uſually very ſhort, poignant, and unlucky: When Marforio is attacked, Paſquin comes to his aſſiſtance; and Paſquin is aſſiſted by Marforio in his turn, *i. e.* the people make the ſtatues ſpeak juſt what they pleaſe. See PASQUINADE.

PASQUINADE, or PASQUIL, is properly a ſatyrical libel faſtened to the ſtatue of Paſquin. See PASQUIN.

Hence, by extenſion, the term becomes uſed for any ſatire, lampoon, or ſneer upon the public, or the ruling powers. See LIBEL.

There is this difference between a *Paſquinade* and a *Satire*; that the end of the latter is to correct and reform; whereas that of the former is only to ſcoff, and expoſe. See SATYR.

The Italians have publiſhed ſeveral books which they call *Paſquino in eſtaſi*, Paſquin in an extaſy.

PASS, PASSADE, in fencing, a leap, or advance upon the enemy. See PARRYING and GUARD, *&c.*

Of theſe are ſeveral kinds; as, *voluntary paſſes*, commencing from the left foot out of meaſure of the firm foot; as when the enemy is not expected.

Others, *neceſſary*, made after a puſh from the right foot; where being ſo preſſed by the enemy, as not to have time to retire, you endeavour to ſeize the guard of his ſword.

The meaſure of the *Paſs* is, when two ſmalls of the ſwords are ſo near as that they may touch one another.

There are *paſſes*, within, above, beneath, to the right, the left, *paſſes* under the ſword, over the line, *&c.*

PASS *of arms*, in chivalry, a place which the ancient knights undertook to defend, *e. gr.* a bridge, road, *&c.* which was not to be paſſed without fighting the perſon who kept it. See KNIGHT, KNIGHTHOOD, and ALMS.

The knights who held the *paſs* hung up their arms on trees, pales, columns, *&c.* erected for the purpoſe: ſuch as were diſpoſed to diſpute the *paſs*, touched one of theſe armories with his ſword; which was a challenge the other was obliged to accept. The vanquiſhed gave the victor ſuch prize as was before agreed on.

PASSA, *uva* PASSA, in pharmacy, a term applied to thoſe dried grapes, which we call *raiſins*, and *currants*. See RAISIN, and CURRANTS.

Uvæ PASSAE, is ſometimes alſo uſed, with leſs propriety, for figs. See FIG.

PASSADE, or PASSADO, in fencing, a thruſt or paſs. See PASS.

PASSADE, is alſo a benevolence or alms given to poor paſſengers. See ALMS.

PASSADE, in the manage, ſignifies a turn, or courſe of a horſe backwards or forwards on the ſame plot of ground; paſſing or repaſſing from one end to the other.

PASSAGE, in commerce, or *right of* PASSAGE, is an impoſition which ſome princes exact by their officers or farmers, in certain narrow, cloſe places of their territories, either by land or ſea; on all veſſels, vehicles, and carriages of all kinds; and even ſometimes on perſons, and paſſengers coming in or going out of ports, *&c.*

The *paſſage* of the ſound, (that famous ſtreight which carries us out of the German into the Baltic ſea) is the moſt celebrated *paſſage* in Europe: The dues thereof belong to the king of Denmark, and are paid at Elſenore or Cronenburg. See SOUND.

Birds of PASSAGE, are ſuch as only come at certain ſeaſons, and then diſappear again; being ſuppoſed to *paſs* the ſea to ſome other climate. See MIGRATION.

The *birds of paſſage* are the ſtork, ſwallow, nightingale, martin, woodcock, quail, *&c.* There are alſo fiſhes of *paſſage*, as herrings, mackerel, *&c.* See BIRD, and FISH.

Mr. Derham produces it as a remarkable inſtance of inſtinct, that,—*the ſtork in the heavens knoweth her appointed times, and the turtle, and the crane, and the ſwallow, obſerve the time of their coming*—Jer. viii. 7. No doubt the temperature of the air, and their natural propenſity to breed their young, are the great incentives to this migration: but how theſe untaught, unthinking creatures, ſhould ſo exactly know the beſt and only proper ſeaſons to go and come from a place that would obſtruct their generation, or not afford convenient food for them and their young; or how they ſhould know which way to ſteer their courſe, and whither to go; is a difficult conſideration? *Phyſ. Theol.* L. VII. c. 3.

PASSAGE, in the manage, an action wherein the horſe raiſes two legs together, a hind and a fore leg, in form of St. Andrew's croſs; when, ſetting thoſe two on the ground again, he raiſes the other two; and thus alternately; never gaining above a foot of ground at a time.

The beauty of the *paſſage* conſiſts in keeping the legs a good while in the air: ſetting that aſide, the motion of the legs in the *paſſage* is the ſame as in pacing and trotting.

PASSAGE, or PASSO, in muſic, a portion of an air, or tune, conſiſting of ſeveral ſhort notes, as quavers, demi-quavers, *&c.* laſting one, two, or at moſt, three meaſures.

What the Italians call *Contrapunto d'un ſol paſſo*, is a portion conſiſting of one, two, or three meaſures, compoſed in the firſt notes of a piece, and which is to be afterwards imitated on the other notes of the piece, not with the ſame chords or tones, but only by obſerving the ſame motion, number, and figure as in the notes of the firſt *paſſage*.—This makes one of the kinds of *Contrapunto perfidiato*.

PASSAGERS. *Vide* ALBIGENSES.

PASSALORHYNCHITES, PASSALORHYNCHITAE, a ſect of montaniſts in the ſecond century, who made profeſſion of perpetual ſilence, and the better to maintain it, kept the thumb continually upon the lips: founding their practice on that of the Pſalmiſt, *Set a guard, O Lord, on my mouth.*

St. Jerom mentions his having met with ſome of them in his time.

PASSANT, in heraldry, a term applied to an animal in a ſhield, appearing to walk leiſurely; or, to the ordinary poſture of terreſtrial animals. See COUNTER-PASSANT.

Thus we ſay, he bears gules two lions *paſſants* over one another. In moſt beaſts, except lions, they frequently uſe *tripping*, inſtead of *paſſant*.

PASSION, PASSIO, ΠΑΘΟΣ, or ΠΑΘΗΜΑ, is applied to the different motions, and agitations of the ſoul, according to the different objects that preſent themſelves to the ſenſes. See SOUL.

In propriety, all thoſe motions whereby the ſoul is carried towards any thing; as love, ambition, revenge, *&c.* are rather actions, than *paſſions*. See ACTION.

Thoſe motions whereby the ſoul finds itſelf interrupted in its actions, as grief, *&c.* are the only real *paſſions*.

We find various modifications and impreſſions of pleaſure and pain, inſeparably annexed by an eſtabliſhed law of nature, to the ſeveral judgments we form concerning good and evil: theſe judgments, with their reſpective modifications of pleaſure or pain annexed, according to the various appearances and relations of the object conſidered, either as good or evil, preſent or abſent, certain or uncertain, probable or improbable, poſſible or impoſſible, and affecting the machine in a certain manner peculiar to ſuch modifications; make what we call the *paſſions*.

How, or by what means, this mutual action and communication between ſoul and body is effected, we are, in a great meaſure, ignorant: we have but very obſcure and faint notions of any thing prior, or more ſimple to reſolve it into; except the immediate will and agency of the firſt cauſe itſelf. See COMMUNICATION, CAUSE, *&c.*

Malebranche defines the *paſſions* to be all thoſe emotions naturally ariſing in the ſoul, on occaſion of extraordinary motions of the animal ſpirits, and the blood.—In oppoſition to thoſe motions of the ſoul which are common to us with pure intelligences, and which he calls *natural inclinations*. See NATURAL *inclination*.

Though the *paſſions* be inſeparable from inclinations; and though a man be only capable of ſenſible love or hatred, becauſe he is capable of ſpiritual ones; yet does it appear juſt in that author to diſtinguiſh between them. *Paſſions* are much ſtronger and warmer than inclinations; their objects are different, and ſo are their cauſes: *paſſions* and inclinations differ juſt as much as ſenſe and imagination.

In effect, the *paſſions* of the ſoul are impreſſions of the author of nature, which incline us to our bodies, and all things that may be of uſe to their preſervation: natural inclinations are impreſſions of the author of nature, which determine us primarily to love him, as our ſupreme good.

Philoſophers are not agreed about the number and diviſion of the *paſſions*: the ordinary diſtribution is into *paſſions of the concupiſcible appetite*, which are pleaſure and pain, deſire and averſion, love and hatred: and thoſe *of the iraſcible appetite*, which are anger, courage, fear, hope, and deſpair.—See the authors on the ſubject of the *paſſions*; Des Cartes, who conſiders them phyſically; Coeffeteau who gives us the tableau, picture of the *paſſions*; La Chambre, the characters of the *paſſions*; and Senault, the uſes of the *paſſions*. See alſo CONCUPISCENCE, IRASCIBLE, *&c.*

Dr. Cheyne conſiders the *paſſions* as either ſpiritual or animal:—*Spiritual paſſions* he defines to be thoſe ſentiments produced in the ſoul by external objects, either ſpiritual ones immediately, or material ones by the mediation of the organs of the body.

Animal paſſions he defines to be thoſe effects produced by ſpirits or bodies, immediately on the body.

Hence, as outward objects may be conſidered either as goods or evils; the moſt natural diviſion of the *paſſions*, whether ſpiritual, or natural, as they regard thoſe objects, is into *pleaſurable* and *painful*.

And in this ſenſe, all the *paſſions* may be reduced to love and hatred; of which joy, and ſorrow, hope and fear, are only ſo many modifications, or complexions, according to the various appearances, poſitions, *&c.* of the object.

In effect, all the *paſſions* may not only be reduced to two, *viz.* love and hatred; but, perhaps, to one, love; and even that may be all reſolved into ſelf-love; and this into a principle of ſelf-preſervation, or neceſſary invincible deſire of pleaſure, or happineſs.—The reſt are only rivulets from this ſource; or ſpecial applications of this principle to particular occaſions.

Thus, the deſire of any thing under the appearance of its goodneſs, ſuitableneſs, or neceſſity to our happineſs conſtitutes the *paſſion* of love: the deſire of eſchewing or avoiding any thing apprehended to be miſchievous, hurtful, or deſtructive, conſtitutes hatred or averſion: the deſire of a good, which appears at the ſame time probable, and in our power, conſtitutes hope; but if the good appear improbable, difficult, or impoſſible, it conſtitutes fear or deſpair: the unexpected gratification of deſire is joy: the deſire of happineſs to another under pain, or ſuffering, is compaſſion; and the deſire of another's puniſhment, revenge or malice, *&c.*

The ſingle deſire of happineſs, then, is the ſpring or motive of all our *paſſions*; as thoſe are of all our actions. Some wiſe and reaſonable motive, or end of action, ſays Dr. Morgan, is certainly neceſſary to all wiſe and reaſonable action; to act without a motive, would be the ſame thing as not to act at all, that is, ſuch an action could anſwer no farther or better end than not acting; and conſequently the action, as well as the agent, would be ſo far inſignificant and uſeleſs. He who ſhould have no object at all of his love or averſion, hope or fear, joy or grief, muſt be ſimply and purely indifferent to all action; and conſequently muſt either be in a ſtate of perfect reſt and inaction, or in a ſtate equivalent thereto; wherein the action of ſuch a being could be of no more ſignificancy, than the uncertain fluctuation of an atom, or the quivering of a feather in the air.

The natural, or occaſional cauſe of all the *paſſions*, Malebranche makes to be the motion of the animal ſpirits, which are diffuſed through the body to produce and preſerve a diſpoſition therein ſuitable to the object perceived; to the end, that the body and mind may mutually aſſiſt each other on this occaſion; it being the order of the creator, that our wills be followed by motions of the body proper to execute them; and that the motions of the body mechanically excited in us by the view of external objects, be accompanied with a *paſſion* of the ſoul which inclines to will or nill what appears ſerviceable or noxious to the body.

It is a continual impreſſion of the will of the creator, that unites us thus intimately to a piece of matter, and occaſions this reciprocation of motions and ſenſations; were this impreſſion of the creator's will ſuſpended a moment, we ſhould be delivered from all dependance, all *paſſions*, *&c.* For, what people uſually imagine of a neceſſary connection between the motions of the ſpirits and blood, and the emotions of the ſoul, is inconceivable.

Certain little parts of the bile, ſay they, move with ſome violence among the fibres of the brain: therefore the ſoul muſt neceſſarily be agitated with ſome *paſſion*; and this *paſſion* muſt be anger, rather than love. What relation can we conceive between the faults of an enemy, a *paſſion* of contempt or hatred, and a bodily motion of the parts of the blood ſtriking againſt certain parts of the brain? how can the union or alliance of two things ſo different as ſpirit or matter be effected, but by the omnipotent will of the author of nature?

It is a point, about which the divines and philoſophers can never agree, whether this relation and connection of thoughts of the mind, and motions of the body, be the gift of nature, or the puniſhment of the firſt ſin? and whether the *paſſions* be the inſtitution of nature, or the corruption thereof? Indeed, conſidering the good and wiſe purpoſes the *paſſions* ſerve, and that abſolute neceſſity they are of, it is ſurprizing it ſhould ever be doubted, that they are eſſential to human nature.

This union or relation is found in all men, but in different degrees, and of different extent, according to the different temperaments, conditions, ages, ſexes, occaſions, objects, *&c.* Thus, *e. gr.* our union or relation to ſenſible objects we have ſeen, is ſtronger than that to things we have only heard talk of. And thus, as the great have a relation to many more things, than others, their ſlavery is more extenſive. A general, *e. gr.* retains or has a relation to all his ſoldiers, as they all reſpect him; and it is this ſlavery that uſually occaſions his generoſity: the deſire of being eſteemed by all in whoſe ſight he is frequently, obliges him to ſacrifice more reaſonable pleaſures.

It is thus throughout the world: vanity animates virtue, otherwiſe we ſhould never have ſuch lengths gone. Again, children do not mind the ſame things with grown people. Women look no further than their families and neighbourhood: but men retain to their whole country; it is for them to defend it; they mind honours, offices, *&c.* Nor is there a leſs variety reſulting from the different circumſtances and employments of people.

The diſpoſition of mind in a married man differs much from that in a batchelor. The people in monaſteries have both the mind and heart turned very differently from people who live in the world. They are united to much fewer things; but then the attachment is much cloſer and ſtronger. Their *paſſions* move in a narrow ſphere, and, like the ſun's rays in a convex lens, are collected, as it were, in a focus.

In every *paſſion* there may ſeven things be diſtinguiſhed: the firſt, the judgment the mind makes of an object, or the view of the relation the object bears to us. The ſecond, a new determination of the will towards that object, ſuppoſing it to appear as good. The third, the peculiar ſenſation of modification which accompanies them; as the ſenſation of love, hatred, deſire, or joy; which ſenſations are always different in the different *paſſions*, and, as it were, the characteriſticks thereof. The fourth, a new determination of the courſe of the blood and ſpirits towards the ſeveral parts of the body: before the ſight of the object of the *paſſion*, the animal ſpirits were pretty equally diffuſed throughout the body; but the preſence of the new object diſturbs the whole œconomy; and the greateſt part of the ſpirits are ſent into the muſcles of the arms, legs, face, *&c.* The fifth, is the ſenſible emotion of the ſoul, which finds itſelf ſhaken by this ſudden over-flowing of ſpirits. The ſixth, is the different ſenſation of love, hatred, *&c.* cauſed, not by the intellectual view of good or evil, but by the different ſhakes or movements the animal ſpirits occaſion in the brain. The laſt, is a certain ſenſation of joy, or inward ſatisfaction, which detains the ſoul in its *paſſion*, and atteſts its being in the ſtate it ought to be with regard to that object.

PASSIONS, in a view to medicine, make one of the ſix non-naturals, of the utmoſt conſequence, with reſpect to health or diſeaſe. See NON-NATURAL.

In conſequence of the ſeveral judgments we form concerning objects, as either good or evil, the organs of ſenſation and motion, *i. e.* the nervous fibres, are variouſly impreſſed or ſtimulated; whence ariſe certain ſenſations, and certain modifications of motion, which it is apparent, are reciprocal, and follow mutually from each other, whether the impreſſion be ſuppoſed firſt made on the body, or on the mind: that is, any ſtrong violent motion made on the organs, will excite a painful ſenſation in the mind; or any ſuch painful ſenſation firſt excited in the mind from the bare conſideration of an object will impreſs a violent motion on the organs. And, on the contrary, an eaſy and placid undulation, impreſſed originally by the actual impulſe of objects, will excite a pleaſurable ſenſation in the mind; or a pleaſurable ſenſation excited in the mind, from the mere contemplation of an object, will be followed with a like eaſy, placid undulation of the organs.

The painful *paſſions*, then, as well as bodily pain, impreſs the nervous fibres with a violent motion, which brings them alternately into forcible contractions, and dilatations, or ſtrengthens and increaſes their muſcular force, and action. While then this pain or uneaſineſs of deſire, annexed to the paſſions, and impreſſed on the nerves, is moderate and reſtrained within the bounds of nature, ſuch ſtimulating deſires have a good effect; as they ſtrengthen muſcular motion, keep up the circulation of the blood, promote the natural ſecretions, and excite a man to ſuch actions and exerciſes, wherein animal life, health, and vigour conſiſt. But where the uneaſineſs annexed to the *paſſion* is too violent, ſuch a continual ſtimulus will gradually derive a too great proportion of blood to the ſtimulated organs, by which the veſſels will be over-ſtretched and diſtended, their muſcular force gradually impared, and the equilibrium of the blood and juices be interrupted. And hence, from a mere painful ſenſation, will ariſe a complicated train of bodily illneſſes and pains, in conſequence of the eſtabliſhed laws of the union and communication of ſoul and body.

Again, while we are wearing off the uneaſineſs of deſire annexed to any *paſſion*, we feel a ſenſible pleaſure, or agreeable emotion; and the organs, hereupon falling into eaſy, uniform, placid undulations, the too great current of the blood toward them is diverted, and the equilibrium reſtored. As ſoon as the uneaſineſs is all gone, the pleaſure ceaſes, and terminates in meer indolence, which diſpoſes the perſon to reſt and inaction: till the return of ſome freſh deſire, ſtimulating to farther action, renews the ſame ſucceſſion, and interchangeable ſeries of pains and pleaſure.

And this is the circle of animal life: as the ſtimulus of deſire throws off the indolence of reſt, and excites to action; ſo the gratification moderates the pain of deſire, creates a pleaſure at firſt, and then terminates in the former indolence and inaction; till freſh deſires returning, ſtimulate to farther action, and continue the ſame round.

Dr. Cheyne divides the *paſſions*, into acute and chronical; after the ſame manner, and for the ſame reaſon as diſeaſes are ſo divided. See DISEASE.

The *acute paſſions*, whether pleaſurable or painful, he obſerves, have much the ſame effect, and operate after the ſame manner as accute diſeaſes do. They affect a briſk circulation of the fluids, and conſtringe the ſolids for ſome ſhort time. Thus, ſudden guſts of joy or grief ſtimulate the nervous fibres, and the coats of the animal tubes, and thereby give a greater celerity to their included fluids; and the functions of the heart and lungs being involuntary, they have their more neceſſary and immediate effects on them. Thus, both ſudden joy and grief make us breathe ſhort and quick, and render the pulſe ſmall and frequent: though retaining our breath ſometime to reflect more intenſely on a painful object, forces at length a ſtrong expiration, which becomes a ſigh. Thus a ſudden painful idea, making a quick circulation, and thereby throwing a great quantity of blood upward, makes it appear in the ſuperficial veſſels of the face, neck, and breaſt, and ſo produces a bluſh. The ſame principles will account for the effects of fear and anger, which make us change colour, and look red or pale as the blood is accelerated or retarded in its courſe. Sudden, and great fear do ſo convulſe the nervous ſyſtem, that they ſometimes alter the poſition of the parts: thus the hair ſhall ſtand on end in a fright, and the nerves be rendered ſo ſtiff and rigid, as to ſtop at once the animal functions, whence fainting, and ſometimes death.

Chronical paſſions, waſte the nervous ſyſtem gradually. Thoſe nerves employed in conſidering, brooding over, and fixing ſuch a ſet of ideas in the imagination, muſt be worn out and impaired; and the reſt, by diſuſe, rendered reſty and unactive, lifeleſs and deſtitute of a ſufficient flux of warm blood and due nouriſhment. Thus do long grief, dark melancholly, hopeleſs love, over weening pride, *&c.* impair the habit; and ſometimes, when long indulged, terminate in madneſs; the reaſon is, that a conſtant habit of fixing one thing in the imagination, begets a ready diſpoſition in the nerves, to produce again the ſame image, till the thought of it become ſpotaneous and natural, like breathing, or the motion of the heart. Thus the Faquirs in India fix one or both hands by long holding them up ſo, as that they cannot bring them down again. *Eſſay of Health, &c.*

Dr. Morgan ſeems to have gone beyond any body in explaining the orign, and effects of the *paſſions*.—From a courſe of actual obſervations of the ſeveral phænomena in the body, which attend the ſeveral *paſſions*, *viz.* the ſtate of the pulſe, reſpiration, warmth, digeſtion, *&c.* that author draws theſe general concluſions:

1°. That all the grateful, or pleaſurable *paſſions* raiſe the vital tide, ſtrengthen and quicken the pulſe, diffuſe the natural heat, and take off any antecedent ſtimulus, or preſſure upon the abdomen and inferior organs: and, on the contrary, the painful *paſſions* ſink and depreſs the blood, weaken the pulſe, recall and concenter the natural heat, and fix a ſtimulus or compreſſion on the inferior organs.

2°. All the *paſſions* impreſs their characteriſtick ſenſations, or modifications of pleaſure and pain, eſpecially upon the oeſophagus, and upper orifice of the ſtomach.

3°. That they impreſs the different modifications on the muſcles of the larynx, and thus diſcover themſelves by the different modulation and tone of the voice.

And hence he infers, that the nerves of the eighth conjugation, or par vagum, are the principal inſtruments of the *paſſions*; by means whereof they are variouſly impreſſed, modified, and organized: theſe, therefore, which are diſperſed to all parts of the breaſt and abdomen, particularly the heart, lungs, ſtomach, liver, oeſophagus, diaphragm, inteſtines, the organs of generation, *&c.* he conſiders as *patheticks of the firſt order*; the intercoſtal, which accompanies all the diviſions of the par vagum, he calls *patheticks of the ſecond order*: the nerves which ſerve the muſcles employed in reſpiration, and have the neareſt communication with thoſe of the par vagum, by means of the intercoſtal, he calls *patheticks of the third order*: and, the nerves which immediately diſpenſe ſenſe and motion to the ſeveral parts of the head, and have a remoter communication with the par vagum, *patheticks of the fourth order*. See NERVE.

According to this gradation, then, the organs which are immediately ſupplied with nerves from the par vagum, or *patheticks of the firſt order* will be firſt affected in the *paſſions*, and with the ſmalleſt degree of impreſſed motion; with which the parts communicating immediately with the intercoſtal, or *ſecond order of patheticks*, keep pace, and are affected almoſt at the ſame time, and with the ſame motion: then the organs ſupplied with the *third order of patheticks*, or the nerves employed in the muſcles of reſpiration, are affected: and laſtly, the organs of ſenſe and motion in the brain itſelf, by which ſenſation and imagination are performed, are put in a forcible emotion; by which the ordinary operations of ſenſe, judgment, *&c.* are much diſturbed.

This gradual riſe and progreſs of the *paſſions* is confirmed by fact, obſervation, and experience; but how they are generated, and by what ſteps they make theſe advances, requires ſome farther conſideration.

It may be obſerved then, that the quantity of motion impreſſed on the pathetick nerves in any *paſſion*, is always proportional to the ſtrength of the deſire; but ſuch impreſſed motion is not always uniform, or equally diffuſed through the whole pathetick ſyſtem; for as the largeſt and moſt numerous branches of the pathetick nerves are ſpent on thoſe parts which derive their blood from the deſcending trunk of the aorta, *viz.* the ſtomach, ſpleen, kidneys, *&c.* upon any motion too forcibly impreſſed or too long continued, theſe inferior organs are the firſt and greateſt ſufferers; whence the blood flowing impetuouſly and irregularly to the parts thus ſtimulated, they become overſtretched; and hence a ſenſe of pain, weight and oppreſſion. By this means the head and ſuperior parts being deprived of their due ſhare of blood, the pulſe muſt ſink, the natural heat diminiſh and retire, and a ſenſe of cold and conſtriction be felt about the oeſophagus, where the branches of the par vagum are very numerous: and hence the patient will be excited to ſigh, groan, moan, cry out, and complain, and diſcover it in the tone of the voice, and modulation of the muſcles of the larynx, the characteriſticks of the prevailing *paſſion.*

Such is the ſtate of nature under the painful *paſſions*, where the ſtrong deſire of good is attended with an appearance of difficulty, or improbability: where the ſame deſire is attended with a ſeeming probability of obtaining or effecting it, this appearance, by moderating the intenſeneſs of the pain of the deſire, and taking off the too violent action of the pathetick nerves on the inferior organs, puts the pathetick ſyſtem in an eaſy, natural, uniform undulation; by which the equilibrium of the blood being reſtored, the pleaſurable *paſſions* of love, joy, hope, *&c.* will be raiſed: and in this caſe the pulſe will riſe, and the natural heat be diffuſed, and by the action of the pathetick nerves on their proper organs the ſeveral ſymptoms be produced which diſcover their placid emotions. Where the deſire is very keen and intenſe, we ſee what a prodigious force it will impreſs on the nerves, by the actions of madmen, and men in a fright. In this caſe the ſtimulus of deſire being exceeding ſtrong, and the impreſſed motion univerſal, the pathetick nerves of the fourth or laſt order come to be affected; that is, the organs of ſenſation and imagination in the brain are brought into ſuch violent vibrations, as to diſturb the operations of reaſon.

And from this violent perturbation of the pathetic nerves in the brain, madmen have their imagination as ſtrong and vivid as ſenſation itſelf. See IMAGINATION and SENSATION.

Hence, alſo, we may obſerve the heights, or extremes of the two contrary painful, and pleaſurable *paſſions*; the one riſing at length into a mania or raving madneſs, and the other ſinking into a hypochondriacal melancholy. The principal ſeat of the one is the brain; and of the other the viſcera of the abdomen, eſpecially the ſpleen and meſentery. The one inflames and overheats, the other chills and frezees the imagination: the one hangs over the underſtanding, like a glaring, dazling light, which animates and leads us on with zeal and vehemence; the other like a thick, black, and diſmal cloud, that ſinks all the powers of nature into the depths of miſery and deſpair. See MANIA and MELANCHOLY.

Cœliac PASSION, See the article COELIAC.

Hypochondriac PASSION. See the article HYPOCHONDRIAC.

Hyſteric PASSION. See the article HYSTERIC.

Iliac PASSION. See the article ILIAC.

PASSIONS in poetry, denote the *paſſionate* ſentiments, geſtures, actions, *&c.* which the poet gives his perſons. See CHARACTER.

The *paſſions* are, as it were, the life and ſpirit of the longer poems. Their neceſſity in tragedy and comedy is obvious; nor can the epopœa ſubſiſt without them. See TRAGEDY, COMEDY, *&c.*

It is not enough, the epic narration be ſurprizing; it muſt likewiſe be moving, and *paſſionate* hurrying away the reader's mind, and filling it with anxiety, joy, terror, or ſome other violent *paſſion*, and this for ſubjects it knows are feigned. See EPIC and NARRATION.

Though *paſſions* be always neceſſary, yet, all are not equally neceſſary, or ſuitable to all. Comedy has joy, and agreeable ſurprizes for its part: tragedy on the contrary, has terror, and compaſſion. The proper *paſſion* of the epopœia is admiration; tho' the epopœia, as a medium between the two others, takes in both their kinds of *paſſions*; as we ſee in the griefs of the fourth book of the Æneid, and the games and diverſions of the fifth. Admiration in effect, is conſiſtent with each; we admire with joy the things that ſurprize us agreeably, and with terror and grief thoſe that amaze and afflict us.

Beſides the general *paſſion*, which diſtinguiſhes the epic from dramatic poems, each epopœia has its peculiar *paſſion*, which diſtinguiſhes it from other epic poems. This peculiar *paſſion* ſtill follows the character of the hero. Thus wrath and terror reign in the Iliad, becauſe Achilles is wrathful, and παντων εκπαγλοτατ' ανδρων, the moſt terrible of men. The Æneid is all in the tender, ſofter *paſſions*; ſuch being the character of Æneas. The prudence of Ulyſſes, not allowing theſe exceſſes, we find none of them in the Odyſſee.

As to the conducting of the paſſions, to make them have their effect, there are two things required; *viz.* that the audience be prepared or diſpoſed to receive them; and that ſeveral incompatible *paſſions* be not mixed together.

The neceſſity of diſpoſing the audience, is founded on the natural neceſſity of taking up things where they are, in order to remove them elſewhere. The application of this maxim is eaſy; a man is calm and at eaſe, and you would put him in a *paſſion* by a diſcourſe made on purpoſe. You muſt begin, then, in a calm manner; by this means you join yourſelf to him; and afterwards walking together, he wont fail to follow you in all the *paſſions* to which you lead him inſenſibly.

If you ſhew your anger at firſt, you will be as ridiculous, and will have as little effect as Ajax in the Metamorphoſes; in whom the ingenious Ovid gives a fine example of this failing. He begins his harrangue in the height of *paſſion*, and with the moſt violent figures, before his judges in the deepeſt tranquillity.

> *————————————Sigeia torvo,*
> *Littora proſpexit, claſſemque in littore, vultu;*
> *Protendenſque manus, Agimus, proh Jupiter! inquit,*
> *Ante rates cauſam, & mecum confertur Ulyſſes.*

The neceſſary diſpoſitions ariſe from ſome preceding diſcourſe, or, at leaſt from ſome action, which has already begun to raiſe the *paſſions* ere they are mentioned. The orators themſelves ſometimes uſe this laſt means: for though ordinarily, they do not raiſe the *paſſions* till the end of their diſcourſe; yet, when they find their audience already moved it would be ridiculous in them, by an unſeaſonable tranquillity, to lay them again.

Thus, the laſt time Catiline came to the ſenate, the fathers were ſo ſhocked at his preſence, that thoſe near the place where he ſat down, roſe up, retired, and left him alone. On this occaſion, Cicero had too much ſenſe to begin his oration with the uſual tranquillity and coolneſs of exordiums. By this means he would have palled and abated the indignation of the ſenators againſt Catiline, which it was his buſineſs to ſpirit up, and inflame? and would have eaſed the parricide of that conſternation, the behaviour of the ſenators had given him; and which it was Cicero's deſign to aggravate. Omitting therefore, the firſt part of his oration, he takes his auditors in the condition he finds them; continues and augments their paſſions: *Quouſque tandem abutere, Catilina, patientia noſtra? Quamdiu nos etiam furor iſte tuus eludet? Quem ad finem ſeſe effrænata jactabit audacia? Nihilne te nocturnum præſidium palatii, nihil urbis vigiliæ, nihil timor populi, nihil, &c.*

The poets are full of inſtances of this kind, where the *paſſion* is prepared or kept up by actions. Dido in Virgil begins a diſcourſe like Ajax: *Proh Jupiter! ibit hic, ait, &c.* But then the motions are here well diſpoſed; Dido is before repreſented under terrible apprehenſions of Æneas's quitting her, *&c.*

Seneca's conduct, indeed is quite oppoſite to this rule. If he has a *paſſion* to raiſe, he is ſure firſt to take from his audience any diſpoſition they might have to be affected. If they be in grief, fear, or the expectation of ſomething horrible, *&c.* He will begin with ſome fine deſcription of the place, *&c.* In the Troades, Hecuba and Andromache, being prepared to hear the violent and barbarous death of their ſon Aſtyanax, whom the Greeks precipitated from the top of a tower; what booted it to tell them, that of the ſpectators that crouded from all quarters to ſee the execution, ſome placed themſelves on ſtones, which the ruins of the walls made to project; that others ſhook their legs, as being placed too high, *&c. Alta rupes, cujus è cacumine, erecta ſummos turba libravit pedes, &c.*

The ſecond thing required in the management of the *paſſions*, is, that they be found pure, and diſengaged from any thing that might prevent their effect.

Polymythy, therefore, *i. e.* a multiplicity of fables, actions, or hiſtories, muſt be avoided: all adventures much broken, and hard to be retained; and all intrigues intricate and difficult to conceive, are at once excluded. Theſe embarraſs the mind, and require ſo much attention, that there is none to ſpare for the *paſſions.* The ſoul muſt be free and diſengaged, to feel; and we divert ourſelves even from our real ſorrows, by an application to other things.

But of all others, the greateſt enemies to the *paſſions*, are the *paſſions* themſelves: They oppoſe and deſtroy one another; and if two oppoſite ones, *e. gr.* joy and ſorrow, meet in the ſame object, they will neither of them ſtand it. It is the nature of theſe habits that impoſes this law: The blood and ſpirits cannot move gently and equally, as in a ſtate of tranquillity, and at the ſame time be ſtopped and ſuſpended with ſome violence, occaſioned by admiration. Nor can they be in either of thoſe ſituations, while fear calls them from the outer parts of the body, to aſſemble them about the heart; or rage ſends them into the muſcles, and makes them act there with violences very oppoſite to the opperations of fear.

The cauſes and effects, therefore, of the *paſſions* in the ſoul, are to be ſtudied, to be able to manage them with all their force. Virgil furniſhes two examples of what we have ſaid about the ſimplicity and engagement of each *paſſion*, in the deaths of Camilla and Pallas. See the *Æneid.*

PASSION in heraldry—*Croſs of* PASSION, is a croſs thus called, becauſe, in ſhape of that whereon our ſaviour ſuffered, *i. e.* not croſſed in the middle, but nearer the top; with arms ſhort in proportion to the length of the ſhaft. See CROSS.

PASSION-WEEK, the Week next preceding Eaſter. See EASTER and WEEK.

It is thus call'd from our ſaviour's *paſſion*, *i. e.* his crucifixion, *&c.* which happened on the Friday of this week, now called *Good-Friday.*

PASSIVE, a term of relation, implying a thing to ſuffer, or undergo the action of ſome other: which, in reſpect hereof, is denominated *active.* See ACTIVE.

In all generations, philoſophers conceive an *active* power and a *paſſive.* See POWER.

In civil life, we ſay, ſuch a perſon in ſuch an election, has both an active voice, and a *paſſive*, *i. e.* he is both capable of electing, and being elected. See VOICE.

Some alſo uſe the term *paſſive debt*, for a debt which we owe another, in contradiſtinction to an active debt, which is owing us. See DEBT,

The chymiſts divide their principles, or elements into active and *paſſive.*—*Paſſive* are ſuch as have no active force inherent in themſelves, and which only act by being joined with ſome of the others. See PRINCIPLE.

Such are phlegm, and earth, ſome ſay alſo, ſalt, and, in effect, all but ſulphur, or fire, which they will have the only principle of action, and motion in the univerſe. See EARTH, SULPHUR, FIRE, *&c.*

PASSIVE *qualities.* See the article QUALITY.

PASSIVE *underſtanding.* See UNDERSTANDING.

PASSIVE *prayer*, in the language of myſtick divines, is a total ſuſpenſion, or ligature of the intellectual faculties, in virtue whereof the ſoul remains, of itſelf and as to its own power, impotent with regard to the producing of any effects. See PRAYER.

The *paſſive* ſtate, ſays Fenelon, is only *paſſive* in the ſame ſenſe as contemplation is ſo, *i. e.* it does not exclude peaceable, diſintereſted acts, but only unquiet ones, or ſuch as tend to our own intereſt.

In the *paſſive* ſtate, the ſoul has not properly any activity, any ſituation of its own: it is a mere infinite flexibility of the ſoul, which the feebleſt impulſe of grace gives motion to. *Id.*

PASSIVE in grammar, denotes a ſecond voice, or inflexion of verbs, which of active becomes *paſſive*, by aſſuming, in the modern languages, new auxiliary verbs: in the ancient, by new terminations. See VERB, VOICE, *&c.*

The Engliſh verbs become *paſſive*, by taking the auxiliary verb *I am*, in lieu of *I have*, wherewith the *active* are conjugated: the French by *Je ſuis*, in lieu of *J'ay*; the Italian, by *Jo ſo*, for *Jo ho*, *&c.*

Latin verbs become *paſſive*, by changing their terminations; as *amor* for *amo*, *&c. amari* for *amare*, *&c.*

Engliſh verbs *paſſive* are nothing elſe, in effect, but the verb *I am*, in all its inflections joined to to the participle *paſſive:* as, *I am praiſed*, in Latin *laudor*, in French *Je ſuis loué*; I have been praiſed, *J'ay été loué, laudatus ſum, &c.*

Neuter **PASSIVE**, is a verb that has a *paſſive* conjugation, but a neuter ſignification. See NEUTER.

Of theſe, there are a very ſmall number in Latin, more in French, fewer in Engliſh: as, I am entered, *ingreſſus ſum, je ſuis entré, &c.*

Grammarians are frequently miſtaken here; taking verbs for neuters *paſſives*, which in effect are actives, and only differ in that they act on themſelves, by adding the pronoun perſonal; and which on that footing ſhould rather be neuters active, than neutets *paſſive.*

Some admit of no genuine *paſſive* verbs in the modern tongues; ſuch we mean as anſwer to the notion of *paſſives* in the ancient, where all is done by different terminations. On which footing, there ſhould be none but actives *paſſive* and neuters *paſſive.*

PASSIVE *vaſſalage.* See the article VASSALAGE.

PASSO. See the article PASSAGE.

PASSSOVER, ΠΑΣΧΑ a ſolemn feaſt, celebrated among the Jews, on the fourteenth day of the moon next after the vernal equinox. See FEAST.

This feaſt was called by the ancient Latins and Greeks *paſcha*; not from πασχω I ſuffer, as Lactantius weakly imagines; but from the Hebrew פסח *Peſahh*, paſſage, leap; the deſign of the feaſt being to commemorate the deſtroying angels *paſſing over* the houſe of the Iſraelites, when he entered in, and deſtroyed the firſt born in thoſe of the Egyptians.

Yet, many weakly imagine that it was in memory of their *paſſing* the red ſea, that the *paſſover* was inſtituted; though it is certain the feaſt was held, and had its name before the Iſraelites took a ſtep of their way out of Egypt; and conſequently ſeveral days before their paſſing the red ſea.

Beſide the *paſſover* celebrated in the fourteenth of the firſt month; there was a ſecond *paſſover* held on the fourteenth of the ſecond month after the equinox, inſtituted by god in favour of travellers, and ſick perſons who could not attend at the firſt; nor be at Jeruſalem on the day.

The Greeks, and even ſome of the catholic doctors, from the XVIIIth chapter of St. John, take occaſion to conclude that Jeſus anticipated the day marked for the *paſſover* in the law; but the authority of three evangeliſts ſeems to evince the contrary.

F. Lamy is of opinion, he did not attend at the *paſſover* the laſt year of his life; which ſentiment has drawn upon him abundance of oppoſers.

F. Hardouin maintains, that the Galileans celebrated the *paſſover* on one day, and the Jews on another. See SAMARITAN.

PASS-PAROLE, a command given in the head of an army, and thence communicated to the rear; by paſſing it from mouth to mouth. See WORD.

PASS-PAR-TOUT, a maſter-key; or key that opens indifferently ſeveral locks belonging to the ſame lodge or apartment. See KEY, and LOCK.

PASS-PORT, a licence, or letter from a prince, or governor, granting liberty and ſafe-conduct to travel, enter, and go out of his territories, freely and without moleſtation.

The *paſs-port* is, properly, given to friends; and the ſafe-conduct to enemies. See SAFE-CONDUCT.

Paſquier takes *paſs-port* to have been introduced for *paſſe-partout.* Balzac mentions a very honourable *paſ-port* given by an emperor to a philoſopher in theſe terms: If there be any one on land, or ſea, hardy enough to moleſt Potamon; let him conſider whether he be ſtrong enough to wage war with Cæſar.

PASS-PORT is alſo uſed for a licence granted by a prince for the importing, or exporting merchandizes, moveables, *&c.* without paying the duties.

Merchants ſometimes procure ſuch *paſs-ports* for certain kinds of commodities; and they are always given to embaſſadors and miniſters, for their baggage, equipage, *&c.*

PASS-PORT is alſo a licence obtained for the importing or exporting of merchandizes deemed contraband, and declared ſuch by tariffs, *&c.* as gold, ſilver, precious ſtones, ammunition of war, horſes, corn, wool, *&c.* upon paying duties.

PASS-VOLANT, or PASSE-VOLANT, a faggot, or a pretended ſoldier, not enrolled, whom the captain or colonel makes paſs in review, or muſter, to ſhew that his company is compleat, or to receive the pay thereof to his own profit. See FAGOT, *&c.*

In France the *paſſe-volants* are condemned to be marked on the cheek with a flower de luce.

PAST-BOARD, a kind of thick paper, formed of ſeveral ſheets paſted together. See PAPER.

There is alſo a coarſe kind of *paſt-board*, made of old paper and old *paſt-board*, beaten in a mortar with water, and reduced into a kind of pulp; to which is added a little paſte, to give the maſs a conſiſtence; after which it is formed in a mould; and to finiſh it, laid in a preſs, to ſqueeze out all the water, and reduce it to its proper thickneſs.

Each kind is diſtinguiſhed by numero's, which expreſs its fineneſs and value: the fineſt is covered on both ſides with a very white ſmooth paper, others only on one ſide; and others on both ſides with common paper.

The chief uſe of *paſt-board* is in the binding of books, letter-caſes, hat-caſes, gloves, *&c.* See BOOK-BINDING.

PASTE, in cookery, a ſoft compoſition of flour, wrought up with proper fluids, as water, milk, or the like, to ſerve for caſes or coffins, therein to bake meats, fruits, *&c.*

Paſte, is the baſis, or foundation of pyes, tarts, patties, paſties, and other works of paſtry. See PASTRY, *&c.*

PASTE, is alſo uſed in confectionry, *&c.* for a preparation of ſome fruit, made by beating the pulp thereof with ſome fluid, or other admixture, into a ſoft pappy conſiſtence, ſpreading it into a diſh, and drying it with ſugar, till it become as plyable as an ordinary paſte. See CONFECT.

It is uſed occaſionally for making the cruſts, and bottoms of pyes, *&c.*

Thus they make almond *paſtes*, apple *paſtes*, apricot *paſtes*, cherry, currant, lemon, plum, peach, and pear *paſtes*.

PASTE, is alſo uſed for a preparation of wheaten flour, boiled up, and incorporated with water; uſed by various artificers, as upholſterers, ſadlers, bookbinders, *&c.* inſtead of glue or ſize, to faſten or cement their cloths, leathers, papers, *&c.* See CÆMENT.

PASTEL. See the article PASTIL.

PASTERN, of a horſe, the diſtance between the fetlock or joint next the foot, and the *coronet* of the hoof.

This part ſhould be ſhort, eſpecially in middle ſized horſes; becauſe long *paſterns* are weak, and cannot ſo well endure travel.

PASTERN *joint* is the joint above the *paſtern*.

The *paſtern joint*, after travelling, is apt to be crowned, *i. e.* to have a ſwelling round it beneath the ſkin, in form of a circle, a third of an inch broad.

PASTIL, or PASTEL, among painters, *&c.* a ſort of paſte made of ſeveral colours, ground up with gum-water, either together or ſeparately; in order to make crayons to paint with on paper, or parchment. See CRAYON.

PASTIL, PASTILLUS is alſo uſed for a dry compoſition, yielding a fragrant ſmell when burnt in a perfuming pan, to clear and ſcent the air of a chamber. See PERFUME.

It is compoſed of odorous reſins, mixed with aromatic woods, or drugs pulverized, and incorporated with mucilages of gum tragacanth. Some call theſe compoſitions *Oſſelets of Cyprus*.

There are alſo *paſtils* for the mouth, eaten to procure a ſweat breath. Theſe have ſeveral names, and conſiſt of ſeveral preparations, as muſcadines, conſerves, *&c.*

PASTIL, or PASTEL is ſometimes alſo uſed for the plant otherwiſe called woad or glaſs-wort. See WOAD.

PASTIL in confectionry, is a preparation of ſugar with lemon-water, *&c.* boiled up with gum-water, ſtrained, beat up, and by the addition of more dry ſugar, worked into a plyable paſte, and thus formed into round, or oblong figures, and dried in the ſtove. See LOZENGE.

PASTINATION, a term ſometimes uſed in agriculture, for the act of opening, looſening, and preparing the earth for planting. See EARTH and PLANTING.

PASTOR, originally, ſignifies one that *(paſcit)* feeds.—Hence it was anciently uſed for a *ſhepherd*; or *advocate*; and is now appropriated to a *miniſter*, or one that has the cure of ſouls.

PASTORAL, ſomething that relates to ſhepherds, *paſtores*.

The poets repreſent the *paſtoral* life, and *paſtoral* manners in the moſt agreeable light. We muſt not imagine them ſo beautiful in nature as in their deſcriptions.

PASTORAL, in poetry, denotes a compoſition, the ſubject whereof is ſomething in the *paſtoral*, at leaſt rural life, and the perſons ſhepherds, at leaſt ruſticks. See POETRY.

Moſt authors, except the Engliſh, eſteem *paſtoral* of the dramatic kind; and define it a dramatic piece, wherein the perſons are clad like nymphs and ſhepherds, and act their own amours. See DRAMATIC.

The ſcene is always in the fields or the woods; whence Taſſo calls *paſtoral*, *favola Boſcareccia*.

Such are the *Paſtor Fido* of Guarini, the *Aminta* of Taſſo, the *Sylvia* of Mairet the French poet, the *Comus* of Milton, *&c.*

Taſſo aſſumes to himſelf the honour of having invented *paſtoral*; but the firſt idea of this kind of *drama* ſeems to be Beccari's due, who made the firſt attempt of this kind in 1552. But Taſſo's Aminta, which did not appear till the year 1573, effacing what had been done by Beccari, the firſt author was forgot, and Taſſo left the inventor.

It is certain this kind of *paſtoral* fable, compoſed according to the rules of the ſtage, was unknown among the ancients. The Greeks and Latins have indeed introduced ſhepherds in their eclogues; but theſe eclogues had nothing theatrical in them; nor were the ſhepherds ever brought upon the ſtage. See ECLOGUE.

This kind of dramatic *paſtoral* is ſtill but little known among us; nor have we any thing conſiderable under the title of *paſtorals*, but country pieces after the manner of the eclogues, or idyllions of the ancients. See IDYLLION.

Every *paſtoral*, even in this laſt view, ſhould have a little plot, or fable, which may deſerve the title of a *paſtoral ſcene*. It muſt be ſimple, and but one; yet, not ſo as to refuſe all digreſſions, provided they be but ſhort. This rule of the plot is every where obſerv'd by Virgil.

PASTORAL *column*. See the article COLUMN.

PASTORAL *ſtaff*. See the article CROSIER.

PASTRY, that branch of cookery, which teaches the preparation of *paſte* with ſeveral ſavoury ingredients of fleſh, fruits, ſpices, ſugar, butter, *&c.* See PASTE.

Paſtry is chiefly converſant in the making of pies, paſties, patties, cakes, biſcuits, *&c.* See PASTY.

PASTURE, PASTURA, in our law-books, is any place where cattle are occaſionally fed.

By which it differs from *paſcua*, which is a place ſet wholly a part for feeding, and never plough'd, * *&c.*

* Paſtura *omne genus paſcendi ſignificat, ſive in pratis, ſive in ſtipula, ſive in agris, ſive in campis: Sed* paſcua *eſt locus principaliter deputatus pecoribus paſcendis, ut puta in montibus, moris, mariſcis, & planis non cultis nec aratis.* Lindwood.

PASTURE *ground* is properly that which is not cultivated; that is, is neither meadow, nor arable; but reſerved for the feeding of cattle. The beſt domains are thoſe conſiſting in *paſture*; they need no tilling. Holland is a country abounding much in *paſture*.

Admeaſurement of PASTURE. See ADMEASUREMENT.

PASTUS, the procuration, or proviſion, which the king's, or lord's tenants, are bound to make for them at certain days, or ſeaſons, or as often as they make a progreſs to their lands.

This, in many places, has been converted into a pecuniary fee; as in the procurations of the clergy. See PROCURATION.

PASTY, in cookery, a work of paſtry; being a preparation of ſome proper meat, as beef, veniſon, lamb, or the like, well boned, beaten up to a pulp, and highly ſeaſoned; put up in a paſte, and then baked in an oven.—They alſo make veal *paſties*, umble *paſties*, kidney *paſties*, marrow *paſties*, *&c.*

PATARINS. *Vide* ALBIGENSES.

PATAVINITY, PATAVINITAS, among criticks, a fault objected to Titus Livy, which he derived from his country Padua, by the ancients called Patavium.

Aſinius Pollio, as we are informed by Quintilian, taxed Livy with *patavinity*.—What this *patavinity* conſiſted in, has given the criticks a world of pain to find out.

Paolo Beni, profeſſor of eloquence in the univerſity of Padua, is of opinion, it muſt be underſtood of the inclination of that hiſtorian to Pompey's party.—But would Pollio have reproached him with an inclination from which he himſelf was not exempt?

Pignorius will have the *patavinity* to conſiſt in Livy's retaining the vicious orthography of his countrymen of Padua; who wrote *ſibe* and *quaſe*, for *ſibi* and *quaſi*: which he proves from ſeveral ancient inſcriptions.

F. Rapin, takes the *patavinity* to be only a faulty pronunciation, which ſhocked the delicate ears of the people in the court of Auguſtus; and ſavoured a little of the country.

Morhof believes it to be a certain turn of expreſſion, and ſome phraſes peculiar to the Padueſe.—All we know for certain, is, that it was a fault in the language of Livy, not in the ſentiments, or manners. In all probability, it is one of thoſe delicacies that are loſt in a dead language. M. Balzac could not ridicule his dotard better than by ſuppoſing he valued himſelf on having diſcovered the *patavinity* objected by Pollio to Livy.

Dan. Georg. Morhof, has an expreſs treatiſe, *De patavinitate Liviana*, printed at Kiel in 1685; where he explains, very learnedly, the urbanity and peregrinity of the Latin tongue.

PATE in fortification, a kind of platform, like what they call an horſe-ſhoe; not always regular, but generally oval, encompaſſed only with a parapet, and having nothing to flank it. It is uſually erected in marſhy grounds, to cover a gate of a town, or the like. See HORSE-SHOE.

PATEE, or PATTEE, a term in heraldry for a croſs, ſmall in the centre, and widening towards the extremes. *V. Tab. Herald. fig.* 76.

The field is ſable, a croſs *patee* argent, by the name of Croſs.

This form of a croſs is alſo called *formé*. See FORME'.

Petty PATES. See the article PETTY.

PATELLA, in anatomy, a bone which covers the forepart of the joint of the knee; called alſo *mola*, *rotula*, and popularly, the *knee-pan*.—See *Tab. Anat.* (Oſteol.) *fig.* 3. *n.* 21. *fig.* 7. *n.* 25. See alſo the article MOLA.

The *patella* is roundiſh on the outſide, ſomewhat of the figure of a ſhield, covered with a ſmooth cartilage, and about two inches in diameter; over it ſlide the tendons of the muſcles which extend the leg, as on a trochlea, or pulley.

But its more immediate uſe is to hinder the leg from being bent forwards in extenſion; which would of neceſſity be the caſe in this articulation, did not this bone, like a bolſter, check its rolling forwards; as the olecranum does the ſwing of the cubitus backwards. See OLECRANUM.

In an erect poſture, when one foot is ſet forwards, the whole weight of the body bears on the *patella*; which in this ſituation, hinders the knee from bending backwards, and ſtraining the muſcles that inflict it behind.—Hence it was that Galen's wreſtler, who had diſlocated his *patella*, found ſo much pain in going down hill.

PATENA, in the Romiſh church, the cover or lid of the chalice, made of the ſame metal therewith, ſerving to hold the particles of the hoſt, and given the people to kiſs when they make an offering. See CHALICE.

It has its name *patena*, *a patendo*; and is a general name, in Columella, for any broad flat veſſel.

PATENTS, or *letters* PATENT, in law, the king's letters, ſealed with the great-ſeal; ſerving to convey the title or property of ſome grant, favour, privilege of a new eſtabliſhment, or the like. See LETTERS *patents*, and EXEMPLIFICATION.

They have their name becauſe deliver'd open, *ut pateant omnibus*; by way of contradiſtinction from *letters de cachet*, which are ſealed.

It is to be noted, that *patents* differ from writs: a coroner is made by writ, not by *patents*. See WRIT.

To this office enacted 18 Jac. I. belong a Clerk, *&c.*

PATENTEE, is he to whom the king grants his letters patent. See PATENTS.

PATERA*, among antiquaries a goblet, or veſſel, uſed by the Romans in their ſacrifices; wherein they offered their conſecrated meats to the gods; and wherewith they made libations. See SACRIFICE and LIBATION.

* The word is Latin, formed from *pateo*, I am open; *quod pateat*, becauſe it has a great aperture: in contradiſtinction to bottles, *&c* which have only narrow necks, or whoſe aperture is leſs than the body of the veſſel.

On medals, the *patera*, is ſeen in the hands of ſeveral deities; and frequently in the hands of princes, to mark the ſacerdotal authority joined with the imperial, *&c.*

Hence F. Joubert obſerves, that beſide the *patera*, there is frequently an altar, upon which the *patera* ſeems to be pouring its contents.

The *patera* was of gold, ſilver, marble, braſs, glaſs, or earth; and they uſed to encloſe it in urns with the aſhes of the deceaſed, and after it had ſerved for the libations of wine and liquors at the funeral.

The *patera* is an ornament in architecture, frequently ſeen in the Dorick freeze, and the tympans of arches.

PATERERO. See the article PEDRERO.

PATERNITY, the quality of a father. See FATHER.

There is an immediate relation between the *paternity* of the father, and the filiation of the ſon, in the myſtery of the trinity. See TRINITY.

Divines have a long time diſputed, whether *paternity* be a real and ſpecific character, which abſolutely diſtinguiſhes the father from the ſon; or whether it be a mere relation of œconomy, and ſubordination? On the one hand, if *paternity* be ſuppoſed incommunicable to the ſon, and if it conſtitute a real and poſitive diſtinction; this ſeems to amount to tritheiſm. See TRITHEISM.

On the other hand, if *paternity* be only regarded as a mode, or a term of order and œconomy; there is no eſſential and intrinſic difference between the father and ſon: which is nothing leſs than ſabellianiſm. See SABELLIAN.

PATER-NOSTER, the Lord's-prayer; a form ſo called from the two initial words thereof in Latin.

PATER-NOSTER is alſo uſed for a chaplet or ſtring of beads; becauſe, ſerving to number the rehearſals of that prayer. See CHAPLET.

PATER-NOSTERS, in architecture; a ſort of ornaments cut in form of beads, either round, or oval; uſed on baguettes, aſtragals, *&c.* See BAGUETTE, BEAD, *&c.*

PATER-NOSTRE', in heraldry. A croſs *Pater-noſtré*, is a croſs, made of beads: as repreſented in *Tab. Herald. Fig.* 77. See CROSS.

This croſs is to be ſo ſhadowed in drawing, as that the ſphericity of the beads may appear; to diſtinguiſh them from beſants, *&c.*

PATH *of the Vertex*, a term frequently uſed by Mr. Flamſteed in his doctrine of the ſphere, ſignifying a circle, deſcribed by any point of the earth's ſurface, as the earth turns round its axis. This point is conſidered as vertical to the earth's centre; and is the ſame with what is called the *vertex* or zenith in the Ptolemaick projection.

The ſemi-diameter of this *path* of the vertex, is always equal to the complement of the latitude of the point or place that deſcribes it; that is, to the place's diſtance from the pole of the world.

PATHETIC*, ΠΑΘΗΤΙΚΟΣ, ſomething that relates to the paſſions; and particularly, that is proper to wake, or excite them. See PASSION.

* The word comes from the Greek ϖαθος, paſſion, emotion.

The *pathetic*, and ſublime have a near affinity. See SUBLIME. See alſo STYLE.

PATHETIC, in muſic, ſomething very moving, expreſſive, or paſſionate; capable of exciting pity, compaſſion, anger, or the like. In this ſenſe, we ſay the *pathetic* ſtyle, a *pathetic* fugure, *pathetic* ſong, *&c.*

The chromatic genus, with its greater and leſſer ſemi-tones, either aſcending or deſcending is very proper for the *pathetic*; as is alſo an artful management of diſcords; with a variety of motions, now briſk, now languiſhing, now ſwift, now ſlow.

Nieuwentyt tells us of a muſician at Venice, who excelled in the *pathetic* to that degree, that he was able to play any of his auditors into diſtraction; he adds, that the great means he made uſe of, was the variety of motions, *&c.*

PATHETICI, in anatomy, the fourth of the ten pair of nerves, which ariſe out of the medulla oblongata.—See *Tab. Anat.* (Oſteol.) *fig.* 5. *litt.* m m. See alſo the article NERVE.

The *pathetici* are the ſmalleſt nerves of the brain; they have their origin in the lower part of the medulla oblongata, behind the nates and teſtes. They have their name *pathetici*, from their ſerving to move the eyes in the various paſſions; and are by ſome alſo called *amatorii*, from the great uſe made thereof by lovers, in ogling, *&c.* See EYE, *&c.*

PATHOGNOMONIC, ΠΑΘΟΓΝΩΜΟΝΙΚΟΣ, in medicine an eſſential ſign, or characteriſtic; or a ſymptom peculiar to, and inſeparable from ſome diſeaſe; and every ſtage thereof. See SYMPTOM.

Thus Blancard, and after him Harris, *&c.*—But the truth is, there is nothing in all medicine that anſwers to the idea of a *pathognomonic*; diſeaſe and ſymptoms are too complicated. And we are to judge of the former not by any one ſign, but by the concurrence of ſeveral. See SIGN and DIAGNOSTIC.

PATHOLOGY*, ΠΑΘΟΛΟΓΙΑ, that part of medicine which conſiders diſeaſes, both thoſe of the body, and the mind; their natures, cauſes, ſymptoms, *&c.* See DISEASE.

* The word is formed from the Greek ϖαθος, paſſion, ſuffering, and λογος, diſcourſe.

PATHOS, ΠΑΘΟΣ, paſſion; a term uſed in ſpeaking of the movements, which the orator excites in his audience.

There is a world of *pathos* in his diſcourſe.—We ſometimes alſo uſe the word for energy or ſtreſs. See ENERGY.

PATIENT; among phyſicians, a perſon under the direction of a phyſician, or ſurgeon, to be cured of ſome diſeaſe.

Agent and PATIENT. See the Article AGENT.

PATIENTIÆ *muſculus*, in anatomy. See LEVATOR *Scapulæ.*

PATONCE, in heraldry—a *Croſs* PATONCE, is a croſs flory at the ends: from which it only differs in this, that the ends inſtead of turning down like a flower de luce, are extended ſomewhat in the patee form.—*Vid. Tab. Herald. fig.* 78. He bears gules, a croſs *patonce*, argent, by the name of Latimer.

PATRES *conſcripti*, in antiquity, a denomination given to the ſenators of Rome. See SENATOR, PATRICIAN, *&c.*

The firſt hundred ſenators appointed by Romulus, were called ſimply *patres*, fathers; another hundred being added by Romulus and Tatius, upon the union of the two people; theſe latter were called *patres minorum gentium*, and the former *majorum gentium*.

At length Tarquinius Priſcus making up the number three hundred, the two latter claſſes were called *patres conſcripti*; becauſe, *adſcripti*, were wrote down to the former.

Thoſe afterwards choſen from among the knights, were called *patres adlecti*.

Gloria PATRI. See the article GLORIA.

Dower ex aſſenſu PATRIS. See the article DOWER.

PATRIARCH, PATRIARCHA, one of thoſe firſt fathers who lived towards the beginning of the world; and who became famous by their long lines of deſcendants.

Abraham, Iſaac, Jacob, and his twelve ſons are the *patriarchs* of the Old Teſtament: Seth, Enoch, *&c.* were antediluvian *patriarchs*. The number of children is the benediction and character of a *patriarch*.

PATRIARCH, is alſo uſed in Chriſtendom for the biſhops in poſſeſſion of ſome of the grand ſees, independent of the papal juriſdiction. See BISHOP.

The patriarchate has been always eſteemed the ſupreme dignity in the church: ſo that to riſe by degrees, the biſhop had only under him the territory of the city whereof he was biſhop; the metropolitan commanded a province, and had for ſuffragans the biſhops of his province; the primate was the chief of a dioceſe, and had ſeveral metropolitans under him; and the patriarch had under him ſeveral dioceſes, and primates themſelves were under him.—But this order was not always obſerved. See METROPOLITAN and PRIMATE.

Uſher, Pagi, de Marca and Morinus, attribute the eſtabliſhment of the grand *patriarchates* to the apoſtles. They ſuppoſe that the apoſtles, according to the deſcription of the world then given by geographers, pitched on the three principal cities in the three parts of the known world, *viz.* Rome in Europe; Antioch in Aſia; and Alexandria in Africa: and thus formed a trinity of patriarchs.

Others, far from attributing this inſtitution to the apoſtles maintain that the name *patriarch* was unknown at the time of the council of Nice; and that for a long time afterwards, *patriarchs* and primates were confounded together: as being all equally chiefs of dioceſes, and equally ſuperior to metropolitans, who were only chiefs of provinces.—Hence it is that Socrates gives the title patriarch to all the chiefs of dioceſes, and reckons ten of them. In effect, it does not appear that the dignity of *patriarch* was appropriated to the five grand ſees of Rome, Conſtantinople, Alexandria, Antioch, and Jeruſalem, till after the council of Chalcedon in 451. For when the council of Nice regulated the limits and prerogatives of the three *patriarchs* of Rome, Antioch, and Alexandria, it did not give them the title of *patriarchs*, though it allowed them the pre-eminence and privileges thereof. Thus, when the council of Conſtantinople adjudg'd the ſecond place to the biſhop of Conſtantinople, who till then, was only a ſuffragan of Heraclea; it ſaid nothing of his *patriarchate*.

Nor is the term *patriarch* found in the decree of the council of Chalcedon, whereby the fifth place is aſſigned to the biſhop of Jeruſalem; nor did theſe five *patriarchs* govern all the churches.

There were ſtill many independent chiefs of dioceſes, who, far from owning the juriſdiction of the grand *patriachs*, called themſelves *patriarchs*; ſuch as that of Aquileia; nor was Carthage ever ſubject to the *patriarch* of Alexandria.

The authority of the *patriarchs* grew by inſenſible degrees, till at length all affairs of moment, within the compaſs of their *patriarchate*, came before them; either at firſt hand, or by appeal from the metropolitans.

They conſecrated biſhops, appointed the time of Eaſter, *&c.* Nothing in ſhort was done without conſulting them; and their decrees were executed with the ſame reſpect as thoſe of princes.

The Latin church was unacquainted with patriarchs till the ſixth century; and the churches of Gaul, Britain, *&c.* were never ſubject to the authority of the *patriach* of Rome, whoſe authority only extended to the ſuburbicary provinces.—There was no primacy, no exarchate, or *patriarchate*, owned here; but the biſhops, with the metropolitans, governed the church in common.

Indeed, after the name *patriarch* became frequent in the weſt, it was attributed to the biſhops of Bourges, and Lyons; but it was only in the firſt ſignification, *viz.* as heads of dioceſes.—Du Cange adds, that there have been ſome abbots, who have bore the title of *patriarchs*. See ABBOT.

PATRIARCH, is alſo applied to the chiefs of ſeveral churches in the eaſt, who live out of communion with the Roman church; Such are the *patriarch* of the Armenians, reſiding in the monaſtery of St. Gregory; the *patriarch* of the Abyſſinians, called *Abuna*: the *patriarchs* of the Cophti, the Jacobins, *&c.* See ARMENIANS, COPHTI, JACOBINS, *&c.*

PATRIARCHAL, in heraldry.—A *Patriarchal croſs*, is that where the ſhaft is twice croſſed; the lower arms or traverſes being longer, and the upper ſhorter.—Such a croſs is ſaid to belong to *patriarchs*, as the triple croſs does to the pope.

PATRICIAN, PATRICIUS, in ancient Rome, a title given to the deſcendants of the hundred, or, according to others, of the two hundred firſt ſenators choſen by *Romulus*, and by him called *patres*, fathers. See SENATOR, PATRES, *&c.*

Patricians, therefore, were then the ancient nobility; in oppoſition to the plebeians. See PLEBEIAN.

But the cognizance and character of theſe ancient families being almoſt loſt and extinguiſhed, by a long courſe of years, and frequent changes in the empire; a new kind of *patricians* were ſet on foot; who had no pretenſions from birth: but their title depended wholly on the emperor's favour.

This new *patriciate*, Zoſimus tells us, was erected by Conſtantine; who conferred the quality on his counſellours; calling them *patricii*, not becauſe deſcended from the ancient fathers of the ſenate, but becauſe they were the fathers of the republic, or of the emperor.

This dignity in time, became the higheſt of the empire, Juſtinian calls it *ſummam dignitatem*: in effect, the *patricians* ſeem to have had the precedence of the *conſulares*, and to have taken place before them in the ſenate: though F. Faber aſſerts the contrary. What embroils the queſtion is, that the two dignities often met in the ſame perſon; for that the *patriciate* was only conferred on thoſe who had gone through the firſt offices of the empire, or had been conſuls.

Pope Adrian made Charlemaign take the title of *patrician*, ere he aſſumed the quality of emperor; other popes have given the title to other kings and princes, by reaſon of its eminence.

PATRICIAN, PATRICIUS, is alſo a title of honour frequently conferred on men of the firſt quality in the time of our anglo-ſaxon kings. See THANE.

PATRICIANS, in eccleſiaſtical writers, denote ancient ſectaries who diſturbed the church in the beginning of the third century: thus called from their founder *Patricius*, preceptor of a Marcionite called Symmachus.

His diſtinguiſhing tenet was, that the ſubſtance of the fleſh is not the work of God, but that of the devil; on which account, his adherents bore an implacable hatred to their own fleſh; which ſometimes carried them ſo far as to kill themſelves.

They were alſo called *Tatianites*; and made a branch of Encratites. See TATIANITE.

PATRIMONY, PATRIMONIUM, a right, or eſtate, which a perſon inherits from his anceſtors. See HEREDITARY, and INHERITANCE.

The name *patrimony* was alſo anciently given to the effects, or revenues wherewith a church or religious houſe was endowed. In which ſenſe, we ſtill ſay the *patrimony* of the church of Rimini, of Milan, *&c.* The duchies of Urbino and Spoleto, are called *St. Peter's patrimony*. The church of Rome had *patrimonies* in ſeveral countries, in France, Africa, the Alps, Sicily, *&c.*

To make what belonged to the churches the more reſpected, they uſually gave their *patrimonies* the names of the ſaints they held in the higheſt veneration.

Thus the church of Ravenna, called its inheritance the *patrimony* of St. *Apollinarius*; that of Milan the *patrimony* of St. *Ambroſe*, *&c.* as is obſerved by Fra. Paolo.

PATRIPASSIANS, PATRIPASSIANI, a name given to the Sabellians, becauſe they did not believe it was the ſon, but the father himſelf that ſuffered and was crucified [*]. See SABELLIAN,

The *Patripaſſian* hereſy was firſt broached by Praxeas, who was ſeconded by Victorinus, at the beginning of the third century.—They confeſſed Chriſt to be God, and that God ſuffered and died for us; but confounded the divine perſons, and denied in effect the trinity; meaning by father, ſon, and ſpirit, not three perſons but one perſon under three names. So that he who ſuffered for us is as much father as ſon. Tertullian wrote expreſſly againſt Praxeas.

Hermogenes eſpouſed the error of the *Patripaſſians*, whence they came to be denominated *Hermogenians*.—Afterwards Noetius gave into it, which occaſioned them the name of *Noetians*.—His diſciple Sabellius the Libyan followed, about the year 250, whence they were called *Sabellians*.—Laſtly, becauſe Sabellius was of Pentapolis, and the hereſy ſpread much there, called the *Pentapolitan doctrine*.

PATRROLL, or PATROUILLE, anciently PATOUL, in war, a round, or march made by the guards, or watch, in the night-time; to obſerve what paſſes in the ſtreets, and to ſecure the peace, and tranquillity of the city or camp. See GUARD, ROUNDS, *&c.*

The *patroll* conſiſts generally of a body of five or ſix men detached from a *corps de guard*, and commanded by a ſerjeant.

PATRON, PATRONUS, a term uſed in various acceptations, though all reducible to the relation of a protector, or guardian. In the church of Rome, a ſaint, whoſe name a perſon bears, or under whoſe protection he is put, and whom he takes particular care to invoke; or a ſaint in whoſe name a church, or order is founded; or a perſon who firſt eſtabliſhed it, and who is choſen protector: are called *patrons* thereof.

Thus, St. Peter and St. Paul are the *patrons* of the church of St. Genevieve, St. Dionyſius the *patron* of the city of Paris, St. George of England, St. Benedict the *patron* of the Benedictines, Michael of the Armorers, St. Ignatius of the Jeſuits, *&c.*

PATRON, PATRONUS, among the Romans, was an appellation given to a maſter, who had freed his ſlave. See SLAVE and MANUMISSION.

And hence, as the right, and relation of maſter expired, that of *patron* commenced. See MASTER.

For the Romans, in giving their ſlaves their freedom, did not deſpoil themſelves of all rights and privileges in them: the law ſtill ſubjected the freed-men to conſiderable ſervices and devoirs toward their patrons, the neglect whereof was ſeverely puniſhed. The principal right which *patrons* had, was that of being the legal heirs of their freed-men, if they died without lawful iſſue born after their enfranchiſement, and inteſtate.

By the Paphian law it was further provided, that if the eſtate of the freed-man were 100000 ſeſterces, and he had three children, the *patron* ſhould have a child's portion. See LIBERTUS.

PATRON, was alſo a name which the people of Rome gave to a perſon of power under whoſe protection they put themſelves. The common people uſually choſe ſome perſon of eminence and authority, to whom they paid all kind of honour and reſpect; denominating themſelves his *clients*: and the *patron* on his ſide granted them credit and protection.

By this reciprocal relation was the *patron* bound to his client, and the client to his *patron*. See CLIENT.

PATRON, in the canon and common law, denotes a perſon who founds, or endows a church or benefice, and reſerves to himſelf the right of patronage. See PATRONAGE.

The king is *patron paramount* of all eccleſiaſtical benefices in England. See KING, PARAMOUNT, *&c.*

PATRON, in navigation, is a name given in the Mediterranean, to the perſon who commands the veſſel and ſeamen; ſometimes to the perſon who ſteers it: the former, in other places, called *maſter*; the ſecond pilot. See MASTER and PILOT.

PATRONAGE, PATRONATUS, the right of giving or diſpoſing of a church or benefice, properly belonging to the founder or endower thereof. See PATRON.

Patronage conſiſts in having the nomination, or preſentation to the benefice by him founded or endowed; in having the honourable rights of the church, in being interred in the chancel, *&c.* See BENEFICE.

Of *patronages*, ſome are *lay*, others *eccleſiaſtical*.

Lay PATRONAGE is a right attached to the perſon, either as founder, or as heir of the founder; or as poſſeſſor of a fee to which the patronage is annexed.

Eccleſiaſtical PATRONAGE is that which a perſon is entitled to by virtue of ſome benefice which he holds.

If an eccleſiaſtic have a right of *patronage* on his own account, independent of his eccleſiaſtical capacity; this is ſtill *lay-patronage*. *Lay-patronage* again is *real* or *perſonal*.

Real PATRONAGE is that attached to the glebe, or to certain lands and hereditaments.

Perſonal PATRONAGE is that belonging immediately to the founder of the church, and tranſmittible to his children and family, without being annexed to any fee.

Perſonal *patronage* cannot be alienated or ſold; *real* may, together with the glebe to which it is annexed. There muſt ever be ſome body or matter to fix it to, in order to its being tranſferred to another.

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[*] The council of Antioch held by the Euſebians in 345, ſays that thoſe whom the Romans call *Patripaſſians*, the Eaſtern people called *Sabellians*: it adds the reaſon of the name *Patripaſſians* in their condemnation; *viz.* that by the incarnation of the father, they rendered him comprehenſible and paſſible.

The origin of the right of *patronage*, we find in the 10th canon of the council of Orange: where it is expreſſed that a founder may preſent to the dioceſan the clerks he thinks proper for his church. By a law of Juſtinian it is ordained, that the founders of churches may not put clerks in them on their own authority, but only preſent them to the biſhop.

Some canoniſts look on the right of *patronage*, as a kind of eccleſiaſtic ſervitude.—The right of *patronage* ſleeps, but is not loſt, while a perſon is out of the communion of the church.

Arms of **PATRONAGE**, in heraldry, are thoſe, a top whereof are ſome marks of ſubjection and dependance.—Thus the city of Paris bears three flower de luces in chief, to ſhew her ſubjection to the king.

The cardinals on the top of their arms bear thoſe of the pope, who gave them the hat, to ſhew that they are his creatures. See ARMS.

PATRONYMIC, * ΠΑΤΡΟΝΥΜΙΚΟΣ among grammarians, is applied to thoſe names, which the Greeks gave to the race, or lineage; and which were taken from him who was the chief, or founder thereof. See NAME.

* The word is formed from the Greek, ϖατηρ father, and ονομα name.

Thus the deſcendants of Æacus, were called Æacidæ; and thoſe of Hercules, Heraclidæ. See HERACLIDÆ.

Theſe *patronymic* names the Romans called *gentilitia*, which amount to much the ſame with our *ſur-names*. See SUR-NAME.

Thus, thoſe of the preſent reigning family in France, we call the Bourbons; thoſe of the late in England, the Stuarts, *&c.*

PATROON-*galley*. See the article GALLEY.

PATROUILLE. See the article PATROLL.

PATTES, in heraldry, the paws of a beaſt. See PAW.

PAVAGE, PAVAGIUM, in our old law-books, money paid towards the paving of ſtreets, or high-ways, See PAVEMENT.

PAVAN, or PAVANE, a grave kind of dance, borrowed from the Spaniards; wherein the performers made a kind of wheel, or tail before each other, like that of a peacock: whence the name. See DANCE.

The *pavane* was anciently in great repute; and was danced by gentlemen with cap and ſword; by thoſe of the long robe with their gowns, by princes with their mantles, and by the ladies with their gown tails, trailing on the ground.

It was called the *grand ball*; from the ſolemnity wherewith it was performed.—To moderate its gravity, it was uſual to introduce ſeveral flouriſhes, paſſades, capers, *&c.* by way of epiſodes.—Its tablature or ſcore is given at large by Thoinot Arbeau in his Orcheſographia.

PAVEMENT, a layer or ſtratum of ſtone, or other matter, ſerving to cover and ſtrengthen the ground of divers places, for the more commodious walking on, or the paſſage of carriages.

* The word is formed from the Latin *pavimentum*, of *pavire*, to beat down the earth, in order to make it firm and ſtrong.

In England, the *pavements* of the grand ſtreets, *&c.* are uſually flint, or pebble; courts, ſtables, kitchins, halls, churches, *&c.* are paved with tiles, bricks, flags, or fire-ſtone; ſometimes a kind of free-ſtone, and rag-ſtone. See STONE.

In ſome cities, *e. gr.* Venice, the ſtreets, *&c.* are *paved* with brick; churches ſometimes with marble, and ſometimes with moſaic work, as the churches of St. Mark at Venice.—In France, the public roads, ſtreets, courts, *&c.* are paved with gres or grit, a kind of free-ſtone.

In Amſterdam, and the chief cities of Holland, they call their brick *pavement* the *burgher-maſters pavement*, to diſtinguiſh it from the ſtone or flint *pavement*, which uſually takes up the middle of the ſtreet, and which ſerves for carriages: the brick which borders it being deſtined for the paſſage of people on foot.

Pavements of free-ſtone, flint, and flags, in ſtreets, *&c.* are laid dry, *i. e.* in a bed of ſand; thoſe of courts, ſtables, ground rooms, *&c.* are laid in a mortar of lime and ſand; or in lime and cement, eſpecially if there be vaults or cellars underneath. Some maſons, after laying a floor dry, eſpecially of brick, ſpread a thin mortar over it; ſweeping it backwards and forwards to fill up the joints.—Thirty two ſtatute bricks laid flat *pave* a yard ſquare; ſixty four of edge-wiſe.

The ſquare tiles uſed in paving, called *paving-bricks*, are of various ſizes, from 6 to 12 inches ſquare. See BRICK.

Pavements of churches, *&c.* frequently conſiſt of ſtones of ſeveral colours; chiefly black and white, and of ſeveral forms, chiefly ſquare, and lozange, artfully diſpoſed.—Indeed, there needs no great variety of colours to make a ſurprizing diverſity of figures and arrangements. M. Truchet, in the memoirs of the French academy, has ſhewn by the rules of combination, that two ſquare-ſtones divided diagonally into two colours, may be joined together checquerwiſe ſixty four different ways: which appears ſurpriſing enough; ſince two letters, or figures can only be combined two ways.

The reaſon is, that letters only change their ſituation with regard to firſt and ſecond; the top and bottom remaining the ſame: but in the arrangement of theſe ſtones, each admits of four ſeveral ſituations, in each whereof the other ſquare may be changed 16 times, which gives 64 combinations.

Indeed, from a further examination of theſe 64 combinations, he found there were only 32 different figures; each figure being repeated twice in the ſame ſituation, though in a different combination; ſo that the two only differed from each other by the tranſpoſition of the dark and light parts. See COMBINATION.

PAVEMENT *of tarrace*, is that which ſerves for a covering in manner of a plat-form; whether it be over a vault, or a wooden floor. See TARRACE and PLAT-FORM.

Thoſe over vaults are uſually ſtones ſquared, and bedded in lead.—Thoſe on wood, called by the Latins, *pavimenta contignata*, are either ſtones with beds for bridges, tiles for ceiling of rooms, or lays of mortar made of cement and lime, with flints or bricks laid flat: as is ſtill practiſed by the eaſtern and ſouthern people a-top of their houſes. See PLAT-FORM.

All thoſe *pavements* which lye open, are called by the Latins *pavimenta ſubdialia*.

Moſaic **PAVEMENT**. See the article MOSAIC *work*.

Teſſellated **PAVEMENT**. See the article TESSELLATED.

Projection, or *perſpective of a* **PAVEMENT**. See PERSPECTIVE.

PAVILLION *, in architecture, ſignifies a kind of turret, or building uſually inſulated, and contained under a ſingle roof; ſometimes ſquare, and ſometimes in form of a dome: thus called from the reſemblance of its roof to a tent.

* The word comes from the Italian *padiglione* tent, and that from the Latin *papilio*.

Pavillions are ſometimes alſo projecting pieces, in the front of a building, marking the middle thereof.—Sometimes the *pavillion* flanks a corner, in which caſe it is called an *angular pavillion*.—The Louvre is flanked with four *pavillions*: *pavillions* are uſually higher than the reſt of the building.

There are *pavillions* built in gardens, popularly called *ſummer-houſes*, pleaſure-houſes, *&c.*—Some caſtles or forts conſiſt only of a ſingle *pavillion*.

PAVILLION, in war denotes a tent raiſed on poſts, to lodge under in the ſummer-time. See TENT.

PAVILLION is alſo applied to flags, colours, enſigns, ſtandards, banners, *&c.* all which, authors uſually confound with one another. See FLAG, ENSIGN, STANDARD, *&c.*

The cuſtom of bearing *pointed pavillions*, as at preſent, firſt came from the Mahometan Arabs, at the time when they conquered Spain.—Till then, all colours were ſtretched on croſs pieces like church banners; whence they were called in Latin, *vexilla quaſi velilla*, a diminutive of *vela*, ſails.

The pirates all along the coaſts of the Atlantic and Barbary, bear hexagonal *pavillions*, gules, charged with a little Turk, dreſſed in his turban; though contrary to their law, which prohibits the making any image of a man; from an opinion that thoſe who make the figure here, will be obliged to furniſh a ſoul for it at the day of judgment, or in default thereof be damned.

But this portrait, it ſeems, is that of Hali Sulficar, Mahomet's ſon-in law, to whoſe party the Africans adhere: and who appointed his picture to be repreſented on their banners: imagining himſelf ſo terrible to the chriſtians, that the mere ſight of his image would put them to flight; as we are told by Leunclavius.

PAVILLION, in heraldry, denotes a covering in form of a tent, which inveſts, or wraps up the armories of divers kings, and ſovereigns depending only on God and their ſword.

The French heralds hold, that none but ſovereign monarchs may bear the *pavillion* intire, and in all its parts.

The *pavillion* conſiſts of two parts: the top, which is the chapeau, or coronet; and the curtain which makes the mantle.—Thoſe who are elective, or have any dependance, ſay the heralds, muſt take off the head, and retain nothing but the curtains. See MANTLE.

The uſe of *pavillions* and mantles in armories is derived from the ancient lambrequins, which are ſometimes found ſtretched out in form of coverings; and tucked back on either ſide.

Others will have it derived from the ancient tournaments, wherein were expoſed the arms of the knight in rich tapeſtry work, on tents and *pavillions* which the chiefs of the quadrils planted to ſhelter themſelves, till the time of entring the liſts.

PAVIOUR's *level*. See the article LEVEL.

PAUL's *art*. See the article ART.

Hermits of St. PAUL. See the article HERMIT.

PAULIANISTS, PAULIANISTAE, a ſect of hereticks, ſo called from their founder Paulus Samoſatenus, a native of Samoſata, elected biſhop of Antioch in 262.

This Hereſiarch denied the diſtinction of perſons in the trinity, with Sabellius: and taught with Artemonius, that the word deſcended into Jeſus; and that after having performed by him what he purpoſed to do, he re-aſcended to his father.

He diſtinguiſhed two perſons in J. C. the Word, and the Chriſt: The latter, according to him, was only God in regard of his holineſs: accordingly, he did not baptize in the name of the Father and the Son, *&c.* For which reaſon the council of Nice ordered thoſe baptized by him to be rebaptized.

Being condemned by Dionyſius Alexandrinus in a council, he abjured his errors, to avoid depoſition; but ſoon after reſumed them, and was actually depoſed by another council in 270.

PAULICIANS *, a branch of the ancient Manichees; ſo called from their chieftain, one Paulus, an Armenian, in the ſeventh century. See MANICHEE.

* They were alſo called *publicani*, *populicani*, and *poblicani*.

The *Paulicians*, by their number, and the countenance of the emperor,

emperor Nicephorus, became formidable to all the eaſt. To the other opinions of the Manichees, they are ſaid to have added an abhorrence of the croſs; and to have employed it in the moſt ſervile offices, out of deſpight.

The empreſs Theodora, tutreſs of the emperor Michael in 845, would oblige them either to be converted, or to quit the empire: Upon which ſeveral of them were put to death, and more retired among the Saracens; but they were not all exterminated. Towards the end of the IXth century, they were able to maintain war againſt the emperor Baſil; and even preached long after this in Bulgaria; whence they ſpread into ſeveral other parts of Europe.

PAVO, in aſtronomy. See the article PEACOCK.

PAUPER, in law. See FORMA *pauperis*, and DISPAUPER.

PAUSARY, PAUSARIUS, in ancient Rome, an officer, who in the ſolemn pomps, or proceſſions of the goddeſs Iſis, directed the ſtops, or pauſes. See PAUSE.

In theſe ceremonies, there were frequent ſtands at places prepared for the purpoſe; wherein the ſtatues of Iſis and Anubis were ſet down; much after the manner of reſting places in the proceſſion of the holy ſacrament in the Romiſh church.—Theſe reſts were called *manſiones*; the regulation whereof was the office of the *pauſarii*.

From an inſcription quoted by Salmaſius it appears that the Romans had a kind of college, or corporation of *pauſaries*. See COLLEGE.

PAUSARY, PAUSARIUS, was alſo a name given to an officer in the Roman gallies, who gave the ſignal to the rowers, and marked the times and pauſes; to the end they might act in concert and row all together. See GALLEY.

This was done with a muſical inſtrument: Hyginus ſays, that in the ſhip Argo, Orpheus did the office with his lute.

PAUSE*, a ſtop, or ceſſation of ſpeaking, ſinging, playing, or the like. See REST.

* The word is formed from the Latin *pauſa*, which we find in Lucretius and Plautus in the ſame ſenſe.

The uſe of pointing in grammar, is to make proper *pauſes* in certain places. See POINTING.

There is a *pauſe* in the middle of each verſe: in a hemiſtic, it is called the reſt, or repoſe. See CAESURE.

Pauſes or ſilences are the ſame in poetry, as the odd reſts in muſic, which ſerve to make the odd notes even 10. St. Auſtin inſtructs us how theſe pauſes are to be made according to the laws of muſic.

PAUSE, in muſic, a character of ſilence, and reſt; called alſo by ſome, a *mute figure*; becauſe it ſhews that ſome part or perſon is to be ſilent, while the others continue the ſong.

Pauſes are uſed either for the ſake of ſome fugue or imitation, or to give a breathing time, or to give room for another voice, *&c.* to anſwer what this part ſung; as in dialogues, echoes, *&c.*

The ancients had two kinds of *pauſes*: the one called by the Italians, *initial pauſes*: becauſe firſt placed at the beginning of the piece, though ſometimes after, and regularly before the circle O, or the ſemi-circle C.—They had alſo *pauſes* to mark ſilences, after the characters of the meaſure, and in the courſe of the piece.

General PAUSE denotes a general ceſſation, or ſilence of all the parts.

Demi PAUSE, a ceſſation for the time of half a meaſure.

They alſo ſay, *pauſe of a minim*, *pauſe of a ſemibreve*, *long pauſe*, *pauſes of a croma*, and *ſemi-croma*; which are names given by the Italians, to expreſs the different values, or durations of *pauſes*. See REST.

For the ſigns or characters of *pauſes*. See CHARACTER.

PAW, PATTE, in heraldry, the fore-foot of a beaſt cut off ſhort.—If the whole leg be cut off, it is called *Gambe*.—Lions-*paws* are much uſed in armoury.

PAWN-*broker*. See the article BROKER.

PAWNAGE. See the article PANNAGE.

PAX *Dei*. See the article PEACE *of God*.

PAX *Eccleſiæ*. See the article SANCTUARY.

PAX *Regis**, See the article PEACE *of the king*.

* *Longe debet eſſe* Pax Regis *a parte ſua, ubi reſidens fuerit, a quatuor partibus loci illius, hoc eſt quatuor milliaria & tres quarentenæ, & novem acræ latitudine, & novem pedes, & novem palmæ, & novem grana hordei, &c.* Leg. Edv. Confeſſ.

Ad PACEM *redire*, to reſtore to the peace, is to reverſe an outlawry; whereby a perſon is reſtored to the benefit of the king's peace*. See OUT-LAWRY.

* *Rex poteſt dare quod ſuum eſt, hoc eſt* pacem *ſuam, quam utlagatus amiſit.* Bracton. Lib. 3.

PAYMENT, the diſcharge of a debt, either by money really told, or by bills of exchange, *&c.* See DEBT, *&c.*

Prompt PAYMENT, a popular term in England and Amſterdam, is when a debtor acquits what he owes before the expiration of the term granted by the creditor.

The ordinary diſcount for *prompt payment* on moſt merchandizes is 1 *per cent.* See DISCOUNT, REBATE, *&c.*

PAY, in the ſea language. The ſeamen ſay, *pay more cable*, *i. e.* let out more cable. See CABLE.

Pay cheap, is uſed in turning the anchor out of the boat, to denote, turn it out faſter.

PEACE, PAX, in its general ſignification, ſtands in oppoſition to *war*. See WAR.

PEACE in our law-books, *&c.* is reſtrained to a quiet, and inoffenſive carriage towards the king, and his people. Lamb. *Eirenarch.*

Where any man ſtands in danger of harm from another, and makes oath thereof before a juſtice of the peace; he muſt be ſecured by good bond, which is called *binding to the peace*, &c. See SURETY and FRANK-PLEDGE. See alſo CONSERVATOR, and JUSTICE *of the peace*.

Time of PEACE is when the courts of juſtice are open, and the judges and miniſters of the ſame may by law protect men from wrong and violence, and diſtribute juſtice to all. See Coke on Litt. See alſo TERM.

PEACE *of the king*, *Pax Regis*, mention'd in the Stat. 6 Ric. II. *&c.* is that ſecurity which the king promiſes his ſubjects, and others taken into protection; both for life and goods. See PROTECTION.

PEACE *of God and the church*, *Pax Dei & eccleſiæ*, mentioned in our ancient law books, is that reſt and ceſſation which the king's ſubjects had from trouble and ſuit of law, between the terms. See VACATION.

PEACE *of the plough*, that whereby the plough, plough-tackle, and plough-cattle are ſecur'd from diſtreſſes. See Fitzh. *Nat. Br.*

Thus fairs may be ſaid to have their *peace*, becauſe no man may be troubled in them for any debt contracted elſewhere.

Homage of PEACE. See the article HOMAGE.

Clerk of the PEACE. See CLERK *of the Peace*.

PEACH-*Water*. See the article WATER.

PEACOCK, PAVO, in aſtronomy, a conſtellation of the ſouthern hemiſphere; unknown to the ancients; and not viſible in our northern parts of the world. See CONSTELLATION.

PEACOCK'*s-Tail*. See the article TAIL.

PEAN, in heraldry, is when the field of a coat of arms is ſable, and the powderings, or. See FURR.

PERCH *fiſhing*. See the article FISHING.

PEARL, PERLA, or MARGARITA, in natural hiſtory, a hard, white, ſhining body, uſually roundiſh, found in a teſtaceous fiſh, reſembling an oyſter; and ranked in the number of Gems or precious ſtones. See PRECIOUS *Stone*, and GEM.

The fiſh wherein the *pearls* are found, is three or four times the ſize of the common oyſters; and is called by naturaliſts, *pinna marina*.

Each *pinna* ordinarily yields ten or twelve *pearls*; though an author, who treats of their production, pretends to have ſeen an hundred and fifty in the ſame fiſh; but thoſe in different degrees of perfection. The moſt perfect ſtill drop firſt; the reſt remaining at the bottom of the ſhell.

The formation of *pearls* has puzzled both ancient and modern naturaliſts; and given occaſion to a great number of hypotheſes, many of them wild and extravagant enough. The ancients, Pliny, Solinus, *&c.* will have them to be formed of the dew: the fiſh, ſay they, riſes every morning to the ſurface of the water, and there opens its ſhell, to imbibe the dew of heaven; which, like a liquid *pearl*, inſinuating into the body of the *pearl*-oyſter, fixes its ſalts, and there aſſumes the colour, hardneſs, and form of *pearl*; as ſome liquors are converted into cryſtals in the earth; or the juice of flowers into honey and wax in the body of the bee. But this, how plauſible ſoever, is apparently falſe: for the *pearl*-oyſters grow faſt to the rocks, and no body ever yet ſaw any of them appear on the ſurface of the water.

Others will have *pearls* to be the eggs of the fiſhes they are found in: but neither does this conſiſt with the phænomena. For *pearls* are found throughout the whole ſubſtance of the oyſter, in the head, the coat that covers it, the circular muſcles that terminate in it, the Stomach, and in general in all the fleſhy and muſculous parts; ſo that there is no appearance that *pearls* ſhould be in the oyſters, what the eggs and ſpawn are in fowls and fiſhes. For, beſide that there is no particular place deſtined for their formation; anatomiſts have not been able to find any thing that bears any relation to what paſſes in this reſpect in other animals.—This indeed may be ſaid, that as in a hen there is an infinity of little eggs, in form of ſeed; ſome whereof grow and ripen, whilſt the reſt continue nearly in the ſame ſtate; ſo in each oyſter is uſually found one *pearl* much larger, and that ripens much faſter than the reſt. This *pearl* ſometimes grows big enough to hinder the oyſter from ſhutting, in which caſe the fiſh rots and dies.

Others, with M. Geoffroy the younger, rank *pearls* among the bezoards; as comprehending under that claſs all ſtones formed in layers or ſtrata in the bodies of animals. See BEZOARD.

M. Reaumur, has a very curious piece on the ſubject of the formation both of the ſhells and *pearls*, in the memoirs of the French academy, anno 1717. He obſerves, that *pearls* are formed like other ſtones in animals, as thoſe *e. gr.* in the bladder, kidneys, *&c.* and that they are apparently the effects of a diſeaſe of the fiſh.—In effect, they are all formed of a juice extravaſated out of ſome broken veſſels, and detained, and fixed among the membranes.

To evince the poſſibility of this, he ſhews that the ſhells of ſea-fiſhes, as well as thoſe of ſnails, *&c.* are wholly formed of a glutinous ſtony matter, ouzing out of the body of the animal. (See SHELL.) Now it is no wonder that an animal, which has veſſels wherein circulates a ſufficient quantity of ſtony juice to build, thicken and extend a ſhell, ſhould have enough to form ſtones, in caſe the juice deſtined for the growth of the ſhell ſhall chance to overflow, and burſt forth in any cavity of the body, or among the membranes.

To confirm this ſyſtem he obſerves, that the inner ſurface of the common *pearl*-muſcle, found on the coaſts of Provence, is of a *pearl*, or mother of *pearl* colour, from one part of its extent, which he determines, to another; after which it becomes reddiſh: now there are *pearls* of two colours found in the ſhell; and the colours of the *pearls* are preciſely the ſame with thoſe of the ſhell; nay, more, each kind of coloured *pearl* is found in the correſponding coloured part of the ſhell; which ſhews, that in the ſame place wherein the tranſpiration of a certain juice had formed, and would have continued to form a coat, or layer of ſhell of a certain colour; the veſſels which conveyed that juice being broke, there is formed a little maſs or collection of the juice, which hardening, becomes a *pearl* of the ſame colour with the part of the ſhell to which it correſponds.

Add to this, that the ſilver, or *pearl*-coloured part of the ſhell is formed of ſtrata, or lays over one another, like an onion; and the reddiſh part of little cylindrical, ſhort fibres applied againſt one another. The *pearls* of the two colours have this difference of texture; not but they are both compoſed of concentric couches; but thoſe of the reddiſh *pearls* are much leſs ſenſible; and, beſides, have threads, which, like radii, proceed from their centre to their circumference.—Theſe circumſtances ſeem effectually to determine the formation of *pearls*, and to eſtabliſh the new ſyſtem beyond contradiction.

As to the formation of the *pearl-fiſh*, though it is the moſt natural opinion, that this fiſh, like all others, produces eggs or ſpawn, whoſe exterior ſurface at firſt is ſoft and viſcous, but changes and hardens by degrees into ſhell; yet we muſt not leave unmention'd the popular hypotheſis of the Paravas, *viz.* that in rainy weather the brooks of the neighbouring lands that empty themſelves all along the coaſts, run near two leagues on the ſurface of the ſea without mixing therewith. For a while, the ſuſpended water retains its natural colour and ſweetneſs; but at length, the heat of the ſun condenſing it, forms it into a kind of light tranſparent froth; this done, it preſently divides into an infinity of parts, each whereof appears as if animated; moving this way and that like little inſects. The fiſhes ſometimes catch at them as they paſs by: but ſoon abandon them. By degrees their ſkin thickening and hardening, they at length become heavy enough to ſink to the bottom, and aſſume the figure of oyſters.

The perfection of *pearls*, whether round, in form of pears, or olives, or irregular, conſiſts chiefly in the luſtre and clearneſs of the colour; which they call the *water*. There are ſome whoſe water is white; which are thoſe moſt eſteemed in Europe. The water of others borders on the yellow, which ſome Indians and Arabs prefer to the white. Others are of a lead-colour, others border on black, and others are quite black.

They are all liable to change with wearing: in 80 or 100 years they uſually become of little value; eſpecially the white ones, which turn yellow, and ſpoil in 40 or 50 years time.

The difference of colours doubtleſs ariſes from the different parts of the oyſter wherein they are formed. When the ſeed happens to be thrown into the meſentery or liver, or the parts correſponding thereto, it is no wonder if the impurities of the blood change the natural white.

In Europe, *pearls* are ſold by the carat-weight, the carat containing four grains.—In Aſia, the weights uſed for *pearls* are different, in different ſtates. See CARACT.

The term *pearl* is only properly applied to what grows independent of the ſhell.—The ſhell itſelf is rather call'd *naker of pearl.* Thoſe pieces which have grown thereto, and have been ſince ſeparated by the addreſs of the workman, are called *wens of pearls*; which are in effect nothing but roundiſh excreſcences, or pieces of the ſhell, though frequently uſed for real ſhell.

Pearls, F. Bouhours obſerves, have this advantage over precious ſtones dug out of rocks, *&c.* that the latter owe their luſtre to the induſtry of men; nature only, as it were, hews them out and leaves the finiſhing of them to art: but the former are born with that beautiful water which gives them their value. They are found perfectly poliſhed in the abyſſes of the ſea; and nature has put the laſt hand to them ere they are ſeparated from their mother.

Pearls of unuſual figures, *i. e.* neither round, nor in the pear form, are called *baroguas*, or *Scotch-pearls:* thoſe of unuſual ſizes, are called *parangons*; as that of Cleopatra valued by Pliny at centies HS. or 80000*l.* ſterling; that brought in 1574 to Philip II. of the ſize of a pigeon's egg, valued at 14400 ducats; that of the emperor Rudolph, mentioned by Boetius, called *la peregrina*, or the incomparable, of the ſize of a muſcade pear, and weighing 30 carats; and that mentioned by Tavernier, in the hands of the emperor of Perſia, in 1633, bought of an Arab for 32000 tomans, which at 3*l.* 9*s.* the toman, amounts 110400*l.* ſterling.

Pearls are of ſome uſe in medicine; but it is only the ſmalleſt ſort, called *ſeed of pearls* that is there uſed. The quality required, is, that they be white, clear, and tranſparent; and truly oriental. They ſerve to make cordial potions, formerly much valued, but now fallen much from their ancient reputation; and ſcarce owned by any but charletans.

The ladies alſo uſe certain preparations of *pearls*, as they are made to believe, for their complexions; ſuch as the whites of *pearls*, flowers, eſſences, ſpirits, tinctures, *&c.* of *pearl*; but they are all apparently deceits.

Ounce PEARLS. See the article OUNCE.

PEARL-*fiſheries.*—*Pearls* are caught in the ſeas of the Eaſt-Indies; in thoſe of America; and in ſome parts of Europe. See FISHERY.

PEARL-*fiſheries of the Eaſt*, are—1°. The iſland of Bahren, or Baharem, in the Perſian gulph. This the Portugueze were maſters of while they held Ormus and Maſcata; but it has been returned to the Sophi of Perſia, ſince the time that prince, with the aſſiſtance of the Engliſh, took from them Ormus; and the Arabs Maſcata.

2°. The fiſhery of Catifa, on the coaſt of Arabia Felix, over-againſt Bahern.

3°. That of Manar, a ſea-port in the iſle of Ceylon. The *pearls* here fiſhed, are the fineſt in all the eaſt for their water and roundneſs; but they ſeldom exceed four carats.

Laſtly, there are *pearls* fiſhed on the coaſt of Japan; but they are coarſe and irregular, and little minded.

The *pearls* of Bahren and Catifa, are thoſe commonly ſold in the Indies; they border a little on the yellow, but the eaſtern people do not value them the leſs for it; they eſteem it the ſign of their being ripe and mature, and are perſuaded, that thoſe which have this yellowiſh tincture naturally, never change their colour; and that on the contrary, their white water does not hold above 30 years ere the *pearl* aſſumes a filthy yellow colour, by reaſon of the heat of the climate, and the ſweat of the perſons who wear them.

American PEARL-*fiſheries*, are all in the great gulph of Mexico, along the coaſt of the Terra-firma. There are five of them—

1°. The fiſhery of Cubagna, an iſland five leagues from New Andaluſia, in 10 deg. ½ north lat.

2°. That of the iſland Marguerites, or *pearl iſland.*

3°. That of Comogote near the Terra-firma.

4°. That of the river De la Hach, called *la Rencheria.*

5°. That of St. Martha ſixty leagues from the river de la Hach.

The *pearls* of theſe three laſt fiſheries are uſually of a good weight; but ill formed, and of a livid-water. Thoſe of Cubagna ſeldom exceed 5 carats; but are found in abundance. But the greateſt quantity, and the fineſt, both with regard to weight and water, are thoſe of the iſland Marguerits.

PEARL-*fiſhery in* Chineſe Tartary, is near the city Nipehoa, ſituate on a lake of the ſame name: the *pearls* here are leſs beautiful than thoſe of Baharem; and the fiſhery leſs plentiful. It was this fiſhery that occaſioned the war between the Chineſe and Muſcovites, terminated toward the end of the laſt century, by the jeſuites Pereira and Gerbillon; when the lake, which is of great extent, was divided between the two nations, each whereof had pretended to the whole.

There are ſome *pearl* fiſheries in the South-Sea, but they are very inconſiderable.

PEARL-*fiſheries of* Europe, are in ſome places on the coaſts of Scotland, and in a river of Bavaria: but the *pearls* found here are no ways comparable to thoſe of the Eaſt-Indies, or of America; though they ſerve for necklaces, ſold ſometimes for a thouſand crowns and upwards.

Manner of fiſhing for PEARLS *in the* Eaſt-Indies.—There are two ſeaſons of *pearl-fiſhing* in the year; the firſt in March and April, the ſecond in Auguſt and September: the more rain falls in the year, the more plentiful are the fiſheries.

In the opening of the ſeaſon, there appear ſometimes two hundred and fifty barks on the banks. In the larger barks are two divers, in the ſmaller, one. Each bark puts off from ſhore ere ſun-riſe, by a land-breeze, which never fails; and returns again by a ſea-breeze, which ſucceeds it about noon.

As ſoon as the barks are arrived, and have caſt anchor, each diver binds a ſtone ſix inches thick, and a foot long under his body; which is to ſerve him as ballaſt, and prevent his being driven away by the motion of the water; and to enable him to walk more ſteadily a-croſs the waves.

Beſide this, they tye another very heavy ſtone to one foot, whereby they are ſunk to the bottom of the ſea in a moment. And as the oyſters are uſually ſtrongly faſtened to the rocks, they arm their fingers with leathern mittens, to prevent their being wounded in ſcraping them violently off; and ſome even carry an iron rake for the purpoſe.

Laſtly, each diver carries down with him a large net, in manner of a ſack, tied to his neck by a long cord, the other end whereof is faſtned to the ſide of the bark. The ſack is intended for the reception of the oyſters gathered from the rock, and the cord to pull up the diver when his bag is full, or he wants air.

In this equipage he precipitates himſelf, ſometimes above 60 foot under water. As he has no time to loſe there, he is no ſooner arrived at the bottom, than he begins to run from ſide to ſide, ſometimes on a ſand, ſometimes on a clayey earth, and ſometimes among the points of rocks; tearing off the oyſters he meets withal, and cramming them into his budget.

At whatever depth the divers be, the light is ſo great, that they eaſily ſee whatever paſſes in the ſea, with the ſame clearneſs as on land. And to their conſternation, they ſometimes ſee monſtrous fiſhes, from which, all their addreſs in mudding the water, *&c.* will not ſave them; but they become their prey: and of all the perils of the fiſhery, this is one of the greateſt and moſt uſual.

The beſt divers keep under water for half an hour, the reſt do not ſtay leſs than a quarter. During which time, they hold their breath without the uſe of oils, or any other liquors. See DIVING.

When they find themſelves ſtraitened, they pull the rope to which the bag is faſtened, and hold faſt by it with both hands; when the people in the bark, taking the ſignal, heave them up into air, and unload them of their fiſh, which is ſometimes five hundred oyſters, ſometimes not above fifty.

Some of the divers need a moment's reſpite to recover breath; others jump in again inſtantly, continuing this violent exerciſe without intermiſſion, for many hours.

On the ſhore they unload their barks, and lay their oyſters in an infinite number of little pits, dug four or five foot ſquare, in the ſand; raiſing heaps of ſands over them to the height of a man, which, at a diſtance, look like an army ranged in battle. In this condition they are left, till the rain, wind, and ſun, have obliged them to open, which ſoon kills them. Upon this the fleſh rots and drys, and the *pearls*, thus diſengaged, tumble into the pit upon taking the oyſters out.

The fleſh of the fiſh is excellent, and if what ſome naturaliſts maintain be true, *viz.* that the *pearls* are ſtones, formed there by the ill conſtitution of the body, as ſometimes happen in men, and in the bezoard; this diſeaſe does not alter the humours: at leaſt, the Paravas, who eat them, do not find any difference between thoſe that have *pearls*, and thoſe that have none.

After clearing the pits of the groſſer filth, they ſift the ſand ſeveral times, to ſeparate the *pearls*. But what care ſoever they take herein, they always loſe a great many. After cleaning and drying the *pearls*, they are paſſed through a kind of ſieve, according to their ſizes. The ſmalleſt are ſold for ſeed of *pearls*; the reſt are put up by auction, and ſold to the higheſt bidder.

Manner of fiſhing for PEARL in the Weſt Indies.—The ſeaſon for fiſhing is uſually from October to March. In this time there ſet out from Carthagena ten or twelve barks, under the convoy of a man of war called Larmadilla. Each bark has two or three ſlaves for divers.

Among the barks there is one called Capitana; to which all the reſt are obliged to bring at night what they have caught in the day, to prevent frauds. The divers never hold long, by reaſon of the great hardſhips they ſuſtain; continuing ſometimes under water above a quarter of an hour.—The reſt is the ſame as in the Eaſt-India fiſheries.

The Indians knew the value of their *pearls* before the diſcovery of America; and when the Spaniards arrived there they found great quantities ſtored up, which the Americans ſet great value on. But they were almoſt all imperfect, and their water yellow and ſmoaky, by reaſon they uſed fire in opening the fiſhes.

In the *Dictionnaire de commerce*, is a table of the value of *pearls*, communicated to the author by an able hand. As *pearls* make a very curious article in commerce, and as their value is a thing little known among us; we ſhall here give the reader an abridgment of the ſame, reduced to our money on the foot of 1*s.* 6*d.* ſterling the French livre, or 4*s.* 6*d.* the French crown.

Value of all kinds of PEARLS, *with regard to their different weights.*

Seeds of Pearls.	*l.*	*s.*	*d.* *per oz.*
Seeds of *pearls* not perforated, fit for grinding, are worth	00	09	
Fine ſeed of *pearls* perforated for ſmall necklace or embroidery.	01	01	
Ditto a little larger.	01	16	

Ragged or irregular Pearls.

Of 500 to the ounce, are worth	03	00
300	06	00
150	11	02
100	18	00
60	33	15
30	75	00

Regular round Pearls.

	l.	*s.*	*d.* *per oz.*
One of ½ a grain is worth	00	00	2½
Of a grain	00	00	4½
Of a grain and half	00	01	0
Of 2 grains	00	02	0
Of 2 grains and half	00	04	6
Of 3 grains	00	07	6
Of 4 grains, or one carat	00	18	0
Of 5 grains	01	10	0
Of 6 grains	02	05	0
Of 7 grains	03	01	0
Of 8 grains, or two carats	04	10	0
Of 9 grains	06	00	0
Of 10 grains	08	05	0
Of 11 grains	09	15	0
Of 13 grains	13	05	0
Of 15 grains	21	00	0
Of 17 grains	27	10	0
Of 20 grains, or 5 carats	37	10	0
Of 22 grains	52	10	0
Of 24 grains, or 6 carats	82	10	0
Of 26 grains	99	00	0
Of 28 grains, or 7 carats	150	00	0
Of 32 grains, or 8 carats	225	00	0
Of 36 grains, or 9 carats	262	10	0
Of 40 grains, or 10 carats	300	00	0

As to *pearls* in form of pears, though equally perfect, and of equal weight with the round ones, their value is much inferior: however, when two are found that match well, their value is leſs but by one third.

Falſe PEARLS, are counterfeit, or factitious *pearls*, reſembling the true ones in water or colour: popularly called *beads*.

Theſe anciently were only made of glaſs; with a kind of tincture of quick-ſilver withinſide; afterwards they uſed wax, covered over with a fine brillant fiſh glue.

There has ſince been invented in France, another manner of making them, ſo near the natural ones in luſtre and water, that they deceive a good eye. Theſe are what the ladies now generally wear in defect of true *pearl*; ſmall necklaces whereof they deſpiſe; and the large ones being generally too dear.

Method of making falſe PEARLS.—This curious invention is owing to the Sieur Janin; and is the more to be valued, in that, it is not only very ſimple, but prevents the ill effects of thoſe falſe *pearls* made with quick-ſilver within, or fiſh glue without.

That ingenious artiſt having obſerved, that the ſcales of a little fiſh called the *bleak*, found plentifully in the river Marne, had not only all the luſtre of the real *pearl;* but that after beating them to powder in water, or iceing glaſs, they returned to their former brillant upon drying; he bethought himſelf of ſetting a piece, or little maſs thereof in the cavity of a bead, or grain of giraſol, which is a kind of opal or glaſs, bordering much on the colour of *pearl*. The difficulty was to get it in there, and when in, to ſpread it equally throughout the bead.

A little glaſs tube ſix or ſeven inches long, and a line and half in diameter, but very ſharp at one end, and a little crooked, ſerved for the introducing of the matter, by blowing it with the mouth, after having taken up a drop with the pointed extremity of the tube; and to ſpread it throughout the inner circumference, he contented himſelf to ſhake it gently a long time, in a little oſier baſket lined with paper.

The pulveriſed ſcales, faſtened by this motion in the inſide of the bead, reſume their luſtre as they dry. To increaſe this luſtre, in winter, they lay the beads in a hair ſieve, or a bolting-cloth, which they ſuſpend to the ceiling, and under, at ſix foot diſtance, lay heaps of hot aſhes. In ſummer they ſuſpend them in the ſame manner, but without any fire.

The *pearls*, thus well dried, become very brillant; and nothing remains but to ſtop up the aperture, which is done by melted wax, conveyed into it with a tube like that uſed in introducing the diſſolved ſcales.

After clearing off the ſuperfluous wax, they perforate the *pearls* with a needle, and ſtring them; and thus they commence necklace.

Mother of PEARL, is the ſhell not of the *pearl* oyſter, but of the *auris marina*, a ſmall ſea fiſh of the oyſter kind.

This ſhell within ſide is very ſmooth, and poliſhed, and of the whiteneſs and water of *pearl* itſelf; and it has the ſame luſtre without ſide, after the firſt laminæ, or leaves which make the outer coat of this rich ſhell fiſh, have been cleared off with aqua fortis and the lapidaries drill. It is uſed in inlayed works, and in ſeveral toys, as ſnuff-boxes, *&c.*

Wens of PEARL, are certain excreſcences, or prominent places, in form of half *pearls*; ſometimes found in the bottoms of the *pearl* ſhells.

The lapidaries have the addreſs to ſaw off theſe protuberances, to join them together, and to uſe them in ſeveral works of jewelry, as if they were really *pearls*.

PEARL, in heraldry, is uſed by ſuch as blazon with precious ſtones inſtead of colour and metals, for argent, or white. See ARGENT.

PEARL, *pin*, or *web*, in medicine, an unnatural ſpeck, or thick film over the eye. See PANNUS and UNGUIS.

PEARLED *crowns*. See the article CROWN.

PEARS. See the articles FRUIT, and DWARF *pears*.

PECCANT in medicine, an epithet given to the humours of the body, when they offend either in quantity or quality, *i. e.* when they are either morbid, or in too great abundance. See HUMOUR.

Moſt diſeaſes ariſe from *peccant* humours, which are either to be corrected by alteratives and ſpecificks, or evacuated. See DISEASE, *&c.*

PECK, a meaſure, or veſſel uſed in meaſuring grains, pulſe, and the like dry meaſures. See MEASURE.

The ſtandard, or Wincheſter *peck*, contains two gallons; each gallon weighing about eight pound Troy. See GALLON.

Four *pecks* make a buſhel; four buſhels a comb or carnock, *&c.* See BUSHEL.

Beſides the general, or Wincheſter *pecks*, there are local *pecks*, containing ſome more, ſome leſs; as, the Lancaſter *peck* containing ſix gallons, *&c.*

PECQUETS *duct*, in anatomy, the thoracic duct; thus called from its diſcoverer Pecquet. See THORACIC DUCT.

PECTEN *arboris*, in botany, is the grain of the wood of any tree. See WOOD and TREE.

PECTEN, in anatomy, is uſed by ſome authors for the pubes, or lower part of the hypogaſtrium; uſually covered with hair. See PUBES and PECTINIS.

PECTINEUS, or PECTINÆUS, in anatomy, the third of the fifteen muſcles of the thigh; ſo called, becauſe it has its origin in the fore part of the os pectinis.—See *Tab. Anat.* (Myol) *fig.* 2. *n.* 35.

Its inſertion is in the thigh, under the left trochanter. The *pectineus*, with the pſoas and iliacus, draw the thigh forwards, and of conſequence bend it.

PECTINIS *os*, in anatomy, the ſame with os pubis. See OS PUBIS.

PECTORAL, ſomething relating to the breaſt, pectus. See BREAST.

In the Romiſh church, biſhops, and regular abbots wear a *pectoral* croſs, *i. e.* a little croſs of gold, hanging from the neck down the breaſt.

PECTORAL *medicines*, or ſimply PECTORALS, are remedies proper to ſtrengthen and relieve the breaſt; or medicines againſt diſeaſes of the breaſt, and lungs.

Their ordinary intention is either to attenuate, or thicken the humours of thoſe parts, which cauſe coughing, *&c.* and render them fit to be expectorated, or ſpit out. See BECHIC.

PECTORAL *wine*. See the article WINE.

PECTORALE, or PECTORAL, in the Jewiſh law. See RATIONALE.

PECTORALIS, in anatomy, a muſcle which poſſeſſes almoſt the whole breaſt, and moves the arm forwards.

It ariſes by a fleſhy and ſemicircular beginning, from the clavicula, ſternum, and cartilages of the ſix ſuperior ribs; and covering a great part of the breaſt, is inſerted by a ſhort, but ſtrong and broad tendon into the upper and inner part of the humerus, between the biceps and deltoides. See *Tab. Anat.* (Myol) *fig*, 1. *n.* 22.

Its fibres, near ther inſertion, decuſſate one another. Thoſe which come from the clavicle, or firſt ribs, are on the lower ſide of the tendon, and thoſe from the inferior ribs on the upper ſide of the tendon.

Naturaliſts obſerve a ſpecial mark of providence in the ſize and ſtrength of the *pectoral* muſcle in different animals. It is by the action of this muſcle, that the flying of birds is chiefly performed: accordingly it is much larger and ſtronger in birds than in any animals not made for flight. See BIRD.

Borelli obſerves, that in men the *pectoral* muſcles are ſmall; ſcarce the 50th or 70th part of all the other muſcles: but in birds they are vaſtly large, equalling, nay, exceeding in bulk and weight all the other muſcles of the bird together. See FLYING.

PECTORALIS *internus*. See TRIANGULARIS.

PECTORIS *os*, the ſame as *ſternum*. See STERNUM.

PECTORIS *triangularis*, See the article TRIANGULARIS.

PECULATE, PECULATUS, in the civil law, the crime of pilfering the public money, by a perſon who has the management, receit, or cuſtody thereof: ſo called, *quaſi pecuniæ ablatio.*

Civil lawyers uſe *peculate* for any theft of a thing either ſacred, religious, public, or fiſcal.—*Peculate* is proſecuted even on the criminals heir. See THEFT and SACRILEGE.

PECULIAR in the canon law, a particular pariſh, or church, which hath juriſdiction within itſelf, for probate of wills, *&c.* exempt from the ordinary, and the biſhops courts.

There are *royal peculiars*, and *archbiſhops peculiars.*

The king's chapel is a *royal peculiar*, exempt from all ſpiritual juriſdiction, and reſerved to the viſitation and immediate government of the king himſelf, who is ſupreme ordinary. See CHAPEL.

It is an ancient privilege of the ſee of Canterbury, that whereſoever any manors or advowſons do belong to it, they forthwith become exempt from the ordinary, and are reputed *peculiars.* In the province of Canterbury are fifty ſeven ſuch *peculiars.*

Court of **PECULIARS**, is a court where the affairs of *peculiars* are tranſacted. See COURT.

PECULIUM*, the ſtock which a perſon in the power or property of another, as a ſlave, a minor, or the like may acquire by his own induſtry, without any advance or aſſiſtance from his father or maſter; but merely by their permiſſion.

* The word is uſually derived a *pecunia & pecoribus*; becauſe the whole eſtate anciently conſiſted in money and cattle. See MONEY.

PECULIUM is alſo uſed among the Romaniſts, for what each monk or religious reſerves, and poſſeſſes to himſelf.

Some ſay that the *peculium* of a religious, when preferred to a cure, does not ceaſe to belong to the monaſtery: and that the property thereof never abſolutely reſides in the religious. See PROPERTY.

PECUNIA, *money.* See the article MONEY.

PECUNIA, in our old law books, is ſometimes uſed for cattle; and ſometimes for other goods, as well as money. See CHATTEL.

In the emendation of the laws of Edward the Confeſſor by William rhe firſt, it is ordered that no *viva pecunia*, living money, *i. e.* cattle, be bought or ſold, except within cities, and that before three ſufficient witneſſes.

So in domeſday, *pecunia* is frequently uſed, *pro pecude*; as, paſture *ad pecuniam villæ.*

PECUNIA *eccleſiæ*, was anciently uſed for the eſtate of the church.

PECUNIA *ſepulchralis*, was money formerly paid to the prieſt at the opening of the grave, for the good and behoof of the deceaſed's ſoul; and which our ſaxon anceſtors called *ſoul-ſcot*, and *animæ ſymbolum.*

PEDAGE, PEDAGIUM, *Toll*, or a local due exacted on perſons, goods, and carriages, paſſing through certain places. See TOLL.

Pedage is uſually levied for the repairing of roads, bridges, cauſe-ways, the paving of ſtreets, *&c.* Anciently, thoſe who had the right of *pedage*, were to keep the roads ſecure, and anſwer for all robberies committed on paſſengers between ſun and ſun; which is ſtill obſerved in ſome parts of England, and in Italy, where there are guards called *Stationarii*, eſtabliſhed for the ſecurity of merchants, particularly at Terracina, on the road between Rome and Naples.

PEDAGOGUE*, or PÆDAGOGUE, ΠΑΙΔΑΓΩΓΟΣ, a tutor or maſter, to whom is committed the diſcipline and direction of a ſcholar, to be inſtructed in grammar, and other arts.

* The word is formed from the Greek *ϖαιδων αγαγος*, *puerorum ductor*, leader of boys.

M. Fleury obſerves, that the Greeks gave the name *pedagogues* to ſlaves appointed to attend their children, lead them, and teach them to walk, *&c.* The Romans gave the ſame denomination to the ſlaves who were intruſted with the care and inſtruction of their children.

PEDALS, the large pipes of an organ, ſo called, becauſe played and ſtopped with the foot. See ORGAN.

The *pedals* are the largeſt pipes in the machine, they are made ſquare and of wood; uſually thirteen in number.—They are of modern invention, and ſerve to carry the ſounds an octave deeper than the reſt.

PEDANEUS, in the civil law, a petty judge, who has no formal ſeat of juſtice, but hears cauſes ſtanding, and without any tribunal. See JUDGE.

The word ſeems formed from *ſtans in pedibus*; and is uſed among the ancients by way of oppoſition to thoſe magiſtrates, who were ſeated in the curule chair, in *ſella curuli*, or had a tribunal or bench raiſed on high.

The Roman *pedanei*, therefore, were ſuch as had no tribunal, nor pretorium, but rendered juſtice *de plano*, or *plano pede.*

From the eighty ſecond novel, it appears that the emperor Zeno eſtabliſhed theſe *pedanei*, in the ſee of every province; and that Juſtinian erected ſeven of them at Conſtantinople, in manner of an office; granting them power to judge in any ſum as high as three hundred crowns.

PEDANT, a ſchool-maſter, or pedagogue, who profeſſes to inſtruct and govern youth, teach them the humanities, and the arts. See PEDAGOGUE.

PEDANT is alſo uſed for a rough, unpoliſhed man of letters who makes an impertinent uſe of the ſciences, and abounds in unſeaſonable criticiſms, and obſervations.

Dacier defines a *pedant*, a perſon who has more reading than good ſenſe. See PEDANTRY.

Pedants, are people ever armed with quibbles, and ſyllogiſms; breath nothing but diſputation and chicanry, and purſue a propoſition to the laſt limits of logic.

Malebranche deſcribes a *pedant* as a man full of falſe erudition, who makes a parade of his knowledge, and is ever quoting ſome Greek or Latin author, or hunting back to a remote etymology.

St. Evremont ſays, that to paint the folly of a *pedant*, we muſt repreſent him as turning all converſation to ſome one ſcience or ſubject he is beſt acquainted withal.

There are *pedants* of all conditions, and of all robes. Wicquefort ſays, an embaſſador always attentive to formalities, and decorums, is nothing elſe hut a political *pedant.*

PEDANTRY, or PEDANTISM, the quality, or manner, of a pedant. See PEDANT.

To ſwell up little, and low things, to make a vain ſhow of ſcience, to heap up Greek and Latin without judgment, to tear thoſe to pieces who differ from us about a paſſage in Suetonius, or the etymology of a word, to ſtir up all the world againſt a man a man for not admiring Cicero enough, to be intereſted for the reputation of an ancient, as if he were our next of kin, is what we properly call *pedantry*.

PEDESTAL*, in architecture, the loweſt part of an order of columns; being that which ſuſtains the column, and ſerves it as a foot or ſtand. See Column.

* The word is formed from the Latin *pes pedis*, foot, and ςυλος, column.

The *pedeſtal*, called by the Greeks, *Stylobates* and *Stereobates*, conſiſts of three principal parts; *viz.* a ſquare trunk or dye, which makes the body; a cornice, the head; and a baſe, the foot of the pedeſtal. See Dye, Cornice, and Base.

The *pedeſtal* is properly an appendage to a column; not an eſſential part thereof; though M. le Clerc thinks it is eſſential to a compleat order. See Order.

The proportions and ornaments of the *pedeſtal*, are different in the different orders: Vignola, indeed, and moſt of the moderns, make the *pedeſtal* and its ornaments in all the orders, one third of the height of the column, including the baſe and capital: but ſome deviate from this rule.

M. Perrault makes the proportions of the three conſtituent parts of *pedeſtals* the ſame in all the orders, *viz.* the baſe one fourth of the *pedeſtal*; the cornice an eighth part; and the ſocle or plinth of the baſe two thirds of the baſe itſelf. The height of the dye is what remains of the whole height of the *pedeſtal*.

Tuſcan **Pedestal**, is the ſimpleſt, and the loweſt.—Palladio and Scamozzi, make it three modules high; Vignola 5. Its members in Vignola, are only a plinth for a baſe, the dye, and a talon crown'd for a cornice.—It has rarely any baſe. See Tuscan.

Doric **Pedestal**, Palladio makes four modules, five minutes high, Vignola five modules four minutes.—In the antique, we not only do not meet with any *pedeſtals*; but even, not with any baſe in the doric order.—The members in Vignola's doric *pedeſtal*, are the ſame with thoſe in the tuſcan, with the addition of a mouchette in its cornice. See Doric.

Ionic **Pedestal**, in Vignola and Serlio, is ſix modules high; in Scamozzi five; in the temple of Fortuna Virilis it is ſeven modules twelve minutes.—Its members and ornaments are moſtly the ſame with thoſe of the doric, only a little richer. The *pedeſtal* now uſually followed, is that of Vitruvius; though we do not find it in any work of the antique.—Some in lieu hereof uſe the attic baſe, in imitation of the ancient. See Attic.

Corinthian **Pedestal** is the richeſt and moſt delicate. In Vignola it is ſeven modules high, in Palladio five modules one minute, in Serlio ſix modules fifteen minutes, in the Coliſeum four modules two minutes.

Its members in Vignola are as follows: in the baſe are a plinth for a ſocle, over that a tore carved; then a reglet, a gula inverted and inriched, and an aſtragal.—In the dye are a reglet, with a conge over it, and near the cornice a reglet, with a conge underneath.—In the cornice is an aſtragal, a frieze, fillet, aſtragal, gorge, talon, and a fillet. See each under its proper article.

Compoſite **Pedestal**, in Vignola, is of the ſame height with the corinthian, *viz.* ſeven modules, in Scamozzi ſix modules two minutes, in Palladio ſix modules ſeven minutes, in the goldſmiths arch ſeven modules eight minutes.

Its members in Vignola, are the ſame with thoſe of the corinthian; with this difference, that whereas theſe are moſt of them enriched with carvings in the corinthian, they are all plain in the compoſite.—Nor muſt it be omitted, that there is a difference in the profiles of the baſe and cornice in the two orders.

The generality of architects, Daviler obſerves, uſe tables or pannels, either in relievo or creux, in the dyes of *pedeſtals*; without any regard to the character of the order. Thoſe in relievo, he obſerves, only fit the tuſcan and doric; the three others muſt be indented; which he adds, is a thing the ancients never practiſed, as being contrary to the rules of ſolidity, and ſtrength.

Square **Pedestal**, is that whoſe height and width are equal—as, that of the arch of the lions at Verona, of the corinthian order; and ſuch, ſome followers of Vitruvius, as Serlio, Philander, *&c.* have given to their tuſcan orders.

Double **Pedestal**, is that which ſupports two columns, and is more in width than height.

Continued **Pedestal**, is that which ſupports a row of columns without any break or interruption; ſuch is that which ſuſtains the fluted ionic columns of the palace of the Tuileries on the ſide of the garden.

Pedestals *of ſtatues*, are thoſe ſerving to ſupport figures or ſtatues. See Statue.

Vignola obſerves, there is no part of architecture more arbitrary, and wherein more liberty may be taken than in the *pedeſtals* of ſtatues; there being no laws preſcribed by antiquity: nor any even ſettled by the moderns.

There is no ſettled proportion for theſe *pedeſtals*; but the height depends on the ſituation, and the figure they ſuſtain. Yet, when on the ground, the *pedeſtal* is uſually two thirds, or two fifths of that of the ſtatue: but the more maſſive the ſtatue, the ſtronger the *pedeſtal*.

Their form, character, *&c.* are to be extraordinary and ingenious, far from the regularity and ſimplicity of the *pedeſtals* of columns. The ſame author gives us a great variety of forms, oval, triangular, multangular, *&c.*

Pedestrian *ſtatue*. See the article Statue.

PEDICLE*, Pediculus, in botany, *foot-ſtalk*; that little ſtalk whereby the leaf, fruit, or flower is ſuſtained, and connected to its branch, or ſtem. See Flower, Leaf, *&c.*

* The word is a diminutive of the Latin, *pes*, foot.

Flowers will keep freſh a long time after gathering, by immerging their *pedicles* in water. The great ſecret of preſerving fruits for the winter, is to ſeal up their *pedicles* with wax. Cherries with the ſhorteſt *pedicle*,, are eſteemed the beſt. The piſtil of the flower frequently becomes the *pedicle* of the fruit. See Pistil.

PEDIÆAN, ΠΕΔΙΑΙΟΣ, in antiquity.—The city of Athens was anciently divided into three different quarters; one on the deſcent of a hill; another on the ſea-ſhore; and a third in a plain between the other two.

The inhabitants of the middle regio were call'd Πεδιαιοι, * *Pediæans*; or, according to Ariſtotle, *Pediaci*: thoſe of the hill, Diacrians; and thoſe of the ſhore, Paralians. See Diacrian.

* The word is formed from the Greek ϖεδιον plain, flat.

Theſe quarters uſually compoſed ſo many different factions: Piſiſtratus made uſe of the *Pediæans* againſt the Diacrians.

In the time of Solon, when a form of government was to be choſen, the Diacrians would have it Democratic; the *Pediæans* demanded an Ariſtocracy; and the Paralians a mixed government.

PEDIÆUS, in anatomy, is the ſecond of the extenſor muſcles of the foot, *pes*; whence its name. See Foot.

It has its origin in the lower part of the perone, and annular ligament; and is divided into four tendons, which are inſerted into the external part of the firſt articulation of the four toes.—Its uſe is to extend the foot together with the firſt of the extenſors, called *extenſor communis*. See Extensor.

PEDICULARIS * *morbus*, in medicine, the louſy diſtemper; a diſeaſe ariſing from ſome uncommon corruption in the body, which generates infinite quantities of lice on the ſkin. See Phthiriasis.

* The word comes from the Latin *pediculus*, louſe.

Herod is ſaid to have died of the *pedicular* diſeaſe.

PEDIGREE, a deſcent or genealogy. See Descent and Genealogy.

PEDIMENT, in architecture, a kind of low pinnacle; ſerving to crown an ordonnance, or finiſh a frontiſpiece; and placed as an ornament over gates, doors, windows, niches, altars, *&c.* —See *Tab. Architect. fig.* 24. See alſo Crowning, *&c.*

The pinnacles of the ancient houſes, Vitruvius obſerves, gave architects the firſt idea of this noble part; which ſtill retains the appearance of its original. See Pinnacle.

The parts of the *pediment* are, the tympanum, and its cornice. The firſt is the pannel, naked, or area of the *pediment*, repreſented by *e*, in *Tab. Architect. fig.* 34. encloſed between the cornice *f*, *f*, which crowns it, and the entablature, which ſerves it as a baſe or ſocle.

Architects have taken a deal of liberty in the form of this member: nor do they vary leſs as to the proportion of the *pediment*.—The moſt beautiful, according to *Daviler*, is that where its height is about one fifth of the length of its baſe.

It is deſcribed thus: divide the line *a b* (*Tab. Architect. fig.* 34.) which is the length of the baſe, into two equal parts, in the point *c*, by means of the perpendicular *f d*; in this perpendicular, take the part *e d*, equal to *a c*; and from the point *d*, as a centre, deſcribe the arch *a e b*. The point of the perpendicular cut in *e*, will be the top of the *pediment a e b*; and the cornice, and the triangular ſpace included therein, the tympanum.

Vitruvius calls the *pediment*, faſtigium; a word which ſignifies a roof raiſed or pointed in the middle, which form among the Romans was peculiar to temples. All their dwelling-houſes were covered in the plat-form manner: Salmaſius on Solinus obſerves, that Cæſar was the firſt who obtained leave to roof his houſe with a ridge, after the manner of temples. See Plat-Form.—Pliny tells us, that *pediments* were firſt made to place ſtatues upon, whence they were called plaſtæ. See Statue, *&c.*

The *pediment* is uſually triangular, and ſometimes an equilateral triangle, called alſo a *pointed pediment*.—Sometimes it is circular; though Felibien obſerves, that we have no inſtance of round *pediments* in the antique, beſide thoſe in the chapels of the Rotondo.

Sometimes its upper cornice is divided into three, or four ſides, or right lines: ſometimes the cornice is cut, or open a top; which is an abuſe introduced by the moderns, particularly Michael Angelo. For the deſign of this part, at leaſt over doors, windows, *&c.* being chiefly to ſhelter thoſe underneath from the rain, to leave it open in the middle, is to fruſtrate its end.

Sometimes the *pediment* is formed of a couple of ſcrolls, or wreathes, like two conſoles joined together. See Console.

Sometimes again the *pediment* is without a baſe, or its lower cornice is cut out, all but what is beſtowed on two columns or pilaſters, and on theſe an arch or ſweep raiſed, in lieu of an entablature: of which Serlio gives an inſtance in the antique, in a corinthian gate a Foligny, in Umbria; and Daviler, a more modern one, in the church of St. Peter at Rome.

Under this kind of *pediments*, do alſo come thoſe little arched cornices, which form *pediments* over doors and windows, ſupported by two conſoles, in lieu either of entablature or columns.

Sometimes the *pediment* is made double, *i. e.* a leſs *pediment* is made in the tympanum of a larger, on account of ſome projecture in the middle; as in the frontiſpiece of the church of the great Jeſus at Rome: but this repetition is an abuſe in architecture, though authorized by very good buildings; as the large pavillion of the Louvre, where the caryatides ſupport three *pediments* one in another.

Sometimes the tympanum of the *pediment* is cut out, or left open, to let in light; as we ſee under the portico of the capital at Rome. Laſtly, this open *pediment* is ſometimes triangular, and enriched with ſculpture, as roſes, leaves, *&c.* as we find in moſt of the gothic churches.

M. Le Clerc obſerves, that the modillions in the cornice of the *pediment* ſhould always anſwer exactly over thoſe of the entablature. Indeed, Vitruvius ſays, the ancients did not allow any modillions at all in *pediments*. See MODILLION.

The ſame M. Le Clerc obſerves, that the cornice which ſerves the *pediment* as a baſe, ſhould have no cymatium; by reaſon the cymatium of the reſt of the entablature, when it meets the *pediment*, paſſes over it.

This change of determination occaſions a conſiderable difficulty; the cymatium, in this caſe, appearing too broad in the turn of the angle. To remedy which, the architects have recourſe to ſeveral expedients.

A pointed pediment may crown three arches; but a *circular pediment* can only crown one agreeably.

One would never uſe above two *pediments* over each other in the ſame frontiſpiece; and even where there are two, it would be proper to have the lower circular, the upper pointed.

PEDIS *abſciſſo*, cutting off a foot; a puniſhment anciently inflicted among us: as appears by the laws of William the conqueror. *Interdicimus ne quis occidatur, vel ſuſpendatur, pro aliqua culpa, ſed eruantur oculi,* abſcindantur pedes, *vel teſticuli, vel manus, &c. Leg. Will. cap.* 1.—So *Ingulphus, ſub pœna perditionis dexteri ſui pedis, &c.*

PEDIS *minimi digiti abductor*	See the articles	ABDUCTOR.
Adductor pollicis PEDIS		ADDUCTOR.
Dorſum PEDIS		DORSUM.
Flexor pollicis PEDIS		FLEXOR.
PEDIS *interoſſei*		INTEROSSEI.
PEDIS *perforans*		PERFORANS.
PEDIS *perforatus*		PERFORATUS.
PEDIS *tranſverſalis*		TRANSVERSALIS.
Tranſcriptio PEDIS *finis*		TRANSCRIPTIO.
PEDITUM *arraiatio*		ARRAIATIO.

Pedo-BAPTISM. See PÆDO-*Baptiſm.*

PEDOMETER*, or PODOMETER, way-wiſer; a mechanical inſtrument, in form of a watch; conſiſting of various wheels with teeth, catching in one another; all diſpoſed in the ſame plane; which by means of a chain or ſtring faſtned to a man's foot, or the wheel of a chariot, advance a notch each ſtep, or each revolution of the wheel; ſo that the number being mark'd on the edge of each wheel, one may number the paces, or meaſure exactly the diſtance from one place to another. See PERAMBULATOR.

* The word is formed from the Greek πȣς, *pes*, foot; and μετρον, meaſure.

PEDOMETER, is ſometimes, alſo, uſed for a ſurveying wheel, an inſtrument chiefly uſed in meaſuring roads; popularly called the *way-wiſer*. See PERAMBULATOR.

PEDRERO, PETERERO, or PATERERO, a ſmall piece of ordnance, uſed on board ſhips; for the diſcharging of nails, broken iron, or partridge ſhot on an enemy attempting to board. See ORDNANCE and MORTAR.

They are generally open at the breech, and their chamber made to take out, to be loaded that way, in lieu of the muzzle. See CHAMBER.

PEDUNCULI, in anatomy, two medullary proceſſes of the cerebellum, whereby that part is joined to the medulla oblongata. See CEREBELLUM and MEDULLA.

Willis, who firſt gave them the name, obſerved in them three diſtinct proceſſes on either ſide, the two firſt whereof go to the teſtes, the ſecond directly from the cerebellum to the medulla oblongata, decuſſating the former, and faſtening the proceſſus annularis. The third, ſpringing from the hind proceſs of the cerebellum, is inſerted into the medulla oblongata; looking like an additional chord to it.

PEEK, in the ſea language, a term uſed in various ſenſes.—*E. gr.* an anchor is ſaid to be a *a-peek*, when the ſhip being about to weigh, comes over her anchor, ſo as the cable hangs perpendicularly between the hauſe and the anchor;—the bringing of a ſhip into which poſition they call *heaving a-peek*.

A ſhip is ſaid to *ride a-peek* when lying with her main and fore-yards hoiſed up, one end of her yards is brought down to the ſhrouds, and the other raiſed up an end; which is chiefly done when ſhe lies at reſt in rivers, leſt other ſhips, falling foul on her, ſhould break her yards.

To ride a broad-peek, denotes much the ſame, excepting that the yards here are only raiſed to half the height.

To peek the miſſen, is to put the miſſen-yard perpendicular by the maſt.

PEEK is alſo uſed for the room in the hold, from the bitts forward to the ſtem, where men of war keep their powder, and merchant men their victuals.

PEER, PAR, primarily denotes an equal, or one of the ſame rank and condition.—Hence, in ſome councils or aſſemblies, we find, with the conſent of our peers, biſhops, abbots, *&c.*

PEER, afterwards was applied to the vaſſals, or tenants of the ſame lord, who were obliged to ſerve, and attend him in his courts. They were called *peers*, *pares*, becauſe equal in function; and *peers in fiefs, or fees*, becauſe holding fees of the lord, or becauſe their buſineſs in court was to ſit and judge under their lord of diſputes ariſing on fees.

The number of *peers* required to ſit in court, was at leaſt four; and when there happened to be too many *peers* in the ſame lordſhip, the lord uſually choſe out twelve who had the title of *peers* by way of diſtinction and eminence. See VASSAL.

There are alſo inſtances of women who have aſſiſted at judgments, on account of their tenements, not of their being wives of *peers*. The origin of theſe *peers* of fees is as ancient as that of the fees they were appointed to judge of; from theſe we derive our common juries, and our peers of the realm. See PAR *regni*, JURY, and PEER *of the realm.*

PEER *of the Realm*, denotes a noble lord, or perſon who has a ſeat, and vote in the upper-houſe of parliament; hence called the *houſe of peers*. See NOBLE, *&c.*

The houſe of lords have a *right* to take cogniſance, originally, of all public accounts; and to enquire into any miſapplication, or default in the diſtribution of public monies, or of any other miſmanagement whatſoever. *Vide* Life of qu. Ann, p. 85.

There are five degrees of peerage, or nobility, *viz.* that of a duke, marqueſs, earl, viſcount, and baron. See each under its proper article DUKE, MARQUESS, EARL, *&c.*

It is the king confers the *peerage*, by honouring the perſon with ſome of thoſe titles by patent. See NOBILITY, BARON, *&c.*

PEERS, PAIRS *of France*, are the 12 grand lords of that kingdom. the inſtitution of theſe *peers* is very uncertain; ſome refer it to Hugh Capet, at the time when the dukes and counts changed the offices they then held of the king into perpetual fiefs. But this is impoſſible; Champagne not being then erected into a county. Indeed Paſquier obſerves, that it is an old tradition there has been 12 *peers* in all ages.

Of theſe *peers*, ſix are dukes, and ſix counts, *comtes*; of theſe again, ſix are eccleſiaſticks, and ſix lay-men. The archbiſhops of Rheims, biſhops of Laon, and Langres are dukes and *peers*; the biſhops of Noyons, Chalon on the Marn, and Beauvais, are counts and *peers*.

The dukes of Burgundy, Normandy, and Aquitain were lay *peers* and dukes; and the counts of Flanders, Champagne, and Tholouſe, lay *peers*, and counts.

Theſe lay *peers* ſtill aſſiſt at the coronation of the kings in ceremony, and by way of repreſentatives; where each performs the functions attached to his reſpective dignity: though their peerſhips be in reality all, except Flanders, reunited to the crown. Six lords of the firſt quality are choſe to repreſent them.—The eccleſiaſtic *peers* uſually aſſiſt in perſon.

At preſent, the title *peer*, in France, is beſtowed, as in England, on every lord or perſon, whoſe fee is erected into a lordſhip or peerſhip.

The word *peer*, according to Paſquier, is derived from patricius, the firſt dignity in the eaſtern empire, on the model whereof he ſuppoſes theſe *peers* to have been inſtituted. But others with more probability derive the title from the *pares curiæ*, or of fees, becauſe of their being equal to each other.

Theſe *pares curiæ*, on whoſe model they ſuppoſe the peers of Realms to have been erected, were a kind of vaſſals depending all on the ſame lord, whom they oblig'd to attend and aſſiſt in court.

All feudal matters or diſputes among vaſſals relating to their fees or dependences, were terminated by the ſuperior lord of the two contending parties, and by their *peers* in fee.

If the proceſs were between the lord and the vaſſal, the lord took no cognizance of it, and the *peers* alone judged it.

Hence, all lords or nobles being *pares nobilitate*, *i. e.* all equally entitled to the privileges or nobility, are denominated *pares regni*, *peers* of the realm.

Some authors attribute the firſt inſtitution of *peers* of the realm to Charlemagne; but with little probability; ſince moſt of the fiefs which bear the names of duchies, *&c.* or give titles to the *peers*, were not erected into duchies, *&c.* till long after. The dukes, *&c.* in thoſe days being no more than ſimple governors of provinces, without any other title or privileges. See DUKE.

The mote probable opinion is, that *peers* were firſt inſtituted by Philip the young, of France, about the year 1179; and that they firſt acted in capacity of *peers* at the coronation of his ſon.

PEER, or PIER*, in building, denotes a maſſive of ſtone, *&c.* oppoſed, by way of fortreſs, againſt the force of the ſea, or a great river; for the ſecurity of ſhips, that lye at harbour in any haven. See PORT, *&c.*

* The word in this ſenſe, is formed from the French, *pierre*, ſtone. Such See PIEDROIT.

Such is the *peer* of Dover deſcribed by Camden, *Brit.* The haven and *peer* of great Yarmouth, mentioned 22 Car. II.

PEERS are alſo uſed in architecture for a kind of pilaſters or buttreſſes, raiſed for ſupport, ſtrength, and ſomething for ornament. See PIEDROIT and PARASTATA.

PEERAGE, the dignity of a *peer* attached to a duchy, earldom, barony, or the like. See PEER.

The Kings of England and France confer *peerage* at pleaſure.

His late majeſty of England offered his parliament to reſign that branch of his prerogative, and to have the number of *peers* limited.

The reaſon inſiſted on, was the inconvenience accruing to the ſtate from an arbitrary and immoderate uſe thereof, the prince having it hereby in his power to throw what number of his creatures he pleaſes into the upper-houſe of parliament.

The twelve *peers* created at once in the late reign, was a main argument in behalf of the *peerage* bill.—It is recorded as a ſaying of King Charles, that if his friends could but ſecure him a houſe of commons, he would put his whole troop of guards into the upper-houſe, but he would have the *peers*.

To hold land in PEERAGE, in the ancient cuſtoms, was a tenure which obliged the perſon to aſſiſt the lord's bailiff in his judgments; as all the ancient vaſſals, called *peers*, did. See PEER and VASSAL. See alſo TENURE.

PEGASUS, among the poets, a horſe imagined to have wings; being that whereon Bellerophon was fabled to be mounted when he engaged the Chimæra. See CHIMÆRA.

The opening of the fountain Hippocrene, on mount Helicon, is aſcribed to a blow of *Pegaſus*'s hoof.—It was feigned to have flown away to heaven; where it became a conſtellation. Hence

PEGASUS, in aſtronomy, the name of a conſtellation of the northern hemiſphere, in form of a flying horſe. See CONSTELLATION,

The ſtars in this conſtellation in Ptolemy's catalogue are 20, in Tycho's 19, in the Britannic catalogue 93. Whoſe longitudes, latitudes, magnitudes, &c. are as follow.

Names and ſituation of the ſtars.	Sign.	Longit.			Latitude, North.			Magnit.
		°	′	″	°	′	″	
Preced. } In the triangle over Pegaſus's mouth.	♒	25	58	39	33	18	39	4
North }		29	49	57	36	09	30	4 5
		24	43	41	19	38	14	6
		24	36	55	18	46	05	6
5		29	49	32	31	28	35	6 7
		23	37	56	15	21	40	6
		25	21	30	18	22	36	6
Pegaſus's mouth		27	33	32	22	07	16	3
Poſter. and ſouth. in the triangle	♓	0	41	04	29	02	49	4 5
In the heel of the preced. foot		4	37	10	36	39	05	4
		25	39	21	15	06	59	6
		3	34	17	34	05	10	6
		2	04	04	28	28	58	6
		8	25	13	40	15	40	6
		8	19	10	38	46	07	6
		6	54	27	36	07	07	6
		1	35	20	23	01	46	6
		0	16	21	17	46	20	5
		1	06	39	19	06	36	7
20		3	01	42	23	37	20	6
		2	51	41	21	47	57	5
South of two in the head		0	58	06	15	42	01	5
		11	39	57	37	40	34	6
In the preced. knee		10	04	09	34	17	48	4
25		8	31	30	30	51	42	6 7
North in the head		2	28	46	16	21	48	4
		15	04	15	41	03	45	8
In the heel of the hind foot		8	48	51	29	58	44	6 7
		15	15	13	40	59	52	4 5
30		19	42	07	44	24	30	5
Small one againſt the ear.		4	48	30	15	01	47	6
North in the ear, or rather inform		7	37	52	20	51	42	4 5
		15	10	56	35	34	03	5 6
		11	55	26	28	34	40	6 7
In the top of the main, proced. of little △) 35		5	42	45	13	09	56	6
North of the triangle		6	08	55	13	21	09	5
		8	11	58	17	18	50	6 7
Poſter. and ſouth. in the ſame		6	33	16	12	53	28	6
		19	41	51	38	29	08	6
40	♓	13	48	43	27	09	30	6 7
	♓	15	0	29	25	54	02	6 7
		15	17	33	25	56	59	6
Preced. of the contig. ſtars in the neck		11	59	06	17	42	03	3
South in the hind knee		20	35	43	34	25	43	5 6
North. in the ſame knee 45		21	24	12	35	07	01	3
		16	29	36	25	05	48	6
Laſt of the contig. in the neck		13	37	19	18	27	18	5
Preced. of the two in the breaſt		18	43	48	28	43	12	4
Subſeq.		20	03	20	22	23	32	4
North of two in the main 50		13	57	01	15	43	34	6
South of the ſame		14	14	06	14	30	06	6
		19	56	37	25	11	47	6
		16	21	59	16	46	18	6
In the riſe of the hind leg Scheat.		25	02	13	31	08	06	2
In the ſhoulder of the wing Markab 55 of the neck		19	09	13	19	24	37	2
Preced. of the north in the ſmall □		17	14	16	13	53	52	5
That under Scheat.		24	28	48	28	28	30	5 6
Preced. of South. in □ of neck		17	31	19	12	58	10	6
Laſt of north.		18	06	39	13	57	58	6
Laſt of ſouth. 60		18	03	32	12	47	24	6 5
		26	16	35	29	13	44	6
		27	53	40	30	05	17	6
North of two under the wing in		26	44	08	20	33	57	6
the body)	♈	0	10	38	31	31	39	6
Preced. of 5 in the belly 65		1	11	12	32	39	01	6
	♓	25	50	08	22	44	22	6 7
Preced. of two behind Markab.		22	10	23	14	57	25	6
Second and north in the belly	♈	02	09	28	32	52	21	6 7
South of two under the wing	♓	27	38	15	24	47	52	6
70		29	01	51	26	09	20	6 7
That behind Markab (and 63d		23	45	06	14	45	25	5 6
That in a right line with the 69th		29	04	02	23	10	09	6
Third and middle in the belly	♈	03	35	42	31	01	57	6
		4	56	31	32	53	00	6
75	♓	27	25	39	17	37	36	7
Preced. in the middle of the wing		28	12	34	19	00	48	6
		28	23	55	16	40	02	6
		26	00	19	11	07	40	6
Fourth in the belly	♈	4	46	00	28	18	95	5 6
South of five in the belly 80		5	45	24	27	16	20	6
	♓	27	24	45	9	24	26	6 7
		2	57	24	20	32	38	7
Middl. in the mid. wing.		1	49	59	18	13	41	6
		28	22	33	10	45	59	6
North. in the mid. wing. 85		3	03	01	20	35	00	6
North in the extrem. of the wing		5	45	50	23	09	16	6
		7	37	33	24	34	42	6
		2	22	00	11	42	38	5 6
In the navel, Andromeda's head		9	58	50	25	41	00	2
90		5	09	17	15	46	15	6
		2	25	18	9	13	22	5
Tip of the wing, Algenib		4	49	50	12	35	12	2
South in extrem. of the wing	♓	7	17	42	17	01	40	6

PEGMATES, or rather PEGMARES, in antiquity, a name given to certain gladiators, as well as artificers, among the Romans.

The ancients ſometimes exhibited ſhews of a ſort of moving machines, called *pegmata:* theſe were ſcaffolds variouſly adorned, ſomewhat after the manner of thoſe now raiſed for fire-works.

Theſe ſcaffolds being made to play, and riſe aloft, either threw up into the air the matters wherewith they were charged; and among the reſt, men, who were thus ſacrificed to afford the people diverſion; or they precipitated them into holes dug in the ground, where they lighted their funeral piles; or into the dens of wild beaſts.

Now, both the miſerable people thus ſacrificed, and the workmen that made and played the machines, were called *pegmates*, or *pegmares*.

According to Caſaubon, fire was ſet to the ſcaffold; and the *pegmates* were to ſave themſelves through the flames, and the wreck of the machine.

Lipſius only ſays, that the *pegmates* were ſuch gladiators as fought on ſcaffolds erected for that purpoſe.—They were alſo called *petauriſtæ*, *q. d.* flyers in the air. See GLADIATOR.

PELAGIÆ,* in natural hiſtory, a term uſed to expreſs ſuch ſea-ſhells and fiſhes, as never, or very rarely, are found near the ſhoars; but always reſide in the deep, or in thoſe parts of the bottom of the ſea which are moſt remote from land. See SHELL.

* The word is formed of the Greek πελαγος, marine, belonging to the ſea.

PELAGIANS, PELAGIANI, ancient hereticks, well known in the church by the writings of St. Auguſtin. See HERETIC. The author of this ſect, *Pelagius*, properly called *Morgan*, was a monk of Banchor; but the learned are at a loſs whether it was the monaſtery of Banchor in Wales, or that of the ſame name and order in Ireland. But he was cotemporary with St. Jerom, and St. Auguſtin, and quitted his country to go and live in the eaſt, according to the cuſtom of the monks of thoſe days, who were not attached to particular houſes like thoſe of our time.

Pelagius abſolutely denied all original ſin, which he held to be the mere invention of St. Auguſtin, and taught that men are entire maſters of their actions, perfectly free creatures: in oppoſition to all predeſtination, reprobation, election, *&c.* See ORIGINAL *ſin*, PREDESTINATION, and SEMI-PELAGIANS.

He owned indeed that the natural power of man needed to be aſſiſted by the grace of God, to enable him to work out his own ſalvation; but by this grace, he only meant outward aſſiſtance, *viz.* the doctrines of the law and of the goſpel. See GRACE.

Though, when preſſed by thoſe words of St. Paul, *deus eſt enim qui operatur in nobis, &c.* he owned that it is God, in effect, that makes us will what is good, when he warns and excites us by the greatneſs of the glory we are to obtain, and by the promiſes of rewards; when he makes us love him by revealing his wiſdom, *&c.*

Theſe are Pelagius's own words, as cited by St. Auguſtin; who confutes him, and ſhews that beſides theſe exterior graces, there are required other real and interior ones.

Pelagius owned further, that the will of man is indeed aided by a real grace; but added that this grace is not abſolutely neceſſary in order to live well; but only helps us to do well with the more eaſe.

Julian, one of his adherents went further yet; and owned that the aſſiſtance of grace was abſolutely neceſſary to enable us to do perfect works.

In effect, the grand doctrine of the *Pelagians* was, that a man might accompliſh all the commands of God by the mere power of nature; and that the gifts of grace were only neceſſary to enable him to act more eaſily, and more perfectly.

PELECAN. See the article PELLICAN.

PELECOID *angle.* See the article ANGLE.

PELECOIDES, * in geometry, a figure, in form of a hatchet.

* Whence its name from the Greek πελεκυς hatchet, and ειδος form.

Such is the figure BCDA, *Tab. Geometry, fig.* 45. contained under the two inverted quadrantal arcs AB and AD, and the ſemicircle BCD.

The area of the *pelecoides* is demonſtrated to be equal to the ſquare AC; and that, again, to the rectangle EB.—It is equal to the ſquare AC becauſe it wants of the ſquare on the left hand, the two ſegments AB and AC, which are equal to the two ſegments BC and CD, by which it exceeds on the right hand.

PELLETS, in heraldry, a name given thoſe roundlets which are black.—Called alſo *ogreſſes*, and *gun-ſtones*.

PELLICAN, or PELECAN, among chymiſts, a kind of double veſſel, ordinarily of glaſs; uſed in diſtilling liquors by circulation. See DOUBLE *veſſel* and CIRCULATION.

PELLICAN, alſo denotes an inſtrument uſed by chirurgeons, *&c.* to draw teeth.

PELLICAN, again, is the name of an ancient piece of ordnance, carrying a ball of ſix pounds; by the French made eight feet and half, and by the Dutch nine feet long. See CANNON, ORDNANCE, GUN, *&c.*

PELLICLE, PELLICULA, * a thin film, or fragment of a membrane or ſkin. See MEMBRANE.

* The word is a diminutive of *pellis*, ſkin.

The epiderma or cuticula, is a little *pellicle*, covering the derma, cutis or ſkin. See CUTICLE.

The valves of the veins and arteries are inſenſible *pellicles*, which open and ſhut to promote the circulation. See VALVE.

When any chymical ſolution is evaporated in a gentle heat till a thin ſkin or film ariſe a top, it is called an evaporation to a *pellicle*, wherein there is but juſt liquor enough left to keep ſalts in fuſion. See EVAPORATION.

PELLS, *Clerk of the* PELLS. See CLERK *of the pells.*

Controllers of the **PELLS**. See CONTROLLER.

PELLUCID, * a term of the ſame import with diaphanous, or tranſparent. See TRANSPARENT, *&c.*

* The word is formed of the Latin *pelluceo*, or *perluceo, I ſhine through.*

Pellucid, ſtands oppoſed to opake. See OPAKE.

PELLUCIDITY, diaphaneity, or tranſparency. See TRANSPARENCY, *&c.*

PELTA, ΠΕΛΤΗ, in antiquity, a kind of buckler, uſed among the ancients. See BUCKLER.

The *pelta* was ſmall, light, and more manageable than the parma. See PARMA.

It appears from Virgil, and other authors, that the *pelta* was the buckler uſed by the Amazons: and Xenophon obſerves, that the *pelta* of the Amazons was ſhaped like a leaf of ivy. See AMAZON.—Pliny ſpeaking of the Indian fig-tree, ſays its leaves are the width of the Amazonian *pelta*.—Servius on the Æneid ſays, the *pelta* reſembled the moon in her firſt quarter.

PELVIS, in anatomy, the lower part of the cavity of the abdomen; thus called from its reſemblance to a baſon, or ewer, called in Latin, *pelvis*. See ABDOMEN.

The *pelvis* is always much larger in women than in men, to give room for the growth, *&c.* of the fœtus. See MATRIX. It is well fortified with bones, to ſkreen the contents from external injuries.—The oſſa ileum, coxendicis, pubis & ſacrum, comprehend or environ the *pelvis*.

PELVIS *of the kidneys*, is a large membranous ſinus, or cell in the concave part of the kidneys.—See *Tab. Anat.* (Splanch) *fig*, 4. *litt. e. dd. &c.* See alſo KIDNEY.

From the twelve papillæ of the kidneys, ariſe twelve canals, called *fiſtulæ membranaceæ*. Theſe at length are collected into three large branches, which being at laſt united into one, form the *pelvis*; and this again, contracting itſelf, terminates in a membranaceous pipe, called the *ureter*. See PAPILLÆ and URETER.

The urine, then ſeparated from the blood by the urinary pipes, conveyed to them by the papillæ, and taken up by the fiſtulæ membranaceæ, is brought into the *pelvis*, and thence diſcharged into the ureter, thence into the bladder, *&c.* See URINE.

PEN, according to Camden, originally ſignifies a high mountain, which was thus called among the ancient Britains, and even Gauls.—And hence that tall range, which parts Italy and France, is called *apennines*. See MOUNTAIN.

PEN, is alſo a little inſtrument, uſually formed of a quill, and ſerving to write withal. See WRITING.

Dutch **PENS**, are thoſe made of quills, which have been paſſed through hot aſhes, to take off the groſſer fat and moiſture thereof. See QUILL.

Fountain **PEN**. See the article FOUNTAIN *pen.*

PEN *ſtock*, a ſort of ſluice or flood-gate placed in the water of a mill-pond, or the like, to retain or let it go at pleaſure. See SLUICE.

PENAL *action.* See the article ACTION.

PENALTIES *negative.* See the article NEGATIVE.

PENANCE, POENITENTIA, is properly the exerciſe of *penitence*; and may be defined a puniſhment, either voluntary, or impoſed by legal authority, for the faults a perſon has committed. See PUNISHMENT.

The Romaniſts define *penance*, a ſacrament wherein a perſon who has the requiſite diſpoſitions, receives abſolution at the hands of the prieſt, of all ſins committed ſince baptiſm. See SACRAMENT.

To a legitimate *penance* they require three things, contrition, abſolution, and ſatisfaction. See CONTRITION, ABSOLUTION, *&c.*

Their prieſts receive a power of adminiſtring the ſacrament of *penance*, when they receive the prieſthood; but to exerciſe this power, it is required they have the juriſdiction of an ordinary, *i. e.* that they have a benefice, either original or delegated; with the approbation of the biſhop to hear confeſſions.

PENANCE, is particularly uſed in the Romiſh church, for the penalty which a confeſſor impoſes, for ſatisfaction of the ſins whereof a perſon is abſolved. See CONFESSION and ABSOLUTION.

The ancient diſcipline, Du Pin obſerves, was very ſevere on the head of *penance*; for great crimes people were excluded the communion of the church, expelled the aſſemblies of the faithful, obliged to faſt, and to mortify themſelves publickly, even at the church door, cut their hair, go always on foot, *&c.*

He adds, that thoſe who had done public *penance*, were never admitted into the clergy; and that public *penance* was never granted more than once. Thoſe who fell a ſecond time were never to be reconciled to the church, and were to look for pardon only at the hands of God.

PENANCE, in our canon-law, is an eccleſiaſtical puniſhment, chiefly adjudged to the ſin of fornication. See FORNICATION.

The puniſhment is thus preſcribed by the canons: the delinquent to ſtand in the church porch on ſome ſunday bare head and bare foot, in a white ſheet, with a white wand in his hand; here bewailing himſelf, and begging every one to pray for him, Then to enter the church, falling down, and kiſſing the ground; and at laſt, placed on an eminence in the middle of the church, againſt the miniſter to declare the foulneſs of his crime, odious to God, and ſcandalous to the congregation.

If the crime be not notorious, the canons allow the puniſhment to be commuted at the parties requeſt, for a pecuniary mulct, for the benefit of the poor, *&c.*

PENATES, in the ancient mythology, a term applied to all the domeſtic gods, whom the ancients adored in their houſes: whence they are ordinarily confounded with the lares. See LARES.

Authors are not at all agreed about the origin of the *dii penates*, who were properly the tutelary gods of the Trojans, and were only adopted by the Romans, who gave them the title of *penates*.

De Meziriac, in his notes on Dido's epiſtle to Æneas, relates at large what he has met withal in the ancient writers on this ſubject: Dionyſius Halicarnaſſeus tells us that Æneas firſt lodged theſe gods in the city Lavinium; and that his ſon Aſcanius, afterwards, upon building the city Alba, tranſlated them thither; but that they returned twice miraculouſly to Lavinium. The ſame author adds, that in Rome is ſtill ſeen a dark temple, ſhaded by the adjacent buildings, wherein are the images of the Trojan gods, with the inſcription Denas, which ſignifies *penates*. See DENATES.

Theſe images repreſent two young men ſitting, each of which holds a lance. I have ſeen, adds Dionyſius, ſeveral other ſtatues of the ſame gods in ancient temples; who all appear like young men dreſſed in a habit of war.

Varro fetches theſe *penates* from Samothrace to Phrygia, to be afterwards tranſported by Æneas into Italy.—Macrobius, who relates this from Varro, adds, that they were called *penates* from the Latin words *per quos penitus ſpiramus*, which ſeems a mere ſubtilty. But the real etymology muſt be ſought in the Phrygian, not the Latin tongue.

Cicero, in Aulus Gellius, derives the name hence, *quod penes nos nati ſunt*. Yet in his book *de Nat. Deor.* he ſays, it is formed from *penus*, proviſion; or, perhaps, adds he, *quod penitus inſident*; others ſay, *quia coluntur in penetralibus*.

Roſinus diſtinguiſhes among the *penates*: he makes an order of *penates* of the heavens, ſuch as Pallas in the ethereal region, Jupiter in the middle region, and Juno in the loweſt; beſides, *penates* of cities, *penates* of private families, *&c.*—On which footing the *dii penates* were the guardian or tutelary gods of every thing. See TUTELARY.

It is a popular queſtion among the learned, who were the *penates* of Rome? ſome ſay Veſta, others Neptune and Apollo; Vives ſays Caſtor and Pollux, with whom agrees Voſſius, who adds that the reaſon of their chuſing Caſtor and Pollux in quality of *penates*, might be the important ſervice they did the Romans in the war againſt the Latins.

Nor are authors more unanimous on the ſubject of the *penates*, which Æneas brought into Italy. Some ſay they were Neptune and Apollo who built the walls of Troy; others Jupiter, Juno, and Minerva; others Cœlus and Terra.

PENCE, *Peter*-PENCE. See the article PETER-*pence*.

Pitching-PENCE. See the article PITCHING-*pence*.

PENCIL*, an inſtrument uſed by painters, for the application of their colours, See COLOUR and PAINTING.

* The word comes from the Latin, *peniculus*, *penicillus*, or *penicillum*, which ſignify the ſame, formed by diminution of *penis*, tail.

There are *pencils* of various kinds, and made of various matters: the moſt uſual are of badgers and ſquirrels hair, thoſe of ſwansdown, and thoſe of boars briſtles; which laſt are bound on to a ſtick bigger, or leſs, according to the uſes they are deſtined for; and when large, are call'd *bruſhes*.—The others are incloſed in the barrel of a quill.

The ancients, M. Felibien obſerves, had *pencils* made of little pieces of ſpunge; whence, doubtleſs, the ſtory of the painter, who, not able to expreſs the foam of a dog, ſucceeded by throwing his ſpunge at the picture.

PENCIL *caſe*. See the article PORT *craion*.

PENCIL *of rays*, in opticks, is a double cone, or pyramid of rays, joined together at the baſe; one of which hath its vertex in ſome point of the object, and has the cryſtallin humour, or the glaſs GLS (*Tab. Opticks*, *fig.* 39.) for its baſe; and the other has its baſe on the ſame glaſs, or cryſtallin, but its vertex in the point of convergence; as at C. See RAY, *&c.*

Thus BGSC is a *pencil* of rays; and the line BLC is called the *axis of that pencil*. See AXIS and RAY.

Optic **PENCIL**. See the article OPTIC.

PENDANT, *Ear-ring*, an ornament, of ſome precious matter, wore by the ladies; hung by a hole made for that purpoſe through the ear; and frequently enriched with diamonds, pearls, and other precious ſtones. See DIAMOND, PEARL, *&c.*

The *pendants* of the European ladies are nothing in compariſon with thoſe wore by the Eaſt-Indians, both men and women; among whom it is the faſhion to lengthen out the ears, and to enlarge the hole, by putting in *pendants* of the ſize of ſaucers, ſet with ſtones.

The queen of Calicut, Pyrard tells us, and other ladies of her court, have their ears, by this means, weighed down as low as their breaſts, and even lower; imagining this a main point of beauty; and the holes large enough to paſs the fiſt through.

The Moncois, who are the common people, are not allowed to wear their ears ſo long as the Naires, who are the nobility; three fingers length are the utmoſt ſtretch allowed the former.

In the Weſt-Indies, Columbus named a certain coaſt Oreja, by reaſon he found people with holes in their ears big enough to paſs an egg through. See EAR.

They make holes too in their lips and noſtrils, and hang *pendants* at them; which is alſo practiſed by the Mexicans and other nations. See NOSE.

PENDANT, in heraldry, a term applied to the parts hanging down from the label, to the number of three, four, five, or ſix at moſt. See LABEL.—Theſe muſt be ſpecified in blazoning, when there are more than three.—They reſemble the drops at the bottom of the triglyphs in the doric freeze. See LABEL, DROP, *&c.*

PENDANT *barometer*. See the article BAROMETER.

PENDANT *feathers*, in falconry, are thoſe feathers, which grow behind the thighs of an hawk. See FEATHER.

PENDANTS, among floriſts, a kind of ſeeds, growing on ſtamina, or chives. Such are thoſe in the middle of tulips, lilies, *&c.* See APICES, STAMINA, *&c.*

PENDANTS *of a ſhip*, are thoſe long colours, or ſtreamers, cut pointing out towards the end, and there divided into two parts; hung out at the heads of maſts, or at the yard-arm ends. See COLOUR and FLAG.

The *pendants* are chiefly uſed for ſhew, though ſometimes for diſtinction of ſquadrons.—See *Tab. Ship. fig.* 1. *n.* 80.

PENDANT, or **PENNANT**, is alſo uſed for a ſhort rope, which at one end is faſtened to the head of the maſt, or to the yard, or the clew of the ſail, and at the other end, hath a block and ſhiver, to reeve ſome running rope into.

The *pendant* of the tackle is made faſt to the head of the maſt; and the *pendants* of the back-ſtays are faſtned to, and hang down on the inſide of the ſhrouds.—All the yard-arms, except the miſſen have of theſe *pendants*, into which the braces are reeved.

PENDENTIVE, in architecture, the whole body of a vault, ſuſpended out of the perpendicular of the walls, and bearing againſt the arc-boutants. See VAULT.

Daviler defines it, a portion of a vault between the arches of a dome, uſually enriched with ſculpture: Felibien, the plane of the vault, contained between the double arches, the forming arches, and the ogives. See OGIVE.

The *pendentives* are uſually of brick, or ſoft ſtone; but care muſt be taken that the joynts of the maſonry be always laid level, and in right lines proceeding from the ſweep whence the riſe is taken.

The joints too muſt be made as ſmall as poſſible, to ſave the neceſſity of filling them up with ſlips of wood, or of uſing much mortar.

PENDULOUS, *hanging down*; a name which botaniſts give to thoſe heads of flowers which hang downwards; the ſtalk not being able to ſuſtain them upright. See FLOWER.

PENDULUM, in mechanicks, any heavy body ſo ſupended as that it may vibrate, or ſwing backwards and forwards, about ſome fixed point, by the force of gravity. See VIBRATION.

The vibrations, or alternate aſcent and deſcent, of the *pendulum* are called its *oſcillations*. See OSCILLATION.—The point on which it vibrates, is called the *center of ſuſpenſion or motion*. See CENTER and SUSPENSION.—And a right line paſſing through the center, parallel to the apparent horizon, is called the *axis of oſcillation*. See AXIS.

The vibrations of a *pendulum*, are all iſochronal, or effected in ſpaces of time perfectly equal. See ISOCHRONAL.

And hence the *pendulum* becomes the moſt accurate chronometer, or inſtrument for meaſuring time, in the world. See TIME and CHRONOMETER.

And hence alſo its vibrations are propoſed as an invariable and univerſal meaſure of lengths for the moſt diſtant countries and ages See MEASURE.

For, a vibration being once found, preciſely equal to a ſecond of time of the ſun's mean motion; if *v. gr.* the horary foot (as M. Huygens calls the third part of his ſecond *pendulum*) compared to the Engliſh ſtandard foot, be as 392 to 360; it will be eaſy, by calculation, to reduce all the other meaſures of the world to theſe feet; the lengths of *pendulums*, reckoned from the point of ſuſpenſion, to the center of the ball, being to each other, as the ſquares of the times wherein the ſeveral oſcillations are performed; and therefore reciprocally are the ſquares of the numbers of oſcillations performed in the ſame time.—On this ſame principle, M. Mouton, canon of Lyons, has a pretty treatiſe, *de menſura poſteris tranſmittenda*.

M. Huygens lays down the length of a *pendulum* that ſhall ſwing ſeconds, to be three feet, three inches, and two tenths of an inch; according to Sir J. Moor's reduction; which agrees perfectly with M. Mouton's *pendulum* eight inches one tenth long, to vibrate one hundred and thirty two times in a minute: ſo that this may be relied on as a ſure meaſure.—Note, the lengths of *pendulums* are uſually meaſured from the center of motion.

The firſt who obſerved this noble property, the iſochroniſm of *pendulums*, and made uſe thereof in meaſuring time, Sturmius tells us, was Ricciolus; after him Tycho, Langrenus, Wendeline, Merſenne, Kircher, and others hit on the ſame thing; though without any intimation of what Ricciolus had done.—Huygens firſt applied the *pendulum* to clocks. See *pendulum* CLOCK.

Pendulums are either *ſimple* or *compound*.

Simple **PENDULUM**, is that conſiſting of a ſingle weight, as A, conſidered as a point, and an inflexible right line, as AC, conſidered as void of gravity, ſuſpended on a center C, and voluble about it. (*Tab. Mechanicks*, *fig.* 36.)

Compound **PENDULUM**, is that which conſiſts of ſeveral weights, ſo fixed as to retain the ſame diſtance both from one another, and from the centre about which they vibrate. See Compound.

Doctrine and laws of Pendulums.—1° A *pendulum* raiſed to B, through the arch of the circle BA; will fall, and again riſe, through an equal arch, to a point equally high, D; and thence fall to A, and again riſe to B; and thus continue riſing and falling reciprocally, for ever.

For ſuppoſe HI a horizontal line, and BD parallel thereto; if the ball A, which we here conſider as a point, be raiſed to B; the line of direction BH, being perpendicular from the centre of gravity B to the horizontal line HI, falls without-ſide the baſe, which is in the point C.—The ball therefore cannot reſt, but muſt deſcend. See Descent.

But being retained by the thread BC, from falling perpendicularly through BH; it will fall through the arch BA. Conſequently, when the centre of gravity arrives at the bottom; A has the ſame force, it would have acquired in falling from K; and will therefore be able to riſe equally high as if it had, *i. e.* in deſcending through the firſt half of its vibration, it acquires a velocity by the continual acceleration of its fall: and as this velocity is always proportionable to the height whence it falls, as being in ſome meaſure the effect thereof; it is ſtill able to make it remount to the ſame height, ſuppoſing, according to the ſyſtem of Galileo, that the volocities are always the ſquare roots of the heights. See Acceleration.

Since then the thread prevents the *pendulum* going off in the tangent AI, it muſt aſcend through the arch AD, equal to that AB.

All the force therefore which it had acquired by falling, being exhauſted; it will return by the force of gravity through the ſame arch AD, and again riſe from A to B; and thus for ever. See Gravity.

Experience confirms this theorem, in any finite number of oſcillations; but if they be ſuppoſed infinitely continued, there will ariſe a difference. For the reſiſtance of the air, and the friction about the center C, will take off part of the force acquired in falling; whence it will not riſe preciſely to the ſame point whence it fell.

Thus the aſcent continually diminiſhing; the oſcillation will be at laſt ſtopped, and the *pendulum* hang at reſt. See Resistance and Friction.

2° If the *ſimple pendulum* be ſuſpended between two ſemicicloids CB and CD (*Tab. Mechanicks, fig.* 37.) whoſe generating circles have their diameter CF equal to half the length of the thread CA; ſo as the thread in oſcillating be wound about them; all the oſcillations, however unequal in ſpace, will be iſochronal, or performed in equal times; even in a reſiſting medium.

For ſince the thread of the *pendulum* CE, is wound about the ſemi-cycloid BC; the centre of gravity of the ball E, which is here conſidered as a point, by its evolution, will deſcribe a cycloid BEAD; as is ſhewn from the doctrine of infinites; but all aſcents and deſcents in a cycloid are iſochronal, or equal in time: therefore the oſcillations of the *pendulum* are alſo equal in time. See Cycloid.

Hence, if with the length of the *pendulum* CA, a circle be deſcribed from the centre C; ſince a proportion of the cycloid near the vertex A, is almoſt deſcribed by the ſame motion; a ſmall arch of the circle will almoſt coincide with the cycloid.

In little arches of a circle, therefore, the oſcillations of *pendulums* will be iſochronal as to ſenſe; however, unequal in themſelves; and their ratio to the time of perpendicular deſcent through half the length of the *pendulum*, is the ſame with that of the circumference of a circle to its diameter.

Hence, alſo, the longer the *pendulums* are, that oſcillate in arches of a circle; the more oſcillations are iſochronal; which agrees with experiment: for in two *pendulums* of equal lengths, but oſcillating in unequal arches, provided neither arch be very great, you will ſcarce diſern any inequality in an hundred oſcillations.

Hence, alſo, we have a method of determinating the ſpace which a heavy body, falling perpendicularly, paſſes over in a given time. For the ratio which the time of one oſcillation has to the time of the fall through half the length of the *pendulum*, being thus had; and the time wherein the ſeveral vibrations of any given *pendulum* being found; we have the time of the fall through half the length of the *pedulum*. And hence may collect the ſpace it will paſs over in any other time.

The whole doctrine of *pendulums* oſcillating between two ſemicycloids, both theory and practice, we owe to the great Huygens; who firſt publiſhed the ſame in his *Horologium Oſcillatorium ſive demonſtrationes de motu pendulorum, &c.*

3°. The action of gravity is leſs in thoſe parts of the earth where the oſcillations of the ſame *pendulum* are ſlower, and greater where they are ſwifter.

For the time of oſcillation in the cycloid, is to the time of perpendicular deſcent through the diameter of the generating circle, as the periphery of the circle to the diameter.

If then the oſcillations of the ſame *pendulum* be ſlower; the perpendicular deſcent of heavy bodies is likewiſe ſlower, *i. e.* the motion is leſs accelerated, or the force of gravity is leſs: and converſely. See Gravity.

Hence, as it is found by experiment, that the oſcillations of the ſame *pendulum* are ſlower near the equator, than in places leſs remote from the pole; the force of gravity is leſs towards the equator than towards the poles. And conſequently the figure of the earth is not a juſt ſphere, but a ſpheroid. See Earth and Spheroid.

This M. Richer found by an experiment made in the iſland Cayenna, about four degrees from the equator; where a *pendulum* 3 foot, 8 lines $\frac{2}{5}$ long, which at Paris vibrates ſeconds, was to be ſhortened a line and a quarter to reduce its vibrations to ſeconds.

M. des Hayes, in a voyage to America, confirms the obſervation of Richer; but adds, that the diminution eſtabliſhed by that author, appears too little.

M. Couplet the younger; upon his return from a voyage to Braſil and Portugal, falls in with M. des Hayes, as to the neceſſity of ſhortening the *pendulum* towards the equator more than Richer has done. He obſerved, that even at Liſbon the *pendulum* which ſwings ſeconds, muſt be two lines $\frac{1}{2}$ ſhorter than that of Paris; which is ſhorter than that of Cayenna, as fixed by Richer; though Cayenna be in 24 degrees leſs latitude than Liſbon.

The truth is, this diminution does not proceed regularly: Meſſ. Picart and de la Hire, found the length of the *pendulum* which beats ſeconds exactly the ſame at Bayonne, at Paris, and at Uranibourgh in Denmark, though the firſt be in 43° $\frac{1}{2}$ of latitude, and the laſt in the latitude 55° 3′.

Hence M. de la Hire takes occaſion to ſuſpect that the diminution is only apparent; and that *e. gr.* the iron yard, wherewith M. Richer meaſured his *pendulum*, might be lengthened by the great heats of the iſle of Cayenna; not the *pendulum* ſhortened by the approach towards the line.

To confirm this, he tells us he found, by very careful experiments, that an iron bar, which expoſed to the froſt was 6 foot long; was lengthened $\frac{2}{3}$ of a line by the ſummer's ſun. See Dilatation, Heat, Thermometer, *&c.*

4°. If two *pendulums* vibrate in ſimilar arches, the times of the oſcillations are in the ſubduplicate ratio of their lengths.

Hence the lengths of *pendulums* vibrating in ſimilar arches, are in a duplicate ratio of the times wherein the oſcillations are performed.

5°. The numbers of iſochronal oſcillations performed in the ſame time by two *pendulums*, are reciprocally as the times wherein the ſeveral oſcillations are performed.

Hence the lengths of *pendulums* vibrating in ſimilar and ſmall arches are in the duplicate ratio of the numbers of oſcillations performed in the ſame time, but reciprocally taken.

6°. The lengths of *pendulums* ſuſpended between cycloids, are in a duplicate ratio of the times wherein the ſeveral oſcillations are performed.

And hence they are in a duplicate ratio of the numbers of oſcillations performed in the ſame time, but reciprocally taken: and the times of oſcillations in different cycloids are in a ſubduplicate ratio of the lengths of the *pendulums*.

7°. To find the length of a *pendulum*, which ſhall make any aſſigned number of vibrations in any given time,

Let the number of vibrations required, be 50 in a minute, and the length of the ſtring, counted from the point of ſuſpenſion, to the centre of oſcillation, or round ball at the end of it be required: it is a fixed rule that the lengths of *pendulums* are to each other, as the ſquares of their vibrations and contrarywiſe: now it is agreed that a *pendulum* vibrating ſeconds (or 60 times in a minute) is 39 inches, and $\frac{2}{10}$ of an inch; ſay therefore as the ſquare of 50 (which is 2500) to the ſquare of 60, (which is 3600) ſo is 39, 2, to the length of the *pendulum* required: which will be found 56 inches $\frac{4}{10}$.

Note, In practice, ſince the product of the mean time will always be 1411200 (that is the product of the ſquare of 60, multiplied by39, 2.) that is 3600 + 39, 2. you need only divide that number by the ſquare of the number of vibrations aſſigned; and the quotient will give the length of a *pendulum*, which ſhall vibrate juſt ſo many times in a minute.

8°. The length of a *pendulum* being known, to find the number of vibrations it will make in a given time.

This being the reverſe of the former; ſay, as the length given, ſuppoſe, 56, 4, is to the length of the ſtandard *pendulum* ſwinging ſeconds, *viz.* 39, 2; ſo is the ſquare of the vibrations of the ſtandard *pendulum* in the given time, *v. gr.* a minute, to the ſquare of the vibrations ſought: that is, as 56, 4 : 32, 2 : : 3600 : 2500.—And the ſquare root of 2500, will be 50, the number of vibrations ſought.

But for uſe, here, (as in the former problem) you need only divide 1411200 by the length; and it gives the ſquare of the vibrations; as there you divided by the ſquare of the vibrations to find the length.

On theſe principles, Mr. Derham has conſtructed a table of the vibrations of *pendulums* of different lengths in the ſpace of a minute.

Pend. length in inches.	Vibrat. in a Minute.	Pend. length in inches.	Vibrat. in a Minute.
1	375.7	30	68.6
2	265.6		
3	216.9	39.2	68.0
4	187.8		
5	168.0	40	59.5
6	153.3	50	53.1
7	142.0	60	48.5
8	132.8	70	44.9
9	125.2	80	42.0
10	118.8	90	39.6
20	84.0	100	37.5

Note, Theſe laws, *&c.* of the motion of *pendulums*, will ſcarce hold ſtrictly, unleſs the thread that ſuſtains the ball, be void of weight, and the gravity of the whole weight be collected in a point.

In practice, therefore, a very fine thread, and a ſmall ball, but of a very heavy matter, are to be uſed. A thick thread, and a bulky ball diſturb the motion ſtrangely; for in that caſe, the *pendulum*, of ſimple, becomes compound; it being much the ſame as if ſeveral weights were applied to the ſame inflexible rod in ſeveral places.

The uſe of *pendulums* in meaſuring time in aſtronomical obſervations, and on other occaſions where a great degree of preciſeneſs is required; is too obvious to need a deſcription. Either the length of the *pendulum* may be adjuſted before its application, and made to vibrate the deſired time, *v. gr.* ſeconds, half ſeconds, *&c.* by article VI or it may be taken at random, and the times of the vibrations afterwards determined from article VIII.

For the uſe of the *pendulum* in meaſuring remote inacceſſible diſtances, *&c.* by means of ſound, *&c.* See SOUND.

PENDULUM *Clock*, a clock, which derives its motion from the vibration of a *pendulum*.

It is controverted between Galileo and Huygens, which of the two firſt applied the *pendulum* to a clock. For the pretenſions of each. See CLOCK.

After Huygens had diſcovered that the vibrations made in arches of a cycloid, however unequal they were in extent, were all equal in time; he ſoon perceived that a *pendulum* applied to a clock, ſo as to make it deſcribe arches of a cycloid, would rectify the otherwiſe unavoidable irregularities of the motion of the clock; ſince, though the ſeveral cauſes of thoſe irregularities ſhould occaſion the *pendulum* to make greater or leſs vibrations; yet, in virtue of the cycloid, it would ſtill make them perfectly equal; and the motion of the clock governed thereby, would be preſerved perfectly equable. See CYCLOID.

But the difficulty was to make the *pendulum* deſcribe arches of a cycloid; for, naturally, the *pendulum* being tied to a fixed point, can only deſcribe arches of circles about the ſame.

Here M. Huygens hit on a ſecret which all the world is now the better for: the iron rod or wier which bears the bob or bottom, he tied a top to a ſilken thread, placed between two cycloidal cheeks, or two little arches of a cycloid, made of metal. Hence the motion of vibration, applying inceſſantly from one to the other of thoſe arches, the thread, which is extremely flexible, eaſily aſſumes the figure thereof; and by means hereof it is demonſtrated, that the weight ſuſpended at the other end of the rod, will deſcribe a juſt arch of a cycloid.

This is doubtleſs one of the moſt uſeful and ingenious inventions many ages have produced: by means whereof, we have clocks which will not err a ſingle ſecond in ſeveral days.

It is true, the *pendulum* is liable to its irregularities, how minute ſoever they may be; and M. de la Hire thinks there is ſtill room to improve it.

The ſilk thread by which it is ſuſpended, he obſerves, ſhortens in moiſt weather, and lengthens in dry; by which means the length of the whole *pendulum*, and conſequently the times of the vibrations are varied.

To obviate this inconvenience, M. de la Hire, in lieu of a ſilk thread, uſed a little fine ſpring; which was not indeed ſubject to ſhorten and lengthen; but which he found grew ſtiffer in cold weather, and made its vibrations faſter than in warm.

He had therefore recourſe to a ſtiff wire or rod, firm from one end to the other. Indeed, by this means he renounced the advantages of the cycloid; but he found, as he ſays, by experience, that the vibrations in arches of circles are performed in times as equal, provided they be not of too great extent, as thoſe in cycloids. But the experiments of Sir J. Moor and others, have demonſtrated the contrary.

The ordinary cauſes of the irregularities of *pendulums*, Mr. Derham aſcribes to the alterations in the gravity, and temperature of the air; which increaſe and diminiſh the weight of the ball, and by that means make the vibrations greater and leſs: an acceſſion of weight in the ball being found by experiment to accelerate the motion of the *pendulum*.

A weight of ſix pound added to the ball, Mr. Derham found, made his clock gain 13 ſeconds every day.

A general remedy againſt the inconveniences of *pendulums*, is to make them long, the bob heavy, and to vibrate but a little way: this is the uſual means in England; the cycloidal cheeks being generally overlooked.

To correct the motion of PENDULUM *clocks*; the uſual method is to ſcrew and let down the ball; but a very ſmall alteration here having a very great effect, Mr. Derham prefers Huygens's method, which is to have a ſmall weight or bob to ſlide up and down the rod above the ball, which is to be immoveable: though he improves on the method, and recommends having the ball to ſcrew up and down, to bring the *pendulum* near its gage; and the little bob to ſerve for the nicer corrections, as the alteration of a ſecond, *&c.*

Mr. Huygens orders the weight of this little corrector to be equal to that of the wier, or 50′ of that of the great ball: he adds a table of the alterations, the ſeveral ſhiftings thereof will occaſion the motion of the *pendulum*; wherein it is obſervable, that a ſmall alteration towards the lower end of the *pendulum*, makes as great an alteration in time, as a greater riſing or falling does when higher.

PENDULUM *Royal*, a name given among us to a clock, whoſe *pendulum* ſwings ſeconds, and goes eight days; ſhewing the hour, minute, and ſecond. See CLOCK.

The numbers of ſuch a piece are thus calculated; firſt caſt up the ſeconds in twelve hours, and you will find them to be $43200 = 12 \times 60 \times 60$. The ſwing wheel muſt be 30 to ſwing 60 ſeconds in one of its revolutions: now let $\frac{1}{2}\,43200 = 21600$, be divided by 30, and you will have 720 in the quotient, which muſt be broken into quotients; the firſt of them muſt be 12 for the great wheel which moves round once in twelve hours. 720 divided by 12, gives 60 which may alſo be conveniently broken into two quotients, as 10 and 6, or 5 and 12, or 8 and $7\frac{1}{2}$; which laſt is moſt convenient: and if you take all your pinions 8, the work will ſtand thus.

```
8) 96 (12
8) 64 ( 8
8) 60 ( 7½
__________
        30
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According to this computation, the great wheel will go about once in twelve hours, to ſhew the hour; the ſecond wheel once in an hour, to ſhew the minutes; and the ſwing wheel once in a minute, to ſhew the ſeconds. See MOVEMENT and CLOCK-WORK.

PENDULUM *level.* } See the articles { LEVEL.
PENDULUM *watch.* } { WATCH.

PENETRABILITY. See the article IMPENETRABILITY.

PENETRATION, PENETRATIO, the act whereby one thing enters another, or takes up the place already poſſeſſed by another.

The ſchool-men define *penetration*, the co-exiſtence of two or more bodies; ſo, as one is preſent, or has its extenſion in the ſame place as the other. See EXISTENCE and BODY. See alſo MATTER, SOLIDITY, *&c.*

Philoſophers hold the *penetration* of bodies abſurd, *i. e.* that two bodies ſhould be at the ſame time in the ſame place: accordingly, impenetrability is laid down as one of the eſſential properties of matter. See IMPENETRABILITY.

What we popularly call *penetration*, only amounts to the matter of one body's being admitted into the vacuity of another. See VACUUM, PORE, DIMENSION, *&c.* Such is the *penetration* of water through the ſubſtance of gold. See WATER, GOLD, *&c.* See alſo HARDNESS.

PENICILLA*, in pharmacy, a lozenge; or form of medicine made round by rolling. See LOZENGE.

* It is thus called from *penicillus*, a Pencil, which it is ſuppoſed to reſemble in ſhape.

PENICILLUS, among chirurgeons, is uſed for a tent, to be put in wounds or ulcers. See TENT and TURUNDA.

PENIDIUM, in pharmacy, *barly-ſugar*; a preparation of ſugar, made by boiling it up with a decoction of barly, till it become brittle; which done, it is turned out upon a marble anointed with oil of ſweet almonds, kneaded with the hands like paſte; and while yet hot, drawn out into ſticks twiſted like cords. See SUGAR.

Penidia are good againſt colds, to moderate the acrimonies of the breaſt, promote expectoration, *&c.*

Dr. Quincy uſed *Penidium*, for a kind of clarified ſugar, with a mixture of ſtarch, made up into bolus's.

PENINSULA*, in geography, a portion, or extent of land, joining to the continent by a narrow neck, or iſthmus; the reſt encompaſſed with water. See ISTHMUS.

* The word is compounded of the Latin, *pene*, and *inſula*; *q. d.* almoſt iſland, which the French pertinently enough render *preſque iſle*.

Such is Peloponneſus, or the Morea; ſuch alſo are Africa, Jutland, *&c.*

Peninſula is the ſame with what is otherwiſe called *Cherſoneſus*. See CHERSONESUS.

PENIS, in anatomy, a part of the body, from its form, called alſo the *yard*; and by way of eminence the *member*, or *virile member*, as being one of the principal organs of generation in the male kind.—See *Tab. Anat.* (Splanch) *fig.* 1. *lit.* z. *fig.* 8 *litt.* e b, *&c.* *fig.* 10. *litt.* d. *fig.* 15. *litt.* e e. n n. (Angeiol) *fig.* 1. *n.* 67. See alſo Generation and Male.

It is faſtened to the lower part of the os pubis, and the upper part of the iſchion: its body conſiſts of the two corpora cavernoſa, the corpus cavernoſum urethræ, and the urethra itſelf.

The *corpora cavernoſa of the penis*, called alſo *corpora nervoſa & ſpongioſa*, *&c.* have two diſtinct origins in the os pubis; whence they proceed, growing both in bulk and thickneſs, till they meet the corpus cavernoſum of the urethra, where they join; leaving an interſtice or channel for its paſſage along them; and thus continue their progreſs, connected together by a membranous body called the *ſeptum*, and terminating at length in the glans. See Cavernosa *corpora penis*.

The *cavernous body of the urethra*, includes the urethra or urinary paſſage. Its form contrary to that of the other cavernous bodies, is largeſt at the two extremes, and ſmalleſt in the middle. That part included between the two origins of the cavernous bodies of the *penis*, Mr. Cowper calls the *bulb of the urethra*: its other extremity being dilated, forms the body called the *glans*. See Urethra, Glans, *&c.*

The *penis* receives arteries from the internal iliac branches, and umbilical arteries; and theſe at length ſubdividing into innumerable branches, from the capillary extremities thereof ariſe ſo many veins, in whoſe channels are apertures correſponding to ſo many cells, which communicating with each other, empty themſelves into larger venous ducts, running on the ſuperior ſurface of the *penis*: ſome whereof join the veins of the prepuce; others make one large trunk, called *vena penis*, which marching on the dorſum *penis* to the proſtatæ, there divides and enters the internal iliac on either ſide.

The *penis* has nerves from a trunk compoſed of a coaleſcence of the third of the os ſacrum, and a branch of the great crural: theſe aſcending the cavernous bodies, expand themſelves over the upper ſurface thereof, and are thence diſtributed to all parts of the *penis*.

It has lymphæducts very numerous on its ſurface under the ſkin, which diſcharge themſelves into the glandulæ inguinales. See Seed and Urine.

The *penis* has two pair of muſcles, and an odd one; the odd muſcle is called *accelerator urinæ*: its upper part, which covers the bulb, ſerves to ſtreighten the veins paſſing through it from the corpus cavernoſum of the urethra, and thus hinders the reflux of the blood in erection; and by repeated contractions, drives the blood into the bulb toward the glans. Its elongation ſerves to compreſs the channel of the urethra, and to force out the contained ſeed or urine. See Accelerator *urinæ*.

The firſt pair of muſcles is called the *erectores penis*. By their action the *penis* is ſuſtained, and drawn towards the pubes; and by the aſſiſtance of the ſuſpenſory ligament of the *penis*, the vena penis is applied to the tranſverſe ligament of the oſſa pubis, and the refluent blood hindered from paſſing that way; whereby the corpora cavernoſa become diſtended. See Erector, Collateralis.

The laſt pair of muſcles are the *tranſverſales penis*, which vary in various ſubjects, and are ſometimes wanting: their uſe is to dilate that part of the cavernous body of the urethra, to which they are faſtened. See Transversales *penis*.

The *penis* has alſo three glands, firſt diſcovered by Mr. Cowper; theſe all empty themſelves into the urethra, and from the tenacity of the liquor they ſeparate, are called the *mucous glands*. See Mucous *glands*.

The whole compages of the *penis* is inveſted with a celluloſe membrane, of admirable texture; which again is covered with a firm nervous coat; and that with a cuticula and cutis: the duplicature of the cutis on the glans, makes the prepuce. See Prepuce.

It is tyed to the lower part of the glans by a ligament called the *frænum*. See Frænum.—By another ligament, called *ſuſpenſorium*, the *penis* is held up to the oſſa pubis. See Ligament.

The uſe of the *penis* is for evacuating the ſeed, and urine.—Indeed Dr. Drake, from a view of its ſtructure, thinks it originally intended for the former only; and that the conveyance of the urine was not conſidered by nature in the mechaniſm of this part. See Seed and Urine.

He adds another uſe, *viz.* the incitement to venery, and the propagation of the ſpecies.—In effect, without ſuch an inſtrument, the ſeed of the moſt perfect animals could not be conveyed to the place of prolification: add to this, that an alternation of erection and flaccidity is abſolutely neceſſary; the firſt for the performance of its office, the ſecond for the ſecurity of the part.

Without an erection, it were impoſſible to emit and lodge the ſeed where it ought to be; and with a conſtant one, almoſt as impoſſible to ſecure the part from injuries: not to mention the loſs of inſtigation, which would be the conſequence of conſtant erection. See Priapism, *&c.*

The cauſe of the erection of the *penis* is the blood diſtending the corpora cavernoſa; as is evident from many experiments; among the reſt, from tying the *penis* of a dog in coitu, in which nothing is found but blood. And hence, in the bodies of criminals that hang long after death, the *penis* becomes erected, by the blood's falling to the inferior parts, and ſtopping there.—The cavernous body of the urethra is erected by the muſculi accelatores, embracing the veins of its bulb. See Erection.

PENITENCE, Poenitentia, is ſometimes uſed for a ſtate of repentance, and ſometimes for the act of repenting. See Repentance and Impenitence.

Penitence is alſo uſed for a diſcipline, or puniſhment attending repentance; more uſually called *penance*. See Penance.

Penitence, alſo gives the title to ſeveral religious orders, conſiſting either of converted debauchees, and reformed proſtitutes; or of perſons who devote themſelves to the office of reclaiming them. See Penitence. Of this latter kind is the

Order of **Penitence** *of St. Magdalen*, eſtabliſhed about the year 1272, by one Bernard, a citizen of Marſeilles, who devoted himſelf to the work of converting the courtezans of that city.

Bernard was ſeconded by ſeveral others; who forming a kind of ſociety, were at length erected into a religious order by pope Nicholas III. under the rule of St. Auguſtin.

F. Geſnay adds, that they alſo made a religious order of the *penitents*, or women they converted, giving them the ſame rules and obſervances which they themſelves kept.

Congregation of **Penitence** *of St. Magdalen at Paris*, owed its riſe to the preaching of F. Tiſſeran, a Franciſcan; who converted a great number of courtezans about the year 1492. Louis, duke of Orleans gave them his houſe for a monaſtery; or rather, as appears by their conſtitutions, Charles VIII gave them the Hotel, called *Bochaigne*, whence they were removed to St. George's chapel in 1572. By virtue of a brief of pope Alexander, Simon, biſhop of *Paris*, in 1497, drew them up a body of ſtatutes, and gave them the rule of St. Auguſtin.

To qualify a woman for admiſſion, it was required that ſhe had committed the ſin of the fleſh.—None were admitted above 35 years of age.

Till the beginning of the laſt century, none but *penitents* were admitted; but ſince its reformation by Mary Alvequin, in 1616, none have been admitted but maids; who, however, ſtill retain the ancient name *penitents*. See Penitents.

Penitents, an appellation given to certain fraternities, or ſocieties of perſons who aſſemble together for prayers, make proceſſions bare-footed, their faces covered with linen, and give themſelves diſcipline, *&c.*

There are *white penitents* in Italy, at Avignon, and at Lyons.—There are alſo *blue penitents*, and *black penitents*, which laſt aſſiſt criminals at their death, and give them burial.

Mabillon tells us, that at Turin there are a ſet of *penitents* kept in pay, to walk through the ſtreets in proceſſion, cut their ſhoulders with whips, *&c.*

Penitents, *or converts of the name of Jeſus*, a congregation of religious at Seville; conſiſting of women, who had led a licentious life: founded in 1550. See Penitence.

This monaſtery is divided into three quarters: one for profeſſed religious; another for novices; a third for thoſe under correction.

When theſe laſt give ſigns of a real repentence, they are removed into the quarter of the novices; where, if they do not behave themſelves well, they are remanded to their correction. They obſerve the rule of St. Auguſtin.

Penitents *of Orvieto*, are an order of nuns, inſtituted by Anthony Simoncelli, a gentleman of Orvieto.—The monaſtery he built, was at firſt deſtined for the reception of poor girls, abandoned by their parents, and in danger of loſing their virtue.

In 1662, it was erected into a monaſtery, for the reception of ſuch as, having abandoned themſelves to impurity, were willing to take up and conſecrate themſelves to God by ſolemn vows.—their rule is that of the Carmelites.

Theſe religious have this in peculiar, that they undergo no noviciate. All required is, that they continue a few months in the monaſtery in a ſecular habit; after which they are admitted to the vows.

PENITENTIAL, Poenitentiale, an eccleſiaſtical book, retained among the Romaniſts; wherein is preſcribed what relates to the impoſition of penance, and the reconciliation of *penitents*. See Penance and Penitence.

In the capitulars of Charlemaign, the prieſts are enjoined to ſtudy well their *penitential*.—There are various *penitentials*; the Roman *penitential*, that of venerable Bede, that of pope Gregory III, *&c.*

PENITENTIARY, Poenitentiarius, an office, or tribunal in the court of Rome; wherein are examined and delivered out the ſecret bulls, graces, or diſpenſations relating to conſcience, confeſſion, *&c.* See Bull, Penance, *&c.*

The expeditions of the *penitentiary* are ſealed up with red wax, and ſent cloſe; directed to the confeſſors.

Penitentiary is alſo an officer, or dignitary, in ſome cathedrals; veſted with power from the biſhop to abſolve caſes reſerved to him: on which account he is alſo called the *biſhop's ear*. See Absolution.

In ſome places there is a *grand penitentiary*, and a *ſub-penitentiary*. Anaſtaſius ſays, that pope Simplicius choſe ſome among the Roman prieſts to preſide over penances.

At preſent the pope has his *grand penitentiary*; who is a cardinal and the chief of the other *penitentiary* prieſts eſtabliſhed in the patriarchal churches of Rome, who conſult him in difficult caſes. He preſides in the *penitentiary*, diſpatches diſpenſations, abſolutions, *&c.* and has under him a regent, and twenty four proctors, or advocates of the ſacred *penitentiary*.

PENNA. See the article Pinna.

PENNATA *folia*, winged leaves, among botaniſts, are ſuch leaves of plants, as grow directly one againſt another, on the ſame rib or ſtalk: as thoſe of aſh, walnut-trees, *&c.* See Leaf, Plant, *&c.*

PENNON, or Penon, a ſtandard with a long tail; anciently belonging to a ſimple gentleman; properly uſed as a guidon, to place over a tent. See Guidon, *&c.*

It is oppoſed to the *banner*, which was ſquare; and hence, when any one was to be made a banneret, the ceremony conſiſted in cutting off the tail of his *pennon*, and thus converting it into a banner. See Banneret.

PENNY, or Peny *, in commerce, an ancient Engliſh coin, which had formerly conſiderable courſe; but is now generally dwindled into an imaginary money, or money of account. See Money and Coin. See alſo Pence.

* Camden derives the word from the Latin *pecunia*, money. See Pecunia.

The ancient Engliſh *penny*, *penig*, or *pening*, was the firſt ſilver coin ſtruck in England; nay, and the only one current among our Saxon anceſtors: as is agreed by Camden, Spelman, Dr. Hicks, *&c.*

The *Penny* was equal in weight to our three-*pence*; five of them made one ſhilling, or ſcilling ſaxon; thirty a mark or mancuſe, equal to our 7*s.* 6*d.* See Mark, *&c.*

Till the time of king Edward I. the *penny* was ſtruck with a croſs ſo deeply indented in it, that it might be eaſily broke, and parted, on occaſion, into two parts; thence called *half-pennies*; or into four, thence called *fourthings*, or *farthings*.—But that prince coined it without indenture; in lieu of which he firſt ſtruck round half-*pence* and farthings. See Farthing.

He alſo reduced the weight of the *penny* to a ſtandard; ordering that it ſhould weight thirty two grains of wheat, taken out of the middle of the ear.—This *penny* was called the *penny ſterling*.—Twenty of theſe pence were to weigh an ounce; whence the *penny* became a weight, as well as a coin. See Sterling and Penny-weight.

The *penny* ſterling, is now nigh diſuſed as a coin; and ſcarce ſubſiſts, but as a money of account, containing the twelfth part of a ſhilling, or the two hundred and fortieth part of a pound. See Shilling and Pound.

The courſe of exchange between England and France, is ſettled on the foot of ſo many pence ſterling, for a French crown of three livres. See Exchange.

The French *penny*, or denier, is of two kinds; the Paris *penny*, called *denier Pariſis*; and the *penny* of Tours, *denier Tournois*. See Denier.

The Dutch *penny*, called *pennink*, is a real money, worth about one fifth more than the French *penny Tournois*.—The *pennink* is alſo uſed as a money of account, in keeping books by pounds, florins and patards; twelve *penninks* make the patard; and twenty patards the florin. See Florin.

At Hambourg, Nuremberg, *&c.* the *penny* or *pfennig* of account, is put equal to the French *penny Tournois*. Eight of them make the krieux; and ſixty the florin of thoſe cities; and ninety the French crown, or 4*s.* 6*d.* ſterling.

Penny, in ancient ſtatutes, *&c.* is uſed for all ſilver money.

And hence the the *ward-penny*, *aver-penny*, *hundred-penny*, *tithing-penny*, and *brothal-penny*. See Pence, *&c.*

Bord half-Penny	See the article	Bord *half-penny*.
Half-Penny		Half-*penny*.
Rete Penny		Rete *penny*.
Schar Penny		Schar *penny*.
Ward Penny		Ward *penny*.

PENNY-WEIGHT *, a Troy weight, containing twenty four grains; each grain weighing a grain of wheat gathered out of the middle of the ear, well dried. See Weight and Grain.

* The name took its riſe hence, that this was actually the weight of one of our ancient ſilver *pennies*. See Penny.

Twenty of theſe *penny-weights* make an ounce Troy. See Ounce.—A *penny-weight* of gold bullion ſtandard, is worth four ſhillings; and of ſilver bullion, three-pence. See Gold and Silver.

PENNY POST. See the article *penny*-Post.

PENON. See the article Pennon.

PENSA *libra*, in our ancient cuſtoms, a pound of money paid by weight, not by tale. See Pound and Libra.

PENSION, Pensio, a yearly appointment, or ſum of money paid any one for ſervices, or conſiderations already paſt. See Pensionary.

That which in the two temples is called a *parliament*, and in Lincoln's-Inn a *council*, is in Gray's-Inn termed a *penſion*; *viz.* an aſſembly of the members of of the ſociety, to conſult of the affairs of the houſe. See Inn, *&c*,

Pensions, alſo denote certain annual payments of each member to the houſe, for certain occaſions.

When a *penſion writ* is iſſued, none ſued thereby in the inns of court ſhall be diſcharged, or permitted to come into commons, till all duties be paid.

Hence a *penſion order* in the ſame inn, is a peremptory order againſt ſuch of the ſociety as are in arrear for *penſions*, and other duties.

PENSIONARY, or Pensioner, a perſon who has a *penſion*, appointment, or yearly ſum, payable during life, by way of acknowledgment; charged on the eſtate of a prince, company, particular perſon, or the like.

In the Romiſh countries it is frequent to have *penſions* on benefices: theſe were anciently granted with a great deal of eaſe, under pretence of infirmities, poverty, *&c.*—But ſince the XIIth century, theſe pretences were carried ſo far, that the incumbents, or titularies of benefices were little more than farmers. This obliged the ſpiritual powers to fix the cauſes, and the quantities of *penſions*.—*Penſions* are now only creatable by the pope; and are never to exceed one third of the revenue; two thirds being ſtill to remain to the incumbent.

Pensionary, is alſo the appellation of the firſt miniſter of the ſtates of the province of Holland. See States.

The *penſionary* is chairman in aſſemblies of the ſtates of that province; he propoſes the matters to be conſulted on, collects the votes, forms and pronounces the reſolutions of the ſtates, opens letters, confers with foreign miniſters, *&c.*

He is charged with inſpecting the finances, preſerving the rights of the province, maintaining the authority of the ſtates, and ſeeing to the obſervation of the laws, *&c.* for the good of the ſtate. He aſſiſts in the college of deputy-counſellors of the province, who repreſent the ſoveraignty in the abſence of the ſtates; and is perpetual deputy of the ſtates general of the United Provinces. His commiſſion is only given for five years; after which it is deliberated whether or no it ſhall be renewed. Indeed, there is no inſtance of its having been revoked. Death only puts a period to the functions of this important miniſter. Formerly, he was called the *advocate of the province*: the title *penſionary* was only given at the time Barnevelt had the office. Orotius calls him in Latin *adſeſſor juriſperitus*; Merula *advocatus generalis*; Matthæus, profeſſor at Leyden, *conſiliarius penſionarius*, which is the quality the ſtates give him in their inſtruments.

Pensioary, is alſo the firſt miniſter of the regency of each city, in the province of Holland. See Province.

His office is to give his advice in matters relating to the government, either of the city in particular, or of the ſtate in general; and in aſſemblies of the ſtates of the province is ſpeaker in behalf of his city.

Yet, the functions of theſe *penſionaries* is not alike every where: In ſome cities they only give their advice; and are never found in aſſemblies of the magiſtrates, except when expreſſly called thither: in others they attend conſtantly; and in others they even make the propoſitions on the part of the burgher maſters, draw up their concluſions, *&c.*—They are called *penſionaries*, becauſe they receive an appointment or *penſion*.

Gentlemen Pensioners, a band of gentlemen, whoſe buſineſs is to guard the king's perſon in his own houſe; and who for that end wait in the preſence chamber.

They were firſt ſet on foot by King Henry VII. the number is forty; and each obliged to keep three double horſes and a ſervant, who is to be armed: ſo that they properly make a troop of guards; and have accordingly been muſtered by their own officers: but this part of duty, to which they are ſwore, the king uſually diſpenſes with.

Their officers are a captain, lieutenant, ſtandard-bearer, and clerk of the cheque.—Their ordinary arms are gilt pole-axes, with which they attend the king to and from the chapel-royal; receiving him in the preſence chamber, or coming out of his private lodging; as alſo at all great ſolemnities. Their *penſion* 100 *l. per annum.*

PNSTOCK. See the article Pen.

PENTACHORD *, an ancient muſical inſtrument with five ſtrings.

* Whence the name of πεντε, five, and χορδη, ſtring.

The invention of the *pentachord* is referred to the Scythians: the ſtrings were of bullocks leather, and were ſtruck with a plectrum made of goats horn.

PENTACROSTICK, a ſet of, or ſeries of verſes ſo diſpoſed, as that there are always found five acroſticks of the ſame name, in five diviſions of each verſe. See Acrostick.

PENTAGON *, in geomerry, a figure of five ſides, and five angles. See Figure.

* The word comes from the Greek πενταγωνος, *quinquangulus*, compounded of πεντε, five, and γωνια, angle. See Polygon.

If the five ſides are equal, the angles are ſo too; and the figure is called a *regular pentagon*, as *fig.* 47. *Tab. Geometry.*—Moſt citadels are regular *pentagons*. See Citadel.

The moſt conſiderable property of a *pentagon* is, that one of its ſides, *v.g.* DE, is equal in power to the ſides of a hexagon, and a decagon inſcribed in the ſame circle ABCDE: that is, the ſquare of the ſide DE is equal to the ſum of the ſquares of the ſides D a and D b.

Pappus has alſo demonſtrated that twelve regular *pentagons*, contain more than twenty triangles inſcribed in the ſame circle. *lib.* 5. *probl.* 45.

The dodecahedron, which is the fourth regular body, conſiſts of twelve *pentagons*. See DODECAHEDRON.

Projection or perſpective of a PENTAGON. See PERSPECTIVE.

PENTAGRAPH, an inſtrument whereby deſigns, prints, *&c.* of any kind, may be copied in any proportion; without a perſon's being ſkilled in drawing. See DESIGN, REDUCTION, *&c.* The inſtrument is otherwiſe called a *parallelogram.* See PARALLELOGRAM.

The common *pentagraph* (repreſented *Tab. Miſcell. fig.* 6.) conſiſts of four braſs or wooden rulers, two of them from fifteen to eighteen inches long, the other two half that length. At the ends, and in the middle of the longer rulers, as alſo at the ends of the ſhorter, are holes, upon the exact fixing whereof the perfection of the inſtrument chiefly depends. Thoſe in the middle of the long rulers are to be at the ſame diſtance from thoſe at the ends of the long ones, and thoſe of the ſhort ones; ſo that when put together they may always make a parallelogram.

The inſtrument is fitted together for uſe, by ſeveral little pieces, particularly a little pillar, N° 1. having at one end a ſcrew and nut, whereby the two long rulers are joined; and at the other a little knot for the inſtrument to ſlide on. The piece N° 2. is a rivet with a ſcrew and nut, wherewith each ſhort ruler is faſtened to the middle of each long one. The piece N° 3. is a pillar, one end whereof being hollowed into a ſcrew, has a nut fit to it. At the other end is a worm to ſcrew into the table: when the inſtrument is to be uſed, it joins the ends of the two ſhort rulers. The piece N° 4. is a pen, portcraion, or pencil, ſcrewed into a little pillar. Laſtly, the piece N° 5. is a braſs point, moderately blunt, ſcrewed likewiſe into a little pillar.

Uſe of the PENTAGRAPH *or parallelogram.*—1. To copy a deſign in the ſame ſcale or bigneſs as the original: ſcrew the worm N° 3. into the table; lay a paper under the pencil N° 4. and the deſign under the point N° 5. This done, conducting the point over the ſeveral lines and parts of the deſign, the pencil will draw or repeat the ſame on the paper.

2. If the deſign be to be reduced—*e. gr.* into half the ſpace; the worm muſt be placed at the end of the long ruler N° 4. and the paper and pencil in the middle. In this ſituation conduct the braſs point over the ſeveral lines of the deſign as before; and the pencil at the ſame time will draw its copy in the proportion required; the pencil here only moving half the lengths that the point moves.

Hence, on the contrary, if the deſign be to be enlarged by one half, the braſs point, with the deſign, muſt be placed in the middle, at N° 3. the pencil and paper at the end of the long ruler, and the worm at the other.

3. To enlarge or reduce in other proportions, there are holes drilled at equal diſtances on each ruler, *viz.* all along the ſhort ones, and half way the long ones; in order for placing the braſs point, pencil, and worm in a right line therein; *i. e.* if the piece carrying the point be put in the third hole, the two other pieces muſt be put in its third hole.

If then, the point and deſign be placed at any hole of the great rulers, and the pencil with the paper at any hole of the ſhort ruler, which forms the angle therewith; the copy will be leſs than half the original. On the contrary, if it be placed at one of the holes of that ſhort ruler, which is parallel to the long ruler, the copy will be greater than half the original.

The conſtruction of this inſtrument requires a degree of accuracy, which moſt of our inſtrument-makers are ſtrangers to; for which reaſon there are very few of the inſtruments that ſucceed. Few will do any thing tolerably but ſtrait lines; and many of them not thoſe.

PENTAMETER*, in poetry, a kind of verſe, conſiſting of five feet or metres. See VERSE and FOOT.

* The word is derived from the Greek πενταμετρος, *q. d.* five Meaſures.

The two firſt feet of a *pentameter*, may be either dactyls or ſpondees; the third always a ſpondee; and the two laſt anapæſts.

It is uſually joined to hexameters, in elegies, epiſtles, epigrams, and other little pieces. There is no work of *pentameters* alone. See HEXAMETER.

PENTAPETALOUS *plants*, are ſuch whoſe flower conſiſts of five leaves. See PLANT.

PENTAPOLIS, ΠΕΝΤΑΠΟΛΙΣ, in geography, *&c.* a country wherein are five cities.

The name *pentapolis* has been given to ſeveral countries, particularly the valley wherein ſtood the five infamous cities deſtroyed by the ſhower of fire and brimſtone, in the time of Abraham. It is commonly ſuppoſed, this country was the place where now ſtands the lake Aſphaltites, or dead ſea: Sanſon places it in the neighbourhood of this lake, but without any proof. D'Herbelot calls this the *pentapolis of the ſodomites.*

The moſt celebrated was the *pentapolis cyrenaica*, or *pentapolis* of Egypt, whoſe five cities were Berenice, Arſinoe, Ptolemais, Cyrene, and Apollonia.

Among the ancient geographers and hiſtorians, we likewiſe read of the *pentapolis* of Libya, now called *meſtrata*; the *pentapolis* of Italy; and the *pentapolis* of Aſia minor.

PENTAPTOTON, in grammar, a noun which has only five caſes. See APTOTE and CASE.

PENTASTICH, PENTASTICHON, in poetry, a ſtanza, or diviſion of a poem, conſiſting of five verſes. See STANZA.

PENTASTYLE, in architecture, a work wherein are five rows of columns. See COLUMN.

Such was the portico begun by the emperor Gallienus, and which was to have been continu'd from the Flaminian-gate, to the bridge Milvius, *i. e.* from the Porto del populo, to the Ponte-mole.

PENTATEUCH, in the ſacred learning, the five books of Moſes, at the head of the old teſtament: *viz.* Geneſis, Exodus, Leviticus, Numbers, and Deuteronomy. See BIBLE.

* The word is formed from the Greek πεντατευχος, which ſignifies the ſame, compounded of πεντε five and τευχος, volume.

Pere Simon, in his *Hiſt. Crit. du V. Teſt.* produces a good number of paſſages to prove that Moſes was not wholly the author of the *Pentateuch*, as we now have it. Indeed, thoſe apparent interpolations at the end, are ſufficient to determine the point; it being abſurd to ſuppoſe Moſes the author of the account of his own death and burial, and of the compariſon between him and the ſucceeding prophets in Iſrael.

Theſe interpolated paſſages are uſually attributed to Eſdras; who, on his return from the Babyloniſh captivity, is ſuppoſed to have publiſhed the old teſtament, or at leaſt a part of it corrected and enlarged. See CANON.

There are two famous *Pentateuchs*, or editions of the *Pentateuch*, which have a long time diſputed the preference, both as to antiquity, and as to character; *viz.* that of the Jews, called the *Jewiſh or Hebrew Pentateuch*, wrote in the Chaldean, or Aſſyrian character; and that of the Samaritans, wrote in the Samaritan or Phœnician character.—Each is maintained to be the ancient Hebrew; though the generality of the criticks give it in behalf of the latter. See HEBREW.

Indeed, as to the point of matter, they are generally pretty conformable to each other, each has all the interpolated paſſages above-mentioned, though the Samaritan has one or two more; not in the Hebrew: the firſt a paſſage in Deut. xxvii. 4. where an altar is enjoined to be built, and ſacrifices to be offered on mount Ebal, or rather mount Gerizzim; which paſſage was doubtleſs foiſted in to countenance the Samaritan worſhip, and repreſent it of equal antiquity with that of the temple of Jeruſalem. See SAMARITANS.

Mr. Whiſton, however, declares he ſees no reaſon to accuſe the Samaritan of corruption, in theſe points, but rather the Jewiſh; and earneſtly contends that the former is an uncorrupted copy of the books of Moſes, originally derived from the firſt ſeparation of the ten tribes themſelves, in the days of Jeroboam.—The contrary whereof is apparent from the mere confeſſed interpolations aſcribed to Eſdras, who lived ſeveral hundred years after the time of Jeroboam.

But the grand difference is in the letter or character: the Jewiſh being in the Chaldean or Aſſyrian character, and the Samaritan in the Phœnician, *i. e.* the Canaanitiſh character; this latter ſeems to have an advantage over the vulgar Jewiſh *Pentateuch.*—Yet is Prideaux of opinion, the latter is only a tranſcript from the former, out of the Chaldean into the old Hebrew character. One great reaſon he gives, is, that there are many variations in the Samaritan, manifeſtly occaſioned by miſtaking the ſimilar letters in the Hebrew alphabet; which letters having no ſimilitude in the Samaritan character, it is evident the variations muſt have ariſen in tranſcribing from the vulgar Hebrew into Samaritan; not the contrary way.

Add to this, that Simon, Allix, and many other learned men take the Chaldean or Aſſyrian character to have been the character always in uſe among the Jews; and the Samaritan or Canaanitiſh, or as it is alſo called the *old Hebrew* character, to have never been uſed by the Jews before the captivity, in any manner, either in books, or on medals. See CHARACTER.

Hence the *Pentateuch* muſt have been tranſcribed into that character; and that, probably, to render it legible to the inhabitant of Samaria, who upon their introduction of the *Pentateuch* might probably be verſed in no other character.

Uſher takes the Samaritan *Pentateuch* to have been compiled by Doſitheus a Samaritan, mentioned by Origen to have adulterated the *Pentateuch.*—Du Pin ſuppoſes it the work of ſome modern Samaritan, whom he imagines to have compiled it chiefly out of the different copies of the Paleſtinian and Babylonian Jews, and the Septuagint; becauſe it ſometimes agrees with one, and ſometimes with another.

PENTATHLON, ΠΕΝΤΑΘΛΟΝ, in antiquity, the five exerciſes performed at the Grecian games, and for which prizes were propoſed. See EXERCISE, GAME, *&c.*

Theſe exerciſes were wreſtling, boxing, leaping, running, and quoit-playing.—He who bore away the prize in them all, was called *pentathlus*; by the Latins, *quinquertio*; as the five exerciſes themſelves were by thoſe latter people called *quinquertium.*

PENTATONON, in the ancient muſic, a concord, by us called the redundant ſixth. See SIXTH.

It conſiſts of four tones, and a major and minor ſemitone: whence the name, *Pentatonon, q. d.* five tones.

PENTECONTERUS, ΠΕΝΚΗΤΟΝΤΕΡΟΣ, a veſſel with fifty oars. See GALLEY, *&c.*

PENTECOST*, ΠΕΝΤΗΚΟΣΤΗ, Whitſuntide; a ſolemn feaſt of the church, held in commemoration of the deſcent of the Holy Ghoſt on the apoſtles: as deſcribed in the acts. See WHITSUNTIDE.

* It has its name from the Greek πεντηκοςος, q. d. *quinquageſimus* 50th, becauſe held on the fiftieth day after Eaſter. See EASTER.

In the ancient church, *Pentecoſt* finiſhed the paſchal time, or eaſter-ſeaſon; wherein, as Tertullian, St. Jerom, *&c.* obſerve, Hallelujah was ſung every where, the office celebrated ſtanding, no faſting allowed, *&c.*

The Jews likewiſe had a feaſt they called *Pentecoſt*, or *quinquageſimus*; ſolemnized in memory of the laws being given to Moſes 50 days after their departure out of Egypt.

PENTECOSTALS, PENTECOSTALIA, anciently, were pious oblations made at the feaſt of *Pentecoſt*, by the pariſhioners to their pariſh prieſt; and ſometimes by inferior churches or pariſhes, to the principal or mother church. See OBLATION.

Theſe pariſh *Pentecoſtals* were alſo called *Whitſun-farthings*; and their ſum was divided into four parts, of which one went to the prieſt, one to the poor, one towards the repair of the church, and one to the biſhop of the dioceſe. See WHITSUN-FARTHINGS.

PENTESYRINGUS, in antiquity, a ſort of pillory, with five holes; wherein were faſtened the legs, arms, and heads of criminals, to prevent their ſtirring. See PILLORY.

PENTHEMIMERIS*, in the Greek and Latin poetry, part of a verſe, conſiſting of two feet, and a long ſyllable.

* The word in Greek, πενθημιμερις; compounded of πεντε, five ημισυς, half, and μερος, part.

PENULTIMA*, or PENULTIMATE, in grammar, denotes the ſyllable, or foot, immediately before the laſt.

* The word is formed from the Latin *pene & ultimus*, almoſt laſt.

Hence *antepenultimate* is that before the *penultimate*, or the laſt but two. See ANTEPENULTIMA.

PENULTIMATE, in muſic. M. Broſſard will have it the ſame with what the Greeks called *paranete*; though others will not allow the *paranete* to be the *penultimate* chord, but the next thereto.

PENULTIMATE *of the ſeparate, paranete diazeugmenon*, is a name the ancients gave to one of the chords of their lyre or ſyſtem; correſponding to the *d, la, re*, of the third octave of the modern ſyſtem.

PENULTIMATE *of the acute, paranete hyperboleon*, a chord of the ancient ſyſtem, anſwering to the *g, re, ſol*, of the third octave of the modern ſyſtem.

PENUMBRA, in aſtronomy, a faint, or partial ſhade, obſerved between the perfect ſhadow and the full light in an eclipſe. See SHADOW.

The *penumbra* ariſes from the magnitude of the ſun's body: were he only a luminous point, the ſhadow would be all perfect; but by reaſon of the diameter of the ſun, it happens that a place which is not illuminated by the whole body of the ſun, does yet receive rays from a part thereof.

Thus ſuppoſe S the ſun (*Tab. Aſtron. fig.* 47.) and T the moon, and the ſhadow of the latter to be projected on a plane as G H. The true proper ſhadow of T, *viz.* G H, will be encompaſſed with an imperfect ſhadow, or *penumbra*, HL and GE, each portion whereof is illuminated by an entire hemiſphere of the ſun.

The degree of light or ſhadow of the *penumbra* will be different in different parts, as thoſe parts lye open to the rays of a greater or leſſer part of the ſun's body: thus from L to H, and from E to G the light continually diminiſhes; and in the confines of G and H, the *penumbra* becomes loſt and confounded with the total ſhade; as, near E and L, it is confounded with the total light.

A *penumbra* muſt be found in all eclipſes, whether of the ſun, the moon, or the other planets, primary or ſecundary; but it is moſt conſiderable with us in eclipſes of the ſun; as is the caſe here referred to.

In eclipſes of the moon, the earth is incompaſſed indeed with a *penumbra*; but it is only ſenſible to us on the earth near the total ſhadow: an obſerver placed on a plane, whereon the ſhadow falls, might obſerve the whole *penumbra*, as in eclipſes of the ſun. Thus an eye placed at I or F, would only ſee the ſemidiameter of the ſun; the reſt being hid behind the moon. Going from I towards H, more and more of the ſun is hid, till it be loſt in the ſhadow itſelf, *&c.*

Hence we have eclipſes of the ſun when the ſhadow never touches the earth, provided the *penumbra* do but reach it; and hence there is a difference obſerved in eclipſes of the ſun, as the ſhadow itſelf, or a greater or leſs degree of the *penumbra* paſſes over a place.—But eclipſes of the moon appear the ſame in all places where they are viſible. See MOON.

When the ſhadow itſelf falls on the earth, the eclipſe is ſaid to be total or central; when only the *penumbra* falls on it, the eclipſe is ſaid to be partial. See ECLIPSE.

The *penumbra* extends infinitely in length, in aſmuch as to each point of the diameter of the ſun, there anſwers a ſpace infinite in length into which no rays enter from that point, though there do from others. Two rays drawn from the two extremities of the earth's diameter, and which proceed ſtill diverging, form the two edges of the *penumbra*; which, of conſequence, is continually growing in width, and is infinite alſo in this ſenſe.—All that infinite ſpace is the *penumbra*, except the triangle of the ſhadow included in it.

The figure of this ſpace comprehending the ſhadow, is a trapezium, one of whoſe ſides is the diameter of the earth; the oppoſite ſide parallel thereto is an infinite line, *i. e.* the width of the *penumbra* projected to infinity, and the two other ſides two rays drawn from the two extremities of the diameter of the ſun, through thoſe of the diameter of the earth, and which prolonged back beyond the ſun, will interſect in a certain point, making an angle equal to the apparent diameter of the ſun; which angle may be called the *angle of the penumbra*.

Now the *penumbra* will be the greater as this angle, or, which is the ſame thing, as the ſtar is greater, the planet remaining the ſame: and if the diameter of the planet be increaſed, the ſtar remaining the ſame, it will be the ſame as if the diameter ſtill receded from the angle of the *penumbra*.

M. de le Hire examines the different degrees of the *penumbra*, and repreſents them geometrically by the ordinates of a curve, which ſhall be among themſelves, as the ſeveral parts of the ſun's diſk, wherewith a body placed in the *penumbra* is enlightened.

PENY. See the article PENNY.

PEP and PEPIA. See the article PIP.

PEPASMUS*, ΠΕΠΑΣΜΟΣ, in medicine, the digeſting, and ripening of morbid humours. See MATURATION, DIGESTION, *&c.*

PEPASTIC*, or PEPTIC, ΠΕΠΑΣΤΙΚΟΣ, or ΠΕΠΤΙΚΟΣ, in medicine, a kind of medicament of the conſiſtence of an emplaſter; proper to bring vitious and corrupt humours to a head, and diſpoſe them for ſuppuration. See RIPENER and DIGESTIVE.

* The words are formed from the Greek πεπαινειν to digeſt, or ripen.

Butter, roots of mallows, of flowers-de-lis, onions and leaves of oxylapathum are eſteemed good *pepaſticks*, or maturatives.

PEPPER, PIPER, an aromatic fruit, or berry, of a hot, dry quality; chiefly uſed in the ſeaſoning of meats. See SPICE.

It is the product of a ſhrub growing in ſeveral parts of the Eaſt-Indies, chiefly Java, Sumatra, Malacca, and the coaſts of Malabar. The plant is very weak and of the reptile kind, and for that reaſon uſually planted at the foot of the larger trees, as the areca, coco, *&c.*

Pepper grows in bunches or cluſters; at firſt green, as the grains ripen they grow red; and at laſt, after being expoſed a while to the ſun, become black, in the condition we ſee them.

The fruit is gathered in November. It muſt be choſen large, full, not wrinkled, without duſt, with a good many white grains in it; and care be taken the largeſt berries have not been picked out to make white *pepper*.

White **PEPPER**, *Piper album*, is the fruit of the ſame plant with the black, and is prepared from it by moiſtening it with the ſea-water, and then expoſing it to the ſun, and caſting away the outer bark, which abandoning the grains, leave it white. See WHITE.

Indeed, M. Dellon, a late traveller, ſays, they ſtrip off the ſkin, by beating it before it be quite dry; or by ſoaking it in water after it has dried, and then beating it.

Many authors, and among the reſt Pomet, will have the *white pepper* to be natural, and the fruit of a different plant from the black; but M. Dellon, who expreſsly declares the contrary from his own long experience, ſeems to put the matter paſt doubt.

White pepper muſt be choſen after the ſame manner as black; with this further care, that it hath not been dyed white.—*Pepper* that is ſold ground, is very apt to be ſophiſticated; the black with burnt cruſt of bread, *&c.* the white with beaten rice.

Long **PEPPER**, *Piper longum*, is denominated from its form, which in length and thickneſs equals a child's finger; it conſiſts of an aſſemblage of grains, or berries joined cloſe to one another, of a browniſh colour, bordering without on red, and within on black; and grows by a long pedicle to a plant, like that of the black *pepper*, but lower, and its leaves ſmaller and greener.—Its taſte reſembles that of the former, but leſs ſharp.

There are three kinds of this *pepper*, that of the Eaſt-Indies, that of America, and that of Ethiopia, called alſo grain of Zelim: though the firſt alone is the proper *long pepper*; the reſt reſembling it but little.

It muſt be choſen new, large, heavy, well filled, hard to break, without duſt or mixture; its chief uſe is in medicine, where it enters ſeveral galenical compoſitions, among the reſt Venice treacle.

Guinea **PEPPER**, *Piper indicum*, is a reddiſh *pepper*, of a coral colour, much eſteemed by the Americans, from among whom it is brought, and by them called *chile*, by the Spaniards *pimenton*, and the French, *garden coral.*

It is now cultivated pretty commonly in France, eſpecially in Languedoc; uſed in making vinegar, and likewiſe comfited with ſugar. It muſt be choſen new, in large pods, dry, entire, and red.

There are four kinds, the firſt called by the Americans *chilchotes*; the ſecond, very ſmall, *chilterpin*; both of a very pungent taſte: the third, *tonalchiles*, moderately hot, and eaten by the natives like other fruit with bread; the fourth, *chilpelagua*, moderately pungent, much uſed by the Spaniards in the preparation of chocolate; there is alſo a fifth kind called *agy*, growing in Peru.

Jamaica PEPPER, called by the Dutch *amomi*, by the Spaniards *pimienta de Jamaica*, is the fruit of the tree that yields the Indian wood, growing plentifully in Jamaica, and other American iſlands.

It is a real aromatic, and may ſupply the defect both of cloves, nutmeg, and cinnamon; whence it is called alſo by the Engliſh, *all-ſpice*. The French call it the *round clove*, from its taſte reſembling that ſpice.

PEPSIS*, in medicine, the coction, or digeſtion of foods, or humours in the body. See COCTION and DIGESTION.

* The word is Greek, πεψις, which ſignifies boiling.

PEPTIC, in medicine. See PEPASTIC.

PEPUZIANS, a ſect of ancient hereticks, otherwiſe called *Phrygians*, or *Cataphrygians*. See CATAPHRYGIAN.

They had their name *Pepuzians* from a pretence that Jeſus Chriſt appeared to one of their propheteſſes in the city Pepuza in Phrygia, which was their holy city. See QUINTILIANS.

PER *accidens*. See the article ACCIDENS.

PERACUTUM *menſtruum*. See MENSTRUUM.

PERAMBULATION *of the foreſt*, the ſurveying, or walking about a foreſt, or the limits of it, by juſtices or other officers thereto appointed, to ſet down the metes and bounds thereof, and what is within the foreſt, and what without. See PURLIEU and FOREST.

PERAMBULATIONE *facienda*, is a writ commanding the ſheriff to make *perambulation*, and ſet down the bounds of two, or more manors, whoſe limits are not ſo well known.

The writ *de perambulatione facienda*, is only iſſued where the lords of both manors agree to have ſuch perambulation. If one of them refuſe, the other muſt ſeek his remedy by a writ *de rationabilibus diviſis*. See RATIONABILIBUS.

PERAMBULATOR, in ſurveying, an inſtrument for the meaſuring of diſtances; called alſo *pedometer*, *way-wiſer*, and *ſurveying wheel*. See PEDOMETER and WAY-WISER.

Its advantages are its handineſs, and expedition: its contrivance is ſuch, that it may be fitted to the wheel of a coach; in which it performs its office, and meaſures the road without any trouble at all.

There is ſome difference in its make: that now moſt uſual, as moſt convenient, is as follows.

Conſtruction of the PERAMBULATOR *or way-wiſer.*—The *perambulator* (repreſented *Tab. Survey. fig.* 23.) conſiſts of a wheel two feet ſeven inches and a half in diameter; conſequently half a pole, or eight foot and three inches in circumference. On one end of the axis is a nut three quarters of an inch in diameter, divided into eight teeth, which upon moving the wheel round, fall into the eighth teeth of another nut *c*, fixed on one end of an iron rod Q, and thus turn the rod once round, in the time the wheel makes one revolution. This rod lying along a groove in the ſide of the carriage of the inſtrument, has at its other end a ſquare hole, into which fits the end b of the little cylinder P. This cylinder is diſpoſed under the dial-plate of a movement, at the end of the carriage B, in ſuch manner as to be moveable about its axis. Its end *a* is cut into a perpetual ſcrew, which falling into the thirty two teeth of a wheel perpendicular thereto; upon driving the inſtrument forward, that wheel makes a revolution, each ſixteen pole. On the axis of this wheel is a pinion with ſix teeth, which falling into the teeth of another wheel of ſixty teeth, carries it round every hundred and ſixtieth pole, or half a mile.

This laſt wheel then carrying a hand or index round with it, over the diviſions of the dial-plate whoſe outer limb is divided into one hundred and ſixty parts, correſponding to the one hundred and ſixty poles; points out the numbers of poles paſſed over.

Again, on the axis of this laſt wheel is a pinion containing twenty teeth, which falling into the teeth of a third wheel that has forty teeth, drives it once round in three hundred and twenty poles, or a mile. On the axis of this wheel is a pinion of twelve teeth, which falling into the teeth of a fourth wheel that has ſeventy two teeth, drives it once round in twelve miles.

This fourth wheel carrying another index, over the inner limb of the dial-plate, divided into twelve, for miles, and each mile ſubdivided into halves, quarters, and furlongs, ſerves to regiſter the revolutions of the other hand, and to keep account of the half miles and miles paſſed over, as far as twelve miles.

Uſe of the PERAMBULATOR *or way-wiſer.*—The application of this inſtrument is obvious from its conſtruction. Its proper office is in the ſurveying of roads, and large diſtances, where a great deal of expedition, and not much accuracy is required.—It is evident that driving it along, and obſerving the hands, has the ſame effect as dragging the chain, and taking account of the chains and links. See therefore the article CHAIN.

PER ARSIN, and *theſin*, in muſic.—*Per* is a Latin prepoſition, ſignifying by, during; *arſis* and *theſis* are Greek words, the firſt whereof ſignifies elevation or riſing; the ſecond poſition, or ſetting down. See MEASURE and TIME.

Per theſin, then ſignifies in falling, or during the latter time of the meaſure: *per arſin*, in riſing, or in the firſt time of the meaſure. A ſong, counter-point, fugue, *&c.* are ſaid to be *per theſin*, when the notes deſcend from acute to grave: on the contrary, they are *per arſin*, when the notes aſcend from grave to acute. See ARSIS. *Fugue per* ARSIN and *theſin*. See FUGUE.

PERCEPTION, PERCEPTIO, in philoſophy, the act of *perceiving*, or apprehending a thing; or that ſimple idea which we conceive of a thing without making any affirmation, or negation. See IDEA, and APPREHENSION.

If that idea exhibit any image to the mind, it is called *imagination*; if it exhibit none, it retains the general name of *perception*. See IMAGINATION.

Thus when we hear the word *tree*, the idea we then form in the mind, is called an *imagination*. But when we hear of a thing whereof no image can be framed, as of doubting, the idea we then have is a mere *perception*. See SENSATION.

The faculty or power of *perception*, conſtitutes what we call the *underſtanding*. See POWER, FACULTY, and UNDERSTANDING.

It may be obſerved, that the ideas we receive by *perception* are often altered by the judgment, without our taking notice of it; thus a globe being ſet before our eyes, the idea thereby imprinted, is a flat circle, variouſly ſhadowed: but being accuſtomed to perceive what kind of appearances convex bodies are wont to make in us; the judgment alters the appearances into their cauſes; and from that variety of ſhadow or colour, frames to itſelf the *perception* of a convex figure of one uniform colour See JUDGMENT.

This, in many caſes, by a ſettled habit, is performed ſo readily, that we take that for the *perception* of our ſenſes, which is but an idea formed by the judgment; ſo that one ſerves only to excite the other, and is ſcarce taken notice of itſelf: as a man who reads or hears with attention, takes little notice of the characters or ſounds, but of the ideas which are excited in him thereby.

The faculty of *perception*, ſeems to be that which puts the diſtinction between the animate, and inanimate parts of the creation. Vegetables, ſome of them, have ſome degree of motion, and upon different applications of other bodies, alter their figures and motions; ſo as hence to obtain the name of *ſenſitive* plants: which, however, is the reſult of mere mechaniſm, and no otherwiſe produced, than the ſhortening of a rope by the effuſion of water. But *perception* is a metaphyſical principle, and found in ſome degree in all animals; and in them alone. See ANIMAL, *&c.*

PERCH, *pole*, or *rod*, a long meaſure, much uſed in ſurveying and meaſuring of land. See MEASURE.

Among the old Romans, and ſtill among geometricians, the pertica, *perch*, is ten foot; and they otherwiſe call it the *catena*, *funis*, and *decempeda*. See DECEMPEDA.

In England, the ſtatute *perch* contains ſixteen foot, and a half; and for coppice-woods, *&c.* eighteen foot.—Forty ſquare *perches* make a rood, and one hundred and ſixty an acre. See ROOD and ACRE.

The cuſtomary *perch* is various in various counties: in Staffordſhire it is twenty four foot; in the foreſt of Sherwood twenty one, the foot there being eighteen inches, the meaſure whereof is marked in the chancel wall of Edwynſtow, and in the church of St. Mary in Nottingham. See FOOT.

In Herefordſhire, a *perch* of walling is ſixteen foot and a half; a *perch* of ditching twenty one foot, *&c.*—In France, the *perch* is from eighteen to twenty three, and even twenty ſeven of their feet.

PERCH-*fiſhing*. See the article FISHING

PERCHANT, among fowlers, a decoy-bird, which the fowler has faſtened by the foot, and which flutters about the place where it is tied, to draw other birds to it, and give the fowler an occaſion of catching them. See DECOY.

PERCOLATION. See FILTRATION.

PERCUSSION, in phyſicks, the impreſſion a body makes in falling or ſtriking upon another; or the ſhock or colliſion of two moving bodies; which meeting alter each others motion See MOTION and COLLISION.

Percuſſion is either *direct* or *oblique*.

Direct PERCUSSION, is where the impulſe is given in the direction of a right line perpendicular to the point of contract.

In ſpheres therefore, the *percuſſion* is *direct*, when the line of direction paſſes through both their centres.

Oblique PERCUSSION, is where the impulſe is given in the direction of a line oblique to the point of contact. See OBLIQUE.

In bodies either perfectly hard, or perfectly ſoft, and ſo void of all elaſticity, the laws of *percuſſion* are eaſily determined: but ſince even the hardeſt bodies have their ſhare of elaſticity, and in elaſtic bodies the laws are very different, and much more intricate, having been firſt aſcertained in the *Philoſophical Tranſactions*, by Sir Ch. Wren, Dr. Wallis, and Mr. Huyens; we ſhall lay down each a-part.

Laws of PERCUSSION *in bodies not elaſtic.*—1°. If a body in motion, as A (*Tab. Mechanicks*, *fig.* 40.) ſtrike directly againſt another at reſt, B; the firſt will loſe juſt as much of its motion as it communicates to the ſecond: ſo that the two will proceed thence with an equal velocity, as if collected into one maſs.

If A therefore be triple of B, it will loſe one fourth of its motion; ſo, that if before it moved through a line of twenty four foot in a minute, it will now only move eighteen.

2°. If a moving body A, ſtrike againſt another already in motion, B; the firſt will increaſe the velocity of the latter; but will loſe leſs of its own motion than if the latter had been at reſt: ſince all here required, is that ſome degrees of motion be added to thoſe the latter already had, to make them both proceed with an equal velocity.

Suppoſe, *e. gr.* the body A with twelve degrees of motion, to ſtrike againſt the other B, leſs by half, and at reſt: the firſt will transfer four degrees of its motion to the latter, and retain eight to itſelf: but if it ſtrike with twelve degrees of motion on the other already moving with three degrees, it will only communicate two degrees; for A being double of B, this needs only half the motion to make it proceed with the ſame velocity.

3°. If a moving body A, ſtrike on another B, either at reſt, or moving more ſlowly, and either in the ſame direction, or in a contrary one; the ſum of the momenta, if the bodies move in the ſame direction, or their difference, if they move in a contrary one, will be the ſame after the *percuſſion* as before.

4°. If two equal bodies A and B meet each other with equal velocities; after the congreſs, they will both remain at reſt.

5°. If a body A, ſtrike directly on another at reſt B; its celerity after the ſtroke is to its celerity before it, as the weight of A is to the ſum of the weights of A and B: if therefore the weights were equal, the celerity after the ſhock will be half of that before it.

6°. If a body in motion, A, ſtrike directly on another moving more ſlowly, but in the ſame direction; the velocity after the ſhock will be equal to the ſum of the momenta, divided by the ſum of the weights.

7°. If two equal bodies moving with different velocities, ſtrike directly againſt each other; after the conflict, they will proceed with the ſemi-difference of the velocities wherewith they were moved before it.

8°. If two bodies A and B meet directly with velocities that are reciprocally as their weights; after the conflict, they will both remain at reſt.

9°. If two bodies A and B meet directly with the ſame velocity, the celerity after the impulſe will be to that before it, as the difference of the weights to their ſum.

10°. If two bodies meet directly with any velocity whatever, the celerity after the ſtroak will be equal to the ſemi-difference of the momenta, divided by the ſum of the weights.

To determine the momentum loſt by the conflict: multiply the celerity which the body had before the conflict, into its maſs: thus have you the momentum before the conflict. In like manner, multiply the celerity after the conflict into the maſs: thus have you the momentum after the conflict. The latter moment therefore being ſubtracted from the former, leaves the loſs. Hence may the magnitudes of the ſtrokes be eſtimated.

11°. A direct or perpendicular ſtroke is to an oblique one, as the whole ſine is to the ſine of the angle of incidence.

Laws of PERCUSSION *in elaſtic bodies.*—In bodies perfectly elaſtic, the force of elaſticity is equal to the force wherewith they are compreſſed; that is, the colliſion of two ſuch bodies on each other is equivalent to the motion which either of them would acquire, or loſe, by mere ſimple impulſe. This force exerting itſelf contrary ways, a motion equivalent thereto muſt be ſubtracted from the motion in the impelling body, and added to that in the body impelled by mere impulſe, to find their velocities after *percuſſion*. See ELASTICITY.

12°. If a body ſtrike directly on an immoveable obſtacle, either one, or both of them being elaſtic, the body will be reflected with the ſame velocity wherewith it ſtruck, and in the ſame line. For if the elaſticity were away, the whole force of the ſtriking body would be ſpent in overcoming the reſiſtance of the obſtacle; and conſequently all the motion ceaſe: it follows that the whole force is employed in compreſſing the elaſtic body; by which means it acquires an elaſtic force equal thereto: ſince then the elaſticity, when the compreſſing force is ſpent, reduces the body into its former ſtate; it repells the other with the ſame force wherewith it ſtruck, conſequently it will rebound with the ſame velocity. And becauſe an elaſtic body reſtores itſelf in the ſame direction wherein it was compreſſed (there being no reaſon why it ſhould change its direction) the body will rebound in the ſame right line.

13°. If an elaſtic body ſtrike obliquely on an immoveable obſtacle, it will rebound in ſuch manner as to make the angle of reflection equal to the angle of incidence. See REFLECTION.

14°. If an elaſtic body A, ſtrike directly againſt another at reſt, B; after *percuſſion*, A will remain at reſt, and B proceed with the ſame velocity which A had before the ſhock, and in the ſame direction.

For if the bodies were not elaſtic, each would proceed after the ſtroke in the ſame direction, and with half the velocity; but ſince the elaſtic force acts in the ſame direction wherein the compreſſion is made, and is equal to the compreſſing force; it repells A with half its velocity, and therefore ſtops it motion; but it drives B further, with half its velocity, and therefore accelerates its motion. It is therefore carried after the ſhock with the whole celerity wherewith A was carried before it, and A remains at reſt.

Hence, ſince A (*Tab. Mechan. fig.* 41.) transfers all its force to B, B in like manner will transfer it to C; C again to D, and D to E. Wherefore if there be ſeveral equal elaſtic bodies, mutually touching each other, and A be ſtruck againſt B; all the intermediate ones remaining at reſt, the laſt alone, E, will be moved; and that with the velocity wherewith A ſtruck againſt B.

15°. If two equal elaſtic bodies A and B meet directly, and with equal velocity; each will rebound with the ſame velocity wherewith it ſtruck, and in the ſame direction.

For, ſetting aſide the elaſticity, both would remain at reſt: their whole force therefore is ſpent in the compreſſion; but their elaſtic force whereby they rebound in the former direction, is equal thereto: this force therefore acting equally on each body A and B, will produce the ſame celerity in each; and that, equal to the former. So that they will rebound with the celerity wherewith they ſtruck.

16°. If two equal elaſtic bodies A and B ſtrike directly againſt each other with unequal velocities, after the ſhock they will rebound with interchanged velocities.

For ſuppoſe the bodies to concur with the velocities $C+c$ and C: if they meet with the ſame velocity C, after the ſhock, they would both move with the ſame velocity C. If B were at reſt, and A ſhould ſtrike upon it with the celerity *c*, after the ſhock, A would remain at reſt, and B be moved with the celerity *c*. Therefore the exceſs of celerity *c*, wherewith A is carried, is transferred wholly by the conflict to B: A therefore is moved with the celerity C, and B with the celerity $C+c$.

Hence, after *percuſſion*, they recede from each other with the ſame velocity as before they concurred.

17°. If an elaſtic body A, ſtrike on another equal one, indued with a leſs degree of motion, B; after *percuſſion*, both will proceed in the ſame, *viz.* the former, direction, and with interchanged velocities.

For ſuppoſe A to ſtrike with the velocity $C+c$, upon B moving with the velocity C. Since by reaſon of the equal velocities C and C, there ariſes no impulſe; it is the ſame thing as if A ſtruck on B with the ſole celerity *c*, on B at reſt. But in that caſe A would remain at reſt, and B move with the velocity *c*: therefore, after *percuſſion*, A will move with the ſole celerity C; and B with the celerity $C+c$, both according to the former direction, there being nothing to change that direction.

18°. If a moving body A ſtrike on another B; the ſtroke will be the ſame as would be made by the body A ſtriking on B at reſt, with the difference of their velocities.

Hence, ſince the elaſtic force is equal to the *percuſſion*; it acts on the bodies A and B with the difference of the velocities they had before the congreſs.

19°. *To determine the velocities of any two elaſtic bodies* A *and* B, *after ſtriking directly on each other with any velocities.*—If the elaſtic body A ſtrike on B, either at reſt, or moving faſter than A; the velocity *v. gr.* of A after *percuſſion*, is found thus: as the ſum of the weights is to double of either of them, ſuppoſe, in this caſe, of B; ſo is the difference of the velocities before the congreſs, to a velocity, which ſubtracted from the velocity of A before the impulſe (in the other caſe added to it) leaves the velocity of A after the congreſs.

If the two elaſtic bodies A and B meet each other; the velocity of A after the impulſe is found thus: as the ſum of the weights, is to the double of either of them, ſuppoſe of B; ſo is the ſum of the velocities before colliſion, to a velocity which ſubtracted from the velocity of A before colliſion, leaves its celerity after colliſion.

20°. If an elaſtic body A ſtrike directly on another at reſt, B; its velocity after *percuſſion* will be to its velocity before it, as the difference of weights is to their ſum: but the velocity it communicates to B, is to the ſame, as double the weight of A, to the ſum of the weights.

After *percuſſion* therefore, the velocity of A is to the velocity of B, as the difference of weights to the double of A.

21°. If two elaſtic bodies, A and B, ſtrike directly on each other with velocities that are reciprocally proportional to their weights; after colliſion, they will rebound with the ſame velocity wherewith they met.

22°. In the direct colliſion of bodies the ſame reſpective velocity is preſerved, *i. e.* in a direct concurrence, the difference of velocities is the ſame before and after the ſhock; and in a direct mutual encounter, the difference of velocities after the ſhock is the ſame with their ſum before it.

Hence they retire from each other after the impulſe, with the ſame velocity wherewith they met.

23°. In the colliſion of elaſtic bodies there is not always preſerved the ſame momentum, or as the Carteſians expreſs it, the ſame quantity of motion; but it is ſometimes increaſed, and ſometimes diminiſhed.

It is a miſtake therefore of Cartes and his followers, that the ſame quantity of motion is ſtill preſerved in the world. See Cartesian.

24°. If two elaſtic bodies, A and B, meet, or overtake each other directly; the ſum of the factums of the maſſes into the ſquares of the velocities remains the ſame before and after the congreſs. Hence the ſame quantity of force is likewiſe preſerved in the congreſs.

25°. *To determine the motion of two bodies* A *and* B, (fig. 42.) *ſtriking obliquely againſt each other, whether they be elaſtic, or not elaſtic.*—The motion of the body A along AC is reſoluble into two others, in the directions AE and AD; and the motion of B along BC into two others according to BF and BG; and the velocities through AD and BF are to the velocities through AC and BC, as the right lines AD, BF, AC, BC; now, ſince the right lines AE and BG are parallel, the forces acting according to theſe directions are not mutually oppoſite, and muſt therefore be conſidered in the congreſs. But ſince the lines AD and BF, or, which is the ſame, EC and GC, conſtitute the ſame right line perpendicular to DC; it is the ſame as if the bodies A and B ſhould meet directly with velocities that are as EC and GC. Find therefore the velocity of A and B according to the rules above laid down.

Suppoſe, *e. gr.* the velocity of the rebounding body A to be as CH; ſince the motion along AE is not changed by the congreſs, make CK = AE, and compleat the parallelogram HCKI; the diagonal CI will repreſent the motion of A after congreſs: for after *percuſſion*, the body will move according to the direction CI, and with a velocity as CI. In the ſame manner it will be found that the rebounding body B will move along the diagonal of the parallelogram CM; in which LM = BG. The velocities therefore after *percuſſion* are as CI to CM.

Center of Percussion, is that point wherein the ſhock or impulſe of the percutient bodies is the greateſt. See Center.

The *center of percuſſion* is the ſame with the center of oſcillation, if the percutient body revolve round a fixed axis. See Oscillation.

If all the parts of the percutient body be carried with a parallel motion, or with the ſame velocity; the center of *percuſſion* is the ſame with the center of gravity. See Gravity.

PER *deliquium.* See the article Deliquium.

PER *deſcenſum*, by deſcent, in chymiſtry, a particular manner of diſtillation. See Distillation.

PERDONATIO *utlagariæ*, in law, a pardon for one who is outlawed. See Pardon and Outlawry.

PERDUE*, a ſoldier placed in a dangerous, and almoſt deſperate poſt.—Thus we ſay, *enfans perdues*, for the forlorn hope of an army. See Forlorn and Enfans.

* The word is French, and literally ſignifies loſt.

To lye *perdue*, is to lye flat on the belly, to lye cloſely in wait.

PEREGRINARY, Peregrinarius, in the ancient monaſteries, a monk to whom was committed the care of receiving, and entertaining ſtrangers, or viſitors.

PEREGRINE, Peregrinus, a term applied among aſtrologers to a planet, when found in a ſign where it has none of its five eſſential dignities.

PEREMPTORY, in law, an epithet applied to an action, exception, *&c.* ſignifying them to be abſolute, final, and determinate; not to be altered, renewed, or reſtrained.

Thus in our law-books we find *peremptory action, peremptory nonſuit, peremptory exemption,* &c. See Action, Exception, *&c.*

PERENNIAL, in botany, is applied to thoſe plants whoſe roots will endure many years. See Plant, Root, Annual, *&c.*

Perennials are of two kinds; the one retain their leaves all the winter, called *ever-greens.* See Ever-green.

The other caſt the leaves in winter, called *deciduous* or *perdeſols.*

Perennial *Winds.* See the article Wind.

PERFECT, ſomething to which nothing is wanting; or that has all the requiſites of its nature and kind. See Perfection.

Perfect, in arithmetic. *Perfect* Number is that, all whoſe aliquot parts added together, make the ſame number with the number whereof they are ſuch parts. See Number.

Perfect, in grammar. Preter or preterit-*perfect* tenſe, is an inflection, marking a time perfectly paſt; as *I have heard:* pluſquam *perfect*, is an inflection, expreſſing a time more than perfectly paſt; as *I had heard, &c.* See Tense.

Perfect, in muſic, denotes ſomething that fills, and ſatisfies the mind, and the ear.—In which ſenſe we ſay, *perfect* cadence, *perfect* concord, *&c.* See Concord, Cadence, *&c.*

The ancients had two kinds of modes, the major and minor; and each of theſe again was either *perfect*, or *imperfect.* See Mode.

The word *perfect*, when joined with the words *mode*, and *time*, uſually expreſſes triple time, or meaſure; in oppoſition to double time, which they called *imperfect.* See Time, Triple, *&c.*

Perfect, in phyſiology. A *perfect* animal is uſed by ſome writers for that which is born by univocal generation; in oppoſition to inſects, which they pretend to be produced by equivocal generation. See Generation, Univocal, Equivocal, *&c.*

Perfect *flowers*, are ſuch as have petala, piſtil, ſtamina, and apices. See Flower.

Perfect *mixts* } See the articles { Mixts.
Perfect *plants* } See the articles { Plants.

PERFECTION, the ſtate or quality of a thing perfect. See Perfect.—This is of divers kinds: *phyſical, moral,* and *metaphyſical.*

Phyſical, or *natural* Perfection is that, whereby a thing has all its powers, or faculties, and thoſe too in their full vigour; all its parts both principal and ſecondary, and thoſe in their due proportion, conſtitution, *&c.*—In which ſenſe a man is ſaid to be *perfect*, when he has a ſound mind in a ſound body.

This *perfection* is by the ſchoolmen frequently called ενεργετικη, by reaſon a thing is hereby enabled to perform all its operations.

Moral Perfection is an eminent degree of virtue, or moral goodneſs; to which men arrive by often repeated acts of piety, beneficence, *&c.*

This ſome ſubdivide into abſolute or *inherent*, which is actually in him to whom we attribute it; and *imputative*, which exiſts in ſome other, and not in him it is attributed to.

Metaphyſical, or *tranſcendental* or *eſſential* Perfection is the poſſeſſion of all the eſſential attributes, or of all the parts neceſſary to the integrity of a ſubſtance: or it is that whereby a thing has, or is provided of every thing belonging to its nature. See Essence.

This is either *abſolute*, where all imperfection is excluded; ſuch is the *perfection* of God: or *ſecundum quid*, and in its kind. See Good.

PERFECTISSIMATE, Perfectissimatus, a quality, or dignity, whereof we find mention made in the code.—*Perfectiſſimi* were thoſe to whom the emperors truſted the preſidentſhip of any province.—Alciat imagined the name had been only given to the governors of Hiſpania Tarraconenſis, and Noricum; but Calvin has ſhewn the contrary in his *Lexicon juridicum.*

The *perfectiſſimi* were inferior to the *clariſſimi*, though the former word imply moſt perfect.

PERFIDIA, in muſick, a term borrowed from the Italians, ſignifying an affectation of doing always the ſame thing, of purſuing the ſame deſign, continuing the ſame motion, the ſame ſong, the ſame paſſage, and the ſame figures of notes. See Passage, *&c.*

Such are the ſtiff or conſtrained baſſes, as thoſe of chacones, and I know not how many others, becauſe depending wholly on the caprice of the compoſer.

PERFORANS *manus*, in anatomy, a muſcle of the hand; call'd alſo, from its action, *flexor tertii internodii digitorum manus.* See *Tab. Anat.* (Myol.) *fig.* 2. *n.* 18. Vide Perforatus.

It ariſes fleſhy from the fore and upper part of the ulna, and the ligament which joins that and the radius; and after forming a pretty thick fleſhy body, is ſplit into four round tendons; which paſſing under the annular ligament, and through the ſlits in the tendons of the former, are inſerted into the third bone of each finger. See Finger.

Perforans *pedis*, in anatomy, a muſcle of the foot, called alſo *profundus*; and from its action, *flexor tertii internodii digitorum pedis, & flexor magnus.*

It riſes from the upper and back-part of the tibia, and paſſing under the inner ancle, and ligament that ties the tibia and os calcis together, divides into four tendons, which paſſing the holes of the perforatus, are inſerted into the third phalanx of the leſſer toes.

There is a maſſa carnea, or fleſhy ſubſtance that ariſes from the os calcis, and which joins the tendons of this muſcle where the lumbricales begin. Vide Muscle.

PERFORATIVE. Vide Trepanum.

PERFORATUS *manus*, in anatomy, a muſcle of the fingers, thus called from the *perforations* of its tendons by thoſe of the perforans; ſometimes *flexor ſecundi internodii*, from its action; and ſometimes *ſublimis*, from its ſituation. See *Tab. Anat.* (Myol.) *fig.* 2. *n.* 17.

It ariſes tendinous from the internal protuberance of the humerus, and the upper-part of the radius before; and being parted into four, paſſes under the annular ligament; whence it ſends ſeveral tendons into the upper-part of the phalanx of each finger: every tendon having at the firſt internode, a ſlit or perforation for the admiſſion of the tendons of the perforans.

Prrforatus *pedis*, in anatomy, a muſcle of the foot, called alſo *flexor pedis, & ſublimis.*

It ariſes from the inner and lower part of the calcaneum, and ſends a tendon to every bone of the ſecond phalanx of each of the four leſs toes.—In this, as the *perforatus* of the hand, there is a ſlit in each tendon about the firſt joint, which lets through the tendon of the perforans.

PERFUME, an agreeable artificial odour, ſtriking the ſenſe, or organ of ſmelling. See Smell.

The generality of *perfumes* are made, or compoſed of muſk, ambergreeſe, civet, roſe and cedar-woods, orange-flowers, jeſſamine, jonquills, tuberoſes, and other odoriferous flowers.

Therein alſo enter ſtorax, frankincenſe, benzoin, cloves, mace, and other like drugs, commonly called *aromatics.* See Aromatick.—Some *perfumes* are alſo compoſed with aromatic herbs, or leaves, as lavender, marjoram, ſage, thyme, hyſſop, *&c.*

Perfumes were anciently much in uſe; particularly thoſe wherein muſk, ambergreeſe, and civet enter; they are now generally diſuſed, ſince people have become ſenſible of the harm they do the head.—In Spain and Italy they are ſtill alamode.

PERFUMES, *ſuffitus*, in pharmacy, *&c.* are topical or external medicines, compoſed of certain powders and gums, which being mixed together, and thrown on the coals, produce a vapour or ſmoak, ſalutary in ſeveral diſeaſes. See SUFFITUS.

Fits of the mother are cured by the *perfume* or fume of partridge feathers, old leather, *&c.* Burnt mercury is ſometimes applied by way of *perfume*, called fumes of cinnabar.

There are dry *perfumes*, made up in troches, pills, *&c.* of olibanum, maſtic, aloes, *&c.* and moiſt viſcous ones of the juices of herbs, *&c.*

PERIANTHIUM*, or PERIANTHEUM, in botany, the little green leaves which compaſs the bottom of a flower; called by Dr. Grew the empalement, and by others the calyx. See CALYX and FLOWER.

* The word is formed from the Greek ϖεϱι, about and ανϑος, flower.

The uſe of the *perianthium* is to be a ſupport, ſecurity, and as it were bands to the other parts of the flower.—Mr. Ray obſerves, that flowers, whoſe leaves or petala are ſtrong, as tulips, have no *perianthium*, as needing none. Carnations, *&c.* whoſe petala are long and ſlender, have their *perianthium* of one piece; others, as the knap-weed, *&c.* have it of ſeveral pieces, and in divers rounds, and all with a counterchangeable reſpect to each other, for the greater ſtrength and ſecurity of themſelves, and the petala, *&c.* they include.

PERIAPTON, ΠΕΡΙΑΠΤΟΝ, a kind of medicine, otherwiſe called *periamma*, or *amulet*; which being tied about the neck, is ſuppoſed to prevent, or cure diſeaſes. See AMULET. See alſo PHYLACTERY.

PERICARDIARY, an epithet given to worms generated in the pericardium, or capſula of the heart. See WORMS and PERICARDIUM.

M. Andry makes theſe one of the twelve kinds of worms engendered in the human body: they ſometimes occaſion convulſions, the paroxyſms whereof laſt but a little while, but return inceſſantly.

Theſe worms are accompanied with a frightful paleneſs of the face, a low pulſe, violent pains of the ſtomach and breaſt.—They ſometimes occaſion a palpitation of the heart. See PALPITATION. M. Andry adds, that they have been known to occaſion ſudden death.

PERICARDIUM*, ΠΕΡΙΚΑΡΔΙΟΝ, in anatomy, a membranous capſula, or pouch, which includes the heart. See HEART.

* The word is formed from the Greek ϖεϱι, about, and καϱδια, heart.

The *pericardium* conſiſts of a double membrane; the inner ariſing from the coats of the veſſels of the heart, and the outer from the mediaſtinum. Its figure reſembles that of the heart, conoidal; and it embraces the heart laxly, allowing room for its pulſation.

It is connected either immediately, or by veſiculæ emitted from it, to the ſternum, back, jugulum, and in human bodies to the tendinous part, or center of the diaphragm; whereas in brutes it is looſe.

Its uſe is ſuppoſed to be to defend the heart; as likewiſe to contain a ſoft ſerous humour, which ſerves to lubricate and moiſten the heart, and prevent any inflammation, that might probably ariſe from the dry friction of the heart and its capſula. But this latter uſe is controverted; for ſome take the humour found in it to be unnatural; and will have it forcibly ſeparated by the convulſive agonies ſupervening in the article of death. In effect, anatomiſts are puzzled to find whence it ſhould come, or from what veſſels it is ſecreted.

Dr. Keil, in his treatiſe of animal ſecretion, ſhews that the liquor in the *pericardium* muſt be the moſt fluid of any ſeparated from the blood, becauſe its particles unite firſt, and are ſecreted firſt. For thoſe particles which unite firſt, will have the greateſt attractive force, conſequently their particles muſt be the moſt ſpherical and moſt ſolid; and therefore their contact the leaſt of any, therefore the moſt fluid. See FLUIDITY.

In the memoirs of the French academy, M. de Mortal gives an inſtance of a *pericardium*, which being opened, the liquor contained therein, was found congealed into a conſiſtence fit to be cut with a knife, and two ſquare fingers thick about the heart.

PERICARPIA*, ΠΕΡΙΚΑΡΠΙΑ, a name ſometimes given to medicines that are applied to the wriſt: otherwiſe called *epicarpia.* See EPICARPIUM.

* The word is compounded of ϖεϱι about and καϱπος, *carpus*, the wriſt.

PERICARPUS, or PERICARPIUM*, in botany, a pellicle, or thin membrane, incompaſſing the fruit, or ſeed of a plant. See FRUIT, SEED, *&c.*

* The word is formed of the Greek ϖεϱι, about, and καϱπος, fruit.

PERICHORUS*, in antiquity, a name given by the Greeks to their profane games and combats, *i. e.* to ſuch as were not conſecrated to any of the gods. See GAMES.

* The word is formed from the Greek ϖεϱι, and χωϱα, country.

Perichorus in the original ſignifies near or neighbouring; apparently, becauſe none but the people of the neighbourhood attended at theſe obſcure exerciſes.—The champions did not fight in honour of any god, or hero, as in the others; but only for the prize ſake.

PERICRANIUM*, ΠΕΡΙΚΡΑΝΙΟΝ, in anatomy, a thick, ſolid coat or membrane, covering the out-ſide of the cranium, or ſkull. See CRANIUM.

* The word is formed from the Greek ϖεϱι, about, and κϱανιον, head, or ſkull.

Some call it by the general name of *perioſteum*, becauſe of its adhering to the bone: others divide it into two membranes; the under whereof immediately inveſting the ſkull, they call perioſteum, and the upper the *pericranium.* In effect, it is one double membrane, conſiſting, as moſt others do, of two coats.

It is ſuppoſed to have its origin from the dura mater; which paſſing through the ſutures of the ſkull, by means of ſeveral filaments forms this thick membrane: at leaſt, it is found connected to the dura mater by fibres tranſmitted from it to the membrane through the ſutures.

About the origin of the temporal muſcles the two coats of the *pericranium* part; the outer paſſing over thoſe muſcles, and the inner ſtill adhering cloſe to the cranium. See PERIOSTEUM.

PERIDROME, PERIDROMUS, in the ancient architecture, the ſpace, or iſle in a periptere, between the columns and the wall. See PERIPTERE.

Salmaſius obſerves, that the *peridromes* ſerved for walks among the Greeks.

PERIEGETES, ΠΕΡΙΗΓΗΤΕΣ, a Greek term, ſignifying a perſon who leads or conducts another about a thing, to ſhew it him, *&c.*

It is applied in antiquity to geographers; eſpecially to thoſe who deſcribed the ſea-coaſts: thus Dionyſius is ſtyled *periegetes*, for publiſhing a geography in hexameter verſes; which Euſtathius has commented on: both, in Greek.

The name *periegetes* was alſo given to thoſe who conducted ſtrangers about in cities, to ſhew them the antiquities, monuments, curioſities, *&c.* thereof.—Theſe were the ſame with what they now call antiquaries in Italy. See ANTIQUARY.

PERIGÆUM, PERIGEE, in aſtronomy, that point of the Sun's or Moon's orbit, wherein they are at their leaſt diſtance from the earth. See EXCENTRICK.

In which ſenſe *perigee* ſtands oppoſed to *apogee.* See APOGEE.

PERIGEE, in the ancient aſtronomy, denotes a point in a planet's orb, wherein the centre of its epicycle is at the leaſt diſtance from the earth.

PERIHELIUM*, in aſtronomy, that point of the orbit of a planet, or comet, wherein it is at its leaſt diſtance from the ſun. See PLANET, COMET, SUN, *&c.*

* The word is formed from the Greek ϖεϱι, and ἡλιος *ſol*, ſun.

Perihelium ſtands oppoſed to *aphelium.* The ancient aſtronomers in lieu hereof uſed *perigæum:* becauſe they placed the earth in the centre. See PERIGÆUM.

PERIMETER*, in geometry, the ambit, or extent that bounds a figure, or body. See FIGURE.

* The word is formed from the Greek ϖεϱι and μετϱον, meaſure.

The *perimeters* of ſurfaces, or figures, are lines; thoſe of bodies are ſurfaces. See SUPERFICIES.

In circular figures, *&c.* inſtead of *perimeter* we ſay circumference, or periphery. See PERIPHERY.

PERINÆUM, or PERINEUM, in anatomy, the ſpace between the pudendum, and the fundament; properly, the ligamentous ſeam which connects thoſe two parts; called by the Latins, *interfœmineum.*

* The word is Greek ϖεϱιναιον or ϖεϱινεον, formed from ϖεϱι, and ναιειν, to inhabit.

PERINDE *valere*, in the canon law, a diſpenſation granted a clerk, who being legally incapable of a benefice, or other eccleſiaſtical function, is *de facto* admitted to it. See DISPENSATION.

The *perinde valere* is a kind of writ, thus called from two words therein, ſignifying the diſpenſation to be equivalent or tantamount to a legal capacity.

PERIOCHA, ΠΕΡΙΟΧΗ, an argument, indicating the ſum of a diſcourſe. See ARGUMENT.

PERIOD, ΠΕΡΙΟΔΟΣ, in aſtronomy, the time taken up by a ſtar or planet in making a revolution; or the duration of its courſe, till it return to the ſame point of the heavens. See REVOLUTION.

The ſun's, or rather the earth's *period* is three hundred and ſixty five days, five hours, forty nine minutes. That of the moon twenty ſeven days, ſeven hours, forty three minutes, *&c.* See SUN, MOON, *&c.* The *periods* of the comets are now many of them pretty well aſcertained. See COMET.

There is a wonderful harmony between the diſtances of the planets from the ſun, and their *periods* round him; the great law whereof is, that the ſquares of the periodic times are ever proportional to the cubes of their mean diſtances from the ſun. See PLANET.

The ſeveral *periods* and mean diſtances of the ſeveral planets are as follow.

	Days	h.	′	″	mean Diſt.
Saturn	10579	6	36	26	953800
Jupiter	4332	12	20	35	520110
Mars	686	23	27	30	152369
Earth	365	6	9	30	100000
Venus	224	16	49	24	72333
Mercury	87	23	15	53	38710

PERIOD, in chronology, denotes an epocha, or interval of time, by which the years are accounted; or a ſeries of years, whereby, in different nations, and on different occaſions, time is meaſured. See TIME.

Such are the *Calippic*, and *Metonic periods*, two different corrections of the Greek calendar; the *Julian period*, invented by Joſeph Scaliger; the *Victorian period*, *&c.*

Calippic PERIOD, is a ſeries of ſeventy ſix years, returning in a perpetual circle; which elapſed, the new and full moons are ſuppoſed to return to the ſame day of the ſolar year.

The *Calippic period* is an improvement on the *Metonic* of nineteen years, which proving inaccurate, Calippus the Athenian multiplied it by four, and thus aroſe the *Calippic period.* See CALIPPIC.

Conſtantinopolitan PERIOD. See *Julian* PERIOD.

Dionyſian PERIOD. See *Victorian* PERIOD.

Hypparchus's PERIOD, is a ſeries of three hundred and four ſolar years, returning in a conſtant round, and reſtoring the new and full moons to the ſame day of the ſolar year; according to the ſentiment of Hipparchus.

This *period* ariſes by multiplying the *Calippic period* by four. Hipparchus aſſumed the quantity of the ſolar year to be 365 days, 5 hours, 55′ 12″. And hence concluded that in one hundred and four years Calippus's *period* would err a whole day. He therefore multiplied the *period* by four, and from the product caſt away an entire day. But even this does not reſtore the new and full moons to the ſame day throughout the whole *period:* but they are ſometimes anticipated 1 day, 8 hours, 23′ 29″ 20‴.

Julian PERIOD, a ſeries of ſeven thouſand nine hundred and eighty Julian years; ariſing by the multiplication of the cycles of the moon, the ſun, and indictions into one another; commencing from the firſt day of January in the Julian year. See JULIAN.

The *Julian period* is alſo produced by multiplying the Victorian *period* by fifteen. Since every year in the *Julian period* has its particular cycles of the moon, ſun, and indictions: *e. gr.* only the firſt has the moon's cycle one, the ſun's cycle one, and the cycle of indictions one; all the years of this *period* are accurately diſtinguiſhed from each other.

This *period* was invented by Scaliger, as a common receptacle of epocha's, to facilitate the reduction of years of a given epocha to thoſe of another epocha likewiſe given. It agrees with the Conſtantinopolitan epocha, or *period* uſed by the Greeks, except in this, that the cycles of the ſun, moon, and indictions are reckoned differently; and in that the firſt year of the Conſtantinopolitan *period* differs from that of the *Julian period.*

Metonic PERIOD, or *cycle*, called alſo the *cycle of the moon*, is a ſeries of nineteen years, which elapſed, the new and full moons are ſuppoſed to return to the ſame day of the ſolar year: it was thus called from its inventor Meton. See METONIC. See alſo CYCLE.

Victorian PERIOD, an interval of five hundred and thirty two Julian years, which elapſed, the new and full moons return on the ſame day of the Julian year, according to the ſentiment of Victorinus or Victorius, who lived in the time of pope Hilary.

Some aſcribe this *period* to Dionyſius exiguus; and hence call it the *Dionyſian period:* others call it the *great paſchal cycle;* becauſe invented for computing the time of Eaſter.

The *Victorian period* is produced by multiplying the lunar cycle nineteen, by the ſolar circle eighteen; the product of which is five hundred thirty two. But neither does this reſtore the new and full moons to the ſame day throughout its whole duration, by 1 day, 16 hours, 58′ 59″ 40‴.

PERIOD, in grammar, denotes a little compaſs of diſcourſe, containing a perfect ſenſe; diſtinguiſhed at the end by a point or full ſtop (.) and its members or diviſions marked by commas, colons, *&c.* See SENTENCE, POINT, *&c.*

De Colonia defines *period* a ſhort, but perfect ſentence, conſiſting of certain parts of members, depending one on another, and connected together by ſome common vinculum.

That celebrated definition of Ariſtotle is, a *period* is a diſcourſe which has a beginning, a middle, and an end, all viſible at one view.

The *periods* allowed in oratory are three: a *period* of two members, called by the Greeks *dicolos*, and the Latins, *bimembris:* a *period* of three members, *tricolos*, *trimembris*; and a *period* of four, *quadrimembris*, *tetracolos*.

A ſtrict oratorial *period* does not allow of either more or fewer than theſe: it is poſſible indeed to introduce a *period* of one member, called by Ariſtotle, *monocolos*, or ſimple *period*; but it will be reputed a flaw, and is a thing never practiſed by the maſters.

The *period* may be likewiſe prolonged to five or ſix members; but then it changes its name, and inſtead of *period*, commences what they call a *periodical diſcourſe.*

A *period* of two members Cicero ſupplies us with: *Ergo & mihi meæ priſtinæ vitæ conſuetudinem, C. Cæſar, intercluſam aperuiſti; & his omnibus ad bene de republica ſperandum quaſi ſignum aliquod ſuſtuliſti.*

A *period* of three members the ſame Cicero gives us in the exordium of his *Manilian oration: Nam cum antea per ætatem hujus auctoritatem loci contingere non auderem; ſtatueremque nihil huc niſi perfectum ingenio, elaboratum induſtria afferri oportere; omne meum tempus amicorum temporibus tranſmittendum putavi.*

A *period* of four members he gives us in that admirable deſcription of the puniſhment of parricides. *Ita vivunt, ut ducere animam de cœlo non queant: ita moriuntur, ut eorum oſſa terra non tangat: ita jactantur fluctibus, ut nunquam abluantur: ita poſtremo ejiciuntur, ut ne ad ſaxa quidem mortui conquieſcant.*

The laws and meaſures of *periods* are pretty ſtrictly regarded by orators, at leaſt by the ancient ones: in ordinary diſcourſe, and in the modern tongues authors are much leſs ſevere.

In oratory, the members of *periods* are to be equal, or nearly equal; that the pauſes or reſts of the voice at the cloſe of each member may be nearly equal: but in writing no ways intended for rehearſal, this is diſregarded.

Common diſcourſe allows of *periods* both longer and ſhorter than oratory; which admits of none leſs than two members, nor greater than four. Short, mutilated *periods* break the ſtream, and check the courſe of the ſublime; and long ones embarraſs and keep the mind too long in ſuſpenſe; and even ſtrain the voice, which is never to ſtop but at the ends of *periods.* Phalareus, Hermogenes, Terence, *&c.* confine the juſt *period* (called by the Latins, *Ambitus* and *Circuitus*) to four members; agreeable to the diſtich,

> *Quatuor e membris plenum formare videbis*
> *Rhetora* circuitum, *ſive* ambitus *ille vocetur.*

Of which ſentiment is Cicero, who in his *Orator* ſays, *Conſtat ille ambitus & plena comprehenſio e quatuor fere partibus, quæ membra dicuntur, ut & aures impleat, & ne brevior ſit quam ſatis ſit, neque longior.*—An inſtance of a periodical diſcourſe the ſame author gives us in the opening of his oration for Archias the poet: *Si quid in me ſit ingenii, judices, quod ſentio quam ſit exiguum; aut ſi qua exercitatio dicendi, in qua me non inficior mediocriter eſſe verſatum; aut ſi hujuſce rei ratio aliqua ab optimarum artium ſtudiis & diſciplina profecta, a qua ego confiteor nullum ætatis meæ tempus abhorruiſſe; earum rerum omnium vel in primis hic A. Licinius fructum a me repetere prope ſuo jure debet.*

Periods are ſaid to be either *rotundi*, round, or *quadrati*, ſquare, according to their different œconomy, and cadences.

Square PERIOD is that conſiſting of three or four equal members, formerly diſtinguiſhed from each other—as, that of Cicero on the puniſhment of parricides.

Round PERIOD is that whoſe members or parts are ſo connected, and fitted into each other, as that the junctures or commiſſures are ſcarce ſeen; but the whole ſlides equally round, without any notable ſtops or inequalities.—Such are the dicolos and tricolos of Cicero abovementioned.

PERIOD is alſo uſed for the character (.) wherewith the *periods* of diſcourſe are terminated and expreſſed; popularly called a *full-ſtop or point.* See POINTING.

Father Buffier obſerves two difficulties in the uſe of the *period*, or point; *i. e.* in diſtinguiſhing it from the colon, or double point; and in determining juſtly the end of a *period* or perfect ſentence.

It is obſerved that the ſupernumerary members of a *period*, ſeparated from the reſt by colons and ſemicolons, uſually commence with a conjunction. (See COLON.) Yet it is certain theſe ſame conjunctions ſometimes rather begin new *periods*, than ſupernumerary members of old ones. It is the ſenſe of things, and the author's own diſcretion that muſt make the proper diſtinction which of the two in effect it is. No rules will here be of any ſervice, unleſs this be admitted as one; that when what follows the conjunction is of as much extent as what precedes it, it is uſually a new *period*; otherwiſe not.

The ſecond difficulty ariſes hence, that the ſenſe appears perfect in ſeveral ſhort detached phraſes, wherein it does not ſeem there ſhould be *periods:* a thing frequent in free diſcourſe; as, *we are all in ſuſpence: make your propoſals immediately: you will be to blame for detaining us longer.* Where it is evident that ſimple phraſes have perfect ſenſes like *periods*, and ought to be marked accordingly; but that the ſhortneſs of the diſcourſe making them eaſily comprehended, the pointing is neglected.

PERIOD, in numbers, is a diſtinction made by a point or comma, after every ſixth place, or figure: and is uſed in numeration, for the readier diſtinguiſhing and naming the ſeveral figures or places: which ſee under NUMERATION.

PERIOD, in medicine, is applied to certain diſeaſes which have intervals, and returns, to denote an entire courſe, or circle of ſuch diſeaſe; or its progreſs from any ſtate through all the reſt, till it return to the ſame. See DISEASE.

Galen deſcribes *period* as a time compoſed of an intenſion and remiſſion; whence it is uſually divided into two parts, paroxyſm or exacerbation, and remiſſion. See PAROXYSM and REMISSION.

In intermitting fevers, the *periods* are uſually ſtated and regular; in other diſeaſes, as the epilepſy, gout, *&c.* they are vague, or irregular. See FEVER.

PERIOD is alſo uſed, by ſome writers, for the ſtate of a diſtemper, or diſeaſe.

PERIOD *of the blood*, PERIODUS *ſanguinis*, the circle of the blood, or the tour it makes round the body, for the ſupport of life. See CIRCULATION.

PERIODEUTA, ΠΕΡΙΩΔΕΥΤΗΣ, a church officer among the Greeks; eſtabliſhed by the council of Laodicea, in towns, *&c.* where there were no biſhops.

The *Periodeutæ* were a kind of rural deans, ſo called, according to Zonaras, becauſe always on the road, going from one quarter to another to keep the people in their duty. See RURAL.

Hence, Gregory of Theſſalonica calls them *ambulantes*, *walkers*. Balſamon, calls them *exarchæ*, by which name they are known among the Greeks at this day. See EXARCH.

PERIODIC, PERIODICAL, ſomething that terminates and comprehends a period. See PERIOD.

A periodical month, is the ſpace of time wherein the moon diſpatches her period or *periodic* motion, *viz.* 27 days, 7 hours, 43 minutes, in which time ſhe returns to the ſame point of the zodiac, wherein ſhe was when ſhe left the ſun. See MONTH.

PERIODICAL *diſeaſes*, are ſuch as decline and riſe again with ſimilar ſymptoms; alternately. See DISEASE and PERIOD.

In the *Philoſophical Tranſactions*, Dr. Muſgrave gives us an inſtance of a *periodic* palſy; Dr. Cole an inſtance of a *periodic* convulſion. See CONVULSION, PALSY, *&c.*

PERIODIC, in grammar, is applied to a ſtyle or diſcourſe that has numbers; or which conſiſts of juſt, and artful periods. See NUMBERS.

PERIODICAL *Winds*. See the article WIND.

PERIOECI*, ΠΕΡΙΟΙΚΟΙ, in geography, ſuch inhabitants of the globe as have the ſame latitudes, but oppoſite longitudes; or live under the ſame parallel, and the ſame meridian, but in different ſemi-circles of that meridian, or oppoſite points of the parallel. See GLOBE.

* The word is formed from the Greek, περι, about, and οικεω, I inhabit.

Theſe have the ſame common ſeaſons throughout the year; and the ſame phænomena of the heavenly bodies; but their hours, or times of the day, are oppoſite to each other. When *v. gr.* with the one it is mid-day; with other it is mid-night. See DAY and SEASON.

PERIOPHTHALMIUM*, in natural hiſtory, a thin ſkin which birds can draw over their eyes, to defend them, without ſhutting their eye-lids.—The ſame with the nictitating membrane. See NICTITATING *membrane*.

* The word is compounded of the Greek, περι, about, and οφθαλμος eye.

PERIOSTEUM, or PERIOSTIUM, in anatomy, a membrane, pretty tough, and extremely ſenſible, covering the whole exterior ſurface of all the bones of the body, the teeth only excepted.—See *Tab. Anat.* (Splanch.) *fig.* 13. *litt. gg.* See alſo BONE.

* The word is originally Greek, περιοστεον, formed of περι, about, and οστεον. bone.

The *perioſteum* is derived from the dura mater, and conſiſts principally of fibres detached thence; beſides which it receives other fibres from the membrana communis of the muſcles, or, as Dr. Havers imagines, from the fleſhy fibres of the belly of the muſcles, which interſect the former.—That part of it which covers the cranium or ſkull, is by a peculiar name called the *pericranium*. See PERICRANIUM.

The *perioſteum* is very thin every where; though not every where alike. It adheres cloſely to the bone; and in ſome places is obſerved to ſend fibres into the very ſubſtance thereof.

Its principal uſe is to defend the muſcles and tendons from being fretted in their action by the attrition of the hard ſubſtance of the bones; and to give notice, by its ſenſibility, of any thing that might annoy the bones—Indeed, this laſt uſe is controverted; ſome of the lateſt anatomiſts maintaining that the *perioſteum* is inſenſible.

PERIPATETIC *philoſophy*, the ſyſtem of philoſophy, taught and eſtabliſhed by Ariſtotle, and maintained by his followers the *peripateticks*. See PERIPATETICKS, PHILOSOPHY, and PHYSICKS.

A ſpecimen of the *peripatetic* philoſophy, ſee under ARISTOTELIAN.

PERIPATETICKS, ΠΕΡΙΠΑΤΗΤΙΚΟΙ, a ſect of philoſophers, the followers of Ariſtotle; or the maintainers of the *peripatetic* philoſophy: called alſo *Ariſtotelians*. See ARISTOTELIAN.

Cicero tells us that Plato left two excellent diſciples, Xenocrates and Ariſtotle, who founded two ſects, which only differed in name: the former taking the appellation of *academicks*, who were thoſe that continued to hold their conferences in the academy, as Plato had done before: the others who followed Ariſtotle, were called *peripateticks*; from περιπατεω, I walk, becauſe they diſpute walking in the lyceum. See ACADEMY and LYCEUM.

Ammonius fetches the name *peripatetic* from Plato himſelf, who only taught walking; and adds that the diſciples of Ariſtotle, and thoſe of Xenocrates were equally called *peripateticks*; the one *peripateticks* of the academy, the other *peripateticks* of the lyceum: but that at length, the former quitted the title *peripatetic*, for that of academic, on occaſion of the place where they aſſembled, and the latter retained ſimply that of *peripatetic*. See ACADEMIC.

The greateſt and beſt part of Ariſtotle's Philoſophy, he borrow'd from his maſter Plato: Serranus affirms confidently, and ſays he is able to demonſtrate it, that there is nothing exquiſite in any part of Ariſtotle's philoſophy, dialectics, ethics, politics, phyſics, or metaphyſics, but is found in Plato. And of this opinion are many of the ancient authors, Clemens Alexandrinus, *&c.* See PLATONISM.

Gale endeavours to ſhew, that Ariſtotle borrowed a good deal of his philoſophy both phyſical about the firſt matter; and metaphyſical about the firſt being, his affections, truth, unity, goodneſs, *&c.* from tbe ſacred books; and adds from Clearchus, one of his (Ariſtotle's) ſcholars, that he made uſe of a certain Jew, who aſſiſted him therein.

Ariſtotle's philoſophy preſerved itſelf in *puris naturalibus*, a long time; none of his followers or commentators having dared to make any innovations therein, till the beginning of the XIIIth century; when it began to be new modelled.—A reformed ſyſtem of *peripateticiſm* was firſt introduced into the ſchools, in the univerſity of Paris; from whence it ſoon ſpread throughout Europe; and has ſubſiſted in the univerſities to this day, under the name of *ſchool philoſophy*. See SCHOLASTIC, *&c.*

The foundation hereof is Ariſtotle's doctrine, frequently miſunderſtood; oftener miſapplied: whence the retainers thereto may be denominated *reformed peripateticks*.

Out of theſe have ſprung, at ſeveral times, ſeveral branches, the chief are the Thomiſts, Scotiſts, and Nominaliſts; ſee each under its proper article, THOMIST, SCOTIST, and NOMINAL.

PERIPETIA, ΠΕΡΙΠΕΤΕΙΑ, in the drama, that part of a tragedy wherein the action is turned, the plot unravelled, and the whole concludes. See TRAGEDY.

* The word is formed from the Greek περιπετης. *ſomething falling into a different ſtate*, formed of περι, about, and πιπτω, *cado*, I fall.

The *peripetia* is properly the change of condition, whether happy or unhappy, which the principal perſon or perſons undergo; ariſing from ſome diſcovery or incident, which gives a new turn to the action.

The *peripetia* therefore coincides with the cataſtrophe, or unravelling; unleſs we make the *peripetia* to depend on the cataſtrophe, *&c.* as an effect on its cauſe. See CATASTROPHE.

The *peripetia* is ſometimes induced by remembrance or diſcovery, as in the Oedipus, where the meſſenger, ſent from Corinth to invite Oedipus to the crown, informs him that Polybus and Merope were not his father and mother; which begins a diſcovery, that Laius, whom he had killed, and Jocaſta whom he had then to wife, were his father and mother; and throws him into the deepeſt diſtreſs.—This inſtance Ariſtotle calls a *double peripetia*. See DISCOVERY.

The qualities of the *peripetia* are, that it be probable and neceſſary; in order to which it muſt be the natural reſult, at leaſt the effect, of the foregoing actions, or of the ſubject itſelf; not ſtart out from any foreign, or collateral cauſe.

Sometimes the *peripetia* is occaſioned without any diſcovery; as in the Antigone of Sophocles, where the change in Creon's fortune is produced by the effect of his own obſtinacy; and ſometimes by a mere change of the will, which, though the leaſt artful, yet, Mr. Dryden obſerves, may be ſo managed as to become exceedingly beautiful.

Theſe two caſes Ariſtotle calls *ſimple peripetias*; in theſe, the change only conſiſts in a paſſage out of trouble and action, into tranquillity and reſt. See FABLE, ACTION, *&c.*

PERIPHERY*, in geometry, the circumference or bounding-line of a circle, ellipſis, parabola, or other regular curvilinear figure. See CIRCUMFERENCE, CIRCLE, *&c.*

* The word is formed from the Greek, περιφερω, *circumfero*, I ſurround; of περι, about, and φερω, I bear, or carry.

The *periphery* of every circle is ſuppoſed to be divided into 360 degrees, which are again ſubdivided, each into 60 minutes, the minutes into ſeconds, *&c.* See DEGREE, MINUTE, *&c.*

The diviſions of degrees, therefore, are fractions, whoſe denominators proceed in a ſexagecuple ratio: as, the minute $\frac{1}{60}$, ſecond $\frac{1}{3600}$, third $\frac{1}{216000}$. See SEXAGESIMAL.

But theſe denominatiors being troubleſome; in their ſtead are uſed the indices of their logarithms; hence the degree, being the integer, or unit is marked by o, the minute by ′, ſecond by ″, &c. See MINUTE, SECOND, *&c.*

Geometricians demonſtrate that a circle is equal to a triangle, whoſe baſe is equal to the *periphery*, and altitude to the radius. See TRIANGLE.

Hence it follows that circles are in a ratio compounded of their peripheries and radii. But they are alſo in the duplicate ratio of their radii; therefore the *peripheries* of circles are to each other as their radii: and ſince the *periphery* of one circle is to its radius, as the *periphery* of any other to its radius; the ratio of the *periphery* to the diameter is the ſame in all circles.

Angle at the PERIPHERY. See the article ANGLE.

PERIPHRASIS*, in rhetoric, *circumlocution*; a circuit or tour of words, much affected by orators, to avoid common and trite manners of expreſſion. See CIRCUMLOCUTION, FIGURE.

* The word in the original Greek, περιφρασις, ſignifies *circumlocution*; formed of περι, about, and φραζω, I ſpeak.

The *periphraſis* is of good uſe on many occaſions; and we are ſrequently forced to have recourſe to it, to make things be conceived, which is not proper to name.

It is a piece of politeneſs to ſuppreſs the names, and only intimate, or deſign them. Theſe turns of expreſſion are particularly ſerviceable in oratory; for the ſublime admitting of no direct citations, there muſt be a compaſs taken to inſinuate the authors, whoſe authority is borrowed. A *periphraſis* by turning round a proper name to make it underſtood, amplifies and raiſes the diſcourſe; but care muſt be taken it be not too much ſwelled, nor extended *mal a propos*, in which caſe it becomes flat and languid.

PERIPLUS, ΠΕΡΙΠΛΟΥΣ, a voyage or navigation round a certain ſea, or ſea coaſt. See NAVIGATION.

Arrian has deſcribed all the coaſts of the black ſea, after having inſpected them in quality of general of the emperor Adrian, to whom he dedicates the deſcription under the title of *Periplus of the cuxine ſea*.

PERIPNEUMONIA*, ΠΕΡΙΠΝΕΥΜΟΝΙΑ, in medicine, an inflammation of ſome part of the thorax, properly of the lungs; attended with an acute fever, and a difficulty of breathing. See LUNGS, *&c.*

* The word is formed from the Greek, περι, about, and πνευμων, lungs.

The *peripneumonia* is diſtinguiſhed into *vera*, or *true*; and *notha*, or *ſpurious*.

The *true* PERIPNEUMONY is a real inflammation of the ſubſtance of the lungs, attended with a ſymptomatical fever, and a cough; by the former of which it is diſtinguiſhed from an Aſthma; and by the latter from a pleuriſy. See ASTMA and PLEURISY.

Its uſual cauſes are, want of exerciſe, hard ſtudy, ſuppreſſion of natural evacuations, a moiſt air, or the like.—When it ariſes from a phlegmon, the patient ſpits pure blood; when it is eryſipelatous, the ſputum is yellow, and not much tinged with red. In this laſt, the breaſt is not ſo much contracted, but the fever more violent.

The *peripneumonia* is more dangerous, though leſs painful than a pleuriſy: its uſual way of going off is by expectoration of well concocted, reddiſh, yellow or white matter. The flowing of the menſes, or any hæmorrhage, a diarrhœa, abſceſſes about the ears, or other parts, are alſo good prognoſticks.—The medicines preſcribed are moſtly the ſame that obtain in aſtmatick and pleuritick caſes.

Spurious or baſtard PERIPNEUMONY, is a diſeaſe of the lungs, ariſing from a heavy pituitous matter generated throughout the whole maſs of blood, and diſcharged upon the lungs.

It is known by the viſcidity, paleneſs, and ſlowneſs of the blood, ropineſs of the ſaliva, paleneſs and want of ſcent of the urine, ſwellings and obſtructions in the minuter veſſels, ſhort breath, oppreſſion in the thorax, *&c.* Worn out, phlegmatic, cold, phthiſical, catarrhous, conſtitutions, are moſt liable to it. It begins with a feebleneſs, indolence, wearineſs, difficulty of breathing, oppreſſion of the breaſt, feveriſhneſs; and goes on without any great appearance of danger to death itſelf, without any prognoſtic thereof in the urine, pulſe, *&c.* It is cured by blood-letting, clyſters, thin diet, diluters, abſtergents and aperients.

PERIPTERE*, ΠΕΡΙΠΤΕΡΟΣ, in the ancient architecture, a building incompaſſed on the out ſide with a ſeries of inſulate columns, forming a kind of iſle or portico all around.

* The word is formed of the Greek περι, *circum*, about, and πτερον, *ala*, wing, *q. d.* winged on every ſide.

Such were the baſilica of Antonine, the ſeptizon of Severus, the portico of Pompey, *&c.*

Peripteres were properly temples, which had columns on all the four ſides; by which they were diſtinguiſhed from *proſtyles*, and amphiproſtyles, the one of which had no columns before, and the other none on the ſides. See TEMPLE, PROSTYLE, *&c.*

M. Perrault obſerves, that *periptere* in its general ſenſe, includes all the ſpecies of temples which have portico's of columns all around; whether the columns be diptere, or pſeudo-diptere, or ſimply *periptere*, which is a ſpecies that bears the name of the genus, and which has its columns diſtant from the wall by the breadth of an intercolumnation.—For the difference between *periptere*, and periſtyle, ſee PERISTYLE.

PERISCII*, ΠΕΡΙΣΚΙΟΙ, in geography, thoſe inhabitants of the earth, whoſe ſhadows do, in one and the ſame day, ſucceſſively turn to all the points of the horizon. See SHADOW.

* And hence the name, from the Greek περισκιοι, *q. d. circumumbres*; of περι, about, and σκια, ſhadow.

Such are the inhabitants of the frozen zones, or thoſe who live within the compaſs of the artict and antarctic circles; for, as the ſun never goes down to them after he is once up, but always round about, ſo do their ſhadows; inſomuch, that in the ſame day they have their ſhadows on all ſides. See ZONE.

PERISKYTISM*, or PERISKYPHISM, in chirurgery, an operation performed by the ancients on the cranium. See CRANIUM.

* The word is formed from the Greek περι and σκυτιζειν, to flay, or cut ſkin.

The *periſkytiſm* is an inciſion which they made under the coronal ſuture, reaching from one temple a-croſs to the other, and penetrating to the bone of the cranium: its intention was to ſeparate the pericranium from the ſkull. See PERICRANIUM.

PERISSACHOREGIA, a term found in the code, about the meaning whereof authors are much divided.

Alciat, and ſome others, will have it to be the name of an office, *viz.* that of curator of the annona or proviſions; from περισσεια, abundance, and χορηγεω, to lead, or bring—Others take it to be the office of a magiſtrate who was to look to the augmentation of the annona, and the diſtribution of the ſame.

Dom. Macri will have it to ſignify a donative, or diſtribution made to the ſoldiers, over and above their pay. See DONATIVE.

PERISTALTIC, ΠΕΡΙΣΤΑΛΤΙΚΟΣ, in medicine, a motion proper to the inteſtines, wherein the ſeveral parts are ſucceſſively contracted from above downwards, or from the pylorus to the anus; in a manner ſomewhat reſembling the creeping of a worm: whence it is alſo called the *vermicular motion.* See INTESTINES.

* The word is formed from the Greek περιστελλω; and literally implies ſomething *driven* or *preſſed all around.*

The *periſtaltic* motion is performed by the contraction of the circular and longitudinal fibres, whereof the fleſhy coat of the inteſtines is compoſed. It is by means hereof that the chyle is driven into the orifices of the lacteal veins, and the excrements preſſed downwards, and at laſt expelled. See CHYLE and EXCREMENT.

When this motion comes to be depraved, and its direction changed, ſo as to proceed from below upwards, it produces what we call the *iliac paſſion.* See ILIAC *paſſion.*

M. Perrault in an expreſs treatiſe on the *periſtaltic motion*, obſerves, that though it is ordinarily, only attributed to the inteſtines; yet, it is really an action common to all the parts of the body which alter, prepare, concoct the ſeveral humours and ſpirits, which are the matter and inſtruments of animal action.—In effect, he gives the name to all the motions whereby the cavities of the body are preſſed, or compreſſed. V. MUSCLE.

PERISTAPHYLINUS, in anatomy, a name which ſome give to the muſcle of the uvula, more properly denominated *pterygoſtaphylinus.* See UVULA and PTERYGOSTAPHYLINUS.

PERISTYLE, ΠΕΡΙΣΤΥΛΟΣ, in the ancient architecture, a place or building, incompaſſed with a row of columns on the inſide; by which it is diſtinguiſhed from the periptere, where the columns are diſpoſed without-ſide. See PERIPTERE.

* The word is formed from the Greek περι, about, and στυλος, column.

Such was the hypæthre temple of Vitruvius; and ſuch are now ſome baſilica's in Rome, ſeveral palaces in Italy, and moſt cloiſters of religious.

PERYSTYLE is alſo uſed by modern writers for a range of columns, either within, or without a building.

Thus we ſay, the corinthian *periſtyle* of the portail of the Louvre, *&c.*

PERISYSTOLE, ΠΕΡΙΣΥΣΤΟΛΗ, in medicine, the pauſe or interval between the two motions of the heart, or pulſe, *viz.* that of the ſyſtole or contraction, and that of the diaſtole or dilatation. See SYSTOLE and DIASTOLE. See alſo PULSE and HEART.

PERITONÆUM*, or PERITONEUM, in anatomy, a thin ſoft membrane, covering and containing all the viſcera of the lower belly.—See *Tab. Anat.* (Splanch) *fig.* 1. *lit. uu. fig.* 3. *lit. bb.* See alſo VISCERA and ABDOMEN.

* The term is Greek περιτοναιον, or περιτονειον, derived from the verb περιτεινω, *circumtendo*, I ſtretch all around.

The figure and ſize of the *peritonæum* anſwer to thoſe of the lower belly, which it lines throughout; its internal ſurface is ſmooth, and lined with an unctuous humour, ſerving to prevent its wounding the inteſtines, and other parts it touches, as well as to lubricate and facilitate their motion; when the glands which furniſh it are obſtructed, the *peritonæum* grows thick, as is frequently found in dropſies.

The external ſurface is fibrous and unequal, that it may adhere more firmly to the muſcles of the abdomen, linea alba, oſſa pubis, iſchium, ilium, ſacrum, and the vertebræ lumbares, to which it is faſtened; and from the laſt whereof, many ſuppoſe it to have its origin.

It is alſo connected to the inferior or convex ſurface of the liver, which it ſuſpends; and the part imployed in this action, is called the *ligamentum ſuſpenſorium hepatis.*

The *peritonæum* is double every where, but moſt apparently ſo from the naval to the os pubis, and near the lumbar vertebræ, as appears not only from its extraordinary thickneſs in both, but from its ſpontaneous parting in the latter, to receive the kidnies. It is perforated in the upper part to give paſſage to the œſophagus, aorta and cava; in the under, for the fundament, the neck of the matrix, and the veſſels that go to the thighs; and in the fore-part to give paſſage to the umbilical veſſels.

Its exterior coat has two proceſſes; which in men fall down into the ſcrotum, wrap up the ſpermatick veſſels, and dilating make the tunica vaginalis of the teſticles; in women they form a cover for the round ligament of the womb.

The *peritonæum* receives veins and arteries from the mammariæ, diaphragmaticæ, epigaſtricæ, ſacræ, and lumbares: nerves from the os ſacrum and loins. Ol. Rudbeckius pretends to have likewiſe diſcovered lymphaticks, which being ſcarce viſible, except in hydropic caſes, are not much taken notice of.

In morbid caſes, great quantities of ſerum have been found between the duplicatures of this membrane, when there was none in the cavity of the abdomen; which conſtitutes the true tympany. See TYMPANY.

The uſe of the *peritonæum* is to contain, and keep in their place the viſcera of the abdomen; this is ſo manifeſt, that when ever this membrane happens to be broke, or extraordinarily dilated, ſome of the parts are apt to fall down, and to form thoſe tumors called *hernias* or *ruptures*. See HERNIA.

PERITROCHIUM, in mechanicks, a wheel, or circle, concentric with the baſe of a cylinder, and moveable together with it, about an axis.—Such is the wheel AB, *Tab. Mechanicks*, *fig.* 44, moveable on the axis EF.

The axis, with the wheel, and levers fixed therein to move it, make that mechanical power, called *axis in peritrochio*. See *axis in* PERITROCHIO.

Axis in PERITROCHIO, in mechanicks, one of the ſix mechanical powers, or ſimple machines, contrived for the raiſing of weights.—See its ſtructure, doctrine, application, *&c.* under the article AXIS *in peritrochio*.

PERJURY, PERJURIUM, in law, the crime of ſwearing falſely in a lawful oath, adminiſtered by one who has authority, in any matter relating to an iſſue, or cauſe in queſtion; whether it be of the perſon's own accord, or by ſubornation of another. See OATH.

If a man calls me *perjured*, I have my action upon the caſe. If he call me *forſworn* no action lyes, becauſe the forſwearing may be extra-judicial.—*Perjury* is uſually excepted out of general acts of grace.

The puniſhment of *perjury* is colliſtrigium, the pillory, or burning the criminal in the forehead with a P, rooting up his trees, and confiſcating his goods. See PILLORY, *&c.*

PERMANENT *air* } See the article { AIR.
PERMANENT *quantity* } { QUANTITY.

PERMEABLE, denotes a body conſidered as its pores are capable of letting ſomewhat paſs through them. See PORE.

PER MINIMA, in medicine, denotes a perfect mixture of the ſmalleſt particles of ſeveral bodies, or ingredients. See MIXTURE and MINIMA.

PER MINIMA, in pharmacy, denotes an intimate and perfect mixture of natural bodies; wherein their very *minima*, *i. e.* their atoms, or firſt component particles are ſuppoſed to be accurately blended together. See MIXTION.

If ſilver and lead be melted together, they will mingle *per minima*. See SILVER, LEAD, METAL, *&c.*

PERMITTIT—*quare non* PERMITTIT. See the article QUARE.

PERMUTATION, the truck, or exchange of one thing for another. See EXCHANGE.

The commerce of the ancients, was performed wholly by way of *permutation*. See COMMERCE.

PERMUTATION, in the canon law, a real and actual exchange of two benefices. See BENEFICE.

Permutation is a means of bringing benefices into commerce without ſimony. See SIMONY.

The conditions acquired to a canonical *permutation* are; 1° That there be benefices *permuted* on either ſide, though the revenues be unequal; and in caſe of inequality, no compenſation to be made in money; but only a penſion charged on the bigger. 2° That each of the *permutants* quit his benefice, and make a procuration *ad reſignandum*. 3° That the *permutation* be followed by a collation of the ordinary. 4° That the ordinary be informed of the cauſe of the *permutation*. 5° That thoſe to whom the preſentation or election to the benefices belongs, give their conſent; or in caſe of their refuſal, that the conſent of the dioceſan be had.

The chief rules of *permutation* are, that if one of the *compermutants* cannot enjoy, he re-enters with full right into the benefice he has quitted; and that if he die ere he have accompliſhed the *permutation* on his part by the taking of poſſeſſion, the *compermutant* who has accompliſhed, retains both benefices, unleſs they fall into the regale.

PERMUTATIONS *of quantities*, in algebra, the changes, alternations, or different combinations of any number of quantities. See COMBINATION.

PERMUTATIONE *archidiaconatus & eccleſiæ eidem annexæ cum eccleſia & prebenda*, is a writ iſſued to an ordinary, commanding him to admit a clerk to a benefice upon exchange made with another. *Reg. of writs.*

PER MY *& per tout*—A joint tenant is ſaid to be ſeized of the land he holds jointly, *per my & per tout*, *i. e.* he is ſeized by every parcel, and by the whole, *totum tenet*, *& nihil tenet*; *ſc. totum conjunctim*, *& nihil ſeparatim*. Bract. See JOINTENANT and COPARCENER.

PERNANCY, in law, the taking, or receiving any thing—from the French, *prendre*, to take. See PERNOR.

Tithes in *pernancy* are tithes taken, or which may be taken, in kind. See TITHES.

PERNIO (in medicine) a diſeaſe afflicting the hands and feet in winter-time, popularly called a *kibe*, or *chilblain*. See CHILBLAIN.

The parts affected ſwell, inclining from a white to a bluiſh colour, itch and ake; yet the tumour vaniſhes without any exulceration, upon anointing the part with petrol.

PERNOR *of profits*, he who takes, or receives the profits of any thing—from the French, *preneur*, taker. See PERNANCY.

PERONE, in anatomy, a bone of the leg, more uſually called *fibula*. See FIBULA. Hence

PERONEUS, *anticus*, *longus* or *primus*, a muſcle of the leg, ariſing fleſhy and tendinous from the head to the middle of the perone; whence running as in a pulley, through the chanel on the hind part of the outer ankle bone, it is inſerted into the upper end of the bone of the metatarſus, which joins the great toe. The office of this muſcle is to draw the foot upwards. See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 76. *fig.* 2. *n.* 46. *fig.* 6. *n.* 43. *fig.* 7. *n.* 28.

PERONEUS *poſticus*, *brevis* or *ſecundus*, a muſcle ſometimes alſo called *ſemifibulæus*, ariſing fleſhy and ſharp on the back part of the perone; whence, continuing down the outer ſide of the bone till below the middle, it forms a ſmooth, ſtrong, flat tendon, which runs through the ſame chanel at the bottom of the malleolus externus, with the longus, to the out-ſide of the os metatarſi of the little toe. Its office is to pull the foot upwards. See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 76. *fig.* 6. *n.* 44. *fig.* 7. *n.* 28.

PERORATION, PERORATIO, in rhetoric, the epilogue, or laſt part of an oration; wherein, what the orator had inſiſted on through his whole diſcourſe is urged afreſh, with greater vehemence, and paſſion. See ORATION.

The *peroration* conſiſts of two parts, 1. recapitulation, wherein the ſubſtance of what was diffuſed throughout the whole ſpeech, is collected briefly, and curſorily; and ſummed up with new force and weight. See RECAPITULATION.

2. The moving the paſſions; which is ſo peculiar to the *peroration*, that the maſters of the art call this part *ſedes affectuum*. See PASSIONS.

The paſſions to be raiſed in the *peroration* are various, according to the various kinds of orations: in a panegyric, love, admiration, emulation, joy, *&c.* In an invective, hatred, contempt, *&c.* In a deliberation, hope, confidence, or fear.

The qualities required in the *peroration* are, that it be vehement and paſſionate; and that it be ſhort: becauſe as Cicero obſerves, tears ſoon dry up.

The *peroration* was Cicero's maſter-piece, here that great orator not only ſet his judges and auditors on fire, but even ſeemed to burn himſelf; eſpecially when he was to raiſe pity and commiſeration towards the accuſed; where, as he himſelf tells us, he frequently filled the forum with weeping and lamentation. He adds, that where there were ſeveral orators to ſpeak for the ſame perſon, the *peroration* was always reſerved to Cicero; and ſubjoins, that if he excelled herein, it was not owing to genius, but the grief himſelf ſhewed.—This is abundantly evident in his Milonian *peroration*; where he ſays, *ſed finis ſit: neque enim præ lachrymis jam loqui poſſum*; *& hic ſe lachrymis defendi vetat*—and in that for *Rabirius Poſthumus*: *ſed jam, quoniam, ut ſpero, fidem quam potui, tibi præſtiti, Poſthume, reddam etiam lachrymas quas debeo—jam indicat tot hominum fletus quam ſis carus tuis, & me dolor debilitat, includitque vocem.*

PERPENDICULAR, in geometry, a line falling directly on another line, ſo as to make equal angles on each ſide; called alſo a *normal* line. See LINE.

Thus the line IG. (*Tab. Geometry fig.* 57.) is *perpendicular* to the line KH. *i. e.* makes right and equal angles therewith.

From the very notion of a *perpendicular*, it follows; 1. That the *perpendicularity* is mutual; *i. e.* if a line, as IG. be *perpendicular* to another, KH; that other is alſo *perpendicular* to the firſt.

2. That only one *perpendicular* can be drawn from one point in the ſame place.

3. That if a *perpendicular* be continued through the line it was drawn *perpendicularly* to; the continuation will alſo be *perpendicular* to the ſame.

4. That if there be two points of a right line, each of which is at an equal diſtance from two points of another right line; that line is *perpendicular* to the other.

5. That a line which is *perpendicular* to another, is alſo *perpendicular* to all the parallels of the other. See PARALLEL.

6. That a *perpendicular* line is the ſhorteſt of all thoſe which can be drawn from the ſame point to the ſame right line.

Hence the diſtance of a point from a line, is a right line, drawn from the point *perpendicular* to the line or plane; and hence the altitude of a figure is a *perpendicular* let fall from the vertex to the baſe. See DISTANCE.

To erect a PERPENDICULAR G I on any given point G, in a right line M L: one foot of the compaſſes being in G, with any interval at pleaſure, cut off equal parts on each ſide G H and G K; from the points K and H, with an interval greater by half than K H ſtrike two arches interſecting in I; the right line G I is *perpendicular* to M L.

Perpendiculars are beſt deſcribed in practice by means of a ſquare; one of whoſe legs is applied along that line to or from which the *perpendicular* is to be let fall or raiſed. See SQUARE.

To erect a PERPENDICULAR on the end of a given line, ſuppoſe at P; open your compaſſes to any convenient diſtance, and ſetting one foot in C, deſcribe the arch R P S; lay a ruler from S through C, it will find the point R in the arch, whence draw P R, which is *perpendicular* to P M.

To let fall a PERPENDICULAR on a given line, M P; from a given point L, *fig.* 57. *n.* 2: ſet one foot of the compaſſes in L, and with the other croſs the given line in the points M and G. Then ſetting the compaſſes in G and M, ſtrike two arches interſecting each other in *a*: then lay a ruler from L to *a*, and the line K L deſcribed thereby is the *perpendicular* required.

A line is ſaid to be *perpendicular* to a plane, when it is *perpendicular* to more than two lines drawn in that plane.

A plane is ſaid to be *perpendicular* to another plane, when a line in one plane is *perpendicular* to the other plane. See PLANE.

PERPENDICULAR to a parabola, is a right line cutting the parabola in the point in which any other right line touches it, and is alſo itſelf *perpendicular* to that tangent. See PARABOLA.

PERPENDICULARITY *of plants*, is a curious phænomenon, in natural hiſtory, firſt obſerved by M Dodart, and publiſhed in an expreſs eſſay on the affectation of *perpendicularity* obſervable in the ſtems or ſtalks of all plants, in the roots of many, and even in the branches as much as poſſible. See PLANT.

The matter of fact is, that tho' almoſt all plants riſe a little crooked; yet, the ſtems ſhoot up *perpendicularly*, and the roots ſink down *perpendicularly*: even ſuch as by the declivity of the ſoil come out inclined, or ſuch as are diverted out of the *perpendicular* by any violent means, again redreſs or ſtreighten themſelves, and recover their *perpendicularity*, by making a ſecond and contrary bend or elbow, without rectifying the firſt.

A common eye looks on this affectation without any ſurprize; but a man that knows what a plant is, and how formed, finds it a ſubject of aſtoniſhment.

In effect, each ſeed contains a little plant, already formed, and needing nothing but to be unfolded: the little plant has its little root; and the pulp, which is uſually ſeparated into two lobes, is the foundation of the firſt food the plantule draws, by its root, when it begins to germinate. See SEED, RADICLE, *&c.*

Now if a ſeed in the earth be ſo diſpoſed, as that the root of the little plant be turned downwards, and the ſtem upwards, and even *perpendicularly* upwards; it is eaſy to conceive that the little plant coming to unfold itſelf, its ſtalk and root need only follow the direction they have, to grow *perpendicularly*. But it is known the ſeeds of plants, whether ſown of themſelves, or by the help of man, fall in the ground at random; and among an infinite number of ſituations with regard to the ſtalk of their plant, the *perpendicular* one upwards is but one. See SEMINATION.

In all the reſt therefore, it is neceſſary the ſtalk redreſs or rectify itſelf, in order to get out of the ground: but what force is it, that effects this change, which is certainly a violent action? is it that the ſtalk finding a leſs load of earth above it, goes naturally that way where it finds the leaſt obſtacle? were this ſo, the little root when it happens to be uppermoſt, muſt for the ſame reaſon follow the ſame direction, and mount on high.

M. Dodart, therefore, to account for two ſuch different actions, has recourſe to another ſyſtem: he ſuppoſes that the fibres of the ſtalks are of ſuch a nature, as that they contract and ſhorten by the heat of the ſun, and lengthen out by the moiſture of the earth: and on the contrary, that the fibres of the roots contract by the moiſture of the earth, and lengthen by the heat of the ſun.

When, then, the plantule is inverted, and the root a-top; the fibres which compoſe one of the branches of the root are not equally expoſed to the moiſture of the earth; the lower part is more expoſed than the upper. The lower therefore muſt contract the moſt; which contraction is again promoted by the lengthening of the upper, whereon the ſun acts with the greateſt force. Of conſequence, therefore, this branch of the root muſt recoil towards the earth, and inſinuating through the pores thereof get underneath the bulb, *&c.*

By inverting this reaſoning, it is eaſy to ſhew how the ſtalk comes to get uppermoſt.

In a word, we may imagine, that the earth attracts the root to itſelf, and that the ſun contributes to its deſcent; and on the contrary, that the ſun attracts the ſtem, and the earth, in ſome meaſure, ſends it towards the ſame.

As to the ſecond ſtreightening, *viz.* that of the ſtalks in the open air; he takes it to ariſe from the impreſſion of external cauſes, particularly the ſun and rain. For the upper part of a ſtalk that is bent, is more expoſed to the rain, dew, and even ſun, *&c.* than the under. Now both theſe cauſes, in a certain ſtructure of the fibres, tend equally to ſtreighten the part moſt expoſed, by the ſhortening they ſucceſſively occaſion in it; for moiſture ſhortens by ſwelling, and heat by diſſipating. Indeed, what that ſtructure is which gives the fibres ſuch different qualities, or whereon it depends, is ſtill a myſtery.

M. de la Hire accounts for the *perpendicularity* of the ſtems or ſtalks of plants thus: he imagines that in plants, the root draws a coarſer and heavier juice; and the ſtem and its branches a finer and more volatile one. And, in effect, moſt naturaliſts conceive the root as the ſtomach of the plant, where the juices of the earth are ſubtilized, ſo as to become able to riſe through the ſtem to the extremity of the branches. This difference of juices ſuppoſes larger pores in the roots than the ſtalk, *&c.* and in a word, a different contexture; which difference muſt be found even in the little inviſible plant incloſed in the ſeed: in this plantule, therefore, we may conceive a point of ſeparation; ſuch, as that all on one ſide, *e. gr.* the root, ſhall be unfolded by the groſſer juices, and all on the other ſide, by the more ſubtile juices.

Suppoſe, now, the plantule when its parts begin to unfold, to be entirely inverted; the root a-top, and the ſtalk below: the juices which enter the root will ſtill be coarſeſt, and when they have opened and enlarged the pores, ſo as to admit juices of a determinate weight, thoſe juices ſtill preſſing the root more and more, will drive it downwards, and this the more, as the root is more extended or enlarged: for the point of ſeparation being conceived as the fixed point of a lever, they will act by the longer arm. At the ſame time the volatile juices having penetrated the ſtalk, will tend to give it a direction from below upwards; and by reaſon of the lever, will give it more and more every day. Thus is the little plant turned on its fixed point of ſeparation, till it be perfectly erect.

The plant thus erected; the ſtalk, we know, ſhould continue to riſe *perpendicularly*, to give it the more firm biding, and enable it to withſtand the effort of wind and weather.

The manner wherein this is effected, M. Parent lays down thus: the nutritious juice being arrived at the extremity of a riſing ſtalk; if it evaporate, the weight of the air which encompaſſes it on all ſides, will make it aſcend vertically; and if it do not evaporate, but congeal, and remain fixed to that extremity whence it was ready to go off, the weight of the air will give it the ſame direction; ſo that the ſtalk will have acquired a very little new part, vertically laid over it: juſt as in a candle held any how obliquely to the horizon, the flame ſtill continues vertical, by the preſſure of the atmoſphere. The new drops of juice that ſucceed, will follow the ſame direction; and as all together from the ſtalk, that muſt of courſe be vertical, unleſs ſome particular circumſtance intervene.

As to the branches, which are at firſt ſuppoſed to proceed laterally out of the ſtalk in the firſt embryo of the plant; though they ſhould even come out in a horizontal direction, yet, muſt they raiſe themſelves upwards by the conſtant direction of the nutritious juice; which at firſt ſcarce meets any reſiſtance in a tender, ſupple branch; and even afterwards, though the branch grow more firm, yet will it act with the more advantage: ſince the branch being become longer, furniſhes it with a longer arm of lever. The ſlender action of a little drop becomes very conſiderable, by its continuity; and by the aſſiſtance of ſuch favourable circumſtances. Hence may be accounted for, that regular ſituation and direction of the branches, which all, and always, nearly, make the ſame conſtant angle of 45° with the ſtem and one another. See BRANCH.

M. Aſtruc, accounts for the *perpendicularity* of the ſtems, and their redreſſing themſelves; on theſe two principles. 1° That the nutritious juice ariſes from the circumference of the plant, and terminates in the pith. 2° That fluids contained in tubes either parallel or oblique to the horizon, gravitate on the lower part of the tubes, and not at all on the upper.

For hence it eaſily follows, that in a plant poſited either obliquely or parallel to the horizon, the nutritious juice will act more on the lower part of the canals than the upper, and by this means, inſinuate more into the canals communicating therewith, and be collected more copiouſly therein; thus the parts on the lower ſide will receive more accretion, and be more nouriſhed than thoſe on the upper; the conſequences whereof muſt be, that the exremity of the plant will be obliged to bend upwards.

The ſame principle brings the ſeed into its due ſituation at firſt: in a bean planted upſide down, the plume and radicle are eaſily perceived with the naked eye, to ſhoot, at firſt, directly, for about an inch; but thenceforth they begin to bend, the one downward, and the other upward, The like is ſeen in a heap of barley to be made into malt, in a quantity of acorns laid to ſprout in a moiſt place, *&c.* each grain of barley in the firſt caſe, and each acorn in the ſecond, has a different ſituation; and yet, all the ſprouts tend directly upward, and the roots downward, and the curvity or bend they make is greater or leſs as their ſituation approaches more or leſs, to the direction whereas in no curvature at all would be neceſſary. Now, two ſuch oppoſite motions cannot ariſe without ſuppoſing ſome conſiderable difference between the two parts: the only one we know of, is, that the plume is fed by a juice, imported to it by tubes parallel to its ſides, whereas the radicle imbibes its nouriſhment at all the pores in its ſurface. As oft, therefore, as the plume is either parallel, or inclined to the horizon, the nutritious juice feeding the lower parts more than the upper, will determine its extremes to turn upward, for the reaſons already aſſigned. On the contrary, when the radicle is in the like ſituation, the nutritious juice penetrating more copiouſly through the upper part than the under; there will be a greater accretion of the former than the latter; and conſequently the radicle will be bent downwards. And this mutual curvity of the plume and radicle muſt continue, till ſuch time as their ſides are nouriſhed alike, which cannot be till they are perpendicular. *Memoires de l'Acad. Royale des Scienc.* an. 1708.

PERPETUAL, ſomething that endures always, or that laſts for ever. See ETERNITY.

PERPETUAL, is ſometimes alſo uſed for a thing that laſts, or holds, during a perſon's life.

Thus offices, *&c.* held *durante vita*, are ſometimes called *perpetual* offices.—In this ſenſe, M. Fontenelle is ſaid to be *perpetual* ſecretary of the royal academy of ſciences. Hence the French call him abſolutely, *M. le Perpetuel.*

PERPETUAL *action.* See the article ACTION.

PERPETUAL *glands*, in anatomy, are thoſe which are natural: thus diſtinguiſhed from the adventitious ones. See GLAND.

PERPETUAL *Lamp.* See the article LAMP.

PERPETUAL *motion*, in mechanicks, is a motion which is ſupplied and renewed from itſelf, without the intervention of any external cauſe: or, it is an uninterrupted communication of the ſame degree of motion from one part of matter to another, in a circle, (or other curve returning into itſelf) ſo as the ſame momentum ſtill returns undiminiſhed upon the firſt mover. See MOTION.

To find a *perpetual* motion, or to conſtruct an engine, *&c.* which ſhall have ſuch a motion, is a famous problem that has employed the mathematicians of two thouſand years; though none perhaps have proſecuted it with attention and earneſtneſs equal to thoſe of the preſent age.

Infinite are the ſchemes, deſigns, plans, engines, wheels, *&c.* to which this longed for *perpetual* motion has given birth: it were as endleſs as impertinent to give a detail of them all.

Nor does any of them deſerve particular mention, ſince they have all equally proved abortive. It would rather be of the nature of an affront than a complement, to diſtinguiſh the pretenders hereto; when the very thing they are commemorated for, carries with it ſo diſagreeable an idea.

In effect, there ſeems but little in nature to countenance all this aſſiduity and expectation: among all the laws of matter and motion, we know of none yet, which ſeems to lay any principle or foundation for ſuch an effect. See NATURE.

Action and re-action are allowed to be ever equal; and a body which gives any quantity of motion to another, loſes juſt ſo much of its own: but under the preſent ſtate of things; the reſiſtance of the air, the friction of the parts of machines, *&c.* do neceſſarily retard every motion. See RESISTANCE.

To keep the motion on foot, therefore, either 1st there muſt be a ſupply from ſome foreign cauſe; which in a *perpetual* motion is excluded.

Or, 2dly all reſiſtance from the friction of the parts of matter, muſt be removed; which implies a change in the nature of things. See MATTER and FRICTION.

For, by the ſecond law of nature, the changes made in the motions of bodies, are always proportional to the impreſſed moving force, and are produced in the ſame direction with it; no motion then, can be communicated to any engine, greater than that of the firſt force impreſſed. See COMMUNICATION and PERCUSSION.

But, on our earth, all motion is performed in a reſiſting fluid; and muſt therefore of neceſſity be retarded; conſequently a conſiderable quantity of its motion will be ſpent on the medium. See MEDIUM.

Nor is there any engine or machine wherein all friction can be avoided; there being in nature no ſuch thing as exact ſmoothneſs, or perfect congruity; the manner of the coheſion of the parts of bodies, the ſmall proportion the ſolid matter bears to the vacuities between them, and the nature of thoſe conſtituent particles not admitting it. See FRICTION.

This friction, therefore, will alſo in time ſenſibly diminiſh the impreſſed, or communicated force; ſo that a *perpetual* motion can never follow, unleſs the communicated force be ſo much greater than the generating force, as to recompenſe the diminution made therein by all theſe cauſes: but *nil dat quod non habet*, the generating force cannot communicate a greater degree of motion than it hath itſelf.

The whole buſineſs of finding a *perpetual* motion, therefore, comes to this, *viz.* to make a weight heavier than itſelf, or an elaſtic force geeater than itſelf. See MACHINE.

Or 3dly and laſtly, there muſt be ſome method of gaining a force equivalent to what is loſt, by the artful diſpoſition and combination of mechanic powers: to which laſt point, then, all endeavours are directed: but how, or by what means ſuch force ſhould be gained, is ſtill a myſtery!

The multiplication of powers or forces, it is certain, avails nought; for what is gained in power is ſtill loſt in time, ſo that the quantity of motion ſtill remains the ſame.

All mechanicks cannot really make a little power equal, or ſuperior to a larger; and wherever a leſs power is found in equilibrio with a larger *v. gr.* twenty five pounds with a hundred, it is a kind of deception of the ſenſe: the equilibrium is not ſtrictly between one hundred and twenty five; but between one hundred pounds, and twenty five moving, or diſpoſed to move four times as faſt as the one hundred.

To conſider the weights one hundred and twenty five as fixed, and immoveable; the twenty five may ſeem, ſome how, raiſed beyond themſelves; which is one of the ſham-miracles of mechanicks, that has deceived millions; but which is eaſily diſſipated by conſidering the four degrees of velocity, which are to be given to the twenty five pounds, and which require a force equal to the exceſs of one hundred above twenty five pounds.

A power of ten pounds moved with ten times the velocity of the one hundred pounds, would have equalled them in the like manner; and the ſame may be ſaid of all the poſſible products equal to one hundred. But in fine, there muſt ſtill be one hundred pounds of power on each ſide, what way ſoever they be taken; whether in the matter, or in the velocity.

This is an inviolable law of nature; by which nothing is left to art, but the choice of the ſeveral combinations that may produce the ſame effect. See *law of* NATURE.

PERPETUAL *occultation.* See the article OCCULTATION.

PERPETUAL *pills, pilulæ* PERPETUÆ, among phyſicians, are pills made of regulus of antimony; which being ſwallowed, and voided fifty times, will purge every time, with undiminiſhed force. See ANTIMONY and PILL.

PERPETUAL, or *endleſs ſcrew.* See SCREW.

PERPETUAL *Virginity.* See the article VIRGIN.

Circle of PERPETUAL *apparition.* See the article CIRCLE.

PERPETUITY, PERPETUITAS, in the canon law, the quality of a benefice that is irrevocable, or whoſe incumbent cannot be deprived; except in certain caſes determined by law. See BENEFICE.

It is aſſerted with reaſon, that the *perpetuity* of benefices is eſtabliſhed by the ancient canons, and that prieſts are inſeparably attached to their churches, as by a ſpiritual marriage. It is true, by the corruption of the times, the ſecular prieſts being fallen into great diſorder, and even contempt, the biſhops anciently called the religious to their aſſiſtance, and committed to them the cure of ſouls, and the adminiſtration of pariſhes; ſtill remanding them back again to their cloiſters, when they thought fit, and revoking them *ad nutum.*

But this vague and uncertain adminiſtration only laſted to the XIIth century, when benefices returned to their eſſential *perpetuity.*

PER QUÆ *ſervitia*, is a writ judicial, iſſuing on the note of a fine; and lyes for the cognize of a manor, ſeignory, chief rent, or other ſervices, to compel the tenant of the land, at the time of the fine levied, to attourn to him.

PERQUISITE, PERQUISITUM, any thing gotten by a man's own induſtry, or purchaſed with his own money.—In contradiſtinction to that which deſcends to him from his father, or anceſtors.

PERQUISITES *of courts*, are thoſe profits which ariſe to a lord of a manor, by virtue of his court-baron; over and above the certain yearly profits of his lands; as, fines of copy-holds, heriots, amerciaments, waifes, ſtrays, *&c.*

PERRIWIG. See the article PERRUKE.

PERRON, in architecture, a ſtair-caſe lying open, or without ſide the building: properly, the ſteps before the front of the building, which lead into the firſt ſtory when raiſed a little above the level of the ground. See STAIR-CASE.

Perrons are made of different forms and ſizes, with regard to the ſpace and height they are to lead to.—Sometimes the ſteps are round, or oval; more uſually ſquare.

PERRUKE*, or PERRIWIG, was anciently uſed for a long head of natural hair; ſuch, particularly, as there was care taken in the adjuſting, and trimming of. See HAIR.

* Menage derives the word by a long detour, from the Latin *pilus* hair. The ſeveral ſtages of its paſſage according to the critic, are *pilus, pelus, pelutus, peluticus, pelutica, perutica, peruca, perruque.*

The Latins called it *coma*; whence part of Gaul took the denomination of *Gallia comata*, from the long hair, which the natives wore as a ſign of freedom. An ancient author ſays that Abſolom's *perruke* weighed two hundred ſhekels.

PERRUKE, is now uſed for a ſet of falſe, or borrowed hair, curled, buckled, and ſewed together on a frame, or cawl; anciently called *capillamentum*, or *falſe perruke.* See HAIR.

It is doubted whether or no the uſe of *perrukes* was known among the ancients. It is true, they uſed falſe hair; Martial and Juvenal make merry with the women of their time, for making themſelves look young with their borrowed hair; with the men who changed their colours according to the ſeaſons;

and the dotards who hoped to deceive the deſtinies by their white hair.

But theſe ſeem to have ſcarce had any thing in common with our *perrukes*; and were at beſt compoſed of hair painted, and glued together: nothing can be more ridiculous than the deſcription Lampridius gives of the emperor Commodus's *perruke:* it was powdered with ſcrapings of gold, and oiled (if we may uſe the expreſſion) with glutinous perfumes for the powder to hang by.

In effect, the uſe of *perrukes*, at leaſt on their preſent footing, is not an hundred years old: the year 1629 is reckoned the epocha of long *perrukes*; at which time they began to appear in Paris; whence they ſpread by degrees throughout the reſt of Europe.

At firſt it was reputed a ſcandal for young people to wear them; by reaſon the loſs of their hair at that age was attributed to a diſeaſe, the very name whereof is a reproach: but at length the mode prevailed over the ſcruple; and now all ages and conditions wear them; foregoing, without any neceſſity, the conveniences of their natural hair.

It was ſome time, though, ere eccleſiaſticks came into the faſhion: the firſt who aſſumed the *perruke* were ſome of the French clergy, in the year 1660; nor is the practice yet well authorized. The cardinal Grimaldi in 1684, and the biſhop of Lavaur in 1688, prohibited the uſe of the *perruke* to all prieſts without a diſpenſation and neceſſity. M. Thiers has a treatiſe expreſs, to prove the *perruke* indecent in an eccleſiaſtic, and directly contrary to the decrees and canons of councils. A prieſt's head embelliſhed with an artificial hair curiouſly adjuſted, he eſteems a monſter in the church; nor can he conceive any thing ſo ſcandalous as an abbot with a florid countenance, heightened with a jolly *perruke*.

PERRY, a drink made of pears, after the like manner as cider from apples. See CIDER.

The beſt fruit for this uſe, are ſuch as are leaſt fit for eating; *e. gr.* the borbery-pear, horſe-pear, boreland-pear, and choak-pear: and ſtill the redder they are the better.

The method of preparing *perry*, is perfectly the ſame with that of cider.—Only note, that the fruit muſt be perpectly ripe. Some mix crabs with them to mend the liquor.

PER SE, in the ſchools, is ſometimes oppoſed to *per accidens*.—In which ſenſe, a thing is ſaid to agree with another *per ſe*, when the agreement is not owing to any accidental event, but is found in the intrinſic principles of things themſelves.

PER SE is ſometimes alſo oppoſed to *per aliud*—In which ſenſe God alone is ſaid to have a being *per ſe*, as not deriving it from any other, but having it neceſſarily and of himſelf.

PER SE, again, ſometimes ſignifies as much as, of its own nature or in virtue of its own entity.—Thus the ſun is ſaid to give light *per ſe*; and quantity is extended *per ſe*.

PER SE among logicians—A thing ſaid to be known *per ſe*, *per ſe notum*, when we immediately perceive it upon the firſt propoſing of the terms.—As, that the whole is greater than its parts See AXIOM.

Philoſophers go ſo far as to conſider the mode of a thing exiſting *per ſe*, or that which conſtitutes its exiſtence ſuch; which they call *perſeity*, *perſeitas*. See EXISTENCE.

Object **PER SE**. See the article OBJECT.

PER SE, in chymeſtry. When a body is diſtilled ſingly, and without the uſual addition of any other matter to raiſe it; it is ſaid to be diſtilled *per ſe*. See DISTILLATION.

The genuine ſpirits of harts-horn, are thoſe raiſed *per ſe*, in oppoſition to thoſe diſtilled with the addition of chalk.

PERSECUTION, PERSECUTIO, literally imports any pain, affliction, or inconvenience, which a perſon deſignedly inflicts on another.

PERSECUTION, as a term, is reſtrained to the ſufferings of chriſtians, in behalf of their religion; particularly to thoſe of the primitive chriſtians, under the heathen emperors Nero, Decius, Diocleſian, &c. See MARTYR.

We uſually reckon ten of theſe perſecutions; Nero lighted the firſt.

Lactantius has wrote the hiſtory of the deaths of *perſecutors* though ſome queſtion whether that work be really his or not: biſhop Burnet, who has turned it into Engliſh, makes no great doubt of it.

PERSEVERANCE, in theology, a chriſtian virtue, whereby we are enabled to perſiſt in the way of ſalvation to the end.

The final *perſeverance* of the ſaints is an article much controverted between the Arminians, and Calviniſts: the latter of whom maintain it impoſſible for grace to be loſt; and therefore make *perſeverance* to the end, a neceſſary conſequence thereof: which the former deny; believing the moſt confirmed believers never out of a poſſibility of falling. See GRACE, CALVINISM, &c.

PERSEUS, in aſtronomy, a conſtellation of the northern hemiſphere; whoſe ſtars, in Ptolemy's catalogue, are twenty nine; in Tycho's as many; in the Britannic catalogue ſixty ſeven, the longitudes, latitudes, magnitudes, &c. whereof are as follow:

Names and ſituation of the ſtars.	Sign.	Longit.			Latitude, North.			Magnit.
		°	′	″	°	′	″	
In Andromeda's foot, according to Ptolemy and Tycho; according to Bayer in Perſeus.	♉	8	08	36	35	23	45	4
		10	18	13	36	49	13	5
		14	19	14	40	13	15	6
In the middle of the ſword		11	52	02	36	18	37	6
5		12	09	56	34	26	01	6 7
		15	39	10	38	57	37	6
		19	02	06	41	13	15	6
		15	45	38	35	09	28	6
South in the hilt of the ſword againſt		19	56	48	40	43	20	5 6
North. (the hand 10		20	12	34	41	03	20	6
Small one under the hand		19	44	42	38	57	41	6
		20	39	23	39	28	49	7
		22	47	39	37	06	23	7
North. of the informes before Me-		16	32	13	23	13	10	6
In the preced. ſhoulder (duſa's head 15		20	19	25	31	36	07	4
		18	25	56	26	57	26	6
In the upper arm (duſa's head		24	23	27	37	26	50	4
South. of the informes before Me-		17	29	12	20	55	32	4
Preced. of inform. under Meduſa's		16	36	35	17	46	05	6 5
In Perſeus's head (head 20		23	35	30	34	20	12	5
Subſeq. and leſs. before Meduſa's		18	08	09	20	44	42	6
(head		16	51	09	14	24	47	5 6
Preced. in Meduſa's head		19	34	36	21	42	15	4
Laſt. of inform. und. Meduſa's head		18	13	28	17	24	46	6
In the hinder ſhoulder 25		25	42	10	34	30	05	3
In the upper part of the arm		27	10	38	37	27	42	5 6
South. in Meduſa's head		20	34	30	20	33	13	4
In the middle of the back, Algol		24	49	20	30	38	35	4
Bright one in Meduſa's head		21	50	42	22	23	47	2 3
In the lower part of the arm 30		23	21	12	26	04	21	4
That under Algol		22	01	38	20	55	56	4 5
		26	52	43	30	42	10	6 7
		24	38	48	24	49	51	6
		26	54	54	30	33	42	6
Againſt the preced. and ſouth ſide 35		25	07	54	23	58	05	5 6
A lucid one againſt the hind part		27	46	04	30	05	20	2
		28	35	25	29	30	00	6
Preced. the lucida of the hind. part		28	17	42	28	00	24	5
		28	03	15	26	03	51	6
Middle of three in the ſide 40 (hip		29	26	13	27	56	05	5
Another following theſe againſt the	♊	0	29	07	27	15	21	3
Over the heel of the inner foot	♉	26	48	20	13	53	28	6
In the lower thigh		29	30	16	22	07	03	4
In the heel of the ſouth. foot		26	49	11	12	08	36	3 4
In the heel of the ſame foot		28	05	52	12	40	25	6
45		2	54	03	26	20	30	7
In the upper thigh	♊	3	46	50	29	33	04	5
In extrem. of ſouth. foot	♉	28	47	44	11	17	54	3
In ſouth. knee	♊	1	21	25	19	04	53	3
In ſouth. leg 50		0	39	15	14	54	06	5
Preced. againſt north. knee		5	26	24	28	51	00	5
Preced. in the upper leg		5	10	54	26	12	08	4 5
		2	56	50	16	26	27	6
		3	03	45	16	44	25	6 7
Subſeq. in upper leg 55		6	28	58	26	40	09	5
Inform. over north. knee		7	54	41	31	27	20	6
That following ſouth. knee		4	49	30	18	53	20	5
That following north. knee		7	30	02	28	24	56	5
South. of thoſe contiguous thereto		7	37	09	28	08	30	6
North 60		7	59	23	28	58	11	7
In the calf of the upper leg		7	17	48	24	35	00	6
		4	51	10	12	51	48	5 5
		5	37	12	12	17	47	7
		5	37	19	12	07	44	7
In the heel of the upper foot 65		8	55	46	20	49	11	6
In the ſole of the ſame foot		9	16	20	18	58	00	5
	♊	10	48	29	20	52	59	6

PERSIAN, or the PERSIAN *tongue*, one of the living oriental languages; ſpoke in the empire of Perſia. See LANGUAGE.

The *Perſian* has two particularities not found in any of the other eaſtern tongues, the one that it has an auxillary verb, anſwering to the verb ειμι of the Greeks; the other, that it has an Aoriſtus.—Both theſe it borrowed from the Macedonians, after the conqueſt of Alexander. See GREEK.

PERSIAN *Wheel*, in agriculture, is a machine for raiſing a quantity of water ſufficient to overflow lands bordering on the banks of rivers, *&c.* where the ſtream is too low to do it alone. See WHEEL.

PERSIAN or PERSIC, in architecture, a name common to all ſtatues of men, ſerving inſtead of columns, to ſupport entablatures.—See *Tab. Architect. fig.* 37. See alſo STATUE and COLUMN.

They only differ from *caryatides*, in that thoſe repreſent ſtatues of women. See CARYATIDES.

The *Perſian* is a kind of order of columns, firſt practiſed among the Athenians, on occaſion of a victory their general Pauſanias obtained over the *Perſians*. As a trophy of this victory, the figures of men dreſſed in the *Perſian* mode, with their hands bound before them, and other characters of ſlavery, were charged with the weight of doric entablatures; and made to do the office of doric columns. See *Tab. Architect. fig.* 37. See alſo the article ORDER.

Perſian columns, M. le Clerc obſerves are not always made with the marks of ſlavery; but are frequently uſed as ſymbols of virtues, vices, of joy, ſtrength, and valour, *&c.* as when made in the figures of Hercules to repreſent ſtrength, of Mars, Mercury, Fauns, Satyres, *&c.*

PERSIAN *Æra*, and *Year*. See EPOCHA and YEAR.

PERSIAN *Bibles.*	See the articles	BIBLE.
PERSIAN *Coins.*		COINS.
PERSIAN *Money.*		MONEY.

PERSON, PERSONA, an individual ſubſtance, of a rational or intelligent nature. See SUBSTANCE and INDIVIDUAL.

The father and ſon are reputed, in law, as the ſame *perſon*; an embaſſador repreſents the *perſon* of his prince. See EMBASSADOR.

In theology, the godhead is divided into three *perſons*; but here the word *perſon* carries a peculiar idea, very different from that attached to it every where elſe; being only uſed for want of another term more pertinent, and expreſſive. See TRINITY.

The word *perſon*, *perſona*, is ſaid to be borrowed a *perſonando*, from perſonating, or counterfeiting, and is ſuppoſed to have firſt ſignified a maſk: by reaſon, ſays Boethius, *in larva concava ſonus volvatur*: and hence the actors who appeared maſked on the ſtage, were ſometimes called *larvati*, and ſometimes *perſonati*.

The ſame author adds, that as the ſeveral actors repreſented each their ſingle individual man, *viz.* Oedipus, or Chremes, or Hecuba, or Medea; for this reaſon, other people, who were alſo diſtinguiſhed by ſomething in their form, character, *&c.* whereby they might be known, came alſo to be called by the Latins *perſonæ*, and by the Greeks ϖϱοσωπα.

Again, as theſe actors rarely repreſented any but great and illuſtrious characters; the word came at length to import the mind, as being a thing of the greateſt regard and dignity among human matters.—And thus men, angels, and even God himſelf were called *perſons*.

Things merely corporeal, as a ſtone, a plant, or a horſe, were called *hypoſtaſes*, or *ſuppoſita*; but never *perſons*. See HYPOSTASIS, *&c.*

Hence alſo, the learned imagine, the ſame name *perſon* came to be uſed to ſignify ſome dignity, whereby a *perſon* is diſtinguiſhed from another; as a father, huſband, judge, magiſtrate, *&c.*

In which ſenſe we are to underſtand that of Cicero; Cæſar never ſpeaks of Pompey, but in terms of honour and reſpect; but he does many hard and injurious things againſt his *perſon*. See PERSONALITY.

This for the name *perſon*.—As for the thing, we have already defined *perſon*, an individual ſubſtance of a reaſonable nature; which is the ſame as Boethius's definition.

Now a thing may be individual two ways; 1. Logically, as it cannot be predicated of any other; as Cicero, Plato, *&c.* 2. Phyſically, in which ſenſe a drop of water ſeparated from the ocean, may be called an individual. *Perſon* is an individual nature in each of theſe ſenſes: Logically, ſays Boethius, ſince *perſon* is not ſpoke of univerſals, but only of ſingulars and individuals; we do not ſay the *perſon* of an animal or a man, but of Cicero and Plato; and phyſically, ſince Socrates's hand or foot are never conſidered as *perſons*.

This laſt kind of individual is denominated two ways; poſitively, as when the *perſon* is ſaid to be the whole principle of acting; for, whatever thing action is attributed to, that do the philoſophers call a *perſon*: and negatively, as when we ſay, with the Thomiſts, *&c.* that a *perſon* conſiſts in this, that it does not exiſt in another as a more perfect being.

Thus, a man, though conſiſting of two very different things, *viz.* body and ſpirit, is not two *perſons*; ſince neither part alone is a whole principle of action; but one *perſon*, ſince the manner of his conſiſting of body and ſpirit, is ſuch as conſtitutes one whole principle of action; nor does he exiſt in any other as a more perfect being, as *e. gr.* Socrates's foot does in Socrates, or a drop of water in the ocean.

So Chriſt, though conſiſting of two different natures, *viz.* the divine and human, is not two *perſons*, but one divine *perſon*; the human nature, in him, not being a whole principle of action, but exiſting in the other more perfect one. By the union of the divine and humane nature one individual, or whole is conſtituted; that is one principle of acting: for whatever Chriſt's humanity does, that does his divinity joined therewith: ſo that there is but one *perſon* in Chriſt, and one operation, which is called *Theandric*. See THEANDRIC.

PERSON, in grammar, is a term applied to verbs, and pronouns, which being conjugated, are applicable to three different *perſons*. See VERB, *&c.*

I love, is a verb uſed in the firſt *perſon*; *thou loveſt*, deſigns the ſecond *perſon*; *he loveth*, marks the third: and thus in the plural number. See NUMBER.

I, *thou*, *he*, are pronouns of the firſt, ſecond, and third *perſons*. See PRONOUN.

Verbs agree with their nouns in tenſe, number, and *perſon*. See CONSTRUCTION, and CONCORD.

PERSON, PERSONA, in dramatic poetry, the name, and part of an actor; or of him preſented by the comedian. See ACTOR.

At the head of dramatic pieces come the *dramatis perſonæ*, the liſt of actors, and characters that are to appear on the ſtage.

The ancient tragedy was only a ſimple chorus: Theſpis was the firſt who introduced a *perſon* to relieve the chorus; Æſchylus added a ſecond. See TRAGEDY. See alſo CHORUS, *&c.*

F. Boſſu obſerves, that in the epic and dramatic poem, the ſame *perſon* muſt reign throughout, *i. e.* muſt ſuſtain the chief part through the whole piece, and the characters of all the other *perſons* be ſubordinate to him. See CHARACTER. See alſo HERO.

Quod PERSONA *nec prebendarii*, *&c.* See the article QUOD.

PERSON, PERSONA, in law. See PARSON.

PERSONABLE, PERSONABILIS, in law, implies the being able to hold, or maintain a plea in court. See ABILITY.

That is, as the civilians would expreſs it, *habere perſonam ſtandi in judicio*.

Thus they ſay, the defendant was judged *perſonable* to maintain this action: old *Nat. Brev.* 142.

The tenant pleaded that the demandant was an alien, born in Portugal, without the ligeance of the king; and judgment was aſked whether he ſhould be anſwered? the plaintiff ſaid he was made *perſonable* by parliament, Kitch. fol. 124.

PERSONABLE, is alſo uſed to ſignify a capacity to take any thing granted or given. See CAPACITY.

PERSONAL, ſomething that concerns, or is reſtrained to the *perſon*. See PERSON.

In diſputes among the learned, there is ever ſomething *perſonal* intermixed; in ethicks it is a maxim that all faults are *perſonal*, *i. e.* do not paſs to our deſcendants.

PERSONAL *Action*, in law, is that levied directly, and ſolely againſt the perſon: in oppoſition to a real or mixed action. See ACTION.

PERSONAL *Goods*, or *Eſtate*, is that conſiſting of money, movebles, *&c.* which every perſon has in his own diſpoſal.—In oppoſition to lands and tenements, which are called *real eſtate*. See ESTATE, and GOODS.

Theft is defined a felonious taking away another man's moveable, or *perſonal goods*. See THEFT.

PERSONAL *Tithes*, are tithes paid of ſuch profits as come by the labour and induſtry of a man's perſon: as, by buying, and ſelling, gains of merchandize, handicraft, *&c.* See TITHES.

PERSONAL *Chattels.*	See the articles	CHATTELS.
PERSONAL *Covenant.*		COVENANT.
PERSONAL *Diſtreſs.*		DISTRESS.
PERSONAL *Hiſtory.*		HISTORY.
PERSONAL *Patronage.*		PATRONAGE.
PERSONAL *Privilege.*		PRIVILEGE.
PERSONAL *Service.*		SERVICE.

Pronoun PERSONAL, or *Verb* PERSONAL, in grammar, a verb, or pronoun, conjugated in all the three perſons. See VERB, CONJUGATION, and PRONOUN.

In oppoſition to *imperſonals* which have only the third perſon. See IMPERSONAL.

PERSONALITY, PERSONALITAS, in the ſchools, the quality of *perſon*; or that which conſtitutes an individual in the quality of *perſon*. See PERSON.

The philoſophers being uſed to conſider matter, and form in every other thing, do the ſame in *perſon*.—The matter of perſon, according to them, is a ſingular ſubſtance, endued with reaſon. For ſubſtance may, at the pleaſure of God, either be, or not be a perſon; inaſmuch as the human nature in Chriſt is not a perſon. The form of perſon which they call *ſubſiſtency*, *ſuppoſitality*, and *perſonality*, is that by which the foreſaid ſubſtance becomes individual.

The ſchool divines are divided about what it is that diſtinguiſhes the ſeveral *perſonalities* in the trinity: ſome will have it to be only the different relations: others, as Floraventius, contend for ſome incommunicable ſubſtance: S. Bonaventure, and S. Thomas, take it to be different origins that diſtinguiſh the *perſonalities*; which opinion is the moſt followed. See IDENTITY.

Personality, or **Personalty**, in law.—An action is ſaid to be in *perſonality*, when it is brought againſt the right perſon.

PERSONATI, among botaniſts, denote ſuch flowers as expreſs the gaping mouths of certain living creatures. See Flower.

PERSONIFYING, or **Personalising**, the feigning a *perſon*; or attributing a *perſon* to an inanimate being; or giving it the figure, ſentiments, and language of a *perſon*. See Person. The poets have *perſonified* all the paſſions; and made divinities of them, which were worſhipped by the heathens; as the goddeſs perſuaſion, the god ſleep, the furies, envy, diſcord, fame, fortune, victory, *&c.* See God, See alſo Machine, Passions.

Perſonifying is eſſential to poetry, eſpecially the epopœia. See Poetry, Epic, Fable, *&c.*

PERSPECTIVE, the art of delineating viſible objects on a plain ſurface, ſuch as they appear at a given diſtance or height, upon a tranſparent plane, placed perpendicular to the horizon, between the eye and the object. See Designing. This we particularly call

Linear **Perspective**, as regarding the poſition, magnitude, form, *&c.* of the ſeveral lines, or contours of objects, and expreſſing their diminution *.

* This is a branch of mathematicks: ſome make it a member of opticks; others a rivulet therefrom: its operations are all geometrical. See Opticks.

Aerial **Perspective**, which regards the colour, luſtre, ſtrength, boldneſs, *&c.* of diſtant objects, conſidered as ſeen through a column of air, and expreſſes the diminutions thereof †.

† This is a part of painting, and conſiſts wholly in the conduct of the colours, their different teints, or degrees, force, weakneſs, *&c.* See Colour, Colouring.

A third kind of Perspective, called

Specular **Perspective**, which repreſents the objects in conical, ſpherical, or other mirrors, erect, and clear, whereas on lawn and other planes they appear confuſed and irregular. See Mirrour. But to return to the doctrine of

Linear **Perspective**: Suppoſe a glaſs-plane H I (*Tab. Perſpect. fig.* 1.) raiſed perpendicular on an horizontal plane: and the ſpectator S, directing his eye O, to the triangle ABC: if now we conceive the rays A O, O B, O C, *&c.* in their paſſage through the plane, to leave their traces or veſtigia, in *a*, *b*, *c*, *&c.* on the plane; there will appear the triangle *a b c*; which, as it ſtrikes the eye by the ſame rays *a* O, *b* O, *c* O, by which the ſpecies of the triangle A B C is carried to the ſame; it will exhibit the true appearance of the triangle A B C, though the object ſhould be removed; the ſame diſtance and height of the eye being preſerved. See Vision, Point, Plane, Line, *&c.*

The buſineſs of *perſpective* then, is to ſhew by what certain rules the points *a*, *b*, *c*, *&c.* may be found geometrically: and hence alſo, we have a mechanical method of delineating any object very accurately. See Designing,

Perſpective is either employed in repreſenting the *Iconographies*, and ground-plots of objects, as projected on *perſpective* planes. See Ichnography.

Or in *Scenographies*, and repreſentations of the bodies themſelves. See Scenography.

The general laws of each are ſubjoined; in order to which it is neceſſary to premiſe the following: *viz.*

Lemmas: 1. That the appearance of a right line is ever a right line; whence, the two extremes being given, the whole line is given. 2. That if a line F G (*fig.* 12.) be perpendicular to any right line N I drawn on a plane, it will be perpendicular to every other right line through the ſame point G drawn on the ſame plane. 3. That the height of the point appearing on the plane, is to the height of the eye, as the diſtance of the objective point from the plane, to the aggregate of that diſtance and the diſtance of the eye.

Laws of the projection of plane figures, or Ichnographic Perspective, *are as follows.*

To exhibit the Perspective *appearance, h, of an objective point,* H, (*fig.* 2.) From the given point draw H I perpendicular to the fundamental line D E. From the fundamental line D E cut off I K = I H: though the point of ſight F draw a horizontal line F P; and make F P equal to the diſtance of the eye S L: laſtly from the point I to the point of ſight F draw F I; and from K to the point of diſtance P, the line P K. The interſection *h* is the appearance of the objective point. Hence, 1. Since, the appearance of the extreme points of a right line being given, the appearance of the whole line is given; the *ichnographic* projection of any rectilinear figure may be had by this method. And, 2. Since any number of points of a curve line may by this means be projected on the *perſpective* plane; the projection of curve lines may likewiſe be effected after the ſame manner. See Curve. And, 3. Therefore, this method will ſuffice for mixtilinear figures; and is conſequently univerſal. There are indeed other methods delivered by other authors, but this is the moſt uſual.—To conceive its *force and effect*, it will be proper to illuſtrate it with ſome examples.

To find the Perspective *appearance of a Triangle,* A B C, (*fig.* 3 *n.* 2.) *whoſe baſe* A B *is parallel to the fundamental line* D E. To the fundemental line D E draw a parallel at an interval equal to the altitude of the eye. Aſſume a fundamental point V, oppoſite to this either directly or obliquely, as the caſe requires. Transfer the diſtance of the eye from V to K. From the ſeveral angles of the triangles A C B, let fall perpendiculars, A 1, C 2, B 3: ſet off theſe perpendiculars upon the fundamental line D E oppoſite to the point of diſtance K. From 1, 2, 3, draw right lines to the fundamental or principal point V 1, V 2, V 3. From the points A, B and C of the fundamental line D E draw other right lines A K, B K, C K, to the point of diſtance K. Since *a*, *b* and *c* are the appearances of the points A, B and C; the right lines *c a*, *a b* and *b c*, being drawn, a c b will be the appearance of the triangular A C B.

After the ſame manner is a triangle projected on a plane, where the vertex C is oppoſed to the eye: all here required, is, that its ſituation on the geometrical plane be changed, and the vertex C turned towards the fundamental line D E.

To exhibit the Perspective *appearance of a Square* A B D C (*fig.* 4.) *ſeen obliquely, and having one of its ſides* A B *in the fundamental line.* The ſquare being viewed obliquely aſſume the principal point V in the horizontal line H R, in ſuch manner as that a perpendicular to the fundamental line may fall without the ſide of the ſquare A B, at leaſt, may not biſſect it; and make V K the diſtance of the eye. Transfer the perpendiculars A C and B D to the fundamental line D E; and draw the right lines K B, K D, as alſo A V, V C. Then will A and B be their own appearances; and *c* and *d* the appearances of the points C and D. Conſequently A *c d* B is the appearance of the ſquare A B D C.

If the ſquare A C B D ſhould be at a diſtance from the fundamental line D E; which yet rarely happens in practice; the diſtances of the angles A and B muſt likewiſe be transferred to the fundamental line: as is evident from the preceding problem. And ſince, even the oblique view is not very common; in what follows, we ſhall always ſuppoſe the figure to be poſited directly oppoſite to the eye; unleſs, where the contrary is expreſsly mentioned.

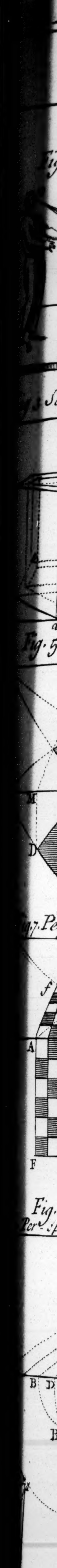
To exhibit the appearance of a ſquare A B C D (*fig.* 5.) *whoſe diagonal* A C *is perpendicular to the fundamental line.* Continue the ſides D C and C B till they meet the fundamental line in 1 and 2. From the principal point V ſet off the diſtance of the eye to K and L. From K to A and 1 draw right lines K A and K 1; and from L to A and 2, the right lines L A, L 2. The interſections of theſe lines will exhibit the appearance of the ſquare A B C D viewed angle-wiſe.

To exhibit the appearance of a ſquare A B C D (*fig.* 6.) wherein another, I M G H is inſcribed; the ſide of the greater, A B, being in the fundamental line; and the diagonal of the leſs, perpendicular to the fundamental. From the principal point V, ſet off, each way, on the horizontal line H R, the diſtances V L and V K; draw V A and V B; and K A and L B; then will A *c d* B be the appearance of the ſquare A C D B. Produce the ſide of the inſcribed ſquare I H, till it meet the fundamental line in 1; and draw the right lines K 1, and K M; then will *i h g* M be the repreſentation of the inſcribed ſquare I H G M. Hence is eaſily conceived the projection of any figures inſcribed in others.

To exhibit the Perspective *of a pavement, conſiſting of ſquare ſtones, viewed directly.* Divide the ſide A B (*fig.* 7.) transferred to the fundamental line D E into as many equal parts as there are ſquare ſtones in one row. From the ſeveral points of diviſion, draw right lines to the principal point V; and from A to the point of diſtance K, draw a right line A K; and from B to the other point of diſtance L, draw another L B. Through the points of the interſections of the correſponding lines draw right lines on each ſide, to be produced to the right lines A V, and B V. Then will A *f g* B be the appearance of the pavement A F G B.

To exhibit the Perspective *of a Circle.*—If the circle be ſmall, circumſcribe a ſquare about it. Draw diagonals and diameters *h a* and *d e* (*fig.* 8.) interſecting each other at right angles; and draw the right lines *f g* and *b c* parallel to the diameter *d e* through *b* and *f*; as alſo through *c* and *g* draw right lines meeting the fundamental line D E in the points 3 and 4. To the principal point V draw right lines V 1, V 3, V 4, V 2; and to the points of diſtance L and K, draw the right lines L 2 and K 1. Laſtly connect the points of interſection, *a*, *b*, *d*, *f*, *h*, *g*, *e*, *c*, with arches *a b*, *b d*, *d f*, *&c.* Thus will *a b d f h g e c a*, be the appearance of the circle.

If the circle be large, on the middle of the fundamental A B (*fig.* 9,) deſcribe a ſemi-circle; and from the ſeveral points of the periphery, C, F, G, H, I, *&c.* to the fundamental line, let fall perpendiculars C 1, F 2, G 3, H 4, I 5, *&c.* From the points A, 1, 2, 3, 4, 5, *&c.* draw right lines to the principal point V, as alſo a right line from B to the point of diſtance L; and another from A to the point of diſtance K. Through the common interſections draw right lines as in the preceding problem; thus ſhall we have the points *c*, *f*, *g*, *h*, *i*, which are the repreſentations of theſe A, C, F, G, H, I, which being connected as before, give the projection of the circle. Hence appears not only how any curvilinear figure may be projected



Tab: Perspective

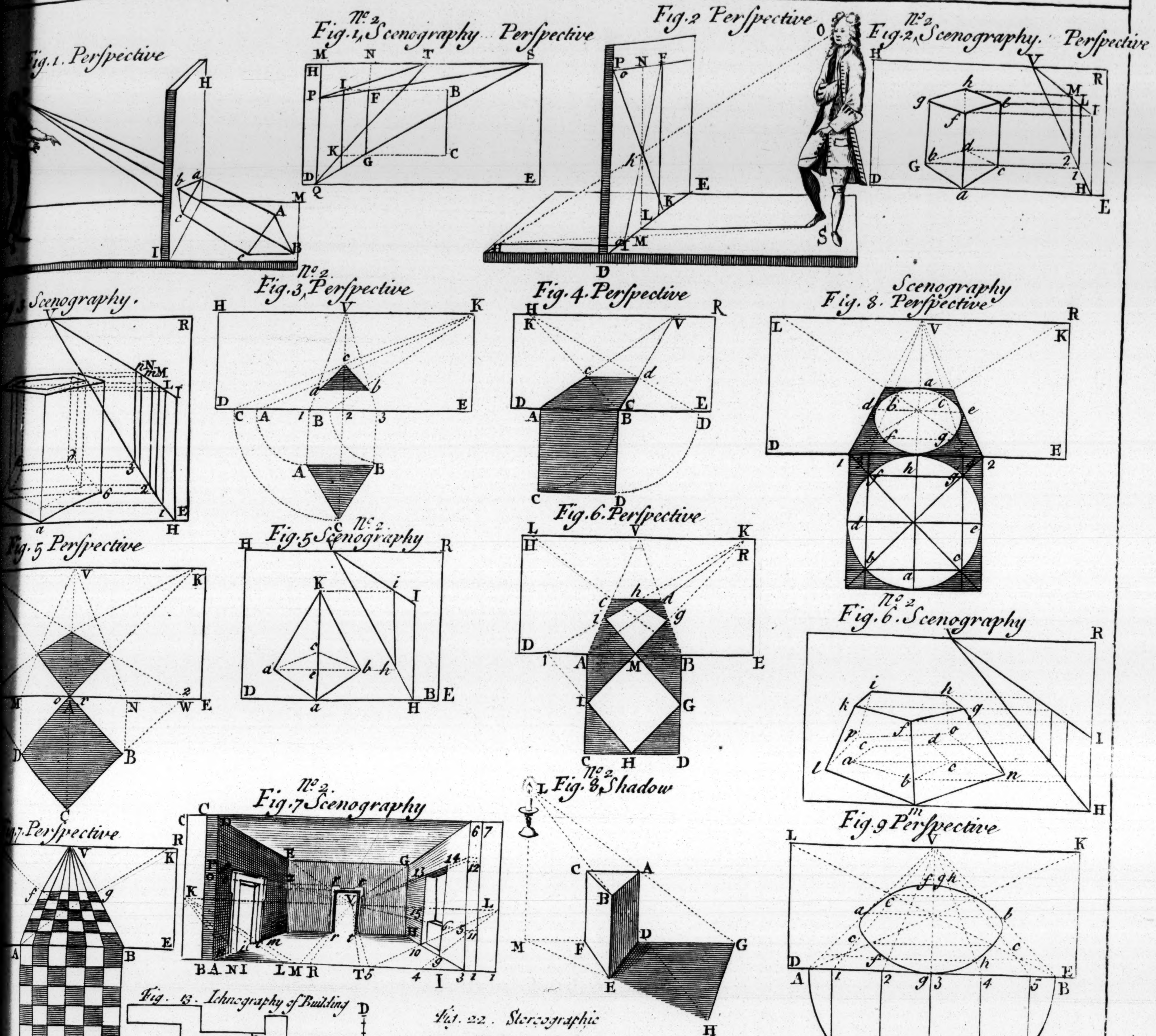


Fig. 1. Perspective
No. 2 Fig. 1, Scenography. Perspective
Fig. 2 Perspective
No. 2 Fig. 2, Scenography. Perspective
Fig. 3 Scenography.
No. 2 Fig. 3, Perspective
Fig. 4. Perspective
Scenography Fig. 8. Perspective
Fig. 5 Perspective
No. 2 Fig. 5 Scenography
Fig. 6. Perspective
No. 2 Fig. 6. Scenography
Fig. 7. Perspective
No. 2 Fig. 7 Scenography
No. 2 Fig. 8, Shadow
Fig. 9 Perspective
Fig. 13. Ichnography of Building
Fig. 22. Stereographic
Fig. 23. Stereographic
Fig. 24. Stereographic
Fig. 10. Perspective
Horizontal Plane
Fig. 12. line of distance
Fig. 14 Perspective of Building
Fig. 15. designing
Fig. 17 Orthographic Projection
Fig. 18 Orthographic Projection
Fig. 19 Anamorphosis
Fig. 20 Anamorphosis
Fig. 21 Anamorphosis

jected on a plane; but alſo how any pavement, conſiſting of any kind of ſtones, may be delineated in *perſpective*.

Hence alſo appears what uſe the ſquare is of in *perſpective*, for even in the ſecond caſe we uſe a ſquare divided into certain areolæ, and circumſcribed about the circle; though it be not delineated on the geometrical plane in the diagram.

To exhibit the PERSPECTIVE *of a regular pentagon, having a broad limb, terminated by lines parallel thereto.*—1° From the ſeveral angles of the exterior pentagon A, B, C, D, E, (*fig.* 10.) to the fundamental line T S, let fall perpendiculars A o, B 1, C 2, D 3, E 4; which, as in the former, transfer to the fundamental line. Connect the points 1, 2, 3, 4 to the principal point V; and the points 1, 2, 3, 4 to the point of diſtance K. Thus will the common interſections repreſent the appearance of the exterior pentagon. 2. If now, from the inner angles G H L I, the perpendiculars G o, H 5, K 6, I 7, L 8, be in the like manner let fall; and the reſt be done as in the former; we ſhall have the repreſentation of the inner pentagon. The pentagon A B C D E, therefore, with its limb, is repreſented in *perſpective*.

This problem is added for the ſake of an inſtance of the projection of a figure that has a broad limb, or edge.

It muſt be here obſerved, that if the magnitudes of the ſeveral parts of an object, be given in numbers, together with the height and diſtance of the eye; its figure is to be firſt conſtructed by a geometrical ſcale; and the fundamental point, with the point of diſtance, to be determined by the ſame.

Nor is it always neceſſary, that the object be delineated under the fundamental line: in the projection of ſquares and pavements it is beſt let alone. But where it is neceſſary, and ſpace is wanting, draw it a-part; find the diviſions in it, and transfer them to the fundamental line in the plane.

Threads being hung in the principal point, and the point of diſtance, and ſtretched to the points of the diviſions of the fundamental line; the common interſection of the threads will give the projection of the ſeveral points without confuſion; a thing much to be feared from the multiplicity of lines to be drawn.

Scenographic PERSPECTIVE; *or the projection of bodies on a plane.*— *On a given point*, C. (fig. 1. n. 2.) *to raiſe a* perſpective *altitude, anſwerable to the given objective altitude* P Q. On the fundamental line, raiſe a perpendicular P Q, equal to the given objective altitude. From P and Q to any point, as T, draw right lines P T and Q T. From the given point C draw a line C K parallel to the fundamental line D E; and meeting the right line Q T, in K. In K, erect a perpendicular to K C, *viz.* I K; this I K is the ſcenographic altitude required.

To exhibit the PERSPECTIVE *of a ſolid.*—Find the projection of its baſe in the ichnographic *perſpective*; and in the ſeveral points thereof erect the *perſpective* altitude: Thus will the ſcenography of the ſolid be finiſhed, except for what relates to the ſhadow; which muſt be ſuperadded from the laws of ſhadows, delivered under the article SHADOW.—For an example,

To exhibit the ſcenographic PERSPECTIVE *of a cube, viewed angle-wiſe.*—Since the baſe of a cube viewed angle-wiſe, and ſtanding on a geometrical plane is a ſquare viewed angle-wiſe; draw a ſquare on the *perſpective* plane, after the manner laid down above: raiſe the ſide of the ſquare H I (*fig.* 2. *n.* 2.) perpendicularly in ſome point of the fundamendal line D E; and to any point V, of the horizontal line H R, draw right lines V I and V H. From the angles *d*, *b*, and *c*; draw *c* 1, *d* 2 parellel to the fundamental line D E. From the points 1 and 2 raiſe L 1 and M 2 perpendicular to the ſame. Laſtly, ſince H I is the altitude to be raiſed in *a*, L 1 in *c*, and *b* and M 2 in *d*; in *a* raiſe *f a*, perpendicular to *a* E; and in *b* and *c*, raiſe *b g* and *c e* perpendicular to *b c* 1; and laſtly raiſe *d h* perpendicular to *d* 2; and let *a f* be equal to H I, $bg = ec = L\,1$, and *h d* to M 2; if then the points *g*, *h*, *e*, *f* be connected by right lines, the ſcenography will be finiſhed.

This method is general; but its application is not equally obvious in every caſe; ſee it further illuſtrated under the article SCENOGRAPHY.

PERSPECTIVE *of Building, &c.*—In the practice hereof, great regard is had to the height of the horizontal line; all above the horizontal, being ſeen in the upper part, and all below it in the under part: whence, *perſpective* becomes divided into the *high*, and *low ſight*; both which may be illuſtrated by what follows.

To repreſent a building (*v. gr.* palace, college, *&c.*) *in perſpective.*

1. Take the ichnography, or ground-plat of the building; its lengths, breadths, and depths, by actual meaſuring. (See ICHNOGRAPHY) and take its altitude with a quadrant. See ALTITUDE and QUADRANT.

2. Make a ſcale divided into two or three hundred equal parts, either actually, or ſo as that each diviſion ſignify ten parts: by this ſcale lay down the ground plat: as in *figure* 13.

This done, having a long rule, and a ſquare, which by ſliding on the rule helps you to draw your perpendiculars eaſilier, reduce it into *perſpective*, in its ſcenograpbick appearance.

Then having drawn a line towards the bottom of the paper for the front or baſe line as F L, (*fig.* 14.) divide it into as many equal parts as you find the building has in the ichnography, or more if you pleaſe: this will ſerve for a ſcale to determine the ſeveral heights, *&c.* and to theſe diviſions, with a black lead pencil draw lines from the centre, when you have choſen it; which choice requires judgment on two accounts.

For, if the centre be too nigh the front-line, then the depth of the whole building will fore-ſhorten too much; if too far off, it will not fore-ſhorten enough. This may be illuſtrated thus, ſet an open tankard, or the like, on a ſtand, ſo as that it be a little lower than your eye; if you be at a great diſtance from it, you can ſee very little or nothing into it; if you come nigher to it by degrees, you will perceive the farther edge ſeem to be raiſed a little higher than that next you, ſo that you may ſee a little way into it; if you come very nigh it, you ſee too deep into it more than can well be expreſſed in picture. We ſhall therefore find ſome one place, which we muſt conclude the moſt convenient for the draught, and which may be in general determined to be as far off the front-line as the front-line is long: this rule, though it has juſt grounds, yet we ſometimes diſpenſe with it *pro re nata*; that we may expreſs things with the better appearance.

4. Conſider how to place this centre with ſuch advantage as that you may expreſs thoſe things moſt, which are chiefly deſigned; for as to the bottom and top lines of the ſides of the building that run from us in or nigh the direct line to the centre, though you ſee the upper part very well, yet the ſides that fall between the ground-line and top, fall ſo very near one another, that it would be very difficult to expreſs particulars in them; ſo that the centre muſt be well choſen in reference to this.

Thoſe buildings therefore, you would ſee moſt of, muſt be placed as far off as you think convenient from the direct line that runs to the centre; and the farther they are, the plainer they will be.

Place then thoſe things you would ſee leaſt of, nigheſt the direct line; and ſee whether the others fall according to your mind: but this muſt be done after you have drawn your diagonal, which is the next thing.

5. Having pitched on your centre, and having from it drawn lines to every diviſion of the front-line, you are to determine your diagonal, A R, thus: having with a pair of compaſſes, meaſured the length of the front-line, take your compaſſes, and putting one foot in the centre, ſee where the other will reach in the horizon: (on both ſides if you pleaſe) where it reſts, from that point draw a thwart line to the laſt diviſion of the front; and this will be truly drawn, or pretty nigh to the truth. That it is ſo, you may conſider how it falls in reſpect of the two laſt centre-lines: for if where the next line from the laſt is interſected by the diagonal, you draw a parallel to the front between them, as at A 10, you will have a rhombus; if then all the ſides be pretty equal, you may be ſure you are nigh the right; but if the ſides that run towards the centre be too long, then things will not fore-ſhorten enough; if the ſides be not long enough, they will fore-ſhorten too much.

6. After the front-line is thus divided, the centre fixed, and the diagonal placed, take the breadth of the chapel A B, which in the ichnography is ſhewn to be twenty parts; becauſe this line is perpendicular, it muſt run toward the centre, therefore reckon twenty in the diagonal, and the rule laid parallel to the front in that point, will give you a point in the centre-line, which will give the breadth of the chapel; conſequently a line drawn from A to B puts it into the ichnographick *perſpective*. The length of the chapel being ſeventy diviſions in the front-line; reckon ſeventy from B, parellel to the front-line, and there you will have a point at C.

The depth of the building from the chapel northward, being one hundred and fifteen from the chapel, I reckon from D; (where it cuts the diagonal at ten) onwards in the diagonal; and at one hundred and fifteen in the diagonal, with my rule as before parallel in this place in the front, I have the point Z in the central-line. Its breadth being thirty, I reckon three diviſions, and there is the juſt breadth there; and ſo on in every particular part.

Having placed the ichnography into *perſpective*, you may then give every thing its proper height thus:

7. The height of the chapel being thirty, I reckon thirty on the front-line, and with this length by a ſquare clapt to the front-line, I drop a perpendicular to that height; and ſo where the other ſide of the chapel is placed, having reckoned the height upon a ſuppoſed parallel, there I draw another line in that height; then joining theſe ſeveral heights by ſeveral lines, you have the profiles of each building.

To diverſify theſe ſeveral lines, that they confound you not, make the ichnography, when you lay it into *perſpective*, in diſcontinued crooked lines, the heights in pricked lines, and the tops of each building in continued lines, as the centre-lines are in the table. You will likewiſe find the centre, though it is not here expreſſed, as likewiſe the point of diſtance, by continuing the diagonal up to the ſuppoſed horizon where it and the eye is placed.

Having done thus, your art muſt be employed for the particular expreſſions of things, by drawing and ſhadowing, which is the life of this half formed figure, which we leave to the painter.

It remains that we ſpeak of the low-ſight: And here, we ſuppoſe the horizontal line juſt the height of the eye, about five foot from the baſis; though it is generally placed higher, even to a third part of the height of the building, that the ſide building may be expreſſed more gracefully.

The diagonal is beſt determined by dividing the laſt diviſion of the baſis-line into five parts at G, taking four of theſe, ſometimes the whole five, becauſe we determined before, that the length of the front-line was the diſtance of the eye in the horizon to the point of diſtance: but here we take four, and then make this the diſtance in the horizon between the eye and the point of diſtance. You may then either graduate the plan at the ſeveral interſections of the diagonal with the centre lines, or elſe ſuppoſe it ſo; and then raiſe the buildings as you will find by *perſpectives* enough of this ſort every where to be met with.

Perſpective, is alſo uſed for a kind of picture or painting, frequently ſeen in gardens, and at the ends of galleries; deſigned expreſly to deceive the ſight by repreſenting the continuation of an alley, a building, landſkip, or the like.

Perſpective *aerial*,	See the article	Aerial.
Alley in Perſpective, V.		Alley.
Architecture in Perſpective,		Architecture.

Perſpective, *Plan*, *Plane*, is a glaſs, or other tranſparent ſurface, ſuppoſed to be placed between the eye and the object, perpendicular to the horizon, unleſs the contrary be expreſly mentioned. See Plan, Plane.

Such is the plane, HI (*fig.* 1.) between the eye O, and the object ABC, cutting the optic rays in *a*, *b*, *c*.

This, ſome call the *ſection*; ſome the *table*, and others the *glaſs*. See Section.

PERSPIRATION, Perſpiratio, in medicine, the action of evacuating the ſuperfluous juices of the body, through the pores of the ſkin. See Evacuation, Pore, and Skin.

When this evacuation is copious enough to be perceived by the ſenſes, as in ſweat, the *perſpiration* is ſaid to be *ſenſible*; where it eſcapes the notice of the ſenſes, as is the caſe in the ordinary ſtate of the body, the *perſpiration* is ſaid to be *inſenſible*. See Sweat.

The word *perſpiration* uſed ſimply, and without any adjective, is underſtood of inſenſible *perſpiration*.

This evacuation was known to the ancients, Hippocrates, Galen, *&c.* but it was Sanctorius, the famous Paduan phyſician, who firſt brought it under any ſtated rules. To him we owe both the invention and perfection of the doctrine of *inſenſible perſpiration*.

The veſſels through which the *perſpiration* is performed, lye obliquely open under the ſquamæ or ſcales of the cuticle or ſcarf-ſkin. They are inconceivably ſmall: from a calculation of Leewenhoeck, it appears that the mouths of one hundred twenty-five thouſand of them, may be covered with a common grain of ſand. See Cuticle, Miliary *gland*, &c.

Through theſe veſſels is continually tranſuding a ſubtle humour, from every point of the body, and throughout the whole expanſe of the cuticle.

The matter evacuated this way, is found by ſure experience to be more than equal to that evacuated all the other ways, *i. e.* by ſtool, urine, *&c.* Sanctorius found in Italy, under the circumſtances of a moderate diet, middle age, and eaſy life, that the matter inſenſibly perſpired was $\frac{5}{8}$ of that taken in for food: ſo that there only remained $\frac{3}{8}$ for nutrition, and the excrements of the noſe, ears, inteſtines, bladder, *&c.* See Excrement.

The ſame author ſhews, that as much is evacuated by inſenſible *perſpiration* in one day, as by ſtool in fourteen days; particularly, that in a night's time, about ſixteen ounces is ordinarily ſent out by urine, four ounces by ſtool; and above forty ounces by *inſenſible perſpiration*.

He alſo obſerves, that if a man eat and drink eight pound in a day, five pound of it is ſpent in *inſenſible perſpiration*; and adds as to the times, that within five hours after eating there is perſpired about one pound; from the fifth to the twelfth hour about three pound; and from the 12th to the 16th ſcarce half a pound.

The benefits of *inſenſible perſpiration* are ſo great, that without it, Borelli ſays, animal life could not be preſerved.

The great ſubtility, equability, and plenty of the matter, thus perſpired, its increaſe after ſleep, *&c.* conſtitute the grand ſymptoms of a perfect ſtate of health; and the chief means of preſerving the ſame. On the contrary, the departing from theſe is the firſt ſure ſign, and, perhaps, cauſe of diſeaſes. See Health and Disease.

Perſpiration is performed, preſerved, and encreaſed by the viſcera, veſſels, fibres; by motion or exerciſe as far as the firſt appearance of ſweat, by moderate uſe of venery; ſleep of ſeven or eight hours, the body well covered yet not loaded with bedcloaths, chearfulneſs, light fermented yet ſolid food, not fat; pure, cold, heavy air, *&c.*—The contraries of all theſe, as alſo the increaſe of the other excretions, diminiſh, prevent, and deprave it.

Hence we ſee the cauſe, effect, *&c.* of this perſpirable matter, its uſe in preſerving the parts ſoft and flexible, in ſupplying what's loſt, but chiefly in preſerving the nervous papillæ moiſt, freſh, lively, fit to be affected by objects, and to tranſmit their impreſſions. See Nerve, Sensation, *&c*

Too much *perſpiration* occaſions weakneſs, ſwoonings, ſudden death; too little, or none at all, occaſions the capillary veſſels to dry, wither, and periſh. Hence alſo the larger emunctories come to be obſtructed; hence the circulation is diſturbed, ſharp humours retained; hence putridity, crudity, fevers, inflammations, impoſthumes. See Disease.

To determine the ſtate and conditions of the *perſpiration*, ſo neceſſary for judging of thoſe of the body, Sanctorius invented a weighing chair, whereby he examined the quantity, degree, *&c.* of *perſpiration* in ſeveral circumſtances of the body, under ſeveral temperatures of the air, in the ſeveral intervals of eating, drinking, ſleeping, *&c.* See Weighing *chair*.

Some of the more extraordinary phænomena obſerved herewith, are; that for ſome time after eating the *perſpiration* is leaſt of all. That between the fifth and twelfth hour after meals *perſpiratiom* is greateſt. That riding either on horſback, in a coach or ſhip, *&c.* briſk motion on the ice, *&c.* but above all, a briſk friction of the ſkin; promote *perſpiration* ſurpriſingly. That in ſweating, the *perſpiration* is much leſs than at other times: and that *perſpiration* is always much leſs in women than men.

PERTICATA*, or Particata *terræ*, in our old law books, is the fourth part of an acre, or a piece of ground containing one perch in breadth, and forty in length. See Rood, and Perch.

* *Continet in integra ſuperficie* 40 *perticas.* See Perch.

Peru—*Balſam of* Peru. See the article Balsam.

PERVIGILIUM, in medicine, exceſſive waking or watching. See Wakefulness.

PERVISE, or Parvise, a term in our old law books, ſignifying, according to Selden in his notes on Forteſcue, an afternoon's exerciſe, or moot, which the pleaders held for the inſtruction of the younger ſtudents; bearing originally the ſame name with the parviſiæ in Oxford. See Moot.

M. Somner ſays, that Pervise ſignifies *palatii atrium vel area illa a fronte aulæ Weſtmonaſterienſis, hodie* the *Palace-yard*. See Paradisus.

Spelman thinks that the lawyers turned thither to meet their clients, not to hold moots.

PERUVIAN-*bark*. See Cortex *peruvianus*.

Peruvian *Emerald*. See the article Emerald.

PES, a long meaſure, in Engliſh better called a *foot*. See Foot.

Pes *foreſtæ*, the foreſt foot contains eighteen inches*.

* *Notandum eſt quod* pes foreſtæ *uſitatus tempore Ric. Oyſſel in arrentatione vaſſallorum, factus eſt, ſignatus & ſculptus in pariete cancellæ eccleſiæ de Edwynſtone & in eccleſia B. Mariæ de Nottingham, & dictus pes continet in longitudine octodecim pollices, & in errantatione quorundam vaſſallorum pertica*, 20, 21, & 24 *pedum uſa fuit*, &c.

Pes *monetæ*, in ancient records, ſignifies a true and reaſonable adjuſtment of the real value of all current coin. See Standard and Coin.

PESA, an old law term, for a weigh, or certain weight of cheeſe, wool, *&c.* See Weigh.

PESADE, or Pesate, in the manage, that action taught a horſe, wherein he riſes with his fore feet, and bends them up to his body, without ſtirring the hind feet.

The *Peſade* is the firſt leſſon taught a horſe, in order to bring him to curvetts, *&c.* unleſs he perform this well, he will never go well in any air: yet is he not to be taught it at the firſt riding.

PESAGE, Pesagium, a cuſtom or duty paid in certain markets, *&c.* for weighing of merchandiſes, or wares. See Weighing.

PESATE. See the article Pesade.

PESSARY, or Pessus, in medicine, a ſolid medicament of the length and thickneſs of the finger, but a pyramidal form; conveyed into the narural parts of a woman, to provoke, or to put a ſtop to the menſes, to prevent a deſcent of the matrix, or on other occaſions of thoſe parts.

* The word is formed from Greek, Πεσσαριον, or πεσσος, which ſignifies the ſame.

The *peſſary* conſiſts of cork, or other light wood, or of a little linnen bag full of powders, incorporared with wax, oil, and cotton; crammed cloſe together, to make it ſolid enough for intromiſſion.

At one end it is faſtened to a little ribbon, by which it may be drawn out at pleaſure.

PESTILENCE*, in medicine, an epidemical, malignant, and contagious diſeaſe, uſually mortal; popularly known under the name of *plague*. See Plague.

* The word is formed from the Latin, *peſtis*, which ſignifies the ſame.

Peſt-*houſe*, a lazaretto or infirmary, where goods, perſons, *&c.* infected, or ſuſpected to be infected with ſome contagious diſeaſe, are diſpoſed and provided for. See Lazaretto.

PESTILENTIAL *fevers*, among phyſicians, are ſuch as do not only afflict the patient with a vehement heat, but alſo with ſome malignant, and venomous quality. See Fever, and Malignant.

PESTIS. See the article Plague.

PETALA*, in botany, the leaves of a flower; ſo called to diſtinguiſh them from the leaves of the plant. See LEAF.

* The word is formed from the Greek ϖεταλον, a leaf; which in that language, ſerves indifferently for the leaves of the plant, and the flower.

By flower is properly meant, that aſſemblage of parts, called *ſtamina* and *piſtil*, which ſerve for the propagation of the kind. See FLOWER.

The coloured leaves, called *petala*, which incompaſs thoſe parts, are in reality no more than caſes or covers to ſecure and ſcreen the generative parts; unleſs, as Mr. Bradley conjectures, they may alſo ſerve to ſecrete ſome fine juice for the nouriſhment of the ſeed. See GENERATION *of plants*.

The moſt eaſy diviſion of flowers is into ſimple flowers, *i. e*, thoſe formed of ſtamina and piſtil only; and compound flowers, whoſe ſtamina and piſtil are encompaſſed with *petala*, called by Dr. Grew the *foliation*, and by Mr. Ray *folia*. See FOLIATION.

Compound flowers again, are either incompaſſed with a ſingle *petalum*, or piece; or with ſeveral pieces; the firſt of which are called *monopetalous*, the ſecond *polypetalous* flowers. See MONOPETALOUS, *&c.*

Again, from the regular or irregular configuration of the *petala*, M. Jeſſieu makes another diviſion of flowers into claſſes; as regular and irregular *monopetalous*; regular and irregular *polypetalous*, *&c.* See POLYPETALOUS.

Nature ſhews a world of art in the folding up of the *petala* in the perianthium, before they begin to blow or expand: of theſe foldings Dr. Grew notes the following varieties, *viz.* the cloſe couch, as in roſes; the concave couch, as in blattaria flore albo; the ſingle plait, as in peaſe-bloſſoms; the double plait, as in blue-bottles; the couch and plait together, as in marigolds, *&c.* the rowl, as in ladies bower; the ſpire, as in mallows; and laſtly the plait and ſpire together, as in convolvulus doronici folio.

The calyx, or perianthium ſometimes ſerves in lieu of *petala*. See CALYX, and PERIANTHIUM.

PETALISM, PETALISMUS, ΠΕΤΑΛΙΣΜΟΣ, in antiquity, a kind of exile or baniſhment, for the term of five years, See BANISHMENT.

The *petaliſm* at Syracuſe was nearly the ſame thing as the *oſtraciſm* at Athens, except that the latter was for ten years, and the former only for five. See OSTRACISM.

The *petaliſm* was performed by the people's writing the name of the perſon condemned, on a leaf: whence the name, from ϖελαλον, leaf.

PETALODES, ΠΕΤΑΛΩΔΗΣ, a name given to urine, when it ſeems to have little leaves, flakes, or ſcales in it. See URINE.

PETAMINARIUS*, in antiquity, a name given to certain perſons who performed extraordinary feats of activity; took perilous leaps, vaults, *&c.*

* The word is formed from the Greek, ϖεταμαι, volo, *I fly*.—Some authors write it *petiminarius*; and derive it from *petimen*, which according to Servius ſignifies the bunch of a camel; alluding to the manner wherein theſe operators bend the body in exhibiting poſtures, *&c.* See POSTURE.

PETARD, in war, a kind of engine of metal, ſomewhat in ſhape of a high-crowned hat; ſerving to break down gates, barricades, draw-bridges, or the like works which are intended to be ſurprized.

The *petard* may be conſidered as a piece of ordnance, very ſhort, narrow at the breech, and wide at the muzzle; made of copper mixed with a little braſs; or of lead with tin; uſually about ſeven inches long, and five broad at the mouth; weighing from forty to fifty pound. See ORDNANCE.

Its charge is from five to ſix pounds of powder, which reaches to within three fingers of the mouth: the vacancy is filled with tow, and ſtopped with a wooden tampion; the mouth being ſtrongly bound up with cloth tied very tight with ropes.—It is covered up with a madrier or wooden plank, that has a cavity cut in it to receive the mouth of the *petard*, and faſtened down with ropes after the manner expreſſed in *Tab. Fortification*, *fig.* 5.

Its uſe is in a clandeſtine attack, to break down gates, bridges, barriers, *&c.* to which it is hung; which it does by means of the wooden plank.—It is alſo uſed in countermines to break through the enemies galleries, and give vent to their mines.

Some, inſtead of gun-powder for the charge, uſe one of the following compoſitions, *viz.* gun-powder ſeven pounds, mercur. ſublimat. one ounce, camphor eight ounces; or gun-powder ſix pound, mercur. ſublimat. three ounces, and ſulphur three; or gun-powder ſix, beaten gleſs $\frac{1}{2}$ an ounce, and camphor $\frac{1}{4}$.—*Petards* are ſometimes alſo made of wood, bound round with iron hoops.

The invention of *petards* is aſcribed to the French huguenots in the year 1579: their moſt ſignal exploit was the taking the city Cahors by means hereof, as we are told by d'Aubigne.

PETECHIÆ, ſpots in the ſkin, like flea-bites, which come out in ſome fevers, hence called *petechial* or *ſpotted fevers*. See PETECHIAL.

PETECHIAL, an appellation given to a malignant, epidemical kind of fever; wherein the ſkin breaks out in *petechiæ*, or purple ſpots. See PETECHIÆ, and FEVER.

The *Petechial fever*, is alſo called *febris lenticularis*, and *pulicaris*

PETERERO. See the article PEDRERO.

PETER-*pence*, an ancient levy, or tax of a penny on each houſe throughout England, paid to the pope. See TAX.

It was called *Peter-pence*, becauſe collected on the day of St. *Peter ad vincula*; by the Saxons it was called *Rome feoh*, i. e. the fee of Rome, and alſo *Rome-ſcot*, and *Rome-pennying*, becauſe collected and ſent to Rome; and laſtly, it was called *Hearth-money*, becauſe every dwelling-houſe was liable to it, provided there were thirty pence *vivæ pecuniæ* belonging to it; nay, and every religious houſe; the abbey of St. Albans alone excepted.

This *Peter-pence* was at firſt given as a penſion, or alms, by Ina king of the weſt ſaxons, in the year 725, being then in pilgrimage at Rome: and the like was done by Offa king of the Mercians, throughout his dominions in 794.

It was not intended as a tribute to the pope, but chiefly for the ſupport of the Engliſh ſchool or college at Rome: the pope, however, went halves with the college; and at length ſwallowed almoſt the whole.

At firſt it was only an occaſional contribution; but became at laſt a ſtanding tax; being eſtabliſhed by the laws of king Canute, Edward the Confeſſor, the Conqueror, *&c.*

The biſhops who were charged with the collecting it, employed the rural deans and archdeacons therein.

Edward the III^{d} firſt forbad the payment; but it ſoon returned, and continued till the time of king Henry VIII, when Polydore Virgil reſided here as the pope's receiver-general. It was aboliſhed under that prince, and reſtored under Philip and Mary; but finally prohibited under queen Elizabeth.

PETIT *Cape*. See the article CAPE.

PETIT *Serjeanty*, in law. See the article SERJEANTY.

PETIT *Jury*. See the article JURY.

PETITA *Terra*. See the article SUMMONS.

PETITIO *Induciarum*, in the civil law, the ſame as *imparlance* in common law. See IMPARLANCE.

PETITIO *Principii*, in logic, a begging the queſtion, or a precarious ſuppoſing a thing to be true, or taking it for granted, when it really remains either dubious, or elſe is expreſsly denied. See FALLACY, ERROR, *&c.*

PETITION, PETITIO, a ſupplication in form, made by an inferiour to his ſuperiour; eſpecially to one having juriſdiction. See SUPPLICATION.

PETRA *lanæ*, in our ancient cuſtoms, a ſtone of wool. See STONE.

PETRARIA, in ancient writers, is ſometimes taken for a quarry of ſtone. See QUARRY.

In other places *petraria* is uſed for a ſort of engine of war wherewith ſtones were caſt on the enemy; chiefly uſed in ſieges, *&c.*

PETRE *oil*, ΠΕΤΡΕΛΑΙΟΝ, the ſame as *petroleum*. See PETROL.

PETRIFACTION, or PETRIFICATION, in phyſiology, the act of converting fluids, woods, and other matters into ſtone. See STONE, and LAPIDIFICATION.

* The word is formed from the Greek, ϖετρα, ſtone, and the Latin *fio* or *facio*, to become, to do.

The faculty of *petrifying* wood is aſcribed to ſeveral ſprings, lakes, *&c.* The ancient naturaliſts mention a river whoſe waters turned bodies into marble, by mere contact; nay, which being drunk, *petrified* the viſcera of the drinker.

Flumen habent Cicones, quod potum ſaxea reddit
Viſcera, quod tactis inducit marmora rebus.

Seneca relates, that the mud of this river is of ſuch a nature as to harden and glue together the parts of bodies. As, ſays he, the duſt of Puzzuoli, by barely touching water becomes ſtone; ſo this water, by touching any ſolid, ſticks, and grows to it: Whence things caſt into it, are immediately taken out ſtones. Pliny adds very well, that wood caſt into this river, is preſently found covered with a ſtony bark or rind; and ſubjoins the names of ſeveral other rivers which do the ſame: particularly the river Silarus near Tarentum, whoſe waters are nevertheleſs found very wholeſome.—To Pliny's liſt we might add many more among ourſelves; particularly the lake Lohmond in Scotland, *&c.*

But, in effect, there does not ſeem any real tranſmutation of the woody nature into the nature of ſtone, in any of theſe caſes: all that is done is this, the ſtony particles which before floated in the liquor are now lodged, and depoſited in the pores of theſe ſubſtances, in ſuch manner, and in ſuch plenty as to leave little elſe but the appearance of a ſtone.

Petrifactions too, are frequently nothing elſe but incruſtations of ſtony particles, which ſurround the bodies immerged, as ſalts ſhoot upon and adhere to them. See INCRUSTATION.

Varenius has a conjecture that waters only petrify woods by means of certain minute, ſharp, and pointed particles lodged therein, which cut the longitudinal fibres of the wood in an infinite number of points, and thus deſtroy the form by which they were diſtinguiſhed from ſtone.

Near Naſcivan is a little river, whoſe water the people turn off into little canals; where, in a little time it *petrifies*; and of this *petrified* water is built a large caravanſera in the neighbourhood.

Petrifications of waters, or juices of the earth are inconteſtable. In the place called *les Caves Goutieres* in France, the water falling from the upper parts of the cave to the ground, immediately hardens into little ſtones, of ſuch figures as the drops falling either ſingly, or upon one another chance to exhibit.

Of this kind of caves we have ſeveral in England, Pools'-hole is one of the moſt remarkable. Mr. Derham mentions another on the top of Bredon-hill in Worceſterſhire; to which we may add another called the *Elve-hole* in Witherſlack in Weſtmoreland; lined a top with theſe ſtalactical ſtones, hanging like icicles; which are manifeſtly nothing elſe but exſudations or exſtillations of ſome *petrifying* juices out of the rocky earth there. See STALACTITES. See alſo LABYRINTH.

PETROBRUSSIANS, a religious ſect, which aroſe in France, and the Netherlands, about the year eleven hundred and twenty ſix; ſo called from their leader, *Peter Bruys*, a provincial.

The chief of Bruys's adherents was a monk, one Henry; from whom the *Petrobruſſians* were alſo called *Henricians*.—Peter the venerable abbot of Clugny, has an expreſs treatiſe againſt the *Petrobruſſians*; in the preface to which he reduces their opinions to five heads.

1. They denied that children before the age of reaſon can be juſtified by baptiſm; in regard, it is our own faith that ſaves by baptiſm. 2. They held that no churches are to be built, but thoſe that already are, to be pulled down; an inn being as proper for prayer as a temple, and a ſtable as an altar. 3. That the croſs ought to be pulled down and burned, in regard we ought to abhor the inſtruments of our Saviour's paſſion. 4. That Jeſus Chriſt is not in the euchariſt, and that this ſacrament is vain. 5. That ſacrifices, alms, prayers, *&c.* do not avail the dead.

F. Langlois objects manicheiſm to the *Petrobruſſians*; and ſays they maintained two gods, the one good, the other evil; but this we rather eſteem an effect of his zeal for the catholick cauſe, which determined him to blacken the adverſaries thereof, than any real ſentiment of the *Petrobruſſians*. See ALBIGENSES.

PETROJOANNITES, the followers of Peter John, or Peter Joannis, *i.e.* Peter the ſon of John, who lived in the XIIth century; whoſe doctrine was not known till after his death; when his body was taken out of his grave, and burnt.—His opinions were, that he alone had the knowledge of the true ſenſe wherein the apoſtles preached the goſpel; that the reaſonable ſoul is not the form of man; that there is no grace infuſed by baptiſm; that Jeſus Chriſt was pierced with a launce on the croſs ere he expired.

PETROL, PETROLEUM, *q. d. petræ-oleum*, oil of petre, or rock oil, an oleaginous juice, ſuppoſed to iſſue out of the clefts of rocks; and found floating on the waters of certain ſprings See OIL.

Beſide artificial and vegetable oils, *i. e.* thoſe drawn from plants, *&c.* by expreſſion; there are alſo natural and mineral oils iſſuing of themſelves from the entrails of the earth; called by a common name *petrols*, or *petrolea*.

Theſe, according to all appearance, muſt be the work of ſubterraneous fires, which raiſe, or ſublime the more ſubtile parts of certain bituminous matters that lye in their way. Theſe parts being condenſed into a liquor by the cold of the vaults of rocks, are there collected, and ooze thence through clefts and apertures, which the diſpoſition of the ground furniſhes them withal. *Petrol*, then is a black liquid bitumen; only differing by its liquidity from other bitumens, as aſphaltum, jet, *&c.* See BITUMEN.

The naphtha, which is either a liquid, or at leaſt a very ſoft bitumen, is much the ſame with *petrol*. See NAPHTHA.

Hitherto there has been little *petrol* found, except in hot countries. Olearius ſays he ſaw above thirty ſprings of it near Scamachia in Perſia: there are alſo *petrols* in the ſouthern provinces of France; but the beſt are thoſe in the duchy of Modena, firſt diſcovered by Arioſto a phyſician, in 1640, in a very barren valley, twelve leagues from the city of Modena.

There are three canals dug with great expence in the rock; by which three different kinds of *petrol* are diſcharged into little baſons or reſervoirs: the firſt, as white, clear, and fluid as water, of a briſk penetrating ſmell, and not diſagreeable; the ſecond of a bright yellow, leſs fluid, and a leſs briſk ſmell than the white; the third a blackiſh red, of thicker conſiſtence, and a ſmell more approaching that of bitumen.

M. Boulduc has made ſeveral experiments on the *petrol*, deſcribed in the *Hiſt. of Acad. of Scienc. an.* M.DCC.XV. He obſerves, that he could not raiſe from it any phlegm or ſaline ſpirit by any diſtillation, either in balneo mariæ, or in a ſand heat: all that would riſe was oil; at the bottom of the pellican remained an exceeding ſmall quantity of a thickiſh, browniſh matter.

Hence, to uſe *petrolium* in medicine, it muſt be preſcribed juſt as it is. It is a remedy nature has prepared to our hands: it is found very warm and penetrating; and commended in many outward complaints, rheumatick and arthritick pains, and paralytick limbs.

PETRONEL, a ſort of harquebuſs or hand-gun. See HARQUEBUSS.

PETROSA *oſſa*, in anatomy, a denomination given to the fifth and ſixth bones of the ſkull, called alſo *oſſa temporum*, becauſe they ſhew the age of man; the hairs hereon turning grey before any of the reſt. See CRANIUM and TEMPLES.

Their upper-part is ſquamous, or ſcaly, the lower *petrous*, *i.e.* hard or ſtony, and hence they come here to be more particularly denominated *petroſa*.—

The *oſſa petroſa* are the ſmalleſt proper bones of the cranium: their upper part is ſemi-circular, and their lower of a rocky make. They are ſituated in the lateral and lower parts of the head; bounded a-top by the ſquamous ſuture, which joins them to the parietalia; behind by the lamboides, which joins them to the occipital, and connects them to os ſphenoides.

Each has two ſinus's, before and behind the ſphenoides: the exteriour lined with a cartilage, receiving the proceſs of the lower jaw; the interior receives the lower-part of the ſinus lateralis of the dura mater.

Each again has four proceſſes; three external, and one internal; of the external, the firſt is called *zygomaticus* or *os jugale*; the ſecond *maſtoides* or *mammillaris*; the third *ſtyloides*, each whereof ſee under its proper article, ZYGOMATICUS, *&c.*

The internal proceſs is properly called the *os petroſum*: this is pretty long and large, containing the whole meatus auditorius and cavity of the tympanum. See TYMPANUM and EAR.

PETTEIA, ΠΕΤΤΕΙΑ, in the ancient muſick, a Greek term, to which we have no correſponding one in our language.

The melopœia, *i. e.* the art of arranging ſounds in ſucceſſion ſo as to make melody, is divided into three parts, which the Greeks call *lepſis*, *mixis*, and *chreſis*; the Latins *ſumptio*, *mixtio*, and *uſus*; and the Italians *preſa*, *meſcolamento*, and *uſo*.—The laſt is alſo called by the Greeks, Πεττεια, *petteia*, and by the Italians *pettia*.

Petteia, or *pettia*, then is the art of making a juſt diſcernment of all the manners of ranging, or combining ſounds among themſelves, ſo as they may produce their effect, *i. e.* may expreſs the ſeveral paſſions intended to be raiſed: thus, *e. gr.* it ſhews what ſounds are to be uſed, and what not, how often any of them are to be repeated, which to begin, and with which to end, whether with a grave ſound to riſe, or an acute one to fall, *&c.*

It is the *petteia* that conſtitutes the manners of the muſick; it being this that chuſes out this or that paſſion, this or that motion of the ſoul to be awakened, and whether it be proper to excite it on this or that occaſion.—The *petteia* therefore is in muſick what the manners are in poetry. See MANNERS.

We do not ſee whence the denomination ſhould have been taken by the Greeks, unleſs from Πεττεια their game of cheſs; the muſical *petteia* being a ſort of combination and arrangement of ſounds, as cheſs is of peices called πεττοι, calculi, cheſs-men.

PETTY *bag*, an office in chancery, the three clerks whereof record the return of all inquiſitions out of every ſhire, make all patents of cuſtomers, gaugers, comptrollers, *&c.* See CLERK.

PETTY *fogger* *, a little, ſtickling, ſolicitor, or jobber in law diſputes, without either ſkill or conſcience.

* The word is formed from the French, *petit*, little; and the Saxon, *fogere*, ſuiter, or woer.

PETTY, or PETIT *larceny*, in law, ſmall theft; or the ſtealing of things under the value of twelve-pence. See LARCENY.

The puniſhment, anciently was ſometimes the loſs of an ear; ſometimes cudgelling: after Edward III. it was for a long time whipping, but is now tranſportation.

PETTY *orders*. See the article ORDERS.

PETTY *patees*, among confectioners, a ſort of ſmall pies, made of march-pane, and filled with ſweat meats.

PETTY *ſingles*, among falconers, are the toes of a hawk. See HAWK.

PETTY *tally*, in the ſea language, a competent allowance of victuals, according to the number of the ſhips company.

PETTY, or PETIT *treaſon*, in law, the crime of a ſervant's killing his maſter, a wife's killing her huſband, a child's killing his parent, or a clergyman's killing his prelate to whom he owes obedience. See TREASON.

The puniſhment of *petty treaſon* is, that the criminal ſhall be drawn on a ſledge, or hurdle to the gallows, and there hanged The puniſhment of *petty-treaſon* in a woman is the ſame with that of high-treaſon, *viz.* drawing and burning alive. See PUNISHMENT.

PETUM, *nicotiana*, or tabacco. See TOBACCO.

PEVET. See the article PIVOT.

PEVETS, in a watch, the ends of the ſpindle of a wheel in a watch.—The holes into which they run, are called *pevet holes*, See WATCH.

PEWTER, a factitious metal, uſed in domeſtick utenſils: its baſis is tin, which is converted into *pewter* by the mixture of ſix pounds of braſs, and fifteen pounds of lead, to an hundred weight of tin. See METAL.

Beſide this compoſition which makes the common *pewter*, there are others for other occaſions; compounded of tin, mixed with regulus of antimony, tin-glaſs, and copper, in ſeveral proportions. See TIN.

Pewter has occaſionally ſerved for money. In the philoſoph. tranſact. M. Putland informs us, that K. James II. turned all the *pewter* veſſels, *&c.* of the proteſtants in Ireland he could ſeize, into money; half-crowns were ſomewhat bigger than half-pence, and other pieces in proportion. See MONEY and COIN. He ordered it to be current in all payments: whence, our author obſerves, people abſconded for fear of being paid their debts: he mentions crown-pieces of this metal, with this legend on the rim, *melioris teſſera fati.*

PHÆNOMENON*, ΦΑΙΝΟΜΕΝΟΝ, in phyſics, an extraordinary appearance in the heavens, or on earth; either diſcovered by obſervation of the cæleſtial bodies, or by phyſical experiments: and whoſe cauſe is not obvious. See OBSERVATION, EXPERIMENT, *&c.*

* The word is formed from the Greek φαινω, I appear.

Such are meteors, comets, uncommon appearances of ſtars, and planets, earthquakes, *&c.* ſuch alſo are the effects of the magnet, phoſphorus, *&c.* See METEOR, COMET, STAR, PLANET, EARTHQUAKE, MAGNET, *&c.*

The *phænomena* of comets are inconſiſtent with the ſolidity of the heavens, ſuppoſed in the ptolemaic hypotheſis and with the plenitude of the heavens aſſerted by the carteſians. See PTOLEMAIC, PLENUM, *&c.*

That hypotheſis is beſt which ſolves moſt *phænomena*. See HYPOTHESIS.—Sir Iſ. Newton ſhews, that all the *phænomena* of the heavenly bodies follow from the attraction of gravity, which intercedes thoſe bodies; and almoſt all the *phænomena* of the leſſer bodies from the attraction and repulſion between their particles: ſo ſimple is nature. See GRAVITATION, ATTRACTION, COHESION, PARTICLE, *&c.*

Parallax of a PHÆNOMENON. See PARALLAX.

PHAGEDÆNA*, in chirurgery, *&c.* a deep, bloated ulcer, which eats, and corrodes the neighbouring parts. See ULCER.

* The word is Greek, φαγεδαινα, formed of φαγειν, to eat.

PHAGEDÆNIC *medicines*, ſuch as are uſed to eat off fungous, or proud fleſh. See EPULOTIC, SARCOTIC, CAUSTIC, *&c.*

PHAGEDÆNIC *ulcer*. See PHAGEDÆNA, and ULCER.

The ephemerides of the academy of the *curioſi naturæ*, relate that *phagedænic* ulcers have been frequently cured with ſheeps dung.

PHAGEDÆNIC *water*, in chymiſtry, denotes a water drawn from quick-lime; ſo called from its efficacy in the cure of *phagedænic* ulcers. See LIME, and WATER.

To prepare this water; they put two pounds of freſh quick lime in a large earthen-pan, and pour upon it about ten pounds of rain-water; theſe they let ſtand together two days ſtirring them frequently: at laſt leaving the lime to ſettle well, they pour off the water by inclination, filtrate it, and put it up in a glaſs bottle, adding to it an ounce of corroſive ſublimate in powder; which, of white becomes yellow, and ſinks to the bottom of the veſſel. The water being ſettled, is fit for uſe, in the cleanſing of wounds and ulcers, and to eat off ſuperfluous fleſh: eſpecially in gangrenes; in which caſe may be added a third or fourth part of ſpirit of wine. See GANGRENE.

PHALANX, ΦΑΛΑΓΞ, in antiquity, a huge, ſquare, compact battalion, formed of infantry ſet cloſe to one another, with their ſhields joined, and pikes turned croſs-ways; inſomuch that it was almoſt impoſſible to break them.

It conſiſted of eight thouſand men: Livy ſays, that this ſort of battalion was invented by the Macedonians, and that it was peculiar to them; whence, among writers, it is ſometimes called the *Macedonian phalanx.*

St. Evremont obſerves, that the Macedonian *phalanx* had the advantage of valour and ſtrength over the Roman legion. See LEGION.

PHALANX, PHALANGES, is alſo applied by anatomiſts, to the three rows of ſmall bones which form the fingers. See FINGER.

The uppermoſt *phalanx* next the wriſt is the longeſt and largeſt; the ſecond leſs, but longer and larger than the third *phalanx*.

PHALEUCUS, or PHALÆCIUS, in poetry, a kind of verſe, in uſe among the Greeks and Latins; conſiſting, like the ſaphic, of five feet, the firſt a ſpondee, the ſecond a dactyl, the three laſt trochees. See VERSE, FOOT, SPONDEE, *&c.*

The *phaleucus* is very proper for epigrams. Catullus excelled in it. Its author is not known.

PHALLICA, ΦΑΛΛΙΚΑ, in antiquity, feaſts, or ſacrifices celebrated at Athens, in honour of Bacchus. See FEAST.

The *phallica* were inſtituted on the following occaſion: one Pegaſus, a citizen of Eleutheris, having carried ſome ſtatues of Bacchus to Athens; drew the laughter and contempt of the Athenians.—Soon after, this people were ſeized with an epidemic diſeaſe; and upon conſulting the oracle how to get free of it, were anſwered that there was no way but to receive Bacchus in pomp: they did it, and thus inſtituted the *phallica*; wherein, beſides the ſtatues and trophies of the god, they bore figures of the parts affected tied to thyrſi.

PHALLOPHORI*, ΦΑΛΛΟΦΟΡΟΙ, in antiquity, a name given at Sicyon to certain mimes, who ran about the ſtreets ſmutted with black, cloathed in ſheeps ſkins, bearing baſkets full of various herbs, ar chervil, branca urſina, violet, ivy, *&c.*

* The word is formed from the Greek, φαλλος, a pole, at the end of which was faſtened the figure of a human penis made of leather; and φερω, I bear.

They danced in cadence and were crowned with ivy, in honour of Bacchus: carrying the phallus before them as the enſign of their office.

PHANATIC, PHANATICUS, a viſionary; one who fancies, or thinks, he ſees ſpectres, ſpirits, apparitions, or other imaginary objects, even when awake; and takes them to be real. See PHANTASY and FANATIC.

Such are phrenetics, necromancers, hypocondriac perſons, lycanthropi, *&c.* See PHRENETIC, HYPOCHONDRIAC, LYCANTHROPY, *&c.* See alſo WITCHCRAFT, IMAGINATION, *&c.*

Hence the word is alſo applied to enthuſiaſts, pretenders to revelation, new lights, prophecies, *&c.* See ENTHUSIAST.

PHANTASM, ΦΑΝΤΑΣΜΑ, PHANTOM, a ſpecies of an object perceived by an external ſenſe, and retained in the phantaſy. See SPECIES and PHANTASY.

PHANTASTIC, in muſick.—PHANTASTIC *ſtyle*, is a free, eaſy manner of compoſition; proper for inſtruments. See STYLE, and COMPOSITION.

PHANTASTICAL *colours*, is a denomination given by the peripateticks to thoſe colours exhibited by the rainbow, or a priſm; as ſuppoſing them not to be real colours, but only phantoms or deceptions of the ſight. See COLOUR.

But many experiments of the moderns, and particularly thoſe of Sir Iſaac Newton, demonſtrate the contrary; and prove them as real as any other colours in nature. See PRISM, and RAIN-*bow*.

PHANTASY, or FANCY, the *imagination*; the ſecond of the powers, or faculties of the ſenſitive or rational ſoul; by which the ſpecies of objects received by the common ſenſe, are retained, recalled, further examined, and either compounded, or divided. See IMAGINATION.

Others define the *phantaſy* to be that internal ſenſe or power, whereby the ideas of abſent things are formed, and preſented to the mind, as if they were preſent. See SENSE.

The ſeat or organ of this ſenſe is vulgarly ſuppoſed to be the middle part of the brain; and its objects, all the ſpecies communicated to it by the common ſenſe, by the comparing of which it frames infinite others to itſelf. See IMAGE.

In melancholic, and mad men this faculty is very ſtrong, repreſenting many extravagant and monſtrous things; and framing its images as lively as thoſe of ſenſation: whence the viſions and deceptions thoſe perſons are liable to. See PASSION, DELIRIUM, MANIA, *&c.*

In poets and painters, that ſame faculty is to be the predominant one; to enable them to feign, and purſue and execute their fictions or fables with more ſtrength, conſiſtency, *&c.* See FABLE, POETRY, *&c.*

In men it is ſuppoſed to be ſubject to reaſon, but in brutes it has no ſuperiour: this being the *ratio brutorum*, or what we call reaſon in brutes. See REASON, and BRUTE.

The *phantaſy* is free from the ligature, or ſuſpenſion of ſleep; witneſs our dreams, *&c.* See SLEEP and DREAM.

Some philoſophers uſe the word *phantaſy* in a more general ſignification, *viz.* for what we uſually call *ſenſus communis*, the common ſenſe. See *common* SENSE, and SENSORY.

PHARISEES, a celebrated ſect among the antient Jews; ſo called, ſay ſome, becauſe ſeparated from the reſt by the auſterity of their life, by their profeſſing a greater degree of holineſs, and a more religious obſervation of the law.

* This is the import of the word *pharis*, in the Hebrew, or rather Chaldee tongue; whence is formed the Greek Φαρισαιος, and the Latin *phariſæus*.—St. Jerom, and ſeveral of the Rabbins maintain this etymology; which is very agreeable to the ſtate and character of the *phariſees*; who were not only diſtinguiſhed from the reſt by their manner of life, but by their habit.

It is very difficult to fix the preciſe origin of the *phariſees*. The jeſuit Serrarius places their firſt riſe about the time of Eſdras; becauſe it was then the Jews firſt began to have interpreters of their traditions. Maldonat, on the other hand, will not have this ſect to have roſe among the Jews, till a little before the time of Chriſt. Others, perhaps with more probability, refer the origin of the *phariſees* to the time of the Maccabees.

Be this as it will, *phariſaiſm* is ſtill the prevailing doctrine in the Jewiſh religion; that huge number of traditions in the Talmud which bear ſo great a ſway among the Jews, coming all from the *phariſees*. See TRADITION and TALMUD.

Joſephus, who deſcribes their dogmata, ſays, that they attributed all to deſtiny, and to God; ſo, however, as not to deprive man of his free agency; which Sixtus of Sienna thus explains: The *phariſees* believed that all things were done by deſtiny, *i. e.* with God's foreknowledge, and in conſequence of his immutable decree; the will of man ſtill remaining free and unaffected: *fato, hoc eſt Dei præſcientia & immobili decreto omnia geri; manente tamen libero humanæ libertatis aſſenſu.*

They owned the immortality of the ſoul, and a future ſtate; but admitted at the ſame time a kind of metempſychoſis, or tranſmigration of ſouls. See METEMPSYCHOSIS.

The *phariſees* were great ſticklers for the allegorical or myſtical ſenſe of the ſcriptures; whence moſt of the converts made to chriſtianity among the Jews were of the *phariſees*. See Allegory, *&c.*

In effect, the *phariſees* were in every thing directly oppoſite to the ſadducees. See Sadducees.

PHARMACEUTICA, ΦΑΡΜΑΚΕΥΤΙΚΗ, that part of phyſick which directs the preparation, and application of medicines. See Pharmacy.

PHARMACOLOGY, a treatiſe of medicines; of the art of preparing them, judging of them, *&c.* See Pharmacy.

PHARMACOPOEIA, a diſpenſary; or a treatiſe deſcribing the preparations of the ſeveral kinds of medicines, with their uſes, manner of application, *&c.* See Dispensary.

* The word is formed from the Greek φαρμακον, remedy, and ποιειν *facere*, to make.

We have various *pharmacopœia's*; as thoſe of Bauderon, Quercetan, Zwelfer, Charas, Bates, Salmon, Lemery, *&c.*—The lateſt, and moſt rational, and that in moſt eſteem, is Quincy's *pharmacopœia officinalis & extemporanea*.

PHARMACOPOLA, or *pharmacopœius*, an *apothecary*; or a perſon who prepares, and ſells medicines. See Apothecary.

* The word is ſeldom uſed but by way of ridicule. It is formed from the Greek φαρμακον and πωλειν, *vendere*, to ſell.

PHARMACUM, ΦΑΡΜΑΚΟΝ, a medicament, or medicine; whether of a ſalutary, or poiſonous quality. See Medicine and Poison, and Tetrapharmacum.

PHARMACY*, ΦΑΡΜΑΚΕΙΑ, that branch of medicine which teaches the choice, preparation, and mixture of medicines. See Medicine.

* The word is derived from the Greek φαρμακον, remedy.

Pharmacy is divided into galenical and chymical.

Galenical Pharmacy, called alſo ſimply *pharmacy*, is that derived to us from the ancients; conſiſting in the knowledge, and management of the ſeveral parts of the materia medica, now in the hands of the apothecaries. See Galenical.

Chymical Pharmacy, called alſo *ſpagyrical* and *hermetical*, is that introduced by Paracelſus, who calls it *ars diſtillatoria*; conſiſting in the reſolving of mixed bodies, into their component parts, in order to ſeparate the uſeleſs and ill, and collect and exalt the good. See Chymistry.

One of the chief obſtacles in the way of the improvement of phyſic, is the phyſicians neglecting of *pharmacy*.—Simples, vulgar, familiar, eaſily prepared, readily procured ſimples, Pliny well obſerves, were the only remedies intended by nature: when fraud was got into the world, and men began to live by their wits, ſhops were ſoon ſet up; and life offered every man to ſale. Straight, innumerable compoſitions; endleſs, inexplicable mixtures, are cryed up; Arabia and India are crouded into a draught; and a plaiſter for a little ulcer fetched from the red ſea. Whenas the proper remedies are thoſe the poor every day feed on.—*Hiſt. Nat. lib.* 24. *c.* 1.

Characters in Pharmacy. See Character.

PHAROS, Phare, a *light-houſe*; a pile raiſed near a port, where a fire is kept burning in the night to guide, and direct veſſels near at hand.

The *pharos*, of Alexandria, built in a ſmall iſland at the mouth of the Nile, was anciently very famous, inſomuch as to communicate its name to all the reſt—the Coloſſus of Rhodes ſerved as a *pharos*.

Ozanam ſays, *pharos* anciently ſignified a ſtreight; as the *pharos* or *pharo* of Meſſina. See Streight.

PHARSANG, or Parasang. See Parasang.

PHARYNX, ΦΑΡΥΓΞ, in anatomy, the upper opening of the oeſophagus or gullet, ſituate at the bottom of the mouth; and called alſo *fauces*. See Oesophagus and Mouth.

The *pharynx* is that part more particularly called the *gula*, or gullet; in which the action of deglutition commences; and where it is chiefly performed.

It is aſſiſted by three pair of muſcles which chiefly compoſe the *pharynx*. See Deglutition.—The firſt called the *ſtylopharyngæus* ſerves to draw up and dilate the *pharynx*: the ſecond the *pterygopharyngæus* ſerves to conſtringe it: the third, which is called the *oeſophagæus* ſerves to cloſe it; ſee each under its proper article, Stylopharyngæus, *&c.*

PHASES*, ΦΑΣΕΣ, in aſtronomy, the ſeveral appearances, or quantities of illumination of the moon, venus, mercury, and the other planets; or the ſeveral manners wherein they appear illuminated by the ſun. See Planet.

* The word is formed from the Greek φαινω, I appear, I ſhine upon.

The variety of *phaſes* in the moon is very remarkable: ſometimes ſhe increaſes, ſometimes wanes, ſometimes is bent into horns, and again appears like a ſemi-circle, at other times is gibbous, and preſently reſumes a full circular face. See Crescent, Falcated, Gibbous, *&c.*

For the theory of the *lunar-phaſes*. See Moon.—As to the *phaſes* of venus, the naked eye does not diſcover any diverſity; but the teleſcope does: Copernicus antiently propheſied, that after-ages would find that Venus underwent all the changes of the moon; which prophecy was firſt fulfilled by Galileo, who directing his teleſcope to Venus, obſerved her *phaſes* to emulate thoſe of the moon; being ſometimes full, ſometimes horned, ſometimes gibbous. See Venus.

And Mercury does the ſame—all the difference between theſe, and thoſe of the moon, is, that when theſe are full the ſun is between them and us; whereas, when the moon is full, we are between her and the ſun. See Mercury.

Saturn puzzled the aſtronomers a long time with his ſtrange variety of *phaſes*: Hevelius and others found him; 1. Monoſpherical. 2. Triſpherical. 3. Spherico-anſated. 4. Elliptico-anſated. 5. Spherico-cuſpidated: but Huygens ſhews, that thoſe monſtrous *phaſes* are all owing to the imperfection of their teleſcopes. That great author aſſiſted by the beſt teleſcopes noted three principal *phaſes*; *viz.* Jan. 16, 1656 he was round, Octob. 13, brachiated, and Decemb. 17, 1657 anſated. See Saturn.

Phases *of comets*. See the article Comet.

To determine the Phasis *of an eclipſe for any given time.*—Find the moon's place in her viſible way for that moment; and thence, as a centre, with the interval of the moon's ſemi-diameter, deſcribe a circle. Find in like manner the ſun's place in the ecliptic, and thence, with the ſemi-diameter of the ſun deſcribe another circle: the interſection of the two circles ſhews the *phaſes* of the eclipſe, the quantity of obſcuration, and the poſition of the cuſps or horns. See Eclipse.

PHASMATA, in phyſiology, certain appearances ariſing from the various tinctures of the clouds by the rays of the heavenly luminaries, eſpecially the ſun and moon. See Meteor, Rainbow, *&c.*

Theſe are infinitely diverſified by the different figures and ſituations of the clouds and the appulſes of the rays of light, and together with the occaſional flaſhings and ſhootings of different meteors, have, no doubt, occaſioned thoſe prodigies of armies fighting in the air, *&c.* of which we have ſuch frequent accounts in moſt ſorts of writers*. V. Maccab. ii. 5. Melancth. meteor. 2. Snell. de comet. ann. 1618. See alſo Aurora *Borealis*.

* Kircher, and his imitator Schottus, have endeavoured to explain the phænomenon from the reflexion of terreſtrial objects made on opake and congealed clouds in the middle region of the air, which, according to them, have the effect of a mirrour.—So that, according to theſe authors, the armies pretended by ſeveral hiſtorians to have been ſeen in the ſkies, were no other than the reflexion of the like armies placed on ſome part of the earth. Vid. *Hiſt. Acad. R. Scienc. an.* 1726. *p.* 405, *& ſeqq.*

PHEONS, in heraldry, the barbed heads of darts, arrows, or other weapons.

Pheons are repreſented as in *Tab. Heraldry, fig.* 79.—Sable, a feſſe ermine between three *pheons*, by the name of Egerton.

PHIAL, Phiala, a ſmall thin glaſs-bottle; popularly called a *vial*. See Glass.

* The word is formed of the Greek φιαλη, which ſignifies the ſame.

PHIDITIA, or Philitia, in antiquity, feaſts celebrated with great frugality at Lacedæmon.

The *phiditia* were held in the public places, and in the open air: rich and poor aſſiſted at them alike, and on the ſame footing; their deſign being to keep up peace, friendſhip, and a good underſtanding, and equality among all the citizens great and ſmall. Bernegger ſays, they who attended at this feaſt, brought each a buſhel of flower, eight meaſures of wine, called corus, and five minæ of cheeſe, and as much figs.

The *phiditia* of the Greeks were much the ſame with the chariſtia at Rome. See Charistia.

PHILADELPHUS, ΦΙΛΑΔΕΛΦΟΣ, in antiquity, a title, or ſur-name, bore by ſeveral ancient kings; formed from the Greek φιλος friend, lover, and αδελφος brother; *q. d.* one who loves his brother, or brethren.

Ptolemy *Philadelphus* erected a library at Alexandria, and furniſhed it with 400000, others ſay 700000 volumes, by the advice, and with the aſſiſtance, of Demetrius Phalareus. See Library.

It was the ſame *Philadelphus*, that procured the Greek verſion of the books of Moſes, called the *Septuagint*. See Septuagint. Father Chamillart has a medal of the queen of Comagene, which bears the title of *Philadelpha*, without any other name.—M. Vaillant tells us that Philip king of Syria had the title *Philadelphus*.

PHILANTHROPY, ΦΙΛΑΝΘΡΩΠΙΑ, *love of mankind*; a general benevolence toward the ſpecies. See Misanthropy.

PHILAUTIA, ΦΙΛΑΥΤΙΑ, in the ſchools, *ſelf-love*; a vicious fondneſs and complaiſance for a man's ſelf.

* The word is formed from the Greek φιλος, *amicus*, and αυτος, *ipſe*.

PHILIPPICKS, Philippicæ, ΦΙΛΙΠΠΙΚΟΙ, ΛΟΓΟΙ, in literature, a name given to the orations of Demoſthenes againſt Philip king of Macedon. See Oration.

The *philippicks* are eſteemed the maſter-pieces of that great orator: Longinus quotes abundance of inſtances of the ſublime from them; and points out a thouſand latent beauties therein. In effect, that pathetic wherein Demoſthenes excelled, the frequent interrogations and apoſtrophe's wherewith he attacked the indolence of the Athenians, where could they be better employed? How much delicacy ſoever there be in the oration againſt Leptinus, the *philippicks* have yet the advantage over it, were it only on account of the ſubject, which gives Demoſthenes ſo fair a field to diſplay his chief talent, we mean with Longinus, that of moving and aſtoniſhing.

Dionyſius Halicarnaſſeus ranks the oration on the Halonese among the *philippicks*, and places it the eighth in order; but though the authority of that great critic be of no ſmall weight;

yet, that force and majeſty whereby Cicero characteriſes the *philippicks* of Demoſthenes ſeems to exclude the oration on the Haloneſe out of the number; and authoriſe the almoſt univerſal opinion of the learned, who reject it as ſpurious.

Libanius, Photius, and others, but above all the languidneſs of the ſtyle, and the lowneſs of the expreſſions which reign throughout the whole, father it on Hegeſippus.

M. Tourreil has given an excellent French tranſlation of the *philippicks* of Demoſthenes.—It is an extraordinary thing to ſee ſo much ſpirit in a tranſlation: ſo much of the ſtrength and energy of Demoſthenes, in a modern tongue; and that too ſo weak a one as the French.

PHILIPPICK is alſo applied to the fourteen orations of Cicero againſt Marc Anthony.—It was Cicero himſelf that gave them this title in his epiſtles to Brutus; and poſterity have found it ſo juſt that it has been perpetuated to our times.

Juvenal calls the ſecond the *divine philippick*, and witneſſes it to be of great fame, *conſpicuæ divina philippica famæ*. That orator's entitling his laſt and moſt valued orations after the *philippicks* of Demoſthenes, ſhews the high opinion he had of them.

Cicero's *philippicks* coſt him his life; Marc Anthony having been ſo irritated with them, that when he was arrived at the triumvirate, he procured Cicero's murther, cut off his head, and ſtuck it up in the very place whence the orator had delivered the *philippicks*.

PHILIPPISTS, a ſect or party among the Lutherans; the followers of Philip Melanchthon. See LUTHERANISM.

That reformer having ſtrenuouſly oppoſed the Ubiquiſts, who aroſe in his time; and the diſpute growing ſtill hotter after his death: the univerſity of Wittemberg, who eſpouſed Melanchthon's opinion, were called by the Flacians, who attacked it, *Philippiſts*. See UBIQUIST.

PHILITIA See the article PHIDITIA.

PHILIZERS, or FILAZERS. See FILAZER.

PHILO, a term originally Greek, formed of φιλος, *amicus*, friend, lover; uſed in compoſition in ſeveral words in our language. As,

PHILELEUTHERUS*, ΦΙΛΕΛΕΥΘΕΡΟΣ, a lover of liberty.

* The word is formed of φιλος, and ελευθερος, *liber*, free.

PHILOLOGY*, ΦΙΛΟΛΟΓΙΑ, a ſcience, or rather aſſemblage of ſeveral ſciences, conſiſting of grammar, rhetoric, poetry, antiquities, hiſtory, and criticiſm. See SCIENCE.

* The word is formed from the Greek φιλος, and λογος, *q.d.* lover of diſcourſe.

Philology, is a kind of univerſal literature, converſant about all the ſciences, their riſe, progreſs, authors, *&c.* See POLYMATHY.

Philology, makes what the French call the *belles lettres*. In the univerſities it is alſo called *humanities*, or *humaniores litteræ*. Anciently, *philology* was only a part of grammar. See GRAMMAR and GRAMMARIAN.

Eratoſthenes, library keeper at Alexadria; was the firſt who bore the ſplendid title of *philologus*, according to Suetonius; or that of *critick*, according to Clemens Alexandrinus. He lived under Ptolemy Philaldephus, and died in the 146th olympiad. See CRITICISM.

PHILOMATHES*, ΦΙΛΟΜΑΘΗΣ, a lover of learning, or ſcience. See SCIENCE, KNOWLEDGE, *&c.*

* The word is formed from the Greek φιλος, lover, and μανθανω, *diſco*, I learn.

PHILONIUM, in pharmacy, an opiate, or electuary, whereof there are two kinds, the Roman and the Perſian. See OPIATE.

The Roman, called alſo the great *philonium*, took its name from the phyſician Philo who invented it. It conſiſts of the ſeeds of henbane, pepper, opium, and other ingredients. It is uſed to promote ſleep, againſt colds, colicks, *&c.*

The Perſian *Philonium* conſiſts of ſeveral ingredients, among which are opium, terra ſigillata, lapis hæmatites, caſtor, and ſaffron. It is uſed to ſtop hæmorrhages, dyſenteries, *&c.*

PHILOPATOR*, ΦΙΛΟΠΑΤΩΡ, in antiquity, a title, or ſurname, aſſumed by ſeveral of the kings of Egypt, and Syria: importing, lover of one's father.

* The word is formed from the Greek φιλος, lover, and πατηρ, father.

Ptolemy *Philopator* ſucceeded Ptolemy Euergetes; and had for his ſucceſſor Ptolemy Philometer. See EUERGETES.—The Syrians had their Seleucus *Philopator*, Antiochus *Philopator*, *&c.*

PHILOSOPHER, ΦΙΛΟΣΟΦΟΣ, a perſon well verſed in philoſophy; or who makes profeſſion of, or applies himſelf to the ſtudy of nature, and morality. See PHILOSOPHY.

The ſects of *Philoſophers* are very numerous; and their dogmata or tenets very contradictory. See SECT.

Helmont, and ſome of the chymiſts, denominate themſelves *philoſophers by fire*. See CHYMISTRY.

The alchymiſts and adepti are frequently denominated *the philoſophers*, by way of eminence. See ALCHYMIST, *&c.*

PHILOSOPHERS *Lotion*. See the article LOTION.

PHILOSOPHERS *Stone*, the great object of alchymy, is a long-ſought-for preparation, which is to tranſmute or exalt impurer metals, as tin, lead, and copper, into gold and ſilver. See TRANSMUTATION.

There are three ways whereby the alchymiſts have attempted to arrive at the making of gold: the firſt, by ſeparation; for every metal yet known, contains ſome quantity of gold: only in moſt, the quantity is ſo little that it wont defray the expence of getting it out. See METAL and GOLD.

The ſecond, by maturation; for the alchymiſts hold mercury to be the baſis and matter of all metals; that quickſilver purged from all heterogeneous bodies would be much heavier, denſer and ſimpler than the native quickſilver; and that by ſubtilizing, purifying and digeſting it with much labour, and long operations, it may be converted into pure gold. See MERCURY.

This method of maturation is only for mercury: the other metals it is ineffectual for, on two accounts: 1° becauſe their matter is not pure mercury, but has other heterogeneous bodies adhering to it: and 2° by reaſon the digeſtion whereby mercury is turned into gold would not ſucceed in other metals, in regard theſe had not been long enough in the mines. Weight is the individual and inimitable character of gold, *&c.* Now mercury has ever ſome impurities in it; and thoſe impurities are lighter than mercury. Could thoſe be purged quite out, as it does not appear impoſſible but they might; mercury would be as heavy as gold; and what is as heavy as gold is gold, or at leaſt might very eaſily be made gold. See WEIGHT.

The third method is, that of tranſmuting; or of turning of all metals readily into pure gold, by melting them in the fire, and caſting a little quantity of a certain preparation into the fuſed matter; upon which, the fæces immediately retire, are volatized and burnt, and ſo carried off; and the reſt of the maſs turned into pure gold.—Now that which works this change in the metals is called the *philoſopher's ſtone*. See TRANSMUTATION.

Whether this third method be poſſible or not is very hard to ſay? We have ſo many teſtimonies of perſons, who on all other occaſions ſpeak truth, that it is ſomewhat hard to ſay they lye in this, that they have been maſters of the ſecret. All required is, to do that by art which nature does in many years and ages. For lead and gold do but differ little in weight. Therefore there is not much in lead beſide mercury and gold. Now, if I had any body which would ſo agitate all the parts of lead, as to burn all that is not mercury therein; and had ſome ſulphur to fix the mercury; would not the maſs remaining be converted into gold? there is nothing in nature ſo heavy as lead, gold and mercury only excepted. It is evident, therefore, there is ſomething in lead that comes very near to gold. But in lead there is ſome heterogeneous matter different both from mercury and gold. If now nineteen ounces of lead be diſſolved by the fire, and eight ounces be thus deſtroyed, we ſhall have good gold; the ratio of lead to gold being as eleven to nineteen. If then the *philoſopher's ſtone* can purify the mercurial matter in lead, ſo as nothing ſhall remain but the pure mercurial body, and you can fix and coagulate this, by means of ſulphur, out of nineteen ounces of lead, you will have eleven of gold. Or, if you reduce the lead from eleven to fourteen, you will then have converted it into mercury; and if you further purify this mercury from fourteen to nineteen, you will have gold; provided you have but a ſulphur to fix and coagulate it withal. Such is the foundation of the *philoſopher's ſtone*; which the alchymiſts contend to be a moſt ſubtile, fix'd, concentrated fire, which as ſoon as it melts with any metal, does by a magnetic virtue immediately unite itſelf to the mercurial body of the metal, volatilizes and cleanſes off all that is impure therein, and leaves nothing but a maſs of pure gold. See ELIXIR, PROJECTION, METAL, MERCURY, *&c.*

PHILOSOPHERS *Tree*, a chymical preparation, called alſo *arbor dianæ*, *diana's tree*. See ARBOR *Dianæ*.

PHILOSOPHICAL, ſomething that relates to *philoſophy*. See PHILOSOPHY and PHILOSOPHER.

Thus we ſay a *philoſophical* theſis, a *philoſophical* principle, a *philoſophical* definition, *&c.*

PHILOSOPHICAL *Æther*. See ÆTHER.

PHILOSOPHICAL *Criticiſm*. See CRITICISM.

PHILOSOPHICAL *Egg*, among the chymiſts, is a thin glaſs body, or bubble, of the ſhape of an egg; with a long neck or ſtem; uſed in digeſtions. See DIGESTION.

PHILOSOPHICAL *Month*,	See	MENSRTUM, MONTH.
PHILOSOPHICAL *Tranſactions*,		TRANSACTIONS.
PHILOSOPHICAL *Tree*,		TREE.

PHILOSOPHIZING, the act of conſidering ſome object of our knowledge, examining its properties, and the phænomena it exhibits, enquiring into their cauſes or effects, and the laws thereof; the whole conducted according to the nature and reaſon of things, and directed to the improvement of knowledge. See SCIENCE, METHOD, KNOWLEDGE, TRUTH, *&c.*

Rules of PHILOSOPHIZING, *regulæ* PHILOSOPHANDI, as eſtabliſhed by ſir Iſaac Newton, are; 1. That no more cauſes of a natural effect be admitted than are true, and ſuffice to account for the phænomena thereof.

This agrees with the ſentiments of moſt philoſophers, who hold that nature does nothing in vain; and that it were vain to do that by many things which might be done by fewer.

2. Natural effects, therefore, of the ſame kind, proceed from the ſame cauſes. Thus *e. gr.* the cauſe of reſpiration is one and the ſame in man and brute; the cauſe of the deſcent of a ſtone, the ſame in Europe as in America; the cauſe of light the ſame in culinary fire, and in the ſun; the cauſe of reflection the ſame in the planets as the earth.

3. Thoſe qualities of bodies which are not capable of being heightened, and remitted, and which are found in all bodies where experiments can be made; muſt be looked on as univerſal qualities of all Bodies. See QUALITY.

Thus the extenſion of body is only perceived by our ſenſes, nor is it perceived in all bodies: but ſince it is found in all that we have perception of, it may be affirmed of all. So we find that ſeveral bodies are hard; and argue that the hardneſs of the whole only ariſes from the hardneſs of the parts: whence we infer that the particles, not only of thoſe bodies which are ſenſible, but of all others, are likewiſe hard. Laſtly, If all the bodies about the earth gravitate towards the earth, and this according to the quantity of matter in each; and the moon gravitates towards the earth, alſo, according to its quantity of matter, and the ſea again gravitates towards the moon; and all the planets and comets gravitate towards each other: it may be affirmed univerſally, that all bodies in the creation gravitate towards each other.—This rule is the foundation of all natural *philoſophy*. See PHYSICS, GRAVITY, NEWTONIAN, *&c.*

PHILOSOPHY, ΦΙΛΟΣΟΦΙΑ, the knowledge, or ſtudy of nature and morality, founded on reaſon and experience. See KNOWLEDGE.

Philoſophy owes its name to the modeſty of Pythagoras, who refuſed the titles, σοφος, *wiſe*, given to his predeceſſors, Thales, Pherecydes, *&c.* as too aſſuming; and contented himſelf with the ſimple appellation of φιλοσοφος, *quaſi*, φιλος της σοφιας, a friend, or lover of wiſdom.

Chauvin rather derives the name from φιλια, deſire or ſtudy, and σοφια, *q. d. ſtudium ſapientiæ*: Pythagoras conceiving, that the application of the human mind, ought rather to be called *ſtudy* than *ſcience*, ſet aſide the appellation *wiſe*, and in lieu thereof took that of *philoſopher*.—For having diſcourſed with great judgment and learning before Leontius king of the Phliaſii, that prince aſked him what art he profeſſed; or in what points his wiſdom chiefly lay? To which he anſwered, that he neither underſtood any art, nor was he σοφος, but φιλοσοφος. Which title St. Auguſtin obſerves, took ſo well with other authors, that whoever excelled in any thing relating to wiſdom or knowledge had no other appellation. Accordingly Socrates, Plato, *&c.* ever refrained from the ſwelling titles of *ſophos*. See SOPHIST.

PHILOSOPHY, is a term uſed in various ſignifications among ancient, and modern writers. In its laxer ſenſe, it ſignifies the love of truth: thus, Plato frequently calls it *philaletheia*. See TRUTH. In other places it ſignifies the knowledge of many things: thus, Zeno calls *philoſophy*, καταληψις, comprehenſion; becauſe comprehending all truth.—Agreeable to which, is Cicero's definition of philoſopher, that he is one who ſtudies to know the natures, and cauſes of all things human, and divine, and to attain to every good rule, and method of life.

PHILOSOPHY, in a narrower ſenſe, is frequently confined to ſome one ſcience, or branch of ſcience: *v. gr.* to Logic, as we find it in Plato, and Ariſtotle.—To Phyſics, or the knowledge of nature: in which ſenſe it was chiefly uſed in the Ionic ſchool.—And to Ethics, or the rules of morality: thus it is Clemens of Alexandria relates, that among the Greeks there are philoſophers who hold diſputes about virtue.

Agreeable to this laſt application, Pythagoras defines *philoſophy*, a meditation on death; by which, according to Plato and Clemens is meant an abſtraction or retirement from the body; which Apuleius thus explains: A philoſopher is to ſtudy nothing ſo much as to ſet his ſoul at liberty from its correſpondence with the body: Thus Cicero calls *philoſophy*, *ars vitæ*, and Seneca, *lex vitæ*; and thus Plutarch—conſtancy, fidelity, and a ſound mind are the real *philoſophy*; all the other parts of wiſdom, tending any other way, are prettineſſes and curioſities: and in this ſenſe it was, that *philoſophy* chiefly flouriſh'd in the ſchool of Socrates, afterwards called the *academic ſchool*, and among the Stoics. See ACADEMIC and STOIC.

PHILOSOPHY again is frequently uſed by Pythagoras and Plato for Metaphyſics, or the knowledge of God; which Plato calls the *true philoſophy*, others the *prima philoſophia*; and in reſpect whereof, the Platoniſts call all other *philoſophy*, *nocturnal*, νυκτελιη φιλοσοφια. See METAPHYSICKS and GOD.

Gale includes the ſeveral notions hitherto delivered, under this one general definition: *philoſophy* is the knowledge of things natural, moral, ſupernatural and notional, firſt granted by God to our firſt parents, and tranſmitted to us, for the honour of the Creator, and the good of the univerſe. See KNOWLEDGE.

That definition of Epictetus is alſo pretty comprehenſive: *philoſophy* conſiſts in three things; the practice of precepts, the reaſon of precepts, and the proof of precepts.

Some have given the following appellations to the ancient *philoſophy*, under its ſeveral ſtages: *Philoſophy*, ſay they, became *impious* under Diagoras; *vicious* under Epicurus; *hypocritical* under Zeno; *impudent* under Diogenes; *covetous* under Demochares; *voluptuous* under Metrodorus; *fantaſtical* under Crates; *ſcurrilous* under Menippus; *licentious* under Pyrrho; *quarrelſome* under Cleanthes, *&c.*

The ſeveral dogmata maintained by the ſeveral philoſophers, are infinite: Cicero makes no ſcruple to aver, that there is nothing in the world, how abſurd ſoever, but has been maintained by one *philoſopher* or other.

From the firſt broachers of new opinions, and the firſt founders of ſchools, *philoſophy* is become divided into innumerable ſects: ſome ancient, others modern: ſuch are the Platoniſts, Peripateticks, Epicureans, Stoicks, Pyrrhonians and Academicks; and ſuch are the Carteſians, Newtonians, *&c.* See the riſe, doctrines, *&c.* of each ſect, under its proper article, PLATONIST, PERIPATETIC, EPICUREAN, STOIC, PYRRHONIAN, ACADEMIC, CARTESIAN, NEWTONIAN, *&c.*

Philoſophy may be divided into two branches, or conſidered under two habitudes, *Theoretical* and *Practical*.

Theoretical, or *Speculative* PHILOSOPHY, is that employed in mere contemplation, and which terminates therein.—Such is Phyſics, which is a bare contemplation of nature, and natural things. See PHYSICKS.

Theoretical philoſophy, again, is uſually ſubdivided into three, *viz.* Pneumatics; Phyſics, or Somatics; and Metaphyſics, or Ontologia.

The firſt conſiders being, abſtracted from all matter, its object are ſpirits, their natures, properties, effects, *&c.* See SPIRIT and PNEUMATICKS.

The ſecond conſiders matter and material things; its object are bodies, their properties, laws, *&c.* See BODY and PHYSICS.

The third extends to each indifferently; its object are either body or ſpirit. See METAPHYSICS.

In the order of our diſcovery, or arrival at the knowledge of them, Phyſics is firſt, then Metaphyſics; the firſt ariſes from the two conſidered together: after an acquaintance with God, ourſelves, and natural bodies, we come to conſider what is common to them all, or the attributes that agree to all; and thus form a ſort of univerſal *philoſophy*, or doctrine *de ente* in general. See ONTOSOPHY, ENS, ESSENCE, *&c.*

But in teaching, or laying down theſe ſeveral branches to others, we obſerve a contrary order; beginning with the moſt univerſal, and deſcending to the more particular. And hence we ſee why the Peripatetics call Metaphyſics, and the Carteſians Pneumatics, the *prima philoſophia*.

Others prefer the diſtribution of *philoſophy* into four parts, *viz.* 1. Pneumatics, which conſiders, and treats of ſpirits. 2. Somatics, of bodies. The third compounded of both, Anthropology, which conſiders man, in whom both body and ſpirit are found. The 4. Ontoſophy, which treats of what is common to all the other three.

Practical PHILOSOPHY, is that which lays down the rules of virtuous and happy life; and excites us to the practice thereof.

Practical philoſophy, is properly Ethics, alone, or the method of leading a virtuous and happy life.—Yet moſt authors divide it into two, anſwerable to the two ſorts of human actions to be directed thereby, *viz.* 1° Logics, which govern the operations of the underſtanding. See LOGICS and UNDERSTANDING.

2° Ethics, properly ſo called, which direct thoſe of the will. See ETHICKS, WILL, and MORALITY.

Natural PHILOSOHHY.	See the articles	NATURAL.
Moral PHILOSOPHY.		MORAL.

PHILOSOPHY is alſo frequently uſed for the particular doctrine, or ſyſtem of opinions, broached by ſome conſiderable philoſopher, and eſpouſed and adhered to by his followers. See SYSTEM and HYPOTHESIS.

In this ſenſe we ſay the

Ariſtotelian	PHILOSOPHY. See	PERIPATETIC.
Carteſian		CARTESIAN.
Epicurean		EPICUREAN.
Hermetical		HERMETICAL.
Newtonian		NEWTONIAN.
Platonic		PLATONIC.
Socratic		SOCRATIC.

PHILOSOPHY is alſo uſed for a certain manner of philoſophizing; or certain principles, upon which all the enquiries thereby made, do turn. See PHILOSOPHIZING.

In this ſenſe we ſay,

Corpuſcular or *Atomical* PHILOSOPHY.	See	CORPUSCULAR, and ATOMICAL.
Mechanical PHILOSOPHY.		MECHANICAL.
Experimental PHILOSOPHY.		EXPERIMENTAL.

PHILOSOPHY, again, is conſidered with regard to the age, or the place wherein it was taught.

In this ſenſe we ſay

Scholaſtic or *School* PHILOSOPHY. See SCHOLASTIC.

New PHILOSOPHY, *&c.* See EXPERIMENTAL, MECHANICAL, *&c.*

PHILTER. PHILTRE, PHILTRUM, in pharmacy, *&c.* a ſtrainer, or filter. See FILTER.

PHILTER*, ΦΙΛΤΡΟΝ, is alſo uſed for a drug, or preparation, which it is pretended will excite love. See CHARM.

* The word is formed from the Greek, φιλεω, I love, or φιλος, lover.

Philters, are diſtinguiſhed into true and ſpurious: the ſpurious are ſpells or charms, ſuppoſed to have an effect beyond the ordinary laws of nature, by ſome magick virtue; ſuch are thoſe ſaid to be given by old women, witches, *&c.* See MAGIC and WITCHCRAFT.

The true *philters* are thoſe ſuppoſed to work their effect by ſome natural, and magnetical power.—There are many grave authors who believe the reality of theſe *philters*; and alledge matter of fact in confirmation of their ſentiments: among the reſt, Van-Helmont, who ſays, that upon holding a certain herb in his hand for ſome time, and taking afterwards a little dog by the foot with the ſame hand, the dog followed him wherever he went, and quite deſerted his former maſter.

He adds that *philters* only demand a conformation of mumia; and on this principle accounts for the phænomena of love tranſplanted by the touch of an herb; for, ſays he, the heat communicated to the herb, not coming alone, but animated by the emanations of the natural ſpirits, determines the herb towards the man, and identifies it to him: having then received this ferment, it attracts the ſpirit of the other object magnetically, and gives it an amorous motion. See MUMIA and TRANSPLANTATION.—But this is mere cant; and all *philters*, whatever facts may be alledged, are mere chimera's.

Naturaliſts aſcribe an effect ſomewhat of kin to that of a *philter* to cantharides taken inwardly; theſe, it is true, tend to excite love, or rather luſt: but it is luſt in the general, not determined to any particular object; and they do it no otherwiſe than by irritating the fibres of the nerves and muſcles, by whoſe action the emiſſio ſeminis is effected. See CANTHARIDES.

PHILTRATION, or FILTRATION, the ſeparation of the finer parts of a fluid, from the coarſer; by paſſing it through a filter, *viz.* a linnen cloth, ſhammy ſkin, brown paper, or the like. See FILTRATION.

PHIMOSIS*, ΦΙΜΩΣΙΣ, in medicine, a diſeaſe of the penis, wherein the præputium is glued, or ſtrongly conſtringed upon the glans; ſo as not to be capable of being drawn back, to uncover the glans. See GLANS, PREPUCE, and PARAPHIMOSIS.

* The word is Greek, and properly ſignifies a ligature with packthread, φιμωσις denoting packthread.

Sometimes a *phimoſis* conceals ſhankers on, or about the glans; and ſometimes is ſo violent as to prevent the flowing out of the matter, whence it cauſes an inflammation or mortification of the part.

The cure of a paraphimoſis in no wiſe differs from that of a *phimoſis*, except in the uſe of injections; and in both caſes, if they ſtill prove obſtinate, the prepuce muſt be cut, in order to reduce it to its natural ſtate or ſituation. See PARAPHIMOSIS.

PHIMOSIS, is alſo uſed for a diſeaſe of the eyes, wherein the eyelids are ſo bound together by the mediation of ſome glutinous matter, as not to be opened.

PHLEBOTOMY*, ΦΛΕΒΟΤΟΜΙΑ, in medicine and chirurgery, *bleeding*; or the art, or operation of letting blood. See BLOOD.

* The word is compounded of the Greek, φλεψ, vein, and τεμνειν, to cut.

Phlebotomy is a ſpecies of evacuation of the utmoſt importance in medicine; an idea of its effects, with the reaſon of its uſe, may be conceived from what follows.

It is evident the blood thrown out of the heart, while it ſtrikes upon the antecedent blood, and drives it forwards, transfers to it part of its own motion, and is therefore ſo much retarded in its own motion. Hence, if blood be drawn out of the baſilic vein of the right arm; the ſucceeding blood, or that carried by the axillary artery, or right ſubclavian, will be leſs hindered in its motion, than it was before that vein was opened: for part of the blood being taken away by the opening of that vein, there remains behind a leſſer quantity in the axillary vein, or leſs is contained between the farther extremity of the axillary artery and the heart, than was before: therefore the blood being let out by the vein, the remainder in the artery will be leſs impeded in its motion than before. See PULSE.

Hence the blood of that artery which communicates with the vein that is opened, will flow with a greater velocity after the aperture is made than before. Conſequently, while the blood is flowing out of the vein in the arm, that thrown out of the heart into the aorta, will find leſs reſiſtance in the aſcending trunk, than in the deſcending; and will therefore flow faſter in the aſcending, than in the deſcending trunk: and thence too it will find leſs reſiſtance in the right ſubclavian artery than in the left.

Laſtly, it hence appears, that the blood being let out of a vein in the right arm, the remaining blood in the right axillary artery runs with a greater velocity into the artery of that arm that is contiguous to it, than through the thoracic artery, or the right ſcapulary, which is likewiſe contiguous to it; becauſe, when the blood is not ſuppoſed to be drawn out from any vein correſponding to the thoracic artery, or into which this diſcharges itſelf, there is proportionably a greater impediment to the motion of the blood in the thoracic artery, than in that of the arm. But becauſe the velocity of the blood in the ſubclavian artery, or the right axillary, is greater than in the left; the velocity in the right thoracic will alſo be greater than in the left thoracic artery. Hence it is manifeſt, that the blood being let out of a vein in the right arm; the greateſt velocity of the remaining blood will be in the artery of that arm, becauſe it immediately empties its blood into the vein that is opened; and the next greateſt velocity will be in the thoracic artery, or ſcapulary of the ſame ſide, going out from the axillary artery. But the velocity of the blood will be far leſs in the brachial, axillary, and thoracic artery on the left and oppoſite ſide; and leaſt of all in the arteries ariſing from the deſcending trunk of the aorta.

On this view it may eaſily be gathered, what is to be done in the ſeveral circumſtances of blood-letting: for inſtance, if we would prevent the increaſe of any humour from the blood ſtagnating in the left leg, or bring it about, that as little blood as poſſible, ſhould flow to that leg in any given ſpace of time; firſt, blood is to be taken from the arm or leg of the right ſide: becauſe this is truly making what is called a *revulſion*.

Again, if blood be drawn away on the ſame ſide, and from ſome vein that receives the blood from a branch of that trunk which tranſmits it to the ſwelled part; it will occaſion a greater derivation of blood to that limb.

As to what relates to the whole habit; in all lentors and viſcidities, if there be a due ſtrength and elaſticity remaining in the ſolids, *phlebotomy* will make the remaining blood circulate the faſter, and become thinner and warmer; but in a plethora, from a debauch, and too large quantities of ſpirituous nouriſhment, or from a diminution of perſpiration, where the blood yet retains its natural fluxility, *phlebotomy* will make the remaining maſs circulate ſlower, and become cooler.

In the former caſe, a diminution of the reſiſtance in the blood-veſſels, will increaſe the contractile powers of thoſe veſſels, and make them beat faſter, and circulate their contents with greater velocity; but in the latter caſe a diminution of the quantity of a ſpirituous blood will leſſen the quantity of ſpirit ſecreted in the brain, the conſequence of which will be, that the heart and arteries will not contract ſo often nor ſo ſtrongly as before, and therefore the blood will move ſlower, and become cooler. See HEART and ARTERY.—And on theſe things depend the whole doctrine of blood-letting. See EVACUATION.

PHLEGM, ΦΛΕΓΜΑ, in chemiſtry, an aqueous and inſipid fluid, ſuppoſed to be found in all natural bodies; coinciding with what the other philoſophers call *water*. See WATER.

Phlegm makes the fourth of the chemical elements, or elementary principles. See PRINCIPLE and ELEMENT.

In the diſtillation of vinegar, as alſo of all minerals and inodorous vegetables, *phlegm* comes out firſt; in that of wine laſt. See DISTILLATION.

This *phlegm* is ſuppoſed to be the common vehicle and diluter of all ſolid bodies; and in proportion to its quantity in the mixture, are the other parts more languid and diſabled in their attractions: yet, on the chemiſts principles, *phlegm* ſhould be a principle of action; as being neceſſary to the diſſolution of the ſalt in bodies, without which the ſalt muſt remain inactive. See SALT.

It is much to be queſtioned, whether this *phlegm* can ever be procured without ſome mixture of other matters, that which has the leaſt muſt come neareſt to the nature of a principle; and on that account rain-water ſhould afford it moſt.

Phlegm, Boerhaave obſerves, drawn by diſtillation from vegetables, does always carry with it ſomewhat of the ſmell of the vegetable, which it derives partly from the oil, and partly from the ſpirit reſiding therein. The ſame *phlegm*, by frequently reiterated diſtillations, lays aſide moſt of this ſmell, and approaches nearer to pure water, but never becomes perfectly ſuch. Add, that the pureſt diſtilled water, if expoſed a few days to the ſun, is much changed, and rendered turbid.

That *phlegm* is not an elementary body, Mr Boyle argues from its different powers and properties: the *phlegm* of wine, and moſt liquors, have qualities that make them differ from mere water, and from one another; the *phlegm* of vitriol, that author obſerves, is an effectual remedy againſt burns, and a valuable noſtrum for diſcuſſing hard tumours; that of vinegar will extract a ſaccharine ſweetneſs out of lead, and even diſſolve corals with long digeſtion; and that of ſugar of lead, is ſaid to diſſolve pearls.

In effect, the characters which ſerve to denominate a fluid, *phlegm*, or water, among the chemiſts, are inſipidity, and volatility; yet, quick-ſilver has all theſe, which no body pretends to be *phlegm*. Add, that it appears from ſeveral experiments, that water itſelf, by repeated diſtillations, may be converted into earth. Yet water, the ſame author obſerves, has a much fairer pretence to be an element, than any of the *tria prima*.

Add, that as to the qualities which occaſion that name to be given any viſible ſubſtance, *viz.* its being fluid, inſipid, and inodorous; we have never yet ſeen any of theſe ſeparated ſubſtances, which the chemiſts call *phlegm*, perfectly deſtitute both of taſte and ſmell.

Common ſalt, and ſeveral other ſaline bodies diſtilled ever ſo dry, will each yield a large quantity of *phlegm*; which can no other way be accounted for, but from this, that among the various operations of the fire, on the matter of a concrete, ſeveral particles of that matter are reduced to a ſhape and ſize, requiſite to compoſe ſuch a liquor as the chemiſts call *phlegm*, or water.

PHLEGM, in the animal œconomy, is one of the four humours, whereof the antients ſuppoſed the maſs of blood to conſiſt. See HUMOUR, and BLOOD.

Phlegm is the ſame that is otherwiſe called *pituita*. See PITUITA.

PHLEGMAGOGUE*, ΦΛΕΓΜΑΓΩΓΟΣ, a medicine proper to purge *phlegm*, or *pituita*. See PURGATIVE.

* The word is formed from the Greek, φλεγμα, *pituita*, and αγειν, to drive, or draw.

Agaric, hermodactyls, turbith, *&c.* are reputed *phlegmagogues*.

PHLEGMATIC, ΦΛΕΓΜΑΤΙΚΟΣ, a temperament wherein *phlegm*, or *pituita*, is the prevailing humour. See TEMPERAMENT and PHLEGM.

Phlegmatic conſtitutions are ſubject to rheums, defluxions, *&c.* See CONSTITUTION and COMPLEXION.

PHLEGMON*, ΦΛΕΓΜΟΝΗ, in medicine, a general name for all hot or inflamed tumours, formed in the fleſhy or bloody parts of the body. See TUMOR.

* The word is formed from the Greek, φλεγειν, to burn, or inflame.

An inflammation, attended with a conſiderable ſwelling of the part, conſtitutes a *phlegmon*. See INFLAMMATION.

If the blood be good, and laudable, and only peccant in quantity, it is called a *true phlegmon*.

When corrupted and adulterated with bile, or pituita, it is called a *baſtard phlegmon*; in which caſe it participates of the eryſipelas, œdema, or ſchirrus.

The blood here extravaſated produces a heat, redneſs, tenſion, renitency, pulſation, and great pain.—The bubo, carbuncle, furuncle, puſtles, and other tubercles ariſing from the blood, are all reducible to the *phlegmon*. See BUBO, CARBUNCLE, *&c.*—The ophthalmia, parotides, ſquinancy, and even pleuriſy and peripneumony, are ſpecies of the *phlegmon*. See each under its proper article OPHTHALMIA, *&c.*

PHLOGOSIS, ΦΛΟΓΩΣΙΣ, in medicine, ſometimes denotes a degree of the ophthalmia.

When the inflammation of the eye is light and gentle, it is called a *phlogoſis*; when very ſevere, *chemoſis*. See OPHTHALMIA.

PHLYACOGRAPHIA*, among the antients, a merry and burleſque imitation of ſome grave and ſerious piece; particularly a tragedy traveſtied into a comedy. See TRAVESTY.

* The word is formed from the Greek, φλυαζειν, *nugari*, to trifle, or φλυαξ, trifler, of φλυω, *nugor*.

The *phlyacography* was the ſame thing with the *hilarody*, or *hilarotragedy*. See HILARODIA, *&c.*

There were ſeveral kinds of *phlyacography*; which had their ſeveral names. See Salmaſius on Solin.

The parodies which have been made of ſome parts of the beſt poets, as the *Virgil traveſty* of Scarron, and Cotton; the *Rival queens* of Cibber, from the *Rival queens* of Lee; ſome pieces of opera's, the muſick whereof is applied to low and ridiculous words, come under the notion of *phlyacographies*.

PHLYCTÆNÆ, ΦΛΥΚΤΑΙΝΑΙ, little white itching pimples or veſiculæ, ariſing on the ſkin, chiefly between the fingers, and about the wriſt; and full of a limpid ſerum.

They ſometimes degenerate into the itch, and ſometimes into tetters. See ITCH, *&c.* They are cured like other cutaneous eruptions. See PSORA and PUSTULE.

PHLYCTÆNÆ alſo denote little ulcerous veſicles, ariſing ſometimes on the adnata, ſometimes on the cornea, of the eye, like ſo many little bladders full of water; popularly called *bliſters in the eyes*.

They appear like grains of millet; and when produced by a ſharp corroding humour, occaſion violent pain: the puſtules on the adnata are red; thoſe on the cornea blackiſh, if near to the ſurface, but whiter if deeper. They are cured by excutients and dryers.

PHLYSTÆNA, in medicine, a diſeaſe which produces bubo's, full of a ſerous humour. See BUBO.

* The word is formed from the Greek, φλυω, φλυζω, *ebullio*, I boil, bubble, *&c.*

The *phlyſtæna* is a kind of pox.—The bubo's it occaſions are ſometimes big, livid, pale, black, or any colour different from that of the natural fleſh.—When pierced, the fleſh frequently appears ulcerated under them.

They are uſually occaſioned by a hot, ſharp humour, and ariſe on all parts of the body; but are moſt dangerous on the cornea of the eye.

PHOENICIAN *Character*. See the article CHARACTER.

PHOENIGMUS*, ΦΟΙΝΙΓΜΟΣ, a medicine which produces redneſs, with bliſters, on the places it is applied to. See VESICATORY, *&c.*

* The word is formed from the Greek, φοινιξ, red.

Such are muſtard-ſeed, pepper, veſicatories, *&c.* See VESICATORY, SINAPISM, *&c.*

Phœnigma's are uſed, to draw the humour to the part they are applied on, and divert it from the part affected. See REVULSION.

PHOENIX, ΦΟΙΝΙΞ, in aſtronomy, a conſtellation of the ſouthern hemiſphere; unknown to the antients, and inviſible in our northern parts. See CONSTELLATION.

It took its name, and form, from that of a bird famous among the antients; but generally looked upon by the moderns as fabulous.

The naturaliſts ſpeak of it as ſingle, or the only one of its kind: they deſcribe it as of the ſize of an eagle; its head finely creſted, with a beautiful plumage; its neck covered with feathers of a gold colour, and the reſt of its body purple; only the tail white intermixed with carnation; and its eyes ſparkling like ſtars.—They hold that it lives five or ſix hundred years, in the wilderneſs: that when thus advanced in age, it builds itſelf a funeral pile of wood and aromatic gums; then it lights it with the waſting of its wings, and thus burns itſelf: and from its aſhes ariſes a worm, which in time grows up to be a *phœnix*. Hence the Phœnicians gave the name *phœnix* to the palm-tree, by reaſon when burnt down to the very root, it riſes again fairer than ever.

PHONASCIA*, ΦΩΝΑΣΚΙΑ, the art of forming the human voice. See VOICE.

* The word is derived from the Greek, φωνη, voice.

In antient Greece, there were combats, or conteſts, eſtabliſhed for the voice, as well as other parts of the gymnaſtice. See GYMNASTICKS.

Theſe combats continued to be held in the time of Galen; and it was theſe that brought the *phonaſcia* into vogue.

Hence the maſters of this art, and thoſe who taught the art of managing the voice, were called *phonaſci*, φωνασκοι, under whoſe tutorage were put all thoſe deſtined to be orators, ſingers, comedians, *&c.*

PHONICKS*, ΦΩΝΙΚΗ, the doctrine, or ſcience, of ſounds; otherwiſe called *acouſticks*.

* The word is derived from the Greek, φωνη, voice, ſound.

Phonicks may be conſidered as an art, analogous to opticks; and may be divided, like that, into *direct*, *refracted* and *reflected*. Theſe branches the biſhop of Ferns, in alluſion to the parts of opticks, denominates *phonicks*, *diaphonicks*, and *cataphonicks*.

Phonicks is improvable both with regard to the object, the medium, and the organ.

As to the object, ſound, it may be improved both with regard to the begetting, and the propagating of ſounds:

The firſt, in ſpeaking, or pronouncing, in whiſtling, or ſinging, or hollowing, or luring, which are all diſtinct arts and all improvable.—The ſecond by the poſition of the ſonorous body.

With regard to the medium, *phonicks* may be improved by the thinneſs and quieſcency thereof, and by the ſonorous body being placed near a ſmooth wall, either plain or arched, eſpecially cycloidally or elliptically: whence the theory of whiſpering places. See WHISPERING.

Add to theſe, that by placing the ſonorous body near water its ſound is mollified; that by placing it on a plain, the ſound is conveyed to a greater diſtance than on uneven ground, *&c.* See SOUND.

As to the organ, the ear: it is helped by placing it near a wall, (eſpecially at one end of an arch, the ſound beginning at the other;) or near the ſurface of water, or of the earth.

And by inſtruments, as the ſtentorophonicon, or ſpeaking-trumpet. See SPEAKING TRUMPET.

Alſo by an inſtrument to help weak ears, as ſpectacles do eyes; by an inſtrument to take in vaſtly remote ſounds, as teleſcopes do objects; by a microphone, or magnifying ear-inſtrument; by a polyphone or multiplying ear-inſtrument. See EAR, *&c.*

Cataphonicks, or reflected hearing, may be improved by ſeveral kinds of artificial echoes; for in general, any ſound falling either directly or obliquely, on any denſe body of a ſmooth ſurface, whether plain or arched, is beat back again, or reflected, *i. e.* does echo more or leſs. See ECHO, and HEARING.

PHONICUM *centrum.* See CENTRUM.
PHONOCAMPTICUM *centrum.* See CENTRUM.
PHOSPHORICAL *column.* See COLUMN.

PHOSPHORUS*, ΦΩΣΦΟΡΟΣ, a matter which ſhines, or even burns, ſpontaneouſly, and without the application of any ſenſible fire. See FIRE and LIGHT.

* The word is formed from the Greek, φως, light, and, φερω, I bear.

Phoſphorus is either *natural* or *artificial*.

Natural PHOSPHORI, are matters which become luminous at certain times, without the aſſiſtance of any art, or preparation. Such are the glow-worms frequent in cold countries; flies, and other ſhining inſects, in hot countries; rotten wood; the eyes, blood, ſcales, fleſh, ſweat, feathers, *&c.* of ſeveral animals; diamonds when rubbed after a certain manner; ſugar and ſulphur when pounded in a dark place; ſea-water, and ſome mineral-waters when briſkly agitated; a cat's or horſe's back, duly rubbed with the hand, *&c.* in the dark; nay, Dr. Croon tells, that upon rubbing his own body briskly with a well warmed ſhirt, he has frequently made both to ſhine; and Dr. Sloane adds, that he knows a Briſtol gentleman and his ſon, both whoſe ſtockings will ſhine after much walking.

All natural *phoſphori* have this in common, that they do not ſhine always, and that they never give any heat. See NOCTILUCA.

But that which of all natural *phoſphori* has occaſioned the moſt ſpeculation, is the

Barometrical or *mercurial* PHOSPHORUS.—M. Picard firſt obſerved that the mercury of his barometer, when ſhaken in a dark place, emitted light; with this circumſtance, that in ſhaking the mercury with rapidity, ſometimes above and ſometimes below its equilibrium with the air, the light was only ſeen when below it, where it appeared as if adhering to the upper ſurface.

But this light is not found in the mercury of all barometers, which occaſions a great difficulty.

M. Bernoulli, upon examining the circumſtances of this phænomenon, invented a ſolution of the ſame: he imagines that upon the mercury's deſcending, the vacuum in the tube increaſing, there iſſues out of the mercury to fill up this exceſs of vacuity, a very fine ſubtile matter before diſperſed throughout the pores of this mineral; and that at the ſame time there enters through the pores of the tube another finer matter: thus, the firſt matter emitted from the mercury and collected over its ſurface, ſtriking impetuouſly againſt that receiv'd from without, has the ſame effect with Des-Cartes's firſt element againſt the ſecond: that is, produces the motion of light. See LIGHT.

But why, then, is not the phænomenon common to all barometers? to this he anſwers, that the motion of the ſubtile matter out of the mercury may be weakened, and prevented by any heterogeneous matter collected on its upper ſurface into a kind of pellicle: ſo that the light ſhould never appear but when the mercury is perfectly pure.

This reaſoning was confirmed from the experiments of ſeveral barometers which he made according to this plan; but the royal academy of ſciences, who repeated experiments with barometers made after the ſame manner, did not meet with the ſame ſucceſs; the light being found in ſome, not in others.

M. Homberg therefore conjectured, that the difference conſiſted in the different qualities of the quickſilver: in ſome, he obſerved, they uſed quick-lime to purify it; in others, ſteel-filings. The mercury, then, riſing in the diſtillation, and paſſing through the lime, might take away parts thereof, capable, by their extreme ſmallneſs, to lodge in its interſtices. Hence, as quick-lime always retains ſome fiery particles, it is poſſible, in a place void of air, where they ſwim at liberty, they may produce this luſtre.

Mr. Hauksbee has ſeveral experiments on the mercurial *phoſphorus* —paſſing air forcibly through the body of quick-ſilver placed in an exhauſted receiver, the parts were violently driven againſt the ſide of the receiver, and gave all around the appearance of fire; continuing thus till the receiver was half full again of air.

From other experiments he found, that though the appearance of light was not producible by agitating the mercury in the ſame manner in the common air; yet, that a very fine medium nearly approaching to a vacuum was not at all neceſſary.

And, laſtly, from other experiments he found, that mercury encloſed in water, which communicated with the open air, by a violent ſhaking of the veſſel wherein it was encloſed, emitted particles of light in great plenty, like little ſtars.

By including the veſſel of mercury, *&c.* in a receiver, and exhauſting the air, the phænomenon was changed; and, upon ſhaking the veſſel, inſtead of ſparkles of light the whole maſs appeared one continued circle of light.

Artificial PHOSPHORI are ſuch as owe their luminous quality to ſome art, or preparation.

Of theſe there are three kinds: the firſt *burning*, which conſumes every combuſtible it touches; the other two have no ſenſible heat; called the *bononian* and *hermetic phoſphorus*.

The burning PHOSPHORUS, may be made of urine, blood, hairs, and generally of any part of an animal that yields an oil by diſtillation.—The matter it is moſt eaſily drawn from is human urine.

It is of a yellowiſh colour, and of the conſiſtence of hard wax, in the condition it is left by the diſtillation; and in this ſtate is called *phoſphorus fulgurans*, from its coruſcations; and *phoſphorus ſmaragdinus*, becauſe its light is frequently green or blue, eſpecially in places that are not very dark; and *ſolid phoſphorus* from its conſiſtence.

It diſſolves in all kinds of diſtilled oils; and in that ſtate is called *liquid phoſphorus*.

It may be ground in all kinds of fat pomatums; in which caſe it makes a luminous unguent.

So that the *phoſphorus fulgurans*, *ſmaragdinus*, *ſolid* and *liquid phoſphorus*, and *luminous unguent*, are all the ſame drug, under different circumſtances.

It was invented by Mr. Kunkel, chymiſt of the elector of Saxony; brought into France by M. Kraft, a phyſician of Dreſden, by whom it was communicated to Mr. Boyle.

In 1676, Mr. Elzholt publiſhed a treatiſe expreſly on it, at Berlin; and in 1680, Mr. Boyle publiſhed another in Engliſh under the title of *Noctiluca*. See NOCTILUCA.

M. Homberg firſt made of it at Paris in 1679, and communicated the method of preparation to the public.

Preparation of ſolid PHOSPHORUS, *or* PHOSPORUS *of urine.*—Evaporate a good quantity of urine of beer-drinkers to the conſiſtence of honey. Cover it up in an earthen veſſel, and ſet it three or four months in a cellar to ferment and putrify.—Mix a double quantity of ſand, or powder of pot-ſhards with one part of this urine; put it into a retort, fitted to a long necked receiver, with two or three quarts of water.—Diſtil it in a naked fire, in a reverberatory furnace; at firſt gently; after two hours, augment the fire gradually, till all the black fetid oil be drawn off.—Raiſe the fire to the higheſt degree; upon which white clouds will come into the receiver and fix by little and little on one ſide, in form of a yellowiſh ſkin; and another part will precipitate to the bottom in powder.—Keep the fire thus violent for three hours till no more fumes ariſe.—Let all cool, and unlooſe the veſſels; and throwing more water into the receiver, ſhake all well about, to looſen what ſticks to the ſides.—Pour the whole into a glaſs-veſſel to ſettle.

The volatile ſalt will now diſſolve in the water, and the *phoſphorus* and oil ſink to the bottom; pour off the water, and gathering the remaining matter together, put it into a glaſs-veſſel with a little freſh water; and digeſt it in a ſand-heat ſtirring it from time to time with a wooden ſpatula.

By this means the *phoſphorus* will ſeparate from the oil, and ſink to the bottom: pour off the oil, and make up the *phoſphorus*, while hot, into ſticks for uſe.

Boerhaave gives us other ways of preparing *phoſphorus*. Recent urine, he obſerves, digeſted three or four days in a tall glaſs, with a heat no greater than that of a healthy man, grows reddy, fetid, and cadaverous: this digeſted urine being put to diſtil in a retort, yields a clear fetid liquor, then a yellow volatile ſalt, which evaporated to the conſiſtence of a ſapa, and mix'd with four times its weight of dry ſand, and the diſtillation continued in a covered retort; there ſucceſſively comes over, by greater and greater degrees of fire, a fetid brown oil, bluiſh fumes, and a groſs ſhining matter which ſinks in water, and is the ſolid *phoſphorus*.

To make it more directly, and to the beſt advantage, it may be proper to take a ſufficient quantity of human urine, afforded by a perſon not much given to drink wine, and exhale it away in an open veſſel to a rob, or the conſiſtence of honey; then ſet it to putrify for half a year, and upon diſtillation it will afford a large proportion of ſalt; after which, if ſix times its own quantity of ſand, or brick-duſt, be added to the remainder, and the diſtillation be continued, as in the caſe laſt mention'd, the *phoſphorus* will fall into the water.—Or it may commodiouſly be prepared, by ſuffering the rob of urine to digeſt for two years in an open veſſel in the open air; during which time a ſlimy, fæculent, unctuous, earthy matter will fall to the bottom; which being frequently waſhed with pure water, wherein it will not diſſolve, will leave a white matter behind it, neither of an alkaline, acid, ſaline, or terreſtrial, nor ſcarce of an unctuous nature: and this is of itſelf a proper matter for the making of *phoſphorus* by diſtillation with ſand.

Properties of ſolid PHOSPHORUS.—1° With this *phoſphorus* one may write on paper, as with a pencil, and the letters appear like flame in the dark; yet in the light nothing appear but a dim ſmoak.

2° A little piece rubbed between two papers, takes fire inſtantaneouſly.—If care be not taken in the management of it, there is danger of burning the fingers, the *phoſphorus* being exceedingly inflammable. See FIRE.

3° Its burning is very vehement, and penetrates deeper into the fleſh than common fire; and it is very difficult to be extinguiſhed.

M. Caſſini happening to preſs a piece in a cloth between his fingers, the cloth immediately took fire; he endeavoured to put it out with his foot, but his ſhoe caught the flame, and he was obliged to extinguiſh it with a braſs-ruler, which caſt forth rays in the dark for two months after.

The ſolid *phoſphorus* never ſpoils, provided it be kept in a phiol full of water: that in form of an unguent does not keep ſo well; and the liquid *phoſphorus* worſt of all.

The liquid *phoſphorus* is made by digeſting in horſe-dung, a little bit or ſome ſcrapings of the ſolids, for two days, in oil, or eſſence of cloves, oil of turpentine, or the like. After diſſolution the oil will be ſo impregnated with it, that upon opening the bottle, the matter will appear on a flame.

Experiments with liquid PHOSPHORUS.—By waſhing the face, hands, or the like, with the liquid *phoſphorus*, Dr. Slare tells us they will be made to ſhine very conſiderably in the dark, and the luſtre thereof be communicated to adjacent objects, yet without any offence to the ſkin.

As ſoon as a candle is brought in, the ſhining diſappears, and no change perceivable.

This *phoſphorus* emits frequent flaſhes like lightning, even when cloſe ſtopped; eſpecially in warm weather. Hence Mr. Boyle takes occaſion to draw a parallel between lightning and *phoſphorus*.

Bononian PHOSPHORUS.— The ſecond kind of artificial *phoſphorus*, is a preparation of a ſtone called the *Bononian* ſtone, from a city of that name in Italy, nigh which it is found.

The firſt who undertook to make this ſtone luminous, was a chemiſt of that city called *Vincenzo Caſciarolo*.—Poterus, Licetus, *&c.* have deſcribed the proceſs, but miſtakenly: M. Homberg, who made a journey to Italy expreſly to learn the preparation, firſt communicated the ſame to Mr. Lemery, who publiſhed it in the ſeventh edition of his chemiſtry. See the article BONONIAN *ſtone*.

This *phoſphorus* has not any ſenſible heat; and only becomes luminous after being expoſed to the ſun, or the day-light, in which ſtate it reſembles a burning coal, and preſerves its light five or ſix minutes in the dark, during which time it dwindles; and to recover its light muſt be expoſed afreſh to the air.

Hermetic PHOSPHORUS or PHOSPHORUS *Balduini*, which makes the third kind, is a preparation of Engliſh chalk, with aqua fortis or ſpirit of nitre, by the fire.

This makes a body conſiderably ſofter than the Bononian ſtone; but it has all the qualities thereof.—It has its name from its inventor Baldwin, a German chemiſt, call'd *Hermes* in the ſociety of the *naturæ curioſorum*, whence its other name *Hermetic*.

New PHOSPHORUS.—Some of the late chemiſts have hit on other ſorts of *phoſphori.*—Monſ. Homberg, in a proceſs upon the fecal matter, happening to calcine it with allum, accidentally produced a new *phoſphorus*, in form of a powder, the leaſt quantity of which taken out of a cloſe veſſel, and expoſed to the air upon a piece of paper, in a moment's time would take fire, and ſet the paper a ſmoaking, and preſently burn it or any combuſtible matter it came near.

This it would do, equally by night and day; and without rubbing or heating, or mixing it with any other thing to promote the inflammation; in which he obſerves, it differed from all the artificial *phoſphori* hitherto known. For that *e.gr.* of urine, requires a ſmall degree of warmth to enable it to ſhine, or take fire; and the Bononian ſtone, and *phoſphorus Balduini* only ſhine by day-light.

In effect, M. Lemery, the younger, has at length diſcovered that there is ſcarce any animal or vegetable matter but will afford *phoſphorus.*—This he experienced in the ſeeds, farinæ, honey, ſugar, leaves, flowers, woods, roots, and oils of divers plants; the blood and fleſh of calves, ſheep, flies, worms, the yolks of eggs, &c. the human ſcull, bones, fat, nails; and the dung of all animals. The principal thing added to all theſe matters to make *phoſphorus* of them, is allum, which is indiſpenſably requiſite; nor can any other ſalt how near a-kin ſoever hereto, even though it yield the very ſame principles, be ſubſtituted hereto. As to the means, or the operation whereby it is to be made, calcination appears to be the eſſential part.

Rationale of the effects of PHOSPHORUS. It may be obſerved that in moſt of the natural *phoſphori*, there is a briſk attrition or friction concerned; which we may ſuppoſe either to give the minute parts of the ſubſtance the proper motion and agitation neceſſary to convert them into fire, if fire be ſo producible, (as Bacon, Boyle, Newton, and the generality of the Engliſh philoſophers have ſuppoſed it is) or to expel and emit the particles of fire naturally contained in them. See FIRE, FLAME, FRICTION, ATTRITION, &c.

In the factitious ſorts, we may note, that a long proceſs by fire is uſually required, wherein the matter undergoes divers coctions, torrefactions, calcinations, diſtillations, &c. in the courſe whereof a conſiderable quantity of fire muſt neceſſarily be imbibed, and may poſſibly be retained therein.

In that *e.g.* prepared of the fecal matter, M. Homberg obſerves, the aqueous part of the ſubſtance muſt neceſſarily have all been evaporated, with the greateſt part of the oil and volatile ſalt; leaving pores or vacuities in the places they poſſeſſed; ſo that what remains, is a ſpongeous tiſſue of earth and fix'd ſalt, having nothing in its loculi, or cavities, but ſome of the matter of the fire which has been arreſted and detained therein; much as in quick-lime.

This being ſuppoſed, we know that the fix'd ſalt, which is here pretty copious, will readily abſorb the moiſture of the contiguous air; and the ſudden introduction of ſuch moiſture into the pores of the powder muſt produce a friction, which may excite a ſmall degree of heat; and this joined with what fire was there already laid up, may make a heat ſufficient to give fire to the ſmall remains of oils too cloſely linked with the ſalt to have been carried off by the calcining fire: ſo that we have here every thing neceſſary to heat and light. See HEAT, &c.

What confirms this doctrine is, that if the powder be kept in a veſſel not ſufficiently cloſe; the air, inſinuating by degrees, moiſtens and ſaturates the powder, but ſo ſlowly, as not to produce friction enough to ſet it on fire; ſo that it is ſpoiled, and diſabled from taking fire ever after: much as quick-lime, which after it has lain ſome time in the air, ceaſes to grow hot even by the affuſion of water.

The reaſon why quick-lime, which contains a deal of particles of fire, as well as our powder, does not conceive heat by the acceſs of the air, or the ingreſs of its moiſture into the pores thereof, but that water muſt be thrown thereon, is, that the quick-lime being more throughly calcined, retains too little fix'd ſalt to imbibe the moiſture readily and copiouſly enough to excite the neceſſary friction.

And the reaſon why quick-lime does not produce a flame, as the powder does, even when water is caſt on it, is, that it did not retain enough of the oily matter to afford flame: for if oil be mix'd with it, a flame will readily enſue. *Mem. de l'Acad. an.* 1711.

PHOSPHORUS, in aſtronomy, is the morning-ſtar, or the planet Venus, when ſhe goes before the ſun. See VENUS.

The Latins call it *lucifer*; the French, *etoile de berger*; the Greeks, *phoſphorus*, from φως, light, and φερω, I bear, bring.

PHOTOSCIATERICA, a term which ſome authors uſe for the art of dialling. See DIALLING.

The name is derived hence, that the art not only ſhews the hours by the ſhadow of a gnomon, whence it is called *ſciaterica*, from σκια, ſhadow; but ſometimes alſo by means of the ſun's light, as in ſpot-dials, reflecting-dials, &c. from φως, *lux*, light. See DIAL, and NODUS.

PHOTINIANS, a ſect of ancient hereticks, who denied the divinity of Jeſus Chriſt. See HERETIC.

They took their name from *Photinus* their chief, biſhop of Sirmium, and diſciple of Marcellus.—He maintained, as Leo tells us in one of his ſermons, that Jeſus Chriſt was true man, but not true God, nor born before all ages; that he only began to be Chriſt when the Holy Ghoſt deſcended upon him; and that he was called *only Son*, for no other reaſon but becauſe the virgin had no other.—He was convicted of his error, and depoſed by a ſynod of Arians held at Sirmium in 351.—His error has been ſince revived by Socinus. See SOCINIAN.

PHRASE, PHRASIS, ΦΡΑΣΙΣ, in grammar, an elegant turn or manner of ſpeech, peculiarly belonging to this or that occaſion, this or that art, or this or that language.

Thus we ſay an Italian *phraſe*, an eaſtern *phraſe*; a poetical *phraſe*, a rhetorical *phraſe*. See IDIOM.

A few elegant *phraſes*, pertinently applied, are an ornament of diſcourſe; but if they come too thick they have an ill effect, and make the ſtyle ſavour of affectation. See STYLE.

PHRASE is ſometimes alſo uſed for a ſhort ſentence, or ſmall ſet or circuit of words conſtructed together. See SENTENCE.

In this ſenſe father Buffier divides *phraſes* into *compleat* and *incompleat*.

PHRASES are *compleat* where there is a noun and a verb, each in its proper function, *i.e.* where the noun expreſſes a ſubject, and the verb the thing affirmed of it.

Incompleat PHRASES, are thoſe where the noun and the verb together only do the office of a noun; conſiſting of ſeveral words without affirming any thing, and which might be expreſſed in a ſingle word.

Thus; *that which is true*, is an incompleat *phraſe*, which might be expreſſed in one word, *truth*: as, that which is true ſatisfies the mind; *i.e.* truth ſatisfies the mind.

PHRASEOLOGY, PHRASEOLOGIA, ΦΡΑΣΕΟΛΟΓΙΑ, a collection of the *phraſes*, or elegant expreſſions, in any language. See PHRASE.

PHRENES, ΦΡΕΝΕΣ, in anatomy, the diaphragm. See DIAPHRAGM.

It was thus called by the ancients, from φρην mind; as imagining this the ſeat of the rational ſoul. Hence

PHRENESIS, PHRENSY, or diſtraction. See PRHENITIS, and PARAPHRENESIS.

PHRENETIC *nerves*, called alſo *diaphragmatic* and *ſtomachic nerves*, are nervous branches derived from the cervical nerves, which joining in a trunk, run through the mediaſtinum undivided, till arriving near the diaphragm, they again divide, and ſend off divers branches, ſome into the muſcular, others into the tendinous part thereof. See NERVE and DIAPHRAGM.

PHRENIC *veſſels* an appellation given to a vein, and ſome arteries of the human body; from their paſſing through the diaphragm. See DIAPHRAGM.

The *phrenic* artery ariſes out of the deſcending aorta, and diſtributes itſelf into the diaphragm and pericardium. See *Tab. Anat.* (Angeiol.) *fig.* 1. *n.* 40. See alſo ARTERY, AORTA, &c.

The *phrenic* veins are two veins which the deſcending cava receives immediately after its piercing the diaphragm.—See *Tab. Anat.* (Angeiol.) *fig.* 6. *lit.* *qq.* See alſo VEIN and CAVA.

PHRENITIS, PHRENESIS, or PHRENSY, in medicine, a conſtant and vehement dilirium, or diſtraction; accompanied with an acute fever, raving, waking, &c. See DELIRIUM.

* It has its name φρενιτις, from φρην, *mens*, the underſtanding; or, as ſome will have it, from φρην, the diaphragm, in regard the ancients ſuppoſed it to have its ſeat in that part. See DIAPHRAGM.

It differs from the *mania*, and *melancholy*, in that theſe are without fevers. See MANIA, &c.

Phyſicians generally make the *phrenitis* to conſiſt in an inflammation of the meninges of the brain; and diſtinguiſh it from the *paraphrenitis*, which they ſuppoſe to be an inflammation of the diaphragm. See PARAPHRENITIS.

Willis will have them the ſame diſeaſe, and both to conſiſt in an inflammation of the animal ſpirits. He only diſtinguiſhes them as the inflammation ariſes from the cerebrum alone, or from the cerebrum and cerebellum together; and concludes, that they both ariſe after a fever, from the boiling blood's throwing its aduſt recrements into the brain.

Boerhaave makes the *phrenitis* either *true*, wherein the cerebrum, or meninges, or both, are inflamed; or *ſymptomatic*, where the matter of a fever is tranſlated into the cerebrum.

The true one either kills on the third, fourth, fifth, or ſeventh day; or changes into a mania, lethargy, comus, &c. tremors, gnaſhing of the teeth, grumous blood diſtilling from the noſe, are prognoſtics of death.

The diſeaſe is ofteneſt the effect of inflammatory or malignant fevers; though it ſometimes ariſes from a ſuppreſſion of the natural evacuations, as the menſes, &c.

The cure is the ſame as of an apoplexy; but where the evacuations are concerned, they muſt firſt be rectified. See APOPLEXY.

PHRENSY. See the article PHRENITIS.

PHRYGIAN *mode*, in muſic. See MODE.

PHRYGIANS, PHRYGES, or PHRYGASTES, as S. Epiphanius calls them, were ancient heretics, a branch of the Montaniſts; ſo called from *Phrygia*, a country where they abounded. See CATAPHRYGIAN.

They eſteemed Montanus their prophet; and looked on Maximilla and Priſcilla as great propheteſſes. See MONTANISTS.

This ſpirit of prophecy, or rather enthuſiaſm, was their diſtinguiſhing character. In the buſineſs of the trinity they were orthodox.

PHTHIRIASIS*, ΦΘΕΙΡΙΑΣΙΣ, in medicine, the morbus pedicularis, or louzy diſeaſe, wherewith children, and even ſometimes adults are afflicted. See PEDICULARIS.

* The word is formed from the Greek, φθειρ, louſe.

Its cauſe is in the ſeeds of that vermin laid in the cuticle, which here happening to prove a proper nidus, cheriſhes and foſters the ſeed ſo as to hatch it. See WORMS.

The linnen cloths uſed by goldſmiths to wipe their veſſels with after gilding, are excellent againſt the *phthiriaſis* by reaſon of the mercury they contain, when applied by rubbing the child's head.

PHTHISIS, ΦΘΙΣΙΣ, in its general ſenſe, denotes any kind of conſumption, of the body, in what part ſoever it be ſeated, or from what cauſe ſoever it ariſe. See CONSUMPTION, and ATROPHY.

Thus we have a nervous *phthiſis*, and renal *phthiſis*, dorſal *phthiſis*, pulmonary *phthiſis*, *&c.*

PHTHISIS, in its proper ſenſe, is reſtrained to a pulmonary conſumption, or a conſumption ariſing from an ulcer, or other diſorder of the lungs, accompanied with a ſlow hectic fever, which waſtes, extenuates, and conſumes the muſcular fleſh. See LUNGS, *&c.*

Sydenham obſerves, that the hectical *phthiſis* uſually has its origin in the winter's cold; from a ſharp humour trickling down upon the lungs, where, like a catarrh, it irritates them ſo as to raiſe a cough. See COUGH and CATARRH.

This by degrees brings on other ſymptoms; as a ſpitting, firſt of a viſcid pituita, then a heavy fetid pus, then of pure blood, and ſometimes of the very ſubſtance of the lungs rotted by a long exulceration; with night-ſweats, falling of the hair, and a colliquative flux which is ſoon followed by death.—The ſame author adds, that the *phthiſis* kills two thirds of thoſe who dye of chronic diſeaſes. See CHRONIC.

In the laſt ſtage of the *phthiſis*, the noſe appears ſharp, the eyes hollow, the temples fallen, the ears cold and contracted, the ſkin about the forehead hard and dry, and the complexion greeniſh, or livid, *&c.* which is called the *facies hippocratica.* See FACE.

Among the cauſes of this diſeaſe may be reckoned intemperance, as it brings on a plethora or cacochymia, peripneumonies, aſthma's, pleuriſies, *&c.* Morton adds, that the *phthiſis* frequently ariſes from an ill conformation of the breaſt; which is either natural, as when the breaſt is too narrow, the neck too long, *&c.* or accidental, where there happens a curvity or diſtortion of the breaſt;—among the ſymptoms he reckons a nauſea, or retching, with a heat in the palms of the hands, and redneſs in the cheeks, all after eating.

For the cure—Sydenham orders the defluxion on the lungs, in the firſt ſtage, to be abated by blood-letting, *&c.* and pectorals to be uſed, accommodated to the various ſtates of the diſeaſes, *viz.* Incraſſants, attenuants to aſſwage the hectic, *&c.* with emulſions, aſſes-milk, *&c.* and balſamics, to cure the ulcer.

But the chief aſſiſtance in this diſeaſe is from riding conſtantly on horſe-back, where the patient need not confine himſelf to any laws of diet, *&c.* This alone, he adds, is almoſt as ſure a cure for a *phthiſis*, as the cortex for an intermitting fever. See EXERCISE.

Dr. Baynard recommends butter-milk as an admirable ſuccedaneum to aſſes-milk.=Sylvius ſays, he knows of no medicine, either internal or external, ſo good againſt freſh ulcers of the lungs, as balm of ſulphur, eſpecially when prepared with oil of aniſe. See SULPHUR.

Etmuller obſerves, that the cough of *phthiſical* people is at firſt only ſtomachal; at length it becomes pulmonary. He adds, that vomitories are good in a beginning *phthiſis*, purgatives by all means to be avoided; and commends the uſe of medicines made of tobacco, not only as they promote expectoration, but as vulnerary.

It is a common obſervation, that in thoſe countries where they burn turf, people are rarely affected with the *phthiſis*; which Willis aſcribes to the ſulphur abounding therein, and recommends tincture of ſulphur as the beſt remedy he knows of in any cough without a fever; adding, that a ſuffumigation, or ſmother, of ſulphur and arſenic has frequently proved a cure in the moſt deſperate *phthiſis*.

Bonetus holds the *phthiſis* to be contagious; and that there are frequently inſtances of its being communicated by cloaths, linnen, beds, *&c.*

Pitcairn recommends mercurius dulcis, in the beginning of a *phthiſis*. And Barbrette and Colbatch aſſert, that, contrary to the opinion of moſt authors, they have frequently uſed acids with ſucceſs in the *phthiſis*. See HECTIC, *&c.*

PHYGETHLON*, ΦΥΓΕΘΛΟΝ, in medicine, is defined by Celſus, a hard flat tumor, ſomewhat reſembling a puſtle; occaſioning an intenſe pain, and ſometimes a fever. See TUMOR.

* The word is derived from the Greek, φυω, I breed, engender

The *phygethlon* only differs from the *phyma*, in that it does not riſe ſo high; it ripens very ſlowly, and produces but little pus. See PHYMA.

The Latins call it *panis*, or *panus*, and ſometimes *panicula*—Gorræus defines the *phygethlon*, a phlegmon ariſing on the glandulous parts, eſpecially about the neck, armpits, and inguen; which laſt is called a *bubo*. See PHLEGMON, *&c.*

The *phygethlon* has the ſame cauſes, and the ſame ſymptoms with the common bubo. See BUBO.—It frequently ariſes after fevers, and pains of the belly, and is cured like other inflammations.

PHYLACTERY, ΦΥΛΑΚΤΗΡΙΟΝ, in church-hiſtory, a ſlip of parchment, wherein was wrote ſome text of holy ſcripture, particularly of the decalogue; which the more devout people among the Jews wore on the forehead, the breaſt, or the neck, as a mark of their religion. See FRONTAL.

PHYLACTERY, in the general, was a name given by the ancients to all kinds of charms, ſpells, or characters, which they wore about them, as amulets, to preſerve them from dangers or diſeaſes. See CHARM, AMULET, *&c.*

The primitive chriſtians alſo gave the name *phylacteries* to the caſes wherein they incloſed the relicks of their dead. See RELICK.

PHYMA, ΦΥΜΑ, in medicine, a roundiſh pointed tumor, ariſing on the glandular parts, eſpecially under the lower jaw. See TUMOR.

The *phyma* is ſmaller and ſmoother, leſs red and painful, than the *phygethlon*. See PHYGETHLON.

It is eaſily cured in children; more difficultly in adults, but in thoſe it is more rare. It is remedied by aſſiſting nature in the work of maturation; as, by a ſuppurating cataplaſm, *&c*—It is ſuppoſed to have its riſe from pituitous blood; and is moſt common in children, where it frequently ariſes from too tight bandages.

Gorræus obſerves, that ſome make *phyma* a general name for all tumors, or apoſthumes, that maturate and ſuppurate readily, of what kind ſoever, or in whatſoever glandulous part they ariſe.

PHYSIC, or PHYSICK, ΦΥΣΙΚΗ, the art of healing; properly called *medicine*.

* The word is formed from the Greek Φυσις, nature; in regard medicine conſiſts principally in the obſervation of nature. See PHYSICS.

For the riſe, progreſs, diviſion, *&c.* of *phyſic*. See MEDICINE.

Hermetical PHYSIC	See the articles	HERMETICAL.
Bachelor of PHYSIC		BACHELOR.

PHYSICAL, ΦΥΣΙΚΟΣ, ſomething belonging to, or really exiſting in, nature. See PHYSICS.

In this ſenſe we ſay a *phyſical* point, in oppoſition to a methematical one, which only exiſts in the imagination. See POINT.

A *phyſical* ſubſtance, or body, in oppoſition to ſpirit, or metaphyſical ſubſtance, *&c.* See SUBSTANCE, *&c.*

PHYSICAL, or ſenſible horizon. See HORIZON.

PHYSICAL *agent.*	See the articles	AGENT.
PHYSICAL *cauſe.*		CAUSE.
PHYSICAL *certitude.*		CERTTIUDE.
PHYSICAL *concrete.*		CONCRETE.
PHYSICAL *continuity.*		CONTINUITY.
PHYSICAL *evidence.*		EVIDENCE.
PHYSICAL *fate.*		FATE.
PHYSICAL *good.*		GOOD.
PHYSICAL *neceſſity.*		NECESSITY.
PHYSICAL *part.*		PART.
PHYSICAL *perfection.*		PERFECTION.
PHYSICAL *poſſible.*		POSSIBLE.
PHYSICAL *predetermination.*		PREDETERMINATION.
PHYSICAL *premotion.*		PREMOTION.
PHYSICAL *qualities.*		QUALITY.
PHYSICAL *quantity.*		QUANTITY.

PHYSICIAN, a perſon who profeſſes medicine, or the art of healing. See MEDICINE.

The ancients diſtinguiſhed their *phyſicians* into various claſſes, or ſects:—As,

Rational PHYSICIANS, thoſe who proceeded in a certain regular method, founded upon reaſon; deducing conſequences therefrom, to particular caſes.

Methodical PHYSICIANS. See the article METHODICAL.

Dogmatical PHYSICIANS, thoſe who laid down principles, and reaſoned from thoſe principles, and from experience. See DOGMATIC.

Empirical PHYSICIANS, thoſe who kept wholly to experience, and excluded all uſe of reaſon in medicine.—Such were Serapion, Appollonius, Glaucus, *&c.* See EMPIRICAL.

Clinical PHYSICIANS were thoſe who viſited their patients a-bed to examine their caſes. See CLINIC.

In oppoſition to the *empirics*, who ſold their medicines in the ſtreets, *&c.*

They had alſo their aſtrological *phyſicians*, botanical *phyſicians*, anatomical *phyſicians*, chirurgical *phyſicians*, pharmaceutical *phyſicians*, *&c.* beſides gymnaſtical *phyſicians*, iatraliptæ or thoſe who applied external unctions, and frictions, *&c.*—Coſmetick *phyſicians* for the complexion; opthalmic *phyſicians* for the eyes; vulnerary *phyſicians* for wounds, *&c.*

Among the moderns, a *general phyſician* includes almoſt all theſe ſeveral kinds.—Regular PHYSICIANS are contra-diſtinguiſhed from empirical *phyſicians*, who preſcribe at random; having ſome one, or two remedies which ſerve in all diſeaſes. See EMPIRICAL.

Galenical PHYSICIANS are thoſe who preſcribe gentle, natural, and ordinary medicines. See GALENICAL.

Spagyrical or *chymical* PHYSICIANS are thoſe who preſcribe violent medicines drawn from minerals, *&c.* by fire. See SPAGYRICAL and CHYMICAL.

College of PHYSICIANS. See the article COLLEGE.

PHYSICKS, PHYSICA, ΦΥΣΙΧΗ, ſometimes alſo called *phyſiology*, and *natural philoſophy*; is the doctrine of natural bodies, their phænomena, cauſes, and effects, with the various affections, motions, operations, *&c.* thereof. See PHILOSOPHY and NATURE.

* The word is derived from the Greek φυσις, nature. See PHYSIOLOGY.

Mr. Locke would likewiſe have God, angels, and ſpirits, come under *phyſicks*, which are more uſually referred to metaphyſicks. See METAPHYSICKS.

The origin of *phyſics* is referred by the Greeks, to the barbarians, *viz.* the brachmans, magi, and the Hebrew and Ægyptian prieſts. See BRACHMANS, MAGI, *&c.*

From theſe it was derived to the Greek ſages or ſophi, particularly Thales, who is ſaid to have firſt profeſſed the ſtudy of nature in Greece. See SOPHIST.

Hence it deſcended into the pythagoric, platonic, and peripatetic ſchools; whence it was propagated into Italy, and thence through the reſt of Europe: though the druids, bards, *&c.* had *phyſics* of their own. See PYTHAGOREAN, PLATONIC, and PERIPATETIC; ſee alſo DRUID, BARD, *&c.*

Phyſics may be divided, with regard to the manner wherein it has been handled, and the perſons by whom, into

Symbolical PHYSICS, that couched in ſymbols: ſuch was that of the old Egyptians, Pythagoreans and Platoniſts, who delivered the properties of natural bodies under arithmetical and geometrical characters, and hieroglyphics. See SYMBOL, GEOMETRY, HIEROGLYPHICS, *&c.*

Peripatetical, or that of the Ariſtotelians, who explained the nature of things by matter, form, and privation, elementary and occult qualities, ſympathies, antipathies, attractions, *&c.* See ARISTOTELIAN, *&c.*

Experimental, which enquires into the reaſons and natures of things from experiments; ſuch as thoſe in chemiſtry, hydroſtatics, pneumatics, optics, *&c.* See EXPERIMENT, *&c.*

This has been much cultivated ſince the time of my lord Bacon; and continues to be ſo, with good ſucceſs.

The experiments of the academiſts of Cimento, of the royal ſociety, of the royal academy, and even of private perſons, particularly Mr. Boyle, Sir Iſ. Newton, Mr. Haukſbee, *&c.* have been of infinite ſervice in *phyſics*; and it is to theſe, in great meaſure, that the advantage of the modern philoſophy above the ancient is due. See EXPERIMENTAL.

Mechanical or *Corpuſcular*, which explains the appearances of nature from the matter, motion, ſtructure, and figure of bodies, and their parts; all according to the ſettled laws of nature and mechanicks. See CORPUSCULAR and MECHANICAL.

PHYSIOGNOMICS, a term uſed by ſome phyſicians and naturaliſts, for ſuch ſigns as are taken from the countenance to judge of the ſtate, diſpoſition, *&c.* of the body, and mind. See SIGN and PHYSIOGNOMY.

PHYSIOGNOMY, ΦΥΣΙΟΓΝΩΜΙΑ, the art of knowing the humour, temperament, or diſpoſition of a perſon, from obſervation of the lines of his face, and the characters of its members, or features. See FACE, *&c.*

* The word is formed from the Greek φυσις, nature, and γινωσκω, I know.

Baptiſta Porta and Robert Fludd are the top modern authors on *phyſiognomy*.—The ancient ones are the ſophiſt Adamantius, and Ariſtotle; the *phyſiognomy* of which laſt we have tranſlated into Latin by de Lacuna.

There ſeems to be ſomething in *phyſiognomy*; and it may perhaps bear a much purer philoſophy than what theſe authors were acquainted withal. This, at leaſt, we dare ſay, that of all the fanciful arts of the ancients, diſuſed among the moderns, there is none has ſo much foundation in nature as this.

There is an apparent correſpondence between the face and the mind; the features and lineaments of the one are directed by the motions and affections of the other: there is even a peculiar arrangement of the members of the face, a peculiar diſpoſition of the countenance, to each particular affection; perhaps to each particular idea of the mind. See PASSION.

In effect, the language of the face, *phyſiognomy*, is as copious, nay, perhaps, as diſtinct and intelligible, as that of the tongue, ſpeech.—Thanks to bounteous nature, ſhe has not confined us to one only method of converſing with each other, and of learning each other's thoughts; we have ſeveral: we do not wholly depend on the tongue, which may happen to be bound; and the ear, which may be deaf; but in thoſe caſes we have another reſource, the countenance and the eye, which afford us this further advantage, that by comparing the reports of the tongue (a member exceedingly liable to deceive) with thoſe of the face, the prevarications of the former may be detected.

The foundation of *phyſiognomy* is this; the different objects that preſent themſelves to the ſenſes, nay, the different ideas that ariſe in the mind, do each make ſome impreſſion on the ſpirits; and each an impreſſion correſpondent or adequate to its cauſe: therefore each a different impreſſion.

If it be asked how ſuch an impreſſion ſhould be effected? It is eaſy to anſwer that it follows from the oeconomy of the creator, who has fixed ſuch a relation between the ſeveral parts of the creation; to the end we may be apprized of the approach or receſs of things uſeful or hurtful to us.

If this be not philoſophical enough, take the manner in the Carteſian language, thus: the animal ſpirits moved in the organ by an obeject, continue their motion to the brain; whence that motion is propagated to this or that particular part of the body, as is moſt ſuitable to the deſign of nature; having firſt made a proper alteration in the face, by means of its nerves, eſpecially the pathetici and oculorum motorii.

The face, here, does the office of a dial-plate; the wheels and ſprings within-ſide the machine actuating its muſcles, ſhew what is next to be expected from the ſtriking part.—Not that the motion of the ſpirits is continued all the way by the impreſſion of the object; the impreſſion probably terminates in the medulla of the brain, the common fund of ſpirits: the reſt Dr. Gwither imagines may be effected much after the ſame manner as the air is conveyed into the pipes of an organ, which being uncovered, the air ruſhes in, and when the keys are let go, ſtopped again. See CONSENT *of parts.*

Now, if by repeated acts, or the frequent entertaining of a favourite paſſion, or vice, which natural temperament has hurried or cuſtom dragged one to; the face is often put in that poſture which attends ſuch acts; the animal ſpirits will make ſuch patent paſſages through the nerves (in which the eſſence of a habit conſiſts. See HABIT;) that the face is ſometimes unalterably ſet in that poſture (as the Indian religious are by a long continued ſitting in ſtrange poſtures in their pagods) or at leaſt falls inſenſibly and mechanically into that poſture, unleſs ſome preſent object diſtort it therefrom, or diſſimulation hide it. See FAQUIR.

This reaſoning is confirmed by obſervation: thus we ſee great drinkers, with eyes generally ſet to the noſe; the adducent muſcles being oft employed to put them in that poſture, in order to view their loved liquor in the glaſs, in the time of drinking; whence thoſe muſcles are alſo denominated *bibitory muſcles.*

Thus alſo laſcivious perſons are remarkable for the *oculorum mobilis petulantia*, as Petronius calls it.—Hence we may account for the quakers expecting face, waiting the ſpirit; the melancholly face of moſt ſectaries; the ſtudious face of men of great application of mind, *&c.*

Were our obſervation a little more ſtrict and delicate, we might doubtleſs not only diſtinguiſh habits and tempers, but even profeſſions.—In effect, does there need much penetration to diſtinguiſh the fierce look of the veteran ſoldier, the contentious look of the practiſed pleader, the ſolemn look of the miniſter of ſtate, *&c.*

PHYSIOLOGY*, ΦΥΣΙΟΛΟΓΙΑ, the doctrine of nature, or natural bodies; called alſo *phyſics*, and *natural philoſophy.* See PHYSICS, *&c.*

* The word is formed of φυσις, nature, and λογος, diſcourſe, reaſon.

PHYSIOLOGY properly denotes only an internal reaſoning, or diſcourſing, which ſtops or terminates in the ſpeculation, or abſtract contemplation of its object, *viz.* natural appearances, their cauſes, *&c.* and does not direct or preſcribe rules for the making of natural things, *e. gr.* ſtones, plants, *&c.*

In which view, chemiſtry does not properly belong to *phyſiology*, but is a kind of a counter-part thereto, as imitating or mimicking nature, rather than conſidering and explaining her. See CHYMISTRY.

PHYSIOLOGY, is more particularly uſed for a branch of medicine, which conſiders nature with regard to the cure of diſeaſes; particularly the human body, its parts, ſtructure, health, life, functions, oeconomy, *&c.* See MEDICINE.

Phyſiology, in this ſenſe, amounts to much the ſame with what we otherwiſe call the doctrine of the *animal œconomy.* See OECONOMY

PHYTOLOGY*, ΦΥΤΟΛΟΓΙΑ, a diſcourſe upon plants; or a deſcription of their forms, kinds, properties, *&c.* See PLANT.

* The word is compounded of the Greek, φυτον, plant, and λογος, diſcourſe, or λεγω, I deſcribe, rehearſe.

PIA *mater*, in anatomy, called alſo *mater tenuis*, and *meninx tenuis*, a fine coat, or membrane, immediately inveſting the brain.—See *Tab. Anat.* (Oſteol) *fig.* 4. *lit. a, a, a.* See alſo MATER, MENINGES and BRAIN.

PIACHE, PIAZZA, a covered arched walk, or portico. See PORTICO and PIAZZA.

PIASTER, a Spaniſh money, more ordinarily called *piece of eight*. See PIECE *of eight*.

PIAZZA, in building, popularly called *piache*, an Italian name for a portico, or covered walk, ſupported by arches. See PORTICO.

The word literally ſignifies a broad open Place, or Square; whence it alſo became applied to the walks, or portico's around them.

PICA, in medicine, *malacia*; or a depravation of appetite, which makes the patient abſurdly covet things unfit for food, or incapable of nouriſhing, as, coals, aſhes, plaiſter, ſalt, lime, chalk, vinegar, pepper, *&c.* See APPETITE.

The *pica* is frequent in girls, and women with child; men are more rarely affected with it.—The diſorder is ſeldom original; but uſually an effect of an hypochondriacal infirmity in men; and a chloroſis, ſtoppage of the menſes, or their eruption about the ſecond month of pregnancy, in women: ſometimes it is hereditary in children, from ſome cauſe affecting the mother. See MONSTER.

The diſeaſe is uſually ſuppoſed to have its riſe from a vitious ferment of the ſtomach; to which may be added diſorders of the imagination, occaſioned by ill examples and ridiculous prejudices. See IMAGINATION.

In the *Philoſophical Tranſactions*, Dr. Fairfax gives us an inſtance of a woman in Stow market, who was invited by her *pica* to ſuck the wind out of bellows; which as often as ſhe could ſhe took into her body with open mouth, forcing it in by blowing with both hands, the bellows inverted.—He adds, he knew another in the ſame circumſtances, whom nothing would ſatisfy but crackling cinders under her feet.

Something like this has alſo been found in brutes.—The laſt mentioned author mentions a greyhound bitch, who five or ſix days before caſting her whelps, longed for another bitch's whelps, and eat them all up, and would have eat the bitch helſelf. Thus it is that ſows are ſometimes known to eat up whole litters of pigs.—The uſual remedies in the *pica*, are bleeding, purging, vomiting, and chalybeats.

PICA, in printing. See *printing* LETTER.

PICARDS, a religious ſect, who aroſe in Bohemia, in the XVth century; ſo called from their author one Picard.

He drew after him a great number of men and women, pretending he would reſtore them to the primitive ſtate of innocence wherein Adam was created; and accordingly himſelf aſſumed the title of the new Adam. See ADAMITES.

Under this pretence he taught his followers to abandon themſelves to all impurity; making them believe that therein conſiſted the liberty of the ſons of God; and that all thoſe not of their ſect were in bondage.

He firſt began in Germany and the Low Countries: perſuading many to go naked, and giving them the name of Adamites.—After this, ſeizing an iſland in the river Lauſnecz, a few leagues from Thabor, the head quarters of Ziſca, he fixed himſelf and his followers therein; appointed his women to be common, but allowed none to enjoy them without his permiſſion. So that when any man deſired a woman he carried her to Picard, who gave him leave in theſe words, *go, increaſe, multiply and fill the earth.*

At length, Ziſca, the great general of the Huſſites, ſo famous for his victories over the emperor Sigiſmund, ſtruck with their abominations, marched againſt them; and making himſelf maſter of their iſland, put them all to death except two, whom he ſpared to inform himſelf of their doctrine.

PICATUM *vinum*. See the article VINUM.

PICKAGE, or PICCAGE, PICCAGIUM, an ancient cuſtom or duty, paid at fairs and markets, for breaking the ground, and pitching up ſtalls, or ſtandings.

This profit of *pickage* was uſually given or granted in charters for holding a fair or market

PICKEERING, and PICKEROONING. See the article PICQUEERING.

PICKET, PICQUET, or PIQUET, in fortification, a ſtake ſharp at one end, and uſually ſhod with iron; uſed in laying out the ground, to mark the ſeveral meaſures and angles thereof.

There are alſo larger *pickets*, drove into the earth to hold together faſcines or faggots, in any work caſt up in haſte.

PICKETS are alſo ſtakes drove into the ground by the tents of the horſe, in a camp, to tie their horſes to; and before the tents of the foot, where they reſt their muſkets or pikes about them in a ring.

When an horſeman hath committed any conſiderable offence, he is often ſentenced to ſtand on the *picket*; which is to have one hand drawn up as high as it can be ſtretched, and thus to ſtand on the point of a *picket* or ſtake, only with the toe of his oppoſite foot; ſo that he can neither ſtand nor hang well, nor eaſe himſelf by changing feet.

PICKETS are alſo ſtakes with notches towards the top, to which are faſtened the cordages of tents.—Thus, to plant the *picket*, is to encamp.

PICKET in gaming. See the article PIQUET.

PICKLE, a brine, or liquor, ordinarily compoſed of ſalt, vinegar, *&c.* ſometimes with the addition of ſpices, *&c.* wherein meats, fruits, *&c.* are preſerved and ſeaſoned.

PICKLE is alſo uſed ſubſtantively for a fruit, root, leaf, or other vegetable matter, prepared in *pickle*, to be uſed by way of ſauce, *&c.* See SALLET, *&c.*

They *pickle* artichokes, muſhrooms, aſhen-keys, barberries, aſparagus, beans, *&c.*—Broom-buds, capers, and olives are *pickled* with oil and vinegar. See CAPERS, *&c.*

PICKLED *fiſh*. See the article FISH.

PICQUEERING, PICKEERING, or PICKEROONING, a little flying war, or ſkirmiſh, which the ſoldiers make when detached from their bodies, for pillage, or before a main battle begins. See SKIRMISH.

PIQUET, or PICKET, a celebrated game at cards, much in uſe throughout the polite world. See GAME and CARDS.

It is played between two perſons, with only thirty two cards; all the duces, threes, fours, fives, and ſixes, being ſet aſide.

In reckoning at this game, every card goes for the number it bears, as a ten for ten; only all court-cards go for ten, and the ace for eleven: and the uſual game is one hundred up.—In playing, the ace wins the king, the king the queen, and ſo down.

Twelve cards are dealt around, uſually by two and two; which done, the remainder are laid in the middle: if one of the gameſters find he has not a court-card in his hand, he is to declare he has *carte blanche*, and tell how many cards he will lay out, and deſire the other to diſcard, that he may ſhew his game, and ſatiſfy his antagoniſt that the carte blanche is real; for which he reckons ten.

Each perſon *diſcards*, *i. e.* lays aſide a certain number of his cards, and takes in a like number from the ſtock.—The firſt, of the eight cards, may take three, four or five; the dealer, all the remainder if he pleaſes.

After diſcarding, the eldeſt hand examines what ſuit he has moſt cards of; and reckoning how many points he has in that ſuit; if the other have not ſo many in that or any other ſuit he tells one for every ten of that ſuit.—He who thus reckons moſt is ſaid to win the *point*.

The point being over, each examines what *ſequences* he has of the ſame ſuit, *viz.* how many tierces, or ſequences of three, quarters or fours, quintes or fives, ſixiemes or ſix's, *&c.* For a tierce they reckon three points, for a quarte four, for a quinte fifteen, and for a ſixieme ſixteen, *&c.* And the ſeveral ſequences are diſtinguiſhed in dignity by the cards they begin from: thus; ace, king, and queen, are called *tierce major*; king, queen, and knave, *tierce to a king*; knave, ten, and nine, *tierce to a knave*, *&c.* and the beſt tierce, quarte, or quinte, *i. e.* that which takes its deſcent from the beſt card, prevails; ſo as to make all the others in that hand good, and deſtroy all thoſe in the other hand.—In like manner a quarte in one hand ſets aſide a tierce in the other.

The ſequences over, they proceed to examine how many aces, kings, queens, knaves, and tens, each holds; reckoning for every *three* of any ſort, three: but here too, as in ſequences, he that with the ſame number of threes, has one that is higher than any the other has, *e. gr.* three aces, has all his others made good hereby, and his adverſary's all ſet aſide.—But four of any ſort, which is called a *quatorze*, always ſet aſide three.

All the game in hand being thus reckoned, the eldeſt proceeds to *play*; reckoning one for every card he plays above a nine; and the other follows him in the ſuit: and the higheſt card of the ſuit wins the trick.—Note, unleſs a trick be won with a card above a nine, (except the laſt trick) nothing is reckoned for it; though the trick ſerves afterwards towards winning the cards: and that he who plays laſt does not reckon for his cards unleſs he wins the trick.

The cards being played out, he that has moſt tricks reckons ten for *winning the cards*.—If they have tricks alike neither reckons any thing—The deal being finiſhed, and each having marked up his game, they proceed to deal again as before, cutting afreſh each time for the deal.

If both parties be within a few points of being up, the carte blance is the firſt thing that reckons; then the point; then the ſequences; then the quatorzes or threes; then the tenth cards.

He that can reckon thirty in hand, by carte blanche, points, quintes, *&c.* without playing, ere the other has reckoned any thing, reckons ninety for them;—and this is called a *repique*;—if he reckons above thirty, he reckons ſo many above ninety.

If he can make up thirty, part in hand, and part play, ere the other has told any thing, he reckons for them ſixty.—And this is called a *pique*. Whence the name of the game.

He that wins all the tricks, inſtead of ten, which is his right for winning the cards, reckons forty,—and this is called a *capot*.

PICRA—*Hiera* PICRA. See the artice HIERA.

PICTA *Toga*. See the article TOGA.

PICTS *Wall*, in antiquity, a famed piece of Roman work, begun by the emperor Adrian, on the northern bounds of England, to prevent the Incurſions of the Picts and Scots. See WALL.

At firſt it was made only of turf, ſtrengthened with palliſadoes; till the emperor Severus, coming in perſon into Britain, built it with ſolid ſtone, reaching eight miles in length, from the Iriſh to the German ſea, or from Carliſle to Newcaſtle; with watch-towers garriſoned at the diſtance of a mile from each other.

It was ruined ſeveral times by the Picts, and often repaired by the Romans.—At laſt Ætius, a Roman general, rebuilt it of brick; and the Picts ruining it the year following, it was no longer regarded, but as a boundary between the two nations.

The wall was eight foot thick, and twelve high from the ground; it run on the northſide of the rivers Tyne and Irthing, up and down ſeveral hills; the tract or remains of it are to be ſeen this day in many places both in Cumberland and Northumberland.

PICTURE, Pictura, a piece of painting; or a ſubject, repreſented in colours, on canvas, wood, or the like; and incloſed in a frame. See Painting.

PIECE, in commerce, ſignifies ſometimes a whole; and ſometimes only a part of the whole.

In the firſt ſenſe, we ſay, a *piece* of cloth, of velvet, *&c.* meaning a certain quantity of yards, regulated by cuſtom; being yet entire, and not cut. See Cloth.

In the other ſignification, we ſay, a *piece* of tapeſtry, meaning a diſtinct member wrought a part, which with ſeveral others make one hanging. See Tapestry.

A *piece* of wine, of cyder, *&c.* is a caſk full of thoſe liquors.

Chimney Piece.	See the articles	Chimney.
Detached Piece.		Detached.
Maſter-Piece.		Master.
Eaſel Piece.		Easel.

Piece, in matters of money, ſignifies, ſometimes, the ſame thing with *ſpecies:* as, when we ſay, this *piece* is too light, *&c.* See Species, and Coin.

Sometimes, by adding the value of the pieces, it is uſed to expreſs ſuch as have no other particular name: as, a *piece* of eight rials, a *piece* of twenty five ſols, *&c.*

In England, the *piece* abſolutely, is ſometimes uſed for twenty ſhillings ſterling; and ſometimes for a guinea. See Guinea, Pound, and Sterling.

By 6 G. II. c. 25. *Broad-pieces* of five and twenty or three and twenty ſhillings value, or any halves or quarters thereof, are called in.—And all perſons are forbid to receive or utter them in payment by tale.

Piece *of eight*, or *piaſtre*, is a ſilver money, firſt ſtruck in Spain, afterwards in other countries; and now current in moſt parts of the world. Seee Coin.

It has its name *piece of eight*, or *rial of eight*, becauſe equal to eight ſilver rials. See Rial.

Its value is nearly on the ſame foot with the late French crown; *viz.* four ſhillings and ſix pence ſterling.—In 1687, the proportion of the ſimple rial to the piaſter was changed; and in lieu of eight rials they gave ten.—At preſent the reduction is on the ancient ſtandard.

There are two kinds of piaſters or Spaniſh crowns; the one ſtruck at Potoſi, the other at Mexico: theſe latter are a little matter heavier than the former, but in return they are not quite ſo fine.

The *piece of eight* has its diminutions; *viz.* the demi piaſter, or *piece of four rials;* the quarter, or *piece of two;* the half quarter, and the ſixteenth.—The exchange between Spain and England is made in *pieces of eight*. See Exchange.

Piece, is alſo a kind of money of account, or rather a manner of accounting uſed among the negroes on the coaſt of Angola in Africa. See Money.

The price of ſlaves, and other commodities, here negotiated, as alſo the duties paid the petty kings, are eſtimated on both ſides in pieces. Thus, thoſe barbarians requiring ten *pieces* for a ſlave; the Europeans in like manner value the money or merchandize, to be given in exchange, in *pieces*. See Commerce.

E. gr. ten Anabaſtes, are one *piece;* a barrel of powder of ten pounds, one *piece;* a *piece* of blue ſalempouris, four *pieces;* ten braſs baſons, one *piece*.

Piece, in heraldry, denotes an ordinary, or charge. See Ordinary, and Charge.

The honourable *pieces* of the ſhield, are the chief, feſs, bend, pale, bar, croſs, ſaltier, chevron; and in general all thoſe which may take up one third of the field, when alone, and in what manner ſoever it be.

Pieces, in the military art, include all ſorts of great guns and mortars. See Gun, Cannon, and Mortar.

Theſe are alſo called *pieces of ordnance*, or *artillery*. See Ordinance, *&c.*

Field **Pieces**, are a ſmaller ſort, carrying balls of ten or twelve pounds. See Field *pieces*.

Battery **Pieces**, are the larger ſort of guns uſed at ſieges for making of breaches.—Such are the twenty four pounders, and the culverin; the one carrying twenty four, and the other eighteen pound of ball.

Poiſoning a Piece.	See the articles	Poison.
Elevation of a Piece.		Elevation.
Quadrating a Piece.		Quadrating.

PIEDOUCHE*, in architecture, a little ſtand, or pedeſtal, either oblong or ſquare, enriched without mouldings; ſerving to ſupport a buſt, or other little figure. See Pedestal, Bust, *&c*

* The word is French, formed from the Italian, *peduccio*, foot.

PIEDROIT, in architecture, a *peer;* or a ſquare kind of pilar, part whereof is hid within a wall. See Peer and Parastata.

The only thing wherein it differs from a *pilaſter*, is, that the latter has a regular baſe, and capital, which the other wants. See Pilaster.

Piedroit is alſo uſed for a part of the ſolid wall annexed to a door or window; comprehending the door-poſt, chambranle, tableau, leaf, *&c.* See Door, Window, *&c.*

PIE-POUDER-*Court*, an ancient court mentioned in many of our ſtatutes, to be held in fairs; for the rendering of juſtice to buyers and ſellers; and the redreſs of grievances ariſing therein. See Fair.

It had its name, either becauſe moſt ordinarily held in ſummer, and that the ſuiters hereat were chiefly country-clowns, with duſty feet, called by the French, *pieds poudreux:* or from the expedition intended in the hearing of cauſes proper thereto, ere the duſt went off the plaintiff and defendant's feet.

The Saxons called it ceapunᵹ-ᵹemoꞇ, *i. e.* a court of merchandiſe; or for the deciſion of diſputes relating to buying and ſelling.—Doctor and ſtudent obſerve that it is only held during the continuance of the fairs, *&c.*

PIER. See the article Peer.

PIERCED, Percé, in heraldry, is when an ordinary is perforated or ſtruck through, ſhewing, as it were, a hole in it.

This *piercing* is to be expreſſed in blazon, as to its ſhape: thus if a croſs have a ſquare hole, or perforation in the center, it is blazoned, *ſquare pierced*, which is more proper than *quarter pierced*, as Leigh expreſſes it; and accordingly the French call it *percé en quarre*—When the hole, or perforation, is round, it muſt be expreſſed *round pierced;* which Gibbon in Latin calls *perforata*, becauſe all holes made with piercers or augers, are round.—If the hole in the center be in the ſhape of a lozenge, it is expreſſed *pierced lozenge ways*.

All *piercings* muſt be of the colour of the field, becauſe piercing implies the ſhewing of what is under the ordinary, or bearing.—Though when ſuch figures appear on the center of a croſs, *&c.* of another colour, the croſs is not to be ſuppoſed *pierced*, but that the figure on it is a charge, and muſt be accordingly blazoned. See Cross, *&c.*

PIERCING, among farriers.—To *pierce a horſe's ſhoe lean*, is to pierce it too near the edge of the iron.—To *pierce it fat*, is to pierce it further in.

PIES, in our ancient law-books.—*Freres* Pies, were a ſort of monks, ſo called becauſe they wore black and white garments, like magpies; the ſame, we ſuppoſe, with thoſe ſince called *Carmelites:* who for a like reaſon were anciently called by the French *Freres Barrez*. See Carmelite.

They are mentioned by Walſingham, *p.* 124. *In quodam veteri cœmeterio, quod fuerat quondam fratrum, quos* freres pies *veteres appellabant*.

PIESTRUM, ΠΙΕΣΤΡΟΝ, an inſtrument wherewithal to beat in pieces the bones of the head, in drawing a child out of the womb: called alſo *embryothlaſtes*. See Embryothlastes.

PIETANTIA, or Pittance, a portion of victuals diſtributed to the members of a college, or other community, upon ſome great feſtivals. See Pittance.

PIETANTIARIUS. See the article Pitanciarius.

PIETISTS, a religious ſect lately ſprung up among the proteſtants of Germany, ſeeming to be a kind of mean between the quakers of England and the quietiſts of the Romiſh church. See Quietism and Quakers.

Their author was Spenerus, from whom they learnt to deſpiſe all eccleſiaſtical polity, all ſchool theology, all forms and ceremonies; and to give themſelves up to contemplation, and the myſtick theology. See Mystic.

The *Pietiſts* are eſteemed Adiaphoriſts, or Indifferentiſts, *i. e.* in the German way of talking, they receive and allow of all ſects among proteſtants, particularly the calviniſts; contrary to the practice of other Lutherans.—Hence a Lutheran of Dantzick defines *Pietiſm*, an aſſemblage of the hypotheſes, or ſyſtems, of Anabaptiſts, Schwenckfeldians, Weigelians, Rathmannians, Labadiſts, and Quakers, who, under pretence of a new reformation, and in hopes of better times, ſet aſide the Augſburg confeſſion. See Adiaphorist.

The ſame author charges the *Pietiſts* not only with ſchiſm, but with hereſy: in that they believe with the Donatiſts, that the effect of the ſacraments depends on the piety and virtue of the miniſter; that creatures are emanations from the ſubſtance of God; that a ſtate of grace is a real poſſeſſion of the divine attributes, and a true deification; that one may be united to God, though he deny the divinity of Jeſus Chriſt; that all error is innocent, provided they will be but ſincere; that the preventing grace is natural, and that the will begins the work of ſalvation; that one may have faith without any ſupernatural aſſiſtance; that all love of the creature is original ſin; that a chriſtian may avoid all ſin; that one may enjoy the kingdom of God in this world. Theſe things we find charged on the *Pietiſts* in a book intituled, *Manipulus obſervationum Antipietiſticarum*.—Indeed, this looks like polemical exaggeration; at leaſt it is certainly ſo with regard to a good part of them.

In effect there are *Pietiſts* of ſeveral kinds: ſome are in groſs illuſions, and carry their errors to the overturning a great part of the chriſtian doctrine; others are only viſionaries; and others very honeſt and good people, who diſguſted with the coldneſs and formality of other churches, and charmed with the frequent piety of the *Pietiſts*, are attached to their party, without giving into the groſſeſt of their errors.

PIETY—*Mounts of* PIETY. See the article MOUNT.

PIG *of lead*, the eighth part of a fother, amounting to about 250 *l.* weight.

PIGER *Henricus*, ſlothful Harry, a ſlow diſtilling chymical furnace; called alſo *athanor*. See ATHANOR and FURNACE.

PIGMENTS, PIGMENTA, preparations uſed by painters, dyers, *&c.* to impart colours to bodies, or to imitate particular colours. See COLOUR.

When glaſs is ſtained, or coloured, as in painting on glaſs, or for counterfeiting gems, or precious ſtones; the *pigment* is uſually of a metalline, or a mineral nature. See ENAMEL; ſee alſo *painting on* GLASS.

PIGMY, or PYGMY. See the article PYGMY.

PIGNE. See the article PINEA.

PIKE*, an offenſive weapon, conſiſting of a ſhaft of wood, twelve or fourteen foot long; headed with a flat pointed ſteel, called the *ſpear*. See ARM.

> * The name *pike* is ſaid to be derived from a bird called by the French *pie*, by us wood-pecker, whoſe bill is ſo ſharp as to pierce wood like an auger.—Du Cange derives it from the baſe Latin *pica*, or *picca*, which Turnebus ſuppoſes to have been ſo called *quaſi ſpica*, becauſe reſembling a kind of ear of corn: Octavio Ferrari derives it *à ſpicula*—M. Fauchet ſays, it is the *pike* gave name to the Picards, and Picardy, which he will have to be modern, and to have been framed on occaſion of that people' renewing the uſe of the *pike*, the etymology whereof he fetches from the French *piquer*, to prick: others will have the name *picard* to have been given that people by reaſon of their readineſs to pick quarrels, called in French *piques*.

The *pike* was a long time in uſe in the infantry, to enable them to ſuſtain the attack of the cavalry; but is now taken from them, and the bayonet, which ſcrews on at the end of the carabine, ſubſtituted in its place. See BAYONET.

Yet the *pike* ſtill continues the weapon of foot-officers, who fight *pike* in hand, ſalute with the *pike*, *&c.*

Pliny ſays the Lacedæmonians were the inventors of the *pike*.—The Macedonian phalanx was a battallion of *pikemen*. See PHALANX.

PIKE, in commerce—To treat at the PIKE, or *pike's* end, *à la pique*, denotes a kind of commerce which the Europeans hold with certain ſavage nations, wherein they are to keep on their guard, and as it were ſword in hand.—Thus it is we treat with the ſavages of Canada, *&c.* and ſome negro nations on the coaſt of Africa.

Treating at the pike, alſo denotes a kind of prohibited traffic which the Engliſh, French and Dutch maintain in ſeveral parts of the Spaniſh Weſt Indies, near the colonies which thoſe nations have in the Caribbee Iſlands.

Perhaps it ſhould rather be called *treating at pike*, i. e. with the veſſel at anchor; in regard this commerce, which is prohibited on pain of death, is only practiſed in roads where veſſels lye at anchor; waiting for the Spaniſh merchants, who ſometimes by ſtealth, more frequently with the connivance of the governors, *&c.* come to exchange their gold, pieces of eight, cochineal, *&c.* for the European merchandizes.

Others will have it treating at the pike, *i. e.* at a *pike's length*, or *diſtance*; by reaſon of the diſtance ſtrangers are obliged to keep at. See COMMERCE.

PIKE *fiſhing.* } See the articles { FISHING.
Huxing of PIKE. } { HUXING.

PILA or PILE, among our ancient writers, denotes the arms-ſide of a piece of money. See MONEY and COIN.

The denomination aroſe hence, that anciently this ſide bore an impreſſion of a church built on piles. See PILE.

Fleta, lib. 1. *cap.* 39. He who brings an appeal of robbery or theft againſt another, muſt ſhew the certain quantity, quality, price, weight, number, meaſure, valorem & *pilum*; where *pilum* ſignifies *figuram monetæ*.

PILA*, PEER, in building, a maſſive of maſons work in manner of a pillar, uſually hexagonal. See PEER.

> * The word comes from the Latin, *pila*, uſed in the ſame ſenſe by Vitruvius; and this, probably, from πιλοω, *cogo, coarcto.*

Such are thoſe ſerving as fulcra, to ſeparate and ſupport the arches of a ſtone-bridge, or the beams of a wooden-bridge.

The *peers* of a ſtone-bridge are not to be leſs than one ſixth part of the arch, nor more than a fourth. See BRIDGE.

Evelyn obſerves, that *pilæ* and their quadras, as we ſee them in ancient altars and monuments, were uſed for inſcriptions; but the ſhorter and more maſſy ſerved for arches and buttreſſes to ſolid work.—They were ſometimes made ſemi-circular: but the ancients preferred thoſe pointed at right angles, as beſt able to reſiſt the current.

PILASTER, in architecture, a ſquare column, ſometimes inſulated, but more frequently let within a wall, and only projecting with a fourth or fifth part of its thickneſs. See COLUMN.

The *pilaſter* is different in different orders; it borrows the name of each order, and has the ſame proportions, and the ſame capitals, members, and ornaments, with the columns themſelves. See ORDER.

Pilaſters are uſually without either ſwelling or diminution, as broad at top as at the bottom; though ſome of the modern architects, as M. Manſard, *&c.* diminiſh them at top, and even make them ſwell in the middle, like columns; particularly when placed behind columns. See DIMINUTION.

Pilaſters, M. Perrault obſerves, like columns, become of different kinds, according to the different manner wherein they are applied to the wall.—Some are wholly detached, called by Vitruvius, *paraſtatæ*; others have three faces clear out of the wall; and others two; and others only one; all called by Vitruvius, *antæ*. See ANTA and PARASTATA.

Inſulate *pilaſters* are but rarely found in the antique.—The chief uſe they made of *pilaſters* was at the extremities of portico's, to give the greater ſtrength to the corners.

There are four principal things to be regarded in *pilaſters*, *viz.* their projecture out of the wall, the diminution, the diſpoſition of the entablature when it happens to be common to them and to a column, and their flutings and capitals.

1° Then, the projecture of *pilaſters* which have only one face out of the wall, is to be one eighth of their breadth; at moſt not above one ſixth. When they receive impoſts againſt their ſides, their projecture may be a quarter of their diameter. See PROJECTURE.

2° *Pilaſters* are but ſeldom diminiſhed, when they have only one face out of the wall.—Indeed where they ſtand in the ſame line with columns, and the entablature is continued over both, without any break, the *pilaſters* are to have the ſame diminution with the columns; that is to ſay, on the face reſpecting the column; the ſides being left without any diminution.

3° *Pilaſters* are ſometimes fluted, though the columns they accompany be not; and, on the other hand, the columns are ſometimes fluted, when the *pilaſters* that accompany them are not.

The flutings of *pilaſters* are always odd in number, except in half *pilaſters*, meeting at inward angles; where four flutings are made for three, *&c.* See FLUTE.

4° The proportions of the capitals of *pilaſters*, are the ſame as to height with thoſe of columns, but differ in width; the leaves of the former being much wider; becauſe *pilaſters*, though of equal extent, have only the ſame number of leaves for their girt, *viz.* eight—Their uſual diſpoſition is to have two in each face, in the lower row, and in the upper row one in the middle, and two halves in the angles, in the turns whereof they meet.—Add to this, that the rim of the vaſe or tambour is not ſtrait as the lower part is, but a little circular and prominent in the middle. See CAPITAL, *&c.*

In *pilaſters* that ſupport arches, the proportions, Palladio ſhews, muſt be regulated by the light they lie in; and at angles, by the weight they are to ſuſtain. For which reaſon, ſays Sir Henry Wotton, a ruſtic ſuperficies beſt becomes them.

PILASTER-*brick*. See the article BRICK.

PILCHARD-*fiſhing*. See *pilchard* FISHING.

PILE, in antiquity, a pyramid built of wood, whereon were laid the bodies of the deceaſed, to be burnt. See BUSTUM; ſee alſo FUNERAL, BURNING, *&c.*

PILE is alſo uſed in building, for a great ſtake rammed into the earth for a foundation to build upon in marſhy ground. See FOUNDATION; ſee alſo PALLIFICATION.

Amſterdam, and ſome other cities are wholly built upon *piles*.

The ſtoppage of Dagenham-breach is effected by dove-tail *piles*, i. e. *piles* mortiſed into one another, by a dove-tail joint. See PALE, and DOVE-TAIL.

PILE is alſo uſed, among architects, for a maſs, or body, of building. See BUILDING.

PILE, PILA, in coinage, denotes a kind of punchion, which, in the old way of coining with the hammer, contain'd the arms, croſs, or other figure and inſcription, to be ſtruck for the reverſe of the ſpecies. See COIN and SPECIES.

Accordingly, we ſtill call the arms ſide of a piece of money, the *pile*, and the head the *croſs*; becauſe in the ancient monies, a croſs uſually took the place of the head in ours. See COINING. Hence alſo the game of *croſs* and *pile*.

Some will have it called *pile*, *pila*, becauſe on this ſide, in our ancient coins, there was an impreſſion of a church built on *piles*. Scaliger, with more probability, derives it from the old French word, *pile*, a ſhip. *Vide* prima Scaligarana, in voc. *Nummus Ratitus*, p. 115.—In ſome ancient writings *pila* is uſed to ſignify the particular figure or impreſſion of money.—Thus Fleta; he who brings an appeal of robbery, or theft, againſt another, muſt ſhew the certain quantity, quality, price, weight, number, meaſure, value, and *pile*. See PILA.

PILE, in heraldry, is an ordinary, in form of a point inverted, or a ſtake ſharpened; contracting from the chief, and terminating in a point towards the bottom of the ſhield, ſomewhat in manner of a wedge.—See *Tab. Herald. fig.* 80.

It is formed probably in imitation of the Roman pilum, which was a tapering dart about five feet long, and ſharpened at the point with ſteel.

The *pile* is born inverted, engrailed, *&c.* like other ordinaries, and iſſues indifferently from any point of the verge of the eſcutcheon.—He beareth a *pile gules*, by the name of Chandois.

PILES, in medicine, a diſeaſe, by phyſicians, called *hæmorrhoids.* See HÆMORRHOIDS.

PILETTUS*, in our ancient foreſt laws, an arrow which had a round knob a little above the head, to hinder it from going far into the mark.

* From the Latin *pila*, which ſignifies any round thing like a ball. *Et quod foreſtarii ſui non portabunt ſagittas barbatas ſed* pilettos. Charta Rogeri de Quincy.

PILGRIM*, one who travels through foreign countries to viſit holy places, and to pay his devotion to the reliques of dead ſaints. See RELICS, JUBILEE, *&c.*

* The word is formed from the Flemiſh, *pelgrim*, or Italian *pelegrino*, which ſignifies the ſame; and thoſe originally from the Latin *peregrinus*, a ſtranger, or traveller.

The humour of going on pilgrimage anciently prevailed exceedingly; particularly about the time of the croiſades. See CROISADE and CROISE.

Several of the principal orders of knighthood were eſtabliſhed in favour of *pilgrims* going to the Holy Land, to ſecure them from the violences and inſults of the Saracens and Arabs, *&c.* Such were the order of the knights Templars, the knights Hoſpitallers, knights of Malta, *&c.* See ORDER, TEMPLAR, MALTA, *&c.*

PILLAGE, among builders, is ſometimes uſed for a ſquare pillar, ſtanding behind a column to bear up the arches; having a baſe and capital as a pillar has. See PILLAR.

PILLAR, in architecture, a kind of irregular column, round and inſulate; but deviating from the proportions of a juſt column See COLUMN.

Pillars are always either too maſſive or too ſlender for a regular architecture. In effect, *pillars* are not reſtrained to any rules: their parts and proportions are arbitrary.

Such *e.gr.* are the *pillars* which ſupport Gothic vaults and other buildings, *&c.*

A ſquare *pillar* is a maſſive work, called alſo a *peer* or *piedroit*, ſerving to ſupport arches, *&c.* See PEER and PIEDROIT.

Butting pillar, is a butment or body of maſonry, raiſed to prop or ſuſtain the thruſt of a vault, arch, or other work. See BUTTRESS and BUTMENT.

PILLAR, in the manage, ſignifies the centre of the volta, ring, or manage-ground, round which a horſe turns; whether there be a wooden *pillar* placed therein, or not. See MANAGE.

There are alſo other *pillars* in manages on the circumference, or ſide; placed at certain diſtances, by two and two.—To diſtinguiſh theſe from that of the centre, they are called the *two pillars.* When theſe latter are ſpoken of, it is uſual to ſay, *work the horſe between the two pillars.*—When the former, it is called *working round the Pillar.*

The uſe of the *pillar* in the centre, is for regulating the extent of ground, that the manage upon the volts may be performed with method, and juſtneſs, and that they may work in a ſquare by rule and meaſure upon the four lines of the volts; and alſo to break unruly high mettled horſes, without endangering the rider.

The *two pillars* are placed at the diſtance of two or three paces one from the other.—The horſe is put between theſe, to teach him to riſe before, and yerk out behind; and put himſelf upon raiſed airs, *&c.* either by the aids, or chaſtiſement.

Ropes of two PILLARS. See the article ROPE.

PILLE *of Foddray*, or PILE *of Fouldrey*, in the county of Lancaſter, a defence built on a creek of the ſea called *pille*, by the idiom of the county, for a *pile*, or fort built for the ſafe-guard, or protection of any place.

This *pile* was erected there by the Abbot of Fourneſſe, in the firſt year of Edward III. Camd. *Brit. Rex—Dedimus Henrico comiti Northumb. inſulam, caſtrum,* pelam *& dominium de Man,* &c. Rot. Pat. 1 Hen. IV.

PILLORY was anciently a poſt erected in a croſs road, by the lord, as a mark of his ſeignory, with his arms on it, and ſometimes a collar to tye criminals to.

PILLORY, at preſent, is a wooden machine, whereon certain criminals, as perjurors, *&c.* are faſtened, and expoſed to the public deriſion. See PUNISHMENT, PERJURY, *&c.*

In the laws of Canutus, it is called *healſehang*,—Sir Henry Spelman ſays, it is *ſupplicii machina ad ludibrium, magis quam pœnam.* It was peculiarly intended for the puniſhment of bakers who ſhould be caught faulty in the weight, or fineneſs of their bread.—In old charters it is called *colliſtrigium.*

The *Pillory* in Paris is in the middle of a round tower, with openings on every ſide.—It is moveable on an axis, or arbor; round which the executioner gives the criminal the number of turns appointed in court; ſtopping him at each opening to ſhew him to the people.—It was intended for ſeveral kinds of criminals, particularly fraudulent bankrupts; and all who made a ceſſion, or ſurrender of their effects to their creditors, were obliged to take ſome turns round the pillory on foot, with a green cap on. See BANKRUPT, CESSION, *&c.*

PILL, PILLULA, in pharmacy, a form of medicine, taken dry; reſembling a little ball; invented in favour of ſuch as cannot well take medicinal draughts; as alſo to keep in readineſs for occaſional uſe without decaying. See CATAPOTIUM.

Pills are of various kinds, anodyne, ſomniferous, laxative, aperitive, hyſteric, antinephritic, *&c.* but principally cathartic. The baſis of *pills* is uſually aloes; with which are mix'd agaric, turbith, hermodactyls, ſenna, rhubarb, mercury, ſtorax, *&c.* *Pills* are uſually wrapped up in leaf-gold, in ſugar, or the like, to prevent the ill taſte being perceived.

Perpetual PILLS, PILLULÆ *perpetuæ*, are regulus of antimony made up into pills; thus called, becauſe being ſwallowed and voided fifty times, they will purge every time with undiminiſhed force. See ANTIMONY and PERPETUAL.

The *aloephangine* or *aromatic* PILLS of Meſue, made of aloes, ſcammony, troches of alhandal, and ſaffron, are call'd *polychreſtæ*, as being ſuppoſed to collect the humours from all parts, to enable nature to caſt them out more eaſily.

Bechic PILLS, are a ſort of *pills* good againſt coughs, ſo call'd from the Greek, βηξ, cough.—They are alſo called *hypoglottides*, becauſe left to diſſolve under the tongue.

PILLULÆ *Diarrhodon.* See the article DIARRHODON.

PILOT*, a perſon retain'd on board a ſhip to conduct it into a road, or harbour; or over bars, ſands; or through ſerpentine, and intricate chanels, or the like.

* Menage derives the word *pilot* from *prorita*, *q.d.* he who governs the prow, or head. Others fetch it from the old French, *pile*, ſhip.

Pilots are no conſtant and ſtanding officers on board our veſſels: but are moſtly call'd in occaſionally on coaſts and ſhoars unknown to the maſter.—And having done their parts in piloting the veſſel, return to ſhoar were they reſide.

Among the French, *pilot* is alſo uſed for the ſteerſman; or an officer on board a ſhip, who watches her courſe, and directs it. See COURSE, SAILING, *&c.*

There are two kinds of *pilots*; the one a *coaſting pilot*, well acquainted with the coaſts, ports, roads, bars, ſands, *&c.* and who commands in ſight thereof. See COASTING.

The other an officer who makes obſervations and takes altitudes out at ſea, uſes the quadrant, fore-ſtaff, watches the compaſs, *&c.* See OBSERVATION, ALTITUDE, *&c.*

The *pilot* is always the ſecond perſon in the ſhip; whether it be a man of war, or a merchant man.—In the former the captain is the firſt, the *pilot* the ſecond. In a merchant-ſhip, the maſter is the firſt, the *pilot* after him.

The *pilot* is alſo the ſteerſman, who ſtands at the helm, and manages the rudder. See STEERING, HELM, and RUDDER.

PILY *Barry.* See the article BARRY *Pily.*

PIMENTO, PIMENTA, *all-ſpice*; a kind of aromatic berry, called alſo *guinea-pepper.* See PEPPER.

PIN, in commerce, a little, neceſſary implement chiefly uſed by the women, in adjuſting their dreſs.

The form and application of this little moveable need no deſcription; but its conſumption, and the number of hands it employs, are too conſiderable to be paſſed by unnoted.

Pins are now altogether made of braſs-wire blanched: formerly they likewiſe made them of iron-wire, which being blanched like the others, paſſed for braſs: but the ill effects of thoſe *pins* has quite diſcarded their uſe.—The French however could not be driven off from them without ſeveral arrets of parliament. By a ſentence of the lieutenant de police, July 1695, the ſeizure of ſome millions of thoſe *pins* was confirmed, and the *pins* condemned to be burnt by the common executioner.

The *pins* moſt eſteemed in commerce are thoſe of England; thoſe of Bourdeaux are next, then thoſe made at Rugle, Naigle, and ſome places in Normandy.

The perfection of *pins* conſiſts in the ſtiffneſs of the wire, and its blanching, in the heads being well-turn'd, and the points filed. The London pointing and blanching are in moſt repute; becauſe after forming the points on the ſtone, our pin-makers ſmooth them again on the poliſher; and in blanching uſe fine tin well calcin'd, and ſometimes ſilver leaves prepar'd by the gold-beaters; whereas in other parts they uſe a mixture of tin, lead, and quickſilver, which not only blanches worſe than the former, but is alſo dangerous, by reaſon of the ill quality of that mineral, which renders a puncture with a *pin* thus blanched very difficult to cure.

The conſumption of *pins*, and the number of artificers employed in the manufacture thereof are incredible. In Paris alone there were anciently above 1000 people employed in it, at preſent there are none; yet there is every year ſold above 50,000 crowns worth of the *pin-wire*, to the pin-makers of the neighbouring places, all brought thither from Stockholm.—In the little town of Rugle in Normandy, there are computed at leaſt 500 workmen employed in the *pin* manufacture; the whole town being peopled therewith.

Notwithſtanding that there is ſcarce any commodity cheaper than *pins*, there is none that paſſes through more hands ere they come to be ſold.—They reckon twenty-five workmen ſucceſſively employed in each *pin*, between the drawing of the braſs-wire, and the ſticking of the *pin* in the paper.

Pins are diſtinguiſhed by numero's; the ſmaller called from N° 3, 4, 5; thence to the 14th; whence they are only accounted by two to two; *viz.* N° 16, 18, and 20, which is the largeſt ſize.

Beſides the white *pins*, there are alſo black ones made for mourning, from N° 4, to N° 10.—Theſe are uſually of iron-wire.

Laſtly, there are *pins* with double heads, of ſeveral numero's; uſed by the ladies to fix the buckles of their hair for the night, without danger of being diſturbed by their pricking, *&c.*

One of the articles of the ſtatutes of the ancient pin-makers of Paris, was, that no maſter ſhould open more than one ſhop for the ſale of his wares, except on new-year's-day, and the eve thereof: this we mention in an age of luxury and profuſion, to recollect the agreeable ſimplicity of our fore-fathers, who contented themſelves with giving *pins* for new-years gifts.

Hence the cuſtom of ſtill giving the name *pins*, or *pin-money*, to certain preſents which accompany the moſt conſiderable bargains; in which it is uſual to give ſomething towards the *pins* of the wife, or children, of the perſon with whom the bargain is ſtruck.

Hook PINS. } See the articles { HOOK.
Protracting PIN. } { PROTRACTING.

Ad PINNAS *bibere*, a method of drinking anciently uſed among the Danes in England.—The cuſtom was to fix a *pin* in the ſide of the wooden cup or waſſalbowl; which *pin*, each gueſt was to drink bare, upon penalty of forfeiting.

PIN-*and-Web*, a horny induration of the membranes of the eye not much unlike a cataract. See CATARACT.

The *pin* and web is the ſame with what we otherwiſe call *pannus, unguis, pterygium, &c.* See PANNUS, PTERYGIUM, *&c.*

PIN-*wheel*, of a clock, the ſame with the ſtriking wheel. See WHEEL and CLOCK.

PINCHING, in gardening, a ſort of pruning; performed by nipping or breaking off the branches, or ſprigs of a plant, or tree, between the nails of two fingers. See PRUNING.

Moſt gardeners hold, that *pinching* contributes to the abundance of the fruit, as well as of the branches; and ſay, that young ſhoots, thus lopped, are leſs apt to grow black and die, than when cut with a pruning knife.

The ſeaſon for *pinching* is chiefly in April or May, ſometimes it is alſo practiſed in June and July.—The fruits it is practiſed on are chiefly melons, cucumbers, *&c.* Quintiny alſo preſcribes it for fruit-trees.

It is chiefly to be practiſed on the large branches towards the top of the tree, which are uſeleſs and yet conſume a great quantity of good ſap. It muſt rarely be employed on the large branches below; which ought always to be preſerved for the winter's pruning, that they may yield others, the following year, fit to fill the empty places.—Nor muſt the operation of *pinching* be performed on the tender ſhoots; becauſe having only juſt ſap enough for themſelves, when they come to put forth more branches in the place where they are *pinched*, the ſmall ſtock of ſap allotted them being divided, will ſtarve them.—The operation is performed within two or three eyes of the branch they grow out of.

The effect of *pinching* is, that inſtead of one uſeleſs, perhaps hurtful, wood-branch, a vigorous tree will put forth two or three at the eyes remaining; and the ſap being thus divided, the branches may be leſs, and fit for wood and fruit.

PINCHING, in the manage, is when, the horſe ſtanding, the rider holds him faſt with the bridle-hand, and applies the ſpurs juſt to the hairs of his ſides, without pricking him.

Pinching is accounted an aid, ſpurring chaſtiſement or correction. See AID.

PINDARIC, in poetry, an ode formed in imitation of the manner of *Pindar*. See ODE.

The *Pindaric* manner is diſtinguiſhed by the boldneſs and height of the flights, the ſuddenneſs and ſurprizingneſs of the tranſitions, and the ſeeming irregularity, wildneſs, and enthuſiaſm of the whole. See DITHYRAMBUS.

Pindar, whence the manner takes its name, was of Thebes: he flouriſhed about four hundred and ſeventy-eight years before Chriſt; and was cotemporary with Æſchylus: what we have remaining of his is a book of odes, all in praiſe of the victors at the Olympian, Pythian, Nemæan, and Iſthmian games; whence the firſt is entitled the *Olympians*, the ſecond the *Pythians*, the third the *Nemæans*, and the fourth the *Iſthmians*.

Pindar is full of force and fire; his thoughts ſententious, his ſtyle impetuous; his ſallies daring, and frequently running as it were at random: he affects a beautiful diſorder, which yet is ſaid to be the effect of the greateſt art.

The ſuppoſed irregularity of his numbers has made ſeveral of his imitators imagine themſelves *pindaric* poets, by the mere wildneſs, and irregularity of their verſes.—None of our writers ſeem to have ſucceeded in the *pindaric* character, better than Cowley.

In a *pindaric* ode, the plan of the whole is to be drawn firſt, and the places marked out where the elegant ſallies and wandrings may beſt be, and how the returns may be juſtly made to the ſubject.

PINEA, or PIGNE, in commerce, a term uſed in Peru and Chili, for a kind of light, porous maſſes, or lumps formed of a mixture of mercury and ſilver-duſt from the mines. See SILVER.

The ore, or mineral of ſilver, being dug out of the veins of the mine, is firſt broke, then ground in mills for the purpoſe, driven by water with iron peſtles of two hundred pound weight.—The mineral thus pulverized, is next ſifted, then worked up with water into a paſte, which when half dry, is cut into pieces, called *cuerpo's*, a foot long; weighing each about two thouſand five hundred pounds.

Each cuerpo is again kneaded up with ſea-ſalt, which diſſolving incorporates with it.—They then add mercury, from ten to twenty pounds for each cuerpo, kneading the paſte a-freſh until the mercury be incorporated therewith. This office being exceedingly dangerous, by reaſon of the noxious qualities of the mercury, is the lot of the poor Indians. See MERCURY.

This amalgamation is continued for eight or nine days: ſome add lime, lead, or tin ore, *&c.* to forward it; and in ſome mines they are obliged to uſe fire.—To try whether or no the mixture and amalgamation be ſufficient, they waſh a piece in water, and if the mercury be white, it has had its effect; if black, it muſt be further worked.

When enough, it is ſent to the lavatories, which are large baſons that empty ſucceſſively into one another.—The paſte, *&c.* being laid in the uppermoſt, the earth is then waſhed from it into the reſt by a rivulet turned upon it; an Indian all the while ſtirring it up with his feet, and two other Indians doing the like in the other baſons. See LAVATORY.

When the water runs quite clear out of the baſons, they find the mercury and ſilver at bottom, incorporated.—This matter they call *pella*, and of this they form the *pineas* by expreſſing as much of the mercury as they can; firſt by putting it in woollen bags and preſſing and beating it ſtrongly; then by ſtamping it in a kind of wooden mould of an octagonal form, at bottom whereof is a braſs-plate pierced full of little holes.

The matter being taken out of the mould is laid on a trivet, under which is a large veſſel full of water; and the whole being covered with an earthen head, a fire is made around it.

The mercury ſtill remaining in the maſs is thus reduced into fumes, and at length condenſing is precipitated into the water, leaving behind it a maſs of ſilver grains of different figures, which only joining or touching at the extremes render the matter very pourous and light.

This, then, is the *pineas* or *pignes* which the workmen endeavour to ſell ſecretly to the veſſels trading to the South Sea; and from which thoſe who have ventured to engage in ſo dangerous a commerce have made ſuch vaſt gains.—Indeed the traders herein muſt be very careful, for the Spaniſh miners are errant knaves, and to make the *pignes* weigh the more, make a practice of filling the middle with ſand or iron. See COMMERCE, PIKE, *&c.*

PINEAL, PINEALIS, in anatomy, a name which Des Cartes gives to a ſmall gland in the third ventricle of the brain; from its reſemblance to a pine-apple. See GLAND and BRAIN.

This gland he makes the ſenſorium, or ſeat of the reaſonable ſoul. See SENSORUM.—Other authors call it *conoides* and *conarium*. See CONARIUM.

PINGUEDO, (in anatomy) the Latin term for *fat*. See FAT.

Some reſtrain *pinguedo* to that *ſoft humid kind of fat* found in animals next under the ſkin. See FAT and ADEPS.

PINION, in mechanicks, an arbor, or ſpindle, in the body whereof are ſeveral notches, into which catch the teeth of a wheel that ſerves to turn it round.

Or a *pinion* is a leſſer wheel, which plays in the teeth of a larger. See WHEEL.

In a watch, *&c.* the notches of a *pinion* (which are commonly 4, 5, 6, 8, *&c.*) are called *leaves*, and not teeth as in other wheels. See WATCH.

PINION *of report*, is that pinion in a watch which is commonly fixed on the arbor of the great wheel, and which in old watches uſed to have but four leaves; it drives the dial-wheel, and carries about the hand. See WATCH-WORK.

The quotient, or number of turns to be laid upon the *pinion* of report, is found by this proportion: as the beats in one turn of the great wheel, are to the beats in an hour; ſo are the hours of the face of the clock, (*viz.* 12, or 24) to the quotient of the hour-wheel, or dial-wheel divided by the *pinion* of report, that is, by the number of turns which the *pinion* of report hath in one turn of the dial-wheel: which in numbers is 26928 : 20196 :: 12 : 9.

Or rather thus; as the hours of the watches going, are to the numbers of the turns of the fuſy; ſo are the hours of the face, to the quotient of the *pinion* of report.—If the hours be 12, then 16 : 12 :: 12 : 9. But if 24, the proportion is 16 : 12 :: 24 : 18.

This rule may ſerve to lay the *pinion* of report on any other wheel, thus: as the beats in one turn of any wheel, are to the beats in an hour; ſo are the hours of the face, or dial-plate of the watch, to the quotient of the dial-wheel, divided by the *pinion* of report, fixed on the ſpindle of the aforeſaid wheel. See BEATS, TURN, *&c.*

Flying Pinion, See the article Flying.

PINK, a veſſel uſed at ſea, maſted and rigged like other ſhips; only that ſhe is built with a round ſtern; the bends and ribs compaſſing ſo, as that her ſides bulge out very much. See Vessel.

This diſpoſition renders the *pinks* difficult to be boarded; and alſo enables them to carry greater burdens than others.—Whence they are often uſed for ſtore-ſhips and hoſpital-ſhips in the fleet.

Pink among painters, denotes a ſort of yellow colour. See Yellow and Painting.

PINNA, or Penna, a Latin word ſignifying a feather. See Feather.

It is alſo uſed figuratively in divers arts, to expreſs things which bear ſome reſemblance, in form, to feathers; as the fins of fiſhes, *&c.* See Fin.

Pinna *auris*, in anatomy. See Ear and Auricle.

Pinna *naſi*, is the ſame as *ala naſi.* See Nose and Ala.

PINNACE, a ſmall veſſel, with a ſquare ſtern, having ſails and oars, and carrying three maſts; chiefly uſed as a ſcout for intelligence, and for landing of men. See Vessel.

One of the boats belonging to a great man of war, ſerving to carry the officers to and from the ſhoar, is alſo called the *pinnace.* See Boat.

PINNACLE*, in architecture, the top, or roof, of a houſe, terminating in a point. See Roof.

* The word comes from the Latin *pinna*, or *pinnaculum.*

This kind of roof among the ancients was appropriated to temples; their ordinary roofs were all flat, or in the plat-form way. See Platform.

It was from the *pinnacle*, that the pediment took its riſe. See Pediment.

PINNATA *folia*, in botany, are ſuch leaves of plants, as are deeply jagged, cut, or indented, reſembling a feather in ſhape. See Leaf.

PINNING, in building, the faſtening of tyles together, with pins of heart of oak; for the covering of a houſe, *&c.* See Tyles and Covering.

PINT*, Pinta, a veſſel, or meaſure uſed in eſtimating the quantity of liquids, and even ſometimes of dry things. See Measure.

* Budæus derives the word *pint* from the Greek ϖινθα: others from the German *pint*, a little meaſure of wine; Nicod from the Greek ϖινειν, to drink.

The Engliſh *pint* is twofold; the one for wine-meaſure, the other for beer and ale-meaſure.

The wine *pint* contains a full pound, avoir du pois, of common running water; two *pints* make a quart, two quarts a pottle, two pottles a gallon, *&c.* See Gallon, Quart, *&c.*

The Paris *pint* is eſtimated at one ſixth of the ancient congius; and contains two pounds of common water; it is divided into chopines, which ſome call ſeptiers; the ſeptier into two demi-ſeptiers, the demi-ſeptier into two poiſſons, each poiſſon containing ſix cubic inches.—Two *pints* make a quart, quarteau, which ſome call a pot: the *pint* of S. Denis is almoſt double that of Paris.

PINTLE, among gunners an iron which ſerves to keep the cannon from recoiling. See Cannon, Ordinance, Recoil, *&c.*

Pintles, in a ſhip, are hooks by which the rudder hangs to the ſtern-poſt. See Rudder, *&c.*

PIONEER, in war, a labourer employed in an army, to ſmooth the roads, paſs the artillery a-long, dig lines and trenches, mines, and other works.

* Menage derives the word from the Latin *peditones*, a diminutive of *pedites:* Bochart deduces it from the Pæones, a people of Aſia, whoſe principal employment was to dig the earth in mines, *&c.*

PIP, or Pep, Pepia, a diſeaſe among poultry; conſiſting of a white, thin ſkin, or film, that grows under the tip of the tongue, and hinders their feeding.

It uſually ariſes from want of water, or from drinking puddle-water, or eating filthy meat.—It is cured by pulling off the film with the fingers, and rubbing the tongue with ſalt.—Hawks are particularly liable to this diſeaſe; eſpecially from feeding on ſtinking fleſh. See Hawk.

PIPE, in building, *&c.* a canal or conduit for the conveyance of water, and other liquids. See Canal.

Pipes for water, water-engines, *&c.* are uſually of lead, iron, earth, or wood.—Thoſe of timber are commonly either oak, or alder. See Timber.

Thoſe of iron are caſt in the forges; their length about two foot and a half; ſeveral of which are pieced together, by means of four ſcrews at each end, with leather, or old hat between them to ſtop the water.

Thoſe of earth are made by the potters.—Theſe are fitted into one another, one end being always made wider than the other.—To join them the cloſer, and prevent their leaking, they are covered with pitch and tow.—Their length is uſually about the ſame with that of the iron *pipes.*

The wooden *pipes* are bored with large iron augers of different ſizes, ſucceeding one another from leſs to larger; the firſt pointed, the reſt formed ſpoon-wiſe, increaſing in diameter from one inch to ſix.—They are fitted into the extremities of each other, and are ſold by the foot.

Leaden *pipes* are of two kinds: the one ſoldered, the other not ſoldered: for the conſtruction of each kind whereof, ſee Plumbery.

For the Pipes *of organs.* See the article Organ.

Bag Pipe. See the article Bag-Pipe.

Pipe is alſo a popular machine uſed in the ſmoaking of tobacco; conſiſting of a long ſlender tube, made of earth or clay; having at one end a little vaſe, or furnace, called the *bowl*, for the reception of the tobacco; the fumes whereof are drawn by the mouth through the other end. See Tobacco.

Pipes are made of various faſhions, long, ſhort, plain, worked, white, varniſhed, unvarniſhed, of various colours, *&c.*—The Turks uſe *pipes* three or four foot long, made of ruſhes, or of wood bored; at the end whereof they fix a kind of nut, of baked earth, which ſerves as a bowl, and which they take off after ſmoaking.

Pipe* alſo denotes a veſſel, or meaſure, for wine, and things meaſured by wine-meaſure. See Measure.

* The word is formed from the barbarous Latin *pépa*, a veſſel, caſk, *&c.*

The *pipe*, or butt, contains two hogſheads, four barrels, or one hundred and twenty ſix gallons; and is computed to weigh about nine hundred, two quarters and ſeventeen pounds. See Hogshead, *&c.*

The *pipe* is little uſed in France, except in Anjou and Poictou, where it conſiſts of two boiſſeaux, equal to a muid and half of Paris; the muid conſiſting of thirty ſix ſeptiers, and the ſeptier of eight pints. See Muid.

Pipe, Pipa, in law, is a roll in the exchequer, called alſo the *great roll.* See Roll and Exchequer.

Pipe *office*, is an office wherein a perſon called the *clerk of the pipe*, makes out leaſes of crown-lands, by warrant from the lord-treaſurer, or commiſſioners of the treaſury, or chancellor of the exchequer.

Clerk of the pipe makes up all accounts of ſheriffs, *&c.* and gives the accomptants their quietus eſt. To this office are brought all accompts which paſs the remembrancer's office, and remain there; that if any ſtated debt be due from any perſon, the ſame may be drawn down into the great roll of the pipe; upon which the comptroller iſſues out a writ, called the *ſummons of the pipe* for recovery thereof. And, if there be no goods or chattels, the clerk draws down the debts to the lord treaſurer's remembrancer, to write eſtreats againſt their lands.

All tallies which vouch the payment of any ſum contained in ſuch accompts, are examined, and allowed by the chief *ſecondary of the pipe.* See Tally.

Beſides the clerk, in this office are eight attorneys, or ſworn clerks, and a comptroller.

Piquet. See the articles Picket and Picquet.

PIRATE, or Pyrate, Pirata, *rover*; a perſon, or veſſel, that robs on the high ſeas, or makes deſcents on the coaſt, *&c.* without the permiſſion, or authority of any prince, or ſtate. See Privateer.

When *pirates* are caught, they are uſually hanged up without remiſſion, or any formal trial; ſometimes in the next port; ſometimes on board the veſſel that takes them.

In different parts they are differently denominated; as in the Weſt-Indies, *buccaneers*, *free-booters*, *&c.*—In the Mediterranean *corſairs*, *&c.* See Buccaneer, Corsair, *&c.*

Alexander reproaching a *pirate* with his condition; was anſwered, if I am a *pirate*, it is becauſe I have only a ſingle veſſel; had I a fleet, I ſhould be a mighty conqueror.

Pirate was alſo anciently uſed for the perſon to whoſe care the mole, or peer, of a haven, in Latin *pera*, was intruſted. See Peer.

Pirate was ſometimes too, according to Spelman, uſed for a ſea-captain, or ſoldier. Aſſer, in the life of king Alfred, tells us, *juſſit naves longas fabricari, impoſitiſque piratis in illis vias maris cuſtodiendas commiſit.*

PIROUETTE, or Pyroet, in the manage, a turn or circumvolution which a horſe makes, without changing his ground.

* The word is French, and literally ſignifies whirligig.

Pirouettes are either of *one tread or piſte*, or of *two.*—The firſt is an entire ſhort turn which the horſe makes upon one tread, and almoſt in one time; in ſuch manner as that his head comes to the place where his tail was, without putting out his haunches.—In the *pirouette* of *two treads*, or *piſtes*, he takes a ſmall compaſs of ground, almoſt his length; and marks both with the fore-part and the hind. See Piste.

PISCARY, Piscaria, in our ancient ſtatutes, the liberty of fiſhing in another man's waters. See Fishing and Game.

PISCES, in aſtronomy, the twelfth ſign, or conſtellation of the zodiac. See Sign and Constellation.

The ſtars in *piſces*, in Ptolemy's catalogue, are 38. In Tycho's 33. In the Britannic catalogue 109.—The longitudes, latitudes, magnitudes, *&c.* whereof are as follow.

Names and ſituation of the ſtars.	Sign.	Longit. ° ′ ″	Latitude. ° ′ ″		Magn.
	♓	11 06 22	7 22 49	B	7
		12 06 15	6 51 40	B	6
		12 04 48	6 01 09	B	6
In the mouth of the ſouth. fiſh		14 15 56	9 03 19	B	4
		14 41 18	7 01 31	B	6
5					
South. of 2 in the hind part of the head		17 03 44	7 16 43	B	4
North. in the hind part of the head.		18 42 17	8 52 36	B	5 6
Preced. of two in the belly		18 34 33	4 26 26	B	5
A ſmall one contiguous to it		18 35 20	4 16 40	B	6 7
Preced. in the back.		20 52 27	9 01 58	B	5
10					
		17 56 47	1 22 54	B	6
		18 16 05	2 04 20	B	6
		18 48 28	1 46 36	B	6
		19 13 58	1 24 53	B	6
		20 34 43	3 37 54	B	6
15					
		21 05 46	4 15 34	B	6
Subſeq. in the back		23 18 38	7 12 12	B	5
Subſeq. of two in the belly.		22 16 36	3 25 07	B	5
		26 00 11	11 07 22	B	7
		23 56 55	4 32 43	B	5 6
20					
1ſt of thoſe preced. the ſquare		21 48 21	1 19 43	A	6 7
under the ſouth. fiſh)		23 41 07	2 01 47	B	6
		24 59 44	3 28 57	B	6
Second		22 47 44	2 11 39	A	6 7
		27 22 55	6 58 13	B	6
25					
Preced. of north. in the ſquare		23 57 34	3 07 49	A	5
In the tail of the ſouth. fiſh		28 14 55	6 22 15	B	5
Subſeq. of the north. in the ſquare		24 53 04	2 57 45	A	5
Preced. of the ſouth. in the ſquare		23 42 36	5 42 33	A	5
		29 49 12	7 57 50	B	6
30					
That which follows over the tail		29 38 45	7 31 43	B	5 6
Subſeq. the ſouth. of thoſe in the		24 36 38	5 46 55	A	5 4
ſquare under Piſces)		2 26 23	9 12 37	B	6
		2 37 16	6 36 03	B	6
		2 45 08	5 54 26	B	6
35					
		5 04 06	11 05 36	B	6
		3 11 38	6 24 02	B	7
		6 18 45	13 12 04	B	6
		6 46 18	12 55 03	B	6
In the line next the tail of Piſces		3 39 16	5 27 36	B	6
40					
		6 09 48	10 09 08	B	6
		7 01 13	10 41 48	B	6
		2 16 10	0 44 49	A	6
		4 36 55	4 30 42	B	6
		9 57 40	15 06 45	B	6
45					
		9 16 43	13 37 31	B	6
		8 43 31	12 16 56	B	7
		9 08 47	11 39 13	B	7
Second from the tail in the line		5 49 42	3 10 38	B	6
		11 18 56	15 23 53	B	6
50		8 50 00	00 10 00	B	7
		10 08 47	10 21 41	B	7
		13 25 40	15 43 24	B	7
		12 26 42	9 38 42	B	6
		11 08 49	6 22 25	B	7
		14 16 36	13 19 58	B	7
55					
		9 12 22	1 31 48	B	7
		14 57 38	14 30 43	B	7
		9 37 31	1 57 28	B	7
Preced. of the bright ſtars in the line		9 49 17	2 09 44	B	4
		13 34 02	10 44 49	B	6
60					
Preced. of three in the head of the		18 17 46	20 30 43	B	6
north. fiſh)		15 43 29	12 17 13	B	6
Middle of thoſe in the head		19 23 22	19 29 38	B	6
Laſt of 3 in the head of the north. fiſh		20 33 53	20 57 08	B	6
Preced. of 2 againſt the eye of the		22 53 41	23 03 47	B	5
north. fiſh) 65					
Middle of the bright ſtars in the		13 12 11	1 04 07	B	4
ſouth. line)		16 23 36	7 23 22	B	6
		12 46 09	1 10 40	A	6
Preced. of 2 in the fin of the back		19 06 00	13 21 08	B	5
		15 43 21	5 31 13	B	6
70					
Subſeq. againſt the eye of the north.		23 46 30	23 06 23	B	5
fiſh)		12 41 48	1 55 32	A	6
		24 04 18	22 47 51	B	6
Middle in the fin of the back	♈	19 18 25	12 28 46	B	6
	♈	12 06 37	4 49 08	A	7
75					
Upper, in the fold of ſouth. line		13 37 12	1 30 24	A	5
Laſt of three in the fin of the tail		19 17 47	11 18 09	B	6
North. of two againſt the mouth of		24 27 32	21 59 06	B	6
north. fiſh) South. of the ſame		23 58 26	20 42 19	B	5
		12 52 27	4 40 45	A	7
80					
That follow. the fin of the back		20 11 43	12 25 29	B	5
		13 21 16	4 50 30	A	7
South. of two in the belly		22 08 31	15 29 02	B	5
Laſt of three bright ones in the		15 32 13	0 13 25	A	4
ſouth. line)		18 53 15	7 39 27	B	7
85					
		15 32 53	0 51 50	A	6 7
South. of 2 in the fold of ſouth. line		15 00 04	4 17 13	A	6
North. in the belly		24 27 10	17 26 56	B	5
Another following it.		25 25 21	18 39 53	B	6
		21 40 54	8 20 43	B	7
90					
Preced. of the contiguous in the bend-		22 45 12	9 22 03	B	5
ing of the line) Subſeq. of the ſame.		22 52 27	9 23 58	B	5
		17 56 00	3 34 52	A	7
		18 56 45	1 57 39	A	6 7
		23 14 23	8 17 49	B	6 7
95 knot)					
3d of thoſe in north. line before the		18 46 40	3 04 25	A	5
North. of three in north. line		22 29 20	5 21 07	B	4 3
		23 11 35	4 20 47	B	6
Middle of thoſe in the north. line		22 35 18	1 52 05	B	5 4
		24 41 39	5 51 46	B	8
100					
		23 50 06	3 40 32	B	7
		24 42 55	5 38 07	B	6 7
2d of thoſe in ſouth. line before the		21 10 37	4 43 12	A	5
knot)		26 47 42	9 01 34	B	6 7
		27 14 27	8 36 20	B	8
105					
That next the knot in the north. line		23 24 40	1 38 58	A	5
1ſt before the knot in ſouth. line		23 11 18	7 55 45	A	5
		24 42 05	8 35 05	A	6 7
In the knot of the two lines	♈	25 02 33	9 05 10	A	3

PISCINA*, in antiquity, a large baſon, in an open publick place, or ſquare; where the Roman youth learnt to ſwim; and which was ſurrounded with a high wall, to prevent the caſting of filth into it. See SWIMMING.

* The word is formed from the Latin *piſcis*, fiſh; becauſe men here imitated fiſhes in ſwimming; and becauſe fiſhes were actually kept in ſome of them.

PISCINA was alſo uſed for the ſquare baſon in the middle of a bath. See BATH.

PISCINA *probatica*, was a pool, or reſervoir of water, near the court of Solomon's temple; ſo called from the Greek ϖροβατιον, *ſheep*, becauſe they here waſhed the cattle deſtined for ſacrifice. See SACRIFICE.

By this *piſcina* it was that our ſaviour wrought the miraculous cure of the paralytic.—Daviler obſerves, there are ſtill remaining five arches of the portico, and part of the baſon of this *piſcina*.

PISCINA, or *lavatory*, among the Turks, is a large baſon in the middle of the court of a moſque, or under the portico's that encompaſs it. See MOSQUE.

Its form is uſually a long ſquare, built of ſtone or marble, furniſhed with a great number of cocks; wherein the muſſulmans waſh themſelves before they offer their prayers; as being perſuaded that ablution effaces ſin. See ABLUTION.

PISCIS *auſtralis*. See the article AUSTRALIS.

PISCIS *volans*, in aſtronomy, is a ſmall conſtellation of the ſouthern hemiſphere, unknown to the ancients, and inviſible to us in theſe northern regions. See CONSTELLATION.

PISSASPHALTUM*, or PISSASPHALTUS, ΠΙΣΣΑΣΦΑΛΤΟΣ, in natural hiſtory, denotes a native, ſolid bitumen; found in the Ceraunian mountains of Apollonia: of an intermediate nature between pitch and aſphaltum. See BITUMEN.

* The word is compounded of ϖισσα, pitch, and ασφαλτος, bitumen.

PISSASPHALTUM is alſo a name given to a factitious ſubſtance compounded of pitch, and aſphaltus or bitumen judaicum. See ASPHALTUM.

The coarſeneſs of the black colour, and the fetidneſs of the ſmell diſtinguiſhes it from the true aſphaltum.

PISSASPHALTUM is alſo uſed by ſome writers to denote the Jewiſh pitch, or ſimple aſphaltum. See ASPHALTUM.

PISSELÆUM, ΠΙΣΣΕΛΑΙΟΝ, *oleum* PICINUM, or oil of pitch, a medicament compounded of oil and pitch.

PISSELÆUM *indicum*, among modern writers denotes a bituminous ſubſtance brought from the Weſt-Indies, popularly called *Barbadoes* tar.

It has a ſtrong ſmell not unlike the common tar, and is not very pleaſant to ſight or taſte. It is accounted a good balſamick, and where the ſtomach can diſpenſe with it, will do great ſervice in many diſorders of the breaſt, which has alſo been experienced of common tar. See Tar.

PISTACHIA*, or Pistach *nut*, a fruit brought from ſeveral parts of Aſia, chiefly Aleppo and Perſia.—When wrapt in all its coats, it is of the ſize of a green almond; but when ſtript of all but its ſhell, it reſembles a ſmall nut. The kernel is red without and green within, its taſte very agreeable.

* The word is formed from the Latin, *piſtacium*, of the Greek πιϛάκιον; whence according to Menage the city Pſittacium took its name.

The tree that produces it is a kind of turpentine-tree: the nuts are to be choſen new, heavy, and full; as to thoſe that are broken, ſuch as have kept their colours beſt are to be preferred; for as to the ſize it is a fancy.

Piſtachias are apertive, proper to give vigour, and are uſed in emulſions, *&c.* in phtiſical, and nephritical caſes. They alſo enter ſeveral ragouts; are comfited, made into conſerves, *&c.*

There is likewiſe a kind of falſe *piſtachia*, brought from the Caribbee iſlands, which ſome confound with the real ones, though very different, both with regard to the plants that produce them, and their quality. The ſpurious *piſtachia* plant does not riſe above a foot high. Nor does the fruit grow on the branches, but is found in pods adhering to the root.—The pod ſometimes only contains a ſingle nut, which reſembles an olive; but uſually, ſeveral; and in that caſe they are irregular. The ſubſtance is white, compact and heavy.

This fruit is rarely eat raw, becauſe of the ill effects it produces; it is uſually roaſted or comfited; is uſed in ragouts, and to make ratafia's.

PISTE*, in the manage, the track or tread, which a horſe makes upon the ground he goes over.

* The word is French, and literally ſignifies a *track.*

The *piſte* of a horſe may be either *ſingle*, or *double.*

If the rider make him go but an ordinary gallop, in a circle, or rather ſquare, he will make but a *ſingle piſte*: if he either make him gallop with his haunches in, or go terra à terra, he will make two *piſtes*, one with the fore-part, another with the hind.—And the ſame if the rider make him paſſage, or go ſide ways, either in a ſtrait line, or upon a circle.

PISTIL, Pistillum, in botany, a little upright part in the middle of the calyx, or the leaves of flowers; called alſo the *ſtyle.* See Style.

The *piſtil* is an eſſential part of a flower; and the principal female organ of generation; it being in this that the ſeeds or young plants are formed. See Flower.

It ariſes from the pedicle of the flower, or the center of the calyx, and at length becomes the young fruit, which is ſometimes hid in the calyx, and ſometimes quite out. See Fruit, Calyx, *&c.*

The figure of the *piſtil* is very different in different flowers: ſometimes it is a little ſtalk, which enlarges at the two ends like a peſtle; ſometimes it is a mere ſtamen or thread: ſometimes it is round, ſometimes ſquare, triangular, oval, *&c.*

Almoſt all *piſtils* are furniſhed at top, either with fine hairs, which make a kind of velveting; or with little filaments diſpoſed in plumes; or are beſet with little veſicles full of a glutinous juice.

Some flowers have ſeveral *piſtils*; or rather the *piſtils* terminate in ſeveral branches, or horns, which have their riſe from as many young fruits, or as many different capſulæ, containing ſeeds.

All theſe *piſtils*, whatever form they be in, have certain apertures at their tops, or certain clefts continued the whole length, to the baſe or embryo of the fruit.—This is very viſible in the lilly, daffodil, and melon, by cleaving the *piſtils* length-wiſe, or cutting them tranſverſely.—If after cutting the *piſtil* of the lilly, you immerge one extremity in water, and ſuck through the other end, the water will riſe through it, as through a pipe.

By opening the *piſtils* in their different ſtates of growth, it appears evidently, that it is theſe form the young fruits, and contain within them the embryo's of the ſeeds; whether thoſe ſeeds be diffuſed through the whole length of the *piſtil*; or whether they be all incloſed in its baſe; and that they are always open a-top, and perforated, either more or leſs ſenſibly, to the bottom: though this cavity is frequently effaced as the young fruit grows; and ſometimes a part of the *piſtil*, which Malpighi calls the *ſtyle*, or bodkin, drys and falls off.

The *piſtil*, we have obſerved, is the female organ of generation; its baſe does the office of the uterus, or womb, in women; and its length that of the vagina. See Matrix and Vagina.

It is encompaſſed with the ſtamina, the apices whereof are full of a fine duſt, called *farina fœcundans*; which burſting its veſiculæ, or apices, when mature, is ſhed on the upper part of the *piſtil*, and thence conveyed by the cavity thereof to the baſe or uterus; where being fed with a fine juice, ſecreted by the petala, it grows, expands, and thus forms the embryo of a new fruit. See Stamina, Farina, *&c.*—For a more diſtinct account of the office of the *piſtil* in the generation plants. See Plant.

PISTOL, a little fire-arm, bore at the ſaddle-bow, the girdle, or in the pocket. See Fire-*arm.*

The *piſtol* is ſaid to have taken its name from *Piſtoya* a city in Italy; where, as Fauchet tells us, it was firſt made.—Borel derives the word from *fiſtula*, pipe; the barrel of this piece bearing ſome reſemblance to a flute, *&c.*

Pistole, *Doblon*, in commerce, a gold coin, ſtruck in Spain, and ſeveral parts of Italy, Switzerland, *&c.* See Coin.

It has its augmentations, and diminutions; which are *quadruple piſtoles*, *double piſtoles*, and *half piſtoles.*

The *piſtole* is about the ſame weight, fineneſs, and value, with the French louis d'or, *viz.* equal to ſixteen ſhillings and ſix pence, ſterling. See Louis.

In Spain the *piſtole* is accounted equal to four pieces of eight, or thirty two rials, or a thouſand and eighty eight maravadis; or a thouſand three hundred and ſixty maravedis of billon: the old money current at Seville and Cadiz, in Andaluſia, *&c.* being 25 *per cent* better than the money they reckon by at Madrid, Bilboa, *&c.* which augmentation was made by Charles II. in 1686. to prevent the exportation of money out of the kingdom. See Money.

Moſt of the exchanges in Italy are made on the foot of the *piſtole.* See Money and Exchange.

PISTON, a part or member in ſeveral machines, particularly pumps, air-pumps, ſyringes, *&c.* called alſo *embolus*, and popularly the *ſucker.* See Embolus.

The *piſton* of a pump is a ſhort cylinder of metal, fitted exactly to the cavity of the barrel or body; and which being worked up and down alternately therein, raiſes the water; and when raiſed, preſſes it again, ſo as to make it force up a valve wherewith it is furniſhed, and ſo eſcape through the noſe of the pump. See Pump.

The *piſtons* of air-pumps, ſyringes, *&c.* See deſcribed under Air-pump, and Syringe.

PIT *and gallows*, in our ancient cuſtoms. See Furca and Fossa.

Coal Pit. } See the articles { Coal *pit.*
Cock Pit. } { Cock *pit.*

PIT *ſaw.* See the article Saw.

Pit, of a theatre, all that ſpace between the amphitheatre, or galleries, and theatre or ſtage; called by the ancients *orcheſtra*, and by the French parterre. See Theatre, *&c.*

This being the moſt commodious part, it was here the Roman ſenate was placed. See Orchestra.—It has its name *pit*, in Latin *cavea*, from its being ſunk below the level of the ſtage. See Stage.

PITANCIARIUS, Pietanciarius, or Pietantiarius, an officer in the ancient monaſteries, whoſe buſineſs it was to provide and diſtribute the pittances of herbs and meat, amongſt the monks. See Pittance.

PITCH, Pix, a tenacious kind of juice or gum, drawn from fatty woods, chiefly pines and firs; uſed in ſhipping, in medicine, and various other arts.

Pitch is properly a juice of the bark of the *picea*, or pitch-tree; and is conceived to be no other than the oil thereof inſpiſſated, and turned black, farther than in the balſom. See Bark and Balsom.

The method of drawing, or procuring it, is by cleaving the tree into little billets, which they lay in a furnace having two apertures, through one of which the fire is put, and through the other the *pitch* is gathered; which oozing from the wood runs along the bottom of the furnace into baſons or receptacles placed for the purpoſe.—The ſmoak which is here very thick, gives it the black colour we find it withal.—Some will have our common *pitch* to be only the laſt running, and tar to be the firſt. See Tar.

Wheeler gives us another manner of drawing *pitch*, uſed in the Levant.—A pit is dug in the ground two ells in diameter a-top, but contracting as it goes deeper: this they fill with branches of pine, cloven into ſhivers.—The top of the pit is then covered over with fire, which burning down to the bottom, the *pitch* diſtils and runs out at a hole made therein.

Pitch acquires different names according to its different preparations, colours, and qualities. As it diſtils from the wood it is called *barras*, but afterwards aſſumes a double name; the fineſt and cleareſt being called *galipot*, and the coarſer, *marbled barras.*

Of the galipot is made what they call *white pitch*, or *burgundy pitch*, which is nothing but the galipot melted with oil of turpentine; though ſome will have it a native *pitch*, diſtilling from a reſinous tree growing in the mountains of Franche Comte.

Of the ſame galipot is likewiſe prepared what we call *roſin*; by boiling the *pitch* to a certain conſiſtence, and making it up in cakes. See Rosin.

The black *pitch*, which is what we properly call *pitch*, ſome ſay, is the liquid galipot burnt and reduced into the form and conſiſtence we ſee it in, by mixing tar with it while hot.

The beſt is that brought from Sweden and Norway.—Its goodneſs conſiſts in its being of a gloſſy black colour, dry, and brittle.

Naval Pitch, Pix *navalis*, is that drawn from old pines, ranged and burnt like charcoal.—This, with a mixture of tow or beaten cables, ſerves for the pitching of veſſels.

Naval Pitch is alſo a denomination given to that ſcraped from off the ſides of old veſſels; and which is ſuppoſed to have acquired an aſtringent virtue, by means of the ſalt water.—It ſerves to make plaiſters; though it is certain the apothecaries uſually ſubſtitute the common *black pitch* in its ſtead.

Greek Pitch, or *Spaniſh* Pitch, is that boiled in water till it have loſt its natural ſmell: upon which it becomes dry and pliable.

The antients called it *colophony*, from Colophon a city in Greece, whence great quantities were brought. See Colophony.

Oil of Pitch, *oleum* Picinum, is an oil procured from pitch, by ſeparating the aqueous matter that ſwims a-top of the melted pitch.—This, for the great virtues attributed to it, is alſo called *balſam of pitch*.

Pitch, in building, denotes the angle, a gable end, and conſequently the whole roof of a building, is ſet to. See Gable.

If the length of each rafter be ¾ of the breadth of the building, the roof is ſaid to be *true pitch*.

If the rafters be longer, it is ſaid to be a *high* or *ſharp pitched* roof; if ſhorter, which ſeldom happens, it is ſaid to be a *low* or *flat pitched* roof. See Roof, Rafter, *&c.*

Pitch is alſo a ſea term.—When a ſhip falls with her head too much into the ſea, or beats againſt it ſo as to endanger her top-maſts, they ſay, ſhe will *pitch her maſts by the board*.

PITCHING-*pence*, a duty, commonly of one penny, paid for pitching or ſetting down every ſack of corn, or pack of merchandize, in a fair or market.

PITCHT—*ſhoulder* Pitcht. See Shoulder *pitcht*.

PITH, the inward, central part of a tree, or plant; anſwering to the medulla, or marrow, of an animal. See Plant, Tree, *&c.*

Some will have the circulation of the ſap to be effected by means of the *pith*; others by the bark; and others by the wood. See Sap, Circulation, *&c.*

PITHIA, and Pithian. See the articles Pythia and Pythian.

Pitt. See the article Pit.

PITTACIUM, πιττάκιον, in chirurgery, a name which ſome authors give to a piece of cloth ſpread with a ſalve, to be laid on a part affected.

PITTANCE, Pietantia, the commons, or allowance of meat, be it fiſh, fleſh, or the like, ſtatedly eaten at meals, beſides bread.

The word is not much uſed except among religious, and thoſe who live in college, or community.—Du Cange derives it from *pictantia*, uſed in the lower Latin for a monachal portion given to two monks in the ſame diſh, conſiſting of ſomething better than pulſe.

Hence we ſometimes alſo find it denote a meal, or commons better than ordinary; ſuch as is allowed in communities on feaſt days.

Others derive the word *a pietate*; and others, with Salmaſius, from *pittacia*, a meſs, or portion allowed the ſoldiers, mentioned in ſeveral laws of the Theodoſian code.—It is added, that the word *pittacia* properly ſignified a title, or written label, added a-top of the veſſel, to ſhew what was within-ſide, or how it was intended.

PITUITA, one of the four humours found in the bodies of animals, on which their temperament is commonly ſuppoſed to depend. See Humour and Temperament.

The *pituita*, called alſo *phlegm*, is properly the moſt viſcid, and glutinous part of the blood, ſeparated in the largeſt glands, where the contortions of the arteries are greateſt, and give the greateſt retardation to the blood's velocity; as in the glands about the mouth and head. See Secretion and Phlegm.

The claſs of phlegmagogues, as manna, *&c.* are ſuppoſed to purge *pituita*. See Phlegmagogue, Purgative, Manna, *&c.*

Phyſicians give ſeveral epithets to the *pituita*, according to its conditions or qualities, as *ſaline*, *vitreous*, *gypſous*, *acid*, *&c.* *Pituita* is ſuppoſed to be the prevailing humour in cold, heavy, ſlow people, inclined to ſeriouſneſs and ſtudy; as the bile in thoſe inclined to war, *&c.* See Phlegmatic.

The *pituita* diſcharged at the noſtrils, is ſeparated in the membrane that lines the cavities of the noſe, cheeks, *&c.* See Mucus and Nose.

Its uſe is to keep that membrane ſoft, and defend it from injuries of extraneous bodies, eſpecially thoſe of the air, which paſſes this way in inſpiration when the mouth is ſhut.

PITUITARY *gland*, is a gland in the brain, ſomewhat difficult to be ſeen without removing it out of its place.—See *Tab. Anat.* (Angeiol) *fig.* 1. *lit.* 6. See alſo Brain.

It is of the ſize of a very large pea, in the ſella of the os ſphenoides, under the infundibulum, wherewith it communicates; receiving from it a lympha, or juice, which the infundibulum derives from the plexus choroides and pineal gland; and from this lympha does the gland itſelf take its name. See Gland, *&c.*

It alſo filtrates a juice itſelf; ſeparating from the blood, a white liquor very ſubtile, and apparently very ſpirituous. See Spirits.

M. Littre obſerves a ſinus, or reſervoir, of blood, which touches this gland; and which is open to it in the place of contact, ſo that the gland lyes partly in the blood.—This, that author takes to do the office of a balneum mariæ, in keeping the gland of the degree of warmth neceſſary for the diſcharge of its functions.

This gland is found in all quadrupeds, fiſhes, and fowls, as well as in men.—M. Littre gives an inſtance of a tedious diſeaſe, and at length death, ariſing from an obſtruction and inflammation of the *pituitary* gland.

PIVOT, or Pevot, a foot, or ſhoe of iron, or other metal, uſually conical, or terminating in a point; whereby a body, intended to turn round, bears on another fixed at reſt, and performs its circumvolutions.

The *pivot* uſually bears or turns round in a ſole or piece of iron or braſs, hollowed to receive it.

Large gates, *&c.* uſually turn on *pivots*.—The antients tell us, they had theatres in Rome that held eighty thouſand people; which yet turned on a ſingle *pivot*. See Theatre and Amphitheatre.

PLACARD, or Placart, Placaert, a foreign term, frequent in gazettes, ſignifying a leaf, or ſheet of paper, ſtretched and applied upon a wall, or poſt.—Edicts, regulations, *&c.* are to be made publick in *placards*.

The word *placard* is alſo uſed for a libel, or lampoon.—At Rome, *placards* againſt the pope are frequently fixed in the night-time, to the ſtatue of Paſquin. See Pasquinade.

Placard, in architecture, denotes the decoration of the door of apartment; conſiſting of a chambranle, crowned with its frieze or gorge, and a corniche ſometimes ſupported by conſoles. See Door.

Placard, in our cuſtoms, denotes a licence whereby a perſon is permitted to ſhoot in a gun, or to uſe unlawful game. See Game.

PLACE, *locus*, in philoſophy, that part of immovable ſpace which any body poſſeſſes. See Body and Space.

Ariſtotle and his followers, divide *place* into *external* and *internal*.

Internal Place is that ſpace or room which the body contains.

External Place is that which includes or contains the body; which is alſo called by Ariſtotle, the firſt or concave and immovable ſurface of the ambient body.

It is controverted in the ſchools, whether *internal place* be a real entity, or only an imaginary being; *i. e.* whether it be any thing intrinſically, or only an aptitude and capacity of receiving bodies.

Some maintain it a poſitive being, incorporeal, eternal, independant, and infinite; and aſſert it even to conſtitute the immenſity of the godhead. See God.

The Carteſians, on the contrary, hold *internal place*, abſtractedly conſidered, to be no other than the very extenſion of the bodies contained therein; and therefore in no wiſe different from the bodies themſelves. See Matter.

The ſchoolmen likewiſe diſpute whether *external place* be moveable or immoveable? Its immobility is argued from this conſideration, that what moves muſt neceſſarily leave its *place*, which it cannot do if it go along with the moveable. Others charge an abſurdity on this opinion of Ariſtotle, *viz.* that hence it follows, that a body really at reſt is continually ſhifting *place*; a tower, for inſtance, on a plain, or a rock in the middle of the ſea, in regard the one and the other are continually incloſed with new air or new water, muſt be ſaid to be in motion, or to change *place*.

To ſalve this difficulty, and ward off the abſurdity which follows from Ariſtotle's laying down external ſpace as immoveable; infinite expedients have been had recourſe to.—The Scotiſts contend for *place's* being only immoveable, by equivalence.—Thus, when the wind blows, the air which inveſted the ſurface of the tower does indeed recede, but then other ſimilar and equivalent air takes place.—The Thomiſts chuſe to deduce the immobility of *external place*, from its keeping the ſame diſtance from the center, and the cardinal points of the world.—The Nominaliſts, from a correſpondence with certain virtual parts of the divine immenſity.

The Carteſians deny *external place* to be either a ſurrounding ſurface, or a body ſurrounded, or a mean term between the two; and conceive it to be the ſituation of a body among adjacent bodies conſidered as at reſt.—Thus the tower ſhall be deemed to remain in the ſame *place*, though the ambient air be changed, ſince it retains the ſame ſituation, with regard to the neighbouring hills, trees, and other parts of the earth. See Motion.

Sir Iſaac Newton better and more intelligibly diſtinguiſhes *place* into abſolute and relative.

Abſolute and *primary* Place is that part of infinite and immoveable ſpace which a body poſſeſſes. See Absolute.

Relative or *ſecondary* Place is the ſpace it poſſeſſes conſidered with regard to other adjacent objects.

Dr. Clarke adds another kind of *relative place*, which he calls *relatively common place*, and defines it that part of any moveable or meaſurable ſpace which a body poſſeſſes; which *place* moves together with the body. See Motion.

Place, Mr. Locke obſerves, is ſometimes likewiſe taken for that portion of infinite ſpace poſſeſſed by the material world; tho' this, he adds, were more properly called extenſion. See EXTENSION.

The proper idea of *place*, according to him, is the relative poſition of any thing, with regard to its diſtance from certain fixed points; whence we ſay, a thing has or has not changed *place*, when its diſtance is not altered with reſpect to thoſe bodies.—For the viſion of PLACE. See VISION, and VISIBLE.

PLACE, in opticks, or *optical* PLACE, is the point to which the eye refers an object. See OPTIC.

Thus the points D and E (*Tab. Optics*, *fig.* 68.) to which two ſpectators in d and e refer the object C, are called *optic places*. See VISION.

Here, if a right line joining the optic *places* D and E, be parallel to a right line paſſing through the eyes of the ſpectators d, e; the diſtance of the optic *places* D, E will be to the diſtance of the ſpectators d and e, as the diſtance of one of the optic *places* from the *place* of the object E C, to the diſtance of the other ſpectator from the ſame object d C.

Optic PLACE of a ſtar, is a point in the ſurface of the mundane ſphere, as C or B, (*Tab. Aſtronomy*, *fig.* 27.) wherein a ſpectator in E, or T, ſees the center of the ſtar S. See STAR and PLANET.

This is divided into *true* and *apparent*.

True or *real optic* PLACE is that point of the ſurface of the ſphere, B, wherein a ſpectator, placed in the center of the earth ſees the center of the ſtar or phænomenon.—Or a point among the fixed ſtars, determined by a line drawn from the center of the earth, through that of the ſtar, and terminated in B among the ſtars. See SPHERE, and TRUE.

Apparent or *viſible optic* PLACE is that point of the ſurface of the ſphere, wherein a ſpectator, placed on the ſurface of the earth in E, ſees the center of the ſtar S.—Or a point C found by a line paſſing from the ſpectator's eye through the ſtar, and terminated in the ſphere of the ſtars. See APPARENT.

The diſtance between the two optic *places* makes what we call the *Parallax*. See PARALLAX.

PLACE, *of the ſun*, a *ſtar*, or *planet*, ſimply, denotes, the ſign and degree of the zodiack, which the luminary is in. See SUN, STAR, *&c.*

Or, it is that degree of the ecliptic, reckoning from the beginning of Aries, which the planet's or ſtar's circle of longitude cuts: and therefore coincides with the longitude of the ſun, planet, or ſtar. See LONGITUDE.

As the ſine of the ſun's greateſt declination, 23° 30′: to the ſine of any preſent declination given or obſerved, *v. gr.* 23° 15 : : ſo is radius, 10: To the ſine of his longitude 81° 52′; which if the declination were north, would give 20° 52 of Gemini, if ſouth 20° 52′ of Capricorn, for the ſun's place. See PLANET.

Aſtronomical PLACE. See the article ASTRONOMICAL.

Moon's PLACE is that point of her orbit wherein ſhe is found at any time. See MOON and ORBIT.

This, by reaſon of the great inequalities in the lunar motions, which render a number of equations and reductions neceſſary ere the juſt point be found, is of various kinds; *viz.* her *fictitious place*, which is the moon's *place* once equated; her *place nearly true*, which is her *place* twice equated; and the moon's *true place*, which is her *place* thrice equated. See EQUATION.

Excentric PLACE *of a planet in its orbit*, is the *place*, or point of its orbit, wherein a planet would appear if ſeen from the ſun. See EXCENTRIC.

Thus ſuppoſe N E O R, (*Tab. Aſtron. fig.* 25.) the ecliptic, N P O Q the planet's orbit, the ſun in S, the earth in T, and the planet in P: the right line S P expreſſes the *excentric place* in the orbit.

Heliocentric PLACE, of a planet, or its place reduced to the ecliptic, or the excentric place in the ecliptic, is that point of the ecliptic to which a planet, viewed from the ſun, is referred. See HELIOCENTRIC.

This coincides with the longitude of a planet viewed from the ſun. See LONGITUDE.

Thus the right line R S indicates the *heliocentric* place, or place reduced to the ecliptic.

Geocentric PLACE is that point of the ecliptic, to which a planet viewed from the earth is referred. See GEOCENTRIC.

Thus, N E O R repreſenting the ecliptic, *&c.* T R will repreſent the *geocentric place*.

Computation of a planet's PLACE. See the article PLANET.

PLACE of radiation, in optics, is the interval, or ſpace in a medium or tranſparent body, through which any viſible object radiates. See RADIATION, *&c.*

PLACE, in geometry, is a line uſed in the ſolution of problems; more uſually called by the Latin name, *locus*.

See the doctrine of geometrical *places*, under the article LOCUS, ſee alſo GEOMETRICAL and PLAIN.

PLACE, in war, is a general name for all kinds of fortreſſes, where a party may defend themſelves. See FORTRESS.

In which ſenſe it may be defined to be a place ſo diſpoſed, as that the parts which encompaſs it, defend and flank one another. See FORT, FORTIFICATION, and WAR.

Strong or *fortified* PLACE, is a *place* flanked and covered with baſtions. See BASTION, and FORTIFIED.

Regular PLACE, is that whoſe angles, ſides, baſtions, and other parts are equal; and is uſually denominated from the number of its angles: as, a pentagon, a hexagon, *&c.* See PENTAGON, HEXAGON, *&c.* ſee alſo REGULAR.—Palma nova, built by the Venetians, is a dodecagon. See DODECAGON.

Irregular PLACE is that whoſe ſides and angles are unequal. See IRREGULAR.

PLACE *of arms*, in fortification, is a ſtrong city, or town, pitched upon for the chief magazine of an army.—See *Tab. Fortif. fig.* 21. *lit. gg. &c.* See alſo ARMS.

PLACE *of arms*, in a city or garriſon, is a large open ſpot of ground, uſually near the center; where the grand guard is commonly kept, and the garriſon holds its rendezvous at reviews, and in caſes of alarm, to receive orders from the governor. See GARRISON.

PLACE *of arms*, of an attack, in a ſiege, is a ſpacious place covered from the enemy, by a parapet or epaulment, where the ſoldiers are poſted ready to ſuſtain thoſe at work in the trenches, againſt the ſoldiers of the garriſon.

PLACE *of arms particular*, in a garriſon, is a place near every baſtion, where the ſoldiers, ſent from the grand place to the quarters aſſigned them, relieve thoſe that are either upon the guard, or in fight.

PLACE *of arms without*, is a place allowed to the covert way, for the planting of cannon, to oblige thoſe who advance in their approaches to retire.

PLACE *of arms*, in a camp, is a large ſpace at the head of the camp, for the army to be ranged in and drawn up in battalia. There is alſo a *place* for each particular body to aſſemble in. See CAMP.

PLACE *of arms*, of a troop, or company, is the ſpot of ground on which the troop, or company, draws up. See TROOP, *&c.*

Face of a PLACE.	See the articles	FACE.
Fire of the PLACE.		FIRE.
Tenaille of the PLACE.		TENAILLE.
View of a PLACE.		VIEW.

PLACE, among logicians, and orators, denotes the ſeat or ſource of an argument; or that from which it is taken. See ARGUMENT and TOPIC.

There are two ſorts of *places*, *viz. inartificial* and *artificial*.—The firſt is the *place* of teſtimony, authority, *&c.* The ſecond, that of reaſon: as when we argue from univerſals, *e. gr.* from genus, and ſpecies; or from cauſes, as the end, efficient, matter, form, *&c.*

Common PLACE. See the article COMMON *place*.

PLACE *of units*, tens, *&c.* See UNIT, and NUMERATION.

Hylegial PLACES *in aſtrology*.	See the articles	HYLEGIAL.
Whiſpering PLACE.		WHISPERING.
Additions of PLACE.		ADDITION.

Unity of PLACE. See the article UNITY.

PLACENTA, in anatomy, a ſoftiſh roundiſh maſs, found in the womb of a pregnant woman; wherein the antients ſuppoſed, the blood was purified and prepared for the nouriſhment of the fœtus.—See *Tab. Anat.* (Splanch) *fig.* 16. *lit. aa.* See alſo FOETUS. Hence they alſo called it *hepar uterinum*, the liver of the womb; as if it did the office of a liver in preparing the blood. See LIVER.—It is called by the moderns *placenta*, *q. d.* womb-cake, becauſe in form of a cake.

The *placenta* is ſuppoſed by ſome to be only a maſs of coagulated blood; for in the preſſing, or waſhing it, it diſſolves; and its real uſe to be, to ſerve as a pillow for the umbilical veſſels to reſt on. See UMBILICAL.

Its figure is not unlike that of a plate without brims; three quarters of a foot over, and ſometimes a foot. It is round, and generally concave or convex. The concave ſide adheres to the uterus, and is uneven, having divers protuberances and pits, by which it makes impreſſions upon, and receives others from, the uterus.—Its place in the uterus, whatever ſome pretend, is not certain.

In women, unleſs in caſe of twins, *&c.* there is but one *placenta*: however, the number generally anſwers the number of the fœtus.—In ſome brutes, eſpecially oxen or ſheep, they are very numerous, ſometimes near an hundred, even for one fœtus; but ſmall, and reſembling pretty large conglomerate glands.

From the external or concave ſide, which likewiſe has its protuberances, tho' covered with a ſmooth membrane, iſſue the umbilical veſſels, which are in great plenty diſtributed through the whole ſubſtance of it.

Some even imagine this part to be no more than a plexus of the veins and arteries, by whoſe extremities opening into the ſides of the hypogaſtrick veſſels, the circulation is performed between the mother and the fœtus; for that ſide of the *placenta*, which adheres to the womb, appears to be nothing but the extremities of an infinite number of ſmall threads, which, in labour, dropping out of the pores in the ſides of the hypogaſtrick blood-veſſels, into which they had inſinuated themſelves, is the occaſion of the flowing of the lochia, till the uterus collapſes, or the pores, by the natural elaſticity of the veſſels, contract by degrees. See LOCHIA, CIRCULATION, *&c.*

It is a great diſpute among the anatomiſts of the royal academy of Paris, whether the *placenta* have any external coat, whereby it is connected to the womb?—M. Mary maintains it has none, and that nothing hinders the blood of the mother from paſſing out of the womb into the *placenta*, and thence to the fœtus: In which opinion he is ſeconded by M. Rohault. Meſſ. Vieuſſens and Winſlow maintain the contrary. In a ſubſequent memoir, M. Rohault endeavours to ſhew, that the *placenta* is no particular part, but only a portion of the chorion condenſed or thickened. See CHORION.

PLACITA, PLEAS, a term frequent in our laws, and cuſtoms. See PLEA.

Originally, *placita* ſignified certain publick aſſemblies, of all degrees of men, wherein the king preſided, and where the great affairs of the kingdom were conſulted upon.

Theſe aſſemblies were called *placita generalia*; becauſe *generalitas univerſorum majorum tam clericorum quam laicorum ibidem conveniebat.*—And hence, the decrees, ordinances, ſentences, *&c.* of this aſſembly were alſo called *placita.*

Sim. Dunelmenſis tells us, they were held in the open fields; for, ſays he, *nullam oportet regem in litteris aſſignare curiam, quia ubi rex judicat in aperto, ibi eſt curia ſua.* See COURT and CURIA.

Some will have theſe *placita generalia*, and *curiæ regis*, to be much the ſame with what we now call a *parliament*. See PARLIAMENT.

The lords courts came hence alſo to be called *placita generalia*, though oftener *curiæ generales*; becauſe all their tenants and vaſſals were obliged to appear in them. See LORD, VASSAL, *&c.*

We alſo meet with *placitum nominatum*, for the day appointed a criminal to appear in, and make his defence. Leg. Hen. I.—And *placitum fractum*, *i. e.* when the day is lapſed.

My lord Coke derives the word *placitum à placendo, quia bene placitare ſuper omnia placet:* Indeed, this ſeems a very fanciful etymon; and others have more reaſon in deriving the word from the German *platz*, or the Latin *plateis*, fields, or ſtreets, where theſe aſſemblies were originally held.

PLACITARE*, in the old law-books, ſignifies to plead cauſes. See PLEADING.

* *Mos* placitandi, *ante conqueſtum, fuit coram aldermanno, & proceribus, & eorum hundredariis,* ſc. *baronibus, majoribus, melioribus, ſenioribus & urbanis.* Miſc. in Bibl. Cott. ſub Tit. Vitellius.

Hence, *placitator*, a pleader.—Ralph Flambard is recorded to be *totius regni placitator*, in William the ſecond's time.

PLACITUM, in law, a ſentence of the court; or an opinion, ordinance, or decree. See SENTENCE, DECREE, CANON, *&c.*

Cuſtos PLACITORUM *Coronæ*. See the article CUSTOS.

PLAFOND, or PLATFOND, in architecture, the ceiling of a room, whether it be flat or arched; lined with laths and plaſter, and ſometimes alſo enriched with paintings, *&c.*—See *Tab. Archit. fig.* 10. See alſo CEILING.

PLAFOND is alſo more particularly uſed for the bottom of the projecture of the larmier of the corniche; called alſo *ſofit.* See SOFIT and LARMIER.

PLAGIARY, in philology, *author-theft*; or the practice of purloining other peoples works, and putting them off for a man's own.

Among the Romans, *plagiarius* was properly a perſon who bought, ſold, or retained a freeman for a ſlave; ſo called, becauſe the Flavian law condemned ſuch a perſon *ad plagas*, to be whipped. See SLAVE.

Thomaſius has an expreſs treatiſe *de plagio litterario*; wherein he lays down the laws and meaſures of the right which authors have to one anothers writings.—Dictionary-writers, at leaſt ſuch as meddle with arts and ſciences, ſeem exempted from the common laws of *meum* and *tuum*; they do not pretend to ſet up on their own bottom, nor to treat you at their own coſt.

Their works are ſuppoſed, in great meaſure, compoſitions of other people's; and what they take from others they do it avowedly, and in the open ſun.—In effect, their quality gives them a title to every thing that may be for their purpoſe, wherever they find it; and if they rob, they do not do it any otherwiſe, than as the bee does, for the public ſervice. Their occupation is not pillaging, but collecting contributions; and if you aſk them their authority, they will produce you the practice of their predeceſſors of all ages and nations.

PLAGUE, PESTILENCE, PESTIS, a very acute, deſtructive, malignant, and contagious diſeaſe; uſually proving mortal. See DISEASE.

The *plague* is commonly defined by a malignant fever; but Diemerbroek thinks the two ought to be diſtinguiſhed; the fever not being the eſſence, but only a ſymptom, or effect of the *plague*. See FEVER and MALIGNANT.

The *plague* is reckoned by Dr. Liſter, and many others, as an exotic diſeaſe, never bred or propagated in England, but always imported from abroad, and particularly from the Levant the coaſts of Aſia the leſſer, Egypt, *&c.* where it is familiar.—Sydenham obſerves that it rarely infeſts England oftene than once in forty years; but through the mercy of God, it i now upwards of ſixty years ſince we have been viſited.

The origin and cauſe of the *plague* has been a celebrated ſubject of controverſy among phyſicians.—The diſorder is generally ſuppoſed to be communicated by the air; but how, and in what manner the air becomes thus deadly, is the queſtion. Some will have inſects the cauſe of *plagues*, as of blights; which being brought in ſwarms from other parts by the winds, are taken into the lungs in reſpiration, mix with the blood and juices, and attack and corrode the viſcera. See BLIGHT.

Mr. Boyle attributes *plagues* principally to the effluvia or exhalations breathed into the atmoſphere, from noxious minerals. See AIR, EXHALATION, *&c.*

The air, in effect, is depraved in far more places than improved, by being impregnated with ſubterraneous expirations.—Indeed among the minerals known to us, there are many more noxious than wholeſome; and the power of the former to do miſchief, is more efficacious than of the latter to do good, as we gueſs by the ſmall benefit men receive in point of health, by the effluvia of any mineral or other known foſſil, in compariſon of the great and ſudden damage often done by the expirations of orpiment, ſandarack, and white arſenic. See POISON.

Amongſt the various ſorts of particles wherewith the atmoſphere is replete, ſome may be ſo ſmall, and ſolid, or ſo conveniently ſhaped, as to enter many of the numerous orifices of the minute glandules of the ſkin, or at other pores thereof. Thus, though neither paper, nor bladder, be pervious to the elaſtic parts of the air; yet may either of them be eaſily penetrated by other corpuſcles of the atmoſphere; and Mr. Boyle has prepared a dry body, which being incloſed in either, would, without wetting or diſcolouring or any ways ſenſibly altering them, paſs in a trice through the pores thereof, in ſuch plenty, as to exert a manifeſt operation on bodies placed at ſome diſtance beyond them. This is confirmed from the ſudden check almoſt every ſummer given to the *plague* at Grand Cairo: for ſince morbific cauſes operate more effectually than curative ones, it ſeems more than probable, that exhalations aſcending from under ground, may produce peſtilential fevers, and the *plague* itſelf; ſince the corpuſcles which impregnate the Egyptian air upon the ſwelling of the Nile, put a ſpeedy ſtop not only to the contagion, but to the malignity of the *plague*, aſſiſted even by the ſummer's heat, which there is exceſſive.

It is poſſible there may be noxious minerals in a country, that are not often able to produce peſtilencies; they may be in ſtrata, or beds, ſo deep, that even a ſmall earthquake ſhall not effect them, though a more violent ſhock may. See STRATA, EARTHQUAKE, *&c.*

And hence may we account for the *plague's* raging in ſome parts of Africa once in thirty, or once in a hundred years; ſince there may be periodical paroxyſms, or grand and vehement commotions in the ſubterraneal parts, though not yet obſerved in them.

It is probable, peculiar kinds of venemous exhalations may ſometimes be emitted, eſpecially after earthquakes; and thus occaſion mortal diſeaſes in animals of one kind, and not of another; and in this or that place, and not elſewhere.—Fernelius gives us an account of a *plague*, or murrain, in 1514, which invaded none but cats. Dionyſius Halicarnaſſeus mentions a *plague*, which attacked none but maids: and that which raged in the time of Gentilis killed ſcarce any women, and very few but luſty men. Boterus mentions another *plague*, which aſſaulted none but the younger ſort; and we have inſtances of the ſame kind of a later ſtanding. Cardan ſpeaks of a *plague* at Baſil, with which the Switzers, and not the Italians, Germans, or French were infected; and Joh. Utenhovius takes notice of a cruel *plague* at Copenhagen, which, though it raged among the Danes, ſpared the Germans, Dutch and Engliſh, who went with all freedom, and without the leaſt danger, to the houſes of the infected.

The *plague*, according to Sydenham, uſually begins with a chillineſs, and ſhivering, like the acceſs of an intermitting fever; then comes on a nauſea, with vehement vomitings, an intenſe pain about the region of the heart, as if pinched in a preſs; and a burning fever, which continually preys on the patient, till either death, or the eruption of ſome bubo, parotis, or other tumor, in the inguina or axillæ, or behind the ears, relieve him, and diſcharge the matter of the diſeaſe. Sometimes, indeed, it attacks without any fever; purple ſpots appearing all at once, the certain ſigns of preſent death: but this rarely happens except at the beginning of ſome terrible *plague*. It has alſo been known to make its firſt appearance in tumours, without any fever, or other violent ſymptom.

Heavineſs, pain in the ſtomach, head, and back, cardialgy, broken ſleep, anxiety, alteration in the look, difficulty of breathing, hiccough, ſyncope, delirium, convulſive twichings, diarrhœa, eyes ſunk or inflamed, tongue black and dry, vehement drought, fœtid breath, carbuncles, ſpots lived, purple, green, *&c.* are alſo ſymptoms uſually attending this diſeaſe.

A great deal depends on the circumſtances of the tumors, or *plague-ſores*: as they appear, and increaſe, the fever abates; and as they ſink, or diminiſh, renews again. When they happen about the time of the criſis, and ſuppurate kindly, they are good prognoſticks of a happy recovery. See CRISIS.

In acute diſeaſes, ſays Hippocrates, prognoſticks are ever fallacious. However, in the terrible plague at Nimeguen, Diemerbroek, who attended the ſick through the whole progreſs thereof, relates that thoſe taken ill about new and full moon rarely eſcaped; that faintings, ſwoonings, and palpitations of the heart, were uſually deadly ſigns; an intermitting pulſe always mortal; drowſineſs, ſneezings, tremulous motions, doting, ſore throat, *&c.* were ill omens: pleuriſies always mortal; coſtiveneſs a good ſign; a diarrhœa almoſt conſtantly fatal: bloody ſtools or urines always preſaged ill.

As to the cure, phyſicians are much divided. It is generally attempted with alexipharmics and cardiacs, with the aſſiſtance either of ſudorifics, or phlebotomy, or both.—Many eminent phyſicians, both ancient and modern, highly commend bloodletting; Sydenham particularly ſays, that if uſed copiouſly, and in time, it never yet did harm; but that ſudorifics often prove pernicious: Diemerbroek, on the contrary, with other very experienced writers, proteſt againſt phlebotomy, as very dangerous, and often deadly; the chief hopes they built in diaphoretics and ſudorifics; emetics and purgatives are abſolutely forbid: and yet Dr. Sayer uſed the former with good ſucceſs, in the beginning of the diſeaſe in the *plague* at London, *Ann.* 1640. See ALEXIPHARMIC, *&c.*

The juice of lemons is commended as of ſingular efficacy in the *plague*, and peſtilential fevers: Piſo relates that it is the principal remedy of the Indians, and proteſts he never knew any thing come up to it. Dr. Harris obſerves that the ſame is what the Turks have principally recourſe to.—Camphor is alſo much extolled: this, Etmuller aſſures us, was the baſis of Heinſius's antipeſtilential oil, who had a ſtatue erected to him when dead, in the city of Verona, for the ſervice he had done hereby.—It was prepared of equal quantities of camphor, citron bark, and amber.—The viperine ſalt and rob of elder-berries are alſo commended.

For preſervatives againſt the *plague*, they are uſually ſummed up in that popular diſtich:

> *Hæc tria labificam tollunt adverbia* peſtem,
> *Mox*, *longe*, *tarde*, *cede*, *recede*, *redi*.

Cauteries, and eſpecially iſſues, and ſetons in the inguina, are found of great ſervice in preſerving from infection. A piece of myrrh held in the mouth in contagious places, is alſo commended. But Diemerbroek aſſures, that there is nothing better in this intention, than ſmoaking tobacco; but he adds, that it was only ſo to ſuch as had not made the practice familiar to them. The other preſervatives uſed by that author, were the rad. helenii, cardomums, white-wine vinegar, and chearfulneſs; and when he found his ſpirits low, as if the diſeaſe were taking poſſeſſion, a cup of generous wine, ſometimes even to a degree of ebriety.

PLAGUE-*water*, *aqua epidemica*, is one of the compound waters of the ſhops. See WATER.

PLAIN, PLANUS, an epithet applied to various things, generally importing them to be ſmooth, even, level, or ſuperficial, or ſimple, or obvious, or the like. See PLANE.

In which ſenſe the words ſtand oppoſed to rough, ſolid, laboured, enriched, *&c.*

It is a maxim in heraldry, that the *plainer* the coat, the nearer to antiquity.—*Plain* coats are ſuch as are leaſt encumbered with figures, or charges, and which have nothing in them but what is natural. See COAT, CHARGE, *&c.*

PLAIN *figure*, in geometry, in an uniform ſurface, from every point of whoſe perimeter, right lines may be drawn to every other point in the ſame. See FIGURE, PLANE and SURFACE.

PLAIN *angle* is an angle contained under two lines, or ſurfaces. See ANGLE.

It is ſo called in contradiſtinction to a *ſolid* angle. See SOLID.

PLAIN *triangle*, is a triangle included under three right lines, or ſurfaces; in oppoſition to a *ſpherical*, and a *mixt* triangle. See TRIANGLE.

PLAIN *trigonometry* is the doctrine of plain triangles, their meaſures, proportions, *&c.* See TRIGONOMETRY.

PLAIN *glaſs*, or *mirrour*, in optics, is a glaſs or mirrour whoſe ſurface is flat, or even.—See the phænomena, and laws of *plain* mirrours, under the article MIRROUR.

Plain mirrours amount to what we popularly call *looking-glaſſes*; ſee the manner of grinding, poliſhing, and preparing them, under the articles LOOKING-*glaſs* and GRINDING.

PLAIN *tyle*. See the article TYLE.

PLAINE *ſcale*, is a thin ruler, whereon are graduated the lines of chords, ſines, tangents, ſecants, leagues, rhumbs, *&c.* of ready uſe in moſt parts of the mathematics, chiefly in navigation. See LINE, *&c.*

See its deſcription and uſe under the article SCALE.

PLAIN *chant*, in muſic. See the article CHANT.

PLAIN *deſcant*. See the article DESCANT.

PLAIN *chart*, in navigation, is a ſea-chart, wherein the meridians and parallels are repreſented by parallel ſtrait lines; and where, of conſequence, the degrees of longitude are the ſame in all the parallels of latitude.

See the properties, conſtruction, *&c.* of this chart under the article CHART.

PLAIN *ſailing*, in navigation, is the art of working the ſeveral caſes and varieties in a ſhip's motion, on a plain chart. See *plain* CHART.

Plain ſailing is founded on the ſuppoſition of the earth being a plane, or flat; which, though notoriouſly falſe, yet places being laid down accordingly, and a long voyage broke into many ſhort ones; the voyage may be tolerably performed by it, near the ſame meridian. See SAILING.

In *plain ſailing* it is ſuppoſed, that by the rhumb-line, meridian, and parallel of latitude, there always will be formed a right-angled triangle; and that ſo poſited, as that the perpendicular ſide may repreſent part of the meridian, or north and ſouth line, containing the difference of latitude: the baſe of the triangle repreſents the departure; and the hypothenuſe the diſtance ſailed.—The angle at the vertex is the courſe, and the angle at the baſe the compliment of the courſe; any two of which, with the right-angle being given, the triangle may be protracted, and the other three parts found. See TRIANGLE.

For the doctrine of *plain ſailing*, ſee SAILING.

PLAIN *table*, in geometry, *&c.* an inſtrument uſed in the ſurveying of land; whereby the draught, or plan, is taken on the ſpot, without any future protraction, or plotting. See SURVEYING, PLOTTING, *&c.*

The *plain table* repreſented *Tab. Surveying*, *fig.* 31. *n.* 1. conſiſts of a parallelogram of wood, about fifteen inches long and twelve broad; round this goes a boxen jointed frame, by means whereof a ſheet of paper is faſtned tight to the table, ſo as lines may be conveniently drawn upon it.

On each ſide the frame, which may be put on either ſide upwards, towards the inward edge, are ſcales of inches, ſubdivided, for the ready drawing of parallel lines.—Beſide which, on one ſide are projected the 360 degrees of a circle, from a braſs center in the middle of the table, (each degree halved) with two numbers to every tenth degree, the one expreſſing the degree, the other its complement to 360, to ſave ſubtraction: on the other ſide are projected the 180 degrees of a ſemi-circle, from a braſs center in the middle of the table's length, and at $\frac{1}{4}$ of its breadth; each degree halved, and every tenth noted with two numbers, *viz.* the degree and its complement to 180°.

To one ſide of the table is fitted a compaſs, for placing the inſtrument by; and the whole is fixed by a ſocket, upon a three legged ſtaff for a ſtand, on which it is turned round, or faſtned by a ſcrew, as occaſion requires.—Laſtly, to the table belongs an index, which is a ruler at leaſt ſixteen inches long, and two broad; uſually graduated with ſcales, *&c.* and having two ſights perpendicularly placed on its extremities. See SIGHT, STAFF, BALL *and ſocket*, *&c.*

Uſe of the PLAIN *table.*—To take an angle by the *plain table*: or to find the diſtance of two places acceſſible from the ſame third.

Suppoſe D A, D B. (*Tab. Surveying*, *fig.* 32. *n.* 2.) the ſides of the angle required; or A B the diſtance required. Place the inſtrument horizontally, as near the angle as poſſible; and aſſume a point in the paper on the table, *v. gr.* c. To this point apply the edge of the index, turning it about this and that way, till through the ſights you ſee the point B, and in this ſituation of the ruler, draw by its edge the line c e indefinitely. After the ſame manner turn about the index, on the ſame point, till through the ſights you ſee the point A; and draw the right line c d indefinitely.—Thus have you the quantity of the angle laid down.

Meaſure the lines D A, D B, with a chain; (ſee CHAIN) and from a ſcale, ſet off the meaſures thus found, (ſee SCALE) on the reſpective lines; which ſuppoſe to reach from c to b, and from c to a.—Thus will c b and c a be proportional to D B and D A.

Transfer the diſtance a b to the ſame ſcale, and find its length; the length thus found, will be the length, or diſtance, of A B required.

2° *To find the diſtance of two places, one whereof is inacceſſible, by the* plain table.—Suppoſe the diſtance required A B; (*fig.* 33.) and A the acceſſible point. 1° place the *plain table* in C; look through the ſights till you ſee A and B; and draw a c and c b. Meaſure the diſtance from your ſtation to A; and ſet it off from the ſcale, upon c a. 2° Remove the table to A, where place it ſo, as that the point a repreſenting A, and the index laid along the line a c, you ſee backwards, the former ſtation C. (Note, in this fixing the inſtrument, lyes the uſe of the compaſs; for the needle will hang over the ſame degree of the card in the firſt and the ſecond caſe; ſo that ſome ſet the inſtrument by the needle alone; others only uſe it to ſhorten the trouble, by bringing the inſtrument nearly to its due poſition by means thereof; and then fixing for good by the back ſight.) 3° The inſtrument fixed, turn the ſights to B; and draw the line a b. 4° On the ſcale, meaſure the interval a b; which will be the diſtance of A B required.

3° *To find the diſtance of two inacceſſible places by the* plain table.—Suppoſe the diſtance of A B (*Tab. Surveying*, *fig.* 34.) required. 1° Chuſing two ſtations in C and D; in the firſt C, place the *plain table*; and through the ſights look to D, B, and A: drawing by the edge of the index, the lines c d, c b, c a.—2° Meaſure the diſtance of the ſtations C D; and ſet this off, from a ſcale, on c d.—3° Removing the table from C, fix it in D; ſo as the point d hanging over the place D, and the index lying along the line c d, through the ſights you ſee the former ſtation C. The inſtrument thus fixed, direct the ſights to A and B, and draw the right lines d a and d b. Laſtly, find the diſtance of a b, on the ſcale; this will be the diſtance of A B required. After the ſame manner, may the diſtance of any number of places be found from two ſtations; and thus may a field, part of a country, *&c.* be ſurveyed.

4° *To take the plot of a field from one ſtation, whence all the angles may be ſeen; with the* plain table.—Placing the inſtrument in the ſtation, aſſume a point in the paper, to repreſent the ſame, *v. gr.* C. (*fig.* 21.) laying the edge of the index to this point; direct it to the ſeveral angles of the field, A B C D E F, *&c.* and draw indefinite lines by its edge, towards every angle, *viz.* C a, C b, C c, *&c.* meaſure the diſtance of each angle from the ſtation, *viz.* C A, C B, C C, C D, *&c.* and from a ſcale ſet theſe off from C on their correſponding lines; the extremities hereof will give points, which being connected by lines will repreſent the field.

5° *To take the plot of a field, wood, or the like, by going round the ſame; with the* plain table.—Place the inſtrument horizontally at the firſt angle, *v. gr.* A. The needle on the meridian of the card; aſſuming a point on the paper, to repreſent it, to that point lay the index, directing it till through the ſights you ſee a mark in the angle B. And draw an indefinite line along it; meaſure the diſtance of A and B, and from a ſcale ſet it off on the line thus drawn; the extremity of this diſtance will repreſent the point B. Remove the inſtrument to B, where ſet it ſo as that the needle hang over the meridian of the card; and ſo as the index lying along the line laſt drawn, you ſee the former ſtation A through the ſights: here faſten it, lay the index to the point B, and turn it, till through the ſights you ſee the next angle C; in this ſituation draw a line as before, meaſure the diſtance B C, and ſet it off from a ſcale on the line—Remove the inſtrument to C, where, fixing it by the needle, and the back ſight, as before, turn the index on the point C, till you ſee the next angle D; draw the line, meaſure, and ſet off the diſtance C D as before, and remove the *plain table* to E; where fix it, as before, look to the next angle F, draw the line, meaſure, and ſet off the diſtance, *&c.*

In this manner having compaſſed the whole field, you will have its whole perimeter plotted on the table; which may be now caſt up, and its contents found, as in the article of SURVEYING.

Manner of ſhifting paper on the plain table.—When in large parcels of ground, the plot is found to exceed the dimenſions of the *plain table*, and to run off from the paper; the ſheet muſt be taken off the table, and a freſh one put on: the way of managing which ſhifting, is as follows:—Suppoſe H, K, M, Z, (*fig.* 35.) the limits of the *plain table*; ſo that having laid down the field from A to B, thence to C and D; you want room, the line D E running off the paper: draw as much of the line D E as the paper will well hold, *viz.* D O. And by means of the diviſions on the edge of the frame, draw the line P Q through O, parallel to the edge of the table H M; and through the point of interſection O, draw O N parallel to M Z. This done, take off the frame, remove the ſheet, and clap a freſh one (*fig.* 36.) in its ſtead; drawing on it a line R S near the other edge parallel thereto. Then lay the firſt ſheet on the table, ſo as the line P Q lye exactly on the line R S, to the beſt advantage, as at O. Laſtly, draw as much of the line O D, on the freſh ſheet, as the table will hold; and from O continue the remainder of the line D, to E. From E proceed with the work as before to F, G, and A.

Uſe of the plain table, *as a theodolite, ſemi-circle, or circumferentor.*—The great inconveniency of the *plain table* is, that its paper renders it impracticable in moiſt weather. Even the dew of the morning and evening is found to ſwell the paper conſiderably, and of conſequence to ſtretch and diſtort the work.—To avoid this inconvenience, and render the inſtrument uſeful in all weathers; by leaving off the paper, and ſetting up a pin in the centre, it becomes a theodolite, a ſemi-circle, or a circumferentor, and applicable like them.

The *plain table* ſtripped of its paper, becomes either a theodolite, or a ſemicircle, as that ſide of the frame which has the projection of the degrees of a circle, or a ſemi-circle, is turned upwards. If it be to ſerve for a theodolite; the index, which as a *plain table* turns on any point as a centre, is conſtantly to turn about the braſs centre hole in the middle of the table.

If for a ſemi-circle, it muſt turn on the other braſs centre hole; in both caſes it is done by means of a pin raiſed in the holes.

When the *plain table* is to ſerve as a circumferentor, ſcrew the compaſs to the index, and both of them to the head of the ſtaff, with a braſs ſcrew-pin fitted for the purpoſe; ſo as the ſtaff and table ſtanding fixed, the index, ſights, *&c.* may be turned about, and *vice verſa*.

To take an angle by the plain table, conſidered as a theodolite.—Suppoſe the quantity of the angle E K G (*fig.* 20.) required. Place the inſtrument at K, the theodolite ſide of the frame upwards, laying the index on the diameter. Turn the whole inſtrument about, the index remaining on the diameter, till through the ſights you ſpy E. Screw the inſtrument faſt there, and turn the index on its centre, till through the ſights you ſpy G.

The degree here cut on the frame by the index, is the quantity of the angle ſought; which may be laid down on paper by the rules of common protraction. See PROTRACTOR.

Thus may you proceed to do every thing with the *plain table*, as with the common theodolite. See THEODOLITE.

To take an angle with a plain table, *conſidered as a ſemi-circle.*—Proceed in the ſame manner with the inſtrument conſidered as a ſemi-circle, as when conſidered as a theodolite; only laying the ſemi-circular ſide upwards, and turning the index on the other centre hole in the middle of the length, and at about ¼ of the breadth of the table. See SEMI-CIRCLE.

To take an angle with the plain table, *conſidered as a circumferentor.*—Suppoſe the former angle E K G required. Place the inſtrument at K, the flower-de-luce towards you. Direct the ſights to E, and obſerve the degree cut by the ſouth end of the needle which ſuppoſe 296. Turn the inſtrument about, the flower-de-luce ſtill towards you, and direct the ſight to G, noting the degree cut by the other end of the needle, which ſuppoſe 182. Subſtract the leſs from the greater, the remainder 114° is the quantity of the angle ſought. If the remainder chance to be more than 180° then it muſt be again ſubtracted from 360. This ſecond remainder will be the angle required; which may be protracted, *&c.* as under the article PROTRACTOR.

Thus you may proceed to do every thing with the *plain table*, as with the common circumferentor. See CIRCUMFERENTOR.

PLAIN *number*, is a number that may be produced by the multiplication of two numbers into one another.—Thus 20 is a *plain number*, produced by the multiplication of 5 into 4. See NUMBER, and SIMILAR.

PLAIN *place*, in geometry, *locus* PLANUS, or *locus ad* PLANUM, is a term which the ancient geometricians uſed for a geometrical locus, when it was a right line, or a circle—in oppoſition to a ſolid place, which was an ellipſis, parabola, or hyperbola.

Theſe *plain loci* the moderns diſtinguiſh into *loci ad rectam*, and *loci ad circulum*. See LOCUS.

PLAIN *problem*, in mathematics, is ſuch an one, as cannot be ſolved geometrically, but by the interſection either of a right line and a circle; or of the circumferences of two circles. See PROBLEM.

Such is the problem following—Given, the greateſt ſide, and the ſum of the other two ſides, of a right-angled triangle; to find the triangle.—Such alſo is this, to deſcribe a trapezium that ſhall make a given area of four given lines.

Such problems can only have two ſolutions, in regard a right line can only cut a circle, or one circle cut another in two points.

PLAIN, in heraldry, is ſometimes uſed for the point of the ſhield, when couped ſquare; a part remaining under the ſquare, of a different colour, or metal from the ſhield.

This has been ſometimes uſed as a mark of baſtardy, and called *champaigne*: for when the legitimate deſcendants of baſtards have taken away the bar, fillet, or traverſe bore by their fathers, they are to cut the point of the ſhield, with a different colour called *plain*. See BASTARD, DIMINUTION.

PLAIN, uſed ſubſtantively, in perſpective, mechanics, aſtronomy, *&c.* See PLANE.

Oblique PLAINS. See the article OBLIQUE.

PLAINT, PLAINTE, in law, the propounding or exhibiting any action, real or perſonal, in writing. See ACTION.

Hence, the party making this *plaint*, is called plaintiff. See PLAINTIFF.

PLAINTE, in the ancient cuſtoms of France, was a requeſt, or petition, peſented to the king, againſt the judges of the provinces, and afterwards againſt bailiffs and ſeneſchals; for denying juſtice, or for rendring judgment contrary to the laws of the realm. See REQUEST.

For in thoſe days there was no appeal from their deciſions; but they all pronounced in the dernier reſort: ſo that the *plainte* was not directed againſt the party, but againſt the judge; who was cited to ſee his own ſentence declared null.

This was a kind of ſupplement to the way of appeals, which was then ſhut up. Theſe *plaintes*, in the capitulars of Charlemaign, are called *blaſphemiæ*. See APPEAL.

PLAINTIFF, in law, he that ſues, or complains, in an aſſize, or in an action perſonal; as, in an action of debt, treſpaſs, deceit, detinue, and the like. See ACTION.

Plaintiff ſtands oppoſed to *defendant*. See the article DEFENDANT.

PLAISTER, in building. See the articles PLASTER, MORTAR, *&c.*

Caſting in PLAISTER. See the article CASTING.

PLAISTER, in medicine. See the article EMPLASTER.

PLAISTERED *walls*. See the article WALL.

PLAN, a repreſentation of ſomething, drawn on a plane. See PLANE.

Such are maps, charts, ichnographies, *&c.* See PLANISPHERE, MAP, CHART, *&c.*

PLAN, in architecture, is particularly uſed for a draught of a building; ſuch as it appears, or is intended to appear, on the ground; ſhewing the extent, diviſion, and diſtribution of its area into apartments, rooms, paſſages, &c. See BUILDING. The *plan* is the firſt device or ſketch the architect makes; it is alſo called the *ground-plot*, *plat-form*, and *ichnography* of the building. See ICHNOGRAPHY, &c.

Geometrical PLAN, is that wherein the ſolid and vacant parts are repreſented in their natural proportion.

Raiſed PLAN, is that where the elevation, or upright is ſhewn, upon the geometrical plan, ſo as to hide the diſtribution. See ELEVATION.

Perſpective PLAN, is that conducted and exhibited by degradations, or diminutions, according to the rules of perſpective. See PERSPECTIVE.

To render *plans* intelligible, it is uſual to diſtinguiſh the maſſives with a black waſh. The projectures on the ground are drawn in full lines, and thoſe ſuppoſed over them in dotted lines. The augmentations or alterations to be made, are diſtinguiſhed by a colour different from what is already built; and the tints of each *plan* made lighter as the ſtories are raiſed.

In large buildings it is uſual to have three ſeveral *plans* for the firſt three ſtories.

PLANCHIER, or PLANCERE, in architecture, the under part of the corona, or drip; making the ſuperiour part of the corniche, between two cymatiums. See CORONA, CORNICHE, &c.

PLANE, PLANUM, in geometry, denotes a *plain* figure; or a ſurface, lying evenly between its bounding lines. See PLAIN.

Wolfius defines *plane*, a ſurface from every point of whoſe perimeter a right line may be drawn to every other point in the ſame. See SUPERFICIES.

As the right line is the ſhorteſt extent from one point to another; ſo is a *plane* the ſhorteſt extenſion between one line and another. See LINE and SPACE.

Parallel PLANES. See the article PARALLEL.

PLANES are frequently uſed in aſtronomy, &c. for imaginary ſurfaces, ſuppoſed to cut, and paſs through ſolid bodies; and on this foundation it is that the whole doctrine of conic ſections, and of the ſphere, turn. See SECTION.

When a *plane* cuts a cone parallel to one of its ſides, it makes a parabola; when it cuts the cone parallel to its baſe, it makes a circle. See CONICS.

The ſphere is wholly explained by *planes*, imagined to cut the celeſtial luminaries, and to fill the areas or circumferences of their orbits. See SPHERE and CIRCLE.

Aſtronomers ſhew, that the *plane* of the moon's orbit is inclined to the *plane* of the earth's orbit, or the ecliptic, by an angle of about 5 deg. and paſſes through the centre of the earth. See ORBIT. The interſection of this *plane* with that of the ecliptic, has a proper motion of 3′ 11″ each day, from eaſt to weſt; ſo that the nodes anſwer ſucceſſively to all the degrees of the ecliptic, and make a revolution round the earth in about nineteen years. See NODE.

The *planes* of the orbits of the other planets, like that of the ecliptic, paſs through the centre of the ſun.—The *plane* of the orbit of Saturn, is inclined to the ecliptic by 20° 33′ 30″, and cuts it, at preſent, in the 22^d degree of Cancer and Capricorn. See INCLINATION, MOON, and PLANET.

The centre of the earth, then, being in the *plane* of the moon's orbit, the circular ſection of that plane in the moon's diſk, is repreſented to us in form of a right line paſſing through the centre of the moon.—This line is inclined to the *plane* of the ecliptic by 5° when the moon is in her nodes: but this inclination diminiſhes as that planet recedes from the nodes; and at three degrees diſtance, the ſection of the moon's orbit in its diſk, becomes parallel to the *plane* of the ecliptic. The ſame appearances attend the primary planets, with regard to the ſun.

But the caſe is very different in the planets as ſeen from one another, eſpecially from the earth.—The *planes* of their orbits only paſs through the centre of the earth when they are in their nodes: in every other ſituation, the *plane* is raiſed above the orbit of the planet, either to the north or the ſouth. And the circular ſection of the *plane* of the orbit on its diſk, or in the orbit of one of its ſatellites, does not appear a right line, but an ellipſis, broader or narrower as the earth is more or leſs elevated above the *plane* of the orbit of the planet.

PLANE, in mechanics.—A *horizontal* PLANE, is a *plane* level or parallel to the horizon.—See HORIZON, and HORIZONTAL.

The determining how far any given *plane*, &c. deviates from an horizontal one, makes the whole buſineſs of levelling. See LEVELLING.

Inclined PLANE, in mechanics, is a plane which makes an oblique angle with an horizontal plane. See OBLIQUE, and INCLINED.

The doctrine of the motion of bodies on *inclined planes* makes a very conſiderable article in mechanics*; the ſubſtance whereof is as follows:

* A *machine* has been contrived for meaſuring the acceleration of a ball down an inclined plane, and comparing it with that found in bodies falling at liberty. See its deſcription in *Mem. de l'acad. roy. des ſcienc.* 1699. p. 343.

Laws of deſcent of bodies on inclined PLANES.—I. If a body be placed on an *inclined plane*, its relative gravity will be to its abſolute gravity, as the length of the *plane*, *e. gr.* AC (*Tab. Mechan. fig.* 58.) to its height AB. See GRAVITY.

Hence, 1° ſince the ball D only gravitates on the *inclined plane*, with its relative gravity; the weight L, applied in a direction parallel to the length of the *plane*, will retain or ſuſpend it, provided its weight be to that of the ball, as the altitude of the *plane* BA is to its length AC.

2° If the length of the *plane* CA be taken for the whole ſine; AB will be the ſine of the angle of inclination ACB.—The abſolute gravity of the body, therefore, is to its reſpective gravity applied on the *inclined plane*, and therefore, alſo the weight D to the weight L acting according to the direction DA which ſuſtains it; as the whole ſine to the ſine of the angle of inclination.

3° Hence the reſpective gravities of the ſame body on different *inclined planes*, are to each other as the ſines of the angle of inclination.

4° The greater therefore the reſpective gravity is, the greater is the angle of inclination.

5° As, therefore, in a vertical *plane*, where the inclination is greateſt, *viz.* perpendicular, the reſpective gravity degenerates into abſolute; ſo in an horizontal *plane*, where there is no inclination, the reſpective gravity vaniſhes.

II. To find the ſine of the angle of inclination of a *plane*, on which a given power will be able to ſuſtain a given weight—Say, as the given weight, is to the given power, ſo is the whole ſine to the ſine of the angle of inclination of the *plane*. Thus, ſuppoſe a weight of 1000 be to be ſuſtained by a power of 50, the angle of inclination will be found 2° 52′.

III. If the weight L deſcend according to the perpendicular direction AB, and raiſe up the weight D in a direction parallel to the *inclined plane*; the height of the aſcent of D will be to that of the deſcent of L, as the ſine of the angle of inclination C, to the whole ſine.

Hence 1° the height of the deſcent CD of the weight L, is to the height of aſcent DH of the weight D, reciprocally as the weight D to the equivalent weight L.

2° Since then $CD.L = DH.D$, and the actions of the equiponderating bodies D and L are equal; the moments of the weights D and L are in a ratio compounded of their maſſes, and the altitudes through which they aſcend or deſcend in a *plane*, either inclined or perpendicular.

3° The powers that raiſe weights through altitudes reciprocally proportional to them, are equal.—This Des Cartes aſſumes as a principle whereby to demonſtrate the powers of machines, Hence we ſee why a loaden waggon is drawn with more difficulty on an inclined than an horizontal *plane*; as being preſſed with a part of the weight which is to the whole weight in a ratio of the altitude of the plane, to its length.

IV. Weights E and F, *fig.* 53. *n.* 2. equiponderating upon *inclined planes* AC and CB of the ſame height CD, are to each other as the lengths of the *planes* AC and CB.

S. Stevinus gives a very pretty demonſtration of this theorem, which, for its eaſineſs and ingenuity, we ſhall here add—Put a chain, whoſe parts do all exactly weigh in proportion to their length, over a triangle, GIH: (*fig.* 59.) it is evident the parts GK and KH do balance each other. If then IH did not balance GI, the preponderating part would prevail; and there would ariſe a perpetual motion of the chain about GIH: but this being abſurd, it follows, that the parts of the chain IH and GI; and conſequently all other bodies which are as the lengths of the *planes* IH and IG, will ballance each other.

V. A heavy body deſcends on an *inclined plane*, with a motion uniformly accelerated. See MOTION and ACCELERATION.

Hence, 1° The ſpaces of deſcent are in a duplicate ratio of the times, and likewiſe of the velocities; and therefore in equal times increaſe according to the unequal numbers 1, 3, 5, 7, 9, &c.

2° The ſpace paſſed over by a heavy body deſcending on an *inclined plane*, is ſubduple of that which it would paſs over in the ſame time, with the velocity it has acquired at the end of its fall.

3° Heavy bodies, therefore, deſcend by the ſame laws on *inclined planes*, as in perpendicular *planes*. Hence it was, that Galileo, to find the laws of perpendicular deſcent, made his experiments on *inclined planes*, in regard of the motions being ſlower in the latter than the former; as in the following theorem.

VI. The velocity of a heavy body deſcending on an *inclined plane*, at the end of any given time; is to the velocity which it would acquire in falling perpendicularly, in the ſame time, as the height of the *inclined plane* is to its length.

VII. The ſpace paſſed over by a heavy body on an *inclined plane* AD, (*fig.* 60.) is to the ſpace AB, it would paſs over in the ſame time in a perpendicular *plane*: as its velocity on the *inclined plane* is to its velocity in the perpendicular deſcent, at the end of any given time.

Hence, 1° the ſpace paſſed over on the *inclined plane*, is to the ſpace it would deſcend in the ſame time in the perpendicular *plane*, as the altitude of the *plane* AB to its length AC; and therefore as the ſine of the angle of inclination B, to the whole ſine.

2° If, then, from the right angle B, a perpendicular be let fall to AC; $AC : AB :: AB : AD$. So that in the ſame time wherein the body would fall perpendicularly from A to B; in an *inclined plane* it will deſcend from A to D.

3° The ſpace, therefore, of perpendicular deſcent being given in the altitude of the *plane* A B; by letting fall a perpendicular from B to A C, we have the ſpace A D to be paſſed over in the ſame time on the *inclined plane*.

4° in like manner, the ſpace A D, paſſed over on the *inclined plane*, being given, we have the ſpace A B, through which it would deſcend perpendicularly in the ſame time, by raiſing a perpendicular meeting the ſide of the *plane* in B.

5° Hence in the ſemi-circle CDEF, *fig.* 61. the body will deſcend through all the *planes* AD, A E, A F, A C, in the ſame time; *viz.* in that time wherein it would fall through the diameter A B, ſuppoſing that perpendicular to the horizontal *plane* L M.

VIII. The ſpace AD, *fig.* 60. paſſed over in an *inclined plane* A C, being given; to determine the ſpace which would be paſſed over in any other *inclined plane* in the ſame time.

From the point D erect a perpendicular D B, meeting the altitude A B in B; then will A B be the ſpace, through which the body would fall perpendicularly in that time. Wherefore if from B a perpendicular B E be let fall to the *plane* A F; A E will be the ſpace in the *inclined plane* which the body will paſs over, in the ſame time wherein it falls perpendicularly from A to B; and conſequently A D will be the ſpace in the other *inclined plane* A C, which it paſſes through in the ſame time.

Hence, ſince A B is to A D, as the whole ſine to the ſine of the angle of inclination C; and A B is to A E as the whole ſine to the ſine of the angle of inclination F; the ſpaces A D and A E, which the body will paſs over in the ſame time on different *inclined planes*, are as the ſines of the angles of inclination, C and F, and reciprocally as the reſpective gravities on the ſame *planes*. And conſequently, alſo, reciprocally as the lengths of *planes* equally high, A C and A F.—Whence the problem may be reſolved various ways by calculation.

IX. The velocities acquired in the ſame time on different *inclined planes*, are as the ſpaces paſſed over in the ſame time.—Hence, alſo, they are as the ſines of the angles of inclination C and F; reciprocally as the reſpective gravities on the ſame *planes*; and reciprocally as the lengths of equally high *planes*, A C and AF.

X. A body deſcending on an *inclined plane* A C, when it arrives at the horizontal line C B, has acquired the ſame velocity which it would have acquired in a perpendicular deſcent A B, to the ſame horizontal line C B.

Hence, 1° a heavy body deſcending through different *inclined planes*, A C, A G, A F, has acquired the ſame velocity when it arrives at the ſame horizontal line C F.

Hence alſo a body continuing its deſcent through ſeveral contiguous *inclined planes*, acquires the ſame velocity which it would acquire in deſcending perpendicularly to the ſame horizontal *plane*.

XI. The time of deſcent along an *inclined plane* A C, is to the time of perpendicular deſcent through A B, as the length of the *plane* A C, to its altitude A B: but the times of deſcent through different *inclined planes* equally high A C and A G, are as the lengths of the *planes*.

XII. If the diameter of a circle A B (*fig.* 61.) be parallel to the horizontal line L M; a body will deſcend from any point of the periphery D E, or C to B, along an *inclined plane* D C, E B, and C B, in the ſame time wherein it will deſcend through the diameter A B. Hence,

XIII. The deſcents of body through a ſemicycloid D E F, (*fig* 62.) and through any arch thereof D G, are always iſochronal, or performed in the ſame time; on which principle is built the doctrine of pendulums vibrating in a cycloid. See CYCLOID and PENDULUM.

Laws of aſcent of bodies on inclined PLANES.—I. If a body aſcend in a medium void of reſiſtance, in any direction, whether perpendicular, or along an *inclined plane*; its motion will be uniformly retarded. See RETARDATION.

Hence, 1° a body aſcending either perpendicularly or obliquely, in ſuch a medium, paſſes over a ſpace which is ſubduple of that it would paſs over in the ſame time on a *horizontal plane*, with an uniform celerity equal to that it has at the beginning of its motion.

2° Such ſpaces, therefore, performed in equal times, decreaſe in a retrograde order, as the uneven numbers 7, 5, 3, 1: and therefore the aſcent is ſo much impeded; conſequently, when the impreſſed force is exhauſted, the body will deſcend again by the force of gravity.

3° They are therefore, inverſely, as the ſpaces deſcribed in the ſame times by a body deſcending through the ſame altitude.—For, ſuppoſe the time divided into four parts; in the firſt moment, the body A deſcends through the ſpace 1, and B aſcends through 7; in the ſecond, A deſcends through 3, B aſcends through 5, *&c.*

4° Hence, a body riſing with an impreſſed force, aſcends to that altitude, from which it muſt fall to acquire that velocity in falling, wherewith it aſcended.

5° Hence, by falling it acquires a force to riſe again to the height whence it fell. See PENDULUM.

II. The time wherein a body aſcends to a given altitude, being given; to determine the ſpace paſſed over each moment.—Suppoſe the ſame body to deſcend from the ſame altitude in the ſame time; and find the ſpaces paſſed over each moment. (See MOTION.) Theſe, taken inverſely, are the ſame with the ſpaces of aſcent required.

Suppoſe, *v. gr.* a body projected perpendicularly, to aſcend through a ſpace of 240 feet in four ſeconds; and the ſpaces of aſcent performed in the ſeveral times required; if now, the body had deſcended, the deſcent in the firſt minute had been 15 feet, in the ſecond 45, in the third 75, in the fourth 105, *&c.* The deſcent therefore will be in the firſt moment 105, in the ſecond 75, *&c.*

III. If a body deſcend either perpendicularly through A D, (*fig.* 62.) or in any other ſurface F E D, and with the velocity it has there acquired, again aſcend along another ſurface D C; at points equally high, *e. gr.* at G H, and Q, it will have the ſame force and the ſame velocity.

Hence, if a body deſcend along any ſurface, F E D, and again aſcend along another ſimilar and equal ſurface D G C; it is the ſame as if it paſſed over the ſeveral parts of the ſame line twice.

Whence, the times of aſcent and deſcent through equal ſpaces are equal.

On this principle is founded the conſtruction and uſe of pendulums. See PENDULUM and OSCILLATION.

PLANE *of gravity*, or *gravitation*, is a plane ſuppoſed to paſs through the center of gravity of the body, and in the direction of its tendency; that is, perpendicular to the horizon. See GRAVITY and GRAVITATION.

PLANE *of reflection* in catoptrics, is a plane which paſſes through the point of reflection; and is perpendicular to the plane of the glaſs, or reflecting body. See REFLECTION.

PLANE *of refraction* is a plane drawn through the incident and refracted ray. See REFRACTION.

Perſpective PLANE, is a plain pellucid ſurface, ordinarily perpendicular to the horizon, and placed between the ſpectator's eye and the object he views; through which the optic rays, emitted from the ſeveral points of the object, are ſuppoſed to paſs to the eye, and in their paſſage to leave marks that repreſent them on the ſaid plane. See PERSPECTIVE.

Such is the *plane* HI; (*Tab. Perſpect. fig.* 1.) ſome call it the *table*, or *picture*, becauſe the draught, or perſpective of the object, is ſuppoſed to be thereon; others, the *ſection*, from its cutting the viſual rays; and others, the *glaſs*, from its ſuppoſed tranſparency.

Geometrical PLANE, in perſpective, is a plane parallel to the horizon, whereon the object to be delineated is ſuppoſed to be placed.

Such is the *plane* L M. (*Tab. Perſpect. fig.* 1.)—This *plane* is uſually at right angles with the *perſpective plane*.

Horizontal PLANE, in perſpective, is a plane paſſing through the ſpectator's eye, parallel to the horizon, cutting the perſpective plane when that is perpendicular to the geometrical one, at right angles.

Vertical PLANE, in perſpective, a plane paſſing through the ſpectator's eye, perpendicular to the geometrical plane; and uſually parallel to the perſpective plane. See VERTICAL.

Objective PLANE, in perſpective, is any plane ſituate in the horizontal plane, whoſe repreſentation in perſpective is required. See OBJECT.

PLANE *of the horopter*, in optics, is a plane that paſſes through the horopter, A B, (*Tab. Optics fig.* 67.) and is perpendicular to a plane paſſing through the two optic axes I C and C H. See HOROPTER.

PLANE *of the Projection*, in the ſtereographic projection of the ſphere, is the ſame with the *perſpective plane*, which ſee. See alſo PROJECTION, *&c.*

PLANE *of a dial*, or *dial*-PLANE, the ſurface whereon a dial is drawn. See DIAL.

We have *horizontal*, *vertical*, *inclining*, *declining*, *reclining*, *deinclining*, *direct*, *&c. dial-planes*. See DECLINER, RECLINER, DIRECT, *&c.*

Declination of a PLANE. See the article DECLINATION.

PLANE *glaſs*, *mirrour*, *figure*, *number*, *problem*, *&c.* See PLAIN *glaſs*, *mirrour*, *number*, *figure*, *problem*, *&c.*

PLANE, in joinery, *&c.* denotes an edge inſtrument, uſed to pare, or ſhave woods ſmooth, even, *&c.*

It conſiſts of a piece of wood, very ſmooth at bottom, ſerving as a ſtock, or ſhaft; in the middle whereof is an aperture, through which paſſes a ſteel edge, or chiſſel, obliquely placed, and very ſharp, which takes off the inequalities of the wood it is ſlid along.

The *plane* acquires various names according to its various forms, ſizes, and uſes: as, the—*Fore plane*, which is very long, and is that commonly firſt uſed: the edge of its iron is not ground ſtreight, but riſes with a convex arch in the middle, to bear being ſet the ranker; its uſe being to take off the greater irregularities of the ſtuff, and to prepare it for the *ſmoothing plane*.

Smoothing plane is ſhort and ſmall, its iron fine; it takes off the greater irregularities left by the *fore-plane*, and prepares the wood for the *jointer*.

Jointer is the longeſt of all; its edge very fine, not ſtanding out above a hair's breadth; it comes after the *ſmoothing-plane*, and is chiefly intended to ſhoot the edge of a board perfectly ſtreight for jointing ſmooth tables, *&c.*

Strike block is like the *jointer*, but ſhorter; its uſe, to ſhoot ſhort joints, *&c.*

Rabbet-plane is uſed to cut the upper edge of a board, ſtrait or ſquare, down into the ſtuff, ſo as the edge of another, cut after the ſame manner, may join in with it on the ſquare: it is alſo uſed to ſtrike faſcia's in mouldings. Its iron is full as broad as its ſtock, that the angle may cut ſtrait; and it delivers its ſhavings at the ſides, not, like the others, at the top.

The *plow*, a narrow rabbet-*plane*, with the addition of two ſtaves, whereon are ſhoulders, and on the ſhoulders a fence.—Its uſe is to plow a narrow ſquare grove on the edge of a board, *&c.*

Moulding-planes; of theſe there are various kinds, accommodated to the various forms and profiles of the mouldings. See MOULDING.

Such are the *round plane*, the *hollow*, the OG, the *ſnipe's bill*, *&c.* which are all of ſeveral ſizes, from half an inch to an inch and half.

To uſe the *moulding-planes* on ſoft wood, as deal, pear-tree, *&c.* they ſet the iron to an angle of 45° with the baſe or ſole of the *plane*. On hard wood, *v. gr.* ebony, box, *&c.* they ſet to an angle of 80°; ſometimes quite upright. To work on hard wood, the edge or baſil is ground to an angle of 18 or 20°; on ſoft wood to an angle of about 12°. For the more acute the baſil, the ſmoother the iron cuts; but the more obtuſe, the ſtronger.

PLANE, among fowlers.—To PLANE, is to fly or hover as a bird does, without moving its wings. See FLYING, HAWK, and HAWKING.

PLANET, PLANETA*, in aſtronomy, a celeſtial body, revolving round the ſun as a center, and continually changing its poſition, with reſpect to the other ſtars.

* Whence its name πλανήτης, wanderer; in oppoſition to a *ſtar* which remains fixed. See STAR.

The *planets* are uſually diſtinguiſhed into *primary*, and *ſecondary*.

Primary PLANETS, called alſo ſimply and by way of eminence, *planets*, are thoſe which move round the ſun as their proper center.—Such are Saturn, Jupiter, Mars, the Earth, Venus, and Mercury. See PRIMARY.

Secundary PLANETS are ſuch as move round ſome *primary planet*, as their reſpective center, in the ſame manner as the *primary planets* do round the ſun.—Such are the Moon moving round our earth; and thoſe others moving round Saturn and Jupiter, properly called *ſatellites*. See the doctrine of *ſecundary planets*, under the article SATELLITES, and SECUNDARY.

The *primary planets* are in number ſix; which are again diſtinguiſhed into *ſuperiour* and *inferiour*.

Superiour PLANETS are thoſe further off the ſun than our earth is.—Such are Mars, Jupiter, and Saturn.

Inferiour PLANETS are thoſe nearer the ſun than our earth is, and ſituate between the earth and ſun.—Such are Venus and Mercury.—See the order, poſition, *&c.* of the *planets*, in *Tab. Aſtron. fig.* 44.

The *planets* are repreſented by the ſame characters as the chemiſts uſe to repreſent their metals by, on account of ſome ſuppoſed analogy between thoſe celeſtial and ſubterraneous bodies. See METAL and CHARACTER.

Saturn is repreſented by the character ♄.—This *planet*, by reaſon of its great diſtance, appears to the eye with a feeble light.—It performs its revolution round the ſun in about thirty years. See SATURN.

Jupiter, marked ♃, is a bright refulgent ſtar, finiſhing its courſe round the ſun in about twelve years. See JUPITER.

Mars, characteriſed ♂, is a ruddy fiery coloured *planet*, finiſhing its courſe in about two years. See MARS.

Venus, ♀, is the brighteſt of all the *planets*, conſtantly attending the ſun, and never diſtant from him above 47 degrees.—It finiſhes its courſe in about ſeven months. See VENUS.

When it goes before the ſun, it is called *phoſphorus*, and *lucifer*; and when it follows him *heſperus*. See PHOSPHORUS, *&c.*

Mercury, ☿, a little bright *planet*, the ſun's conſtant companion, from whoſe ſide it never departs above 28°, and by that means uſually hid in his ſplendor.—It performs its courſe in about three months. See MERCURY.

To which we now add, Tellus, the earth, marked ⊕, or ♁, performing its courſe about the ſun, between Mars and Venus, in the ſpace of a year. See EARTH.

From theſe definitions, a perſon may eaſily diſtinguiſh all the *planets*.—For if after ſun-ſet he ſees a *planet* nearer the eaſt than the weſt, he may conclude it is neither Mercury nor Venus; and may determine whether it is Saturn, Jupiter, or Mars, by the colour and light: by which alſo he may diſtinguiſh between Mercury and Venus.

Nature of the PLANETS.—From the ſeveral phaſes and appearances of the *planets*, they are found to be all perfectly like the moon; which we have ſhewn to be perfectly like our earth; whence it follows, that the *planets* too are dark, opake, ſpherical, *&c.* bodies, like our earth. See MOON.

This may be ſhewn almoſt to be a demonſtration.—1° Venus, obſerved with a teleſcope, is rarely found full, but with variable phaſes like thoſe of the moon; her illuminated part ſtill turned towards the ſun, *viz.* toward the eaſt when ſhe is the morning-ſtar, and the weſt when the evening-ſtar.—And the like phaſes are obſerved in Mercury and Mars.

2° Gaſſendus firſt, and after him others, have obſerved Mercury on the face of the ſun, a-croſs which he appeared to paſs like a black round ſpot. See TRANSIT.—Horrox in 1639, alſo obſerved Venus in the ſun; where ſhe made the ſame appearance.

3° De la Hire, in 1700, with a teleſcope of ſixteen foot, diſcovered mountains in Venus, larger than thoſe of the moon. See MOUNTAIN.

4° Caſſini obſerved two ſpots in Venus; four in Mars, likewiſe obſerved by Campani; and ſeveral, at ſeveral times, in Jupiter: and from his obſervations of theſe ſpots found that they had a rotation round their axes: He even determined the velocity of that rotation, or the period wherein it was effected, *v. gr.* That of Jupiter, 9 hours 56′. That of Mars 24 hours 40′. And that of Venus, 24 hours. See SPOT.—And ſince the Sun, Moon, Jupiter, Mars, Venus, and the earth, are found to revolve on their axes, *i. e* to have a diurnal rotation: no doubt Mercury and Saturn have the ſame; though the great nearneſs of the former to the ſun, and the great diſtance of the latter, prevent any ſpots from being obſerved on them, whence that rotation might be demonſtrated.

5° In Jupiter are obſerved two ſwaths, or belts, brighter than the reſt of his diſk, and moveable; ſometimes found in one part, ſometimes in another; ſometimes broader, ſometimes narrower. See BELT.

6° In 1609 were firſt obſerved three little ſtars, or moons, moving about Jupiter, by Sim. Marius; and in 1610 the ſame were obſerved by Galileo: Theſe are now frequently obſerved to diſappear in a clear ſky, when Jupiter happens to be diametrically interpoſed between them and the ſun.—Whence it appears they are void of light, at ſuch time when the ſun's rays, intercepted by Jupiter, cannot be propagated to them in right lines; and hence alſo, that, like the moon, they are opake bodies, illuminated by the ſun; and hence again, ſince Jupiter does not illuminate his ſatellites when placed behind him, he himſelf, in that part turned from the ſun, may be argued to be void of light.

7° When Jupiter's moons are diametrically interpoſed between Jupiter and the Sun, there is ſeen a round ſpot on Jupiter's diſk, which is ſometimes larger than the ſatellite itſelf.—Whence it appears, that the ſatellites are opake bodies, illuminated by the ſun, that they project a ſhadow upon the ſun, and that the round ſpots ſeen in Jupiter are the ſhadows of the ſatellites. Whence alſo, the interſection of that ſhadow being found to be a circle, the ſhadow muſt be conical; and therefore the figure of the ſatellites, at leaſt as to ſenſe, is ſpherical.

8° The earth being between Jupiter and the ſun; if, at the ſame time, any of the ſatellites happen to be between Jupiter and the ſun, it is loſt in Jupiter's light; though ſometimes appearing like a black ſpot.—This phænomenon has been frequently obſerved by Caſſini and Maraldi, who have likewiſe noted very conſiderable alterations in the apparent magnitudes of the ſatellites; for which no reaſon could be given from the diſtance of Jupiter, the ſun, or the earth: *e. gr.* That the fourth, which is uſually ſeen the ſmalleſt, is ſometimes the largeſt; and the third, which is uſually the largeſt, ſometimes the ſmalleſt.—Hence, as the ſatellites are illuminated by the ſun, even then when emerged in Jupiter's light, yet do appear obſcure, there muſt be ſome alteration in their atmoſpheres, to prevent the ſun's rays being equally reflected from every part of their ſurface; which muſt likewiſe be the cauſe why their ſhadow is ſometimes larger than themſelves.

Now, to ſum up the evidence.—1° Since in Venus, Mercury, and Mars, only that part of the diſk illuminated by the ſun, is found to ſhine; and, again, Venus and Mercury, when between the earth and the ſun, appear like dark ſpots or maculæ, on the ſun's diſk; it is evident, that Mars, Jupiter, and Mercury, are opake bodies, illuminated with the borrowed light of the ſun. And the ſame appears of Jupiter, from its being void of light in that part to which the ſhadow of the ſatellites reaches, as well as in that part turned from the ſun; and that his ſatellites are opake, and reflect the ſun's light, is abundantly ſhewn. Wherefore, ſince Saturn, with his ring and ſatellites, do only yield a faint light, fainter conſiderably than that of the fixed ſtars; though theſe be vaſtly more remote; and than that of the reſt of the *planets*: it is paſt doubt, he too, with his attendants, are opake bodies.

2° Since the ſun's light is not tranſmitted through Mercury and Venus, when placed againſt him; it is plain they are denſe opake bodies; which is likewiſe evident of Jupiter, from his hiding the ſatellites in his ſhadow; and therefore, by analogy, the ſame may be concluded by Saturn.

3° From the variable ſpots in Venus, Mars, and Jupiter, it is evident thoſe *planets* have a changeable atmoſphere; which changeable atmoſphere may, by a like argument, be inferred of the ſatellites of Jupiter; and therefore, by ſimilitude the ſame may be concluded of the other *planets*.

4° In like manner, from the mountains obſerved in Venus; the ſame may be ſuppoſed in the other *planets*.

5° Since then Saturn, Jupiter, both their ſatellites, Mars, Venus, and Mercury, are opake bodies, ſhining with the ſun's borrowed light, are furniſhed with mountains, and encompaſſed with a changeable atmoſphere; they have, of conſequence, waters, ſeas, *&c.* as well as dry land, and are bodies like the moon, and therefore like the earth. Q. E. D.

And hence, nothing hinders but that the *planets* may alſo be concluded to be inhabited.—Huygens, in his Coſmotheoros, argues very plauſibly for the exiſtence of planetary inhabitants, from the ſimilitude of the *planets* with our earth; thoſe, like this, being opake, denſe, uneven, round, heavy, illuminated and warmed by the ſun; having night and day, ſummer and winter, *&c.* Wolfius deduces ſomething relating hereto from arguments of another kind.—Thus *e. gr.* It is ſcarce to be doubted, that the inhabitants of Jupiter are much larger than thoſe of the earth; and in effect of the giant kind. For it is ſhewn in optics, that the pupil of the eye dilates in a ſtrong light, and contracts in a weak one; wherefore, ſince in Jupiter the ſun's meridian light is much feebler than on the earth, by reaſon of Jupiter's greater diſtance from the ſun; the pupil will need to be much more dilatable in the inhabitants of Jupiter, than in thoſe of the earth. But the pupil is obſerved to have a conſtant proportion to the ball of the eye; and the eye to the reſt of the body, ſo that in animals, the larger the pupil the larger the eye, and the larger the body.

To aſcertain the ſize of theſe jovial inhabitants, it may be obſerved that the diſtance of Jupiter from the ſun, is to the earth's diſtance from the ſame, as 26 to 5; the intenſity of the ſun's light in Jupiter is to its intenſity on the earth, in a duplicate ratio of 5 to 26; but it is found by experience, that the pupil dilates in a ratio greater than that wherein the intenſity of light decreaſes; otherwiſe, a body at a great diſtance might be ſeen as clearly as a nearer: the diameter, therefore, of the pupil in its greateſt dilatation, in Jupiter, is to its diameter in the like ſtate in the earth, in a ratio greater than that of 5 to 26.—If then we put it, as 10 to 26, or as 5 to 13: ſince the ordinary ſtature of the inhabitants of the earth is computed at 5 Engliſh feet, 4 inches and $\frac{3}{10}$; (which Wolfius tells us is his own height) the ordinary ſtature of Jupiter's inhabitants will be found 14 feet $\frac{2}{3}$, which is very nearly the ſize of the giant Og, mentioned by Moſes, whoſe iron bed was 9 cubits long, and its breadth 4. See GIANT.

Motion of the PLANETS.—That the *planets* do all revolve round the ſun as their center, and not round the earth, is evident from a thouſand phænomena.—1° The orbit wherein Venus, *e. gr.* moves, does certainly encompaſs the ſun, and therefore in deſcribing that orbit, the *planet* muſt turn round the ſun. See ORBIT.

That her orbit includes the ſun, appears hence, that ſhe is ſometimes above the ſun, ſometimes below it, ſometimes beyond it, and ſometimes on this ſide; all which are evident from the circumſtances of her phaſes. See PHASES.

That ſhe does not move round the earth is no leſs apparent from her being ever obſerved in the ſame quarter with the ſun, never receding from him above 45°.—She never therefore comes to be in oppoſition to the ſun; no, not to be in a quartile aſpect, or to have a quarter of the heavens between them; both which, like the earth, ſhe muſt frequently have, did ſhe attend and move round the earth.

2° That Mercury revolves round the ſun appears in like manner from his phaſes, which reſemble thoſe of Venus and the moon; and from its neighbourhood to the ſun, from whom Mercury never recedes ſo far as Venus does.

3° That the orbit of Mars includes the ſun, is evident from that *planet's* being found both in conjunction and oppoſition with the ſun; and in both caſes ſhining with a full face.—Indeed, from the ſame circumſtances it appears, that the orbit of Mars encompaſſes the earth; but then, it follows, likewiſe, from Mars's diameter appearing ſeven times as big when in oppoſition, as when in conjunction, that he is ſeven times nearer the earth, in the former than the latter poſition. The earth therefore is far from being the center of Mars's *motion*; but Mars is ever nearly at the ſame diſtance from the ſun.—Again, Mars viewed from the earth moves very irregularly; is ſometimes ſeen to proceed ſlower, ſometimes faſter; ſometimes ſtands ſtill, ſometimes goes backward: (the reaſons whereof, ſee under the article OPTIC *inequality*) but viewed from the ſun, will ever appear to move with the ſame conſtant uniform tenor; whence it is evident, he reſpects the ſun, not the earth, as the center of his *motion*.

4° The ſame appearances whence Mars is ſhewn to revolve round the ſun as a center, are likewiſe obſerved in Jupiter and Saturn; whence the ſame concluſion may be made of them.

Laſtly, that the earth revolves round the ſun, as a center, is evident from her place, which we have obſerved to be between the orbits of Mars and Venus; and from the phænomena of the ſuperior *planets* viewed there-from.—If the earth ſtood ſtill we ſhould never ſee thoſe *planets* either ſtationary or retrograde; the earth therefore moves, but it is ſtill found between the orbits of Mars and Venus which encompaſs the ſun; therefore the earth too encompaſſes the ſun.

To this aſtronomical demonſtration, may be added a phyſical demonſtration, of the earth's motion from Sir Iſaac Newton.—It appears from abundant obſervation, that either the earth turns round the ſun, or the ſun round the earth, ſo as to deſcribe equal area's in equal times: but he demonſtrates, that bodies revolving about one another according to ſuch law, do of neceſſity gravitate towards each other. (See GRAVITATION.) Whence, if the ſun gravitate to the earth, action and re-action being ſtill equal, the earth will likewiſe gravitate toward the ſun. (See RE-ACTION.) But he proves, further, that two bodies gravitating towards each other, without directly approaching one another in right lines, muſt both of them turn round the common center of gravity of both.—The ſun and earth, therefore, do both revolve round one common center.—But the earth being but a point in compariſon of the ſun, the common center of gravity of the two, will be within the ſun's body, and not far from its center.—The earth, therefore, revolves round a point, within the body of the ſun; and therefore round the ſun. See EARTH and SUN.

The orbits of the *planets* are all ellipſes; one of whoſe foci is in the ſun.—This, Kepler firſt found from Tycho's obſervations; before him all aſtronomers took the planetary orbits for eccentric circles. See ORBIT, ELLIPSIS, EXCENTRIC.

The planes of theſe orbits do all interſect in the ſun; nor are their extremities far apart.—In effect, they are but little inclined to one another; and the greateſt angle any of them makes with the plane of the earth's orbit, *i. e.* of the ecliptic, is that of Mercury, which lyes at an angle of 6° 52′; that of Venus is 3° 23′; that of Mars 1° 52′; that of Jupiter 1° 20′; and that of Saturn 2° 30′.

The line wherein the plane of each orbit cuts that of the earth, is called the *line of the nodes*; and the two points wherein the orbits themſelves touch that plane, *the nodes*. See NODE.

The diſtance between the center of the ſun, and the center of each orbit, is called *the eccentricity of the planet*. See EXCENTRICITY.

And the angle at which each plane cuts that of the ecliptic, *the inclination of the plane*. See PLANE, INCLINATION, and ECLIPTIC.

To account for the *motion of the planets* about the ſun; there needs nothing but to ſuppoſe an uniform projectile *motion*, in ſtrait lines, at firſt given them; and a power of attraction or gravitation, ſuch as we obſerve in all the great bodies in our ſyſtem.—For a body A, (*Tab. Aſtron. fig.* 60. *n.* 2.) proceeding uniformly along the line AB; will, by the intervention of the attracting body C, be every moment diverted out of its rectilinear, and bent into a curvilinear path, according to the laws of central forces. Se CENTRAL *force*.

If, then, the projectile *motion* be perpendicular to a line, CA, drawn from the attracting body C; and its velocity be ſo proportioned to the force of attraction of A, as that the centripetal and centrifugal forces are equal, *i. e.* that the conatus to fall to the central body C, in a right line, AC; and that to proceed in the direction of the tangent, AB, balance each other: the body will revolve in a circular orbit, α β, γ, δ, *&c.* See CENTRIPETAL and CENTRIFUGAL.

It is not improbable, that at the beginning, this was the ſtate of things; and that the velocities impreſſed on the ſeveral *planets* were ſo combined with their reſpective maſſes and diſtances from the ſun at which they were to roll; as that their momenta ſhould counter-balance the ſun's attractive force, and be preciſely counter-balanced thereby: whence the primitive orbits muſt have been perfect circles, from which they do not even now deviate very far; the eccentrity of the earth's orbit being only $\frac{50}{1000}$ of its ſemidiameter. See EXCENTRICITY.

If the *planet's* projectile *motion* be not perfectly adjuſted to the ſun's attraction; the orbit deſcribed will be an ellipſis.—If it be too ſwift, the orbit will be greater than a circle, and the nearer focus coincide with the central body; if too ſlow, the orbit will be leſs than a circle, and the further focus coincide with the central body.

Indeed the form of the planetary orbits, does not only depend on the adjuſtment of the firſt projectile velocity with the ſun's attraction, but alſo on the direction wherein that motion was originally impreſſed.—If that direction were according to the tangent AB, as above ſuppoſed, and the central forces exactly balanced, the orbit would be circular; but if that direction were oblique, in any manner, whether aſcending to or deſcending from the ſun, the orbit of the *planet*, notwithſtanding any adjuſtment of its velocity to the attraction, would be an ellipſis. See PROJECTILE.

The *motions of the planets* in their elliptic orbits are not equable, by reaſon the ſun is not in their center but their focus.—Hence they move, ſometimes faſter and ſometimes ſlower, as they are nearer or further from the ſun; but yet theſe irregularities are all certain, and follow according to an immutable law.

Thus, ſuppoſe the ellipſis BEP, *&c.* (*Tab. Aſtron. fig.* 61. *n.* 2.) the orbit of a *planet*; and the focus S, the ſun's place: AP the axis of the ellipſis, is called the *line of the apſides*; the point A the *higher apſis* or *aphelion*; P the *lower apſis* or *perihelion*; SC the eccentricity; and ES the mean diſtance of the *planet* from the ſun. See APSIS, APHELION, PERIHELION, *&c.*

Now the *motion* of the *planet* in its perihelion, is ſwifteſt; in its aphelion, ſloweſt; at E the *motion* as well as the diſtance is mean, *i. e.* ſuch as would deſcribe the whole orbit in the ſame time it is really deſcribed in.

The law whereby the *motion* is regulated in every point of the orbit, is, that a line, or radius, drawn from the centre of the ſun to the centre of the *planet* and thus carried along, with an angular *motion*, does always deſcribe an elliptic area proportional to the time.—Suppoſe, *e. gr.* the *planet* in A, and thence in a certain time to proceed to B; the ſpace or area the radius SA deſcribes, is the triangle ASB: when, at length the *planet* arrives at P, if from the center of the ſun S there be drawn SD, in ſuch manner as that the elliptic area PSD is equal to that ASB; the *planet* will here move thro' the arch PD, in the ſame time wherein it moved thro' the arch AB; which arches are unequal, and nearly in a reciprocal proportion to their diſtance from the ſun. For from the equalities of the areas it follows, that the arch PD muſt exceed AB as much as SA exceeds SP.

This law was firſt demonſtrated by *Kepler*, from obſervation; and is ſince accounted for by Sir J. Newton from phyſical principles: And to this all aſtronomers, now, ſubſcribe, as of all others that which beſt ſolves the planetary phænomena.

Computation of a PLANET'*s motion and place.*—As to the periods and velocities of the *planets*, or the times wherein they perform their courſes; they are found to have a wonderful harmony with their diſtances from the ſun, and with one another. The nearer each *planet* is to the ſun, the quicker ſtill being its motion; and its period the ſhorter.—The great law they here all immutably obſerve is, that the ſquares of their periodical times are as the cubes of their diſtances from the centers of their orbits. See PERIOD, DISTANCE, *&c.*

This law we owe to the ſagacity of Kepler, who found it to obtain in all the primary *planets*; as aſtronomers have ſince found it to do in the ſecondary ones. See SATELLITE.

Kepler deduced this law, merely from obſervation, and compariſon of the ſeveral diſtances of the *planets* with their periods: the glory of inveſtigating it from phyſical principles, is due to Sir Iſaac Newton, who has demonſtrated that, in the preſent ſtate of things, ſuch a law was inevitable. See GRAVITATION.

A *planet*'s motion or diſtance from its apogee, is called the *mean anomaly* of the *planet*; and is meaſured by the arch, or area it deſcribes in the time.—When the *planet* arrives at the middle of its orbit, or the point G, the diſtance or time is called the *true anomaly*.—When the *planet*'s motion is reckon'd from the firſt point of Aries, it is called its *motion in longitude*, which is either mean, *viz.* ſuch as the *planet* would have were it to move uniformly in a circle; or true, which is that wherewith the *planet* actually deſcribes its orbit, and meaſur'd by the arch of the ecliptic it deſcribes. See ANOMALY, LONGITUDE, *&c.*

Hence may the *planet*'s place in its orbit for any given time after it has left the aphelion, be found.—For ſuppoſe the area of the ellipſis ſo divided by the line SG, that the whole elliptic area may have the ſame proportion to the area ASG as the whole periodical time wherein the *planet* deſcribes its orbit, has to the time given: in this caſe G will be the *planet*'s place in its orbit. See PLACE.

The phænomena of the inferiour PLANETS, are their conjunctions, elongations, ſtations, retrogradations, phaſes, and eclipſes. See CONJUNCTION, ELONGATION, STATION, RETROGRADATION, *&c.* under their reſpective articles.

Phænomena of the ſuperiour PLANETS are the ſame with thoſe of the inferiour; with an additional one, *viz.* oppoſition. See OPPOSITION, *&c.*

The particular phænomena, circumſtances, &c. of each PLANET, ſee under the name of the reſpective *planet*, *&c.* JUPITER, MARS, *&c.*

The general proportions, diameters, ſurfaces, ſolidities, diſtances, gravities, degrees of light, &c. of the ſeveral *planets*; ſee under the articles ſolar SYSTEM, DIAMETER, SEMIDIAMETER, *&c.*

Configuration of the PLANETS. } See { CONFIGURATION.
Theories of the PLANETS. } { THEORY.

PLANETARY, ſomething that relates to the *planets*. See PLANET.

In this ſenſe we ſay, *planetary* worlds, *planetary* inhabitants, *&c.* Huygens and Fontenelle bring ſeveral probable arguments for the reality of *planetary* worlds, and animals, plants, men, *&c.*—The former in his ΚΟΣΜΟΘΕΟΓΟΣ, *ſive de terris cœleſtibus*; the latter in his dialogues, *ſur la pluralité des mondes.*

PLANETARY *ſyſtem*, is the ſyſtem, or aſſemblage of the planets, primary and ſecundary, moving in their reſpective orbits, round their common center, the ſun. See *ſolar* SYSTEM.

PLANETARY *hours* in chronology. See HOUR.

PLANETARY *days.*—Among the ancients, the week was ſhared among the ſeven planets; each planet having its day. This we learn from Dion Caſſius and Plutarch, *Sympos, l.* 4. *q.* 7. Herodotus adds, that it was the Ægyptians who firſt diſcovered what God, that is, what planet preſides over each day, for that among this people the planets were directors. And hence it is, that in moſt European languages, the days of the week are ſtill denominated from the planets; Sunday, Monday, *&c.* See WEEK.

PLANETARY *years*, the periods of time wherein the ſeveral planets make their revolutions round the ſun, or earth. See YEAR, REVOLUTION, *&c.*

As from the proper revolution of the ſun, the ſolar years takes its original; ſo from the proper revolutions of the reſt of the planets about the earth, ſo many ſorts of years do ariſe, *viz.* the ſaturnian year, which is defined by 29 Egyptian years, 174 hours 58 minutes, equivalent in a round number to 30 ſolar years.—The jovial year, containing 317 days, 14 hours, 59 minutes.—The martial year, containing 321 days, 23 hours, 31 minutes.—For Venus and Mercury, as their years, when judged of with regard to the earth, are almoſt equal to the ſolar year; they are more uſually eſtimated from the ſun, the true center of their motions: in which caſe, the former is equal to 224 days 16 hours 40 minutes, the latter to 87 days 23 hours 14 minutes. See SATURN, JUPITER, MARS, *&c.*

PLANETARY *dials*, thoſe whereon the *planetary* hours are inſcribed. See DIAL, and HOUR.

PLANETARY *ſquares*, the ſquares of the ſeven numbers from 3 to 9 diſpoſed magically. See MAGIC *ſquare.*

Corn. Agrippa, in his famous book of magic, has given the conſtruction of the ſeven *planetary* ſquares: M. Poignard, canon of Bruſſels, in his treatiſe of ſublime ſquares, gives new, eaſy, and general methods for making the ſeven *planetary* ſquares, and all others to infinity, by numbers in all ſort of progreſſions.

PLANIFOLIOUS *flowers.* See the article FLOWER.

PLANIMETRY, PLANIMETRIA, that part of geometry which conſiders lines and plain figures; without any conſideration of heights or depths. See GEOMETRY; ſee alſo LINE and FIGURE.

Planimetry is particularly reſtrained to the menſuration of planes, or ſurfaces; in oppoſition to *ſtereomatry*, or the menſuration of ſolids. See MEASURING.

Planimetry, or the art of meaſuring the ſurfaces and planes of things, is performed with the ſquares of long meaſures, as ſquare feet, ſquare inches, ſquare yards, ſquare perches, *&c.* that is, by ſquares whoſe ſides are an inch, a foot, a yard, a perch, *&c.* ſo that the area or center of any ſurface is ſaid to be found, when we know how many ſuch ſquare inches, feet, yards, *&c.* it contains. See AREA, SUPERFICIES, FIGURE, SQUARE, *&c.*

PLANISPHERE, a projection of the ſphere and the ſeveral circles thereof, on a plane: as, upon paper, or the like. See PLANE, SPHERE, and PROJECTION.

In this ſenſe, maps of the heavens and the earth, wherein are exhibited the meridians, and other circles of the ſphere, are called *planiſpheres.* See MAP.

PLANISPHERE is ſometimes alſo conſidered as an aſtronomical inſtrument, uſed in obſerving the motions of the heavenly bodies; conſiſting of a projection of the celeſtial ſphere upon a plane, repreſenting the ſtars, conſtellations, *&c.* in their proper ſituations, diſtances, *&c.*—Such is the *aſtrolabe*, which is a common name for all ſuch projections. See ASTROLABE, *&c.*

In all *planiſpheres*, the eye is ſuppoſed to be a point viewing all the circles of the ſphere, and referring them to a plane whereon the ſphere is as it were flattened.—This plane is called the *plane of the projection.* See PLANE.

A perſpective plane is only a plane of projection placed between the eye and the object, ſo as to contain all the points which the ſeveral rays drawn from the object to the eye impreſs thereon, (See *perſpective* PLANE.)—But in *planiſpheres*, or aſtrolabes, the plane of the projection is placed beyond the object; which is the ſphere.—The plane of the projection is always ſome of the circles of the ſphere. See CIRCLE.

Among the infinite number of *planiſpheres*, which the different planes of projection, and the different poſitions of the eye, would furniſh; there are two or three that have been preferred to the reſt.—Such are that of Ptolemy, where the plane of projection is parallel to the equator.—That of Gemma Friſius, where the plane of pojection is the colure, or ſolſtitial meridian, and the eye the pole of the meridian.—That of John de Royas, a Spaniard, whoſe plane of projection is a meridian, and the eye placed in the axis of that meridian, at an infinite diſtance. This laſt is called the *Analemma.* See ANALEMMA.

The common defect of all theſe projections is, that they diſtort and alter the figures of the conſtellations, ſo as it is not eaſy to compare them with the heavens; and that the degrees in ſome places are ſo ſmall that they afford no room for operation.

All theſe faults M. de la Hire has provided againſt in a new projection, or *planiſphere*; where it is propoſed the eye ſhall be ſo placed, as that the diviſions of the circles projected ſhall be ſenſibly equal in every part of the inſtrument.—The plane of his projection is that of a meridian.

NAUTICAL *planiſphere.* See the article NAUTICAL.

PLANO-*concave-glaſs*, or *lens*, is that, one of whoſe ſurfaces is concave, and the other plain. See GLASS, and CONCAVE.

The concavity is here ſuppoſed to be ſpherical, unleſs the contrary be expreſſed.—For the properties, grinding, *&c.* of *plano-concave* lenſes. See LENS, GRINDING, *&c.*

PLANO-*convex-glaſs*, or *lens*, is that, one of whoſe ſurfaces is convex, and the other plain. See CONVEXITY.

The convexity is ſuppoſed to be ſpherical, unleſs the contrary be expreſſed. For the properties, grinding, *&c.* of *plano-convex* lenſes. See LENS, *&c.*

PLANT, Planta, an organical body, conſiſting of a root, eſſentially, and probably too, a ſeed; and producing uſually leaves, a ſtem, branches, and flowers. See Root, *&c.*

A *plant* may be defined, in Boerhaave's manner, to be an organical body compoſed of veſſels and juices; to which body belongs a root, or part whereby it adheres to ſome other body, and particularly the earth, from which it derives the matter of its life and growth. See Vegetable.

A *plant* is diſtinguiſhed from a foſſil by its being organical, and conſiſting of veſſels and juices (ſee Fossil); and from an animal, by its adhering to another body, and deriving its nouriſhment therefrom. See Animal.

Plant is a general name, under which are comprized all vegetable bodies, as trees, ſhrubs, and herbs. See Tree, Shrub, and Herb.

From the Obſervations of Malpighi, Dr. Grew, M. Reneaume, Bradley, and others, there appears a great ſimilitude between the mechaniſm of *plants*, and animals; the parts of the former ſeem to bear a conſtant analogy to thoſe of the latter; and the vegetable and animal œconomy appear both formed on the ſame model.---To give an idea hereof, it will be neceſſary to deſcribe the parts whereof *plants* conſiſt.

The parts of Plants are,---1. The root, a ſpongy body, whoſe pores are diſpoſed to admit certain humid particles prepared in the ground: On the ſize of the veſſels and pores of the root, the quality of the root is found much to depend.---Boerhaave conſiders the root as compoſed of a number of abſorbent veſſels, analogous to the lacteals in animals. And M. Reneaume takes it to do the office of all the parts in the abdomen which miniſter to nutrition; as the ſtomach, inteſtines, *&c.* See Root.

2. The wood, which conſiſts of capillary tubes, running parallel from the root throughout the ſtalk.---The apertures of theſe tubules are ordinarily too minute to come under the cognizance of the eye, unleſs in a piece of charcoal, cane, or the like. Theſe tubes Mr. Bradley calls arterial veſſels; it being through theſe that the ſap riſes from the root. See Wood.

3. Beſide theſe, are other larger veſſels, diſpoſed on the outſide of the arterial veſſels between the wood and the inner bark, and leading down to the covering of the root.---Theſe the ſame author calls the venal veſſels, and ſuppoſes them to contain the liquid ſap found in *plants* in the ſpring, *&c* See Vein, Sap, *&c.*

4. The bark, which is of a ſpongy texture, and by many little ſtrings paſſing between the arteries, communicates with the pith. See Bark.

5. The pith, or pecten, which conſiſts of little tranſparent globules, chained together ſomewhat like the bubbles that compoſe the froth of liquor. See Pith.

Add, that the trunk and branches of a tree bear a reſemblance to the exterior members or limbs of an animal, which it may ſubſiſt without, though their rotting and mortification frequently occaſion a total deſtruction thereof.---Accordingly, we find the like effects from the wounding or lopping of a tree, as that of a limb, *viz.* an extravaſation, callus, *&c.*

Oeconomy or uſe of the parts of Plants.---The root having imbibed the ſaline and aqueous juices of the earth, and filled itſelf therewith for the nouriſhment of the tree; thoſe are put in motion by heat, *i. e.* are made to evaporate into ſteam, which from the root enters the mouths of the arterial veſſels, and mounts to the top with a force anſwerable to the heat that puts it in motion.---By this means it gradually opens the minute vaſcules rolled up in the buds, and expands them into leaves.---Now, as all vapours, upon feeling the cold, naturally condenſe; ſo this, when arrived at the extreme parts of the arteries, *i. e.* the buds of the tree, meeting the cold air, condenſes into a liquor, in which form it returns by its own weight, through the venal veſſels, to the root; leaving behind it ſuch parts of its juice, as the texture of the bark will receive, and requires for its ſuſtenance.

Thus does the juice continue to circulate; till the winter's cold congealing it into the conſiſtency of a gum, it ſtagnates in the veſſels; in which ſtate it remains till the freſh warmth of the ſucceeding ſpring puts it in motion again: upon which it renews its former vigour, puſhes forth branches, leaves, *&c.*

This ſhort view of the vegetable œconomy will bear ſome further illuſtration; there being ſeveral curious points here couched, and, as it were, folded up *in ſemine.*---The principle, then, whereby the root, after imbibing its food, determines it to mount upward, contrary to its natural gravity, is ſomewhat obſcure: Some will have it effected by means of the preſſure of the atmoſphere, in the ſame manner as water is raiſed in pumps: But this is precarious, as being founded on a ſuppoſition, that the abſorbent tubules are void of air; beſides, that the atmoſphere could not raiſe the juice above 32 foot high, whereas there are trees much higher. See Atmosphere.---Others have recourſe to the principle of attraction, and ſuppoſe the power that raiſes the ſap in vegetables to be the ſame with that whereby water aſcends in capillary tubes, or in heaps of ſand, aſhes, or the like; but neither will this alone ſuffice to raiſe water to the tops of trees. See Attraction, Ascent, Capillary, *&c.* One would ſuſpect, therefore, that the firſt reception of the food, and its propagation through the body, were effected by different means; which is confirmed by the analogy of animals. See Food, Heart, Nutrition, *&c.*

The motion of the nutritious juices of *plants* is produced much like that of the blood in animals, by the action of the air; in effect, there is ſomething equivalent to reſpiration throughout the whole *plant.* See Respiration.

The diſcovery of this we owe to the admirable Malpighi, who firſt obſerved, that vegetables conſiſt of two ſeries's or orders of veſſels.---1. Thoſe above-mentioned, which receive and convey the alimental juices; anſwering to the arteries, lacteals, veins, *&c.* of animals.---2. Tracheæ, or air-veſſels, which are long hollow pipes, wherein air is continually received and expelled, *i. e.* inſpired and expired; within which tracheæ, the ſame author ſhews, all the former ſeries's of veſſels are contained. See Trachea.

Hence it follows, that the heat of the year, nay, of a day, of a ſingle hour, or minute, muſt have an effect on the air included in theſe tracheæ, *i. e.* muſt rarefy it, and conſequently dilate the tracheæ; whence alſo muſt ariſe a perpetual ſpring, or ſource of action, to promote the circulation in *plants.* See Heat, Rarefaction, *&c.*

For, by the expanſion of the tracheæ, the veſſels containing the juices, are preſſed; and by that means the juice contained is continually propelled, and ſo accelerated; by which ſame propulſion, the juice is continually comminuted, and rendered more and more ſubtile, and ſo enabled to enter veſſels ſtill finer and finer; the thickeſt part of it being at the ſame time ſecreted and depoſited into the lateral cells or loculi of the bark, to defend the *plant* from cold, and other external injuries. See Bark.

The juice having thus gone its ſtage, from the root to the remote branches, and even the flower; and having in every part of its progreſs depoſited ſomething both for aliment and defence; what is redundant paſſes out into the bark, the veſſels whereof are inoſculated with thoſe wherein the ſap mounted; and through theſe it redeſcends to the root, and thence to the earth again.---And thus is a circulation effected. See Circulation *of the ſap.*

Thus is every vegetable acted on by heat during the day-time, eſpecially while the ſun's force is conſiderable; and the ſap-veſſels thus are ſqueezed and preſſed, and the ſap protruded, and raiſed, and at length evacuated, and the veſſels exhauſted: And in the night again, the ſame tracheæ being contracted by the cold of the air, the other veſſels are eaſed and relaxed, and ſo diſpoſed to receive freſh food for the next day's digeſtion and excretion.---And thus *plants* may be ſaid to eat and drink in the night-time. See Nutrition.

The veſſels or containing parts of *plants*, conſiſt of mere earth, bound or connected together by oil, as a gluten; which being exhauſted by fire, air, age, or the like, the *plant* moulders, or returns again into its earth, or duſt.---Thus in vegetables burnt by the intenſeſt fire, the matter of the veſſels is left intire, and indiſſoluble by its utmoſt force; and, conſequently, is neither water, nor air, nor ſalt, nor ſulphur, but earth alone. See Earth.

The juice, or ſap, of a *plant*, is a humour furniſhed by the earth, and changed in the *plant*; conſiſting of ſome foſſil parts, other parts derived from the air and rain; and others from putrified animals, plants, *&c.* conſequently, in vegetables are contained all kind of ſalts, oil, water, earth; and probably all kinds of metals too, inaſmuch as the aſhes of vegetables always yield ſomewhat which the loadſtone attracts. See Iron, Magnet, *&c.*

This juice enters the *plant* in form of a fine and ſubtle water, which the nearer it is to the root, the more it retains of its proper nature; and the further from the root, the more action it has ſuſtained, and the nearer it approaches to the nature of the vegetable. See Digestion.

Conſequently, when the juice enters the root, the bark whereof is furniſhed with excretory veſſels fitted to diſcharge the excrementitious part; it is earthy, watry, poor, acid, and ſcarce oleaginous at all. See Juice.

In the trunk and branches it is further prepared; though it ſtill continues acid, as we ſee by the tapping or perforating of a tree in the month of February, when it diſtils a watry juice apparently acid. See Tapping.

The juice being hence carried to the germs, or buds, is more concocted; and here having unfolded the leaves, theſe come to ſerve as lungs for the circulation and further preparation of the juice.---For thoſe tender leaves being expoſed to the alternate action of heat and cold, moiſt nights, and hot ſcorching days, are alternately expanded and contracted; and the more on account of their reticular texture. See Leaf.

By ſuch means the juice is ſtill further altered and digeſted; as it is further yet in the petala, or leaves of the flowers, which tranſmit the juice, now brought to a further ſubtility, to the ſtamina.---Theſe communicate it to the farina, or duſt in the apices; where having undergone a farther maturation, it is ſhed into the piſtil; and here having acquired its laſt perfection, it gives riſe to a new fruit or *plant.* See Petala, Stamina, Apices, Farina, Pistil, *&c.*

The generation of Plants does alſo bear a cloſe analogy to that of ſome animals; particularly ſuch as want local motion; as muſſels, and other immoveable ſhell-fiſh, which are hermaphrodites, and contain both the male and female organs of generation. See Hermaphrodite.

The flower of the *plant*, for all its finery, is found to be the pudendum, or principal organ of generation; but the uſe of ſo much mechaniſm, and ſo many parts, has been but little known. ---We ſhall inſtance in a tulip.

Its flower conſiſts of ſix petala, or leaves; from the bottom whereof, at the middle, ariſes a kind of a tube called the *piſtil*; and around this are diſpoſed pretty fine threads called *ſtamina*, ariſing likewiſe from the bottom of the flower, and terminating in little bunches a-top, called *apices*, replete with a fine duſt called *farina*.---For the further explanation of the parts of generation, ſee Piſtil, Stamen, Farina, *&c.*

This is the general ſtructure of the flower of *plants*, though diverſified infinite ways, and to ſuch degree, that ſome have no ſenſible piſtil, others no ſtamina; others have ſtamina without any apices; and what exceeds all the reſt, ſome *plants* have no flowers.---But, allowing the ſtructure now repreſented to be, as in effect it is, the moſt common; and that theſe parts which ſeem wanting are uſually only leſs apparent; the generation of *plants*, in general, may be well accounted for.

The fruit is uſually at the baſis of the piſtil, ſo that when the piſtil falls, with the reſt of the flower, the fruit appears in its ſtead.---Indeed, frequently, the piſtil is the fruit itſelf; but ſtill they have both the ſame ſituation in the centre of the flower, whoſe leaves diſpoſed around the little embryo, only ſeem deſtined to prepare a fine juice in their little veſſels, for its ſupport, during the little time they laſt, and it requires: though Mr. Bradley takes their chief uſe to be to defend the piſtil, *&c.*

The apices of the ſtamina are little capſulæ, or bags full of a farina or duſt, which upon the capſulæ growing ripe, and burſting, fall out.

M. Tournefort took this duſt to be only an excrement of the food of the fruit, and the ſtamina to be no more than a kind of excretory ducts, which filtrated this uſeleſs matter, and thus diſcharged the embryo *plant*. But Mr. Morland, M. Geoffroy, and others, find nobler uſes for this duſt.---According to their ſyſtem, it is this duſt that falling on the piſtil fecundifies the grain or fruit incloſed therein; and hence they call it the *farina fæcundans*.---Thus the farina ſhould be the male part of the plant, and the piſtil the female.

Mr. Bradley, at the bottom of the piſtil of the lily, obſerves a veſſel which he calls the *uterus*, or womb, wherein are three ovaries filled with little eggs, or rudiments of ſeed, like thoſe found in the ovaria of animals; which, he adds, always decay and come to nothing, unleſs impregnated by the farina of the ſame *plant*, or ſome other of the ſame kind.---The ſtamina, he ſays, ſerve for the conveyance of the male ſeed of the *plant*, to be perfected in the apices; which when ripe, burſting forth in little particles like duſt, ſome of them fall into the orifice of the piſtil, and are either conveyed thence into the utricle, to fecundify the female ova, or lodged in the piſtil, where, by their magnetic virtue, they draw the nouriſhment from the other parts of the *plant* into the embryo's of the fruit, making them ſwell, grow, *&c.*

The diſpoſition of the piſtil, and the apices about it, is always ſuch, as that the farina may fall on its orifice. It is uſually lower than the apices; and when we obſerve it to be grown higher, we may conjecture the fruit has begun to form itſelf, and has no further occaſion for the male duſt. Add to this, that as ſoon as the work of generation is over, the male parts, together with the leaves, fall off, and the tube leading to the uterus begins to ſhrink. Nor muſt it be omitted, that the top of the piſtil is always either covered with a ſort of velvet tunicle, or emits a gummy liquor, the better to catch the duſt of the apices. ---In flowers that turn down, as the acanthus, cyclamen, and the imperial crown, the piſtil is much longer than the ſtamina; that the duſt may fall from their apices in ſufficient quantity on the piſtil.

This ſyſtem ſavours much of that admirable uniformity found in the works of nature; and carries with it all the ſeeming characteriſtics of truth; but it is experience alone muſt determine for it.---Accordingly M. Geoffroy tells us, that in all the obſervations he had ever made, the *plant* was rendered barren, and the fruits became abortive, by cutting off the piſtils before the duſt could impregnate them; which is ſince confirmed by other experiments of Mr. Bradley.

In many kinds of *plants*, as the willow, oak, pine, cypreſs, mulberry-tree, *&c.* the flowers are ſterile, and ſeparate from the fruit. But theſe flowers, M. Geoffroy obſerves, have their ſtamina and apices, whoſe farina may eaſily impregnate the fruits, which are not far off.

Indeed there is ſome difficulty in reconciling this ſyſtem to a ſpecies of *plants* which bear flowers without fruits, and another ſpecies of the ſame kind and name which bear fruits without flowers; hence diſtinguiſhed into male and female: of which kind are the palm-tree, poplar, hemp, hops, *&c.*---For how ſhould the farina of the male, here, come to impregnate the ſeed of the female?

M. Tournefort conjectures, that the fine filaments, tomentum, or down, always found on the fruits of theſe *plants*, may ſerve inſtead of flowers, and do the office of impregnation.---But M. Geoffroy rather takes it, that the wind, doing the office of a vehicle, brings the farina of the males to the females.

In this opinion he is confirmed by a ſtory in Jovianus Pontanus; who relates, That in his time there were two palm-trees, the one male, cultivated at Brindiſi, the other female, in the wood of Ottranto, 15 leagues apart; that this latter was ſeveral years without bearing any fruit; till at length riſing above the other trees of the foreſt, ſo as it might ſee (ſays the poet) the male palm-tree at Brindiſi, it then began to bear fruit in abundance.

Here, M. Geoffroy makes no doubt, the tree then only began to bear fruit, becauſe in a condition to catch on its branches the farina of the male, brought thither by the wind.

For the manner wherein the farina fecundifies; M. Geoffroy advances two opinions:---1. That the farina being always found of a ſulphurous compoſition, and full of ſubtile penetrating parts, (as appears from its ſprightly odour) falling on the piſtils of the flowers, there reſolves, and the ſubtileſt of its parts penetrating the ſubſtance of the piſtil and the young fruit, excite a fermentation ſufficient to open and unfold the young *plant* incloſed in the embryo of the ſeed.---In this hypotheſis the ſeed is ſuppoſed to contain the *plant* in miniature, and only to want a proper juice to unfold its parts, and make them grow.

The 2d opinion is, that the farina of the flower is the firſt germ, or bud of the new *plant*, and needs nothing to unfold it, and enable it to grow, but the juice it finds prepared in the embryo's of the ſeed.

Theſe two theories of vegetable generation, the reader will obſerve, bear a ſtrict analogy to thoſe two of animal generation; *viz.* either that the young animal is in the ſemen maſculinum, and only needs the juice of the matrix to cheriſh and bring it forth; or that the animal is contained in the female ovum, and needs only the male ſeed to excite a fermentation, *&c.* See Conception, Generation, *&c.*

M. Geoffroy rather takes the proper ſeed to be in the farina; inaſmuch as the beſt microſcopes do not diſcover the leaſt appearance of any bud in the little embryo's of the grains, when examined before the apices have ſhed their duſt.---In leguminous *plants*, if the leaves and ſtamina be removed, and the piſtil, or that part which becomes the pod, be viewed with the microſcope, ere yet the flower be opened; the little green tranſparent veſiculæ, which are to become the grains, will appear in their natural order; but ſtill ſhewing nothing elſe but the mere coat, or skin of the grain. If the obſervation be continued for ſeveral days ſucceſſively, in other flowers, as they advance, the veſiculæ will be found to ſwell, and by degrees to become replete with a limpid liquor; wherein, when the farina comes to be ſhed, and the leaves of the flower to fall, we obſerve a little greeniſh ſpeck, or globule, floating about at large.---At firſt there is not any appearance of organization in this little body; but in time, as it grows, we begin to diſtinguiſh two little leaves like two horns. The liquor diminiſhes inſenſibly, as the little body grows, till at length the grain becomes quite opake; when, upon opening it, we find its cavity filled with a young *plant* in miniature; conſiſting of a little germ of *plumula*, a little root, and the lobes of the bean or pea.

The manner wherein this germ of the apex enters the veſicula of the ſeed, is not very difficult to determine.---For, beſides that the cavity of the piſtil reaches from the top, to the embryo's of the grains, thoſe grains, or veſiculæ, have a little aperture correſponding to the extremity of the cavity of the piſtil, ſo that the ſmall duſt, or farina, may eaſily fall through the aperture into the mouth of the veſicula, which is the embryo of the grain.---This cavity, or cicatricula, is much the ſame in moſt grains, and it is eaſily obſerved in peaſe, beans, *&c.* without the microſcope. The root of the little germ is juſt againſt this aperture, and it is through this it paſſes out when the little grain comes to germinate.

The proceſs of nature in the generation of vegetables, and the apparatus ſhe has contrived for that purpoſe, are ſo curious, and withal ſo little and ſo lately known among us, that we ſhall illuſtrate them further with figures; taking the melon for our example, in regard the parts of generation are here very diſtinct.

By the way it muſt be obſerved, that though the melon contains both ſexes, yet the diſpoſition of the organs differs, here, from the general one above rehearſed in the inſtance of the tulip: In effect, in the melon are two diſtinct flowers, or bloſſoms, the one doing the male office, the other the female; which we ſhall therefore call the *male* and *female flower*.

In *Tab. Nat. Hiſt. fig.* 13. is repreſented the male flower or bloſſom of the pumpion, the leaves being ſtripped from off the circle FF.---ABE repreſent the head, placed in the centre of the flower, and formed of the circumvolutions of the apices B, and ſuſtained by four columns GGGG.---The part B of the head repreſents the circumvolutions of the apices while yet ſhut; and the part E repreſents them open, and covered with the farina, which they before contained, but which is diffuſed on the outſide when the *plant* arrives at maturity. Each apex forms a kind of canal ſeparated by a partition into two. A grain of the farina is repreſented by D. H repreſents the pedicle that ſuſtains the flower, and which in the male flower produces nothing.

Fig. 15. repreſents the female flower, or bloſſom of the pumpion, or that which bears the fruit.---The leaves are ſtripped off the circle FF, as before, the better to ſhew the other parts. The knot of the flower, or the embryo of the fruit, is repreſented by A. The piſtil is repreſented by BB; and is only a continuation of the embryo of the fruit A. The top of the piſtil ſpreads in BB into ſeveral oblong bodies, each ſeparable into two lobes. Theſe bodies are very rough, furniſhed with hairs and little veſicles proper to catch the duſt of the male flower, and to conduct them to the mouths of the canals, which communicate as far as the cells of the grains contained in the young fruit. Upon cutting the piſtil tranſverſely in its ſmalleſt part, we find as many canals as there are diviſions in its head; which canals correſpond to as many little cells, each including two orders of grains, or ſeeds, ranged in a ſpongy placenta.

This doctrine of generation affords us a hint how to alter, improve, *&c.* the taſte, form, flowers, quality of fruits, *&c. viz.* by impregnating the flower of one, with the farina of another of the ſame claſs.

To this accidental coupling and intermixing it is, that the numberleſs varieties of new fruits, flowers, *&c.* produced every day, with many other phænomena in the vegetable kingdom, are to be aſcribed. See MULE.

The affectation of perpendicularity obſerved in the ſtalks or ſtems of *plants*, as well as in their branches and roots, makes a fine ſpeculation.---It is a phænomenon never attended to till very lately. The cauſe is very ſubtile, and has employ'd the wits of ſeveral of the preſent ſet of philoſophers, particularly Aſtruc, de la Hire, Dodart, and Parent: ſee their ſeveral ſyſtems under the article PERPENDICULARITY.

Nor is that conſtant paralleliſm obſerved in the tufts of trees, to the ſoil or ground they grow upon, a circumſtance to be overlooked. See PARALLELISM.

For the fecundity of PLANTS, *&c.* ſee FECUNDITY, *&c.*

PLANTS may be divided, with regard to the manner of their generating, into

Male, or ſuch as bear no fruit or ſeed, and have only the male organ of generation, viz. the farina.---Of this kind are the *Male* palm-tree, willow, poplar, hemp, nettle, and hop-tree.

Female, or ſuch as bear fruit, and have the female organ, viz. the piſtil, or uterus, but want the farina.---Such are the *female* palm, willow, poplar, *&c.*

Hermaphrodites, or ſuch as have both male and female parts, the farina and piſtil.

Theſe are again ſubdivided into (1.) thoſe, in whoſe flower both ſexes are united; as the lily, gilliflower, tulip, and much the greater part of the vegetable ſpecies; whoſe piſtil is ſurrounded by the ſtamina. And (2.) thoſe whoſe male and female parts are diſtinct, and at a diſtance from each other; ſuch is the roſe, whoſe uterus is beneath the petala; the melon, and all of the cucumber kind, which have their male and female flowers apart; and all fruit, nut, and maſt-bearing trees, as the apple, plum, gooſeberry; the walnut, hazle, philbud, oak, beech, pine, cypreſs, cedar, juniper, mulberry, plantain, *&c.* which have catkins.

Plants may be again diſtinguiſhed, with regard to their food, and the element they live in, into

Terreſtrial, which are thoſe that live only on land; as oaks, beech, *&c.*

Aquatic, which live only in water; either in rivers, as the water-lily, water-plantain, *&c.* or in the ſea, as the fucus, coral, coralline, *&c.*

Amphibious, which live indifferently either in land or water; as the willow, alder, mints, *&c.*

Plants are again diſtributed, with regard to their age or period, into

Annual, which are thoſe whoſe root is formed and dies in the ſame year; ſuch are the leguminous *Plants*, wheat, rye, *&c.*

Biſannuals, which only produce flowers and ſeeds, the ſecond or even third year after their being raiſed, and then die; ſuch are fenel, mint, *&c.*

Perennial, which are thoſe that never die after they have once borne ſeed; of theſe ſome are ever-greens, as the aſarabacca, violet, *&c.* others loſe their leaves one part of the year, as fern, colts-foot, *&c.*

Plants again are diſtinguiſhed with regard to their magnitude, *&c.* into,

Trees, arbores; as the oak, pine, fir, elm, ſycamore, *&c.*

Shrubs, ſuffrutices; as the holly, box, ivy, juniper, *&c.* and

Herbs, as mint, ſage, ſorrel, thyme, *&c.* See TREE, SHRUB, HERB, *&c.*

With regard to certain remarkable qualities, into

Senſitive *, ſuch as give ſome tokens of ſenſe.

But this diviſion is rather popular, than juſt and philoſophical.

The Botaniſts give us more accurate and minute arrangements, or diſtributions, of the vegetable kingdom, into claſſes, genera, ſpecies, *&c.* with regard to their nature, characters, *&c.*---It is a point they are not well agreed upon from what conſideration the diviſion into genera is beſt taken; ſome, as Geſner, Columna, Tournefort, *&c.* chuſing the flower and fruit; and others taking in the roots, leaves, ſtems, *&c.* See farther under the article GENUS.

Our ingenious Mr. Ray diſtributes *Plants* into 25 genera, or claſſes, under the following denominations.

1. *Imperfect* PLANTS, which are ſuch as appear to want the flower and ſeed.---Such are, corals, ſponges, fungus's, truffles, moſs. See CORAL, SPONGE, MUSHROOM, TRUFFLE, and MOSS.
2. PLANTS producing an imperfect flower, and whoſe ſeed is too ſmall to be diſcerned by the naked Eye;---ſuch are fern, polypody, *&c.* See FLOWER.
3. Thoſe whoſe flowers want petala;---ſuch are hops, hemp, nettles, docks. See PETALA, HOPS, *&c.*
4. Thoſe with a compound flower, and which emit a milky juice when cut or broke; as lettuce, dandelion, ſuccory, *&c.* See *compound* FLOWER.
5. Thoſe with a compound flower of a diſcous form, and whoſe ſeed is winged with down; as colts-foot, flea-bane, *&c.* See WINGED.
6. *Herbæ capitatæ*, or thoſe whoſe flower is compoſed of long fiſtulous flowers gathered into a round head, and covered with a ſcaly coat; as the thiſtle, great burdock, blue-bottle, *&c.*
7. *Corymbiferous* PLANTS with a diſcous flower, but no down; as the daiſy, yarrow, corn-marygold, *&c.* See CORYMBUS.
8. PLANTS with a perfect flower, but only one ſeed to each flower; as valerian, agrimony, burnet, *&c.*
9. *Umbelliferous* PLANTS, with a flower of five petala, and two ſeeds to each flower. See UMBELLÆ.---This being a large genus is ſubdivided into ſeven ſpecies, *viz.* thoſe with a broad flat ſeed like a leaf, as wild garden parſnip: with a longiſh and larger ſeed, ſwelling in the middle, as cow-weed, and wild chervil: with a ſhorter ſeed, as angelica: with a tuberous root, as the earth-nut: with a ſmall ſtriated ſeed, as caraways, ſaxifrage, and burnet: with a rough hairy ſeed, as parſly, and wild carrot: with intire leaves ſubdivided into jags, as ſanicle, and thorough-wax.
10. *Stellate* PLANTS, whoſe leaves grow round the ſtalks, at certain intervals, in form of ſtars; as mug-weed, madder, *&c.* See STELLATE.
11. *Rough-leaved* PLANTS, which have their leaves placed alternately, or in no certain order along the ſtalks; as hounds-tongue, mouſe-ear, *&c.*
12. *Suffrutices*, or *verticillate* PLANTS, whoſe leaves grow by pairs, on their ſtalks, one leaf right againſt another, the flower being monopetalous, and uſually in form of a helmet; as thyme, mint, pennyroyal, vervain, *&c.* See VERTICILLATE.
13. *Polyſpermous*, or thoſe with many naked ſeeds, at leaſt five, ſucceeding their flower; as crows-foot, marſh-mallows, cinquefoil, ſtrawberries, *&c.* See POLYSPERMOUS.
14. *Bacciferous* PLANTS, or ſuch as bear berries; as briony, honeyſuckle, Solomon's-ſeal, lily of the valley, nightſhade, aſparagus, *&c.* See BACCIFEROUS, BERRY, *&c.*
15. *Multiſiliquous*, or *corniculate* PLANTS, which after each flower produce ſeveral long ſlender ſiliquæ, or caſes wherein their ſeed is contained; as orpine, navel-wort, bears-foot, columbines, *&c.* See MULTISILIQUOUS, *&c.*
16. *Vaſculiferous* PLANTS *with a monopetalous flower*, and which, after each flower, have a veſſel beſide the calyx, containing the ſeed; as henbane, bindweed, rampions, fox-glove, eye-bright, *&c.* See VASCULIFEROUS, *&c.*
17. Thoſe with *an uniform tetrapetalous flower*, bearing their ſeeds in oblong ſiliquous caſes; as ſtock-gilliflower, muſtard, radiſh, *&c.*
18. *Vaſculiferous* PLANTS *with a ſeeming tetrapetalous flower*, but of an anomalous or uncertain kind, and in reality only monopetalous, falling off altogether in one; as ſpeedwell, fluellin, plantain, yellow and wild poppy, *&c.*
19. *Vaſculiferous* PLANTS *with a pentapetalous five-headed flower*; as maiden-pinks, campions, chickweed, St. John's-wort, flax, primroſe, wood-ſorrel, *&c.*
20. *Leguminous* PLANTS, or ſuch as bear pulſe, with a papilionaceous flower, conſiſting of four parts joined at the edges; as peaſe, beans, vetches, tares, lentils, liquorice, trefoil, *&c.* See LEGUMINOUS.
21. PLANTS with a true bulbous root; as garlick, daffodil, hyacinth, ſaffron, *&c.* See BULB.
22. Thoſe whoſe roots approach nearly to the bulbous form; as flower-de-luce, cuckoo-pint, baſtard hellebore, *&c.*
23. *Culmiferous* PLANTS, with a graſſy leaf, and an imperfect flower, having a ſmooth hollow jointed ſtalk, with a long ſharp pointed leaf at each joint, and the ſeeds contained in a chaffy husk; as wheat, barly, rye, oats, and moſt kinds of graſs. See CULMIFEROUS.
24. PLANTS with a graſſy leaf, but not culmiferous, with an imperfect or ſtamineous flower; as ruſhes, cats-tail, *&c.*
25. PLANTS whoſe place of growth is uncertain; chiefly water-plants, as the water-lily, milk-wort, mouſe-tail, *&c.*

For the tranſmutation of one ſpecies of PLANTS into another, ſee TRANSMUTATION, DEGENERATION, *&c.*

The properties and virtues of *plants* have been obſerved by ſome naturaliſts to bear an analogy to their forms.---In the Philoſophical Tranſactions, we have a diſcourſe of Mr. James Pettiver, to ſhew, that *plants* of the ſame or like figure, have the ſame or like virtues and uſes.---Thus, the umbelliferous tribe, he obſerves, have all a carminative taſte and ſmell, are powerful expellers of wind, and therefore good in all flatulent diſorders.---The galeate or verticillate kind, are a degree warmer, and more powerful than the laſt; and therefore may be reputed aromatic, being proper for nervous diſorders.---The tetrapetalous kind are hot like the two former, but exert their power in a different way, *viz.* by a diuretic volatile ſalt, which makes them of uſe in chronical diſeaſes, obſtructions, cacochymias, *&c.*

PLANTA, in anatomy, the loweſt part, or ſole of the foot of man; comprehended between the tarſus and the toes. See FOOT.

PLANTAGENET, in hiſtory, an addition, or ſurname, borne by many of our ancient kings. See SURNAME, *&c.*

The term *Plantagenet* has given infinite perplexity to the critics and antiquaries, who could never ſettle its origin and etymology.

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* **On which account they were called by the antients *æſchynomenous* plants (from αισχυνομαι, to be baſhful) by the moderns, *living* or *mimic* plants.**

---It is allowed it firſt belonged to the houſe of Anjou, and was brought to the throne of England by Henry II. where his male poſterity preſerved it till the time of Henry VII. a ſpace of above 400 years.

It is diſputed who it was that firſt bore the name. Moſt of our Engliſh authors conclude, that our Henry II. inherited it from his father Geoffrey V. earl of Anjou, ſon of Fulk V. king of Jeruſalem, who died in 1144.---This Geoffrey they will have the firſt of the name; and our Henry II. the iſſue of Geoffrey by Maud only daughter of Henry I. the ſecond.

Yet Menage will not allow Geoffrey to have bore the name; and in effect the old annaliſt of Anjou, J. Bourdigne, never calls him ſo.---The firſt Menage adds, to whom he gives the appellation, is Geoffrey third ſon of this Geoffrey V.

Yet muſt the name be much more ancient than either of theſe princes, if what Skinner ſays of its origin and etymology be true.---That author tells us, that the houſe of Anjou derived the name from a prince thereof, who having killed his brother to enjoy his principality, took to repentance, and made a voyage to the Holy Land to expiate his crime; diſciplining himſelf every night with a rod made of the plant genêt, geniſta, broom; whence he became nick-name *Planta-genêt*.

Now, it is certain that our Geoffrey made the tour of Jeruſalem; but then he did not kill his brother; nor did he go thither out of penance, but to aſſiſt king Amauris his brother.---Who then ſhould this prince of the houſe of Anjou be? Was it Fulk IV? It is true he diſpoſſeſſed his elder brother Geoffrey, and clapt him in priſon, but did not kill him; nay, Bourdigne obſerves, he was even releaſed out of the ſame by his ſon Geoffrey V. already mentioned.

Further, this Fulk did make a journey to Jeruſalem, and that, too, partly out of a penitential view; we are aſſured by Bourdigne, he did it out of apprehenſion of the judgments of God, and eternal damnation, for the great effuſion of chriſtian blood, in the many mortal battles he had been in.---The annaliſt adds, that he made a ſecond voyage; but it was to return God thanks for his mercies, *&c.* To which we may add, that Fulk was never called *Plantagenet*; ſo that what Skinner advances appears to be a fable.

There is another common opinion, which appears no better founded; and it is this, that the name *Plantagenet* was common to all the princes of the houſe of Anjou, after Geoffrey V. whereas, in fact, the name was only given to a few; and that, as it ſhould ſeem, to diſtinguiſh them from the reſt. Thus Bourdigne never applies it to any but the third ſon of Geoffrey V. and diſtinguiſhes him by this appellation from the other princes of the ſame family.---Though it is certain it was likewiſe given to the elder brother, Henry of England, as before obſerved.

PLANTARIS, in anatomy, a muſcle which has a fleſhy beginning, from the back part of the external protuberance of the thigh-bone, and deſcending a little way between the gemellus and ſoleus, becomes a long and ſlender tendon, which marches by the inſide of the great tendon over the os calcis to the bottom of the foot, and expands itſelf under the ſole, upon the muſculus perforatus, to which it adheres cloſely, as the palmaris does in the hand. See *Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 68. and alſo ſee FOOT, PALMARIS, *&c.*

Some reckon this among the extenders of the foot. See EXTENSOR.

PLANTATION, in the iſlands and continent of America, a ſpot of ground which ſome planter, or perſon arrived in a new colony, pitches on to cultivate and till for his own uſe. See COLONY.

PLANTING, in agriculture and gardening, the ſetting of a tree, or plant, taken up from its former place, in a new hole or pit proportionable to its bulk; throwing freſh earth over its root, and filling up the hole to the level of the other ground. See PLANT, TRANSPLANTING, GARDENING, *&c.*

PLANTING *an orchard.* See ORCHARD.

PLANTING *of foreſt-trees.* See NURSERY, TREE, *&c.*

PLANTING *of wall-fruit-trees.*---After two years growth in the nurſery, ſtone-fruit, being firſt inoculated or grafted, are ready for removal; which is beſt done in October or November.

To prepare the ſoil for its new gueſt; a hole is dug two foot deep; or, if the ſoil be not very good, the pit is made ſhallower, and earth raiſed above it.---With the ſoil dug up, they frequently mix either a rich ſoil from elſewhere, or a manure, ſo as the mixture be at leaſt as rich as the ſoil out of which the plant came.

The hole being half filled up with this compoſt, it is trodden down, to afford a firm reſt to the root; all the extremities whereof are cut off, and the tree fitted to the wall by cutting off ſuch branches as grow directly either towards or from-wards the wall, and leaving only the ſide branches, which are to be nailed to it.

This done, the tree is ſet in its hole, as far from the wall as is conſiſtent with the head's ſpreading thereon; that the root may have the more room backwards: and the hole then filled up with the compoſt.

If the ſoil be poor, it is proper to manure round the tree; and in the end of February, to cover it with fern or ſtraw.---It will be neceſſary to prune and nail the tree to the wall, at leaſt twice or thrice every year. See WALLS.

Inverſe PLANTING, is a method of planting, wherein the ordinary poſition of the plant, or ſhoot, is inverted; the branches being ſet in the earth, and the roots reared into the air.

Agricola mentions this monſtrous way of *planting*, which he aſſures us ſucceeds very well in moſt, or all ſorts of fruit-trees, timber-trees, *&c.* foreign and domeſtic.

Bradley affirms to have ſeen a lime-tree in Holland growing with its firſt roots in the air, which had ſhot out branches in great plenty, at the ſame time that its firſt branches were turned into roots, and fed the tree.

The induſtrious Mr. Fairchild has practiſed the ſame at home; and gives us the following directions for the performance thereof.

Chuſe a young tree of one ſhoot, of alder, elm, willow, or any other tree that takes root readily by laying. Bend the ſhoot gently down till the extreme part be in the earth, and ſo let it remain till it has taken good root.---This done, dig about the firſt root, and gently take it up out of the ground till the ſtem be nearly upright; in which ſtate ſtake it up.

Then prune the roots, now erected in the air, from the bruiſes and wounds they received in being dug up; and anoint the pruned part with a compoſition of four parts of bees-wax, two of reſin, and two of turpentine, melted together and applied pretty warm. ---Then prune off all the buds or ſhoots upon the ſtem, and dreſs the wounds with the ſame compoſition, to prevent any collateral ſhootings; and leave the reſt to nature. See FECUNDITY.

PLANTING, in architecture, denotes the laying the firſt courſes of ſtone on the foundation, according to the meaſures, with all the exactneſs poſſible. See FOUNDATION, BUILDING, HOUSE, *&c.*

PLASM, PLASMA, is ſometimes uſed for a mould, wherein any metal, or ſuch-like running matter, which will afterwards harden, is caſt, to receive its figure. See MOULD; ſee alſo PLASTIC.

PLASTER, or PLAISTER, in building, a compoſition of lime, ſometimes with hair, ſometimes with ſand, *&c.* to parget, or cover the nudities of a building. See PARGETING.

PLASTER *of Paris*, is a fiſſile ſtone, of the nature of a lime-ſtone; ſerving many purpoſes in building; and uſed likewiſe in ſculpture, to mould and make ſtatues, baſſo-relievo's, and other decorations in architecture. See STONE, STATUE, *&c.*

It is dug out of quarries, in ſeveral parts of the neighbourhood of Paris; whence its name.---The fineſt is that of Montmartre.

This *plaſter* is of two kinds, *viz. crude*, or in the ſtone; and *burnt*, or beaten.

The *crude* is the native *plaſter*, as it comes out of the quarry; in which ſtate it is uſed as ſhards in the foundations of buildings.

The *burnt plaſter* is a preparation of the former, by calcining it like lime in a kiln or furnace, and then beating it into powder, and diluting and working it. See LIME, *&c.* In this ſtate it is uſed as morter or cement in buildings. See MORTER.

This, when well ſifted and reduced into an impalpable powder, is uſed to make figures and other works of ſculpture; and is beſides of ſome uſe in taking out ſpots of greaſe, *&c.* in ſtuffs and ſilks. See FIGURE, SCULPTURE, *&c.*

In the *plaſter* quarries is alſo found a kind of falſe talc, wherewith they counterfeit all kinds of marble. See MARBLE, GYPSUM, STUC, *&c.* See alſo PLASTICE.

PLASTIC, Πλαστικὸς *, imports as much as *formative*, or a thing endued with a faculty of forming, or faſhioning a maſs of matter after the likeneſs of a living being.

* **The word comes from the Greek, *πλαστης*, of *πλαττω*, or *πλασσω*, fingo, *I faſhion, form*, &c.**

Some of the ancient Epicureans, and perhaps the Peripatetics too, imagined a *plaſtic* virtue to reſide in the earth, or at leaſt to have anciently reſided therein; and that it was by means hereof, and without any extraordinary intervention of a Creator, that it firſt put forth plants, *&c.* See EARTH, WORLD, *&c.*

Nay, ſome of them, whether ſeriouſly or not, we do not undertake, taught, that animals, and even man, were the effect of this *plaſtic* power. See PLATONIST, PERIPATETIC, *&c.*

PLASTICE, Πλαστικη, the PLASTIC *art*; a branch of ſculpture, being the art of forming figures of men, birds, beaſts, fiſhes, plants, *&c.* in plaſter, clay, ſtuc, or the like. See SCULPTURE, PLASTER, POTTERY, *&c.*

The workmen concerned herein are alſo called *plaſtæ*, πλασται.

Plaſtice differs from carving, in that here the figures are made by addition of what wants; but in carving always by ſubtraction of what is ſuperfluous. See ENGRAVING.

The *plaſtic art* is now chiefly uſed among us in fret-work-ceilings; but the Italians apply it alſo to the mantlings of chimnies with great figures. See FRET-WORK, CEILING, *&c.*

PLAT, a popular term among mariners, *&c.* for a ſea-chart. See CHART.

PLATA, PLATE, in commerce, a Spaniſh term, ſignifying ſilver; as vellon, which they pronounce vellion, ſignifies copper. See SILVER, COIN, *&c.*

Theſe two terms are not only uſed to expreſs the ſpecies of thoſe metals ſtruck in Spain, but alſo to diſtinguiſh between ſeveral of their monies of account.---Thus they ſay a ducat of *plata*, and a ducat of vellon; a rial of *plata*, and a rial of vellon; which denominations augment and diminiſh the value by almoſt one half; 34 maravedis of *Plata* being equal to 63 of vellon; and the piece of eight being only 272 maravedis of *plata*, but 510 of vellon. See DUCAT, PIECE *of eight*, RIAL, and MARAVEDIS.

PLATE, in commerce, denotes gold or ſilver wrought into veſſels for domeſtic uſes. See GOLD, SILVER, MARK, PUNCHION, *&c.*

PLATE, in heraldry, is a round, flat piece of ſilver, without any impreſſion; but, as it were, formed ready to receive it.

The term is uſed only by Engliſh heralds.---In other nations they are known by the name of *bezants argent*. See BEZANT.

PLAT-BAND, in gardening, a border, or bed of flowers, along a wall, or the ſide of a parterre; frequently edged with box, *&c.* See PARTERRE, EDGING, *&c.*

PLAT-BAND, in architecture, is any flat ſquare moulding, whoſe height much exceeds its projecture.---See *Tab. Archit. fig.* 28. *lit. n.* and alſo ſee MOULDING.

Such are the faces or faſciæ of an Architrave, and the *plat-band* of the modillions of a cornich. See ARCHITRAVE, CORNICH, *&c.*

The *plat-band* is ſignified in Vitruvius, and others, by the words *faſcia, tænia,* and *corſa*. See FASCIA, TÆNIA, *&c.*

PLAT-BAND of a door or window, is uſed for the lintel, where that is made ſquare, or not much arch'd. See LINTEL.

Theſe *plat-bands* are uſually croſſed with bars of iron, when they have a great bearing: But it is much better to eaſe them by arches of diſcharge built over them. See DOOR, WINDOW, *&c.*

PLAT-BANDS of flutings, the liſts or fillets between the flutings of columns. See FLUTING.

PLAT-FORM, in war, an elevation of earth, on which cannon is placed to fire on the enemy. See RAMPART, BATTERY, *&c.*

Such are the mounts on the middle of the curtins.---On the rampart is always a *plat-form*, where the cannon are mounted.

It is made by the heaping up of earth on the rampart; or by an arrangement of madriers, riſing inſenſibly for the cannon to roll on; either in a caſemate, or on an attack in the out-works.

PLAT-FORM, in architecture, is a row of beams, which ſupport the timber-work of a roof, and lie on the top of the wall, where the entablature ought to be raiſed.

PLAT-FORM is alſo uſed for a kind of terrace, or broad ſmooth open walk on the top of a building, from whence we may take a fair proſpect of the adjacent country.

Hence an edifice is ſaid to be covered with a *plat-form*, when it is flat a-top, or has no ridge. See ROOF.

Moſt of the oriental buildings are thus covered, as were all thoſe of the ancients.---Cæſar was the firſt among the Romans who procured leave to build his houſe with a ridge, or pinnacle. See PINNACLE.

PLAT-FORM, or *orlop*, in a man of war, is a place on the lower deck, abaft the main-maſt, between it and the cock-pit, and round about the main capſtan; where proviſion is made for the wounded men, in time of ſervice. See *Tab. Ship. fig.* 2. *lit.* 7.

PLATONIC, ſomething that relates to Plato, his ſchool, philoſophy, opinions, or the like. See PLATONISM.

PLATONIC *bodies*, are the ſame with what we otherwiſe call *regular bodies*. See REGULAR *bodies*.

PLATONIC *love*, denotes a pure, ſpiritual affection, ſubſiſting between the different ſexes, abſtracted from all carnal appetites, and regarding no other object but the mind, and its beauties: or even a ſincere diſintereſted friendſhip, ſubſiſting between perſons of the ſame ſex, abſtracted from any ſelfiſh views, and regarding no other object but the perſon.

The term took its riſe from the philoſopher Plato, a ſtrenuous advocate for each kind. See PLATONISM.

The world has a long time laugh'd at Plato's notions of love and friendſhip.---In effect, they appear arrant chimera's, contrary to the intentions of nature, and inconſiſtent with the great law of ſelf-preſervation; which love and friendſhip are both ultimately reſolvible into. See PASSION.

PLATONIC *year*, or the *great year*, is a period of time determined by the revolution of the equinoxes; or the ſpace wherein the ſtars and conſtellations return to their former places, in reſpect of the equinoxes. See YEAR, STAR, PRECESSION *of the equinoxes*, &c.

The *Platonic year*, according to Tycho Brahe, is 25816; according to Ricciolus 25920; according to Caſſini 24800 years.

This period, which is more than five times the age of the world, once accompliſhed, it was an opinion among the ancients, that the world was to begin anew, and the ſame ſeries of things to turn over again. See PERIOD, PALINGENESIA, *&c.*

PLATONISM, the doctrine and ſentiments of Plato and his followers, with regard to philoſophy, *&c.* See PHILOSOPHY.

The founder of this ſyſtem of philoſophy, Plato, the ſon of Ariſto, was an Athenian; born about the year of the world 3625; who, after having ſpent his youth in exerciſes of the body, painting, and poetry, became a diſciple of Socrates.---After his maſter's death, he applied himſelf to Cratylus and Hermogenes; till being a maſter of the Greek philoſophy, he travelled into Italy, where he learnt that of the Pythagoreans. See PYTHAGOREAN.

Thence he proceeded into Egypt; where, in ſeveral years reſidence, he became fully acquainted with the ſecrets of the Egyptian prieſts. See SYMBOL.

At his return to Athens he began to retail the ſtock of learning he had collected, among his countrymen; philoſophizing daily in the Academy, a delicious villa in the neighbourhood of that city. See ACADEMY.---And hence his diſciples were called *Academics*.

In phyſics, he chiefly followed Heraclitus; in ethics and politics, Socrates; in metaphyſics, Pythagoras.

After his death, two of the principal of his diſciples, Ariſtotle and Xenocrates, continuing his office, and teaching, the one in the Academy, the other in the Lyceum; form'd two ſects, under different names, though in other reſpects the ſame; the one retaining the denomination of *Academics*; ſee ACADEMIC. The other aſſuming that of *Peripatetics*; ſee PERIPATETIC.

In after-times, about the firſt ages of the Chriſtian church, the followers of Plato quitted the title of *Academiſts*, and took that of *Platoniſts*.

It is ſuppoſed to have been at Alexandria in Egypt that they firſt aſſumed the new title, after having reſtored the ancient Academy, and re-eſtabliſh'd Plato's ſentiments; which in proceſs of time had many of them been laid aſide.

Porphyry, Plotin, Iamblichus, Proclus, and Plutarch, are thoſe who acquired the greateſt reputation among the *Greek* Platoniſts: And among the Latins, Apuleius, and Chalcidius.---Among the Hebrews, Philo Judæus.---The modern Platoniſts own Plotin the founder, at leaſt the reformer of their ſect.

The *Platonic philoſophy* appears very conſiſtent with the Moſaic; and a great party of the primitive fathers follow the opinions of that philoſopher, as being favourable to Chriſtianity.---Juſtin is of opinion, Plato could not learn many things he has ſaid in his works, from mere natural reaſon; but thinks he might have learnt them from the books of Moſes, which he read when in Egypt.

Hence Numenius, the Pythagorean, expreſly calls Plato the *Attic Moſes*; and upbraids him with plagiariſm, in that he ſtole his doctrine about the world and God, from the books of Moſes.

Theodoret ſays expreſly, that he has nothing good and commendable about the Deity, and his worſhip, but what he ſtole from the Hebrew theology; and Clemens Alexandrinus calls him the *Hebrew philoſopher*.

Gale is very particular in his proof of the point, that Plato borrowed his philoſophy from the ſcriptures, either immediately, or by means of tradition; and, beſide the authority of ancient writers, brings ſome arguments from the thing itſelf.---As, *e. gr.* Plato's confeſſion that the Greeks borrowed their knowledge of the one infinite God, from an ancient people, better and nearer to God than they; by which people, our author makes no doubt, he meant the Jews: From his account of the ſtate of innocence; as, that man was born of the earth, that he was naked, that he enjoyed a truly happy ſtate, that he converſed with brutes, *&c.*---In effect, from an examen of all the parts of Plato's philoſophy, phyſical, metaphyſical, and ethical; this author finds, in every one, evident characters of its ſacred original.

As to the manner of the creation, Plato teaches that the world was made according to a certain exemplar, or idea, in the divine Architect's mind. And all things in the univerſe, in like manner, he ſhews, do depend on the efficacy of eternal ideas.

This ideal world is thus explain'd by Didymus: “Plato ſuppoſes certain patterns or exemplars of all ſenſible things, which he calls ideas; and as there may be various impreſſions taken off from the ſame ſeal, ſo is there a vaſt number of natures exiſting from each idea.” This idea he ſuppoſes to be an eternal eſſence, and to occaſion the ſeveral beings in nature to be ſuch as itſelf is: And that moſt beautiful and perfect idea, which comprehends all the reſt, he maintains to be the world. See IDEA.

Further, Plato teaches that the univerſe is an intelligent animal, conſiſting of a body and a ſoul. See ANIMA MUNDI.

The firſt matter whereof this body was formed, he obſerves, was a rude indigeſted heap, or chaos: Now, adds he, the creation was a mixed production; and the world is the reſult of a combination of neceſſity and underſtanding, *i. e.* of matter, which he calls neceſſity, and the divine wiſdom.

The principles, or elements, which Plato lays down, are fire, air, water, and earth. See ELEMENT.

He ſuppoſes two heavens; the *empyrean*, which he takes to be of a fiery nature, and to be inhabited by angels, *&c.* and the *ſtarry* heaven, which he teaches is not adamantine or ſolid, but liquid and ſpirable. See HEAVEN.

His phyſics, or doctrine *de corpore*, is chiefly laid down in his *Timæus*; where he argues on the properties of body, in a geometrical manner; which Ariſtotle takes occaſion to reprehend in him.---His doctrine *de mente* is delivered in his tenth book of *laws*, and his *Parmenides*.

St. Auguſtin commends the *Platonic philoſophy*; and even ſays, that the *Platoniſts* were not far from Chriſtianity: He adds, that the generality of the new *Platoniſts* of his time embraced the faith.

Juſtin Martyr profeſſes, that Plato's doctrine was of the utmoſt advantage to him, in helping him to believe the myſteries of the Chriſtian faith.---To which it may be added, that it was in good meaſure by Plato's help that Origen confuted Celſus. See TRINITY, *&c.*

Indeed the late author of *Platoniſme devoilé* carries things to an extravagant length, when he contends, that the dogmata of our religion are only the opinions of Plato; that the fathers give us nothing of the myſteries thereof, but what they learnt from him; and that Chriſtianity is only *Platoniſm* veiled, or covered over. To which opinion, however, M. le Clerc ſeems a little inclined. See GOD, FATHERS, *&c.*

PLATONISTS. See PLATONISM, and ACADEMICS.

PLATTOON *, or PLOTTOON, in war, a ſmall, ſquare body of 40 or 50 men, drawn out of a battalion of foot, and placed between the ſquadrons of horſe, to ſuſtain them; or in ambuſcades, ſtreights, and defiles, where there is not room for whole battalions or regiments. See BATTALION, *&c.*

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* The word is formed, by corruption, of the French *peloton*, a bottom, or clue of thread.

Plattoons are alſo uſed, when they form the hollow ſquare to ſtrengthen the angles. See MUSQUETEER.

The grenadiers are generally poſted in *plattoons.* See GRENADIER.

PLATTS, on board a ſhip, are flat ropes made of rope-yarn, and woven one in another. See ROPE, *&c.*

Their uſe is to ſave the cable from galling in the hauſe; or to wind about the flukes of the anchors, to ſave the pendant of the fore-ſheet from galling againſt them.

PLATYSMA, *Myoides.* V. MUSCLE.

PLAY, *Luſus.* See GAME, and GAMING.

PLAY, in Poetry, *&c.* See DRAMA, TRAGEDY, COMEDY, *&c.*

PLAY-HOUSE. See THEATRE, AMPHITHEATRE, *&c.*

PLEA, PLACITUM, in law, that which either party alledgeth for himſelf in court, in a cauſe then depending to be tried. See PLACITA, ACTION, and COURT; ſee alſo PLEADING, *&c.*

Pleas are either *of the crown*, or *common pleas.*

PLEAS *of the crown*, are all ſuits in the king's name, for offences committed againſt his crown and dignity, or againſt his crown and peace.---Such are treaſons, felonies, miſpriſions of either, and mayhem. See TREASON, FELONY, *&c.*

Edward I. enfeoffed Walter de Burgo in the land of Ulſter in Ireland, *&c.* excepting the *pleas* of the crown, *viz.* rapeſtal, wilful firing, and treaſure-trove. *Cam. tit. Ireland.*

Common PLEAS, are thoſe agitated between common perſons; though, by the diviſion above laid down, they ſhould compriſe all others except thoſe there enumerated, notwithſtanding the king be a party. See ABATEMENT.

Pleas may farther be divided into as many branches as *action*; inaſmuch as they are in reality the ſame thing. See ACTION.

There is alſo *foreign plea*, whereby matter is alledged in any court, that ought to be tried by another ---As if one lay baſtardy to another in a court baron. See FOREIGN.

PLEAS *of the ſword.*---Ranulph earl of Cheſter, 2. Hen. III. granted to his barons of Cheſhire, an ample charter of liberties, *exceptis placitis ad gladium meum pertinentibus.*

The reaſon of the exception was, that William the Conqueror gave the earldom of Cheſter to his half-brother Hugh, commonly called Lupus, anceſtor of this Ranulph, *Tenere ita libere ad gladium, ſicut ipſe rex tenuit Angliam ad coronam.*

Accordingly, in all indictments for felony, murder, *&c.* in the county Palatine, the form was, *Contra pacem domini comitis, gladium & dignitatem ſuam*; or *contra dignitatem gladii Ceſtriæ.*---Such were the *pleas* for the dignity of the earl of Cheſter. See GLADIUS.

Court of common PLEAS, called alſo *common bench.* See COMMON *pleas.*

PLEADING, PLACITATIO, a diſcourſe ſpoken at the bar, in defence of the cauſe of a party. See PLEA.

From the time of the conqueſt, all *pleading* was performed in French, till the time of Edward III. when it was appointed that the *pleas* ſhould be *pleaded* in Engliſh, but to be entered or recorded in Latin. See LATIN.

At Athens, and even in France and England, it was prohibited to have any formed or prepared *pleading*, or to amuſe the court with long artificial harangues; only, in important matters, it was the ſettled cuſtom to begin the *pleadings* with a paſſage in holy ſcripture.

It is but of late years that eloquence was admitted to the bar; and it may be ſaid there is ſcarce any nation in Europe, where it is leſs practiſed or encouraged, than among us.--The elocution of the bar, like that of the pulpit, deſpiſes the rules of rhetoric. See ACTION, ELOQUENCE, ORATORY, *&c.*

PLEADINGS, in a ſtricter ſenſe, are all the allegations of the parties to a ſuit, made after the count, or declaration, till iſſue is joined. See DECLARATION.

In this ſenſe the *pleadings* expreſs what is contained in the bar, replication, and rejoinder; and not what is in the declaration itſelf.---Hence defaults in the matter of declaration, are not comprized within the *miſpleading*, or inſufficient *pleading*, which only extends to that committed in the bar, replication or rejoinder. See BAR, REPLICATION, and REJOINDER.

PLEASURE, the effect of a ſenſation or perception agreeable to the mind, or of the gratification of ſome appetite. See APPETITE, SENSATION, *&c.*

Pleaſures may be diſtinguiſh'd into two kinds.---The firſt, thoſe which anticipate, or go before the reaſon; ſuch are all agreeable ſenſations.---Theſe are popularly called *pleaſures of ſenſe*, or *of the body.* See SENSE.

The ſecond are thoſe which do not precede or anticipate either the ſenſes or reaſon.---Theſe we call *pleaſures of the mind.*---Such is the joy ariſing from a clear perception of ſome future good, or confuſed ſenſation of a preſent one. See MIND.

For an inſtance of each:---A man frequently finds *pleaſure* in eating a fruit he was before unacquainted withal: This is *anticipating pleaſure*, which he feels ere he knows the fruit to be good. On the other hand, a hungry hunter expects, or perhaps actually finds, victuals; where the joy he conceives, is a *pleaſure* that follows from the knowledge of his preſent or future good. See PAIN.

Pleaſure and *pain* ſeem to be no other than engines in nature's hand; whereby we are directed to conſult our own preſervation, and avoid our ruin.---To things that may contribute to the one, as food, venery, *&c.* ſhe has annexed *pleaſure*; and to thoſe that may conduce to the other, as hunger, diſeaſes, *&c.* pain: She durſt not leave it to our diſcretion, whether we would preſerve and propagate the ſpecies or not; but, as it were, conſtrains us to both: Were there no *pleaſure* in eating, nor pain in hunger, what numbers would be ſtarved through negligence, forgetfulneſs, or ſlothfulneſs? What is it induces people to the office of generation, but *pleaſure*? Without this the world had ſcarce ſubſiſted to this time.

Among the multiplicity of things to be done, and to be avoided, for the preſervation of animal life, *&c.* how ſhould we have diſtinguiſhed between the one and the other, but for the ſenſations of *pleaſure* and pain? Theſe are not only ſpurs, to urge us on, but alſo guides, to direct us whither we are to go. Wherever nature has fixed a *pleaſure*, we may take it for granted, ſhe there injoins a duty; and ſomething is to be there done, either for the individual, or the ſpecies.

Hence it is that our *pleaſures* vary at different ſtages of life; the *pleaſures*, *e. gr.* of a child, a youth, a grown man, an old man, *&c.* all tending to thoſe particular things required by nature in that particular ſtate of life, either for the preſervation, ſimply, or for that and propagation, *&c.*

Hence, from the different conſtitutions of the body, at different ages, it were very eaſy to account for all the particular taſtes and *pleaſures* thereof: Not by deducing the *pleaſures* mechanically from the diſpoſition of the organs in that ſtate; but by conſidering what is neceſſary for the perfection and well-being of the individual in that ſtate, and what it is to contribute to that of the ſpecies.---In a child, *e. gr.* mere preſervation in the preſent ſtate is not enough; it muſt likewiſe grow: to bring this to paſs, nature has made the returns of hunger, *&c.* more frequent, as well as more acute; and the *pleaſures* of feeding more exquiſite. And that the exceſs of aliment in proportion to the bulk of the body may be diſpenſed withal, ſhe has made one of the great *pleaſures* of that ſtate to conſiſt in a ſeries of ſportive exerciſes, by means whereof the parts of the body come to be opened and expanded, and arrive at maturity. This done, the *pleaſures* that conduced thereto diſappear; and others ſuited to the new ſtate, ſucceed. See NATURAL *inclination*; ſee alſo PASSION.

For the PLEASURES *of beauty, muſic,* &c. See BEAUTY, MUSIC, *&c.*

PLEBANUS, was anciently the title of a rural dean. See RURAL *dean.*

The denomination aroſe hence, that theſe deanries were then affixed to the *plebania*, or chief mother-church within ſuch a diſtrict, which at firſt was uſually ten pariſhes.

PLEBANUS ſeems alſo to have been uſed for a pariſh-prieſt, of ſuch a large mother-church, as was exempt from the juriſdiction of the ordinary, ſo that he had the authority of a rural dean committed to him by the archbiſhop, to whom the church was immediately ſubject.

PLEBEIAN, PLEBEIUS, a perſon of the rank of the populace, or common people. See COMMONS.

The term is chiefly uſed in ſpeaking of the ancient Romans, who were divided into *ſenators, knights*, and *plebeians* or *commons.* See SENATOR, KNIGHT, *&c.*

PLEBISCITUM, among the Romans, a law enacted by the common people, at the requeſt of the tribune, or ſome other plebeian magiſtrate, without the intervention of the ſenate. See LAW.

PLEBISCITUM is more particularly applied to the law which the people made, when, upon a miſunderſtanding with the ſenate, they retired to the Aventine mount. See CIVIL *law.*

PLEDGE, PLEGIUS, in common law, a ſurety, or gage, either real or perſonal, which the plaintiff or demandant is to find for his proſecuting the ſuit. See GAGE and VADARI.

The word is ſometimes alſo uſed for *frank pledge*, which ſee. See alſo PLEDGERY.

To PLEDGE, in drinking, denotes to warrant, or be ſurety to one, that he ſhall receive no harm while he is taking his draught.

The phraſe is referred by our antiquaries, to the practice of the Danes, heretofore in England, who frequently uſed to ſtab, or cut the throats of the natives, while they were drinking.

PLEDGERY, or PLEGGERY, ſuretiſhip, or an undertaking or anſwering for another. See SURETY and PLEDGE.

The appellant ſhall require the conſtable and mareſchal to deliver his pleggs, and to diſcharge them of their *pleggery*; and the conſtable and mareſchal ſhall aſk leave of the king to acquit his *pleggs*, after that the appellant is come into the liſts to do his devoir. *Orig. Jur. ex Vet. Cod. MS. in Bibl. Selden.*

PLEDGET, in chirurgery, a kind of flat tent, made, not to enter a wound, but to be laid upon it, to imbibe the ſuperfluous humours, and keep it clean and dry. See TENT and WOUND.

PLEGIIS *acquietandis*, a writ that lies for a ſurety, againſt him for whom he is ſurety, in caſe he pay not the money at the day. *Fitz. Nat. Brev.*

PLEIADES, Πλειαδες, in aſtronomy, an aſſemblage of ſeven ſtars, in the neck of the conſtellation Taurus. See STAR.

They are thus called from the Greek *ϖλειν, navigare*, to ſail; as being terrible to mariners, by reaſon of the rains and ſtorms that frequently riſe with them.

The Latins call them *Vergiliæ*, from *Ver*, ſpring; becauſe of their riſing about the vernal equinox. See VERGILIÆ.

The largeſt is of the third magnitude, and called *Lucida Pleiadum. See their ſeveral longitudes, latitudes, magnitudes*, &c. *under the article* TAURUS.

Poetical PLEIADES, is a name which the Greeks gave to ſeven celebrated poets, flouriſhing under the reign of Ptolemy Philadelphus.

In imitation of the Greeks, Ronſard formed a *Pleiades* of French poets, under the reign of Henry II.----It conſiſted of Daurat, Ronſard, du Bellay, Belleau, Baif, Tyard, and Jodelle.

On the ſame model, ſome of their authors are projecting a new *Pleiades* of the Latin poets of the preſent time; but they are not yet agreed about the names of thoſe that are to compoſe it; much leſs on him who ſhall be the *Lucida Pleiadum*.---M. Baillet has named F. Rapin, F. Commire, F. de la Rue, M. de Santeuil, M. Menage, M. du Perier, and M. Petit.

PLENARTY, in law, a term uſed in eccleſiaſtical matters; to denote that a benefice is full, or poſſeſſed of an incumbent. See BENEFICE.

In which ſenſe it ſtands oppoſed to *vacancy*. See VACANCY, VACATION, *&c.*

Inſtitution, by ſix months, is a good *plenarty* againſt a common perſon, but not againſt the king, without induction. See INSTITUTION and INDUCTION.

PLENARY*, ſomething complete, or full.---Thus we ſay, the pope grants *plenary indulgences*, i. e. full and intire remiſſions of the penalties due to all ſins. See INDULGENCE.

* The word is formed of the Latin *plenarius*, of *plenus*, full.

PLENILUNIUM*, in aſtronomy, that phaſis or ſtate of the moon popularly called the *full moon*. See MOON.

* The word is a compound of the Latin *plenus*, and *luna*.

PLENIPOTENTIARY*, a perſon who has full power, and commiſſion to do any thing.

* The word is compounded of *plenus*, full, and *potentia*, power.

The word is chiefly underſtood of the miniſters or ambaſſadors ſent from princes or ſtates, to treat of peace, marriages, and other important matters. See MINISTER, AMBASSADOR, *&c.*

The firſt thing done in conferences of peace, is, to examine the powers of the *plenipotentiaries*. See TREATY.

PLENITUDE, PLENITUDO, the quality of a thing that is full, or that fills another. See FULL.

In phyſic, it is chiefly uſed for a redundancy of blood and humours. See REPLETION.

Phyſicians reckon two kinds of *plenitude*.---The one called *ad vires*, when the abundance of the blood oppreſſes the patient's ſtrength.

The other *ad vaſa*, when it fills the veſſels too much; ſwelling to a degree of burſting. See PLETHORA.

PLENUM, in phyſics, a term uſed to ſignify that ſtate of things, wherein every part of ſpace, or extenſion, is ſuppoſed to be full of matter. See MATTER and SPACE.

In oppoſition to a *vacuum*, which is a ſpace ſuppoſed devoid of all matter. See VACUUM.

The Carteſians adhere firmly to the doctrine of an abſolute *plenum*.---This they do on this principle, that the eſſence of matter conſiſts in extenſion; from whence, indeed, the conſequence is very eaſy, that where-ever there is ſpace or extenſion, there is matter. See EXTENSION.

But this principle we have ſhewn to be falſe; and therefore the conſequence drawn from it falls to the ground. See MATTER.

But that there is a real vacuum in the nature of things, is likewiſe demonſtrated by arguments *a poſteriori*, under the article VACUUM.

PLEONASM*, PLEONASMUS, in rhetoric; a figure of ſpeech, whereby we make uſe of words ſeemingly needleſs or ſuperfluous, in order to expreſs a thought with the greater force and energy.

* The word is formed from the Greek ϖλεονασμος, *q. d. ſuperabundancy*.

Such is, *I ſaw it with my own eyes*; or, *he heard it with his ears*, &c. See FIGURE.

The *pleonaſm* is called by the Latins, *redundantia*. See REDUNDANCY.

Pleonaſm, by grammarians, is uſually defined a fault in diſcourſe, wherein we ſay more than needs.

M. Vaugelas will not allow the phraſe, *I ſaw it with my own eyes*, to be a *pleonaſm*; inaſmuch as there are no ſuperfluous words in it; none but what are neceſſary to give a ſtronger aſſurance of the thing affirmed.---It is ſufficient that one of the phraſes ſay ſomewhat more than the other, to avoid the imputation of a *pleonaſm*.

In effect, though we give the name *pleonaſm* to any thing that is not neceſſary, or that enters the diſcourſe independently of the ſenſe or conſtruction; yet there are frequently words which in that view would be pertinent, yet are uſed to good purpoſe to give a greater force, or grace to diſcourſe.

He ſpoke with his mouth, is a *pleonaſm* in Engliſh; it is none in Latin: Virgil ſays, *ſic ore locutus*. Some French authors deny *unir enſemble*, to unite together, to be a *pleonaſm*.

PLEROTICS*, ϖληρωτικα, in medicine, a kind of remedies, otherwiſe called *incarnatives*, and *ſarcotics*. See INCARNATIVE and SARCOTIC.

* The word is formed from the Greek ϖληροω, *I fill*.

PLETHORA, ϖληθωρα, in medicine, ſuch an abundance of any good and laudable humour, as proves hurtful to the animal functions. See HUMOUR, *&c.*

Plethora is chiefly underſtood of the blood, though ſometimes of the other humours. See BLOOD.

The *plethora* is the conſequence of a good chylification, ſanguification, *&c.* attended with a too ſparing diſcharge by perſpiration, *&c.*

It is uſually deſcribed as either *ad vires*, or *ad vaſa*. See PLENITUDE.

The *plethora* is chiefly produced in a body whoſe organs of digeſtion are ſtrong, blood-veſſels lax, diet full of good juice, temperament ſanguine, mind at eaſe and indolent, of a middle age, and in a moiſt air.---It renders heat and motion intolerable; ſtretches the great veſſels, and compreſſes the ſmaller. And hence ſtiffneſs, and heavineſs, and on the leaſt occaſion, ruptures in the veſſels, ſuffocations, *&c.* See DISEASE.

Dr. Freind makes the catamenia, or menſes, the mere reſult of a *plethora*; and will have them only an evacuation for relief againſt the quantity of the blood, which he ſuppoſes to be natural to women, from the humidity of their temperature, the ſmallneſs of their veſſels, *&c.* Hence a coacervation in the blood-veſſels, of a ſuperfluity of aliment remaining over and above what is excreted by the common ways. See MENSES.

PLEVIN, PLEVINA, in law, a warrant or aſſurance; the ſame with pledge. See PLEDGE, REPLEVIN, *&c.*

PLEURA*, ϖλευρα, in anatomy, a membrane which lines the inſide of the cavity of the breaſt, and incloſes all the parts contained therein, being of the ſame figure and extent as the thorax itſelf, and of the ſame ſubſtance with the peritonæum. See THORAX.

* The word is derived from the Greek πλευρα, which primarily ſignifies *ſide*. The Latins call it *ſuccingens*.

It is very fine and thin, yet manifeſtly double; thickeſt about the back, where it is faſtened to the ligaments of the vertebræ.---In the middle of the thorax it is doubled, which duplicature forms what we call the *mediaſtinum*, which divides the thorax longitudinally into two parts. See MEDIASTINUM.

The uſe of the *pleura* is to defend the inſide of the thorax, and render it ſmooth, that the lungs may not be hurt in their motion. See LUNGS.

PLEURISY, PLEURESIS, PLEURITIS, ϖλευριτις, in medicine, a violent pain in the ſide, attended with an acute fever, a cough, and a difficulty of breathing.

The *pleuriſy* ariſes from an inflammation of ſome part of the pleura, to which is frequently joined that of the exterior and ſuperficial part of the lungs. See INFLAMMATION and PLEURA.

It uſually ariſes upon cooling too haſtily, after violent heat; as by drinking cold water, lying open to the air, *&c.*

This inflammation ſeizes any part of the integuments of the thorax, *viz.* either the pleura or mediaſtinum; and therefore the pricking pain may be felt in any part of the thorax: but the place it moſt ordinarily infeſts is the ſide; ſometimes the right, ſometimes the left, ſometimes higher, ſometimes lower.

This makes what we call the *pleuritis vera*, or *true* or *internal pleuriſy*; in oppoſition to the *notha*, or *ſpurious* or *external pleuriſy*, which is a pain in the ſide, without any fever, and frequently without any cough; and is ſuppoſed to ariſe from a ſharp ſeroſity lodged in the pleura, or higher among the intercoſtal muſcles.

The great remedy in the true *pleuriſy* is copious and repeated bleeding. In adults, Sydenham obſerves, it is ſeldom cured with leſs than the loſs of forty ounces of blood.---By omitting phlebotomy the patient is frequently ſuffocated.

The *pleuriſy* ſometimes ſucceeds another fever; occaſioned by a precipitation of the febrile matter upon the pleura.

When it riſes to an impoſthume, it is called *empyema*. See EMPYEMA.

When it happens in the mediaſtinum, or diaphragma, it is called *paraphrenitis*. See PARAPHRENITIS.

Etmuller recommends ſudorifics in the *pleuriſy*; and obſerves, that much more regard is to be had to the ſputum that attends the cough, than the urine.---Baglivi notes, that *pleuriſies* are frequently occult; and gives this method of diſcovering them.---Make the patient lie on his right or left ſide, and bid him breathe ſtrongly and cough: If he feel any pain or heavineſs after it, he is certainly *pleuritic*.---The ſame author adds, that a hard pulſe is a certain attendant of the *pleuriſy*.

Riverius gives us inſtances of notable cures performed herein by cupping and ſcarification.

PLEXUS, in anatomy, a name common to ſeveral parts in the body, conſiſting of bundles of little veſſels interwoven in form of net-work. See VESSEL.

The nerves, in their progreſs, form ſeveral *plexus*'s; eſpecially the par vagum, or eighth pair, the intercoſtals, and the fifth. See NERVE.

The par vagum, at its interſection with the intercoſtal nerve, forms the *plexus ganglioformis* ſuperior and inferior. See GANGLIOFORMIS.---A branch of this nerve joining near the heart, with others from the intercoſtals, form the *plexus cardiacus ſuperior*. See CARDIACUS.---A little further it ſends off ſeveral branches, which reuniting, form the *plexus pneumonicus*. See NERVES.---In each trunk of the intercoſtal, before it arrives at the thorax, are two *plexus ganglioformes*, called *plexus cervicales*.---When arrived in the thorax, in receives three or four twigs from the vertebral nerves, together with which it conſtitutes the *plexus intercoſtalis*; whence deſcending into the abdomen, it forms that famous piece of network, called on the right ſide *plexus hepaticus*, and on the left *plexus ſplenicus*.---From the hepatic *plexus* ariſe a number of branches, proceeding ſome to the liver, others to the pancreas, others to the capſula or gliſſon, and other larger ones to the right kidney.---The ſplenic *plexus* ſends out branches to the left part of the ventricle and pancreas, the ſpleen, the left atrabiliary capſula, and left kidney.---Laſtly, ſeveral branches both from the hepatic and ſplenic *plexus*, paſſing along the meſenteric arteries, eſpecially the upper, to which they ſerve as a kind of cover, form the meſenteric *plexus*, which bears ſome reſemblance to a ſun, from the circumference whereof proceed ſeveral little branches or threads in manner of rays, continued thence to the inteſtines; though ſtill accompanying the arteries. See MESENTERIC, *&c.*

PLEXUS *choroides* is a wonderful contexture of ſmall arteries and veins, and, as ſome ſay, lymphatics, in the brain, on each ſide of the thalami nervorum opticorum, and juſt over the pineal gland. See CHOROIDES and BRAIN.

It is ſometimes alſo called *plexus reticularis*, from its net-like ſtructure. See RETICULARIS.

PLICA, in medicine, a diſeaſe of the hair, almoſt peculiar to Poland, and hence denominated *Polonica*; though there are inſtances of it in Hungary, Alſatia, Switzerland, *&c.* See HAIR.

The *plica* is a ſevere, malignant, and dangerous diſeaſe, wherein the hair of the head is matted and glued together beyond all poſſibility of being extricated; attended with a grievous diſorder of all the limbs of the body; and before the hair become complicated, a violent pain; a ſweat uſually attending it.

An unſeaſonable cutting off the hair in this caſe is dangerous; nor is there any proper and adequate remedy for the diſeaſe yet diſcovered.

PLIGHT, in our old law-books, a term which ſignifies the eſtate, with the quality of the land; though ſometimes is extends alſo to the rent-charge, and the poſſibility of a dower. *Coke's Inſt. fol.* 221.

PLINTH*, in architecture, a flat ſquare member, in form of a brick: ſometimes alſo called the *ſlipper*.---See *Tab. Archit. fig.* 26. *lit. n. fig.* 24. *lit. u. fig.* 49. *lit. k.*

* The words come from the Greek ϖλινθος, *brick.*

The *plinth* is uſed as the foot, or foundation of columns; being that flat ſquare table, under the mouldings of the baſe and pedeſtal, at the bottom of the whole order; ſeeming to have been originally intended to keep the bottom of the primitive wooden pillars from rotting. See BASE, PEDESTAL, COLUMN, *&c.*

The *plinth* is alſo called *orle* or *orlo*. See ORLO.

Vitruvius alſo calls the Tuſcan abacus, *plinth*, from its reſembling a ſquare brick. See ABACUS.

PLINTH *of a ſtatue*, &c. is a baſe, or ſtand, either flat, round, or ſquare; ſerving to ſupport a ſtatue, *&c.* See STATUE, *&c.*

PLINTH *of a wall*, is a term for two or three rows of bricks advancing out from the wall; or, in the general, for any flat high moulding, ſerving in a front wall to mark the floors; or to ſuſtain the eaves of a wall, and the larmier of a chimney. See WALL, *&c.*

PLOCE, in rhetoric, a figure whereby a word is repeated, by way of emphaſis; in ſuch manner as not only to expreſs the ſubject, but the quality thereof.

Cruelty! yes, cruelty beyond all example. His wife's a wife indeed. See REPETITION.

PLOK-PENIN, a term uſed in the public ſales at Amſterdam, for a little ſum given to the laſt bidder.

The *plok-penin* is a kind of earneſt, whereby it is ſignified, that the commodity is adjudged to him. See EARNEST.

The *plok-penin* differs according to the quality of the commodity, and the price of the lot.---Sometimes it is arbitrary, and depends on the pleaſure of the buyer; and ſometimes regulated by the ordinances of the burgo-maſters.

For inſtance, the *plok-penins* of French wines are fixed at two florins; thoſe of Frontignac at 20 ſols; thoſe of Rheniſh at two florins; thoſe of vinegar at 20 ſols, and thoſe of brandy at 30.

There are alſo merchandizes where there are no *plok-penins*; and others where it is double what we have mentioned.

PLOT, or PLOTT, in gardening. See the article, GRASS *plot*, &c.

PLOT, in dramatic poetry, the fable of a tragedy or comedy; or the action repreſented therein. See FABLE and ACTION.

PLOT is more particularly uſed for the knot or intrigue, which makes the difficulty and embarraſs of a piece. See KNOT and INTRIGUE.

The unravelling puts an end to the *plot*. See CATASTROPHE.

PLOT, in ſurveying, the plan, or draught, of any parcel of ground, *e. gr.* a field, farm, or manor, ſurveyed with an inſtrument, and laid down in the proper figure and dimenſions. See PLOTTING.

PLOTTING, among ſurveyors, the art of deſcribing, or laying down on paper, *&c.* the ſeveral angles and lines of a tract of ground ſurveyed by a theodolite, or the like inſtrument, and a chain. See SURVEYING.

In ſurveying with the plane-table, the *plotting* is ſaved; the ſeveral angles and diſtances being laid down on the ſpot as faſt as they are taken. See PLAIN *table*.

But in working with the theodolite, ſemicircle, or circumferentor, the angles are taken in degrees; and the diſtances in chains and links. See THEODOLITE, CIRCUMFERENTOR, *&c.*

So that there remains an after-operation, to reduce thoſe numbers into lines: and ſo to form a draught, plan, or map. See MAP.---This operation is called *plotting*.

Plotting, then, is performed by means of two inſtruments, the protractor, and *plotting ſcale*.---By the firſt, the ſeveral angles obſerved in the field with a theodolite, or the like, and entered down in degrees in the field-book, are protracted on paper in their juſt quantity. See PROTRACTOR.

By the latter, the ſeveral diſtances meaſured with the chain, and entered down, in like manner in the field-book, are laid down in their juſt proportion. See PLOTTING *ſcale*.

Under thoſe two articles, are found, ſeverally, the uſe of thoſe reſpective inſtruments in the laying down of angles and diſtances: We ſhall here give their uſe conjointly, in the *plotting* of a field, ſurveyed either with the circumferentor, or theodolite.

Method of PLOTTING, *from the circumferentor*.---Suppoſe an incloſure, *e. gr.* ABCDEFGHK (*Tab. Survey. fig.* 21.) to have been ſurveyed: And the ſeveral angles, as taken by a circumferentor in going round the field, and the diſtances as meaſured by a chain, to be found entered in the field-book, as in the following table:

	Deg.	*Min.*	*Cha.*	*Link.*		*Deg.*	*Min.*	*Cha.*	*Link.*
A	191	00	10	75	F	324	30	7	54
B	297	00	6	83	G	98	30	7	54
C	216	30	7	82	H	71	00	7	78
D	325	00	6	96	K	161	30	8	22
E	12	24	9	71					

1. On a paper of the proper dimenſions, as LMNO, (*fig.* 31.) draw a number of parallel and equidiſtant lines, repreſenting meridians, expreſſed in dotted lines.---Their uſe is, to direct the poſition of the protractor; the diameter whereof muſt always be laid either upon one of them, or parallel thereto; the ſemicircular limb downwards for angles greater than 180°, and upwards for thoſe leſs than 180°.

The paper thus prepared; aſſume a point on ſome meridian, as A, whereon lay the centre of the protractor, and the diameter along the line.---Conſult the field-book for the firſt angle, *i. e.* for the degree cut by the needle at A, which the table gives you, 191°.

Now, ſince 191° is more than a ſemicircle or 180°, the ſemicircle of the protractor is to be laid downwards; where, keeping it to the point, with the *protracting-pin*, make a mark againſt 191; through which mark, from A, draw an indefinite line A*b*.

The firſt angle thus protracted, again conſult the book, for the length of the firſt line AB. This you find 10 chains 75 links. ---From a convenient ſcale therefore, on the *plotting ſcale*, take the extent of 10 chains, 75 links, between the compaſſes; and ſetting one point in A, mark where the other falls in the line A*b*, which ſuppoſe in B: draw therefore the full line AB, for the firſt ſide of the incloſure.

Proceed then to the ſecond angle: and laying the centre of the protractor on the point B, with the diameter as before directed, make a mark, as *c*, againſt 297°, the degrees cut at B; and draw the indefinite line *Bc*.---On this line, from the *plotting ſcale*, as before, ſet off the length of your ſecond line, *viz.* 6 chains, 83 links; which extending from B to the point C, draw the line BC, for the ſecond ſide.

Proceed now to the third angle or ſtation: Lay then the centre of the protractor, as before, on the point C; make a mark, as *d*, againſt the number of degrees cut at C, *viz.* 216. draw the indefinite line C*d.* and thereon ſet off the third diſtance, *viz.* 7 chains, 82 links; which terminating, *e. gr.* at D, draw the full line CD, for the third ſide.

Proceed now to the fourth angle, D; and laying the centre of the protractor, over the point D, againſt 325°, the degree cut by the needle, make a mark *e*; draw the dry line D*e*, and thereon ſet off the diſtance 6 chains, 96 links, which terminating in E, draw DE for the fourth line: And proceed to the fifth angle, *viz.* E.

Here the degrees cut by the needle being 10° 24′, (which is leſs than a ſemicircle) the centre of the protractor muſt be laid on the point E, and the diameter on the meridian, with the ſemicircular limb turned upwards.---In this ſituation make a mark, as before, againſt the number of degrees, *viz.* 12° 24′, cut by the needle at E; draw the dry line E*f*, on which ſet off the fifth diſtance, *viz.* 9 chains, 71 links; which extending from E to F, draw the full line EF, for the fifth ſide of the incloſure.

After the ſame manner proceeding orderly to the angles F, G, H, and K; placing the protractor, making marks againſt the reſpective degrees, drawing indefinite dry lines, and ſetting off the reſpective diſtances, as above, you will have the *plott* of the whole incloſure ABC, *&c.*

Such is the general method of *plotting* from this inſtrument; but it muſt be obſerved, that in this proceſs, the ſtationary lines, *i. e.* the lines wherein the circumferentor is placed to take the angles, and wherein the chain is run to meaſure the diſtances, are, properly, the lines here *plotted*.---When therefore, in ſurveying, the ſtationary lines are at any diſtance from the fence or boundaries of the field, *&c.* off-ſets are taken, *i. e.* the diſtance of the fence from the ſtationary line is meaſured at each ſtation; and even at intermediate places, if there prove any conſiderable bends in the fence, In *plotting*, therefore, the ſtationary lines being laid down, as above; the off-ſets muſt be laid down from them, *i. e.* perpendiculars of the proper lengths let fall at the proper places from the ſtationary lines. The extremes of which perpendiculars, being connected by lines, give the *plott* deſired.

If inſtead of going round the field, the angles and diſtances have been all taken from one ſtation; the proceſs of *plotting* is obvious, from the example above: All here required, being to protract, after the manner already deſcribed, the ſeveral angles and diſtances, taken from the ſame ſtationary point in the field; from the ſame point or centre on the paper.---The extremities of the lines thus determined, being then connected by lines, will give the *plot* required.

If the field have been ſurveyed from two ſtations; the ſtationary line, to be firſt *plotted*, as above; then, the angles and diſtances taken from each, to be laid down from each reſpectively.

The method of PLOTTING, *where the angles are taken by the theodolite*, i. e. *by back-ſight* and *fore-ſight*, (as it is called) is ſomewhat different.---To prepare the angles for *plotting*, the quantity of each muſt firſt be found; by ſubtracting the degrees of the fore-ſight and back-ſight from each other: The remainder is the angle to be protracted.. See THEODOLITE.

The uſe of parallel lines is here excluded, and inſtead of laying the protractor conſtantly on, or parallel to, meridians; its direction is varied at every angle.---The practice is thus:

Suppoſe the former incloſure to have been ſurveyed with the theodolite, after the manner of back-ſight and fore-ſight; and ſuppoſe the quantity of each angle to be found by ſubtraction. An indefinite line is drawn at random, as A K *fig.* 31; and on this the meaſured diſtance, *e. gr.* 8 chains, 22 links, ſet off, as in the former example: If now the quantity of the angle A have been found 140°, the diameter of the protractor is to be laid on the line A K, with the centre over A; and againſt the number of degrees, *viz.* 140, a mark made, an indeterminate dry line drawn through it, and the diſtance of the line A B laid down from the ſcale thereupon.

Thus we gain the point B; upon which laying the centre of the protractor, the diameter, along the line A B, the angle B is protracted, by making a mark againſt its number of degrees, drawing a dry line, and ſetting off the diſtance B C, as before.

Then proceed to C; laying the diameter of the protractor on B C, the centre on C protracts the angle C, and draw the line C D: Thus proceeding, orderly, to all the angles and ſides, you will have the *plot* of the whole incloſure A B C, *&c.* as before.

PLOTTING *ſcale*, a mathematical inſtrument uſually of wood, ſometimes of braſs, or other matter; and either a foot, or half a foot long. See SCALE.

It is denominated from its uſe in *plotting* of grounds, *&c.* See PLOTTING.

On one ſide of the inſtrument (repreſented *Tab. Survey*, *fig.* 32.) are ſeven ſeveral ſcales, or lines, divided into equal parts.---The firſt diviſion of the firſt ſcale is ſubdivided into ten equal parts, to which is prefixed the number 10, ſignifying that 10 of thoſe ſubdiviſions make an inch; or that the diviſions of that ſcale are decimals of inches.

The firſt diviſion of the ſecond ſcale is likewiſe ſubdivided into 10, to which is prefixed the number 16, denoting that 16 of thoſe ſubdiviſions make an inch.---The firſt diviſion of the third ſcale is ſubdivided in like manner into 10, to which is prefixed the number 20.---To that of the fourth ſcale is prefixed the number 24; to that of the fifth 32; that of the ſixth 40; that of the ſeventh 48; denoting the number of ſubdiviſions equal to an inch, in each, reſpectively.

The two laſt ſcales are broken off before the end, to give room for two lines of chords marked by the letters *c c.* See CHORD.

On the back-ſide of the inſtrument is a diagonal ſcale, the firſt of whoſe diviſions, which is an inch long, if the ſcale be a foot, and half an inch, if half a foot, is ſubdivided, diagonally, into 100 equal parts.---At the other end of the ſcale is another diagonal ſubdiviſion, of half the length of the former, into the ſame number of parts, *viz.* 100. See DIAGONAL.

Next the ſcales, is a line divided into hundredth parts of a foot, numbered 10, 20, 30, *&c.* and a line of inches ſubdivided into tenth parts, marked 1, 2, 3, *&c.*

ſe of the PLOTTING *ſcale*.---1. *Any diſtance being meaſured with the chain, to lay it down on paper*.---Suppoſe the diſtance to be 6 chains, 50 links. Draw an indefinite line; ſet one foot of the compaſſes at figure 6 on the ſcale, *e. gr.* the ſcale of 20 in an inch, and extend the other to 5 of the ſubdiviſions, for the 50 links: This diſtance being transferred to the line, will exhibit the 6 chains, 50 links, required.

If it be deſired to have 6 chains, 50 links, take up more or leſs ſpace, take them off from a greater or leſſer ſcale, *i. e.* from a ſcale that has more or fewer diviſions in an inch.

To find the chains and links contained in a right line, e. gr. *that uſt drawn, according to any ſcale*, e. gr. that of 20 in an inch.---Take the length of the line in the compaſſes, and applying it to he given ſcale, you will find it extend from the number 6 f the great diviſions, to 5 of the ſmall ones: hence the given ine contains 6 chains, 50 links.

LOUGH, or PLOW, in agriculture, a popular machine for he breaking up of ground; conſiſting of a train or carriage, ith two large irons; the one pointed, the other edged; ſerving to cut and open the ground, and draw furrows therein. See AGRICULTURE, PLOWING, *&c.*

The parts of the plough are, the *plough-beam*, the *handle*, *tail*, *ſtilts*, *hales* or *ſtaves*, *neck* or *ſhare-beam*, *earth-board*, *mould-board*, *breaſt-board*, *furrow-board*, *ſhield-board*, &c. the *ſheath*, *ſhare-iron*, *coulter*, *plough-pin* and *collar-links*, *plough-pillow* and *bolſter*, and ſometimes *wheels*.

The ſtructure and contrivance of the *plough* is various in various kinds of grounds: A particular deſcription of all would be endleſs.---The moſt uſual are the

Double-wheeled PLOUGH, uſed throughout Hertfordſhire, *&c.* ---This is apparently one of the beſt, ſtrongeſt, and of eaſieſt draught, of any; and ſuits all kinds of lands, except miry clays in winter; which are apt to clog the wheels, which are about 18 or 20 inches high, and the furrow-wheel ſometimes larger than the other.

Lincolnſhire PLOUGH is ſingular in its ſhape, and very good for marſh or fenny lands, ſubject to weeds and ſedges, but free from ſtones; by reaſon of its coulter, and the largeneſs of its ſhare, which is often a foot broad, and very ſharp.

Suſſex ſingle-wheel PLOUGH is of a clumſy make, very wide in the breech; ſo that the draught of it muſt be very hard.---It is chiefly remarkable for its ſhape.

Caxton or *trenching* PLOUGH, invented to cut drains about Caxton in Cambridgeſhire, in ſtiff miry clay grounds.---It is larger than ordinary, and has two coulters, one before the other; which bending inwards, cut each ſide of the trench.---The mould-board is three times the uſual length, to caſt the turf a great way off from the trench.

It cuts a trench a foot wide at bottom, a foot and half at top, and a foot deep; and is drawn with twenty horſes.

Dray PLOUGH is the moſt common.---It is made without either wheel or foot; of an eaſy draught; beſt in winter, for miry clays, where the land is ſoft.

Spaniſh PLOUGH varies much in its make from our common *ploughs*. It is a kind of ſemicircle, pitched on one end, with the convex ſide turned to the plowman, and the concave ſide (a little inclined) to the horſe. Its tail is in a right line with the ſhare.

With this *plough* and one horſe the Spaniards plough two or three acres of their light ground in a day.

Colcheſter PLOUGH is a fine light-wheel *plough*, with which two horſes will cut up two acres of their light land in a day.---It is peculiar for its iron earth-board made rounding, which turns the turf better than any other *plough* yet invented.

One-wheel PLOUGH may be uſed in almoſt any kind of ground; being lighter and nimbler than other wheel *ploughs*.

Double PLOUGH. In this, there is one *plough* fixed to the ſide of another; ſo that by means of four horſes and two men a double furrow is plowed, the one by the ſide of the other.

Add to theſe another kind of *double plough*, whereby two furrows are ploughed at once, one under another, by which the earth is ſtirred up 12 or 14 inches depth, which is of great benefit.

PLOUGH, among book-binders, is a tool wherewith they cut the leaves of books ſmooth. See BOOK-BINDING.

PLOUGH, or *plow*, in navigation, an ancient mathematical inſtrument, made of box, or pear-tree, uſed to take the height of the ſun or ſtars, in order to find the latitude. See HEIGHT, LATITUDE, *&c.*

It admits of the degrees to be very large, and is much eſteemed by many artiſts; though now generally diſuſed among us. See ALTITUDE.

PLOW-LAND, or *plough-land*, *carucata terræ*, in our ancient cuſtoms the ſame with *hida*, or, a hide of land. See HIDE.

In a more modern ſenſe, as uſed in reſpect of repairing highways, a *plough-land* is eſtimated at 50 *s. per annum.*

PLOW-ALMS, a duty anciently of a penny, paid to the church for every *plough-land*, or hide of land. See HIDE.

De qualibet carucata juncta inter paſcha & pentecoſten unum denarium, qui dicitur plou-almes. *Monaſt. Aug.*

PLOUGH-MONDAY, the next monday after twelfth-day, when the ploughmen in the north-country draw a *plough* from door to door, and beg *plough* money to drink.

PLOUGHING, or PLOWING, one of the principal operations in agriculture, performed with the *plough*. See PLOUGH and TILLING.

Ploughing is principally either that of *lays*, or of *fallows*.

PLOUGHING *of lays* is the firſt cutting up of graſs-ground for corn; which is uſually done in January, when the earth is wet, and the turf tough, ſo as to hold turning without breaking; in which the perfection of this kind of ploughing conſiſts.

PLOUGHING *of fallows*, called alſo *fallowing*, is a preparing of land by *ploughing*, long before it be *ploughed* for ſeed.---This is a conſiderable benefit to lands, few of which will bear above two crops ſucceſſively without ſuch reſpite. Hence landlords uſe to bind their tenants to it once in three years.

When this is done twice, it is called *twifallowing*; when thrice, *trifallowing*, &c.

The firſt is as ſoon as the huſbandman has done ſowing his corn; and this is to be very ſhallow, well turned, and clapped cloſe together.---The ſecond is in June, when they go the full depth. ---The third, about the beginning of Auguſt.---If it riſe full of clods, they harrow it down; but ſoon ſtrick-ſize, or *plough* it up again into ridges.

In Staffordſhire, beſide the three ſummer fallowings, they uſually give their land a winter fallowing. Pliny commends the *ploughing* of lands four times; and ſo does Virgil:

Illa ſeges demum votis reſpondet avari
Agricolæ, bis quæ ſolem, bis frigora ſenſit.
Georg. lib. 1.

This is an ancient piece of husbandry; Xenophon, Pindar, and Virgil recommend it: witneſs thoſe verſes of Virgil:

Alternis idem tonſas, ceſſare novaleis,
Et ſegnem patiere ſitu dureſcere campum.
Georg lib. 1.

PLUG, a large wooden peg wherewith to ſtop the bottom of a ciſtern, caſk, pipe, or the like.

PLUMAGE, the feathers, or covering of birds.---*For the mechaniſm* whereof, ſee FEATHER.

PLUMAGE, in falconry, is particularly underſtood of the feathers under a hawk's wing. See HAWK.

The falconers alſo give their hawks parcels of ſmall feathers to make them caſt; and theſe they call *plumage*. See CASTING.

PLUMB, or **PLUM**, in matters of ſpicery. See CURRANS and RAISINS.

PLUMB-LINE, a term among artificers for a *perpendicular line*. See PERPENDICULAR.

It is thus called, becauſe uſually deſcribed by means of a plummet. See PLUMMET.

PLUMBAGO, in metallurgy, a metalline recrement, ſeparated in the purification of gold or ſilver with lead, and ſticking to the ſides of the furnace. See REFINING, GOLD, SILVER, *&c.*

This is otherwiſe called *molybdæna*; and has the ſame virtue with litharge. See LITHARGE.

PLUMBAGO ſeems alſo to have been uſed, among the ancients, for black lead, uſed in making pencils for deſigning, *&c.* See *black* LEAD.

Pomet adds, that *plumbago* was alſo the ſea-lead, *plumbum marinum* of the ancients; who, he notes, took that drug for a production of the ſea, not a mineral, as it really is; but this is ſcarce credible.

PLUMBERY*, the art of caſting, preparing, and working lead; and of uſing it in buildings, *&c.* See LEAD.

* The word is formed of the Latin *plumbum*, lead.

The lead uſed in *plumbery* is furniſhed from the lead-works in large ingots, or blocks, called pigs of lead, ordinarily weighing about an hundred pounds a-piece.

As this lead melts very eaſily, it is eaſy to caſt figures hereof, of any kind, by running it into moulds of braſs, clay, plaſter, *&c.* See FOUNDERY and STATUE.

But the chief article in *plumbery*, is the ſheets, and pipes of lead.---It is theſe make the baſis of the plumbers work in building; the proceſs of theſe, therefore, we ſhall give a deſcription of.

Method of caſting large ſheets of lead.---The lead deſtined for this uſe is melted in a large caldron or furnace, uſually built with free ſtone and earth, fortified on the outſide with a maſſive of ſhards and plaſter. At the bottom hereof is a place ſunk lower than the reſt, wherein is diſpoſed an iron pot, or pan, to receive what may remain of the metal after the ſheet is run. The furnace is ſo raiſed above the area of the floor, as that the iron pot juſt reſts thereon.

To uſe the furnace, they heat it with wood laid within it; that done, they throw in the lead, pell-mell with the burning coals, to melt.

Near the furnace is the table, or mould, whereon the lead is to be caſt.---It conſiſts of large pieces of wood, well jointed, and bound with bars of iron at the ends. Around it runs a frame, conſiſting of a ledge or border of wood two or three inches thick, and one or two high from the table, called the *ſharps*. The ordinary width of the tables is from three to four foot; and their length from 18 to 20 foot.

The table is covered with fine ſand; prepared, by moiſtening it with a watering pot, then working it with a ſtick; and at laſt, to render it ſmooth and even, beating it flat with a mallet, and plaining it with a ſlip of braſs or wood.

Over the table is a ſtrike or rake of wood, which bears and plays on the edges of the frame by means of a notch cut in either end thereof; and ſo placed, as that between it and the ſand is a ſpace proportionable to the intended thickneſs of the ſheet.---The uſe of this ſtrike is to drive the matter, while yet liquid, to the extremity of the mould.

A-top of the table is a triangular iron peel or ſhovel, bearing, before, on the edge of the table itſelf, and behind, on a treſtle ſomewhat lower than the table.---Its uſe is in conveying the metal into the mould; and the deſign of its oblique diſpoſition is, that it may by that means be able to retain the metal, and keep it from running off at the fore-ſide, where it has no ledge.---Some of theſe peels are big enough to hold fifteen or ſixteen hundred weight of lead, and even more.

Things being thus diſpoſed, with a large iron ladle they take out the melted lead, coals and all, out of the furnace; and with this, mixed as it is, fill the iron peel.---When full, they take out the coals, and clear the lead with another iron ſpoon pierced after the manner of a ſcummer.

This done, they hoiſt up the lower part of the peel by its handle; upon which the liquid matter running off, and ſpreading itſelf on the mould, the plumber conducts and drives it to the extremity of the table by means of the ſtrike, which the workman paſſes along the ledges, and thus renders the ſheet of an equal thickneſs.

The ſheets thus caſt, there remains nothing but to edge them, *i. e.* to planiſh the edges on both ſides, in order to render them ſmooth and ſtrait.

Method of caſting thin ſheets of lead.---The table or mould here uſed is of a length and breadth at diſcretion, only ledged on one ſide.---Inſtead of ſand they cover it with a piece of woollen ſtuff, nailed down at the two ends to keep it tight; and over this lay a very fine linen cloth.---The feet of the table are uneven, ſo that it does not ſtand horizontal, but moderately inclined.

Great regard is had to the lead while melting, that it have the juſt degree of heat, ſo as it may run well, yet not burn the linen.---This they judge of by a piece of paper; for if the paper take fire in the liquid lead, it is too hot; and if it be not ſhrunk and ſcorched a little, it is not hot enough.

Being then in its juſt degree, they have a ſtrike, but different from that deſcribed in the former article; as ſerving both for peel and ſtrike, to contain, and to conduct, the liquid lead.---It is, in effect, a wooden caſe without any bottom, only cloſed on three ſides. It is pretty high behind, but the two ſides, like two acute angles, ſtill diminiſh to the tip, from the place where they are joined to the third or middle piece, where they are of the ſame height therewith, *viz.* 7 or 8 inches high.---The width of the middle makes that of the ſtrike, which again makes that of the ſheet to be caſt.

The ſtrike is placed a-top of the table, which is before covered in that part, with a paſteboard that ſerves as a bottom to the caſe, and prevents the linen from being burnt while the liquid is pouring in. The ſtrike is ſo diſpoſed on the table, as that the higheſt part looks to the lower end of the table, and the two ſloping ſides to the higher end.

The ſtrike is now filled with lead according to the quantity to be uſed; which done, two men, one at each ſide the table, let the ſtrike deſcend down the table, or elſe draw it down with a velocity greater or leſs, as the ſheet is to be more or leſs thick; the thickneſs of the ſheet ſtill depending on the promptitude wherewith the ſtrike ſlides down the inclining mould.

Theſe fine ſmooth ſheets of lead are ſometimes uſed between the joints of large ſtones in great buildings, *&c.*

Method of caſting pipes, without ſoldering.---To make theſe pipes, they have a kind of furnace, conſiſting of a large iron furnace or caldron, ſupported on a pretty high iron ſtand. The caldron is encompaſſed with a maſſive of bricks and loam; only leaving a mouth or paſſage for the conveyance of wood underneath, and lighting the fire; and another little aperture behind, to ſerve as a vent-hole.

In this furnace they melt the lead, after firſt heating it with a fire underneath: To forward the fuſion, they put in burning faggots along with the metal.---The metal is ſkimmed and laden off with the inſtruments mentioned above.

Near the furnace is a bench, furniſhed at one end with a little mill, with arms or levers to turn it withal.---A ſtrong girt, armed with an iron hook at one extremity, is faſtened by the other to the axis of the mill, around which it turns when in motion. On this bench the moulds of the pipes are placed horizontally, and the mill and the girt ſerve to draw out the iron core after the pipe is caſt.

The moulds of theſe tubes are of braſs, and conſiſt of two pieces, which open and ſhut by means of hooks and hinges; their inner calliber, or diameter, is according to the ſize of the pipe to be made; their length is uſually two foot and a half.

In the middle is placed a core, or round piece of braſs or iron, ſomewhat longer than the mould, and of the thickneſs of the inner diameter of the pipe.---This core is paſſed through two copper rundles, one at each end of the mould, which they ſerve to cloſe; and to theſe is joined a little copper tube about two inches long, and of the thickneſs the leaden pipe is intended to be of.---By means of theſe tubes the core is retained in the middle of the cavity of the mould.

The core being in the mould, with the rundles at its two ends, and the lead melted in the furnace; they take it up in a ladle, and pour it into the mould by a little aperture at one end, made in form of a funnel.

When the mould is full, and the metal cold, they paſs the hook of the girt into a hole at the end of the core; and turning the mill with the hand, draw out the core.---They then open the mould, and take out the pipe.

If they deſire to have the pipe lengthened; they put one end thereof in the lower end of the mould, and paſs the end of the core into it; then ſhut the mould again, and apply its rundle and tube as before, the pipe juſt caſt ſerving for rundle, *&c.* at the other end.

Things thus replaced, they pour in freſh metal into the mould; thus repeating the operation, till they have got a pipe of the length required.

Pipes made of ſheet-lead ſoldered.---The *plumbers* have wooden cylinders, or rollers, of the length and thickneſs required; and on theſe they form their pipes, by wrapping the ſheet around them; ſoldering up the edges all along, thus:---After grating the lead well with a grater, they rub reſin over the part thus grated;

Tab PNEUMATICKS.

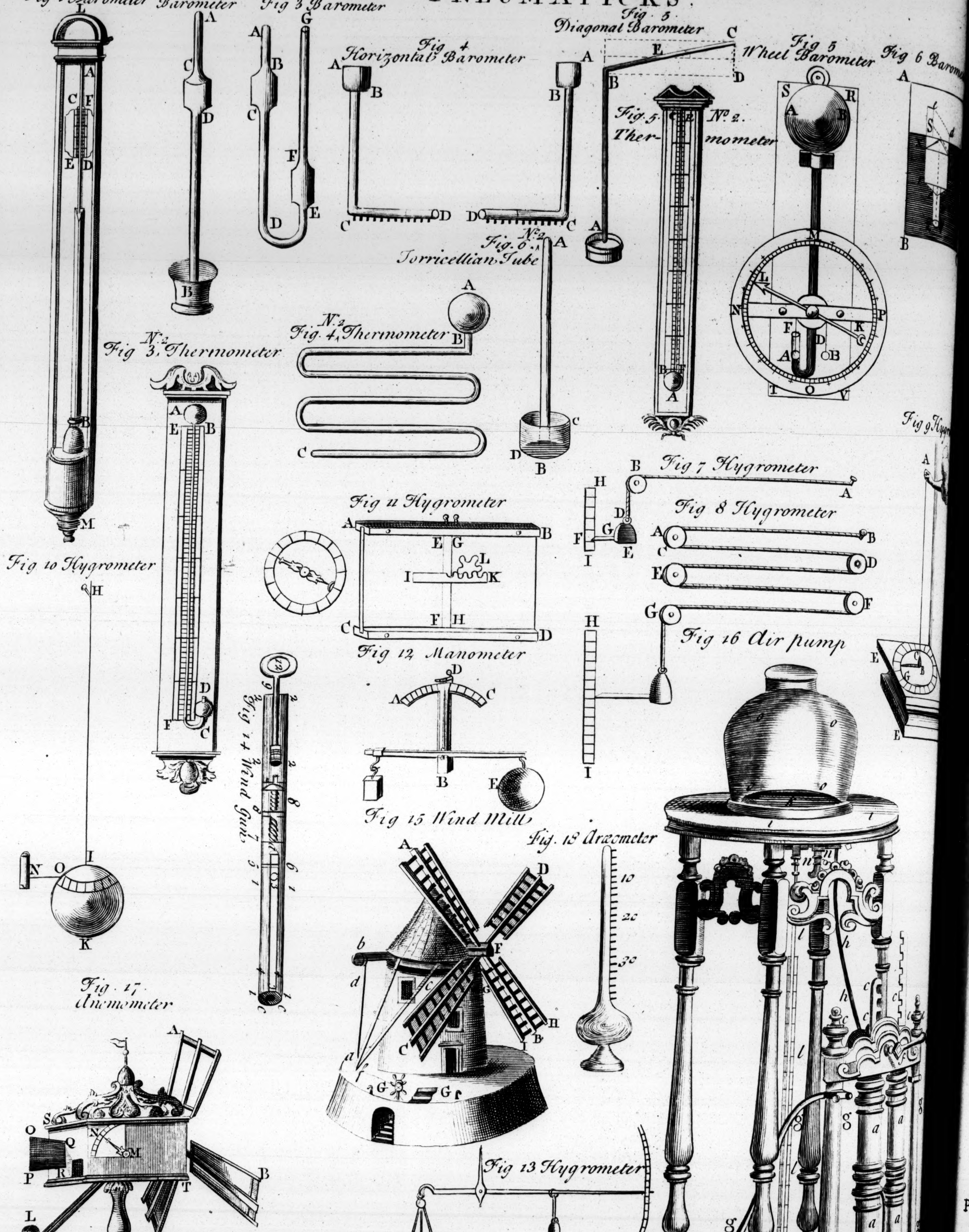
Fig 1 Barometer
Fig 2 Barometer
Fig 3 Barometer
Fig 4 Horizontal Barometer
Fig. 5 Diagonal Barometer
Fig 5 Wheel Barometer
Fig 6 Barom
Fig. 5. No. 2. Thermometer
Fig. 6. No. 2. Torricellian Tube
Fig. 4. No. 2. Thermometer
Fig 3. No. 2. Thermometer
Fig 7 Hygrometer
Fig 8 Hygrometer
Fig 9 Hygr
Fig 10 Hygrometer
Fig 11 Hygrometer
Fig 12 Manometer
Fig 13 Hygrometer
Fig 14 Wind Gun
Fig 15 Wind Mill
Fig 16 Air pump
Fig. 17. Anemometer
Fig. 18 Aræometer
Fig. 19 Aræometer
Fig. 20. Freezing
Fig. 21. Barometer

then pour on it ſome ſolder melted in a ladle, or elſe melt it with a hot ſoldering iron, ſmeering thoſe parts where they would not have the ſolder catch, with chalk, or the ſoil of the hand.

The ſolder which the *plumbers* uſe, is a mixture of two pounds of lead with one of tin. See SOLDER; ſee alſo TIN and TINNING.

PLUMBUM. See the article LEAD.

PLUMBUM *uſtum*. See *Burnt* LEAD.

PLUME-ALUM, *alumen plumoſum*. See ALUM.

PLUME, a ſet or bunch of oſtrich-feathers, pulled out of the tail and wings, and made up to ſerve for ornament in funerals, &c.

PLUME *, in falconry, is the general colour or mixture of the feathers of a hawk, which ſhews her conſtitution. See HAWK.

* The word is formed of the Latin *pluma*, feather.

When a hawk ſeizes her prey, and diſmantles it of its feathers, ſhe is ſaid to *plume it*.

PLUME, or PLUMULE, in botany, a little member of the grain or ſeed of a plant; being that which in the growth of the plant becomes the ſtem, or trunk thereof. See SEED and STEM.

The *plume* is incloſed in a cavity formed in the lobes on purpoſe for its reception.—It is almoſt of the ſame colour with the radicle, or little root, on the baſis whereof it is ſuſtained. See RADICLE.

The *plume* is the firſt part that appears out of the earth; as, in effect, it is the part that firſt appears out of the membrane or cover of the ſeed; there being a hole over-againſt it in the membrane, thro' which it makes its eſcape.

It is the appearance of the *plume* without the cavity of the grain, that makes what we call the *bud* or *germ* of a plant. See GERMINATION; ſee alſo PLANT.

The *plume* is ſo called, becauſe conſiſting of ſeveral pieces bound together in manner of a feather.—In corn, the *plume* is that which, after the radicle is ſhot forth, ſhoots out towards the ſmaller end of the ſeed; whence ſome call it the *acroſpire*. See ACROSPIRE, MALT, &c.

PLUMMET, PLUMB-RULE, or PLUMB-LINE, an inſtrument uſed by maſons, carpenters, &c. to draw perpendiculars withal; in order to judge whether walls, &c. be upright, planes horizontal, and the like. See PERPENDICULAR.

It is thus called from a piece of lead, *plumbum*, faſtened to the end of a thread or cord, which uſually conſtitutes this inſtrument.

Sometimes the ſtring deſcends along a ruler of wood or metal raiſed perpendicularly on another; in which caſe it becomes a level. See LEVEL.

At ſea the *plummet* is uſed by the pilot to ſound the depth of the ſea. See SOUNDING.

PLURAL, PLURALIS, in grammar, a particular inflexion of nouns and verbs, whereby they come to expreſs a plurality, or number, of things. See NUMBER.

The Latins, Engliſh, &c. have only two numbers, *ſingular* and *plural*; the Greeks and Hebrews have three, *ſingular*, *dual*, and *plural*. See DUAL.

In Latin, &c. both nouns and verbs have uſually diſtinct terminations to their different numbers; in Engliſh, nouns ſubſtantives uſually become *plural* by the addition of an *s* or *es* to the ſingular. See SINGULAR.

Nouns adjective are the ſame in both numbers; and in verbs, the number is diſtinguiſhed by that of the pronouns. See NUMBER, ADJECTIVE, VERB, PRONOUN, &c.

PLURALITY, PLURALITAS, a diſcrete quantity, conſiſting of two, or a greater number. See UNITY.

A *plurality of worlds* is a thing which Mr. Huygens has endeavoured to prove in his *Coſmotheoros*.—The ſame is likewiſe contended for in a very pretty treatiſe of M. Fontenelle under that title.

See the chief argument for a *plurality* of worlds, under the articles MOON, PLANET, and EARTH.

The greateſt abſurdity in the pagan theology, is, the *plurality of Gods*. See GOD.

PLURALITY *of benefices* or *livings*, is where the ſame clerk is poſſeſſed of two or more ſpiritual preferments, with cure of ſouls. See BENEFICE.

Plurality of benefices is a thing tolerated in the church, but never approved of. See BENEFICE.

It was the ſmallneſs of ſome benefices that firſt gave occaſion to *pluralities*; for an eccleſiaſtic not being able to ſubſiſt on a ſingle one, was allowed to hold two: at length the number increaſed without bounds.

The abuſe was endeavoured to be remedied at the council of Lateran under Alexander III. and Innocent III. when the holding more than one benefice was expreſly forbid by a canon; but the ſame canon granting the pope a power to diſpenſe with it in favour of perſons of diſtinguiſhed merit, there were ſo many found a title to this merit, that the prohibition became uſeleſs.

In Germany the pope grants diſpenſations for poſſeſſing a *plurality of benefices*, on pretence that the eccleſiaſtic princes there need large revenues to bear up againſt the proteſtant princes.

PLUS, in algebra, a term commonly uſed for *majus*, or *magis*, more.

Its character is $+$. See CHARACTER.

Thus $4+10=14$, is read, four, *plus*, or more, 10, is equal to 14. See QUANTITY; ſee alſo ADDITION, &c.

PLUSH, in commerce, &c. a kind of ſtuff having a ſort of velvet knap or ſhag on one ſide; compoſed regularly of a woof of a ſingle woolen thread, and a double warp, the one wool, of two threads twiſted, the other goats or camels hair; tho' there are alſo *pluſhes* intirely of worſted, and others compoſed wholly of hair.

Pluſh is manufactured like velvet, on a loom with three treadles.—Two of theſe ſeparate and depreſs the woolen warp, and the third raiſes the hair-warp; upon which the workman throwing the ſhuttle, paſſes the woof between the woolen and hair-warp; and, afterwards, laying a braſs broach, or needle, under that of the hair, he cuts it thereon with a knife deſtined for that uſe, conducting the knife on the broach, which is made a little hollow, all its length; and thus gives the ſurface of the *pluſh* an appearance of velvet. See VELVET.

Some aſcribe the invention of *pluſh* to the Engliſh; others ſay, it was firſt made in Holland, and particularly at Haerlem.—Be this as it will; it is certain, the French are the people who make the moſt of it; there being ſeveral very conſiderable *pluſh* manufactures at Amiens, Abbeville, and Compeigne.

There are other kinds of *pluſh*, all of ſilk; ſome of which have a pretty long knap on one ſide, ſome on both.

PLUSH, among botaniſts, is a name given to the middle of roſes, anemonies, &c. called alſo *thrum*, or *thrummy heads*; by others, *hairy heads*, *buttons*, *boſs*, *tuft*, or *wort*.

PLUVIAL, PLUVIALE, anciently ſignified a hood, or cloak, which eccleſiaſtics, chiefly religious, wore in the country, to ſhelter themſelves from the rain; by the Latins called *pluvialis lacerna*.

The word is now uſed in the Romiſh church, for a large hood wore by the chantor and ſub-deacon, at maſs and veſpers, &c.—It covers the whole man, and is fixed before with two claſps.

PLUVIUS, in antiquity, an attribute of Jupiter; implying him the author of rain; *q. d.* he that ſends rain. See RAIN.

Among the baſſo relievo's of the *Antonine* column, in the place where the miracle of the thundering legion is repreſented, we ſee a flying man in the air, his arms ſpread out, and with a very long beard, which ſeems to diſſolve into rain.—The learned take this to be a repreſentation of Jupiter *Pluvius*. See THUNDERING *legion*.

PNEUMATICS, PNEUMATICE, called alſo PNEUMATOLOGY and PNEUMATOSOPHY, the doctrine and contemplation of ſpirits, and ſpiritual ſubſtances. See SPIRIT.

The word is formed of the Greek, πνευμα, *ſpiritus*, breath; whence, from the different acceptations of that word, either as an incorporeal ſubſtance, or as air, there ariſe two ſorts of *pneumatics*.

PNEUMATICS, in the ſchools, is frequently uſed for the doctrine of ſpirits; as GOD, angels, and the human mind. See SPIRIT, GOD, ANGEL, SOUL, &c.

In this ſenſe *pneumatics* coincide with what we otherwiſe call *metaphyſics*. See METAPHYSICS.

PNEUMATICS is more commonly uſed among us, for the doctrine of the air; or the laws wherein that fluid is condenſed, rarefied, gravitates, &c. See AIR.

Some make *pneumatics* a branch of mechanics; becauſe it conſiders the air in motion, with the effects thereof.—It is certainly a ſiſter of hydroſtatics; the one conſidering air in the ſame manner that the other does water. See MECHANICS and HYDROSTATICS.

Wolfius, in lieu of *pneumatics*, uſes the word *aerometry*, *q. d.* the art of *meaſuring the air*. See AEROMETRY.

The doctrine and laws of *pneumatics* will be found under the articles, AIR, ATMOSPHERE, ELASTICITY, GRAVITY, COMPRESSION, CONDENSATION, RAREFACTION, EXPANSION, &c.

PNEUMATIC *engine*, *machina* or *antlia* PNEUMATICA, denotes the *air-pump*. See AIR-PUMP.

PNEUMATOCELE *, πνευματοκηλη, in medicine, a flatulent or windy hernia; or a tumor of the membranes of the ſcrotum or navel, proceeding from pent up vapours, and attended with a tenſive pain. See HERNIA.

* The word is formed from the Greek πνευμα, wind, and κηλη, *tumor*.

Sometimes one of the teſtes only is thus inflated, ſometimes both, and ſometimes likewiſe the ſcrotum. See TESTICLE.

This *hernia* is of all others the lighteſt, and leaſt dangerous.—It is cured by diſcutients internally, and fomentations and cataplaſms externally.

PNEMATOMACHI, Πνευματομαχοι, ancient heretics, ſo called, becauſe they oppoſed the divinity of the Holy Spirit; placing him in the number of creatures. See SEMI-ARIANS.

PNEUMATOSIS, πνευματωσις, a term which ſome authors uſe for the generation or formation of animal ſpirits in the brain. See SPIRIT and BRAIN.

PNEUMONICS *, πνευμονικα, medicines proper in diſeaſes of the lungs, where reſpiration is affected. See LUNGS, RESPIRATION, &c.

* The word is formed from the Greek, πνευμων, lungs, or πνευμα, *ſpiritus*, breath.

Of this number are ſulphur, lung-wort, hyſſop, ground-ivy, and colt's-foot; uſed in phthiſes, aſthma's, peripneumonies, pleuriſies, &c. See ASTHMATIC, ANTIPTHISIC, &c.

POCK. See the article POX.

POCKET *of wool*, is half a ſack. See SACK *of wool.*

POD, the ſhell or husk of any pulſe. See SILIQUA.

PODAGRA*, ποδαγρα, in medicine, the gout in the feet. See GOUT.

*** It is thus called from the Greek, πȣς, *foot*, and αγρα, *captura*, ſeizure.**

PODAGRA *dentium*, ſometimes, tho' with impropriety enough, is uſed for the *tooth-ach*. See ODONTALGIA, and TOOTH-ACH.

PODESTA, or POTESTA, a magiſtrate, or officer of juſtice and policy, in a free city.

The name is originally Italian, *podeſta*; and is chiefly applied to certain magiſtrates of Venice and Genoa, whoſe function is to adminiſter juſtice in thoſe republics.

The *podeſta* in Venice correſponds to the prætor in ancient Rome, though appeals lie from his deciſions, to the new auditors, or the new civil quaranty. See QUARANTIA.

PODEX, in anatomy, *&c.* the ſame with *anus*, or *fundament*. See ANUS.

PODOMETER, or PEDOMETER. See PEDOMETER.

POEM, POEMA, ποιημα, a compoſition in verſe, of a due length and meaſure. See VERSE and POETRY.

POEMS, *carmina*, are of various kinds; ſome denominated from the perſons who firſt invented, or moſt uſed them; as the *Archilochian*, *Sapphic*, &c.---Others from their compoſition, as the *monocolon*, conſiſting of one kind of verſe; *dicolon*, of two; and *tricolon*, of three kinds.---Others from their intireneſs or deficiency; as *brachycatalectus*, which wants two ſyllables; *catalectus*, which wants one; *acatalectus*, none; and *hypercatalectus*, which has a ſyllable too much, which if cut off at the beginning of the next verſe, the verſe is ſaid to be *hypermeter*. See ACATALECTIC, *&c.*---Others are denominated from the ſubject-matter; as the *apobaterion*, *epibaterion*, *epinicion*, *epithalamium*, *genethliac*, *propemptic*, *elegiac*, *ſatiric*, *epicedion*, *epitaph*, *threnas* or *lamentation*, *encomiaſtic*, *panegyric*, *ſoteric*, *lyric*, *paſtoral*, &c.---Others from the manner of narration; as *exegetic*, which relates a thing under the author's own perſon, *dramatic*, and *epic*. See each under its proper head, EPIC, DRAMA, *&c.*---To theſe may be added, odes, eclogues, idylliums. See ODE, *&c.*

To this head muſt alſo be referred ſeveral other poetical compoſitions of a leſs ſerious kind, which the idly-labouring vein of little poets has produced into the world, and which, though frequently admired by perſons of a low taſte, are juſtly ranked by Mr. Addiſon in the claſs of falſe wit.---Such are the acroſtic, enigma, anagram, cento, chronogram, proteus, echo, *&c.* See ACROSTIC, ANAGRAM, *&c.*

POESY*, POESIS. See the article POETRY.

*** The word is formed from the Greek ποιησις, of ποιεω, *facio*, *fabricor*, *fingo*, *I make*, *I frame*, *I invent*.**

Hence alchymy, or the art of making gold, was anciently called *poeſy*, *chryſopoeſy*, &c. See ALCHYMY, *&c.*

POET, POETA, an author who compoſes poems, or diſcourſes in verſe. See POETRY and VERSE.

Cicero relates it as a ſaying of Democritus and Plato, that there could be no good poet *ſine afflatu furoris*, without a tincture of madneſs; and Ariſtotle calls *poets* expreſsly, *maniaci*, maniacs, madmen. See ENTHUSIASM.

M. Spanheim tells us, that the Arab authors are more poetically given, than thoſe of any other people; and adds, that there are more verſes among the Arabians, than among all the other nations put together.

The Greek word ποιητης, *poet*, ſignifies *maker*, from ποιεω, *facio*, *I make*; whence the *poets* were anciently alſo called *fatiſts*.---The name they were properly denoted by among the Romans, was *vates*, which ſignifies *prophet*. See PROPHET.

By a law of the emperor Philip, inſerted in the *code*, *l.* 10. *t.* 52. *poets* are expreſsly excluded from the immunities granted the profeſſors of all other ſciences.

Homer, Virgil, Milton, and Taſſo, are the chief, almoſt the only epic *poets*.---Sophocles, Euripides, Shakeſpeare, Otway, Corneille, and Racine, the beſt tragic *poets*.---Ariſtophanes, Menander, Plautus, Terence, Fletcher, Johnſon, Moliere, *&c.* the chief comic *poets*.---Horace, Cowley, and Malherbe, excelled as lyric *poets*.---Juvenal, Perſius, Regnier, Boileau, Dryden, and Oldham, as ſatiric *poets*. See EPIC, TRAGIC, COMIC, *&c.*

POETICAL, ποιητικος, ſomething that relates to poetry or poets. See POETRY and POET.

In this ſenſe we ſay, a *poetical* genius, a *poetical* phraſe, *poetical* licence, *poetical* fury, *&c.*

Moſt languages have their *poetical* words, which are never uſed on other occaſions.--Theſe prove of great advantage to the poets; who are hereby enabled to raiſe the ſtyle and diction into the *poetical* character, with the greater eaſe.

The French lament the want of a ſet of ſuch words in their language; for want whereof their poetry appears in a too familiar garb, not ſufficiently diſtinguiſhed from the common language. It is too reſerved; not being allowed any boldneſſes, or flights, but what might paſs in proſe. To this, in good meaſure, is attributed the little ſucceſs their authors have met withal in the epic way. See FRENCH, EPIC, *&c.*

POETICAL *juſtice*, is chiefly uſed in reſpect of the drama, to denote a diſtribution of rewards and puniſhments to the ſeveral perſons, at the cataſtrophe or cloſe of the piece, anſwerable to the ſeveral characters they have appeared in. See CHARACTER.

Whatever difficulties and diſtreſſes the virtuous and innocent may labour under, and how proſperouſly ſoever it may go with the wicked, in the courſe of the piece; the poet uſually takes care to give each of them their due ere he parts with them.---It is controverted whether this piece of juſtice be indiſpenſable, and whether it may not be allowed to leave virtue oppreſſed, and vice flouriſhing. See TRAGEDY, *&c.*

POETICAL *riſing* and *ſetting*. See RISING and SETTING.

The ancient poets, referring the riſing, *&c.* of the ſtars to that of the ſun, make three kinds of riſing and ſetting, *viz.* *coſmical*, *acronical*, and *heliacal*. See each under its proper article, COSMICAL, *&c.*

POETICS, POETICE, ποιητικη, the doctrine of poetry, or the laws and rules of conducting pieces or compoſitions of poetry. See POETRY.

Ariſtotle's *poetics* is a work infinitely valued; and M. Dacier's comment thereon is one of his beſt pieces.---Horace, Vieta, Voſſius, and Scaliger, have likewiſe publiſhed *poetics* in Latin; the Duke of Buckingham, in Engliſh; and Menardiere, Hedelin, and Deſpreaux, in French.

POETRY*, POESY, the art of compoſing poems, or pieces in verſe. See POEM and VERSE.

*** The word is formed from the Greek ποιησεια, of ποιεω, *facio*, I make. See POESY.**

If a verſe be conſidered as a mere ſeries of juſt ſix feet following one after another in the ſame line; *poetry* and verſification will appear two very different things: But Boſſu, in his idea of verſe, includes cadencies, peculiar conſtructions, arrangements and expreſſions unknown in common diſcourſe; and above all, a certain noble, bold, elevated, metaphorical turn and manner of diction.---Theſe, he obſerves, are ſo eſſential to *poetry*, that without them the moſt exact arrangement of long and ſhort ſyllables, makes little elſe but a kind of meaſured proſe; whereas theſe, in a diſcourſe that has no poetical feet or meaſures, do yet give it the poetical character, and make it a kind of *unmeaſured poetry*.

The rules of *poetry* and verſifying are taught by art, and acquired by ſtudy; but this force and elevation of thought, which Horace calls *ſomething divine*, and which alone makes the *poetry* of any value, muſt be derived from nature; or, according to Ariſtotle, from ſome happy tranſports, to which that author gives the name of madneſs:---Ευφυεος ἡ ποιητικη εστιν, ἡ μανικȣ.---But there muſt ever be conceived a juſt ſolid judgment at the head of this fury of the poet's imagination.

Hence the critic concludes, that *the end* of *poetry* is to pleaſe; *its cauſe*, either the excellence of the poet's genius, or a poetical fury, and tranſport of the ſoul, manageable by the judgment; *its matter*, long and ſhort ſyllables, and feet compoſed hereof, with words furniſhed by grammar; and *its form*, the arrangement of all theſe things in juſt and agreeable verſe, expreſſing the thoughts and ſentiments of the author after the manner already mentioned.

But after all, how narrow are theſe bounds, if we conſider *poetry* in the light wherein the works of Homer and Virgil have ſet it? What is here laid down pretends to no praiſe, which a mere tranſlator may not riſe to, and which the war of Catiline might not merit, if turned out of the proſe of Saluſt.---It is with reaſon, therefore, that we diſtinguiſh the *low* and *ſimple* from the *greater poetry*; by giving the former the title of *verſification*: and that we make *poetry* and *verſification* two diſtinct arts. In effect, there is not more difference between grammar and rhetoric, than between the art of making verſes, and that of inventing poems. See VERSIFICATION.

The *greater poetry*, then, conſiſts principally in fiction, or the invention of fables; in the expreſſing of things by allegories and metaphors; and in the inventing of actions, under which the truths which the poet has to teach, may be agreeably diſguiſed. See FABLE.

In this view, ſcarce any poems retain the nature and eſſence of the grand *poetry*, but the *epopœia*, *tragedy* and *comedy*; the reſt, be they elegies, ſatires, ſong, or what they will, come under *verſification*.

The ancient eloquence, it is obſerved, was full of myſteries and allegories.- -The truth was by them uſually diſguiſed under thoſe ingenious inventions called μυθοι, fables, *q. d. words*; as if there were as much difference between theſe fabulous diſcourſes of the learned, and the common language, as between the ſpeech peculiar to man, and the voice of brutes. See FABLE.

At firſt fables were chiefly uſed in treating of the divine nature, after the manner they then conceived of it: this occaſioned the firſt poets to be called *divines*, and *poetry* the *language of the gods*.---The divine attributes they ſeparated into a number of perſons; by reaſon the weakneſs of the human mind could not conceive ſo much power, and ſo much action, in a ſimplicity ſo ſtrict and indiviſible as that of God. See GOD.

Nor could they ſpeak of the operation of this almighty cauſe, without ſpeaking likewiſe of its effects.---They therefore added phyſics to their theology, handling both after the ſame manner, without quitting their veils or allegories. See ALLEGORY.

Now, man being the moſt conſiderable of all the works of the Deity, and there being nothing ſo proper for poets, or of ſuch general uſe to mankind, as ſuch a ſubject; they therefore added ethics to the former, and treated the doctrine of manners in the ſame way as they had done divinity and phyſiology.---And hence aroſe the epopœia, or epic poem. See EPIC.

The epic poets have done, with regard to morality, juſt the contrary of what the divine poets did for their theology.---As the too great diverſity of divine actions and perfections, ſo little proportionate to our underſtanding, occaſioned the latter to divide the ſingle idea of the ſimple eſſence of God into ſeveral perſons under different names; as Jupiter, Juno, Neptune, *&c.* So, on the contrary, the nature of moral philoſophy, which never gives any rules for particular things, occaſioned the epic poets to unite in one ſingle idea, in the ſame perſon, and even in a ſingle action, whatever of the like kind occurs in different perſons, and different actions. See ACTION, CHARACTER, HERO, *&c.*

Thus, ſays Ariſtotle, *poetry* teaches moral philoſophy, not by reciting hiſtorically what Alcibiades has done or ſuffered; but by propoſing what ſuch a perſon, whom the poet calls by any name he pleaſes, would neceſſarily or probably have done or ſaid on the like occaſion.---It is in this manner it repreſents either the unhappy conſequences of deſigns ill concerted, of wicked actions, *&c.* or the reward of good actions, and the pleaſure reaped from a deſign laid in virtue, and conducted by prudence.

Thus, according to our critic, the poetical actions and perſons are all feigned, allegorical, and univerſal; not hiſtorical and ſingular.---This is likewiſe the ſentiment of Horace, who adds, that poets teach morality as well as philoſophy; but the preference herein he gives to Homer. See MANNERS.

This advantage of the poets over mere philoſophers ariſes hence, that all *poetry* is an imitation.---Now imitation is a thing extremely natural; and hence this manner of propoſing things becomes better fitted to engage the auditors. Again, imitation is an inſtruction given by examples; and examples are the more proper to perſuade, in regard they prove the thing poſſible.---In effect, imitation is ſo much the nature of *poetry*, that Ariſtotle tells us, it is to this the art owes its riſe.

But the poets, by becoming philoſophers, did not ceaſe to be divines; on the contrary, the morality they taught obliged them frequently to introduce the deity in their works; and the ſhare ſo auguſt a being had in the action, obliged the poet to make it grand, important, and conducted by perſons of kings and princes. See MACHINE.

Add to this, that it likewiſe obliged the poet to think and ſpeak after a manner elevated above the common pitch of men, and to equal, in ſome meaſure, the divine perſons he introduced; and to this purpoſe ſerved the poetical, figurative language, and the majeſty of heroic verſe.

To convey their truths to the beſt advantage, and adapt them to the particular purpoſes they were intended for; poets found out various forms.---Hence the epopœia and drama.

Epic *poetry* is more for the manners and habits, than the paſſions; theſe laſt riſe all at once, and their violence is but of a ſhort duration; but the habitudes are cooler and more gentle, and riſe and fall more ſlowly. See HABIT.

The epic action, therefore, could not be reſtrained to a day or two, as that of the drama; a longer and a juſter ſpace was required for this, than for tragedy, which is only for the paſſions.---And hence aroſe a ſtill greater difference between tragedy and the epopœia.

For the tragic violence required a ſtronger and more lively repreſentation than the epic; and accordingly it conſiſts wholly in the action; the poet never ſpeaking; as he does in the epopœia, where there are no actors.

The laws of epic and dramatic POETRY, ſee under EPIC, CHARACTER, INVOCATION, DRAMATIC, THEATRE, TRAGEDY, COMEDY, ACT, SCENE, CHARACTER, SENTIMENT.

For the lower ſorts of POETRY, ſee each under its proper article, ODE, SONG, EPIGRAM, ELEGY, SATYR, *&c.*

POINT[*], is a term uſed in various arts.

POINT, in geometry, according to Euclid, is a quantity which has no parts, or which is indiviſible. See QUANTITY, PART, INDIVISIBLE, *&c.*

Wolfius defines it, that which terminates itſelf on every ſide; or which has no terms or boundaries diſtinct from itſelf. See TERM.

This is what we otherwiſe call the *mathematical point*; and is only conceived by the imagination; yet is it in this that all magnitude begins and ends; the flux or motion of the point generating a line, that of a line a ſurface, *&c.* See MAGNITUDE; ſee alſo LINE, *&c.*

Hence ſome define a *point* to be inceptive of magnitude. See INCEPTIVE, *&c.*

A line can only cut another in a *point*.---Any three *points* being given out of a right line; a circle, or part of a circle, may be drawn that ſhall paſs through them all. See CIRCLE.

To *draw a parallel line*, *a perpendicular*, *a tangent*, &c. *to a given point*, are popular problems in geometry. See PERPENDICULAR, PARALLEL, TANGENT, *&c.*

Proportion of mathematical POINTS.---It is a current maxim, that all infinites, whether infinitely great or infinitely ſmall, are equal; yet is the maxim falſe in both caſes.---Dr. Halley ſhews ſeveral infinite quantities, which are in a finite proportion to one another; and ſome infinitely greater than others. See *infinite* QUANTITY.---The like, the Hon. Mr. Robarts ſhews of infinitely ſmall quantities, *viz. mathematical points.* He demonſtrates, for inſtance, that the points of contact between circles, and their tangents, are in a ſubduplicate proportion to the diameters of the circles. That the *point* of contact between a ſphere and a plane is infinitely greater than that between a circle and a tangent; and that the *points* of contact in ſpheres of different magnitude are to one another as the diameters of the ſpheres. See CONTACT, *&c.*

POINT *of contrary flexure*, in the higher geometry, is a *point* of a curve, wherein it is bent or inflected towards a part contrary to that it before tended towards: ſo, *e. gr.* as to turn its convexity towards its axis, or any other fixed *point*, which before it, turned its concavity towards. See CURVE.

If the curve turn back again towards the *point* whence it firſt ſet out, the *point of the flexure* is particularly called the *point of regreſſion*, or *retrogradation.* See RETROGRADATION *of curves.*

Wolfius illuſtrates the uſe of the calculus differentialis in finding the *point of contrary flexion* in various kinds of curves. See CURVE.

POINT, **PUNCTUM**, in phyſics, is the ſmalleſt or leaſt ſenſible object of ſight, marked with a pen, point of a compaſs, or the like. See OBJECT.

This is what we popularly call a *phyſical point*; which in reality has parts, though thoſe parts are not here regarded.---Of ſuch *points* does all phyſical magnitude conſiſt. See MAGNITUDE.

This *phyſical point* coincides with what Mr. Locke calls the *point ſenſible*, and which he defines to be the leaſt particle of matter, or ſpace, we can diſcern.---He adds, that to the ſharpeſt eye this is ſeldom leſs than 30 ſeconds of a circle, whereof the eye is the centre. See VISION.

POINT, in grammar, is a character uſed to mark the diviſions of diſcourſe. See CHARACTER and POINTING.

The *point* proper, is what we otherwiſe call a *full ſtop*, or period, and ſerves to denote the ſenſe complete, and the period ended. See PERIOD.

Two *points* uſually mark the middle of a period, and ſhew a conſtruction complete, and the ſenſe to be perfect; yet intimating ſomething to come after it: this we call a *Colon.* See COLON.

A *point* with a comma, called a *ſemicolon*, marks a ſenſe leſs complete than the colon; though authors ſeem to uſe them indifferently: nor are grammarians agreed about their preciſe difference. See SEMICOLON.

The comma, or virgula, marks a ſubdiviſion of a member of a period. See COMMA.

A *point of interrogation*, ? marks ſomething to be pronounced in a higher tone, as intimating a queſtion asked. See INTERROGATION.

A *point of admiration* ! marks a ſudden ſurprize and wondering. See ADMIRATION.

Our *points* and accents were intirely unknown to the ancients. In the ancient Greek manuſcripts, the whole diſcourſe ſeems wrote with the ſame ſtroke of the pen; the words and letters being joined throughout.

In after-times, *points* were invented, and added a-top of the letters, to ſhew when the ſenſe was finiſhed: Hence the grammarians, coming to retouch the old manuſcripts, thought fit to add the points and accents.---Salmaſius affirms, that he has even obſerved, plainly, where they have been added, by the difference of hands. See ACCENT.

POINTS, or *vowel* **POINTS**, in the Hebrew learning, are certain characters, which, in the writings of that language, ſerve to mark the vowels. See VOWEL and HEBREW.

The antiquity of the *points* in the Hebrew tongue makes the ſubject of a celebrated controverſy among the learned; ſome maintaining their origin to be the ſame with that of the Hebrew language; and others aſſerting them to have been firſt introduced by Eſdras, after the Babyloniſh captivity, when he compiled the canon, tranſcribed the books into the preſent Chaldee character, and reſtored the purity of the Hebrew text. See CANON.

Others will have them invented by the doctors of the ſchool of Tiberias, uſually called the Maſſoretes, five or ſix hundred years after Chriſt.---The rabbin Elias Levita was the firſt who ſtarted this queſtion in the laſt century; and maintained them to have been an invention of the Maſſoretes, for the eaſe of thoſe who were to learn the Hebrew tongue. See MASSORETES.

This ſentiment was eſpouſed by Capella, to whom adhered Luther, Calvin, Caſaubon, Scaliger, *&c.* Buxtorf attacked Capella violently on this article, and gained a great number of divines on his ſide, who took the alarm, imagining it a grievous wound to the holy text, to allow the *vowel-points* to have been added by the Maſſoretes, and not to have been found in the ancient text; becauſe, without theſe, it is very difficult to fix the reading thereof.---Yet in the Samaritan text there is no *point* or vowel, nor in many of the moſt ancient Hebrew manuſcripts. See HEBREW, *&c.*

POINT, in muſic, is a mark or note anciently uſed to diſtinguiſh the tones. See NOTE.

Hence we ſtill call it ſimple *counter-point*, when a note of the baſs anſwers preciſely to that of the treble; and figurative *counter-point*, when a note is ſyncopated, and one of the parts makes ſeveral inflexions of the voice or tone, while the other only makes one. See COUNTER-POINT and FIGURATE.

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[*] The word is derived from the latin *punctum*, which is formed from *pungere*, to prick.

We ſtill uſe a *point* to raiſe the value of a note, and prolong its time by one half, *e. gr.* a *point* added to a ſemibreve, inſtead of two minims, makes it equal to three. See Time and Characters *in muſic*.

Point, in aſtronomy, is a term applied to certain parts or places marked in the heavens, and diſtinguiſhed by proper epithets.

The four grand *points* or diviſions of the horizon, *viz.* the *eaſt*, *weſt*, *north*, and *ſouth*, are called *cardinal points*. See Cardinal; ſee alſo East, West, &c. each under its proper article.

The zenith and nadir are the *vertical points*. See Vertical, Zenith and Nadir.

The *points* wherein the orbits of the planets cut the plane of the ecliptic, are called the *nodes*. See Node.

The *points* wherein the equator and ecliptic interſect, are called the *equinoctial points*. See Equinoctial.---Particularly, that whence the ſun aſcends towards the north-pole, the *vernal point*; ſee Vernal: And that by which he deſcends to the ſouth-pole, the *autumnal point*. See Autumnal.

The *points* of the ecliptic, where the ſun's aſcent above the equator, and deſcent below it, terminate, are called the *ſolſtitial points*; ſee Solstitial.---Particularly, the former of them the *eſtival* or *ſummer point*; ſee Summer: the latter, the *brumal* or *winter point*; ſee Winter, &c.

Point, in navigation and geography.---Points *of the horizon*, or *of the compaſs*, are certain *points* formed by the interſections of the horizon with vertical circles. See Horizon.

The number of theſe *points*, therefore, is really the ſame with that of the *points* conceived in the horizon, *i. e.* infinite; though in practice we only diſtinguiſh 32 of them. See Compass.

Some uſe *point*, for the interſection of a vertical circle with a circle parallel to the horizon; and even ſome, for the ſegment of a vertical intercepted between the meridian and horizon, or a circle parallel thereto.

The *points* are ſhewn by right lines drawn from a *point* aſſumed in a horizontal plane.

A *point of the compaſs* is popularly taken for a 32d part of the whole; or for an arch of 11 degrees, 15 minutes: half of which, *viz.* $5^{\circ}\ 37'\ \frac{1}{2}$, is called a *half point*: and half of that, or $2^{\circ}\ 48'\ \frac{3}{4}$, a *quarter point*. See Compass.

Theſe *points of the compaſs* are divided into cardinal and collateral.

Cardinal Points are the interſections of the horizon and meridian, called the *north* and *ſouth points*; and the interſections of the horizon with the prime vertical, called the *eaſt* and *weſt*. See North, South, &c.

Theſe coincide with what the Latins call *cardines mundi*; and are a quadrant, or 90 degrees, diſtant from each other. See Cardinal.

Collateral or *intermediate* Points, are thoſe lying between the cardinal *points*,---which are either *primary*, *viz.* thoſe equidiſtant from the two cardinals, as north-eaſt, ſouth-weſt, &c.

Or *ſecondary*, which are again, either of the *firſt order*, *viz.* ſuch as are equidiſtant from a cardinal and the next primary, as north-north-eaſt; or of the *ſecond order*, *i. e.* equidiſtant between a cardinal or primary, and firſt ſecondary, as north-eaſt by north.

The *primary collateral points*, therefore, are 45° diſtant from the cardinals; the firſt ſecondaries $22^{\circ}\ 30'$ from the cardinal and next primary collateral; and the ſecondaries of the *ſecond order* $11^{\circ}\ 15'$ from a cardinal, or firſt collateral, and a ſecond. See Collateral.

Point, among ſeamen, is alſo uſed for a cape, or head-land, jetting out into the ſea. See Cape.

They ſay, two *points* of land are *one in another*, when they are ſo in a right line againſt each other, as that the innermoſt is hindered from being ſeen by the outermoſt.

Point, in perſpective, is a term uſed for various parts or places, with regard to the perſpective plane. See Perspective *plane*. Such are, the

Point *of ſight*, or *of the eye*, is a point F, on the plane, HI, (*tab. perſpect. fig.* 12.) marked out by a right line OF, drawn from the eye, perpendicular to the plane.---This is alſo called the *principal point*. See Vision; ſee alſo Principal.

This *point* is in the interſection of the horizontal and vertical planes. See Plane.

Some authors call this the *principal point*; and give the name *point of ſight*, or *viſion*, to the point wherein the eye is actually placed, and where all the rays terminate, as O. See hereafter Point *of view*.

Point *of diſtance* is a *point*, *v. gr.* P, or Q, in the horizontal line PQ, at the ſame diſtance from the principal *point* F, as the eye O is from the ſame. See Distance.

Third Point is a *point* taken at diſcretion in the line of diſtance, wherein all the diagonals drawn from the diviſions of the geometrical plane, concur.

Objective Point, a *point* on a geometrical plane, whoſe repreſentation is required on the perſpective plane.

Accidental Point. See the article Accidental.

Viſual Point. See the article Visual.

Point, in optics.---The Point of *concourſe*, or *concurrence*, is that wherein converging rays meet, more uſually called the *focus*. See Focus.

Point *of diſperſion*, is that wherein the rays begin to diverge; uſually called the *virtual focus*. See Virtual.

Point *of incidence*, is a *point* on the ſurface of a glaſs, or other body, wherein a ray falls. See Incidence.

Point *of view*, with regard to building, painting, &c. is a *point* at a certain diſtance from a building, or other object, wherein the eye has the moſt advantageous view or proſpect of the ſame. This *point* is uſually at a diſtance equal to the height of the building.---For an inſtance:---To conſider with judgment, the whole of the famous church of the invalids at Paris; we muſt not ſtand at above 340 foot diſtance from it, which is nearly its height. To be able to judge of the ordonnance of its façade or frontiſpiece, and the regularity of its order, the eye ſhould only be as far off as the frontiſpiece is high, *viz.* 100 feet.

But to examine the correctneſs of its profiles, and the ſpirit of its ornaments, the eye ſhould only be diſtant the height of the Doric order, which is about 40 feet; if it be nearer, the parts too much ſhortened, will appear out of proportion.

A vague or indeterminate *point* has a different effect from the *point of view*; in that, in looking at a building from an indeterminate *point*, the eye can only form an idea of the magnitude of its maſs, by comparing it with other buildings adjacent to it.

Point *of reflexion*, is a *point* on the ſurface of a glaſs, or other body, whence a ray is reflected. See Reflexion.

Point *of refraction*, is a *point* in the ſurface of a glaſs, or other refracting ſurface, wherein the refraction is effected. See Refraction.

Radiant Point. See the article Radiant.

Points, in heraldry, are diviſions of the eſcutcheon into ſeveral ſquares, ſometimes to the number of 9, ſometimes to 15; ſome whereof are of one colour or metal, the others of another; called alſo *equipollent points*.

There is alſo another, and that more frequent diviſion of the eſcutcheon into *points*, which have ſeveral names and values, according to their ſeveral places.

There are nine principal *points* in an eſcutcheon, as marked in *tab. herald. fig.* 38. A repreſents the *dexter chief point*.---B the *middle chief point*.---C the *ſiniſter chief*.---D the *honour point*.---E the *feſs point*, called alſo the *centre*.---F the *nombril* or *navel point*.---G the *dexter baſe*.---I the *ſiniſter baſe*.---H the *preciſe middle baſe*. See Dexter, Sinister, Honour, &c.

Colombiere makes the *points* and their ſituations ſymbolical.---As the ſeveral bearings in an eſcutcheon are ſo many types repreſenting the commendable actions of the perſon they are given to; ſo the eſcutcheon itſelf repreſents the body of the man that performed them; and the *points*, or parts, ſignified by theſe letters, the principal parts of his body.---Thus, A, B, C, repreſent the head, in which the three great faculties reſide: D, the neck, where ornaments are chiefly borne: E, the heart, &c. See Escutcheon.

Point is alſo the name of an ordinary, ſomething like the pile, riſing frequently from the bottom of the eſcutcheon to the top, very narrow; and only taking up two thirds of the *point* of the eſcutcheon. See Pile.

When the *point* ariſes from the baſe, it is peculiarly called *point-in-point*.

Point *inverted*, is when it deſcends from the chief downwards; poſſeſſing two thirds of the chief, but diminiſhing as it approaches the point of the eſcutcheon, though without touching it.

Point *in bend*, or *point in bar*, is when the *point* is placed tranſverſe, in the ſituation of a bend or bar.

When it comes from the ſides of the eſcutcheon, it is alſo called a *point dexter* or *ſiniſter*, according to its ſituation.

The *point dexter* is commonly reputed an abatement due to a braggadocio.---*Point-champion-ten* due for killing a priſoner after quarter demanded.---*Point-in-point*, a diminution belonging to a coward.---*Point-plane*, an abatement belonging to a lyar, &c. See Abatement, Diminution, &c.

Point is alſo uſed in heraldry, for the loweſt part of the eſcutcheon, which uſually terminates in a *point*. See Escutcheon.

Point-*champain*. See the article Champain.

In the French arms the fleur-de lys's are two in chief, and one in *point*.

Point is alſo an iron or ſteel inſtrument, uſed with ſome variety in ſeveral arts.

Engravers, etchers, wooden-cutters, ſtone-cutters, &c. uſe *points* to trace their deſigns on the copper, wood, ſtone, &c. See Engraving, Etching, &c.

Statuaries, &c. have likewiſe *points* in manner of little chiſſels, uſed in the firſt forming or ſketching out their work. See Statue, Foundery, &c.

Turners work or faſhion their common works between two *points* faſtened to the puppets.---Lapidaries have iron *points*, to the ends whereof are faſtened pieces of diamonds, ſerving to pierce the precious ſtones withal. See Turning, Lapidary, &c.

Point, in the manufactories, is a general term uſed for all kinds of laces wrought with the needle.

Such are *point de Venice*, *point de France*, *point de Genoa*, &c. which are diſtinguiſhed by the particular œconomy and arrangement of their *points*.

Point is ſometimes alſo uſed for lace woven with bobbins, as *Engliſh point*, *point de Malines*, *point de Havre*, &c.

POINT, in architecture.---*Arches of the third* POINT. See ARCH. *Arches of the fourth* POINT. See the article ARCH.

Gauge-POINT. See the article GAUGE.

POINT, in poetry, denotes a brisk lively turn, or conceit, uſually found or expected at the cloſe of an epigram. See EPIGRAM.

POINT-BLANK, in gunnery, denotes the ſhot of a gun, levelled horizontally, without either mounting or ſinking the muzzle of the piece.

In ſhooting *point-blank*, the ſhot or bullet is ſuppoſed to go directly forward, in a ſtrait line, to the mark; and not to move in a curve, as bombs and highly elevated random ſhots do. See MORTAR, PROJECTILE, GUNNERY, *&c.*

POINTED *crowns*. See the article CROWN.

POINTED *roof*. See the article ROOF.

A croſs POINTED, among heralds, is that which has the extremities turned off into *points* by ſtrait lines. Colombiere calls it *aiguiſé*, q. d. *ſharpened*. See CROSS and COUNTER-POINTED.

POINTING, PUNCTUATION, in grammar, the art of dividing a diſcourſe, by points, into periods and members of periods, in order to facilitate the pronunciation and underſtanding thereof. See PUNCTUATION.

POINTING, among ſeamen, the marking on the chart in what point or place the veſſel is. See CHART, RHUMB, *&c.*

All the difficulty in *pointing* a chart ariſes from our ignorance of the longitude.---The pilot eaſily finds the latitude by taking the height of the pole; but for the longitude, there is no coming at it but by computation, which is ever uncertain. See LONGITUDE, LATITUDE, SAILING, *&c.*

POINTING *the cable*, is a ſea term, denoting the untwiſting it at the end, and leſſening the yarn, and twiſting them again, making all faſt with a piece of marling, to keep it from ravelling out. See CABLE.

POINTING, in war, the levelling or directing a cannon, or mortar-piece, ſo as to play againſt any certain point. See QUADRATING, CANNON, ORDNANCE, MORTAR, PROJECTILE, *&c.*

This is done by means of a quadrant with a plummet. See *gunners* QUADRANT.

POISE. See the articles COUNTERPOISE, WATERPOISE, *&c.*

POISON*, in medicine, a malignant quality in ſome animal, vegetable, or mineral body, which renders it hurtful, and even mortal, to thoſe who take it even in a ſmall quantity.

*** The word is derived from the Latin *potio*, draught; and was anciently uſed in an innocent ſenſe. See POTION.**

Some define *poiſon* to be any thing taken inwardly, whoſe properties are contrary to thoſe of food, or to what they ſhould be in order to nutrition. See FOOD.

Poiſons are of various kinds, and operate in various manners; ſome by diſſolving the blood, others by coagulating it, and others by corroding and deſtroying the ſolid parts. See BLOOD, DISSOLUTION, COAGULATION, CORROSION, *&c.*

Some attack, equally, all the parts; ſome only a particular one. ---Thus the lepus marinus is an enemy to the lungs, cantharides to the bladder, *&c.*

Some again, which prove *poiſon* to man, ſerve for food to other animals.---Thus, mandragora and juſquiamnus feed hogs, kill man; and thus that deadly *poiſon* hemlock is wholſome for goats, buſtards, and, as Galen ſays, for ſtarlings too. The caſſavi plant, Sir Hans Sloane tells us, *poiſons* unprepared; but prepared, is the very bread of the Weſt Indies, particularly Jamaica and the hotter parts; and is uſed to victual ſhips.

Nay, what is more, ſome *poiſons* are not only food, but even phyſic, to other animals.---In the *Philoſ. Tranſact.* we have an inſtance of a horſe troubled with the farcy, which could not be cured by the moſt famed remedies, which yet cured himſelf in a ſhort time, by feeding greedily on hemlock.---Fontanus tells us of a woman who eat hemlock for ſome time to procure ſleep, and with very good effect, though repeated doſes of opium had no operation.

Dr. Tanc. Robinſon, in a letter to Mr. Ray, gives an account of ſeveral poiſonous plants, which, if truly corrected, or exactly doſed, he ſays, may prove the moſt powerful remedies known. ---Thus the hellebores, incorporated with a ſapo, or alkaly-ſalts alone, are ſucceſsful in epilepſies, vertigo's, palſies, lethargies, and mania's: doſe from ℈*j.* to ʒ*ſs.* The roots of cicuta, aſarum, and napellus, in agues and periodical pains: doſe ℈*j.* to ʒ*ſs.* The hyoſcyamus in hæmorrhages, violent heats and inflammations: doſe ℈*j.* to ʒ*ſs.* The ſemen ſtramoniæ is a good anodyne, uſeful in vigilia's, rheumatiſms, hyſteric caſes, *&c.* doſe ℈*j.* to ʒ*ſs.* Elaterium, ſoldanella and gratiola, in hydropic caſes. Opium corrected loſes its narcotic quality, and is ſafely given in great doſes in convulſive caſes, fluxes, catarrhs, *&c.*

Phyſicians diſtinguiſh three kinds of *poiſons*.

Animal POISONS, thoſe drawn from animals; as, the viper, aſpic, ſcorpion, lepus marinus, *&c.* See VIPER.

Vegetable POISONS, as aconite, cicuta, or hemlock, hellebore, napellus, *&c.* See ACONITE, CICUTA, HELLEBORE, *&c.*

Mineral POISONS, as arſenic, corroſive ſublimate, ceruſſe, orpiment, realgal, *&c.* See ARSENIC, *&c.*

The theory of the effects, operations, *&c.* of *animal poiſons*, is very accurately and mechanically delivered by Dr. Mead, in thoſe remarkable caſes, the bites of a viper, tarantula, and mad dog. See his doctrine under the reſpective articles, TARANTULA, VIPER, and HYDROPHOBIA.

The operation of *vegetable poiſons*, ſee deliver'd under the article OPIATES.

As to *mineral poiſons*, they all bear ſo much analogy to that made of quick-ſilver in the common ſublimate, that their operation will eaſily be conceived from what we have already laid down under the heads MERCURY and SUBLIMATE.

They are all more or leſs dangerous, as their ſalts receive a greater or leſs force from the metallic particles; and hence, as the moſt virulent may be mitigated by breaking the points of the ſaline cryſtals, the moſt innocent minerals may become corroſive by combining them with ſalts, as is ſeen in the preparations of ſilver, antimony, iron, *&c.* See MEPHITES, GROTTO, *&c.*

The general remedies againſt *poiſons* are known by the name of *antidotes*, *alexipharmics*, *alexiterials*, &c. See ANTIDOTE, ALEXIPHARMIC, *&c.*

Counter POISON. See the article COUNTER *poiſon*.

To POISON *a piece*, among gunners, is the ſame as to clog and nail it up. See NAILING.

POISONING, in law, the crime of adminiſtring poiſon to a perſon, whereby he dies. See POISON.

This, by a law of Henry VIII. was made a ſort of treaſon; and the puniſhment doomed for it was, to be put alive into a caldron of water, and boiled to death.---At preſent it is only murder, or felony without benefit of clergy, if the party dies of the poiſon within a year and a day. See PUNISHMENT.

POISONOUS *waters*. See the article WATER.

POLAR, ſomething that relates to the poles of the world. See POLE and CIRCUMPOLAR.

In this ſenſe we ſay, *polar* virtue, *polar* tendency, *&c.* See POLARITY.

POLAR *circles*, are two leſſer circles of the ſphere, parallel to the equator, at the diſtance of 23 deg. from each pole; ſerving to mark the beginning of the frigid zones. See CIRCLE and ZONE.

The *polar* circles are particularly denominated from their reſpective neighbouring poles, the *arctic* and *antarctic*. See ARCTIC and ANTARCTIC.

POLAR *dials* are thoſe whoſe planes are parallel to ſome great circle paſſing through the poles, or to ſome one of the hour-circles; ſo that the pole is neither elevated above, nor depreſſed below the plane.

Such dial, therefore, can have no centre, and conſequently its ſtyle, ſub-ſtyle, and hour-lines, are parallel. See PLANE.

This, therefore, will be an horizontal dial to thoſe who live under the equator or line.

To conſtruct a POLAR *dial*. See the article DIAL.

POLAR *projection* is a repreſentation of the earth, or heavens, projected on the plane of one of the polar circles. See PROJECTION, MAP, PLANISPHERE, *&c.*

POLARITY, the quality of a thing conſidered as having poles. See POLE.

By heating an iron bar, and letting it cool in a vertical poſture, it acquires a *polarity*.---The lower end becomes the north-end; the upper the ſouth. See IRON.

Iron bars acquire a *polarity*, by being kept a long time in an erect poſture, even without heating.---Thus the bars of windows, *&c.* are frequently found to have poles. Nay, a rod of iron acquires a *polarity*, by the mere holding it erect; the lower end in that caſe attracting the ſouth-end of a magnetic needle, and the upper the north-end.---But theſe poles are mutable, and ſhift with the ſituation of the rod. See MAGNET and MAGNETISM.

POLE*, POLUS, πολος, in aſtronomy, one of the extremities of the axis, whereon the ſphere revolves. See AXIS and SPHERE.

*** The word is formed from the Greek πολειν, *vertere*, to turn.**

Theſe two points, each 90 deg. diſtant from the equator, are called, by way of excellence, the *poles of the world*. See WORLD.

Wolfius defines the *poles*, thoſe points on the ſurface of the ſphere, through which the axis paſſes; ſuch are the points I and K, (*tab. aſtron. fig.* 21.)---whereof, that viſible to us, or raiſed above our horizon, I, is called the *arctic* or *north pole*; and its oppoſite, K, the *antarctic* or *ſouth pole*. See ARCTIC and ANTARCTIC.

POLE, in geography, is the extremity of the earth's axis, or one of the points on the ſurface of our globe, through which the axis paſſes. See EARTH.

Such are the points P, Q, (*tab. geogr. fig.* 1.) whereof that elevated above our horizon is called the *arctic* or *north pole*; and its oppoſite Q, the *antarctic* or *ſouth pole*. See GLOBE.

Dr. Halley ſhews, that the ſolſtitial day, under the *pole*, is as hot as under the equinoctial, when the ſun is in the zenith; in regard all the 24 hours of that day under the *pole*, the ſun-beams are inclined to the horizon in an angle of 23½ degrees; whereas, under the equinoctial, though he becomes vertical, yet he ſhines no more than 12 hours, and is abſent 12 hours;---beſides that for 3 hours, 8 minutes, of that 12 hours, he is above the horizon there, he is not ſo much elevated as under the *pole*. See HEAT.

The *altitude*, or *elevation of the pole*, is an arch of the meridian, intercepted between the *pole* and the horizon. See ALTITUDE, ELEVATION, and DEPRESSION.

To find this elevation, is a very popular problem in aſtronomy, geography, and navigation; this, and the latitude of the place, being always the ſame. See LATITUDE.

To obſerve the altitude of the Pole.---With a quadrant, obſerve both the greateſt and leaſt meridian altitude of the *pole* ſtar. See Meridian.

Subtract the leaſt from the greateſt, and divide the difference by two; the quotient is the ſtar's diſtance from the *pole*; which, added to the leſſer altitude found, gives the elevation of the *pole* required.

Thus M. Couplet the younger, at Lisbon, in 1697, in the end of September, obſerved the greateſt meridian altitude 41° 5′ 40″. The ſmalleſt 36° 28′ 0″. The difference whereof is 4° 37′ 40″; one half whereof, 2° 18′ 50″, added to the leſs, gives 38° 46′ 50″, the altitude of the *pole* of Lisbon. See Altitude.

The altitude of the *pole*, together with the meridian line, being the baſis of all aſtronomical obſervations; to determine it with the greater accuracy, the meridian altitudes muſt be corrected from the doctrine of refractions, hereafter delivered. See Refraction, Meridian, *&c.*

By means hereof, M. Couplet, ſubtracting 1′ 25″ in the propoſed example, leaves the corrected altitude 38° 45′ 25″.

Hence, 1. The altitude of the *pole* being ſubtracted from 90°, leaves the *altitude of the equator*. See Equator.

2. If the greateſt meridian altitude of this ſtar exceed the altitude of the equator, the latter ſubtracted from the former, leaves the declination of the ſtar northward; if the altitude of the ſtar be leſs than that of the equator, the former ſubtracted from the latter leaves the ſtar's declination ſouthward. See Declination.

Dr. Hook, and ſome others, imagined the height of the *pole*, and the poſition of the circles in the heavens, in reſpect of thoſe on the earth, to be changed from what they anciently were: But M. Caſſini thinks there is no ground for ſuch ſurmiſe; but that all the difference we now find in the latitudes of places, *&c.* in reſpect of the ancient accounts, ariſes from the inaccuracies of the ancient obſervations.

Indeed, it is no wonder they ſhould err in their obſervations, conſidering what inſtruments they uſed. He adds, it is probable there may be ſome variation in the height of the *pole*; but thinks this never exceeds two minutes; and that even this will vaniſh, after it is arrived to its higheſt difference. See Equator, *&c.*

Pole, in ſpherics, is a point equally diſtant from every part of the circumference of a greater circle of the ſphere; as the centre is in a plain figure. See Centre.

Or, *pole* is a point 90° diſtant from the plane of a circle, and in a line paſſing perpendicularly through the centre, called the axis. See Circle.

The zenith and nadir are the *poles* of the horizon.---The *poles* of the equator are the ſame with thoſe of the ſphere or globe. See Zenith, Nadir, *&c.*

Poles of the ecliptic, are two points on the ſurface of the ſphere, 20° 30′ diſtant from the *poles* of the world, and 90° diſtant from every part of the ecliptic. See Sphere, Ecliptic, *&c.*

Poles, in magnetics, are two points in a load-ſtone, correſponding to the *poles* of the world; the one pointing to the north, the other to the ſouth. See Magnet.

If the ſtone be broken in ever ſo many pieces, each fragment will have its two *poles*.---If a magnet be biſected by a line perpendicular to the axis; the two points before joined will become oppoſite *poles*, one in each ſegment.

To touch a needle, *&c.* that part intended for the north end is touched with the ſouth *pole* of the magnet, and that intended for the ſouth end with the north *pole*. See Needle.

A piece of iron acquires a polarity, by only holding it upright, *&c.* See Polarity. Bur its *poles* are not fixed, but ſhift, and are inverted as the iron is.---A fixed north *pole* may be made all the ways a fixed ſouth *pole* is made, but not *vice verſa*; and whatever way we get a fixed ſouth *pole*, it is always weaker than a fixed north *pole* got the ſame way. Fire deſtroys all fixed *poles*, but ſtrengthens the mutable ones. See Fire.

The end of a rod being heated, and left to cool northward, Dr. Gilbert ſays, becomes a fixed north *pole*; if ſouthward, a fixed ſouth *pole*: Yet this doth not hold in all caſes.---If the end be cooled, held downward, or to the nadir, it acquires ſomewhat more magnetiſm, than if cooled horizontally towards the north. But the beſt way is to cool it a little inclined to the north. Repeated ignitions do not avail more than a ſingle one.

Dr. Power ſays, that if we hold a rod northwards, and hammer the north end in that poſition, it will become a fixed north *pole*; and, contrarily, if you hammer the ſouth end.---What is ſaid of hammering is to be likewiſe underſtood of filing, grinding. ſawing; nay, a gentle rubbing, provided it be continued long, will produce *poles*. See Friction.

The more heavy the blows are, *cæteris paribus*, the magnetiſm is the ſtronger.---A few hard blows do as much as many. Old drills and punches have fixed north *poles*, becauſe almoſt conſtantly uſed downwards. New drills have either mutable *poles*, or weak north *poles*. Drilling with ſuch a one ſouthward horizontally, it is a chance if you produce a fixed ſouth *pole*, much leſs if you drill ſouth downwards; but if you drill ſouth upwards, you make a fixed ſouth *pole*.

A weak fixed *pole* may degenerate into a mutable one in a day, nay, in a few minutes, by holding it in a poſition contrary to its *pole*. The load-ſtone itſelf will not make a fixed *pole* in any iron. It is required the iron have a length, if it be thick. Mr. Ballard tells us, that in ſix or ſeven drills made before his face, the bit of each became a north *pole*, merely by hardening.

Pole *of a glaſs*, in optics, is the thickeſt part of a convex, or the thinneſt of a concave glaſs. See Convex and Concave. If the glaſs be truly ground, the *pole* will be exactly in the middle of its ſurface. See Optic *glaſs*, Grinding, *&c.*

This is ſometimes alſo called the *vertex* of the glaſs. See Vertex.

Pole, in ſurveying, is a meaſure containing 16 feet and an half; called alſo *perch*, and ſometimes *rod*. See Perch.

Pole Star, or **Polar Star**, is a ſtar of the ſecond magnitude; the laſt in the tail of urſa minor, or the little bear. See Ursa Minor.

Its longitude, Mr. Flamſtead makes 24° 14′ 41″, its latitude 66° 04′ 11″.

The nearneſs of this ſtar to the *pole*, whence it happens that it never ſets, renders it of vaſt ſervice in navigation, *&c.* for determining the meridian line, the elevation of the *pole*, and conſequently the latitude of the place, *&c.* See Pole; ſee alſo Meridian and Latitude.

POLEIN, in our ancient cuſtoms, a ſort of ſhoe, ſharp or picked at the point.

This faſhion was firſt taken up in the time of king William Rufus; the picks being made ſo long, that they were tied up to the knees with ſilver or golden chains.

They were forbidden by *ſtat. an.* 4. *Edw.* IV. *cap.* 7.---*Tunc fluxus crinium, tunc luxus veſtium, tunc uſus calceorum cum arcuatis aculeis inventus eſt.* Malmesb. in Will. II.

POLEMICAL *, πολεμικος, an epithet applied to books of controverſy, eſpecially thoſe in divinity.

> * **The word comes from the Greek, πολεμος, war, battle.---Scaliger's exercitations againſt Cardan make a pure *polemical* Book.**

Hence alſo we ſay *polemical divinity*, for controverſial, *&c.* See Theology.

POLEMOSCOPE, in optics, an oblique kind of proſpective glaſs, contrived for the ſeeing of objects that do not lie directly before the eye.

It was invented by Hevelius, in 1637, who gave it this name, from the Greek πολεμος, *battle*; becauſe it may be of uſe in war, in engagements, duels, *&c.*

Something of this kind are thoſe now known among us under the name of ogling-glaſſes, or opera-glaſſes, through which one ſees a perſon in appearing to look at another.

Conſtruction of the Polemoscope.--Any teleſcope will be a *polemoſcope*, if the tube be but crooked, like a rectangular ſyphon ABDM (*tab. opt. fig.* 70.); and between the object-glaſs AB and firſt eye-glaſs GH (if there be ſeveral) be placed a plain mirror, in ſuch manner as that the mirror is inclined to the horizon, at an angle of 45°, and its reflected image found in the focus of the eye-glaſs GH.

For, by this means, objects ſituate over-againſt the lens AB will appear the ſame as if the mirror K were away, and the object-glaſs, with the objects, were directly oppoſite to the eye-glaſſes.

If it be deſired to look in at O, not at M, another plain mirror, N, muſt be added. See Telescope.

POLETA, in our ancient law-books, ſignifies the ball of the foot.---*Tres ortilli ſcindantur de pede anteriori ſine poleta*, Mat. Par. *anno* 1215. See Expeditate.

POLEY, in medicine. See the article Polium.

POLICY *, or Polity, πολιτεια, the laws, orders, and regulations preſcribed for the conduct and government of ſtates and communities. See Government.

> * **The word is of Greek original; being derived from the Greek πολις, *civitas*, city, or ſtate.**

In the general, *policy* is uſed in oppoſition to barbariſm.---Different ſtates have different kinds of *policy*; thus the *policy* of Athens differed from that of Sparta.

Loyſeau obſerves, that *policy* properly ſignifies the courſe and adminiſtration of juſtice in a city.---The direction of the *policy* of London is in the hands of the lord-mayor. See Mayor.

At Paris they have a *chamber of policy*, where people are verbally accuſed for contraventions of *policy*.

Some divide *policy* into two parts, *agoranomy*, that relating to affairs of merchandize; and *aſtynomy*, that concerning the civil and judiciary government of the citizens. Some add a third branch, *viz.* what relates to the eccleſiaſtical government. See Ecclesiastical.

Richard Hooker has a fine treatiſe of the laws of eccleſiaſtical *policy*.

Policy *of inſurance, or aſſurance*, of ſhips, is a contract or convention, whereby a perſon takes upon himſelf the riſques of a ſea-voyage; obliging himſelf to make good the loſſes and damages that may befal the veſſel, its equipage, tackle, victualing, lading, *&c.* either from tempeſts, ſhipwrecks, pirates, fire, war, repriſals, *&c.* in part or in whole; in conſideration of a certain ſum of ſeven, eight, or ten *per cent.* more or leſs, according to the riſque run; which ſum is paid down to the aſſurer by the aſſuree, upon his ſigning the *policy*. See Assurance.

There are ſome aſſurances for the going, ſome for the returning, and ſome for both; or for a limited time; though ſome maintain, that the time ought never to be limited, in that the contract thereby becomes uſurary.

The *policy* is to contain the name and dwelling of the perſon aſſured; his quality, whether as proprietor or agent; the effects, name of the veſſel, and of the maſter; thoſe of the place where the goods are to be loaden or unloaden; the port whence and whither; the time, the riſques, and the conditions.

If the veſſel or merchandizes aſſured be loſt, the aſſuree muſt notify the ſame by an act in form; declaring he ſurrenders the whole to the aſſurer, on his paying the ſums aſſured in the time expreſſed.

The origin of theſe aſſurances is aſcribed to the Jews, at the time they were expelled France, in 1182. who are ſaid to have uſed this as a means to facilitate the tranſporting of their effects.

The term *policy* is Spaniſh, and comes from *poliça*, ſchedule; but the practice comes from the Italians, and the Lombards, who, again, derived it originally from the Latin *pollicitatio*, promiſe.---Some ſay, the merchants of Marſeilles were the firſt who ſet on foot this kind of commerce.

Anciently, *policies* were given by word of mouth, called *policies of credit*; it being ſuppoſed the aſſurer would enter them in his ledger: but of late, that honeſty is become leſs frequent among traders, they have been conſtantly in writing.

The grand mart for the aſſurance of ſhips is the city of Amſterdam. It is here not only the Dutch traders inſure their veſſels; but, what is infinitely more conſiderable, ſuch are the riches, reputation, *&c.* of the inhabitants, as to engage the generality of merchants of other countries to prefer them to their own countrymen, and to aſſure with the Dutch, when it would be much eaſier for them to find aſſurers at home, or in the ports where the veſſels are laden.

The number of inſurers at Amſterdam is not above fifty or ſixty perſons; yet is their wealth and character ſuch, that a man never fails of an aſſurer, be the countries or ports what they will, the cargo ever ſo rich, or the dangers ever ſo imminent.

Policy *of inſurance* or *aſſurance of houſes*, is an inſtrument formed on the model of that for veſſels; whereby a perſon, or community of perſons, take on themſelves the riſques and damages that may befal houſes, their furniture, in whole or in part, *&c.* from fire; on conſideration of a certain ſum or ſums, to be paid by the aſſurer, according to the terms of the agreement. See Assurance.

The inſurance from fire is now a popular piece of commerce; and we have a number of ſocieties erected into corporations for that very purpoſe.

Policy *of inſurance of lives*, is an inſtrument whereby a ſociety of perſons erected into a corporation, *&c.* oblige themſelves to pay a certain ſum of money, *e. gr.* an hundred pounds, upon the death of a perſon whoſe life they aſſure, in conſideration of a ſum of money, *e. gr.* one guinea, paid quarterly, to the aſſurers during the life of the ſaid perſon aſſured.

The *policy* is under the ſeal of the office, and intitles the perſon in whoſe favour it is granted, to make good his claim, according to the tenor of the articles, or by-laws of the ſociety.

There have alſo been lately ſet on foot, *policies* of aſſurance of horſes, from death, damages in travelling, diſeaſes, being ſtolen, *&c.* in which caſes the aſſurers are to make them good to the aſſurees, *&c.*

Officers of Policy. See the article Officer.

Policy, in letter-foundery, is ſometimes uſed for a rule that regulates the number of letters of each kind in a complete font; *i. e.* to determine how many, in proportion to the whole ſet, there are to be of each particular kind. See Letter, Font, *&c.*

For inſtance, in a font of an hundred thouſand characters, there are to be a thouſand for *e*, five thouſand for *a*, three thouſand for *m*, thirty only for *k*, as many or a little more for *x*, *y*, and *z*; and in proportion for the other letters, the great and ſmall capitals, the initial letters, points, comma's, double letters, *&c.* See *letter* Foundery.

POLIOPTRUM, or Polyoptron, in optics. See Polyoptron.

POLISH *coins*, *meaſures*, &c. See the articles Coin, Money, Measure, *&c.*

POLISHER, an inſtrument called alſo a *burniſher*, uſed for poliſhing and burniſhing gold, ſilver, and other metals, when gilt or ſilvered; and matters of other kinds proper to take a poliſh. See Burnishing and Polishing.

The *poliſher* is different in the different arts and manufactures. ---The gilders uſe an iron *poliſher* to prepare their metals before gilding, and the blood-ſtone to give them the bright poliſh after gilding. See Gilding.

The *poliſher* uſed by the makers of ſpurs, bits, *&c.* is part iron, part ſteel, and part wood.---The inſtrument conſiſts of an iron bar, with a wooden handle at one end, and a hook at the other, to faſten it to another piece of wood held in the vice, while the operator is at work. In the middle of the bow, withinſide, is what they properly call the *poliſher*, which is a triangular piece of ſteel with a tail, whereby it is riveted to the bow.

What the cutlers call their *poliſhers*, are a kind of wooden grindſtones, (if we may be allowed the word) made of walnut-tree, an inch thick, and of a diameter at pleaſure. They are turn'd by the great wheel; and it is on theſe they poliſh and ſmooth their works with emery and putty.

The *poliſhers* uſed in the manufacture of glaſs are very different from all theſe.---They conſiſt of two pieces of wood, the one flat, cover'd with old hat; the other long, and half-round, is faſtened on the former, whoſe edge it exceeds on both ſides by ſome inches, which ſerve the workman to take hold of, and to work it backwards and forwards by. See Glass.

The *poliſhers* uſed by ſpectacle-makers are pieces of wood a foot long, ſeven or eight inches broad, and an inch and half thick, covered with old caſtor-hat, whereon they poliſh the ſhell and horn frames their ſpectacle-glaſſes are to be ſet in. See Spectacles.

POLISHING, the art of giving a gloſs, or luſtre, to a thing; particularly a precious ſtone, marble, glaſs, mirror, or the like. See Lustre, *&c.*

Polishing *of glaſſes*, *lens's*, &c. ſucceeds the grinding thereof. See Grinding; ſee alſo Glass, Lens, *&c.*

The *poliſhing* of a mirror is the laſt preparation given it, with emery or putty. See Mirror.

For the *poliſhing* of diamonds, *&c.* ſee Lapidary, *&c.*

POLITICAL*, ϖολιτικος, ſomething that relates to policy, or civil government. See Policy and Government.

* The word is formed from the Greek πολις, *civitas*, city.

In this ſenſe we ſay, *political* intereſts, *political* views, *political* diſcourſes, *&c.*

Political *arithmetic*, is the application of arithmetical calculations to *political* uſes and ſubjects; as, the public revenues, number of people, extent and value of lands, taxes, trade, commerce, manufactures, or whatever relates to the power, ſtrength, riches, *&c.* of any nation or commonwealth. See Arithmetic.

The chief authors who have attempted calculations of this kind, are Sir William Petty, Major Grant, Dr. Halley, Dr. Davenant, and Mr. King; and the principal points ſettled by them are as follow:

According to Sir William Petty's computations, though the land of Holland and Zealand be not above 1000000 acres, nor that of France leſs than 8000000, yet the former are near a third part as rich and ſtrong as the latter.---That the rents of lands in Holland, are to thoſe in France as 7 or 8 to 1.---That the people of Amſterdam are $\frac{2}{3}$ of thoſe of Paris or London; which, according to him, do not differ above a 20th part from one another.---That the value of the ſhipping of Europe is about two millions of tuns, whereof the Engliſh have 500000, the Dutch 900000, the French 100000; the Hamburghers, Danes, Swedes, and Dantzickers, have 250000; and Spain, Portugal, Italy, *&c.* about as much.---That the value of goods exported yearly from France into all parts, was quadruple of that exported into England alone, and conſequently, in all, about 5000000 *l.* What was then exported out of Holland into England, was worth 300000 *l.* and what was exported thence into all the world, 18000000 *l.*---That the money yearly raiſed by the French king, in time of peace, is about $6\frac{1}{2}$ millions ſterling; and that the moneys raiſed in Holland and Zealand, are about 2100000 *l.* and in all the provinces together, about 3000000 *l.*---That the people of England are about 6000000, and their expences at 7 *l. per annum* a head, 42000000 *l.* or 800000 *l.* a week.---That the rent of the lands is about 8 millions, and the intereſts and profits of the perſonal eſtates as much.---The rent of houſes in England 4000000 *l.*---That the profits of the labour of all the people is 26000000 *l.* yearly.---That in Ireland the people amount to about 1200000---That the corn ſpent in England, at 5 *s.* the buſhel for wheat, and 2 *s.* 6 *d.* for barley, amounts to ten millions *per annum*.---That the navy of England (then) required 36000 men to man it, and other trade and ſhipping, about 48000.---That in France, to manage the whole ſhipping trade, there were required 1500 men---That the whole people of France are about thirteen millions and an half; and thoſe of England, Scotland, and Ireland, together, about nine millions and a half.---That in the three kingdoms are about 20000 churchmen; and in France above 270000.---That in the dominions of England are above 40000 ſeamen, and in France not above 10000.---That in England, Scotland, and Ireland, and all other dominions depending thereon, there was then about 60000 tun of ſhipping, which is worth about four millions and a half in money.---That the ſea-line round England, Scotland, and Ireland, and the adjacent iſles, is about 3800 miles.---That in the whole world are about 300 millions of people; whereof thoſe with whom the Engliſh and Dutch have any commerce, are not above 80 millions.---That the value of commodities traded for in the whole, is not above 45000000. That the manufactures exported out of England, amount to about 5000000 *l. per annum.* Lead, tin, and coals, to 500000 *l. per annum.*---That the value of the French commodities (then) brought into England, did not exceed 1200000 *l. per annum*---That the whole caſh of England, in current money, was then about 6000000 *l.* ſterling.

Dr. Davenant gives ſome good reaſons, why many of Sir Wm. Petty's numbers are not to be intirely depended upon; and therefore advances others of his own, founded on the obſervations of Mr. Greg. King.

Some of the particulars are,-- That the land of England is 39 millions of acres.---That the number of people, according to his account, is about 5545000 ſouls, they increaſing about 9000 every year, allowances being made for plagues, *&c.* wars, ſhipping, and the plantations.---The people in London he reckons at 530000: Thoſe in the other cities and market-towns in England, 870000; and thoſe in the villages and hamlets, at 4100000. The yearly rent of the land he accounts to be

10000000 *l.*---That of the houſes and buildings 2000000 *l. per annum* ---The produce of all kinds of grain he reckons to be worth 9075000 *l.* in a year moderately plenty.---The rent of the corn-lands annually 2000000 *l.* and their neat produce, above 9000000 *l.*---The rent of the paſture, meadows, woods, foreſts commons, heaths, *&c.* 7000000 *l.*---The annual produce by cattle, in butter, cheeſe, and milk, he thinks, is about 2500000 *l.* ---The value of the wool yearly ſhorn, about 2000000 *l.*---Of horſes yearly bred, about 250000 *l.*---Of the fleſh yearly ſpent as food, about 3350000 *l.*---Of the tallow and hides, about 600000 *l.*---Of the hay yearly conſumed by horſes, about 1300000 *l.*---Of hay conſumed by other cattle, 1000000 *l.*---Of the timber yearly felled for building, 500000 *l.*---Of the wood yearly ſpent in firing, *&c.* about 500000 *l.*---The land of England to its inhabitants is now about 7¼ acres *per* head.---The value of the wheat, rye, and barley, neceſſary for the ſuſtenance of England, amounts to at leaſt 6000000 *l. ſterl. per annum.*---The value of the woolen manufacture made here is about 8000000 *l. per annum*; and our exports of all kinds of the woollen manufacture amount to above 2000000 *l. per annum.*---The annual income of England, on which the whole people live and ſubſiſt, and out of which taxes of all kinds are paid, is now about 43000000 *l.*---that of France 81000000 *l.* and that of Holland 18250000 *l.*

Major Grant, in his obſervations on the bills of mortality, computes, that there are 39000 ſquare miles of land in England ---That in England and Wales there are 4600000 ſouls.---That the people of London are about 640000; one fourteenth part of the people of England.---That in England and Wales are about 10,000 pariſhes.---That there are 25 millions of acres in England and Wales, *viz.* about 4 acres to every head.---That but 64 out of 100 of the children born, are living at 6 years old.---That but 40 of 100 are alive at 16 years end.---That but 25 of 100 at 26 years end.---That but 16 at 36 years end.---That but 10 out of 100 at 46 years end.---That but 6 out of 100 at 56 years end ---That but three out of 100 at 66 years end.---And that but 1 out of 100 at 76 years end:---And that London doubles itſelf in about 64 years.

Sir William Petty, in his diſcourſe about duplicate proportion, further tells us, that it is found by experience, that there are more perſons living between 16 and 26, than of any other age; and laying down that as a ſuppoſition, he infers, that the ſquare roots of every number of mens ages under 16 (whoſe root is 4) ſhew the proportion of the probability of ſuch perſons reaching the age of 70 years.

Thus, it is 4 times more likely, that one of 16 years of age lives to be 70, than a child of one year old.---It is thrice as probable, that one of 9 years lives to be 70, as ſuch a new-born child, *&c.*---That the odds is five to 4, that one of 25 dies before one of 16 years.---That it is 6 to 5, (ſtill as the ſquare roots of the ages) that one of 36 years old dies before one but of 25 years of age: and ſo on according to any declining age to 70, compared with a number between 4 and 5; which is the root of 21, the law-age.

Dr. Halley has made a very exact eſtimate of the degrees of the mortality of mankind, from a curious table of the births and burials, at the city of Breſlau, the capital of Sileſia; with an attempt to aſcertain the price of annuities upon lives.---From a table which he has calculated thence, publiſhed in the *Philoſ. Tranſact.* he derives the following uſes.

1. To find in any multitude or body of people, the proportion of men able to bear arms, which he reckons from 18 to 56 years old; and accounts about ¼ of the whole.---2. To ſhew the different degrees of mortality, or rather vitality, in all ages; by which means he finds the odds there is, that any perſon of any age doth not die in a year's time, or before he attains ſuch an age.---3. To ſhew of what number of years it is an even lay that ſuch a perſon ſhall die; and finds, for inſtance, that it is an even lay, that a man of thirty years of age lives between twenty-ſeven and twenty-eight years.---4. To regulate the price of inſurance upon lives:--5. And the valuation of annuities upon lives. ---6. How to value two or three lives after the ſame manner. See Annuity.

From the whole, he makes two very good obſervations: 1. How unjuſtly we uſe to complain of the ſhortneſs of our lives; for that it appears, that one half of thoſe that are born, do not live above ſeventeen years.

2. That the growth and increaſe of mankind is not ſo much ſtinted by any thing in the nature of the ſpecies, as it is from the curious difficulty moſt people make of venturing on the ſtate of marriage: and therefore that celibacy ought to be every way diſcouraged by all wiſe governments; and thoſe who have numerous families of children to be countenanced and encouraged by good laws; ſuch as the *jus trium liberorum*, &c. among the Romans.

Farther particulars relating to the number of births and burials, the proportion of males and females, *&c.* See under the articles Marriage, Mortality, *&c.*

Political *criticiſm.* See the article Criticism.

POLITICS*, Politice, ϖολιτικη, the firſt part of œconomy, or ethics, conſiſting in the governing and regulating of ſtates, for the maintenance of the public ſafety, order, tranquillity, and good morals. See Ethics, Philosophy, Government, *&c.*

* The word is form'd from the Greek ϖολις, *civitas*, ſtate.

My Lord Bacon divides *politics* into three parts with regard to the three grand ends thereof, or the three offices incumbent on thoſe who have the adminiſtration, *viz.* the *preſervation* of the ſtate, the *happineſs* and *flouriſhing* of the ſtate, and the *inlargement* of its bounds, *&c.*

The two firſt parts, he obſerves, are well handled by ſeveral authors; but about the third there is a deep ſilence.--He ranks this therefore in the number of the *deſiderata*, and gives us a ſpecimen of an eſſay to ſupply it.

We have ſeveral ſyſtems of *politics* by Ariſtotle, Machiavel, Doria, Lipſius, *&c.* in which laſt there is nothing but particles and conjunctions of the author's own, the body of the book being all quotations.

Academy of Politics. See the article Academy.

POLITY, or Policy. See the article Policy.

POLIUM*, Poley, a medicinal plant, which makes an ingredient in the treacle of Andromachus. See Treacle.

* It has its name from the Greek ϖολιος, *white*, in regard the heads of the *polium* of the ancients, according to Dioſcorides, and the leaves, according to Pliny, were white.

It grows in mountainous places, and is thence denominated *montanum.*---The tops of its flowers are eſteemed cephalic, proper to promote urine, and the menſes, and to prevent putrefaction.

POLL, a term uſed in ancient writings for the head. See Head.

The word is doubtleſs formed from *pole*; this part being, as it were, the pole of the microcoſm. See Pole.

Hence, *to poll*, is to enter down the names of perſons who give their votes or voices at an election. See Vote, Voice, Suffrage, Election, *&c.*

POLLARD, among hunters, a ſtag, or male deer, which has caſt its head. See Head, Hunting, *&c.*

Pollard, or Pollenger, in agriculture, is applied to ſuch trees as have been frequently polled or lopped; by which they are contradiſtinguiſhed from timber trees. See Tree, Timber, and Horn.

POLLEX, in anatomy, denotes either the thumb, or great toe, according as either manus, or pedis, is added to it. See Finger and Toe.

Pollicis *abductor.* See the article Abductor.

Pollicis *adductor.* See the article Adductor.

Extenſor Pollicis *brevis*, and *longus.* See the article Extensor.

Flexor Pollicis *brevis*, and *longus.* See the article Flexor.

POLL-MONEY, or *capitation*, a tax impoſed by authority of parliament on the perſon or head; either on all indifferently, or according to ſome known mark of diſtinction, as quality, calling, *&c.* See Tax and Capitation.

Thus, by the ſtatute 18 *Car.* II. every ſubject in the kingdom was aſſeſſed by the *head*, or *poll*, according to his degree; every duke 100 *l.* marquis 80 *l.* baronet 30 *l.* knight 20 *l.* eſquire 10 *l.* *&c.* and every ſingle private perſon 12 *d.*

This was no new tax, as appears by former acts of parliament; particularly that *anno* 1380. where, *quilibet tam conjugatus quam ſolutus, utriuſq; ſexus, pro* capite *ſuo ſolvere cogebatur.* Walſing.

Camden, in his remains, *of coins*, ſays there was anciently a perſonal tribute, called *capitatio*, or *poll-ſilver*, impoſed on the *poll*, or perſon, of every one; on women from the age of 12 years, and on men from 14.

POLLUTION, Pollutio, the act of profaning a temple, or other holy place. See Profanation.

The Romaniſts hold a church to be polluted by the effuſion of blood, or of ſeed, therein; and require its being conſecrated anew.

The Jews were held polluted by the touching of a dead body, or of the menſes of women; and were to be purified in form. See the laws hereof in *Leviticus.*

The Indians are ſo ſuperſtitious on the head of *pollution*, that they break all the veſſels which thoſe of another religion have drank out of, or even touched; and drain all the water out of a pond a ſtranger has bathed in.

Pollution, or *ſelf* Pollution, is alſo uſed for the abuſing or defiling of one's own body, by means of laſcivious frictions and titillations, raiſed by art, to produce an emiſſion. See Emission.

We read in ſcripture, that Onan, and, as ſome critics alſo think, Er, were ſeverely puniſhed for having polluted themſelves by ſpilling their ſeed on the ground; whence the crime has been denominated by ſome empirics, *Onania.* See Onania.

Of *pollutions*, ſome are *voluntary*, others *involuntary*, and *nocturnal.*

Nocturnal Pollution is an involuntary emiſſion of ſeed, from a too great turgeſcency of the ſeminal veſſels, or from the ſeed's being too ſharp and irritating, or from a weakneſs of the parts. See Seed and Gonorrhoea.

The Romiſh church puts up prayers in the cloſe of the evening office, to be preſerved from nocturnal *pollutions.*

POLLUX, in aſtronomy, the hind twin, or poſterior part of the conſtellation gemini. See Gemini.

Pollux is alſo a fixed ſtar of the ſecond magnitude in the conſtellation gemini, or the twins. See Gemini.

Its place is in the head of the hind-twin, named *pollux*.---Its longitude 18° 56′ 09″. Its latitude 6° 39′ 27″ N.

POLLUX is alſo uſed in meteorology. See CASTOR.

POLTROON, or POLTRON, a *coward*, or *daſtard*, wanting courage to perform any thing great or noble. See COWARD.

The word we borrow from the French, who, according to Salmaſius, derive it *a pollice truncato*; becauſe anciently thoſe who would avoid going to the wars, cut off their thumbs.

But Menage, with more probability, derives it from the Italian, *poltrone*, and that from *poltro* a bed; becauſe timorous, puſillanimous people take pleaſure in lying a-bed.---He adds, that the Italian, *poltro*, is again derived from the German, *polſter*, a pillow, or cuſhion.

Others chuſe to derive the word from the Italian, *poltro*, colt; becauſe of that creature's readineſs to run away.

POLTROON, in falconry, is a name given to a bird of prey, when the nails and talons of his hind-toes are cut off, wherein his chief force and armour lay; in order to intimidate him, and prevent his flying at great game. See HAWK and HAWKING.

POLYACOUSTICS*, inſtruments contrived to multiply ſounds; as multiplying-glaſſes or polyſcopes do images of objects. See PHONICS, SOUND, *&c.*

* The word is compounded of the Greek ϖολυς, *much*, and ακȣω, *audio*, I hear. See ACOUSTICS,

POLYANTHEA*, a famous collection of common-places, in alphabetical order; of great ſervice to orators, preachers, *&c.* of the lower claſs. See COMMON-PLACE.

* The word is formed from the Greek ϖολυς, *much*, and ανθ☉, *flower*; and is much of the ſame ſignificancy with *anthology*, or *florilege*. See ANTHOLOGY.

The firſt author of the *polyanthea* was Dominic Nanni de Mirabellio, whoſe labour has been improved on by Barth. Amantius, and Franc. Tortius, and ſince by Joſ. Langius, under the title of *polyanthea nova*, 1613.

POLYANTHUS*, or POLYANTHIUM, is uſed to denote a plant which bears or produces ſeveral or many flowers. See PLANT and FLOWER.

* The word is compounded of ϖολυς, *multus*, much, and ανθ☉, *flos*, flower.

POLYCHREST*, ϖολυχρηςος, in pharmacy, a medicine that ſerves for many uſes, or that cures many diſeaſes. See PANACEA.

* The word is compounded of the Greek ϖολυς, *multus*, much, and χρηςος, *utilis*, uſeful.

Sal POLYCHREST is a compound ſalt, made of equal parts of ſalt-petre and ſulphur, laid on a crucible firſt heated red hot for the purpoſe. See SALT.

POLYEDRON. See the article POLYHEDRON.

POLYGAMY*, πολυγαμια, a plurality of wives, or husbands, held by the ſame man, or woman, at the ſame time. See WIFE and HUSBAND.

* The word is formed from the Greek ϖολυ, *multum*, and γαμη, *uxor*, wife.

Polygamy is prohibited among Chriſtians, but was allowed by divine appointment among the Jews; as it is ſtill among the Mahometans.

Major Grant obſerves, that the males and females brought into the world are nearly on a balance; only abating for a little exceſs on the ſide of the males, to make up for the extraordinary expence thereof in war, and at ſea: whence it follows, that nature only intends one wife, or one husband, for the ſame perſon; ſince, if they have more, ſome others muſt go without any at all.

Hence he concludes, that the Chriſtian law, which prohibits, is more agreeable to the law of nature than the Mahometan; and we may add, than the Jewiſh law, which tolerates *polygamy*. See MARRIAGE.

Yet Selden has proved, in his *uxor Ebraica*, that plurality of wives was allowed of, not only among the Hebrews, but almoſt among all other nations, and in all ages.---It is true, the ancient Romans were more ſevere in their morals; and never practiſed it, though it was not forbid among them: and Mark Antony is mentioned as the firſt who took the liberty of two wives. See CONCUBINE.

From that time it became pretty frequent in the empire, till the reigns of Theodoſius, Honorius, and Arcadius, who firſt prohibited it by expreſs law in 393.---After this the emperor Valentinian, by an edict, permitted all the ſubjects of the empire to marry ſeveral wives: nor does it appear from the eccleſiaſtical hiſtory of thoſe times, that the biſhops made any oppoſition to this introduction of *polygamy*.

In effect, there are ſome even among the Chriſtian caſuiſts, who do not look on *polygamy* as in itſelf criminal. Jurieu obſerves, that the prohibition of *polygamy* is a poſitive law, from which a man may be exempted by ſovereign neceſſity.---Baillet adds, that the example of the patriarchs is the moſt preſſing argument in favour of *polygamy*.

At London we had ſome years ago an artful treatiſe publiſhed in behalf of a plurality of wives, under the title of *polygamia triumphatrix*; the author whereof aſſumes the name of *Theophilus Aletheus*; but his true name was *Lyſerus*, a native of Saxony ---It has been anſwered by ſeveral.

POLYGAMY is alſo uſed in the canon law for a plurality of wives, though only had ſucceſſively, or one at a time. See WIFE.

In the Romiſh church this ſtill diſqualifies a man for the epiſcopate. See BIGAMY.

POLYGLOTT*, ϖολυγλωττος, among divines and critics, chiefly denotes a bible printed in ſeveral languages. See BIBLE.

* It is thus called from the Greek πολυ, and γλωττα, tongue, language.

The firſt *polyglott* bible is that of cardinal Ximenes, printed in 1515. at Alcala de Henares; and commonly called the *bible of Complutum*, or *Complutenſian bible*.

It contains the Hebrew text, the Chaldee paraphraſe on the pentateuch, the Greek verſion of the LXX. and the ancient Latin verſion. See PENTATEUCH, PARAPHRASE, *&c.*

In this *polyglott* there is no other Latin verſion from the Hebrew beſide this laſt; but there is added another literal one from the Greek ſeptuagint.---The Greek text of the new teſtament is here printed without accents, to bring it nearer to the original of the apoſtles, or, at leaſt, to the moſt ancient copies, wherein there are no accents found. See ACCENT.

At the end is added an apparatus of grammars, dictionaries, and indices or tables.---The chief author, Ximenes de Cineros, cardinal and archbiſhop of Toledo, in his dedication to pope Leo X. obſerves, that it was neceſſary to give the holy ſcriptures in their originals; there being no tranſlation, how perfect ſoever, that can render them perfectly.

The ſecond *polyglott* is that of Philip II. printed by Plantin at Antwerp, in 1572. and the care of the edition impoſed on Arias Montanus.

In this, beſides every thing in the bible of Complutum, are added the Chaldee paraphraſes on the reſt of the Old Teſtament beſide the pentateuch, with a Latin tranſlation of thoſe paraphraſes. In this *polyglott* is likewiſe a very literal Latin verſion of the Hebrew text, for the uſe of thoſe who have a mind to learn the Hebrew language.

As to the new teſtament, beſide the Greek and Latin of the bible of Alcala, in this edition is added an ancient Syriac verſion, both in Syriac and Hebrew characters, with points, to facilitate the reading thereof to thoſe accuſtomed to read Hebrew. ---To the Syriac is likewiſe added a Latin one, compoſed by Guy le Fevre, who had the care of the Syriac verſion of the New Teſtament.

Laſtly, in the *polyglott* of Antwerp is added a more copious apparatus of grammars, dictionaries, *&c.* than in that of Complutum; with ſeveral little treatiſes judged neceſſary for clearing up the more difficult paſſages in the text.

The third *polyglott* is that of M. le Jay, printed at Paris in 1645. which has this advantage over that of Philip II. that it has the Syriac and Arabic verſions of the Old Teſtament with Latin interpretations.---In the pentateuch it has likewiſe the Hebrew and Samaritan text; and the Samaritan verſion in Samaritan characters.

As to the New Teſtament, beſide every thing in the *polyglott* of Antwerp, here is added an Arabic tranſlation, with a Latin interpretation. --But here wants the apparatus, and the grammars and dictionaries, which are in both the former *polyglotts*, which renders this great work very imperfect.

The fourth *polyglott* is that of London, printed in 1657. called *Walton's polyglott*, from the author of the edition, Dr. Brian Walton, afterwards biſhop of Wincheſter.

This is indeed leſs magnificent than that of M. le Jay, with regard both to the ſize of the paper, and the beauty of the characters, but is in all other reſpects preferable; being both much more ample, and more commodious.

In this, the vulgate is printed according to the reviſed and corrected edition of Clement VIII. which is not done in that of Paris, where the vulgate is printed as it ſtands in that of Antwerp before the correction. See VULGATE.

It likewiſe contains an interlineary Latin verſion of the Hebrew text; whereas the Paris edition has no other Latin verſion from the Hebrew beſide the common vulgate: again, the Greek ſeptuagint printed in this *polyglott* is not the ſame with that printed in the bible of Complutum, which was retained in the editions of Antwerp and Paris, but the Greek text of the edition of Rome: to which are added, the various readings of another very ancient Greek copy called the *Alexandrian*, becauſe brought from Alexandria. See SEPTUAGINT.

The Latin verſion of the Greek of the ſeventy is that publiſhed by Flaminius Nobilius, by authority of pope Sixtus V. Add, that in this *polyglott* are found ſome parts of the bible in the Ethiopic and Perſian, nothing whereof appears in any of the reſt.

Laſtly, this edition has the advantage of preliminary diſcourſes, called *prolegomena*, on the text both of the originals and verſions; with a volume of various readings of all the different editions.

To the number of *polyglotts* may likewiſe be added the two pentateuchs printed by the Jews of Conſtantinople, in four languages; but all in Hebrew characters.

In one of theſe pentateuchs, printed in 1551. is found the Hebrew text in large characters; on one ſide whereof is the Chaldee paraphraſe of Onkelos in middling characters; and on the other ſide a paraphraſe in the Perſian, compoſed by a Jew, one Jacob de Tous, ſo called from the city where he lived.--- Beſide theſe three columns, the Arabic paraphraſe of Saadias Gaon is printed in ſmall characters at-top of the pages; and at bottom is added the commentary of Raſch.

The other *Polyglott* is printed at Conſtantinople in 1547, in three columns like the former.—The Hebrew text of the law is in the middle, a tranſlation into the vulgar Greek on one ſide, and a Spaniſh tranſlation on the other. Theſe verſions are both in Hebrew characters, with points to determine the pronunciation. At-top of the page is added the Chaldee paraphraſe of Onkelos, and at the bottom the commentaries of Raſch.

To theſe may be added, as a ſeventh *Polyglott*, the Pſalter publiſhed by Aug. Juſtinian, a Dominican, and biſhop of Nebio, at Genoa, 1515; containing the Hebrew, Greek, Arabic, and Chaldee, with Latin interpretations and gloſſes. See PSALTER.

There are various other editions of the bible either in whole or in part, which might be ranged under the article of *Polyglotts*; though they are not ſo denominated---Such are the *Hexapla* and *Octapla* of Origen. See HEXAPLA and OCTAPLA.

And the bible of Hutter, printed at Hambourg, in Hebrew, Chaldee, Greek, Latin, German, Saxon, Italian, French, Sclavonic, Daniſh, *&c.* See BIBLE.

POLYGON*, *πολυγωνος*; in geometry, a multilateral figure, or a figure whoſe perimeter conſiſts of more than four ſides and angles. See FIGURE, PERIMETER, *&c.*

* The word is formed from the Greek *ϖολυς*, *many*, and *γωνια*, *angle*,

If the ſides and angles be equal, the figure is called a *regular polygon*. See REGULAR. For *ſimilar polygons*, ſee SIMILAR.

Polygons are diſtinguiſhed according to the number of their ſides.---Thoſe of five ſides are called *pentagons*; thoſe of ſix, *hexagons*; thoſe of ſeven, *heptagons*; thoſe of eight, *octagons*, *&c.* The particular properties, *&c.* of each whereof, ſee under its proper article, PENTAGON, HEXAGON, *&c.*

General properties of POLYGONS.---Euclid demonſtrates theſe which follow.---1. That every *polygon* may be divided into as many triangles as it hath ſides. See TRIANGLE.

This is done by aſſuming a point, as F, (*tab. geom. fig.* 28.) any-where within the *polygon*, and thence drawing lines to every angle F *a*, F *b*, F *c*, F *d*, &c.

2. The angles of any *polygon* taken together, make twice as many right ones, abating four, as the figure hath ſides. See ANGLE.

Thus, if the *polygon* have five ſides; the double of that is 10; whence ſubtracting 4, there remain 6 right ones.

3. Every *polygon* circumſcribed about a circle is equal to a rectangled triangle, one of whoſe legs is the radius of the circle, and the other the perimeter or ſum of all the ſides of the *polygon*.

Hence, every regular *polygon* is equal to a rectangled triangle, one of whoſe legs is the perimeter of the *polygon*, and the other a perpendicular drawn from the centre to one of the ſides of the *polygon*. See TRIANGLE.

Hence alſo every *polygon* circumſcribed about a circle is bigger than it; and every *polygon* inſcribed, leſs than the circle.---The ſame likewiſe appears hence, that the thing containing is ever greater than the thing contained.

And hence again, the perimeter of every *polygon* circumſcribed about a circle, is greater than the circumference of that circle; and the perimeter of every *polygon* inſcribed, leſs: whence it follows, that a circle is equal to a right-angled triangle, whoſe baſe is the circumference of the circle, and its height the radius; ſince this triangle is leſs than any *polygon* circumſcribed, and greater than any inſcribed. See CIRCUMSCRIBING.

Nothing therefore is wanted to the quadrature of the circle, but to find a right line equal to the circumference of a circle. See CIRCLE, CIRCUMFERENCE, QUADRATURE, *&c.*

To find the area of a regular POLYGON.---Multiply a ſide of the *polygon*, as A B, by half the number of the ſides, *e. gr.* the ſide of a hexagon by 3. Again, multiply the product by a perpendicular let fall from the centre of the circumſcribing circle to the ſide A B; the product is the area required. See AREA.

Thus, ſuppoſe A B 54; and half the number of ſides $2\frac{1}{2}$; the product or ſemiperimeter is 135. Suppoſing then the perpendicular F *g* 29; the product of theſe two, 3915, is the area of the pentagon required.

To find the area of an irregular POLYGON, or *Trapezium*.---Reſolve it into triangles; find the ſeveral areas of the ſeveral triangles; ſee TRIANGLE. The ſum of theſe is the area of the *polygon* required. See TRAPEZIUM.

To find the ſum of all the angles in any POLYGON.---Multiply the number of ſides by 180°: From the product ſubtract 360; the remainder is the ſum required.

Thus in a pentagon, 180 being multiplied by 5, gives 900; whence ſubtracting 360, there remain 540; the ſum of the angles of a pentagon.

Hence, if the ſum found be divided by the number of ſides, the quotient will be the angle of a regular *polygon*.

Or, the ſum of the angles is more ſpeedily found thus: Multiply 180 by a number leſs by two than the number of ſides of the *polygon*; the product is the quantity of the angles required: thus 180 being multiplied by 3, a number leſs by 2 than that of its ſides, the product is 540, the quantity of angles as before.

The following table exhibits the ſums of the angles in all rectilinear figures, from a triangle to a dodecagon; and is of good uſe both for the deſcribing of regular figures, and for proving whether or no the quantity of angles have been truly taken with an inſtrument. See REGULAR, FIGURE, *&c.*

Numb. Sides.	*Sum. Ang.*	*Ang. of Reg. Fig.*	*Numb. Sides.*	*Numb. Angl.*	*Ang. of Reg. Fig.*
III.	180°	60°	VIII.	1080°	135
IV	360	90	IX.	1260	140
V	540	108	X.	1440	144
VI	720	120	XI.	1620	$147\frac{3}{11}$
VII	900	$128\frac{4}{7}$	XII.	1800	150

To inſcribe a regular POLYGON *in a circle*.---Divide 360 by the number of ſides in the *polygon* required, to find the quantity of the angle E F D. Set off the angle at the centre, and apply the chord thereof E D, to the periphery, as often as it will go.---Thus will the *polygon* be inſcribed in the circle.

The reſolution of this problem, though it be mechanical, yet is not to be deſpis'd, becauſe both eaſy and univerſal.---Euclid indeed, gives us the conſtruction of the pentagon, decagon, and quindecagon; and other authors give us thoſe of the heptagon, enneagon, and hendecagon; but they are far from geometrical ſtrictneſs.

Renaldinus lays down a catholic rule for the deſcribing of all *polygons*, which many other geometricians have borrow'd from him; but Wagnerus and Wolfius have both demonſtrated the falſity thereof.

On a regular POLYGON *to circumſcribe a circle*: or, *to circumſcribe a regular* POLYGON *upon a circle*.---Biſect two of the angles of the given *polygon* A and E, by the right lines A F and E F, concurring in F; and from the point of concourſe with the radius E F deſcribe a circle.

To circumſcribe a *polygon*, &c. divide 360 by the number of ſides required, to find *e* F *d*; which ſet off from the centre F, and draw the line *e d*; on this conſtruct the *polygon*, as in the following problem.

On a given line, E D, *to deſcribe any given regular* POLYGON.---Find an angle of the *polygon* in the table; and in E ſet off an angle equal thereto, drawing E A = E D. Through the three points A E D deſcribe a circle. See CIRCLE. In this apply the given right line as often as it will go.---Thus will the required figure be deſcribed.

To inſcribe or circumſcribe a regular POLYGON *trigonometrically*.---Find the ſine of the arch produced by dividing the ſemiperiphery 180 by the number of ſides of the *polygon*: the double of this is the chord of the double arch; and therefore the ſide AE to be inſcribed in the circle.---If then the radius of a circle, wherein, *e. gr.* a pentagon is to be inſcribed, be given in any certain meaſure, *e. gr.* 345, the ſide of the pentagon is found in the ſame meaſure by the rule of three, thus: as radius 1000 is to 1176; ſo is 3450 to 4057, the ſide of the pentagon.---With the given radius therefore deſcribe a circle; and therein ſet off the ſide of the *polygon* as often as it will go; thus will a *polygon* be inſcribed in the circle.

To ſave the trouble of finding the ratio of the ſide of the *polygon* to radius, by the canon of ſines; we ſhall add a table expreſſing the ſides of *polygons* in ſuch parts whereof radius contains 100000000. In practice, as many figures are cut off from the right-hand, as the circumſtances of the caſe render needleſs.

Numb Sides.	*Quantity Side.*	*Numb. Sides.*	*Quantity Side.*
III.	17320508	VIII.	7653668
IV.	14142135	IX.	6840402
V.	11755705	X.	6180339
VI.	10000000	XI.	5634651
VII	8677674	XII.	5176380

To deſcribe a regular POLYGON, *on a given right line, and to circumſcribe a circle about a given* polygon, *trigonometrically*.---Taking the ratio of the ſide to the radius out of the table; find the radius in the ſame meaſure wherein the ſide is given. For the ſide and radius being had, a *polygon* may be deſcribed by the laſt problem. And if with the interval of the radius, arches be ſtruck from the two extremes of the given line, the point of interſection will be the centre of the circumſcribing circle.

POLYGON, in fortification, denotes the figure or perimeter of a fortreſs, or fortified place. See FORTIFICATION.

Exterior POLYGON, is a right line drawn from the vertex or point of a baſtion, to the vertex or point of the next adjacent baſtion. See BASTION.

Such is the line C F, *tab. fortification*, *fig.* 1.

Interior POLYGON, is a right line drawn from the centre of one baſtion to the centre of another.---Such is the line GH.

Line of POLYGONS, is a line on the French ſectors, containing the homologous ſides of the firſt 9 regular *polygons* inſcribed in the ſame circle, *i. e.* from an equilateral triangle to a dodecagon. See SECTOR.

POLYGONAL *column*. See the article COLUMN.

POLYGONAL *number*, in algebra, is the ſum of a rank of numbers in arithmetical progreſſion, beginning from unity:---thus called, by reaſon the units of which it conſiſts, may be ſo diſpos'd as to repreſent the Figure of ſeveral equal ſides and angles. See SERIES, NUMBER, PROGRESSION, *&c.*

Polygonal Numbers are divided, with reſpect to the number of their terms, into *triangular*, which are thoſe whoſe difference of terms is 1; *quadrangular* or *ſquare*, where it is 2; *pentagonal*, where 3; *hexagonal*, where 4; *heptagonal*, where 5; *octagonal*, where 6, *&c.*

They have their names from the geometrical figures, into which points correſponding to their units may be diſpoſed, *e. gr.* three points correſponding to the three units of a triangular number, may be diſpoſed into a triangle; and ſo of the reſt. See TRIANGULAR, *&c.*

The geneſis of the ſeveral kinds of *polygonal* numbers from the ſeveral arithmetical progreſſions, may be conceived from the following examples.

Arithmetical progreſſion	1,	2,	3,	4,	5,	6,	7,	8
Triangular numbers	1,	3,	6,	10,	15,	21,	28,	36
Arithmetical progreſſion	1,	3,	5,	7,	9,	11,	13,	15
Square numbers	1,	4,	9,	16,	25,	36,	49,	64
Arithmetical progreſſion	1,	4,	7,	10,	13,	16,	19,	22
Pentagonal numbers	1,	5,	12,	22,	35,	51,	70,	92
Arithmetical progreſſion	1,	5,	9,	13,	17,	21,	25,	29
Hexagonal numbers	1,	6,	15,	28,	45,	66,	91,	120

Side of a POLYGONAL *number*, is the number of terms of the arithmetical progreſſion that compoſe it: and the number of angles is that which ſhews how many angles that figure has, whence the *polygonal* number takes its name.

The number of angles, therefore, in triangular numbers, is 3, in tetragonal 4, in pentagonal 5, *&c.* Conſequently the number of angles exceeds the common difference of terms, by two.

To find a POLYGONAL *number, the ſide and number of its angles being given.* The canon is this:---The *polygonal* number is the ſemi-difference of the factums of the ſquare of the ſide into the number of angles diminiſhed by two units; and of the ſide itſelf into the number of angles diminiſhed by four units.

The ſums of *polygonal* numbers collected in the ſame manner as the *polygonal* numbers themſelves are, out of arithmetical progreſſions, are called *pyramidal numbers*. See PYRAMIDAL.

POLYGRAPHY *, POLYGRAPHIA, or POLYGRAPHICE, the art of writing in various unuſual manners or cyphers; as alſo of decyphering the ſame. See WRITING.

* The word is formed from the Greek, πολυ, *multum*, and γραφη, *ſcriptura*, writing.

The word is uſually confounded with *ſteganography* and *cryptography*. See STEGANOGRAPHY and CRYPTOGRAPHY.

The ancients ſeems to have been very little acquainted with this art; nor is there any mark of their having gone beyond the Lacedæmonian ſcytala. See SCYTALA.

Trithemius, Porta, Vigenere, and father Niceron, have written on the ſubject of *polygraphy* or cyphers. See CYPHER.

POLYHEDRON *, or POLYEDRON, πολυεδρον, in geometry, a body comprehended under many rectilinear ſides or planes. See BODY and SOLID.

* The word is formed from the Greek πολυ, *much*, and ἑδρα, *ſeat.*

If the ſides of the *polyhedron* be regular polygons, all ſimilar and equal; the *polyhedron* becomes a regular body, and may be inſcribed in a ſphere; that is, a ſphere may be drawn round it, ſo as its ſurface ſhall touch all the ſolid angles of the body. See REGULAR BODY, *&c.*

Gnomonic POLYHEDRON, is a ſtone with ſeveral faces, whereon are projected various kinds of dials. See DIAL.

Of this kind that in the Privy-Garden, London, now gone to ruin, was anciently the fineſt in the world.

POLYHEDRON, or POLYSCOPE, in optics, is a glaſs or lens conſiſting of ſeveral plain ſurfaces, diſpoſed into a convex form; popularly called a *multiplying-glaſs*. See LENS and MULTIPLYING-GLASS.

The phænomena of the *polyhedron* are as follow:---If ſeveral rays, as EF, AB, CD, (*tab. optics*, *fig.* 71.) fall parallel on the ſurface of a *polyhedron*, they will continue parallel after refraction. See RAY and REFRACTION.

If then the *polyhedron* be ſuppoſed regular, LH, HI, IM, will be as tangents cutting the ſpherical convex lens in F, B, and D; conſequently, rays falling on the points of contact interſect the axis.---Wherefore, ſince the reſt are parallel to theſe, they alſo will mutually interſect each other in G.

Hence, if the eye be placed where parallel rays decuſſate; rays of the ſame object will be propagated to it ſtill parallel from the ſeveral ſides of the glaſs. Wherefore, ſince the cryſtalline humour, by its convexity, unites parallel rays; the rays will be united in as many different points of the retina, *a*, *b*, *c*, as the glaſs has ſides.

Conſequently, the eye, through a *polyhedron*, ſees the object repeated as many times as there are ſides.---And hence, ſince rays coming from remote objects are parallel; a remote object is ſeen as often repeated through a *polyhedron*, as that has ſides.

2. If rays, AB, AC, AD, (*fig.* 72.) proceeding from a radiant point A, fall on ſeveral ſides of a regular *polyhedron*; after refraction they will decuſſate in G, and proceed on a little diverging.

Hence, if the eye be placed where the rays coming from the ſeveral planes decuſſate, the rays will be propagated to it from the ſeveral planes a little diverging, *i. e.* as if they proceeded from different points. But ſince the cryſtalline humour, by its convexity, collects rays from ſeveral points into the ſame point; the rays will be united in as many different points of the retina, *a*, *b*, *c*, as the glaſs has ſides; conſequently, the eye being placed in the focus G, will ſee even a near object repeated as often through the *polyhedron*, as that has ſides.

Thus may the images of objects be multiplied in a camera obſcura, by placing a *polyhedron* at its aperture, and adding a convex lens at a due diſtance therefrom.---And it really makes a very pleaſant appearance, if a priſm be applied ſo as the coloured rays of the ſun refracted therefrom be received on the *polyhedron:* for by this means they will be thrown on a paper or wall near at hand in little lucid ſpecks, much exceeding the brightneſs of any precious ſtone; and in the focus of the *polyhedron*, where the rays decuſſate, (for in this experiment they are received on the convex ſide) will be a ſtar of ſurpriſing luſtre.

If images be painted in water-colours in the areolæ or little ſquares of a *polyhedron*, and the glaſs applied to the aperture of a camera obſcura; the ſun's rays paſſing through it, will carry with them the images thereof, and project them on the oppoſite wall.

This artifice bears a reſemblance to that other, whereby an image on paper is projected on the camera, *viz.* by wetting the paper with oil, and ſtraining it tight on a frame; then applying it to the aperture of the camera obſcura, ſo as the rays of a candle may paſs thro' it upon the *polyhedron*. See CAMERA.

To make an anamorphoſis, or deformed image, which through a POLYHEDRON *or* multiplying-glaſs *ſhall appear regular and beautiful.*---At one end of a horizontal table erect another at right angles, whereon a figure may be deſigned; and on the other end erect another, to ſerve as a fulcrum or ſupport, moveable on the horizontal one.---To the fulcrum apply a plano-convex *polyhedron*, conſiſting, *e. gr.* of 24 plain triangles; let the *polyhedron* be fitted in a draw tube, whereof that end towards the eye to have only a very ſmall aperture, and a little further off than the focus.---Remove the fulcrum from the other perpendicular table, till it be out of the diſtance of the focus; and that more, as the image is to be greater.---Before the little aperture place a lamp; and trace the luminous areolæ projected from the ſides of the *polyhedron*, with a black lead pencil, on the vertical plane, or a paper applied thereon.

In theſe ſeveral areolæ, deſign the ſeveral parts of an image, in ſuch manner as that, when joined together, they may make one whole, looking afreſh every now and then through the tube, to guide, correct, *&c.* the colours, and to ſee that the ſeveral parts match aptly together.

The intermediate ſpace fill up with any figures or deſigns at pleaſure, contriving it ſo, as that to the naked eye the whole may exhibit ſome appearance very different from that intended to appear through the *polyhedron*.

The eye now looking through the little aperture of the tube, will ſee the ſeveral parts and members diſperſed among the areolæ to exhibit one continued image, all the intermediate ones diſappearing. See ANAMORPHOSIS.

POLYMATHY *, POLYMATHIA, πολυμαθια, the knowledge of many arts and ſciences; or, an acquaintance with a great number of different ſubjects. See ENCYCLOPÆDIA.

* The word comes from the Greek πολυ, *multum*, and μανθανω, *diſco*, I learn.

Lipſius, Scaliger, Kircher, Petavius, Grotius, Salmaſius, Leibnitz, *&c.* were famous for *polymathy*.---Among the ancients, ſuch as were eminent this way were called *polyhiſtores*.

Polymathy is frequently little more than a confuſed heap of uſeleſs erudition, occaſionally detailed, either pertinently or impertinently, for parade.---The genuine *polymathy* is an extenſive erudition, or a knowledge of a great number of things, well digeſted, and applied to the purpoſe, and never but where they are neceſſary.

POLYMYTHY, POLYMYTHIA, in poetry, a multiplicity of fables, in an epic or dramatic poem; in lieu of an unity, or a ſingle one. See FABLE, UNITY, *&c.*

Polymythia is a great fault.---It conſiſts in joining a number of diſtinct actions or fables into one complex body. See ACTION.

Such a work Boſſu compares to the batrachomyomachia, or one of the fables of Æſop: And ſuch would be the idea of a Theſeid, an Heracleid, an Achilleid, or the like poems, which ſhould comprehend all the actions of thoſe heroes, compared with the Iliad or Æneid. See HERO, EPIC, *&c.*

POLYNOMIAL, or *multinomial roots*, in mathematics. See MULTINOMIAL and ROOT.

POLYOPTRUM *, in optics, a glaſs through which objects appear multiplied, but diminiſhed. See MULTIPLICATION.

* The word is formed from the Greek πολυ, *much*, *many*, and οπτομαι, *I ſee.*

The *polyoptrum* differs both in ſtructure and phænomena from the common multiplying-glaſſes, called *polyhedra*. See POLYHEDRON.

Conſtruction of the POLYOPTRUM.---In a glaſs, plain on both ſides, AB, (*tab. optics*, *fig.* 73.) and about three fingers thick, cut out ſpherical ſegments, ſcarce a fifth part of a digit in diameter.

If then the glaſs be removed from the eye, till you can take in all the cavities at one view, you will ſee the ſame object, as it through ſo many ſeveral concave glaſſes, as there are cavities, and all exceedingly ſmall.

Fit this, as an object-glaſs, in a tube ABCD, whoſe aperture AB is equal to the diameter of the glaſs, and the other CD equal to that of an eye-glaſs, *e. gr.* about a finger's breadth. The length of the tube AC to be accommodated to the object and eye-glaſs, by trial.

In CD fit a convex eye-glaſs, or in lieu thereof a meniſcus, having the diſtance of its principal focus a little larger than the length of the tube; ſo that the point from which the rays diverge after refraction in the object-glaſs, may be in the focus.---If then the eye be applied near to the eye-glaſs, a ſingle object will be ſeen repeated as often as there are cavities in the object-glaſs, but ſtill diminiſhed.

POLYPETALOUS*, in botany, a flower conſiſting of ſeveral petala, or leaves. See PETALA.

*** The word comes from πολυ, *multum*, and ϖεταλον, *petalum*.**

The covers or defences of flowers conſiſt either of a ſingle continued petalon, whence they are called *monopetalous*; or of ſeveral diſtinct pieces, hence called *polypetalous*. See FLOWER and MONOPETALOUS.

Polypetalous flowers are either *regular* or *irregular*.

Regular POLYPETALOUS *flowers*, according to ſome botaniſts, are either thoſe conſiſting of two pieces, as the cercis; or of four, thence called *croſs-flowers*, as the clove-tree; or of five, called *umbelliferous*, as fenel; or of ſix, as the white lily, thence called the *lily-kind*. See UMBELLIFEROUS, *&c.*

Thoſe exceeding this number, in any quantity, equal or unequal, form a new claſs of *polypetalous* flowers, called the *roſe-kind*; among which are ranked all thoſe of three, four, five, or ſix pieces, whoſe fruits differ ſo from the reſt, that it is required they be diſtinguiſhed from them.

Such is the flower of the water plantain, which, though it has only three leaves, yet, by the relation of its ſeed with that of the ranuncula, is ranged in this laſt claſs.---Such alſo is the flower of tormentil; which, by reaſon of the difference of its fruit from the ſiliquæ or ſiliculæ of the croſs-flowers, cannot be ranged among them.---Such alſo is the pink, which, though conſiſting of five pieces, yet is excluded the claſs of umbelliferous plants, becauſe its fruit is not divided into two parts.---Such, *laſtly*, are the flowers of ſome ranuncula's, houſe-leek, and anemonies; which, though they have ſix petala, yet never produce fruits divided into three lodges, as thoſe of the lily-kind; and therefore cannot belong to their claſs.

Irregular POLYPETALOUS *flowers*, are ſo called from the odd figure and diſpoſition of their petala, what number of them ſoever they have.

Such are thoſe in two pieces reſembling two chaps, as in fumitary; or thoſe of five pieces reſembling butterflies, common to all leguminous plants.

POLYPODY*, POLYPODIUM, in botany, a plant of the paraſitaical kind, popularly called *many-feet*; of conſiderable uſe in medicine, *&c.* See PARASITE.

*** The word is formed from the Greek ϖολυς, and πȣς, *foot*, in regard the root of the plant clings to walls and trees, by a great number of little fibres like claws.**

There are two kinds:---*Common polypody*, and *polypody of the oak*. The firſt uſually grows on old walls in the country, among moſs, *&c.* the latter, called alſo *oak-fern* from the reſemblance it bears to fern, grows on the branches of that tree, in the places where they ſhoot or ſpread out, feeding on a little earth, collected there from the duſt blown about with the wind, and watered with the rain.

Polypody of the oak, *polypodium quercinum*, is much the better of the two.---It muſt be choſen new, well-fed, dry, brittle, of a tan-red without, green within, of a ſweet taſte reſembling liquorice.

The root is what is chiefly uſed in medicine, being eſteemed cathartic; though Dr. Quincy ſays it is no more than a common detergent; in which capacity it is much preſcribed in medicated ales againſt the jaundice, ſcurvy, obſtructions of the viſcera, hypochondriacs, *&c.*

POLYPTOTON, πολυϖτωτον, in rhetoric, a figure wherein the ſame word is repeated in different caſes, genders, or numbers, *i. e.* with different terminations. See FIGURE.

Such is that of Cicero, *pro Arch. Sed pleni ſunt omnes libri, plenæ ſapientum voces, plena exemplorum vetuſtas.* So Virg. Æn. *l.* 4. *v.* 28.

Littora littoribus contraria, fluctibus undas
Imprecor, arma armis pugnent.---

POLYPUS, πολυϖȣς, or πολυϖος, in medicine, a fleſhy tumour or excreſcence ariſing on the inſide of the noſtrils, prejudicial to reſpiration and ſpeech; called alſo, by way of diſtinction, *polypus narium*. See NOSE, EXCRESCENCE, *&c.*

This *polypus* ariſes by ſeveral roots from the os cribroſum, and hangs down, ſometimes as low as the lip; growing likewiſe backwards, ſo as to ſtop the hole of the palate, whereby the air and pituita deſcend out of the noſe down into the throat; and by this means ſtrangles the patient.

It has its name from the reſemblance it bears to the fiſh *polypus*, called in Engliſh, *pourcontrel*, or *many-feet*.---Though ſome derive the name from the reſemblance its ſubſtance bears to that of the polypus; and others, from the reſemblance its many roots bear to the many feet of that fiſh.

If it have no roots, or only one continued root, it is called a *ſarcoma*; which is only a beginning *polypus* See SARCOMA.

Polypus's are chiefly found in ſcrophulous or cancerous conſtitutions, along with venereal caſes, ulcers, ozænas, *&c.*---Cauſtics, emollient fomentations, extirpation, and diſſective powders and lotions are the uſual remedies.

POLYPUS, is alſo uſed for a morbid excreſcence in the heart; conſiſting of a tough concretion of grumous blood lodged therein. See HEART.

Malpighi gives a very accurate deſcription of this *polypus*. In the right ventricle of the heart, he obſerves, it is uſually larger, and of a paler colour, like pituita, with reddiſh or blackiſh ſtreaks; in the left ventricle it is ſmaller, blacker and denſer.---He adds, that it ſeems to have a ſort of organiſm, and appears like a congeries of pellicles ſtretched over one another, which form a kind of nervous compages.

Polypus's are often found upon opening the bodies of perſons dying apoplectic; and are doubtleſs frequently the occaſion of ſudden death.---They are ſeldom diſcovered till they have diſpatched the patient.

It is a diſpute among phyſicians, whether *polypus's* be produced any conſiderable time before, or always immediately after death?---Mr. Gould has an expreſs diſcourſe in the *philoſ. tranſact.* to evince the former.

POLYPUS *of the lungs*.---In *philoſ. tranſact.* Dr. Rob. Clarke gives us a very odd inſtance of a patient, who cough'd up, at times, ſeveral hundred *polypus's of the lungs*.

They ſeemed to have ſome organization, and were all perfectly alike.---The patient ſaid, though they had no life, he had frequently preſſed a ſlimy matter out of the body.

Dr. Liſter obſerves, that ſuch *polypus's* are formed in the remoter and deeper branches of the aſpera arteria, whence they are very difficult to get up.---The patient above-mentioned never brought them up till after a continued coughing of half a day and night.

He adds, that they are nothing but viſcous excretions of the ſmall glands, hard baked in thoſe glands whoſe form they receive.---M. Buiſſiere obſerves, they are frequently miſtaken for pieces of the blood-veſſels or lungs.

POLYPYRENEOUS* *fruits*, in botany, are ſuch as contain ſeveral kernels or ſeeds. See FRUIT.

*** They are thus called from the Greek πολυ, *much*, and ϖυρην, *kernel*, or *berry*. See POLYSPERMOUS.**

POLYSCOPE, a multiplying glaſs, *i. e.* a glaſs which repreſents one object to the eye as if it were many; called alſo *polyhedron*. See MULTIPLYING *glaſs* and POLYHEDRON.

POLYSPASTON*, πολυσϖαϛον, in mechanics, a machine ſo denominated by Vitruvius, conſiſting of an aſſemblage of ſeveral pullies, uſed for raiſing of huge weights in a little time. See MACHINE.

*** The word comes from the Greek ϖολυ, and σπαω, *traho*, I draw, *q. d.* that may be drawn many ways.**

The multiplication of pullies in the *polyſpaſton* is to very good purpoſe; it being demonſtrated in mechanics, that the force required to ſuſtain a weight by means of a *polyſpaſton*, is to the weight itſelf, as unity to the number of ropes, or of the pullies; thoſe ropes or pullies being ſuppoſed parallel to each other. See PULLEY.

Hence, the number of pullies, and the power being given; the weight that will be ſuſtained thereby is eaſily found; *viz.* by multiplying the power by the weight.

E. gr. Suppoſe the power 50 pounds, and the number of pullies 5, the weight they will balance is 250 pounds.

In like manner, the number of pullies being given, together with the weight ſuſtained, the power is found by dividing the weight by the number of pullies: Thus, if the weight be 900 pounds, and the number of pullies 6, the power will be 150 pounds.

Dechales obſerves, that it is found by experience, that a moderate man, ſtanding barely on the ground, will lift 150 pounds; whence the ſame man, by means of a *polyſpaſton* conſiſting of 6 pullies, will be able to ſuſtain 900 pounds.

The power of the pullies will be ſtill exceedingly increaſed by joining ſeveral *polyſpaſtons*.

To find the number of pullies a *polyſpaſton* is to conſiſt of, to raiſe a given weight by a given power.---Divide the weight by the power; the quotient is the number required.

Suppoſe, *e. gr.* the weight 600 pounds, and the power 150; the pullies will be 4; whoſe diameters are to be all equal, ſuppoſing two of them upper and two lower, moveable on the ſame common axes.

POLYSPERMOUS*, πολυσπερμος, in botany, is applied to ſuch plants as have more than four ſeeds ſucceeding each flower, without any certain order or number. See PLANT.

*** The word is formed from the Greek πολυ, and σπερμα, *ſeed*.**

Theſe Mr. Ray makes a diſtinct kind of herbs, calling them *herbæ ſemine nudo polyſpermæ*; where, by *ſemine nudo*, are meant ſuch ſeeds as do not put off ſpontaneouſly the integuments or coverings which they either have, or appear to have, but fall off covered from the mother-plant. See SEED.

Polyſpermous herbs are ſubdivided into, 1. Such as have a calyx or perianthium, conſiſting either, firſt, of *three leaves*, and the flower tripetalous, as the plantago aquatica, and the ſagittaria, both water-plants; or the flower polypetalous, and the calyx falling with it, as the chelidonium minus; or remaining after the flower is dropped, as in the hepatica mobilis. Secondly, of *five leaves*, in ſome deciduous with the flower, as in the ranunculus; in others perennial, as in the helleborus niger ferulaceus; or annual, as in the flos Adonis. Thirdly, of *eigh* *leave* *leaves*, as the malva and alcea. Fourthly, of *ten leaves*, as the caryophylla, fragaria, pentaphyllum, tormentilla, argentina, althæa, and pentaphylloides.

2. Such as have no calyx, or perianthium; as the clematitis, filipendula, ulmaria, anemone nemorum, pulſatilla, *&c.*

POLYSTYLE *colonnade*. See the article COLONNADE.

POLYSYLLABICAL *echoes*, thoſe which repeat many ſyllables or words. See ECHO.

POLYSYLLABLE *, πολυσυλλαβος, in grammar, a word conſiſting of more than three ſyllables. See WORD and SYLLABLE.

*** The word comes from the Greek, πολυ, *much*, and συλλαβος, *ſyllable*.**

A word of one ſyllable is called a *monoſyllable*; one of two, *diſſyllable*; one of three, *triſyllable*; one of four or more, *polyſyllable*. See MONOSYLLABLE, *&c.*

POLYSYNDETON, πολυσυνδετον, in rhetoric, a figure conſiſting in the abundance, or even ſuperfluity, of conjunctions copulative. See FIGURE and CONJUNCTION.

Such is, *me præ cæteris & colit, & obſervat, & diligit*.---In oppoſition to this ſtands *aſyndeton*. See ASYNDETON.

POLYTHEISM *, the doctrine, or belief of a plurality of gods. See GOD.

*** The word comes from the Greek πολυ, *much*, and θεος, *Deus*. See IDOLATRY, *&c.***

POMADA, an exerciſe of vaulting the wooden horſe, by laying one hand over the pommel of the ſaddle.

POMATUM, or POMADO, a compoſition of apples, with lard and roſe-water; uſed by way of unguent on many occaſions, particularly for diſeaſes of the skin, pimples, ſcurfs, *&c.* to ſoften the hands, render the skin ſmooth, the complexion freſh, *&c.* See UNGUENT.

Pomatums are occaſionally made with jeſſamins, oranges, jonquils, tuberoſes, *&c. i. e.* they are perfumed with the odours of thoſe flowers.

The beſt is ſaid to be that prepared of kid's greaſe, pippins, an orange ſliced, with a glaſs of roſe-water, and half a glaſs of white-wine, boiled and ſtrained, and at laſt ſprinkled with oil of ſweet almonds.

The unguentum *pomatum*, preſcribed in the college diſpenſatory, conſiſts of hog's lard, ſheep's ſuet, the apple called pome-water, roſe-water, and orrice root, boiled till the apples are ſoft, ſtrained and perfumed with oil of rhodium.

Dr. Quincy obſerves, that the apple is of no ſignificance at all in the recipe; and that the common *pomatum* ſold in the ſhops is only lard beat into a cream, with roſe-water, and ſcented with lemons, thyme, or the like.

POME, among gardeners.---To POME, is to grow or knit into a round head, ſomewhat like an apple.

Thus, they ſay, a *cabbage begins to pome*, &c.---They ſometimes uſe the term, *to cabbage*, in the ſame ſenſe.

POMEGRANATE *, *malus punica*, or *granata*, a medicinal fruit, in form of an apple or quince; full of ſeeds or kernels, incloſed within a reddiſh pulp, ſometimes ſweet, ſometimes acid. See FRUIT.

*** It is denominated from the abundance of its grains or kernels; *q. d. pomum granatum*, a kernelled apple; or from the country where it was anciently produced, *viz.* Granada.**

The *pomegranate* tree is of two kinds, the one wild, which produces a kind of flowers uſed in pharmacy, called *balauſtia*. See BALAUSTIA.

The other, cultivated in gardens, whereof there are again two kinds; the one only bearing flowers; the other, both flowers and fruit.---The flowers of each, called *cytini*, are incloſed in an oblong purple calyx, reſembling a bell.

The trees never grow high; their branches are a little prickly; their leaves reſemble thoſe of the greater myrtle; and their fruit, which is compoſed of a great number of red angular grains, ſometimes ſweet, ſometimes ſour, and ſometimes vinous, according to the quality of the tree, are all incloſed in little diſtinct cells, and covered, in common, with a thick browniſh rind. Over this grows a kind of crowning, of the ſame nature with the rind, formed of a production of the calyx.

In the general, *pomegranates* are not only agreeable to the taſte, but good for the ſtomach, and of conſiderable uſe in medicine.

Of the kernels are made ſyrups and conſerves; and the peel or rind, which is called *malicorium*, held very aſtringent, is an ingredient in ſeveral remedies and ptiſans, for dyſenteries, diarrhœa's, lienteries, hæmorrhages, and relaxations of the gums.---The ancients uſed the rind as the moderns do ſumac, in the preparation of leather.

The rind ought always to be dried, after the grains are taken out; that dried without ſcouping always taſting muſty, and more likely to increaſe diſtempers, than cure them.

As to the conſerve, there is but little of the true ſold; being very difficult to make.---That which ordinarily paſſes for it is only ſugar melted down; to which they give the colour and ſharp taſte, with cochineel, cream of tartar, and alum.

POMEIS, in heraldry, are green roundles; ſo called by the Engliſh heralds, who expreſs different coloured roundles by diſtinct names.

The French, who content themſelves to denote the different colour of the roundle, call the *pomeis*, *torteaux vert*. See TORTEAUX.

POMIFEROUS *, *apple-bearing*, in botany, a name given to thoſe plants which have the largeſt fruit, and are covered with a thick hard rind; by which they are diſtinguiſhed from the bacciferous, which have only a thin skin over the fruit. See PLANT and BACCIFEROUS.

*** The word is formed from *pomum*, apple, and *fero*, I bear.**

The *pomiferous* kind have a naked monopetalous flower, divided into five partitions, and growing on the top of the ſucceeding fruit.---They are divided into

1. *Capreolate*, or thoſe creeping along the ground, *&c.* by means of tendrils; as the cucurbita, melo, cucumis, cepo, balſamina, anguria, and colocynthis. See CAPREOLI.

2. Without *capreoli*, or *tendrils*, as the cucurbita clypeata, or melo-cepo clypeiformis. See TREE, FRUIT, *&c.*

POMMÉ, or POMMETTÉ, in heraldry,---a *croſs-pommé*, or *pommetté*, called alſo *trophee*, is a croſs with a ball or knob, like an apple, at each end. See CROSS.

POMMEL, or PUMMEL, in the manage, a piece of braſs or other matter a-top and in the middle of the ſaddle-bow, to which are faſtened the holſters, ſtirrup-leathers, *&c.* See SADDLE.

POMMEL is alſo a round ball of ſilver, ſteel, or the like, fixed at the end of the guard and graſp of a ſword; to ſerve, in ſome meaſure, as a counterpoiſe.

Balzac obſerves, that there are ſtill extant charters and privileges granted by Charlemagne, and ſealed with the *pommel* of his ſword, which, ordinarily, he promiſes to defend with the ſame ſword. See SEAL, SIGNATURE, *&c.*

POMMETTÉ. See the article POMMÉ.

POMP. See the articles CIRCUS, CAVALCADE, *&c.*

POMPHOLYX *, πομφολυξ, in pharmacy, a ſort of metalline flower; being a white, light and friable ſubſtance, found adhering to the lid or convercle of the crucibles or furnaces, wherein copper is melted with calamine ſtone, for the making of braſs. See BRASS, CALAMINE, *&c.*

*** The word is Greek, where it literally denotes a *bubble ariſing on water*.**

It is eſteemed deterſive and deſiccative, though only applied externally; and much uſed in divers kinds of fevers: though its violence requires its being uſed with great precaution.

The apothecaries ſometimes call it *nil*, or *nihili album*, and ſometimes *white tutty*, in regard of its reſemblance to tutty in virtue. See TUTTY.

POMUM *Adami*, in anatomy, a protuberance in the fore-part of the throat. See THROAT.

Some fanſy it is thus called upon a ſtrange conceit, that a piece of the forbidden apple, which Adam eat, ſtuck by the way, and was the occaſion of it.

In reality, it is only the convex part of the firſt cartilage of the larynx, called *ſcutiformis*. See LARYNX and SCUTIFORMIS.

POND, in geography, a little lake, which neither receives nor emits any river. See LAKE and RIVER.

Fiſh PONDS. See the article FISH *ponds*.

PONDERARE, in our ancient cuſtoms, a method of curing ſick children, by weighing them at the tomb of ſome ſaint; counterpoiſing or balancing the ſcale with money, wheat-bread, or any other thing the parents were willing to offer to God, his ſaints, or the church.

But a ſum of money was always to make part of the counterbalance. By this means the cure was effected.---*Ad ſepulchrum ſancti, nummo ſe ponderabat.*---

PONDUS, *weight*. See the article WEIGHT.

PONDUS, in ancient records, denotes a duty paid to the king, according to the weight of merchandizes. See POUNDAGE.

PONDUS *regis*, the ſtandard-weight, anciently appointed by the king; being that which we now call *Troy-weight*. See STANDARD and TROY-WEIGHT.

Ad PONDUS *omnium*. See the article AD.

Temperamentum ad PONDUS. See TEMPERAMENTUM.

PONE, a writ, whereby a cauſe depending in the county, or other inferior court, is removed to the common-pleas, or ſometimes the king's-bench. See WRIT, COURT, *&c.*

PONE, *per vadium*, is a writ commanding the ſheriff to take ſurety of one for his appearance at a day aſſigned. See SURETY, VADIMONIUM, *&c.*

PONIARD *, a little pointed dagger, very ſharp edged; borne in the hand, or at the girdle, or hid in the pocket.

*** The word is formed from the French *poignard*, and that from *poignée*, handful.**

The *poniard* was anciently in very great uſe, but is now in good meaſure ſet aſide, except among aſſaſſins. See ASSASSIN.

Sword and *poniard* were the ancient arms of duelliſts; and are ſaid to continue ſtill ſo among the Spaniards.---The practice of ſword and *poniard* ſtill make a part of the exerciſe taught by the maſters of defence.

PONS *varoli*, or *varolii*; or PONS *cerebri*, in anatomy, the upper part of a duct in the third ventricle of the brain, ſituate in the cerebellum, and leading to the infundibulum.---See *tab. anat.* (*oſteol.*) *fig.* 5. *lit. g. g.*: See alſo BRAIN, VENTRICLE, INFUNDIBULUM, *&c.*

It is thus called from its diſcoverer, Variolus, an Italian phyſician, who flouriſhed in the univerſity of Padua about the year 1572.

PONTAGE, PONTAGIUM, a contribution towards the maintenance, repairing, and rebuilding of bridges. See BRIDGE.

This was, anciently, one of the three general national charges, whence no perſon of any degree whatever was exempted.

The three things called *trinoda neceſſitas*, whence, Ingulphus tells us, *nulli poſſunt laxari*, were, the expedition to the wars, the building of caſtles, and the building and repairing of bridges. See TRINODA.

Mr. Selden, in his notes on Eadmerus, obſerves, that *ne quidem epiſcopi, abbates, & monachi immunes erant*.—And Mat. Paris adds, *anno* 1244, that in all grants of privileges to the monaſteries, thoſe three things were always excepted, for the public good, and that the people might be better able to reſiſt any enemy.

PONTAGE, is alſo a due anciently belonging to the lord of the fee, for perſons or merchandizes, that paſs over rivers, bridges, *&c.* called in the later Latin *pontagium*, or *pontonagium*, pontage.

PONTIBUS *reparandis*, a writ directed to the ſheriff, commanding him to charge one or more perſons to repair a bridge, to whom it belongs.

PONTIFEX, PONTIF, *high-prieſt*, a perſon who has the ſuperintendance and direction of divine worſhip; as the offering of ſacrifices, and other religious ſolemnities. See PRIEST, SACRIFICE, *&c.*

The Romans had a college of *pontifs*, and over thoſe a ſovereign *pontif*, or *pontifex maximus*, inſtituted by Numa; whoſe function it was to preſcribe the ceremonies each God was to be worſhipped withal, compoſe the rituals, direct the veſtals; and for a good while to perform the buſineſs of augury; till on ſome ſuperſtitious occaſions he was prohibited intermeddling therewith. See AUGUR.

He conſecrated the ſtatues of the gods, ere they were put up in the temples; bleſſed the figures of ſome of Jove's thunderbolts, to preſerve the people from harms; and compiled their ſtatutes. See ANNALS.

The Jews too had their *pontif* or high-prieſt; and among the Romaniſts the Pope is ſtill ſtyled the *ſovereign pontif*. See POPE.

Authors differ about the origin of the word *pontifex*. Some derive it from *poſſe facere*, that is, from the authority the *pontifs* had to ſacrifice; others, as Varro, from *pons*, becauſe they built the Sublician bridge, that they might go and offer ſacrifice on the other ſide of the Tiber.

PONTIFICAL, PONTIFICALE, a book of the rites and ceremonies belonging to pontifs, biſhops, popes, *&c.* See RITUAL and CEREMONIAL.

PONTIFICALIA, the robes and ornaments wherein a biſhop performs divine ſervice. See EPISCOPALIA.

PONTIFICATE, PONTIFICATUS, the ſtate or dignity of a pontif, or high-prieſt. See PONTIFEX.

Cæſar reformed the calendar in the time of his *pontificate*. See CALENDAR.

PONTIFICATE is more peculiarly uſed in modern writers for the reign of a pope. See POPE.

The concordat was paſſed in the *pontificate* of Leo X. See CONCORDAT.

There was a *pontificate* that only laſted twenty-four hours.

PONTON, or PONTOON, in war, a little floating bridge, made of boats and planks. See BRIDGE.

The *ponton* is a machine conſiſting of two veſſels, at a little diſtance, joined by beams, with planks laid croſs, for the paſſage of the cavalry, the canon, infantry, *&c.* over a river, an arm of the ſea, *&c.*

The late invented *ponton* is of copper, furniſhed with an anchor, *&c.* to fix it.—To make a bridge, ſeveral of theſe are diſpoſed two yards aſunder, with beams acroſs them, and over thoſe, boards or planks.

They are alſo linked to each other, and faſtened on each ſide the river, by a rope run through a ring in each of their heads, and fixed to a tree or ſtake on either ſhore.—The whole makes one firm, uniform bridge, over which a train of artillery may paſs.

Cæſar and Aulus Gellius both mention *pontons*; but theirs were no more than a kind of ſquare flat veſſels, proper for the carrying over of horſe, *&c.* Ours however take their names from them; thoſe authors call them *pontones*, of *ponto*.

PONT *volant*, *flying bridge*, a kind of bridge uſed in ſieges; made of two ſmall bridges laid one over another, and ſo contrived by means of cords and pullies placed along the ſides of the under-bridge, that the upper may be puſhed forwards, till it join the place where it is deſigned to be fixed: the whole length of both not to be above five fathom, leſt they ſhould break with the weight of the men. See BRIDGE.

POOL, is properly a reſervoir of water, ſupplied with ſprings, and diſcharging the overplus by ſluices, defenders, wears, and other cauſe-ways. See POND, SLUICE, *&c.*

Mill **POOL** is a ſtock of water, by whoſe force, *&c.* the motion of a mill is effected. See MILL.

Whirl **POOL**. See the article WHIRL *pool*.

POOP, PUPPIS, *ſtern*; the higheſt or uppermoſt part of a ſhip's hull a-ſtern.—See *tab. ſhip. fig.* 2. *lit.* P. See alſo STERN and SHIP.

POPE, PAPA, the biſhop of Rome; being the head or patriarch of the Roman-catholic church. See PONTIFEX.

Father le Cointe in his annals obſerves, from St. Jerom, St. Cyprian, St. Gregory, St. Auguſtin, and Sidonius Apollinaris, that the title *pope* was anciently given to all biſhops. See BISHOP.

They were alſo addreſſed under the term *holineſs*, and *beatitude*; and their churches called *apoſtolical ſees*. See HOLINESS, APOSTOLICAL, *&c.*

He adds, that it was only in the eleventh century, that Gregory VII. firſt appointed, in a ſynod held at Rome, that the title *pope* ſhould be reſtrained to the biſhop of Rome, as a particular diſtinction and prerogative.

In the council of the Lateran, held under Innocent III. the *pope* was declared *ordinary of ordinaries*. See ORDINARY.

The *pope* is choſen by the cardinals, out of their own body. See ELECTION, CARDINAL, *&c.*

His ſee is at Rome, whence he iſſues out his orders, called *briefs* and *bulls*, throughout the catholic world. See BULL, *&c.*

Hiſtory mentions a popeſs, Joan.—The reality hereof has been oppoſed and defended by many learned men.—The tradition might poſſibly take its riſe from the weakneſs of pope John VIII. in reſtoring Photius to his communion, and owning him as true patriarch: for he hence got the appellation of woman; as that prince called *king Mary* did, by leaving himſelf to be governed by Q. Mary his wife. See KING and QUEEN.

M. Spanheim, profeſſor of theology at Leyden, has lately written very amply on the ſubject; and ſhews it to be a queſtion *de facto*, ſcarce determinable at this time of day.

POPE, POPA, among the Romans, was a name given to certain inferior officers, or miniſters of ſacrifice. See SACRIFICE.

The buſineſs of the *popæ* was, to whet the ſacrificing knife, to bind the victim, prepare the water, and other neceſſaries, to ſmite the victim, *&c.*

They did their office naked to the girdle, and crowned with laurel.

POPLES, in anatomy, the inner part of the juncture whereby the thigh-bone is articulated with the tibia; popularly called the *ham*. See THIGH and TIBIA.

POPLICANI, POPULICANI, or PUBLICANS, a name given in the weſt to the Manichees; or rather to a particular branch thereof, called in the eaſt *Paulicians*. See MANICHEE and PAULICIAN.

POPLITÆUS, or SUB-POPLITÆUS, a muſcle which ariſes from the external and inferior protuberance of the thigh-bone, and paſſing over the joint obliquely, is inſerted into the ſuperior and internal part of the tibia.—It aſſiſts in bending of the leg, and turns it inwards.—See *tab. anat.* (*Myol.*) *fig.* 7. *n.* 27. 27. 27. See alſo LEG.

POPLITEA, in anatomy, is a name given to the third vein of the leg. See VEIN.

It ariſes from the heel, where it is formed out of ſeveral branches coming both from the heel and ankle.

It lies pretty deep in the fleſh; and aſcending up to the ham, terminates in the crural vein. See CRURAL, *&c.*

POPPY, PAPAVER, a medicinal plant, famed for its narcotic quality. See NARCOTIC.

There are divers kinds; ſome wild, ſome cultivated, white, purple, ſcarlet, *&c.*—Thoſe moſt uſed, are the white, *papaver hortenſe ſemine albo*; and black, *papaver hortenſe ſemine nigro*.

The heads of theſe plants are of ſingular virtue to promote ſleep, aſſuage pain, *&c.* They ſtop diarrhœa's, hæmorrhages, *&c.*

Of the juice of the white *poppy*, is prepared the opium ſold in the ſhops; and of the juice of the leaves, meconium. See OPIUM and MECONIUM.

POPPY *water*. See the article WATER.

POPULAR, POPULARIS, ſomething that relates to the common people. See COMMON.

The Roman nobility was diſtinguiſhed into two factions; the *optimates*, who adhered ſtrenuouſly to the miniſtry, the ſenate, *&c.* in oppoſition to the people.—And the *populares*, who favoured the rights and pretenſions of the people, in oppoſition to the nobleſſe.

POPULAR *action*. See the article ACTION.

POPULAR *diſeaſes*, are ſuch as become common, and run through the body of the people; called alſo *endemic* and *epidemical diſeaſes*. See EPIDEMIC and ENDEMIC.

Hippocrates has written expreſly, *de morbis popularibus*. See DISEASE.

POPULAR *errors*, are ſuch as people imbibe from one another, by cuſtom, education, and tradition, without having conſidered the reaſon or foundations thereof. See ERROR.

POPULEUM, or POPULNEUM, in pharmacy, an unguent prepared of the buds of black poplar, violet leaves, navel-wort, and lard bruiſed and macerated; to which are added bramble-tops, leaves of black poppies, mandragora, henbane, night-ſhade, lettuce, and burdock, boiled in roſe-water, and ſtrained.

It is much uſed as a cooler, in burns, ſcalds, and all ſorts of inflammations, and to aſſuage arthritic pains.

POPULICANI. See the article POPLICANI.

POPULNEUM. See the article POPULEUM.

PORCELAIN *, or PURCELAIN, a fine ſort of earthen-ware, chiefly manufactured in China, and thence alſo called *china*, or *china-ware*; but brought into Europe from other parts of the eaſt, eſpecially Japan, Siam, Surat, and Perſia. See POTTERY.

* The Chineſe call it *tſe-ki*. The word *porcelain* is but little known there; except among a few workmen and merchants; and ſeems derived from the Portugueſe, *porcelana*, a cup.

Scaliger and Cardan, though generally of contrary ſentiments, are yet agreed, that what the Romans called *vaſa murrhina*, *murrina*

murrina and *murrea*, which were firſt ſeen at Rome in Pompey's triumph, and afterwards became ſo very precious, were the *porcelain* of our times. See MURRHINE.

This may be true: but if the opinion be only founded on Pliny's deſcription of thoſe veſſels *, one would rather take them for a kind of precious ſtones, of a whitiſh colour, but variouſly veined and variegated; found in ſome parts of Parthia.

* Oriens murrhina mittit. Inveniuntur enim ibi in pluribus locis, nec inſignibus maxime Parthici regni: præcipue tamen in Carmania. Humorem putant ſub terra calore denſari. Amplitudine nuſquam parvos excedunt abacos: craſſitudine raro, quanta dictum eſt vaſi potorio. Splendor his ſine viribus: nitorque verius quam ſplendor. Sed in pretio varietas colorum, ſubinde circumagentibus ſe maculis in purpuram candoremque, & tertium ex utroque igneſcentem, veluti per tranſitum coloris, in purpura aut rubeſcente lacteo. Sunt qui maxime in iis laudant extremitates, & quoſdam colorum repercuſſus, quales in cœleſti arcu ſpectantur. His maculæ pingues placent. Tranſlucere quidquam aut pallere, vitium eſt. Item ſales, verrucæq; non eminentes, ſed ut in corpore etiam plerumque ſeſſiles. Aliqua & in odore commendatio eſt. Plin. Hiſt. Nat. l. 37. c. 2.

Be this as it will, it is certain, that both Cardan and Scaliger are miſtaken when they tell us, that *porcelain* is made of eggs and ſea-ſhells beaten ſmall, and buried under-ground for 80 or 100 years. The account we ſhall here give will put that matter out of all queſtion.

It is not known who was the inventor of *porcelain*: the Chineſe annals, which uſe to contain every thing in any wiſe memorable, are perfectly ſilent about it; nor do we know much more of the time of its invention: only it is certain it muſt have been before the beginning of the fifth century, the annals of Feuliang relating, that from the ſecond year of the reign of the emperor Tam, about the year of Chriſt 442, the workers in *porcelain* of that province had alone furniſhed the emperors therewith.

Porcelain is made chiefly, ſome ſay wholly, at Kingteching, a large town in the province of Kyangſi.

There is ſome indeed made in the provinces of Kanton and Fokyen; but it is of little account, being far inferior in beauty and value to the *porcelain* of Kingteching. That of Fokyen is perfectly white, without either gloſs or painting. Attempts have been made to remove the manufacture from Kingteching to Pekin, and other places, but in vain; the *porcelain* made in the new manufactories never coming up to that of the old: So that Kingteching has the honour of ſupplying the greateſt part of the world with this commodity. F. du Halde aſſures us, that even the Japaneſe come to China for it.

Manufacture of PORCELAIN.---*Porcelain* makes a very curious article in commerce, and even natural hiſtory. Its manufacture has hitherto paſſed for a myſtery in Europe; and that in ſpite of all the endeavours of the Jeſuit miſſionaries to penetrate into the ſecret. The veil, however, is at length drawn; and in a letter of F. d'Entrecolles to F. Orry, from Jauchew, dated September the firſt, 1712, and lately publiſhed in French, the whole proceſs is deſcribed in all its circumſtances; with an extract whereof we ſhall here gratify the curious reader.

In the manufacture of *porcelain* there are four principal things to be conſidered, *viz.* the matter it is made of; the art of forming the veſſels, and other works; the colours wherewith it is painted; and, laſtly, the baking, or giving it the proper degree of fire.---Each of which will make the ſubject of a ſeveral article.

Materials of PORCELAIN.---There are two kinds of earths, and as many kinds of oils, or varniſhes, uſed in the compoſition of *porcelain*. The firſt earth, called *kaulin*, is beſet with glittering corpuſcles; the ſecond, called *petunſe*, is a plain white, but exceedingly fine, and ſoft to the touch. They are both found in quarries twenty or thirty leagues from Kingteching; and hither theſe earths, or rather ſtones, are brought in an infinite number of little barks, inceſſantly paſſing up and down the river Jauchew, for that purpoſe. The petunſes are brought in form of bricks; having been ſo cut out of the quarries, where they are naturally pieces of a very hard rock. The white of the beſt petunſe is to border a little on green.

The firſt preparation of theſe bricks is, to break and pound them, firſt, into a coarſe powder with iron mallets, then in mortars with peſtles that have ſtone heads, armed with iron, and wrought either with the hand, or with mills.

When the powder is rendered almoſt impalpable, they throw it in a large urn full of water, ſtirring it briſkly about with an iron inſtrument. After the water has reſted a little while, they skim off from the top a white ſubſtance formed there, of the thickneſs of four or five fingers, and diſpoſe this ſcum or cream in another veſſel of water. They then ſtir again the water of the firſt urn, and again skim it, and thus alternately, till there remain nothing but the gravel of the petunſes at bottom; which they lay afreſh under the mill, for a new powder.

As to the ſecond urn, wherein are put the skimmings of the firſt; when the water is well ſettled, and become quite clear, they pour it off; and with the ſediment, collected at bottom in form of a paſte, fill a kind of moulds: whence, when almoſt dry, they take it out, and cut it into ſquare pieces, which are what they properly call *petunſes*; reſerving them to be mixed with the kaulin in the proportion hereafter aſſigned.

Theſe ſquares are ſold by the hundred, but it is very rare to meet with them unfalſified. The workmen, who, like the reſt of the Chineſe, are arrant knaves in their dealings, uſually mixing refuſe along with them; ſo that they are commonly obliged to purify them ere they can be employed.

The *kaulin*, which is the other earth uſed in *porcelain*, is much ſofter than the petunſe, when dug out of the quarry; yet is it this, which, by its mixture with the other, gives the ſtrength and firmneſs to the work. F. d'Entrecolles obſerves, that ſome Engliſh or Dutch, having procured ſome petunſes to be bought privately; upon their attempting to make *porcelain* at their return into their own country, could not ſucceed for want of taking kaulin along with it: which the Chineſe being appriſed of, ſaid, drolling, "That the Europeans were wonderful people, to go about to make a body, whoſe fleſh was to ſuſtain itſelf without bones."

The mountains whence the kaulin is dug, are covered without ſide with a reddiſh earth. The mines are deep, and the matter is found in glebes or clods, like the chalk in ours. The author is of opinion, that the white earth of Malta is not much different from the kaulin, except that it wants the ſilvered particles.

The preparation of kaulin is the ſame with that of the petunſes, except that the matter being leſs hard, leſs labour is required.

The oil or varniſh, which makes the third ingredient in *porcelain*, is a whitiſh liquid ſubſtance, drawn from the hard ſtone, whereof the petunſes are formed; that which is whiteſt, and whoſe ſtains are the greeneſt, being always choſen for this purpoſe.

The manner of preparing the oil, is thus: The petunſes, being waſhed, undergo the ſame preparations as for making the ſquares; excepting that the matter of the ſecond urn is not put in moulds, but the fineſt part of it taken to compoſe the oil. To an hundred pounds of this matter they caſt a mineral ſtone called *ſhekau*, reſembling our alum: This ſtone is firſt heated red-hot, and thus reduced in a mortar into an impalpable powder; and ſerves to give the oil a conſiſtence; which however, is ſtill to be kept liquid.

The oil of lime makes the fourth ingredient; the preparation whereof is much more tedious and circumſtantial. They firſt diſſolve large pieces of quick lime, and reduce it to a powder, by ſprinkling water on it; on this powder they lay a couch of dry fern, and on the fern another of the ſlacked lime, and thus alternately, till they have got a moderate pile; which done, they ſet fire to the fern: the whole being conſumed, they divide the aſhes that remain on new couches of dry fern; ſetting them on fire as before. And this they repeat five or ſix times ſucceſſively, or even more; the oil being ſtill the better, as the aſhes are oftener burnt.

In the annals of Feuliang 'tis ſaid, inſtead of fern they anciently uſed the wood of a kind of medlar-tree; and that 'twas this gave the ancient *porcelains* that admirable hue, which the moderns cannot come up to for want of that wood. 'Tis certain, however, the quality of the fern and lime contribute very much to the goodneſs of the oil.

A quantity of theſe aſhes of fern and lime are now thrown into an urn full of water; and to an hundred pounds of aſhes is added a pound of ſhekau, which diſſolves therein. The reſt being performed after the ſame manner as in preparing the earth of the petunſes; the ſediment found at the bottom of the ſecond urn, and which is to be kept liquid, is what they call the *oil of lime*; which the Chineſe eſteem as the ſoul of the former oil, and which gives the *porcelain* all its luſtre. This oil is eaſily ſophiſticated by adding water to increaſe the quantity; adding at the ſame time proportionably of the ſame ſhekau to maintain the conſiſtence. Ten meaſures of oil of petunſe uſually go to one of lime. To have the mixture juſt, the two oils ſhould be equally thick.

Forming of PORCELAIN *veſſels*.---The firſt thing is, to purify the petunſe and kaulin; which, for the firſt, is done after the manner already deſcribed in preparing the ſquares. For the ſecond, as its ſoftneſs makes it diſſolve eaſily, 'tis ſufficient, without breaking it, to plunge it in an urn full of water in an open basket. The dregs that remain are perfectly uſeleſs, and are emptied out of the work-houſe, when a quantity is got together.

The work-houſes are properly vaſt yards walled round, with ſheds, and other conveniencies for the workmen to work under; as well as other buildings for them to live in. It is almoſt inconceivable what number of perſons are employed in theſe works; there being ſcarce a piece of *porcelain* but paſſes through above twenty hands, ere it comes to the painter's work-houſe; and above ſixty, ere it be brought to perfection.

To make a juſt mixture of petunſe and kaulin, regard muſt be had to the fineneſs of the *porcelain* to be made: for the finer *porcelains*, they uſe equal quantities; four parts of kaulin to ſix of petunſe, for moderate ones; and never leſs than one of kaulin to three of petunſe, for the coarſeſt.

The hardeſt part of the work is the kneading and tewing the two earths together; which is done in a kind of large baſons, or pits, well paved and cemented, wherein the workmen trample continually with their feet, relieving one another, till the maſs be well mixed, grow hard, and become of the conſiſtence required to be uſed by the potter.

The earth, when taken out of the baſons, is kneaded a ſecond time, but piece-meal, and with the hands, on large ſlates for the purpoſe; and on this preparation, in effect, it is, that the perfection of the work depends; the leaſt heterogenous body remaining in the matter, or the leaſt vacuity that may be found in it, being enough to ſpoil the whole. The ſmalleſt grain of ſand, nay, ſometimes a ſingle hair, ſhall make the *porcelain* crack, ſplinter, run, or warp.

The *porcelain* is faſhioned or formed either with the wheel, like earthen ware, or in moulds. See POTTERY. Smooth pieces, as cups, urns, diſhes, *&c.* are made with the wheel. The reſt, *i. e.* ſuch as are in relievo, as figures of men, animals, *&c.* are formed in moulds, but finiſhed with the chiſſel.

The large pieces are made at twice; one half of the piece is raiſed on the wheel by three or four workmen, who hold it till it have acquired its figure; which done, they apply it to the other half, which has been formed in the ſame manner; uniting the two with *porcelain earth*, made liquid by adding water to it, and poliſhing the juncture with a kind of iron ſpatula.

After the ſame manner it is that they join the ſeveral pieces of *porcelain* formed in moulds, or by the hand; and after the ſame manner they add handles, *&c.* to the cups, and other works formed with the wheel.

The moulds are made after the manner of thoſe of our ſculptors, *viz.* of divers pieces, which ſeverally give their reſpective figure to the ſeveral parts of the model to be repreſented; and which are afterwards united to form a mould for an intire figure. The earth they are made of is yellow and fat, dug out of its proper quarries, whereof there are abundance about Kingteching. It is kneaded like potters earth, and when ſufficiently mellow, fine, and moderately dry, beating it ſtoutly, they form it into moulds, according to the works required, either by hand, or on the wheel. Theſe moulds are ſold very dear, but laſt a long time. See MOULD.

All the works made in moulds are finiſhed by the hand, with ſeveral inſtruments proper to dig, ſmooth, poliſh, and to touch up the ſtrokes that eſcape the mould; ſo that 'tis rather a work of ſculpture than of pottery. There are ſome works whereon relievo's are added, ready made, as dragons, flowers, *&c.* others that have impreſſions in creux; which laſt are engraven with a kind of puncheons. In the general, all *porcelain* works are to be ſheltered from the cold; their natural humidity making them liable to break when they dry unequally.

To conceive the number of hands each piece of *porcelain* paſſes through ere perfect, we ſhall cloſe this article with what F. d'Entrecolles inſtances of a common tea-cup, ere it be fit for the painter. The cup begins with the potter, who has the management of the wheel, where it acquires its form, height, and diameter. This operator has not a farthing ſterling for a plate furniſhed with twenty-ſix cups; accordingly, they go out of his hands exceedingly imperfect, eſpecially towards the feet, which are only unformed lumps of earth, to be afterwards cut with the chiſſel, when the cup is dry. When it comes from the wheel, the cup is received by a ſecond workman, who fits it to its baſe. A third takes it immediately from him, and applies it on a mould to bring it to its true form. This mould is on a kind of lathe. A fourth workman poliſhes the cup with a chiſſel, eſpecially about the edges; and brings it to the thinneſs neceſſary to make it tranſparent; in doing which, he moiſtens it from time to time, leſt its dryneſs ſhould make it break. When of its proper thickneſs, another workman turns it gently on a mould, to ſmooth its inſide; taking a deal of care it be done equably, leſt any cavity be formed, or it warp. Other workmen add ſome ornaments in relievo; others, impreſſions in creux; others, only handles; as the quality of the cup requires. At laſt, they round and hollow the foot on the inſide with a chiſſel; which is the function of a particular artiſt, who does nothing elſe.

This multiplicity of workmen, ſo far it is from retarding the work, that it is found, by experience, to go on the faſter for it; as well as to be the better done; each workman, by a continual attention to the ſame thing, becoming very dextrous at it: beſides ſaving the time of changing inſtruments, *&c.*

Painting of PORCELAIN.---The Chineſe painters, eſpecially thoſe that meddle with human figures, our author obſerves, are all ſorry workmen: he adds, that the defect is ſcarce any-where ſo ſenſible as in the whapey, or *porcelain* painters, among whom, ſetting aſide flowers and landſkips, which are ſometimes tolerable, the greateſt maſters are not to be compared to ordinary apprentices among the Europeans, for the beauty and juſtneſs of deſign. But it is otherwiſe with the colours theſe whapey uſe; which are ſo exceeding lively and brilliant, that there are but little hopes our workmen ſhould ever come to vie with them.

The painting work is diſtributed among a great number of workmen, in the ſame laboratory: to one it belongs to form the coloured circle about the edges of the *porcelain*; another traces out flowers, which another paints: this is for waters and mountains alone; that for birds and other animals; and a third for human figures.

There are *porcelains* made of all colours; both with regard to the grounds, and to the repreſentations thereon. As to the colour of landſkips, *&c.* ſome are ſimple; ſuch are all blues, which are thoſe moſt uſually ſeen in Europe; others are mixed up of ſeveral teints; and others, again, heightened with gold.

The blue is made of lapis lazuli, prepared by burning it the ſpace of twenty-four hours, in a kiln, where it is buried up in gravel, to the height of half a foot; when burnt, they reduce it into an impalpable powder in *porcelain* mortars; not varniſhed, and with peſtles of the ſame matter.

For the red, they uſe copperas, which they call *tſauſan*; a pound of this they put in a covered crucible, in the lid whereof is left a little aperture, through which the matter on occaſion may be ſeen. The crucible is heated with a reverbatory fire, till the black ſmoak ceaſe to aſcend, and a fine red one ſucceeds it. A pound of copperas yields four ounces of red liquor, which is found at the bottom of the crucible, though the fineſt part is that uſually adhering to the lid and ſides of the crucible.

The powder of flint is likewiſe an ingredient in moſt of the other colours; *e. gr.* for green, to three ounces of tongwhapeen, or ſcoria of beaten copper, they uſe half an ounce of powder of flint, and an ounce of ceruſe. Violet is made by adding a doſe of white to the green already prepared; the more green is added, the deeper is the violet. For yellow, they uſe ſeven drachms of white, and three of the copperas-red.

Moſt of theſe colours are mixed up with gum-water, for application; a little ſaltpetre, ſometimes ceruſe or copperas, but more uſually copperas alone, being firſt diſſolved in the water. Indeed for *porcelains* that are to be quite red, the colour is uſually applied with oil; *i. e.* with the common oil of the *porcelain*, or another made of the white flints.

There is alſo another red, called *blown red*, becauſe in reality applied by blowing with a pipe, one of whoſe orifices is covered with a very fine gauze. The bottom of this tube is lightly applied to the colour wherewith the gauze is ſmeared; when, blowing againſt the *porcelain*, it becomes all ſprinkled over with little points. This *porcelain* is very rare, and of great price.

Black *porcelain*, which they call *umian*, has likewiſe its beauty: this colour has a leady caſt, like our metal-burning mirrors; and is uſually heightened with gold. It is made of three ounces of lapis lazuli, with ſeven of the common oil of ſtone; though that proportion is varied, as the colour is deſigned to be more or leſs deep. The black is not given the *porcelain* till it be dry, nor muſt the work be put to the fire till the colour be dry.

The gold is not applied till after the baking, and is rebaked in an oven for the purpoſe. To apply the gold, they break and diſſolve it in water at the bottom of a *porcelain*, till a thin gilded cloud ariſe on the ſurface: it is uſed with gum-water, and to give it a body, they add three parts of ceruſe to thirty of gold.

There is likewiſe a kind of marbled *porcelain*, which is not made by appling the marblings with the pencil, but for oil to varniſh it withal, uſing that of white flints, which hatches and cuts the work with a thouſand humorous ſtrokes, in manner of Moſaic work. The colour this oil gives, is a white, ſomewhat aſhy. The *porcelain* is called *tſwiki*.

There are ſeveral other kinds of *porcelain*; but they are ſuch as are rather for curioſity than uſe: the pretieſt are the magic *porcelains*, whoſe colours only appear when filled with ſome liquor. Theſe are made double: the outſide is white, and all laid out in compartiments; the inſide is a ſolid cup, of colour'd *porcelain*; though the cup is ſometimes of glaſs, which has a better effect than *porcelain*. The ſecret of theſe magic *porcelains*, which the Chineſe call *kiatſim*, is almoſt loſt; yet F. d'Entrecolles has furniſhed us with the following account.

The *porcelain* to be painted thus, muſt be very thin; and the colours, which in other *porcelains* are applied on the outſide, are here applied on the inſide. When the colour is dry, they lay over it a light couch of a ſize made of the *porcelain* earth; by which means the colour is incloſed between two earthen laminæ. When the ſize is dry, they throw oil within the *porcelain*; and when it has enough, they return it to the mould, and the wheel, to render it as thin and tranſparent as poſſible. When dry, it is baked in the common furnace. The colours here uſed are always the fineſt, and the figures painted are fiſhes; as the moſt ſuitable to the liquor put within them, and in which they ſeem to ſwim.

The ſeveral kinds of *porcelains* above-mentioned, being quite painted, with their ſeveral colours, and all the colours dry, are to be poliſhed, to prepare them to receive the oil or varniſh; which is done with a pencil of very fine feathers, moiſtened with water, and paſſed lightly over, to take off even the ſmalleſt inequalities.

The oiling or varniſhing is the laſt preparation of the *porcelain*, before it be carried to the oven: this is applied more or leſs thick, and ſeldomer or oftener repeated, according to the quality of the work. For thin, fine *porcelains*, they give two very thin couches; to others one; but that one equivalent to the other two. There is a deal of art in applying the varniſh; both that it be done equally, and not in too great quantity. The couches on the inſide are given by aſperſion, *i. e.* by caſting in as much varniſh as is neceſſary: thoſe on the outſide, by immerſion, or by plunging the pieces in a veſſel of oil.

It muſt be obſerved, that the foot is not yet formed, but continues in a mere maſs, till the work has been varniſhed: it is at length finiſhed on the wheel; and when hollowed, a little circle is painted in it, and ſometimes a Chineſe letter. This painting being dry, the foot is varniſhed, and the work now carry'd to the oven to be baked.

Our curious author omits nothing; not even the dexterity of the people, who carry the *porcelain* to the bake-houſe. He has been frequently ſurpriſed, he tells us, to ſee a man paſs through ſeveral ſtreets full of people, with two very long, narrow boards, ranged with *porcelains* on his ſhoulders, ſtill preſerving the equilibrium ſo accurately, as not to do any damage to ſo frail a commodity.

Baking or nealing of PORCELAIN.---There are two kinds of ovens uſed in baking of *porcelain:* large ones, for works that are only to come to the fire once, which is the common way; and ſmall ones for ſuch as require a double baking. The large ones are two Chineſe fathoms deep, and almoſt four wide. They are formed of a mixture of three earths; one whereof, yellow and common, make the baſis; the two others are ſcarcer, and dug out of deep mines, wherein people can only work in winter. One of them, called *lautou*, is a very ſtrong, ſtiff earth; the other, *youtou*, oily.

The ſides and roof of the ovens are ſo thick, that one may lay the hand on them, when the fire is at its height, without danger of burning. At the top of the dome, which is in form of a tunnel, is a large aperture to give vent to the flames and ſmoke, which mount up inceſſantly, as ſoon as fire is once ſet to the oven. Beſide the principal aperture, there are four or five ſmall ones around; which, by being opened and ſhut, ſerve to augment or diminiſh the heat: like the holes in the chymiſts furnaces, called *regiſters*. The hearth, which takes up the whole breadth of the oven, is placed in front, preciſely againſt the opening of the door, and is two or three feet deep, and two broad; people paſſing over it on a plank, to go into the furnace to range the *porcelain*.

As ſoon as the fire is lighted, the door is walled up; only leaving an aperture for the conveyance of wood. Laſtly, the bottom of the oven is covered with ſand, wherein part of the firſt *porcelain* caſes are buried. The oven itſelf is uſually placed at the extremity of a long, narrow veſtible, which ſerves in lieu of bellows, the cold air and wind being thus driven directly in the face of each oven.

Each piece of *porcelain* of any note, is diſpoſed, in the furnace, in its ſeparate caſe, or coffin. Indeed, as to tea-diſhes, *&c.* the ſame caſe ſerves for ſeveral. The caſes are all of the ſame matter with the oven: they have no lids; but ſerve each other mutually, the bottom of a ſecond caſe fitting into the aperture of the firſt; and thus ſucceſſively, to the top of each column. Each coffin, which is uſually of a cylindrical form, that the fire may communicate itſelf more equably to the *porcelains* incloſed, has, at bottom, a little lay of very fine ſand, covered over with duſt of kaulin, that the ſand may not ſtick to the work; and care is taken, that the *porcelain* may not touch the ſides of the caſe. In the larger caſes, which hold the ſmall pieces, they leave the middle vacant, in regard *porcelains* placed there would want the neceſſary heat. Each of theſe little pieces is mounted on a little maſſive of earth, the thickneſs of two crowns covered with powder of kaulin.

F. d'Entrecolles obſerves, that the *porcelains* are put in caſes, to prevent any diminution of luſtre from the too violent effect of a naked fire; adding, that it is owing to theſe thick veils, that the beauty, or, as he calls it, the complexion of the *porcelains*, is not tanned by the heat of the fire.

As faſt as the caſes are filled, a workman ranges them in the cavity of the furnace; forming them into piles or columns, whereof thoſe in the middle are at leaſt ſeven feet high: The two caſes at the bottom of each column are left empty; becauſe being partly ſunk in the ſand, the fire has the leſs effect on them; and for the ſame reaſon, the uppermoſt one is left empty. In this manner is the whole cavity of the oven filled with columns, excepting that part preciſely under the grand aperture.

In ranging the caſes, they obſerve always to place the fineſt piles of *porcelain* in the centre; the coarſeſt at the bottom; and thoſe that are high-coloured, and conſiſt of as much petunſe as kaulin, and wherein the worſt oil is uſed, at the mouth.

Theſe piles are all placed very near one another, and are bound together, at top, at bottom, and in the middle, by pieces of earth; in ſuch manner, as that the flame may have a free paſſage among them, and inſinuate equally on all ſides: in which a great part of the workman's art lies, and on which the perfection of the *porcelain* much depends. Another thing to be obſerved, is, that an oven muſt never be ſet altogether with new coffins; but half one, half the other: the old ones at the bottoms and tops of the pile, and the new ones in the middle. Indeed it were better to have them all burnt in an oven apart, ere they come to be uſed for *porcelain*; as was anciently done. The caſes, our author obſerves, are brought ready prepared from a large village on the river, a league diſtant from Kingteching. Ere burnt, they are yellow; and afterwards of a dark red.

When the oven is filled, they wall up the door; only leaving a little aperture for the throwing in of little pieces of wood, a foot long, but very ſlender, to keep up the fire. It is then heated, by degrees, for the ſpace of a day and night; after which two men, who relieve one another, continue to throw in wood without any interruption. To know when the *porcelain* is baked enough, they open one of the leſſer holes of the oven, and with a pair of tongs take off the lid of one of the piles. If the fire appear very briſk and clear, and the piles equally inflamed; and eſpecially if the colours of the *porcelains* that are uncovered, dart forth a noble luſtre; the coction is ſufficient, they diſcontinue the fire, and wall up what remained of the door of the furnace.

If the oven be only filled with ſmall *porcelains*, they take them out twelve or fifteen hours after the fire is extinct: if it be filled with larger, they defer opening it for two or three days. In this the modern practice differs from the ancient; wherein the door was not opened till after ten days for the large pieces, and five for the ſmall ones.

One thing very ſurpriſing, and almoſt inconceivable, F. d'Entrecolles obſerves, is, that there are never found any aſhes on the hearth of the oven, what quantity of wood ſoever is conſumed. He adds another thing, which with him, paſſes for equally ſtrange, that the workmen employed about the furnaces, ſlake their thirſt, by continually drinking hot tea, with ſalt diſſolved in it.

The Chineſe make another kind of *porcelain*, which they paint and bake twice; and for this ſecond baking they have a kind of little ovens on purpoſe. When very ſmall, they are made of iron; otherwiſe, of a kind of bricks an inch thick, a foot high, and half a foot broad, made of the ſame earth with the *porcelain* caſes. The biggeſt of theſe ovens does not exceed five foot in height, and three in diameter; and being made much in form of bee-hives, the bricks are arched a little, to form the curvity the better. The hearth is of earth half a foot high, formed of two or three ranges of bricks; and on this maſſive is the oven built. Around the oven, at the diſtance of about half a foot, is raiſed a ſhell of common bricks, joined to the oven itſelf, by a kind of arcboutant of earth, which ſerves to ſtrengthen it. They uſually build four or five of theſe ovens at equal diſtances from each other. At the bottom of the ſhell are holes to give air to the fire when lighted: at-top is an aperture, which they cover up with a piece of the baked earth, when the *porcelains* are laid in the oven.

The *porcelains*, here, are not incloſed in coffins, as in the common ovens; the oven itſelf ſerving that purpoſe, and being ſo exactly cloſed, that they receive no other impreſſion of the fire, but that of the heat of the charcoal diſpoſed in the hearth, at the bottom of the oven, as well as at-top of the vault, and in the interval between the oven and the ſhell, or brick-wall.

To prepare the *porcelains* for a ſecond baking, they muſt have had their varniſh in the common manner, and have paſſed the great oven. In this ſtate they are painted with various colours, after which, without giving them any new varniſh, they are ranged in piles in the little oven; ſetting the little ones over the larger, in form of pyramids.

This ſecond baking is ſometimes intended to preſerve the luſtre of the colours the better, and at the ſame time to give them a kind of relievo. But, more uſually, its deſign is to hide defective places, by covering them over with colours: but the artifice is eaſily found out, by paſſing the hand over them.

When the workman judges his *porcelains* enough baked, he takes off the piece that covers the aperture; and if the works appear glittering, and the colours glowing, he takes out the charcoal; and when the oven is cold, the *porcelain* too.

How beautiful ſoever the modern *porcelain* may be; the taſte for antiquity, which reigns in China, as well as in Europe, gives the ancient *porcelain* a value far above that of the modern. It muſt be owned, the ancient ſeems finer as to the matter, more perfect as to the baking, and of a more pleaſant caſt, both as to the white of the ground, and the other colours; yet it is certain, the moſt able and diſcerning may be deceived herein: and there are workmen who make it their buſineſs to counterfeit the ancient *porcelain*, called *kutong*, in the modern.

The matter of theſe falſe kutong is a yellowiſh earth, found near Kingteching. There is nothing particular in the firſt part of the proceſs, except that they are made thicker, and that they are varniſhed with an oil drawn from the yellow ſtone, mixed with the common oil, which gives them a kind of ſea-green hue. When taken out of the oven, they throw it into a fatty broth, made of capons, *&c.* in which they boil it a ſecond time; they then bury it in the filthieſt ſink they can find, for a month or ſix weeks, or more, according as they would give it the greater appearance of antiquity. Beſides their thickneſs and their colour, theſe falſe antiques reſemble the true ones in this, that they do not reſound when ſtruck, nor even give the leaſt buz, when held to the ear.

Notwithſtanding the vaſt quantity of *porcelains* made in almoſt all the provinces of the empire of China, they ſtill continue very dear; though not near ſo dear as anciently. The Chineſe annals tell us of times wherein a ſingle urn coſt ninety or an hundred crowns on the ſpot. What chiefly occaſions the extraordinary price of this commodity, eſpecially in Europe, is, beſide the great profits of the merchants in Europe, and their factors in China, that it rarely happens an oven ſucceeds throughout; that it is frequently quite ſpoilt, ſo that upon opening it, in lieu of fine *porcelains*, is found a hard unformed maſs, into which both the *porcelains*, and their coffins, are converted, either by exceſs of heat, or ſome ill qualities in the matter.

Another reaſon of the dearneſs of *porcelain* is, that the ingredients it is made of, and the wood wherewith it is burnt, grow more and more ſcarce. One may add a third reaſon for the exceſſive price of *porcelains* to the Europeans; and it is this, that moſt of thoſe ſent to Europe are formed on new models, frequently very capricious, and difficult to ſucceed in; which, yet, for the ſmalleſt defects, are turned on the manufacturer's hands: and he not being able to diſpoſe of them to the Chineſe, becauſe not to their taſte, nor to their uſe, is forced to charge the *porcelain* he delivers, the higher, to pay himſelf for thoſe refuſed.

The French have been theſe fifteen years attempting to imitate *porcelain.* The firſt eſſays made at Rouen, are ſaid to have ſucceeded tolerably well; and M. Savary tells us, are now carried to ſuch a point in the manufactories at Paſſi and St. Cloud, that the French *porcelains* want nothing to make them of equal value with the Chineſe, but to be brought five or ſix thouſand leagues. In effect, for the fineneſs of the grain of the matter, the beauty and turn of the veſſels, the exactitude of the deſign, and the luſtre of the colours, at leaſt the blues, the French are not much behind the Chineſe.---But their grand defect is in the white of the ground, which is uſually dingy and dull, and eaſily diſtinguiſhes itſelf from the pure ſprightly white of the Chineſe.

But the Saxons ſeem to have exceeded the French: There is a manufacture at Miſſen the capital of Miſnia, which the baron de Pollnitz aſſures us, produces *porcelains* painted and enamelled in ſuch perfection, that they are more beautiful, as well as dearer, than thoſe of China itſelf. The invention is owing to an alchymiſt, who being clapped up in the caſtle of Konigſtein, by the late king of Poland, on a ſuſpicion of being maſter of the ſecret of the philoſopher's ſtone, had leiſure enough, not indeed to make gold, but to invent a ware, which by the great vent of it conſiderably enriches the country.

PORCELAIN alſo denotes a kind of little white ſea-ſhell, found along with the ſponges; and current in ſeveral parts of Aſia, Africa, and America, by way of money. See COIN.

Authors have hitherto been of opinion, that theſe ſhells were the matter whereof the *porcelain*, or China ware, was made. They are of ſome uſe in medicine, and are preſcribed pounded or broken, in manner of pearls. See PEARL.

PORCH, *atrium*, a kind of veſtible, ſupported by columns; much uſed at the entrance of the ancient temples, halls, churches, *&c.* See VESTIBLE.

In the ancient architecture, *porch* was a veſtible, or a diſpoſition of inſulated columns, uſually crowned with a pediment, forming a covert place before the principal door of a temple, or court of juſtice.---Such is that before the door of St. Paul's, Coventgarden, the work of Inigo Jones.

When it had four columns in front, it was called a *tetraſtyle*; when ſix, *hexaſtyle*; when eight, *octoſtyle*; when ten, *decaſtyle*, &c.---Vitruvius calls it *pronas*; Pollux προδομος, *prodomos:* when finer than ordinary, the ancients called it alſo *propylæum*. See PROPYLÆUM.

PORE *, a little interſtice between the particles of matter which conſtitute bodies; either empty, or filled with ſome inſenſible medium. See BODY and MATTER.

* **The word *pore* is formed from the Greek πορος, aperture, or duct, through which a thing paſſes.**

Condenſation, and rarefaction, are only performed by cloſing and opening the *pores*. See RAREFACTION and CONDENSATION.

The tranſparency of bodies is uſually ſuppoſed to ariſe from their *pores* being directly oppoſite to one another. See TRANSPARENCY.

The matter of inſenſible perſpiration is conveyed through the *pores* of the cutis. See PERSPIRATION.

Sir Iſaac Newton ſhews, that bodies are much more rare and porous, than is commonly believed: water, *e. gr.* is 19 times lighter, and conſequently rarer, than gold; and gold itſelf is ſo rare, as very readily, and without the leaſt oppoſition, to tranſmit magnetic effluvia, and eaſily to admit quickſilver into its *pores*, and to let water paſs through it: for a concave ſphere of gold hath, when filled with water, and ſoldered up, upon preſſing with a great force, let the water ſqueeze through it, and ſtand all over its outſide, in multitudes of ſmall drops like dew, without burſting or cracking the gold. Whence it may be concluded, that gold has more *pores* than ſolid parts; and by conſequence that water hath above forty times more *pores* than parts. See GOLD.

The magnet tranſmits its virtues without any diminution or alteration, through all cold bodies that are not magnetic; as gold, ſilver, braſs, glaſs, water, *&c.* See MAGNET.

The rays of light, let them be either bodies actually coming to us from the ſun, or only motions or impreſſions upon the medium, move in right lines, and are hardly ever, unleſs by great chance, reflected back again in the ſame right line, after their impingence upon objects; and yet we ſee, that light is tranſmitted to the greateſt diſtances through pellucid bodies, and that in right lines. See RAY, *&c.*

Now how bodies ſhould have *pores* ſufficient for theſe effects, may be difficult to conceive, but not impoſſible: for Sir Iſaac ſhews, that the colours of all bodies ariſe from their particles being of ſuch a determinate ſize or magnitude. Wherefore, if we conceive thoſe particles to be ſo diſpoſed, as that there is as much poroſity, as there is of matter; and in like manner thoſe particles to be compoſed of others much leſs, and that have as much interſperſed vacuity or ſpace, as their quantity of matter amounts to; and ſo on, till we come to ſolid particles without *pores:* then, if in any body there be (for inſtance) three of theſe ſizes of particles, and that the laſt be of the ſolid, or leaſt ſort; that body will have ſeven times as much vacuity as ſolid matter: if four ſuch degrees, and the laſt be leaſt and ſolid, that body will have fifteen times as much poroſity as ſolidity: if five ſuch degrees, it will have thirty-one times as much ſpace as ſolidity: and if ſix degrees, then it will have ſixty-three times as much vacuity, as ſolid matter.

And perhaps in the wonderful conformation and fabric of natural bodies, there may be other proportions of ſpace to matter, to us wholly unknown; whence it is poſſible, there may be yet farther great quantities of interſperſed vacuity. See VACUUM.

PORES, in anatomy, are certain permeable ſpaces, between the parts of the skin; whereby we ſweat, or perſpire, *&c.*---See *tab. anat.* (*myol.*) *fig.* 8. *litt.* dd, *fig.* 9. *litt.* aa *and* c. See alſo CUTIS and PERSPIRATION.

The *pores* are moſt remarkable in the hands and feet. By viewing the palm of the hand with a moderate glaſs, after waſhing it well, we perceive innumerable little ridges, of equal ſize and diſtance, running parallel to each other; eſpecially on the tips and joints of the fingers, *&c.* where they are regularly diſpoſed into ſpherical triangles and ellipſes.

On theſe ridges ſtand the *pores*, in even rows, big enough to be ſeen by a good eye without a glaſs; but with one, every *pore* looks like a little fountain; and the ſweat may be ſeen to ſtand therein, clear as rock-water; and as often as it is wiped off, ſprings up again. See SWEAT.

The *pores* are placed on the ridges, not in the furrows between them; that they might be leſs liable to be ſtopped by compreſſion: for the ſame reaſon, the *pores* of the hands and feet are larger than the reſt; thoſe parts being more uſed and preſſed than the reſt: and hence again, there are no ridges on other parts.

Theſe *pores* are a very convenient out-let for the more noxious parts of the blood, which by the continual uſe of the hands and feet, are plentifully brought into them: whence, in hypochondriac and hyſteric people, there is a continual burning in the palms and ſoles.

In the ſtoppage or conſtriction of the *pores* of the skin, that diſeaſe we popularly called a *cold*, is commonly ſuppoſed to conſiſt; tho' Dr. Keill maintains a quite contrary opinion, in a diſſertation at the end of his *medicina ſtatica Britannica.* See COLD.

In the philoſophical tranſactions, we have an inſtance of a ſtudent near Leyden, much addicted to aſtronomy, who ſpending many nights in ſtar-gazing, had, by the nocturnal wet and cold, ſo obſtructed the *pores* of his skin, that little or nothing exhaled from his body; as appeared hence, that the ſhirt he had worn five or ſix weeks, was then as white as if it had only been worn one day. In the mean while, a water was collected under the skin, whereof he was afterwards cured.

Bilary PORE. See the articles BILARY, and PORUS.

PORIME *, PORIMA, in geometry, a theorem, or propoſition, ſo eaſily demonſtrated, that it is almoſt ſelf-evident. See AXIOM.

* **The word is formed from the Greek ποριμος, pervious, a thing eaſy to penetrate or conceive, and which opens the way to ſomething more difficult.**

Such, *e. gr.* is this, that a chord is wholly within the circle.

Porime ſtands oppoſed to *aporime*, which denotes a propoſition ſo difficult, as to be almoſt impoſſible to be demonſtrated.---Such as the quadrature of the circle is now, and as the ſquaring of any aſſigned portion of Hippocrates's lunes formerly was. See APORIME.

The *porime* coincides nearly with the lemma, or aſſumption. See LEMMA.

PORISM *, PORISMA, in mathematics, a general theorem, or canon, deduced from a geometrical locus, and ſerving for the ſolution of other general and difficult problems. See THEOREM, and LOCUS.

* **Proclus derives the word from the Greek ποριζω, I eſtabliſh and conclude from ſomething already done and demonſtrated; and accordingly defines *poriſma*, a theorem drawn occaſionally from ſome other theorem already demonſtrated.---In which ſenſe it coincides with what we otherwiſe call corollary.**

PORISTIC *method*, in mathematics, is that which determines when, by what means, and how many different ways, a problem may be ſolved. See PROBLEM and RESOLUTION.

PORPHYRIANA *arbor*. See the article ARBOR.

PORPHYRIANS, a name given to the Arians, in the fourth century, by authority of Conſtantine. See ARIANS.

That prince, publiſhing an edict againſt Arius and his writings, declares, that as Arius has imitated Porphyry in compoſing books againſt religion, he deſerves to be noted with his infamy; and that as Porphyry is become the reproach of poſterity, and his writings ſuppreſſed; ſo he wills, that Arius and his followers be called *Porphyrians*, &c.

The propriety of the name ſeems to conſiſt in this, that the Arians endeavoured to reſtore idolatry: for in ſaying that the ſon, whom they call *a begotten God*, is a creature, they put a creature in the rank of God; and only differ from the Heathens in this, that the one give the quality of God to one creature, the other to a great many.

PORPHYROGENITUS, in antiquity, an appellation given to the children of the eaſtern emperors: implying as much as, *born in purple*. See PURPLE.

Cedrenus will have the word to ſignify, *born in the purple palace*, or the *palace of porphyry*, a palace ſo called in Conſtantinople; wherein the empreſſes uſed to lie in. Others derive the appellation hence, that the imperial children, as ſoon as born, were wrapped in purple; others from this, that the chamber wherein they were born was hung with purple hangings.

PORPHYRY, PORPHYRITES, in natural hiſtory, *&c.* a precious kind of ſtone, or marble, of a browniſh-red colour; frequently interſperſed with white ſtains; anciently brought from Egypt, and exceeding all others in hardneſs. See MARBLE.

There are three famous *porphyry* pillars, or obelisks, in Egypt; one near Cairo, and the other two at Alexandria. The Franks call them *aguglia's*, the Engliſh *Cleopatra's needles*. See OBELISK.

'Tis difficult to conceive whence they ſhould have been brought; for Dr. Huntingdon aſſures us, that there is no quarry or rock of ſuch ſtone in all the lower parts of Egypt; ſo far as the Nile overflows being perfect ſoil. *V. Ray's trav. T. 2. p.* 461.

The art of cutting *porphyry*, practiſed among the ancients, is loſt. In effect, it is hard to conceive what kind of tools they muſt have uſed for the faſhioning of theſe huge columns, and other *porphyry* works found in ſome of the antique buildings in Rome.

One of the moſt conſiderable pieces, now remaining intire, is a tomb of Conſtantia, daughter of the emperor Conſtantine, in the church of St. Agnes without the walls; ordinarily called, *the tomb of Bacchus*, becauſe of ſeveral boys repreſented herein, playing among the vine-leaves. Add to this Apollo's, and the buſts of twelve emperors, all in *porphyry*, in the palace of the Tuilleries.

Some of the ancient pieces appear to have been wrought with the chiſſel, others with the ſaw, others with wheels, and others ground by degrees with emery. Yet the modern tools will ſcarce touch *porphyry*: either the ancients, therefore, had the ſecret of tempering ſteel better than we; or, as ſome incline to think, they had the art of ſoftening the *porphyry*: though it is more probable, that time and air have contributed to increaſe its hardneſs.

Mr. Addiſon tells us, he ſaw a workman at Rome employed in the cutting of *porphyry*; but his advances were exceedingly ſlow, and almoſt inſenſible.

All the way the Italian ſculptors have to work the pieces of old *porphyry* columns ſtill remaining, (for the *porphyry* quarries are long ſince loſt) is with a braſs ſaw without any teeth. With this, together with emery and water, they rub and wear, with infinite patience. See EMERY.

Yet have many excellent perſons endeavoured to retrieve the ancient art, particularly Leon Baptiſta Alberti; who ſearching for the neceſſary temper, ſays, he found goats blood the beſt of any: yet even this availed but little; for in working with chiſſels tempered herein, ſparks of fire came much more plentifully than pieces of the ſtone. By means hereof, the ſculptors were able to make a flat or oval form; but could never attain to any thing like a figure. See TEMPERING.

It is true, in 1555. Coſmo de Medicis is ſaid to have diſtilled a water from certain herbs, wherewith his ſculptor Franceſco Tadda, gave his tools ſuch an admirable hardneſs and temper, as that he performed ſome fine works with them; particularly, our Saviour's head in demi-relievo, Coſmo's head, and his ducheſs's. Even the very hair, and beard, how difficult ſoever, are here well conducted; and there is nothing of the kind better in all the works of the ancients: but the ſecret ſeems to have died with him.

The French have lately found another method of cutting *porphyry, viz.* with an iron ſaw without teeth, and *grez*, a kind of free ſtone pulverized, and water. The authors of this invention pretend, they could form the whole contour of a column hereby, had they matter to work on.

PORRACEOUS *, in medicine, a term applied to the bile, fœces, *&c.* when their colour is green, approaching that of a leek. See BILE.

* **The word is formed from the Latin *porrum*, leek.**

PORRETANI, a religious ſect, the followers of Gilbert de la Porree, biſhop of Poictiers, condemned in the twelfth century, for admitting a phyſical diſtinction between God and his attributes; or, as Marſham ſays, for having written too curiouſly on the ſubject of the Trinity: for his real ſentiments, we are not over-well acquainted withal.

However, he gave occaſion for thoſe ſuſpicions, by maintaining that this propoſition, *Deus eſt bonitas*, is not true, unleſs reduced to this, *Deus eſt bonus*. And there are ſome paſſages noted by St. Bernard, who wrote warmly againſt him, wherein he ſeems to admit a real diſtinction between the nature of God and his attributes.---The *Porretani* are ſet in oppoſition to the *Nominals*. See NOMINAL.

PORT, *haven*, or *harbour*, a commodious place ſituate on the ſea-coaſt, or at the mouth of a river, with depth of water ſufficient for ſhips of burden, and convenient bottom for anchorage; where veſſels lie by, to load or unload; ſcreened from the wind, and ſafe from any enterprize of enemies; either by the diſpoſition of the place, or by means of a mole, or dike, or the like, with a chain and light-houſe. See HARBOUR, PHAROS, *&c.*

Ports are either *natural* or *artificial*.

Natural PORTS are thoſe which providence ſeems to have formed for the communication of commerce.

Artificial PORTS are thoſe formed with moles, or projectures into the ſea. See MOLE.

The Engliſh coaſts are exceedingly thin of *ports*. France has the advantage of all other countries in the number and excellence of *ports*: that of Breſt is the fineſt natural *port* in the world, as that of Dunkirk was lately the ſtrongeſt artificial one.

Bar PORTS, PORTS *de barre*, are ſuch as can only be entered with the tide, as that of Goa.

Cloſe PORTS, are thoſe within the body of a city; as thoſe of Rhodes, of Venice, Amſterdam, Rochel, Bayonne, and St. John de Luz.

Free PORT, in commerce, a *port* open and free for merchants of all nations to load and unload their veſſels in, without paying any duties or cuſtoms. See FREE, and DUTY.

Such are the *ports* of Genoa and Leghorn.---The emperor, ſince his being in poſſeſſion of the ſtates in Italy, formerly belonging to Spain, has ſeemed determined to eſtabliſh a *free port* in ſome of the cities he poſſeſſes on the Adriatic ſea.---Marſeilles was declared a *free port* by an edict of Louis XIV. bearing date 5th March 1669.

Free PORT is alſo uſed for a total exemption and franchiſe, which any ſet of merchants enjoy, for goods imported into a ſtate, or thoſe of the growth of the country exported.

Such was the privilege the Engliſh enjoyed for ſeveral years after their diſcovery of the *port* of Archangel; and which was taken from them on account of the regicide in 1648.

Cinque PORTS. See CINQUE *ports*, BARON, GUARDIAN, and WARDEN.

PORT is alſo ſometimes uſed for the burden of a ſhip. See SHIP and BURDEN.

The capacity of a veſſel is eſtimated in tuns; each whereof may contain about two thouſand pounds weight of ſea-water. When then we ſay, a veſſel is of the *port* or burden of a thouſand tuns; it is not meant, as ſome imagine, that it bears ſo many casks full of merchandize; but that the ſea-water, which would be contained in the ſpace which the capacity of the veſſel poſſeſſes in the ſea, weighs a thouſand tuns, which, at the rate of 2000 pounds each, is as much as to ſay, it bears a burden of two millions weight. See TUN.

PORT is alſo uſed for the palace of the grand ſignior, or emperor of the Turks. See SERAGLIO.

PORT is alſo uſed for a ſtrong wine brought from Oporto, or Port-a-port in Portugal; whence its name. See WINE.

PORT *of the voice*, in muſic, the faculty and habit of makeing the ſhakes, paſſages, and diminutions; wherein the beauty of a ſong, or piece of muſic, conſiſts; and which the Italians comprehend under the terms *trilli, gruppi, ſtraſcini*.

PORT, among ſailors, denotes the larboard, or left ſide of the ſhip. See LARBOARD.

To port the helm, is to put the helm on the left ſide of the ſhip, that the ſhip may go to the right, or the ſtarboard. See HELM.

PORTA, in anatomy, or *vena* PORTA, a very conſiderable vein, employed in bringing the blood from ſeveral parts, by an infinite number of branches, which it is divided into, to the liver, through the whole ſubſtance whereof it is diſſeminated. ---See *tab. anat.* (*angeiol.*) *fig.* 4. *lit. a.* (*ſplanch.*) *fig.* 5. *lit. i.* See alſo VEIN and LIVER.

The *vena porta* is formed of two large veins; the meſenteric and ſplenic; which are again formed of ſeveral other minuter veins coming from the ſtomach, inteſtines, ſpleen, epiploon, *&c.* See MESENTERIC and SPLENIC.

The ancients gave it the name *porta*, as imagining it to bring the chyle, by its meſenteric branch, from the inteſtines to the liver; but ſome of the moderns have found another uſe for it.

It is remarkable of the *porta*, that, after the manner of the arteries, it ſhoots itſelf from a trunk into branches; and being at laſt loſt in capillaries, it delivers the blood into the cava, by which it is immediately reconveyed to the heart. See CAVA.

The *porta* is formed out of the concurrence of divers veins, which, meeting together, make one of the moſt conſiderable venous trunks of the body, as to its bulk; though, contrary to the courſe of other veins, it runs not far in a trunk, but is, as before obſerved, ſoon diſtributed again, by ramifications, into the liver.

This vein is vulgarly divided into *branches without the liver*, and *branches within*, and a *trunk intermediate*: but this diviſion is not very clear, the *branches*, as they are called, without the liver, not being ſo properly branches as roots; which have, by anatomiſts, been dignified with diſtinct names from the parts whence they come.

The veins which conſpire towards the formation of this trunk, which having been deſcribed in their proper places, or being to be deſcribed there, we ſhall not here inlarge upon, are, from the placenta uterina, in a fœtus, the vena umbilicalis; from the gall-bladder, the cyſticæ gemellæ; from the upper part of the ſtomach, the pylorica, or gaſtrica dextra, which goes to the trunk; the gaſtrica major, and minor ſiniſtra, from the ſtomach (of which the major is formed out of the coronaria ventriculi);

ventriculi); the epiplois ſiniſtra and poſtica, from the omentum; the vas, or vaſa brevia, from the ſtomach; the ſplenica, from the ſpleen: all which join to form the *left*, or *ſplenic branch of the* porta.

The *right*, or *meſenteric branch*, conſiſts of the gaſtrica and epiploica dextra, from the ſtomach and omentum; the duodena, from the duodenum and jejunum; the hæmorrhoidalis interna, from the inteſtinum rectum and colon; the meſaraics, from the meſentery.

By means of all theſe veſſels, the *porta* receives the blood from moſt of the viſcera of the abdomen; and, after the coaleſcence of its branches, enters the liver in a trunk; immediately under the ſurface whereof, having firſt formed a kind of ſinus, it is divided into two principal branches, and thoſe again into five, which ſcatter innumerable ramifications through the whole ſubſtance of the liver.

The true uſe of this vein, hitherto unknown, Dr. Keill thinks he has diſcovered: and it is this: The bile, ſays he, being to be mixed with the chyle, as it comes out of the ſtomach into the duodenum, could no-where be ſo conveniently ſecerned from the blood, as where the liver is placed: but if all the branches of the cœliac artery carried all the blood to the liver, from which the gall was to be ſeparated; it is evident, conſidering the nearneſs of the liver to the heart, and the inteſtine motion of the blood, that ſo viſcid a ſecretion as the gall is, could never have been formed. See GALL.

Nature therefore is forced to alter her conſtant method of ſending the blood to all parts of the body by arteries: ſhe here forms a vein, by which ſhe ſends the blood from the branches of the meſenteric and cœliac arteries to the liver.

By this means the blood is brought a great way about, ere it arrive at the liver; ſo that its celerity being diminiſhed, all the corpuſcles that are to form the gall, may have time to attract one another, and unite ere they come to their ſecerning veſſel. Keill's *anim. ſecret. p.* 36, &c. See SECRETION.

PORTABLE, ſomething eaſy of carriage. See CARRIAGE.

Books in 12mo are valued for their being *portable*; eaſily put in the pocket. This machine is the better, as being *portable*. Armies carry with them *portable* bridges, *portable* mills, boats, ovens, forges, *&c.*

PORTABLE *barometer*, is a barometer ſo contrived as that it may be carried from place to place without being diſordered. See BAROMETER.

A *portable barometer* was an extraordinary thing a little while ago: at preſent they are made *portable* of all ſorts; being ſo contrived, as that the mercury may be ſcrewed quite up to the ſealed end of the tube; by which means it is ſecured from ſwagging, and ſo endangering the breaking of the tube. A contrivance for which we are indebted to Mr. Patrick!

PORTAIL, in architecture, the face or frontiſpiece of a church, viewed on the ſide wherein is the great door.

Portail is alſo uſed for the great door itſelf of a palace, caſtle, *&c.*

PORTAL *, in architecture, a term uſed for a little ſquare corner of a room, cut off from the reſt of the room, by the wainſcot; frequent in the ancient buildings, but now diſuſed.

* The word ſeems a diminutive of the French, *port*, door, gate; it being through this that they entered into the room.

PORTAL is ſometimes alſo uſed for a little gate, *portella*; where there are two gates of a different bigneſs. See GATE.

PORTAL is ſometimes alſo uſed for a kind of arch of joiner's work before a door.

PORTATE, in heraldry.---A *croſs* PORTATE is a croſs which does not ſtand upright, as croſſes generally do; but lies athwart the eſcutcheon, in bend, as if it were carried on a man's ſhoulder. See CROSS.

Colombiere tells us, it is by ſome called *porté*, that is, carried; becauſe, when our Saviour went to ſuffer death, he was obliged to carry his croſs, which is always thus repreſented ſloping, and inclined after this manner.

PORT-CRAION, a *pencil-caſe*, an inſtrument ſerving to incloſe a pencil, and occaſionally alſo uſed as a handle for holding it. See PENCIL.

It is uſually four or five inches long, and contrived ſo as the pencil may be ſlid up and down it by means of a ſpring and button. Its outſide is filed into eight ſides or faces, whereon are drawn the ſector-lines; its inſide, round: ſometimes it is made round or cylindrical both without-ſide and within, and has its length divided into inches and parts of inches.

PORTCULLICE, called alſo *herſe* and *ſarraſin*, in fortification, an aſſemblage of ſeveral great pieces of wood laid or joined acroſs one another, like an harrow; and each pointed at the bottom with iron. See HERSE and SARRASIN.

Theſe formerly uſed to be hung over the gate-ways of fortified places, to be ready to let down in caſe of a ſurprize, when the enemy ſhould come ſo quick, as not to allow time to ſhut the gates.

But now a-days, the orgues are more generally uſed, as being found to anſwer the purpoſe better. See ORGUES.

PORT-DIEU, among the French, is a pariſh-prieſt, whoſe buſineſs is to carry the viaticum, or ſacrament, to ſick people. See VIATICUM.

PORTER, in the circuit of juſtices, is an officer who carries a verge, or white rod, before the juſtice in eyre; ſo called *à portando virgam*. See VERGER.

PORTER *of the door of the parliament-houſe*, is a neceſſary officer belonging to that high court; who enjoys the privileges accordingly. *Cromp. juriſd.*

Groom **PORTER**. See the article GROOM *porter*.

PORT-FIRE, a paper-tube, about ten inches long, filled with a compoſition of meal-powder, ſulphur and ſalt-petre, rammed moderately hard; uſed to fire guns and mortars inſtead of match. See MATCH.

PORT-GLAIVE, *ſword-bearer*, an order of knights in Poland, called by the Latins *enſiferi*. See KNIGHT.

It was confirmed by pope Innocent III. and by him ſent into Livonia to defend the preachers of the goſpel againſt the infidels at the firſt converſion of that country. Being too weak to effect that buſineſs, they united themſelves with the Teutonic or Marian knights, by the pope's authority; and inſtead of knights of the ſword, were called, *knights of the croſs*.---They ſeparated again under Univus, their great maſter, *anno* 1541.

The Teutonic knights being then diſpoſſeſſed of Pruſſia, and the *port-glaives* going into Luther's opinions, ſoon dwindled away; for in the year 1557. they fell out with the biſhop of Riga, of the houſe of Brandenburg, becauſe he would not embrace their notions; and he, to ſecure his own eſtate, put Riga into the hands of the Polanders.

Afterwards, the knights having moſt of Livonia taken from them by the Muſcovites, they put themſelves under the protection of Sigiſmond Auguſtus, king of Poland, *anno* 1559. but William of Furſtembourg, their great maſter, being betrayed by his own mercenaries into the hands of the Muſcovites, Gothard Ketler his ſucceſſor, following the example of Albert, the great maſter of Pruſſia, tranſacted with the aforeſaid Sigiſmond for the whole eſtate, which he ſurrendered to his own uſe in the caſtle of Riga, together with his croſs, the ſeal of the order, the charters and grants of the ſeveral popes and emperors, which concerned the ſame; as alſo the keys of the city and caſtle of Riga, the office of great-maſter, the rights of coinage, and all the powers and privileges appertaining to it; receiving back again from Radzivil, the king's commiſſioner, the dukedom of Courland to him and his heirs for ever.

PORT-GREVE *, or PORTGRAVE, was anciently the principal magiſtrate in ports and other maritime towns.

* The word is formed from the Saxon *port*, a port or other town; and *geref*, a governor.---It is ſometimes alſo written *port-reve*. See REVE.

Camden obſerves, that the chief magiſtrate of London was antiently called *port-greve*; inſtead of whom, Richard I. ordained two bailiffs; and ſoon afterwards king John granted them a mayor for their yearly magiſtrate. See MAYOR.

The charter of William the conqueror to the city of London runs thus: "William king, grete William biſhop, and Godfrey
" *port-greve*, and all the burgeis within London, French and
" Engliſh. I grant you that I will that ye be all your law-worth
" that ye were in Edward's day the king. And I will that each
" child be his fader's eyer, and I will not ſuffer that ony man
" you any wrongs breed, and God you keepe."

PORT-HOLES, in a ſhip, are the embraſures, or holes in the ſides of the veſſel, through which the muzzles of the cannons are put. See EMBRASURE.

Large ſhips have three rows of *port-holes*, or batteries; each uſually conſiſting of fifteen *port-holes*.

In ſtorms, they uſe to ſhut up the *port-holes*, to prevent the water's driving through them.

In Engliſh, Dutch, and French ſhips, their valves or caſements are faſtened a-top of the apertures; in Spaniſh veſſels aſide of them.

PORTICO, in architecture, a kind of gallery on the ground; or a piazza encompaſſed with arches ſupported by columns, where people walk under covert. See PIAZZA.

The roof is uſually vaulted, ſometimes flat. The ancients called it *lacunar*. See LACUNAR, VAULT, *&c.*

Though the word *portico* be derived from *porta*, gate, door; yet it is applied to any diſpoſition of columns which form a gallery, without any immediate relation to doors or gates.

The moſt celebrated *portico's* of antiquity were thoſe of Solomon's temple, which formed the atrium or court, and encompaſſed the ſanctuary: that of Athens, built for the people to divert themſelves in, and wherein the philoſophers held their diſputes and converſations; which occaſioned the diſciples of Zeno to be called *ſtoics*, from the Greek ϛοα, *porticus*: and that of Pompey at Rome, raiſed merely for magnificence, conſiſting of ſeveral rows of columns ſupporting a plat-form of vaſt extent: a draught whereof, Serlio gives us in his antique buildings.

Among the modern *portico's*, the moſt celebrated is the piazza of St. Peter of the Vatican.---That of Covent-Garden, London, the work of Inigo Jones, is alſo much admired.

PORTIO, PORTION, a part, or diviſion of any thing. See PART and DIVISION.

PORTION, in the canon law, is that allowance, or proportion, which a vicar ordinarily has out of a rectory, or impropriation; be it certain or uncertain. See VICAR and IMPROPRIATION.

PORTIO *dura*, and *mollis*, in anatomy, a partition of the fifth pair of nerves of the brain; which, before its egreſs out of the dura mater, is apparently divided into two branches; the one pretty tough and firm, called *portio dura*; the other ſoft and lax, called *portio mollis*. See NERVE.

PORTIONER, PORTIONARIUS. Where a parſonage is ſerved ſometimes by two, ſometimes by three miniſters, alternately; as Bromyard, Burford, *&c.* in Shropſhire; the vicars or incumbents are called *portioners*, becauſe they have but their portion or proportion of tythes, or profits of the living.

PORTLAND *ſtone*. See the article STONE.

PORT-LAST, in a ſhip, denotes the gun-wale. See *tab. ſhip. fig.* 2. *n.* 19.

When a yard is down on the dock, they ſay, *the yard is down a port-laſt.*

PORTMANNIMOTE, in old records, the port-mens court, held in any city or town. See PORT-MEN.

PORT-MANTEAU, a piece of joiners work, faſtened to the wall, in a wardrobe, armory, *&c.* proper for the hanging on of cloaks, hats, *&c.*

PORT-MANTEAU is alſo uſed for a cloak-bag, of cloth, leather, or the like, wherein the cloak and other habiliments of travellers are diſpoſed, and laid on the horſe's crupper. See SADDLE.

PORT-MANTEAU is alſo an officer under the king of France, whereof there are twelve: their buſineſs is to keep the king's hat, gloves, cane, ſword, *&c.* to take them from him, and to bring them to him again when wanted.

The Dauphin has alſo his *port-manteau.* Anſwerable to theſe are the cardinals caudataries, or tail-bearers.

The Romiſh biſhops have alſo their *port-croix*, *port-mitres*, &c. *i. e.* crozier-bearers, mitre-bearers, *&c.*

PORT-MEN, the twelve burgeſſes of Ipſwich; thus called in the ſtat. 13 Eliz.

Camden adds, that the name was common to the inhabitants of all the cinque-ports. See QUINQUE *portus.*

PORTMOTE* ſignifies a court kept in port or haven towns; as ſwani-mote in the foreſt.---It is ſometimes alſo called the *portmote court.* See PORT and COURT.

* The word is formed from the Saxon, *port*, port, and *gemot*, *conventus*, meeting; *q. d. portgemot.*

Portmotes are alſo held in ſome inland towns, as at Knolſt in Cheſhire.

PORT-NAILS, in a ſhip, ſuch as are uſed to faſten the hinges to the ports. See NAIL.

PORTRAIT, POURTRAIT, or POURTRAITURE, in painting, the repreſentation of a perſon, and eſpecially a face, done from the life. See PAINTING.

In this ſenſe, we ſay, *portrait-painting*, in oppoſition to hiſtory-painting, where all reſemblance of perſon is diſregarded.

Portraits are uſually painted in oil-colours, ſometimes in water; ſometimes in miniature, with crayons, pens, paſtels, *&c.* See LIMNING, MINIATURE, *&c.*

It was ſaid of a great painter, who never ſucceeded in the likeneſs, (Sir Peter Lely, if we miſtake not) that he made a great many fine pictures, but all poor *portraits.*

PORT-ROPES, in a ſhip, thoſe which ſerve to haul up the ports of the ordnance.

PORT-ROYAL, a term that makes a conſiderable figure in the republic of learning.---Its origin is this:

Philip Auguſtus, wandering from his company in hunting near Chevreuſe, weſtward of Paris, found a little chapel, where he put up, expecting ſome of his attendants might meet him. This happening accordingly, he gave the place the name of the *king's port*, *Port du roi*, or *Port-royal*; and to give thanks for his deliverance, reſolved to erect a monaſtery there.

Odo, biſhop of Paris, apprized of his intention, prevented him; and, with the concurrence of Mathilda, wife of Matth. Montmorenci, firſt lord of Marly, built a nunnery in 1204. filling it with Ciſtercians, who continued under the juriſdiction of the general of that order till the year 1627. when they were removed to a houſe given them in the Fauxbourg St. Jaques at Paris.

In 1647. they quitted the habit of Ciſtercians, and embraced the inſtitution of the perpetual adoration of the ſacrament. The ſame year the archbiſhop of Paris allowed them to remand ſome of their religious to their former abbey, and to re-eſtabliſh the ſame.

Some time after, the formulary of Alexander VII. being appointed to be ſubſcribed throughout the kingdom; the religious of *Port-royal* in the city ſigned it; thoſe remitted to the former abbey ſcrupled it extremely, and at laſt only ſigned it with great reſtrictions.

Still perſiſting in the ſame ſentiments, the king finding no way to reduce them but by diſperſing them; that was executed in 1709. and the revenues given to the other monaſtery.

Upon this evacuation, ſeveral eccleſiaſtics, and others, who had the like ſentiments with regard to the ſubſcription as the religious, retired to *Port-royal*, and had apartments there; and there publiſhed ſeveral books both on the ſubject of this diſpute, and other topics;---whence all that adhered to that party, took the name of *Port-royaliſts*, and their books, *books of Port-royal.*

Hence we ſay, the *writers of Port-royal*, Meſſieurs *de Port-royal*, the tranſlations of *Port-royal*, the Greek and Latin methods of *Port-royal*, which are grammars of that language.

PORT-SALE, a public ſale of goods to the higheſt bidder. See AUCTION.

Port-ſale; in the ſtat. *an.* 35. *Hen.* 8. cap. 7. denotes the ſale of fiſh preſently upon its arrival in the port or haven. See PORT-MEN.

PORT-SOKEN*, or PORT-SOKA, the ſuburb of a city; or a place within the liberties and juriſdiction thereof.

* The word is formed from the Saxon, *port*, city; and *ſoka*, juriſdiction.---*Conceſſi quod nullus de civitate, vel* port-ſoka *ſua captus*, &c. Somn. *Gavelkind.*

PORTUGUESE *coins*. See the article COINS.

PORTUGUESE *meaſure*. See the article MEASURE.

Quinque **PORTUS**. See the article QUINQUE *Portus*.

PORT-VENT, in an organ, is a wooden pipe, well cloſed, which ſerves to convey the wind from the bellows to the ſound-board of the organ. See ORGAN.

PORUS *bilarius*, *bilary* PORE, or *hepatic duct*, in anatomy, a duct, which, with the cyſtic, or choledoc, forms the common canal of the bile. See BILE.

Fallopius was miſtaken in imagining, that the *porus bilarius* carried the bile into the gall-bladder. Its office is to convey it into the inteſtines by the ductus communis; for in blowing into it, that inteſtine is found to ſwell. See BILARY, and DUCTUS *communis*.

POSE', in heraldry, denotes a lion, horſe, or other beaſt ſtanding ſtill, with all four feet on the ground; to denote thereby, that it is not in a moving poſture.

POSITION, in phyſics, *ſite*, or *ſituation*; an affection of place, which expreſſes the manner of any body's being therein. See BODY, PLACE, *&c.* See alſo DISPOSITION, INTERPOSITION, JUXTAPOSITION, and TRANSPOSITION.

POSITION, in architecture, denotes the ſituation of a building, with regard to the points of the horizon. See BUILDING.

Vitruvius directs the *poſition* of a building to be ſuch, as that the four corners point directly to the four winds.

POSITION, in aſtronomy. The *poſition* of the ſphere is either right, parallel, or oblique; whence ariſes the inequality of our days, difference of ſeaſons, *&c.* See SPHERE.

Circles of POSITION, are ſix great circles paſſing through the interſection of the meridian and horizon, and dividing the equator into twelve equal parts. See CIRCLE.

The ſpaces included between theſe circles, are what the aſtrologers call the *twelve houſes*; and which they refer to the twelve triangles marked in their themes. See THEME.

Theſe circles are repreſented on the globe by the ſemicircle of *poſition.* See GLOBE.

POSITION, in dancing, the manner of diſpoſing the feet, with regard to each other.

There are four regular *poſitions:* the firſt, when the feet are joined in a line parallel to the ſhoulders: the ſecond, when the heels are perpendicularly under the ſhoulders; and of conſequence, the width of the ſhoulders apart: the third, when one foot is before the other, in ſuch manner, as that the heel is in the cavity form'd by the rotula and carpus of the foot: the fourth, when one foot is the width of the ſhoulders apart from the other, the heel ſtill anſwering to the cavity above-mentioned, which is the only regular manner of walking.

POSITION, in arithmetic, a rule, ſo called, for *ſuppoſition.*---The rule of *falſe poſition*, or of *falſhood*, conſiſts in calculating on ſeveral falſe numbers, taken at random, as if they were the true ones; and from the differences found therein, determining the number ſought.

Poſition is either *ſingle* or *double.*

Single POSITION is, when there happens in the propoſition ſome partition of numbers into parts proportional; in which caſe, the queſtion may be reſolved at one operation by this rule:

Imagine a number at pleaſure, and work therewith according to the tenour of the queſtion, as if it were the true number: and what proportion there is between the falſe concluſion and the falſe *poſition*, ſuch proportion the given number has to the number ſought.

Therefore the number found by argumentation ſhall be the firſt term of the rule of three; the number ſuppoſed, the ſecond term; and the given number, the third. See GOLDEN *rule.*

Double POSITION is, when there can be no partition in the numbers to make a proportion.

In this caſe, therefore, you muſt make a ſuppoſition twice; proceeding therein according to the tenour of the queſtion.

If neither of the ſuppoſed numbers ſolve the propoſition, obſerve the errors, and whether they be greater or leſſer than the reſolution requires; and mark the errors accordingly, with the ſigns + and —.

Multiply, contrariwiſe, the one *poſition* by the other error; and if the errors be both too great, or both too little, ſubtract the one product from the other, and divide the difference of the products by the difference of the errors.

If the errors be unlike, as the one +, and the other —, add the products, and divide the ſum thereof by the ſum of the errors added together. For the proportion of the errors is the ſame with the proportion of the exceſſes or defects of the numbers ſuppoſed, to the numbers ſought.

POSITION, in geometry, is a term ſometimes uſed in contradiſtinction to *magnitude.*---Thus, a line is ſaid to be *given in poſition*, *poſitione data*, when its ſituation, bearing, or direction, with regard to ſome other line, is given: on the contrary, a line is given in magnitude, when its length is given, but not its ſituation. See GIVEN, and SUB-CONTRARY.

Sir Iſaac Newton ſhews how to find a point, from which three lines, perpendicularly let fall to three other lines *given in poſition*, have any given ratio, *&c.*

POSITION is alſo uſed for a theſis or propoſition maintained in the ſchools. See THESIS.

Traiterous POSITION. See the article TRAITEROUS.

POSITIVE, a term of relation ſometimes oppoſed to *negative.* See NEGATIVE and AFFIRMATIVE.

Thus, we ſay, the commandments are ſome of them *poſitive,* others *negative.* See DECALOGUE.

POSITIVE *quantity*, in algebra, a real or affirmative quantity; or a quantity greater than nothing;---thus called, in oppoſition to a privative or negative quantity, which is leſs than nothing. See QUANTITY.

Poſitive quantities are deſign'd by the character + prefixed to them, or ſuppoſed to be prefixed. See CHARACTER.

POSITIVE is alſo uſed in oppoſition to *relative*, or *arbitrary*. See RELATIVE.

Thus we ſay, beauty is no *poſitive* thing, but depends on the different taſtes of the people. See RELATIVE.

POSITIVE is alſo uſed in oppoſition to *natural.* See NATURAL.

Thus we ſay, a thing is of *poſitive* right, meaning, it is founded on a law which depends abſolutely on the authority of him who made it.

The prohibition of eating certain beaſts, under the old law, was of *poſitive* right; the command to honour father and mother, of natural right. See RIGHT.

POSITIVE *degree*, in grammar, is the adjective in its ſimple ſignification; without any compariſon. See DEGREE.

Or, *poſitive degree* is that termination of an adjective, which expreſſes its ſubject ſimply and abſolutely, without comparing it with any other.

Thus, good, *bonus*, fair, *pulcher*, &c. are in the *poſitive degree*; better, fairer, in the comparative. See COMPARATIVE.

POSITIVE *theology*, is that which conſiſts in the ſimple underſtanding or expoſition of the dogma's and articles of faith, as contained in the holy ſcriptures, or explained by the fathers and councils, clear of all diſputes and controverſies. See THEOLOGY.

In this ſenſe, *poſitive* theology ſtands oppoſed to *ſcholaſtic* and *polemical* theology. See SCHOLASTIC and POLEMICAL.

POSITIVE, in muſic, denotes the little organ uſually behind, or at the foot of the organiſt, played with the ſame wind, and the ſame bellows, and conſiſting of the ſame number of pipes with the large one, though thoſe much ſmaller, and in a certain proportion. See ORGAN.

In the organs of the Jeſuits, the *poſitive* is in the grand body.

POSITIVE *levity*. See the article LEVITY.

POSITIVE *cold*. See the article COLD.

POSITIVE *modes*. See the article MODE.

POSSE *comitatus*, POWER *of the county*, a phraſe in law, ſignifying the aid and attendance of all knights, gentlemen, yeomen, labourers, ſervants, apprentices, villains, and others, above the age of fifteen years, within the county; becauſe all above that age are bound to have harneſs by the ſtatute of Wincheſter: only women, eccleſiaſtical perſons, and ſuch as are decrepit and infirm, are excuſed.

It is uſed where a riot is committed, a poſſeſſion kept upon a forcible entry, or any force of reſcue uſed, contrary to the command of the king's writ, or in oppoſition to the execution of juſtice. *Stat.* 2. *Hen.* 5.

POSSESSION, POSSESSIO, in law, *quaſi pedis poſitio*; an action whereby we hold or occupy any thing, either *de jure*, or *de facto*. See OCCUPANCY.

POSSESSION *de facto*, is when there is an actual and effectual enjoyment of the thing. See DE FACTO.

POSSESSION *de jure*, or in law, is the title a man has to enjoy a thing, though it be ſometimes uſurped, and in the actual *poſſeſſion* of another.

Unity of POSSESSION makes what the civilians call *conſolidation. E. gr.* If a lord purchaſe a tenancy, held of himſelf by herriot ſervice; the ſervice becomes extinct by *unity of poſſeſſion, i. e.* by the ſeignory and tenancy's coming into the ſame hand. See CONSOLIDATION and UNITY.

Long *poſſeſſion* beyond the memory of man begets a right. See PRESCRIPTION.

By the French laws, a *poſſeſſion* of three years, in matters perſonal, begets a right; and in real eſtates, a *poſſeſſion* of ten years, among perſons living near the premiſes, and twenty years among thoſe that live elſewhere.

Annual POSSESSION is the *uſucapio*, which gives a right to moveables: a triennial and peaceable *poſſeſſion* of a benefice, is ſufficient to maintain it; provided it be founded on a plauſible title.

A *poſſeſſion* of an eſtate for ten years by a perſon preſent, and of twenty years by one abſent, with a title; or of thirty years without any, gives a full right. See PRESCRIPTION.

Centenary *poſſeſſion* conſtitutes *poſſeſſion* immemorial; the beſt and moſt indiſputable of all titles.

POSSESSION is ſometimes alſo uſed for the act of taking *poſſeſſion*, which is performed with certain formalities, whereby a perſon is juſtified to be in the enjoyment of any thing. See LIVERY *and* SEISIN.

Anciently, upon buying an eſtate, *poſſeſſion* was taken with a deal of ceremony: in ſome places, by a ſtick, a branch, or a ſtraw, put into the hands of the buyer by the ſeller. See INVESTITURE.

POSSESSION *of a benefice*, in ſome cuſtoms, is taken by entering the church, kneeling down, kiſſing the altar, and ringing the bell. See INDUCTION, *&c.*

In ſome caſes, *poſſeſſion* is taken by the ſight of the ſteeple.

The emperors anciently put prelates in *poſſeſſion*, by giving them a ring and a ſtaff. See INVESTITURE.

POSSESSION is alſo uſed for the ſtate of a perſon *poſſeſſed* by the devil. See DÆMONIAC.

Poſſeſſion differs from *obſeſſion*, in that in the former the devil acts inwardly; and in the latter outwardly. See OBSESSION.

POSSESSIVE, in grammar, is applied to pronouns, which denote the enjoyment or poſſeſſion of any thing, either in particular, or in common. See PRONOUN.

Thus, *mine*, *thine*, *his*, *ours*, &c. are pronouns *poſſeſſive*.

POSSIBILITAS, POSSIBILITY, in our old law-books, is ſometimes uſed for a thing done wilfully or wittingly.

In which ſenſe it ſtands oppoſed to *impoſſibilitas*, a thing done againſt the will. *Si autem oculos aſnaſſet, reddat weram ejus, &* impoſſibilitatis *accuſetur in eo facto*. Leg. Alfred. Again, —*Si quis agat* impoſſibiliter, *non eſt omnino ſimile ac ſi voluntarie faciat*. Leg. Canut. c. 6.

POSSIBILITY, POSSIBILITAS, denotes a non-repugnance to exiſting in a thing that does not any way exiſt. See POSSIBLE.

This non-repugnance to exiſting is no other than the producibility of any thing; which conſiſts in this, that there are ſufficient cauſes actually exiſting, or at leaſt poſſible, whereby the thing may be produced, or be brought to exiſt; principally as there is a God, or an almighty cauſe. See EXISTENCE.

So that *poſſibility* does not imply any thing in the thing poſſible, but is a mere extrinſic denomination taken from the power of the cauſe, and principally of God.

In effect, if a creatable thing had any intrinſic *poſſibility*, it would follow, that ſuch a thing muſt exiſt even without the cauſe.

And yet we may allow an intrinſic *poſſibility* of a thing, if by *poſſibility* we do not underſtand its producibility, or its non-repugnance to exiſt; but only the non-repugnance of the attributes contained in its idea. But ſuch *poſſibility* is merely logical.

POSSIBLE, POSSIBILE, is ſometimes oppoſed to real exiſtence, and underſtood, in the ſchools, of a thing, which, though it does not actually exiſt, yet may exiſt;---as, a new ſtar, another world, *&c.* which are particularly ſaid to be *phyſically poſſible*.

It is alſo oppoſed to *impoſſible*. See IMPOSSIBLE. In which ſenſe it is applicable to any thing that does not contradict itſelf, or involve contradictory predicates; whether it actually exiſt or not: as a man, fire, *&c.*---Theſe are alſo ſaid to be *logically poſſible*.

It is a great point of controverſy among the ſchool philoſophers, whether and how far things may be ſaid to have any entity, while only in a ſtate of *poſſibility*? See POSSIBILITY.

Poſſibles are ordinarily conceived to be three-fold; *future*, *potential*, and *merely poſſible*.

Future POSSIBLE, is that whoſe production is decreed and aſcertained;---*v. gr.* the futurition of all thoſe events fixed by the immutable decree, or the immutable will, of the Almighty.

Potential POSSIBLE, is that which is contained or lies hid in its cauſes:---as, the tree in the ſeed, the fruit in the tree, *&c.*

Mere POSSIBLE, is that which might exiſt, though it never ſhall.

Others diſtinguiſh *poſſibles* into *metaphyſical*, *phyſical*, and *ethical*.

Metaphyſical POSSIBLE, is that which may at leaſt be brought to being by ſome ſupernatural and divine power,--as, the reſurrection of the dead.

In which ſenſe the word is oppoſed to an *impoſſible* even to God himſelf; as, a crooked ſtraitneſs, a ſquare circle, an infinitely perfect creature, a mortal God.

Phyſical POSSIBLE, is that which may be effected by a natural power;---as, to overturn the Turkiſh empire.

In oppoſition to ſuch things as cannot be produced by any finite power; as, to reſtore the dead, *&c.*

Ethical POSSIBLE, is that which may be done by prudent perſons, uſing all the proper means they have for the ſame.---Again, it is uſed for any thing done according to right reaſon, and conſiſtently with the laws.

In the firſt ſenſe, it is *poſſible* for the Venetians to beat the Turks at ſea: In the ſecond, whatever is right and juſt, is *poſſible*.

POSSIBILITY *of iſſue extinct*. See TAIL.

POST *, in the military art, is any ſpot of ground capable of lodging ſoldiers.

> * **The word is formed from the Latin, *poſitus*, placed; ſome derive it from *poteſtas*, power.**

A *poſt* denotes any ground or place, fortified or not, where a body of men may make a ſtand, and fortify themſelves, or remain in a condition to fight an enemy.

Hence they ſay, the *poſt* was relieved, the *poſt* was quitted, the *poſt* was taken ſword in hand, *&c.*

A ſpot of ground ſeized by a party to ſecure the front of an army, and to cover the *poſts* that are behind, is called an *advance poſt*.

The advance guard, or the right of the two lines of an army, *&c.* is called the *poſt of honour*, and is always given to the eldeſt regiments.

Posts, in building, pretty big pieces of timber, placed upright in houſes, *&c.* See TIMBER, HOUSE, *&c.*

The corner *poſts* are called the *principal poſts*;---the *poſts* framed into breſſummers between principal *poſts* for ſtrengthening the carcaſe of the houſe, are called the *prick-poſts.*

An excellent method to preſerve *poſts* from rotting, is, to burn the ends that are to be ſet in the ground, the out-ſide to a very coal.

Crown **Post**. See the article CROWN *poſt.*

Post*, alſo denotes the diſpatch a courier or letter-carrier makes, by changing horſes from time to time. See COURIER.

***The name is borrowed hence, that the horſes are *poſiti*, placed, poſted, or diſpoſed from diſtance to diſtance.**

The word is alſo applied to the perſon himſelf; the houſes where he takes up, and lays down his charge; and the ſtages, or diſtances between houſe and houſe.---Hence the phraſes, *poſt-boy*, *poſt-horſe*, *poſt-houſe*, &c.

We find mention made of *poſt-horſes* in the Theodoſian Code, *de curſu publico*; but theſe were very different from the preſent eſtabliſhment, and were only public horſes firſt appointed by Trajan; till whoſe time, the meſſengers ſeized any horſes that came in their way.

Lewis Hornigk has an expreſs treatiſe on *poſts*, whereof he makes four kinds; *viz.* on *horſeback*, in *chariots*, in *boats*, and on *foot*: which laſt kind is in uſe in Italy, Turky, and Peru.

Herodotus aſcribes the origin of *poſts* to Cyrus, or Xerxes; but the *poſts* inſtituted by thoſe princes were no more than couriers. See COURIER.

In effect, *poſts* on the preſent footing are but a modern invention; though ſome go back as high as Charlemaign.---It is certain it was the policy, or rather the diffidence, of Louis XI. of France that they owed their riſe to; that uneaſy prince firſt ſettling them by an ordonnance of the 19th of June, 1464. to be the ſooner, and the more ſurely, advertiſed of what paſſed in his own kingdom, and in the neighbouring ſtates.

From France, the inſtitution propagated itſelf, by degrees, through the ſeveral other parts of Europe. In Germany, Hornigk obſerves, *poſts* were firſt ſettled by the count de Taxis at his own expence; in acknowledgment whereof, the emperor Matthias, in 1616. gave him, in fief, the charge of *poſt-maſter* under him and his ſucceſſors.

In England, *poſts* were firſt eſtabliſhed by act of parliament 12 Car. 2. which enabled the king to ſettle a *poſt-office*, and appoint a governor.

The Engliſh *poſt-office* is now managed by two commiſſioners, who have under them about forty other officers, of their own appointing, who are all ſworn, and give ſecurity for their faithful diſcharge, *&c.* as the *receiver*, *comptroller*, *accomptant*, ſix *clerks* of the ſeveral roads, a *window-man*, and ſixteen *ſorters*, for the inland office. For the foreign office, are a *comptroller* and *alphabet-keeper*, ſix *clerks*, and a foreign officer; beſides ſolicitors and clerks, and ſixty-ſeven letter-carriers.

From this office letters and packets are diſpatched every Monday, to France, Spain, Italy, Germany, Sweden, Kent, and the Downs; every Tueſday to all parts of England, Scotland, and Ireland; alſo to Holland, Germany, Sweden, *&c.* every Wedneſday to Kent only, and the Downs; every Thurſday to all parts of England and Scotland, as alſo to France, Spain, and Italy; every Friday to Flanders and Holland, Germany, Sweden, Kent, and the Downs; and every Saturday to all parts of England, Scotland, and Ireland.

Again, letters are returned to London from all parts of England and Scotland, Wales only excepted, every Monday, Wedneſday, and Friday: from Wales every Monday and Friday; and from Kent and the Downs every Day.

On this grand office depend 182 *poſt-maſters* in England and Scotland, who keep regular offices in their ſtages, and *ſub-poſt-maſters* in their branches.

Though the number of letters in England was anciently very inconſiderable; yet it is now ſo increaſed, that this office, before the addition of the *penny-poſt*, was farmed at 50000 *l.* *per annum.*

The charge of a letter of a ſheet of paper 80 miles, is 3 *d.* of two ſheets, 6 *d.* for above 80 miles, a ſheet 4 *d.* two, 8 *d.* An ounce of letters for 80 miles, 1 *s.* for above, 1 *s.* 6 *d.*

Note, The *poſt* travels at the rate of 120 miles in 24 hours. For thoſe who chuſe to travel with the *poſt*, horſes are ready, at the rate of 3 *d.* *per* mile, and 4 *d.* to the boy every ſtage.

The Great Mogul performs part of his *poſtage* by pigeons, kept in ſeveral places, for the conveyance of letters on extraordinary occaſions. They will carry them from one end of that vaſt empire to another. The ſame vehicles have been uſed by the Dutch in ſieges. And at this day, Tavernier obſerves, the conſul of Alexandretta ſends news daily to Aleppo, in five hours time, by means of pigeons; though thoſe two places are three days journey on horſeback apart.

Penny **Post**, a *poſt* eſtabliſhed for the benefit of London, and the parts adjacent; whereby any letter or parcel, not exceeding ſixteen ounces weight, or ten pounds value, is ſpeedily and ſafely conveyed to and from all parts within the bills of mortality, to moſt towns and villages within ten miles of London, for one penny each packet, letter, *&c.*

This office is managed by a comptroller; under whom are an accomptant, collector, ſix ſorters, ſeven ſub-ſorters, and above an hundred meſſengers.

Posts, in ſculpture, *&c.* denote ornaments formed after the manner of rolls, or wreathings; thus called, becauſe they ſeem to run after one another. See FRETT.

Some are ſimple; others enriched, or flouriſhed.

Post, *after*, is alſo a Latin prepoſition, uſed in compoſition with ſeveral Engliſh words, and generally implying a relation of *poſteriority.* See POSTERIOR.

Post-book. See the article BOOK.

Post-communion, a prayer which the prieſt recites after the communion. See COMMUNION.

Post-date. See the article DATE.

Post diem, a fee, by way of penalty, on a ſheriff, for his neglect in returning a writ after the day aſſigned. See RETURN.

For this the cuſtos brevium has four-pence; whereas he has nothing, if it be returned at the day. See WRIT.

Post-disseisin, a writ given by the ſtatute of Weſtminſter, for him who having recovered lands or tenements, by præcipe quod reddat, upon default or reddition, is again diſſeized by the former diſſeizor. See DISSEISIN.

POSTEA, in law, a return or certificate of the proceedings by niſi prius into the court of common-pleas, after a verdict; and there afterwards recorded. See NISI PRIUS.

POSTERIOR, a term of relation, implying ſomething behind, or that comes after another.---In which ſenſe it is uſed in oppoſition to *prior* and *anterior.* See ANTERIOR, *&c.*

The back and hips are the *poſterior* parts of man. Ariſtotle has given *prior* and *poſterior* analytics. A date is *poſterior* to another, when it is later or freſher. See DATE.

Ramus **posterior.** See the article RAMUS.

POSTERIORITY, in law, a term of compariſon, and relation in tenure, oppoſite to *priority.* See PRIORITY.

A man holding lands or tenements of two lords, holds of his ancienter lord by *priority*, and of his later lord by *poſteriority.*

POSTERN, in fortification, a ſmall gate, uſually made in the angle of the flank of a baſtion, or in that of the curtain, or near the orillon, deſcending into the ditch; whereby the gariſon can march in and out, unperceived by the enemy, either to relieve the works, or to make private ſallies, *&c.* See GATE.

The word is alſo uſed in the general for any private, or back-door.---*Poteſtas habere* poſternam *in omni curia penitus inhibeatur, ſed unicus ſit ingreſſus*, &c. Fleta.

Post-fine, a duty belonging to the king for a fine formerly acknowledged before him, in his court; paid by the cognizee after the fine is fully paſſed, and all things touching the ſame accompliſhed.

The rate is ſo much, and half ſo much, as was paid to the king for the *præ-fine*; and is collected by the ſheriff of the county where the land lies, and to be anſwered by him into the exchequer. See FINE.

POSTHUMUS*, or **Posthumous**, a child born after the death of his father, or even of his mother.

*** The word is compoſed of the Latin, *poſt*, and *humus*, ground.**

Among the Romans, *poſthumus* was alſo uſed for a child born after the making of a teſtament, which occaſioned the teſtator to alter it.

Posthumous is alſo applied figuratively to the works of an author that were not publiſhed till after his death, or interment.

POSTICUS *peronæus*, *ſerratus* POSTICUS, *tibialis* POSTICUS. See the articles PERONÆUS, SERRATUS, TIBIALIS.

POSTIL, **Postilla**, a name anciently given to a note, or remark, written in the margin of the bible; afterwards alſo to a note written in any other book poſterior to the text.

Trivet in his chronicle, ſpeaking of St. Langton, archbiſhop of Canterbury, ſays, *Super bibliam* poſtillas *fecit, & eam per capitula, quibus nunc utuntur moderni, diſtinxit:* That Alexander, biſhop of Cheſter, *ſuper pſalterium* poſtillas *ſcripſit.*---Knighton, another of our hiſtorians, ſpeaking of one Hugo, a Dominican and cardinal, ſays, *Totam bibliam* poſtillavit.

POSTING, among merchants, the putting an account forward from one book to another; particularly, from the journal or waſte-book into the ledger. See BOOK-KEEPING.

POSTIQUE*, in architecture, *&c.* An ornament of ſculpture is ſaid to be *poſtique*, when it is ſuperadded after the work itſelf is done.

*** The word is formed from the Italian, *poſticcio*, added.**

A table of marble, or other matter, is alſo ſaid to be *poſtique*, when it is incruſtated in a decoration of architecture, *&c.*

POSTLIMINIUM, **Postliminy**, among the Romans, the return of one who had gone to ſojourn elſewhere, or had been baniſhed, or been taken by the enemy, to his own country and ſtate.

It was thus called, according to Aul. Gellius, from *poſt*, after, and *limen*, threſhold, *q. d.* a return to the ſame bounds, or threſhold:---though others, after Amm. Marcellinus, will have it ſo denominated, becauſe perſons were reſtored into the houſe through a hole in the wall, *poſt limen*, not by going over the threſhold, which was eſteemed ominous.

Postliminium was alſo a law, or action, whereby one recovered an inheritance, or other matter, that had been loſt, from a ſtranger or enemy.

Post-nati, in our ſtatutes, is particularly uſed for ſuch perſons as were born in Scotland, after the acceſſion of king James I. to the crown of England.

7 Jac. 1. it was by all the judges ſolemnly adjudged, that ſuch perſons were no aliens in England; as, on the contrary, the *ante-nati*, or thoſe born in Scotland before that acceſſion, were aliens here in reſpect to the time of their birth. See ALIEN.

POST-NATUS is alſo uſed by Bracton, Fleta, Glanville, *&c.* for the ſecond ſon, as diſtinguiſhed from the eldeſt. Thus in Brompton, lib. 2. *Eſt conſuetudo in quibuſdam partibus, quod* poſt-natus *præfertur primogenito.* See PRIMOGENITURE, and BURGH ENGLISH.

POSTPONING, the putting any thing after, or behind another, with regard either to the order of time or place.

Sometimes it is taken in an ill part; as when we ſay, the book-binder has *poſtponed* a ſheet, *&c.* of a book.

POSTSCENIUM, in the ancient theatre. See PARASCENIUM.

POSTSCRIPT, an after-thought, or article added to a letter or memoir; containing ſomething learnt or recollected after the ſubſcription or concluſion of the piece.

It is uſually marked thus, P. S. The *Spectator* obſerves, that a woman's mind is ever better learnt from her P. S. than her letter.

POST-PREDICAMENTS, in logic, are certain general affections, or properties, ariſing from a compariſon of predicaments with each other; or modes following the predicaments, and often belonging to many. See PREDICAMENT.

Such, according to Ariſtotle, are *oppoſitum*, *prius*, *ſimul*, *motus*, and *habere*; the three firſt of which are in all *predicaments*.

POST-TERM, or **POST-TERMINUM**, a fee, or penalty, taken by the cuſtos brevium of the court of common pleas, for the return of a writ, not only after the day, but after the term or time in which ſuch writs are returnable.---For which the cuſtos brevium has twenty-pence. See WRIT.

POSTULATE, POSTULATUM, in mathematics, a clear, evident propoſition; wherein it is affirmed, or denied, that ſomething may, or may not be done. See PROPOSITION.

A thing immediately deduced from the conſideration of one ſingle definition, if it expreſs ſomething to agree or diſagree to another, is called an *axiom*.---If it affirm, that ſomething may or may not be done, it is called a *poſtulate*.

Thus, *e. gr.* from the geneſis of a circle, it is evident, that all right lines drawn from the centre to the circumference, are equal; ſince they only repreſent one and the ſame line, in a different ſituation: this propoſition, therefore, is eſteemed an axiom. See AXIOM.

But, ſince it is evident from the ſame definition, that a circle may be deſcribed with any interval, and from any point; this is accounted a *poſtulate*.

Axioms and *poſtulates*, therefore, ſeem to have nearly the ſame relation to each other that theorems and problems have. See THEOREM, *&c.*

POSTULATION, POSTULATIO, in the canon law, the nomination of a perſon to a dignity in the church, to which, by the canons, he cannot be elected; as, for want of age, of birth, becauſe already poſſeſſed of a benefice incompatible therewith, or the like impediment.

Thus the formal election of ſuch a perſon being faulty, they are obliged to proceed by way of *poſtulation*; that is, the chapter beſeeches the perſon to whom the confirmation of the election belongs, to approve of it, though it be not canonical. See ELECTION.

The perſon to whom the ſupplication is made by the proteſtants in Germany, is the emperor; by the papiſts, the pope.

Wicquefort obſerves, that when a part of the chapter elects, and another *poſtulates*, the number of *poſtulants* muſt be twice as great as that of the electors, to bring the matter to a *poſtulation*.

POSTURE, in painting and ſculpture, the ſituation of a figure with regard to the eye, and of the ſeveral principal members thereof with regard to one another, whereby its action is expreſſed. See ATTITUDE.

A good part of the painter's art conſiſts in adjuſting the *poſtures*; in giving the moſt agreeable *poſtures* to his figures; in accommodating them to the characters of the reſpective figures, and the part each has in the action, and in conducting and purſuing them throughout.

Poſtures are either *natural*, or *artificial*.

Natural POSTURES are ſuch as nature ſeems to have had a view to in the mechaniſm of the body; or rather, ſuch as the ordinary actions and occaſions of life lead us to exhibit while young, and the joints, muſcles, ligaments, *&c.* flexible.

Artificial POSTURES are thoſe which ſome extraordinary views or occaſions lead us to exhibit.—Such, *e. gr.* are thoſe of our *balance* and *poſture-maſters*.

A painter would be ſtrangely puzzled with the figure of Clark, (the late famous *poſture-maſter* of Pall-mall) in a hiſtory-piece. This man, we are told in the *Philoſ. Tranſact.* had ſuch an abſolute command of his muſcles, &c. that he could disjoint almoſt his whole body; ſo that he impoſed on that great ſurgeon, Mullens, who looked on him in ſuch a miſerable condition, he would not undertake his cure. Though a well-made man, he would appear with all the deformities imaginable; hunch-backed, pot-bellied, ſharp-breaſted, *&c.* He disjointed his arms, ſhoulders, legs, and thighs; and rendered himſelf ſuch an object of pity, that he has frequently extorted money, in quality of a cripple, from the ſame company he had the minute before been in, in quality of a comrade. He would make his hips ſtand a conſiderable way out from his loins; and ſo high as to invade the place of his back. Yet his face was the moſt changeable part about him, and ſhewed more *poſtures* than all the reſt. Of himſelf he could exhibit all the uncouth odd faces of a Quaker's meeting.

Hotch **POT**. See the article HOTCH *pot*.

White **POT**. See the article WHITE.

POTABLE, POTABILIS, ſomething that may be taken, or ſwallowed, by way of drink. See DRINK.

The chymiſts talk much of *potable* gold, *aurum potabile*. See AURUM and GOLD.

POT-ASHES, are properly the lixivious aſhes of certain vegetables, uſed in the making of glaſs and ſoap. See ASHES and LIXIVIOUS.

Such are the aſhes of the herb kali, called alſo ſalt-wort, glaſs-weed, *&c.* from its great uſe in glaſs-making. See GLASS.

Pot-aſhes are alſo called *cineres clavellati*, and make the baſis of ſalt of tartar, and moſt of the lixivial ſalts, as our chymiſts of late manage them for cheapneſs. See KALI, *&c.*

The Engliſh and Dutch make a conſiderable commerce of *pot-aſhes*, which they bring from about the Black ſea; uſing great quantities thereof in the preparation of their cloths, *&c.* thoſe aſhes being found excellent to ſcour withal. See FULLING and DYEING.

POT-ASHES is alſo a denomination popularly applied to all kinds of wood-aſhes bought up and down the country, and mixed together, for the making of green glaſs.---The beſt of Engliſh *pot-aſhes* are thoſe made of the ſmaller common high-way thiſtle; though all thiſtles are good. Fern alſo makes excellent *pot-aſhes*.

POTENT, or POTENCE, in heraldry, a term for a kind of a croſs, whoſe ends all terminate like the head of a crutch. See CROSS and COUNTERPOTENT.

This is otherwiſe called the *Jeruſalem croſs*; and is repreſented in *tab. herald. fig.* 47.

He beareth ſable, a croſs *potent*, or, by the name of *Aleyn*.

POTENTIA, POWER, that whereby a thing is capable either of acting, or being acted upon. See POWER.

Hence it is of two kinds, *active* and *paſſive*.

POTENTIA *activa*, or *active* POWER, called alſo by a barbarous, but ſignificant ſchool-term, *operativity*, is the efficacy or faculty of any being, in virtue whereof ſomething ariſes, or is produced by it.---Such is the power of ſpeaking in man.

POTENTIA *paſſiva, vel receptiva, paſſive*, or *receptive* POWER, is a capacity of receiving ſome act; *e. gr.* of knowing a man.

This is alſo called *ſubjectiva potentia*, ſubjective power.

To exiſt in **POTENTIA**, is uſed among ſchool-writers, to denote that exiſtence which a thing has in a cauſe capable of producing it, but which has not actually produced it.---In which it ſtands oppoſed to exiſtence *in actu*. See POSSIBILITY, EXISTENCE, and ACT.

POTENTIAL, POTENTIALIS, in the ſchools, is uſed to denote and diſtinguiſh a kind of qualities, which are ſuppoſed to exiſt in the body *in potentia* only; by which they capable, in ſome manner, of affecting and impreſſing on us the ideas of ſuch qualities, though not actually inherent in themſelves. See QUALITY, POTENTIA, and POSSIBLE.

In this ſenſe we ſay, *potential heat*, *potential cold*, &c. Brandy and pepper, though cold to the touch, are *potentially* hot.

POTENTIAL *cold* is a relative term, by which we mean, that ſuch a thing is not actually cold to the touch, but in its effects and operations, if taken inwardly. See COLD.

This quality is ſuppoſed to ariſe from the ſize, ſhape, *&c.* of the component particles of a body, which give ſome check or retardation to the blood's motion, whereby it is leſs agitated, and upon which the ſenſible parts of the body are not ſo briſkly ſtruck by it; the perception of which diminution or change of motion in the organs of feeling, is called *cold*.

Hence every thing that leſſens the blood's motion, with relation to the ſenſation before made, is cold;---and every thing which increaſes it, may be called *potentially hot*. See HEAT.

POTENTIAL, in medicine, *&c.*---Cauteries are either actual, *viz.* a button of red-hot iron; or *potential*, as lime, and other cauſtic drugs. See CAUTERY.

POTENTIAL *calcination*. See the article CALCINATION.

POTENTIAL *fire*. See the article FIRE.

POTENTIAL is alſo uſed by ſchoolmen, for ſomething that has the quality of a genus. See GENUS.

A *potential* whole is that which has its parts under it, as a genus has its ſpecies; to diſtinguiſh it from an *actual* whole, which has its parts in itſelf; as a body compoſed of matter and form.

Grotius, with a view hereto, uſes the phraſe, *potential parts of a ſtate*, in oppoſition to the *ſubjective parts*. See PART.

By *potential*, he means thoſe parts poſſeſſed of the ſovereign power; by ſubjective, thoſe ſubject thereto; which are that, with regard to the ſovereign power, that ſeveral ſpecies are with regard to the genus whereof they are the ſubjective parts.

Grotius maintains, that though the ſovereign power be one and indiviſible, yet it may have ſeveral *potential* parts: for, as in the Roman empire there have been two *potential* heads, the one ruling in the eaſt, the other in the weſt; yet the imperial authority, all the while, ſingle and indiviſible: ſo is it poſſible, the ſubjective parts combining to give away their ſovereignty, may not give it intire, but reſerve a part of it for certain emergencies.

gencies. In which caſe the ſubjective part becomes *potential*: and thus there are two *potential* parts, yet the ſovereignty ſingle.

Potential, in grammar, gives the denomination to one of the moods of verbs. See Mood.

The *potential* mood is the ſame in form with the ſubjunctive; but differs from it in this, that it hath always implied in it, either *poſſum*, *volo*, or *debeo*: as, *roget*, that is, *rogare poteſt*, the man may aſk. See Subjunctive.

It is ſometimes called the *permiſſive* mood, becauſe it often implies a permiſſion or conceſſion to do a thing: as, *Habeat, valeat, vivat, cum illa.* Terent.

Poterii *antihecticum*. See the article Antihecticum.

POTION, Potio, a liquid medicine, in the quantity of a draught, to be taken at one time.

A *potion* only differs from a *julep*, or a *mixture*, in the quantity; as being confined to one doſe.

There are purging *potions*, emetic *potions*, diaphoretic, pectoral, cephalic, cardiac, ſtomachic, hyſteric, vulnerary, carminative, &c. *potions*.

POTTERY, the art of making earthen pots and veſſels; or, the manufacture of earthen ware. See Earth and Clay.

The wheel and lathe are the chief, almoſt the only inſtruments uſed in *pottery*; the firſt for large works, the ſecond for ſmall: though, in reality, they are much the ſame as to the manner of uſing them.

The potter's *wheel* conſiſts principally in its nut, which is a beam or axis, whoſe foot or pivot plays perpendicularly on a free-ſtone ſole or bottom. From the four corners a-top of this beam, which does not exceed two feet in height, ariſe four iron bars, called the *ſpokes* of the wheel; which forming diagonal lines with the beam, deſcend, and are faſtened at bottom to the edges of a ſtrong wooden circle, four feet in diameter, perfectly like the felloes of a coach-wheel; except that it has neither axis nor radii; and is only joined to the beam, which ſerves it as an axis, by the iron bars. The top of the nut is flat, of a circular figure, and a foot in diameter. On this is laid a piece of the clay or earth, to be turned and faſhioned.

The wheel thus diſpoſed, is encompaſſed with four ſides of four different pieces of wood, ſuſtained on a wooden frame: the hind-piece, which is that whereon the workman ſits, is made a little inclining towards the wheel: on the fore-piece are placed the pieces of prepared earth: laſtly, the ſide-pieces ſerve the workman to reſt his feet againſt; and are made inclining to give him more or leſs room, according to the ſize of the veſſel to be turned. By his ſide is a trough of water, wherewith from time to time he wets his hands, to prevent the earth's ſticking to them.

To uſe the wheel.---The potter having prepared his clay or earth, and laid a piece of it ſuitable to the work he intends, on the top of the beam, ſits down; his thighs and legs much expanded, and his feet reſted on the ſide-pieces, as is moſt convenient.

In this ſituation he turns the wheel round, till it has got the proper velocity; when, wetting his hands in the water, he bores the cavity of the veſſel, continuing to widen it from the middle; and thus turns it into form, turning the wheel afreſh, and wetting his hands from time to time.

When the veſſel is too thick, they uſe a flat piece of iron with a hole in the middle, and ſomewhat ſharp on one edge, to pare off what is redundant. Laſtly, when the veſſel is finiſhed, they take it off from the circular head by a wire paſſed underneath the veſſel.

The potter's *lathe* is alſo a kind of wheel, but ſimpler and ſlighter than the former. Its three chief members are an iron beam or axis, three feet and an half high, and two inches in diameter; a little wooden wheel all of a piece, an inch thick, and ſeven or eight in diameter, placed horizontally a-top of the beam, and ſerving to form the veſſel on; and another larger wooden wheel, all of a piece, three inches thick, and two or three feet broad, faſtened to the ſame beam at bottom, parallel to the horizon. The beam or axis turns by a pivot at bottom, in an iron ſtand.

The workman gives the motion to the lathe with his feet, by puſhing the great wheel alternately with each foot; ſtill giving it a greater or leſſer degree of motion, as his work requires.

They work with the lathe, with the ſame inſtruments, and after the ſame manner, as with the wheel.

But neither the one nor the other ſerve for any more than forming the body of the veſſel, &c. The feet, handles, and ornaments, if there be any, beſide the mouldings, being to be made and ſet on by hand; if there be any ſculpture in the work, it is uſually done in earthen or wooden moulds, prepared by a ſculptor, unleſs the potter have ſkill enough to do it himſelf, which is very rare.

As to the glazing, or varniſhing of the work, it is uſually done with ſand, litharge or lead-aſhes, wood-aſhes and ſalt, melted into a cake. See Lead.

For the Chineſe Pottery, ſee the article Porcelain.

POTTLE, an Engliſh meaſure, containing two quarts. See Measure.

Two of theſe *pottles*, in the liquids, make a gallon; but in dry meaſure three go to a gallon See Gallon.

POUDER. See the article Powder.

Pie pouder *court*. See the article Pie *powder court*.

POULTICE, or Poultis, a form of medicine, called alſo *cataplaſm*. See Cataplasm.

POULTRY. See the article Fowl.

POUNCE*, among artificers, a little heap of charcoal-duſt, incloſed in ſome open ſtuff; to be paſſed over holes pricked in a work, in order to mark the lines or deſigns thereof on a paper placed underneath; to be afterwards finiſhed with a pencil, a needle, or the like.

* The word is formed from the French, *ponce*, pumice-ſtone; in regard they anciently uſed pumice-ſtone powdered for this purpoſe. See Pumice.

Pounce is much uſed by embroiderers, to transfer their patterns upon their ſtuffs; by lace-makers, and ſometimes alſo by engravers, and writing-maſters.

Pounces, in falconry, the talons or claws of a bird of prey.

POUND*, Libra, a weight of a certain proportion, much uſed as a ſtandard for determining the gravities and quantities of bodies. See Weight.

* The word is derived from the Saxon, *pund*, or *pond*, *pondus*, weight.

We have two different *pounds* in England; the *pound troy*, and the *pound avoirdupoiſe*.

The Pound *troy* conſiſts of 12 ounces, each ounce of 20 penny-weights, and each penny-weight of 24 grains; ſo that 480 grains make an ounce, and 5760 grains a *pound*. See Ounce, &c.

This *pound* is uſed in the weighing of ſilver, gold, precious ſtones, all kinds of grains, &c.

It is alſo uſed by the apothecaries, though differently divided: among them 24 grains make a ſcruple, 3 ſcruples a drachm, 8 drachms an ounce, and 12 ounces a *pound*. See Scruple, &c.

The Pound *avoirdupois* conſiſts of 16 ounces; but then the avoirdupois ounce is leſs by 42 grains than the troy ounce, which amounts to nearly a 12th part of the whole; ſo that the ounce avoirdupois only contains 438 grains, and the troy ounce 480.

The difference whereof is nearly as that of 73 to 80; *i. e.* 73 ounces troy make 80 ounces avoirdupois. 112 avoirdupois *pounds* make the hundred weight, or quintal. See Quintal.

By this *pound* are weighed all large and coarſe commodities, fleſh, butter, cheeſe, iron, hemp, lead, ſteel, &c.

An avoirdupois *pound* is equal to 14 ounces $\frac{5}{8}$ of a Paris *pound*; ſo that 100 of the former *pounds* make 91 of the latter.

The French Pound contains 16 ounces; but one French *pound* is equal to one *pound* one ounce $\frac{1}{8}$ of an avoirdupois *pound*; ſo that 100 Paris *pounds* make 109 Engliſh avoirdupois *pounds*.

The Paris *pound* is divided in two manners; the firſt diviſion is into two marcs, the marc into eight ounces, the ounce into eight gros, the gros into three deniers, the denier into twenty-four grains, each weighing a grain of wheat.

The ſecond diviſion of the *pound* is into two *half-pounds*; the *half-pound* into quarters; the quarter into two demi-quarters; the demi-quarter into two ounces; the ounce into two half ounces, &c.

The firſt diviſion is uſually followed in weighing gold, ſilver, and other precious wares; and the latter in thoſe of leſs value.

At Lyons the *pound* is 14 ounces.---One hundred Paris *pounds* make 116 Lyons *pounds*.---At Venice, the *pound* is equal to eight ounces three quarters of the French *pound*, &c.

For the ſeveral pounds *of the ſeveral cities and countries, their proportion, reduction, diviſion,* &c. ſee Weight.

Pound alſo denotes an imaginary money uſed in accounting; containing more or leſs, according to the ſeveral names added to it, and the ſeveral countries it is uſed in. See Money.

Thus in England we ſay a *pound ſterling*; in France, a *pound*, or *livre tournois* and *Pariſis*; in Holland and Flanders, a *pound*, or *livre de gros*, &c.

The term took its riſe hence, that the ancient *pound* ſterling, though it only contained 240 pence, as ours does, yet each penny being equal to five of ours, the *pound* of ſilver weighed a *pound* troy. See Penny.

The *pound* ſterling, or Engliſh *pound*, contains twenty ſhillings, the ſhilling twelve pence, and the penny four farthings. See Shilling, Penny, &c. See alſo Coin.

Anciently there were three ways of paying a *pound* of money into the exchequer: 1. The payment of a *pound de numero*, which was juſt twenty ſhillings in tale. 2. *Ad ſcalam*, which was 6 *d.* over and above the 20 *s.* 3. *Ad penſam*, which was giving the full weight of twelve ounces.

The French Pound, or *livre tournois*, contains twenty ſols or ſhillings, and the ſol 12 deniers or pence tournois; which was the value of an ancient French coin called *franc*, a term ſtill ſynonymous with *livre*. See Franc.

The *pound*, or *livre tournois*, contains, in like manner, 20 ſols or ſhillings, and the ſol 12 deniers or pence Pariſis. Each ſol Pariſis is equal to 15 deniers tournois; ſo that a *pound* Pariſis is equal to 25 ſols tournois. See Livre and Par.

The Pound, or *livre de gros*, of Holland, is divided into 20 ſhillings gros, and the ſhilling into 12 pence gros. It is equal to ſix florins; the florin valued at 24 ſols tournois; ſuppoſing the exchange on the footing of 100 pence gros for a French crown of 3 livres tournois; ſo that the *pound* gros amounts to 10 ſhillings and 11 pence farthing ſterling.---The *pound* gros of Flanders and Brabant is divided like that of Holland; and like that too, is equal to ſix florins: but the florin is equal to 25 ſols tournois; ſo that the Flanders *pound* is equal to 7 livres, 10 ſols tournois, or 11 *s.* 3 *d.* ſterling.

Merchants, factors, bankers, *&c.* uſe characters, or initial letters, to expreſs the ſeveral kinds of *pounds* of account, as **L.** or **L.** *St. pounds* ſterling. *L. G. pounds* gros; and **L.** or ℔. *pounds* tournois.

Pound *nails.* See the article Nails.

Pound, Parcus, is alſo an incloſure, or ſtrong place, where cattle diſtrained, or caught in any treſpaſs, are put, till they are replevied or redeemed. See Trespass, Replevy, *&c.*

The *pound* is either *overt*, or *covert* and *cloſe*.

Pound *overt*, is an open *pound*, built upon the lord's waſte: and thence alſo called, the *lord's pound*; becauſe he provides it for the uſe of himſelf, and his tenants.

Pound overt alſo includes back-ſides, court-yards, paſture-grounds, or any place whatever, to which the owner of beaſts impounded may come to give them meat and drink, without offence or treſpaſs. See Parco

Pound *covert* or *cloſe*, on the contrary, is ſuch a one as the owner cannot come to for the ſaid purpoſe without treſpaſs or offence; as ſome cloſe houſe, caſtle, fortreſs, *&c.*

POUNDAGE, a ſubſidy granted to the king upon all manner of merchandize imported or exported, by all merchants, natives, denizens, and aliens. See Duty and Customs.

It is called *poundage*, becauſe fixed at the rate of ſo much *per* pound; *viz.* one ſhilling in every pound, or twenty ſhillings; and for Engliſh commodities exported by aliens, one ſhilling more.

It was firſt granted to Edward VI. for term of his life; and afterwards to K. Charles II. *anno* 12 *Car.* 2. See Tunnage.

POUP, or **Poop, Puppis,** in navigation, the hind-part of a veſſel, or that where the helm is fixed, called alſo *ſtern.* See Stern, Abaft, and Ship.

The French frequently call it *queuë*, tail; becauſe the rudder here applied ſerves the ſame purpoſes in a ſhip, as the tail does to fiſhes. See Rudder and Helm.

It is divided into three or four ſtories, which, all together, form the *poup-caſtle*, or hind-caſtle; the outſide whereof is richly adorned with balconies, galleries, pilaſters, trophies, the arms of the prince, *&c.*

To have the *wind in poup*, is to have it behind, or favourable. See Wind.

Poop is more particularly uſed among us for the floor, or deck over the round-houſe, or maſter's cabbin; being the higheſt part of a ſhip's hull a-ſtern.---See *tab. ſhip. fig.* 2. *lit. P.*

POURALLEE. See the article Purlue.

POUR-PARTIE, or **Pour-party,** in law, a term uſed in oppoſition to *pro indiviſo*, denoting the ſhare or part of an eſtate firſt held in common by parceners; which is by partition allotted to any of them. See Coparcener and Partition.

To make *pour-partie*, is to divide and ſever the lands that fall to parceners; which, before partition, they held jointly and *pro indiviſo.* See Pro indiviso.

POURPLE. See the article Purpure.

POUR-PRESTURE, or **Purpresture, Pourprestura,** in law, is defined by Glanville to be, when any thing is unjuſtly occupied, that properly belonged to the king; as in encroaching on his grounds, obſtructing the high-ways, diverting public rivers from their proper courſe, or building any thing over the high-ſtreets of a city; and in the general, where any thing is done to the prejudice of the king's tenements, highways, or cities. See Encroachment.

Crompton in his *Juriſd.* ſays, *pour-preſture* is properly when a man takes to himſelf, or encroaches any thing which he ought not; whether it be in juriſdiction, in land, or in franchiſe; and, generally, where any thing is done to the nuiſance of the king's tenants.

Some authors divide *pour-preſture* into three kinds: the firſt againſt the king, the ſecond againſt the lord, the third againſt a neighbour.

Pour-preſture againſt the king, lib. nig. in ſcacc. fol. 38. is that happening through the negligence of the ſheriff, or the long continuance of wars, *&c.* when thoſe that have lands near the crown-lands, incloſe part of them, or lay them to their own.

Pour-preſture againſt the lord, is when the tenant neglects to perform what he is bound to do for the chief lord, or deprives him of his right.

Pour-preſture againſt a neighbour, is a nuiſance againſt a neighbour, *&c.* mentioned in the *Monaſt. tom.* 1. See Nuisance.

POURSUIVANT *, or **Pursuivant,** a meſſenger, anciently attending the king, in his wars, or at council-table, or in the exchequer; to be diſpatched upon any occaſion or meſſage: as, for the apprehenſion of a perſon ſuſpected, or accuſed, *&c.*

* The word is formed from the French *pourſuivre*, to purſue.

Many of the nobility too had their *pourſuivants*: a knight banneret was allowed a *pourſuivant*, with the conſent of a herald.

Upton, *de re militari*, calls the *pourſuivants*, *milites linguares*; becauſe, ſays he, their chief honour was *in cuſtodia linguæ*.

He divides them into foot and horſe *pourſuivants*, *curſores equitantes & proſecutores.*

There were alſo *pourſuivants* particularly employed in martia cauſes, called

Poursuivants *at arms*, a term anciently applied to gentlemen who attended the heralds, and aſpired to ther office; to which they could not riſe, till after ſeven years apprenticeſhip paſſed in this quality. See Herald.

They were intirely dependent on the heralds, and aſſiſted at their chapter; officiating for them in preparing and aſſigning turnaments, and all other parts of their miniſtry.

They were baptized at ſolemn feaſts with ſome gallant name; as Jolicœur, Verluiſant, Sanſmentir, *&c.*

Their coats of arms were different from thoſe of the heralds, and they bore plain ſtaffs without ornament.

Of the great number of *pourſuivants* anciently on foot, there are now only four remaining; *viz. blue-mantle, rouge-croſs, rouge-dragon*, and *portcullice*; who are the loweſt order of officers belonging to the college of arms.

Their buſineſs is to attend with the heralds in marſhalling and ordering public ſolemnities, funerals, interviews, cavalcades, *&c.* See College *of arms.*

Stow, ſpeaking of Richard the third's end, has theſe words: " His body was naked to the skin; not ſo much as one clout " about him; and was truſſed behind a *pourſuivant* at arms, " like a hog, or a calf."

POURTRAIT, or **Pourtraiture.** See the article Portrait.

POURVEYANCE, or **Purveyance,** the providing of corn, victuals, fuel, and other neceſſaries for the king's houſe. See Pourveyor.

By a ſtat. 12 *Car.* 2. no perſon, under colour of *pourveyance*, ſhall take any timber, cattle, corn, or other matter, from any ſubject, without his free conſent.

POURVEYOR, or **Purveyor,** an officer of the houſhold, who provides and buys in corn, and other victuals, *&c.* for the king's houſe; mentioned in *magna charta*, and ſeveral ſtatutes.

Pourveyor became a term ſo odious in times paſt, that by ſtat. 36 *Edw.* 3. the heinous name *pourveyor* was changed into that of *achator*, or *buyer*.---The office itſelf was much reſtrained by the ſtat. 12 *Car.* 2. See Pourveyance and Achat.

POWDER, or **Pouder,** in pharmacy, a dry medicine pulverized, or prepared, by being broken and reduced into almoſt imperceptible atoms, either in a mortar, or by chymical operations, *&c.* See Pulverization.

We ſay, a ſtyptic *powder*, a ſympathetic *powder*, &c. See Styptic, Sympathetic, *&c.*---Viper *powder*, *pulvis viperinus*, has of late days come much in requeſt, under the denomination of animal bezoard. See Viper and Bezoard.

Powder *for the hair*, is flour of wheat, or beans, well ſifted and prepared, to give it an agreeable odour.

That wherein ſtarch grounds is mixed, is the worſt. See Starch.

Jeſuits **Powder,** *pulvis patrum.* See the article Cortex *Peruvianus.*

Gun **powder.** See the article Gun *powder.*

Powder-chests, in the ſea-language, are boards joined in form of a triangle, and filled with gun-powder, pebbles, *&c.* which they ſet fire to, when the ſhip is boarded by an enemy, and ſoon make all clear before them.

Cornachine **Powder.** See the article Cornachine.

Emetic **Powder.** See the article Emetic.

Flux **Powders.** See the article Flux.

Powder *of projection.* See the article Projection.

POWDERINGS, in building, a term ſometimes uſed for devices ſerving to fill up vacant ſpaces, in carved works: as alſo in eſcutcheons, writings, *&c.*

Powderings, in heraldry. See the article Fur.

POWER, **Potentia,** in phyſics, a natural faculty of doing or ſuffering any thing. See Potentia.

Mr. Locke explains the origin of our idea of *power* to the following effect: The mind being daily informed by the ſenſes, of the alterations of the ſimple ideas of things without, and reflecting on what paſſes within itſelf, and obſerving a conſtant change of its ideas, ſometimes by the impreſſions of outward objects upon the ſenſes, and ſometimes by the determinations of its own choice; and concluding from what it has ſo conſtantly obſerved to have been, that the like changes will for the future be made in the ſame things, by the ſame agents, and by the like ways; conſiders, in one thing, the poſſibility of having any of its ſimple ideas changed; and in another, the poſſibility of making that change: and ſo comes by that idea which we call *power*.

Thus we ſay, fire has a *power* to melt gold, and make it fluid; and gold a *power* to be melted.

Power, thus conſidered, is twofold, *viz.* as able to *make*, or able to *receive* any change: the one may be called *active*, the other *paſſive power*. See Active and Passive.

Of *paſſive power*, all ſenſible things abundantly furniſh us with ideas; nor have we of *active power* fewer inſtances: ſince whatever change is obſerved, the mind muſt ſuppoſe a *power* ſomewhere able to make that change. See Cause.

Yet, if we attentively conſider it, bodies, by our ſenſes, do not afford us ſo clear and diſtinct an idea of active *power*, as we have from reflection on the operations of our minds: for all *power* relating to action, and there being but two ſorts of action, *viz.* thinking and motion, it may be conſidered whence we have the cleareſt ideas of the *powers* which produce thoſe actions.

Of thinking, body affords us no ideas at all; it is only from reflection that we have that: neither have we from body any idea of the beginning of motion. A body, at reſt, affords us no idea of any active *power* to move; and when it is ſet in motion itſelf, that motion is rather a paſſion, than an action in it. The idea of the beginning of motion, we have only by reflection on what paſſes in ourſelves; where we find by experience, that barely by willing it, we can move the parts of our bodies, which before were at reſt.

We find in ourſelves a *power* to begin or forbear, continue or end, ſeveral actions of our minds, and motions of our bodies, barely by a thought or preference of the mind. This *power*, which the mind has, thus to order the conſideration of any idea, or the forbearing to conſider it, or to prefer the motion of any part of the body to its reſt, and *vice verſa*, in any particular inſtance, is what we call the *will*.---And the actual exerciſe of that *power*, is that which we call *volition*, or *willing*. See WILL.

The forbearance or performance of that action, conſequent to ſuch order or command of the mind, is called *voluntary*: and whatſoever action is performed without ſuch a thought of the mind, is called *involuntary*. See VOLUNTARY.

The *power* of perception, is what we call the *underſtanding*. See UNDERSTANDING.

Perception, which we make the act of the underſtanding, is of three ſorts: the perception of ideas in our minds; the perception of the ſignification of ſigns; and the perception of the agreement or diſagreement of any diſtinct ideas. See PERCEPTION.

Theſe *powers of the mind*, *viz.* of perceiving, and preferring, are uſually called by another name; and the ordinary way of ſpeaking is, that the *underſtanding* and *will* are two faculties or *powers* of the mind. A word proper enough, if uſed ſo as not to breed any confuſion in mens thoughts, by being ſuppoſed (as there is room to ſuſpect it has been) for ſome real beings in the ſoul, that perform thoſe actions of underſtanding and volition. See FACULTY.

From the conſideration of the extent of the *power* of the mind over the actions of the man, which every one finds in himſelf, ariſe the ideas of liberty and neceſſity.

So far as a man has a *power* to think, or not to think; to move or not to move, according to the preference or direction of his own mind; ſo far is a man free. See LIBERTY.

Where-ever any performance or forbearance are not equally in a man's *power*; where-ever doing or not doing will not equally follow upon the preference of his mind; there he is not free, though perhaps the action may be voluntary. See NECESSITY.

So that the idea of liberty is the idea of a *power* in any agent, to do or forbear any action, according to the determination or thought of the mind, whereby either of them is preferred to the other: where either of them is not in the *power* of the agent to be produced by him according to his volition, there he is not at liberty; that agent is under neceſſity. So that liberty cannot be where there is no thought, no volition, no will: but there may be thought, there may be will, there may be volition, where there is no liberty. Thus a tennis-ball, whether in motion by the ſtroke of a racket, or lying ſtill at reſt, is not by any one taken to be a free agent; becauſe we conceive not a tennis-ball to think, and conſequently not to have any volition, or preference of motion to reſt, or *vice verſa*. So a man ſtriking himſelf or his friend by a convulſive motion of his arm, which is not in his *power* by volition, or the direction of his mind, to ſtop or forbear; nobody thinks, he has liberty in this; every one pities him, as acting by neceſſity and conſtraint. Again, ſuppoſe a man be carried, whilſt faſt aſleep, into a room, where there is a perſon he longs to ſee, and be there locked faſt in, beyond his *power* to get out; he awakes, and is glad to ſee himſelf in ſo deſirable company, which he ſtays willingly in; that is, he prefers his ſtaying to going away: Is not this ſtay voluntary? Nobody will doubt it; and yet being locked faſt in, he is not at liberty to ſtay, he has not freedom to be gone.

Liberty, therefore, is not an idea belonging to volition, or preferring; but to the perſon having the *power* of doing, or forbearing to do, according as the mind ſhall chuſe or direct.

As it is in the motions of the body, ſo it is in the thoughts of our minds: where any one is ſuch, that we have *power* to take it up, or lay it by, according to the preference of the mind, there we are at liberty.

A waking man is not at liberty to think, or not to think, no more than he is at liberty, whether his body ſhall touch any other or no: but whether he will remove his contemplation from one idea to another, is many times in his choice; and then he is, in reſpect of his ideas, as much at liberty, as he is in reſpect of bodies he reſts on. He can at pleaſure remove himſelf from one to another.

Yet ſome ideas to the mind, like ſome motions to the body, are ſuch, as in certain circumſtances it cannot avoid, nor obtain their abſence, by the utmoſt effort it can uſe: thus a man on the rack is not at liberty to lay by the idea of pain, and entertain other contemplations.

Where-ever thought is wholly wanting, or the *power* to act or forbear according to the direction of thought, there neceſſity takes place. This, in an agent capable of volition, when the beginning or continuation of any action is contrary to the preference of his mind, is called *compulſion*; when the hindering or ſtopping any action is contrary to his volition, it is called *reſtraint*. Agents that have no thought, no volition at all, are in every thing neceſſary agents.

POWER, in mechanics, denotes a force, which being applied to a machine, tends to produce motion; whether it actually produce it or not. See MACHINE.

In the former caſe, it is called a *moving power*; in the latter, a *ſuſtaining power*.

If the *power* be a man, or a brute, it is called an *animate power*; if the air, water, fire, gravity, or elaſticity, an *inanimate power*; See MECHANICS.

Attractive POWER. See the article ATTRACTIVE.

Conſpiring POWER. See the article CONSPIRING.

Repelling POWER. See the article REPELLING.

POWER is alſo uſed in mechanics, for any of the ſix ſimple machines; *viz.* the *lever*, *balance*, *ſcrew*, *axis in peritrochio*, *wedge*, and *pully*; which are particularly called the *mechanic powers*. See MECHANIC *power*.

See alſo each *power* under its proper article, LEVER, BALANCE, *&c.*

POWERS, in pharmacy, the reſult of a combination or union of the eſſential oils with the ſpirit of a plant; wherein, it is ſuppoſed, are contained all the principal virtues thereof: whence the name.

The *powers* of ſcabious and mullein are prepared by beating and incorporating the expreſſed juices of theſe plants when green, with lard, and expoſing them ſeveral days to the ſun: ſuch beating and inſolation being ſeveral times repeated at due diſtances.

POWER, in the feodal juriſprudence, a right which the lord has to re-unite to his fief, a dependent fee held of him, when the vaſſal has alienated it, upon reimburſing the money given for it, with the legal coſts. See FEE.

The lord is to exerciſe his *power* over the fee, within a year after he has notice of the fall; otherwiſe he loſes it.

The word is alſo uſed for the right a lord has to ſeize a dependent fee, to compel the payment of all dues, ſervices, *&c.*

POWERS, *potentiæ*, is alſo uſed among the fathers, *&c.* for the ſixth order in the hierarchy of angels, reckoning from Seraphim. See HIERARCHY and SERAPHIM.

Theſe they ſuppoſe to be the ſpirits who bridle and reſtrain the *power* of the devils; preſide over inferior cauſes; and prevent contrary qualities from diſturbing the œconomy of the world. See ANGEL.

POWER, in optics.---The POWER *of a glaſs* is uſed by ſome for the diſtance of the convexity from its ſolar focus. See FOCUS.

POWER, in arithmetic, the produce of a number, or other quantity, multiplied into itſelf. See NUMBER.

Thus the produce of the number 3, multiplied by itſelf, *viz.* 9, is the ſecond *power* of 3; the factum of 9, multiplied by 3, *viz.* 27, is the third *power*; and the product of 27, again multiplied by 3, *viz.* 81, is the fourth *power*; and ſo on to infinity. ---In reſpect hereof, the firſt number, 3, is called the *root*, or *firſt power*. See ROOT.

The ſecond *power* is called the *ſquare*; with reſpect to which, 3 is the ſquare-root. See SQUARE.

The third *power*, 27, is called the *cube*; with reſpect to which, the 3 is the cube-root. See CUBE.

The fourth *power*, 81, is called the *biquadrate*, or *quadrato-quadratum*; with reſpect to which, 3 is the biquadratic root. See BIQUADRATIC.

The number which ſhews how oft the root is multiplied into itſelf, to form the *power*; or how oft the *power* is to be divided by its root, to come at the root, is called the *exponent of the power*. See EXPONENT.

The moderns, after Des Cartes, are contented to diſtinguiſh moſt of their *powers* by the exponents; as, *firſt*, *ſecond*, *third*, &c.

The particular names of the ſeveral *powers* were introduced by the Arabs; viz. *ſquare*, *cube*, *quadrato-quadratum* or *biquadrate*, *ſurdeſolid*, *ſquare of the cube*, *ſecond ſurdeſolid*, *quadrato-quadrato-quadratum*, *cube of the cube*, *ſquare of the ſurdeſolid*, *third ſurdeſolid*, &c.

The names given by Diophantus, followed by Vieta and Oughtred, are, the *ſide* or *root*, *ſquare*, *cube*, *quadrato-quadratum*, *quadrato-cubus*, *cubo-cubus*, *quadrato-quadrato-cubus*, *quadrato-cubo-cubus*, *cubo-cubo-cubus*, &c.

The characters wherewith the ſeveral *powers* are denoted, both in the Arabic and Carteſian notation, are as follow:

	2	4	8	16	32	64	128	256	512	1024
Arab.	R	*q*	*c*	*bq*	*s*	*qc*	*Bſ*	*tq*	*bc*	*ſq*
Carteſ.	a	a^2	a^3	a^4	a^5	a^6	a^7	a^8	a^9	a^{10}

Hence, to raiſe a quantity to a given *power* or dignity, is the ſame as to find the factum ariſing upon its being multiplied a given number of times into itſelf: *e. gr.* to raiſe 2 to the 3d *power*, is the ſame as to find the factum 8; whoſe factors are 2, 2, 2. See SQUARE, CUBE, *&c.*

Powers of the ſame degree are to one another in the ratio of the roots as manifold as their exponent contains units: thus, ſquares are in a duplicate ratio; cubes in a triplicate ratio; quadrato-quadrata, or fourth *powers*, in a quadruple ratio. See RATIO.

The *powers* of proportional quantities are alſo proportional to one another. See PROPORTION, *From a given power to extract the root*, or *ſide*, is the ſame as to find a number, *e. gr.* 2, which multiplied any number of times, *e. gr.* twice, produces the given *power*, *e. gr.* the 3d *power*, or 8. See ROOT and SIDE.

To multiply or divide any power by another of the ſame root, 1°. For multiplication, add the exponents of the factors; the ſum is the exponent of the factum. Thus:

$$\begin{array}{llllll} \text{Factors} \left\{ \begin{array}{l} x^3 \\ x^4 \end{array} \right. & y^m & y^m & a^m & x^n \\ & y^m & y^n & a^r & x^s \\ \hline \text{Prod.}\quad x^7 & y^{2m} & y^{m+n} & a^{m+r} & x^{n+s} \end{array}$$

2°. For diviſion, ſubtract the exponent of the *power* of the diviſor, from the exponent of the dividend; the remainder is the exponent of the quotient. Thus:

$$\begin{array}{l} \text{Divid.}\quad x^7 \left(x^3 \;\Big\|\; y^{m+n} \left(y^m \;\Big\|\; a^m \;\; x^n \left(a^{m-r} \;\; {}^{n-5} \right.\right.\right. \\ \text{Diviſ.}\quad x^4 \left(\;\Big\|\; y^n \left(\;\Big\|\; a^r \;\; x^5 \left(\quad x \right.\right.\right. \end{array}$$

M. de la Hire gives us a very odd property common to all *powers*: M. Carre had obſerved with regard to the number 6, that all the natural cubic numbers, 8, 27, 64, 125, whoſe root is leſs than 6, being divided by 6, the remainder of the diviſion is the root itſelf: and if we go farther, 216, the cube of 6, being divided by 6, leaves no remainder; but the diviſor 6, is itſelf the root. Again; 343, the cube of 7, being divided by 6, leaves 1; which, added to the diviſor 6, makes 7 the root, *&c.*

M. de la Hire, on conſidering this, has found that all numbers, raiſed to any *power* whatever, have diviſors, which have the ſame effect with regard thereto, that 6 has with regard to cubic numbers.

For the finding of theſe diviſors, he diſcovered the following general rule:

If the exponent of the *power* of a number be even, *i. e.* if the number be raiſed to the 2d, 4th, 6th *power*, &c. it muſt be divided by 2; the remainder of the diviſion, in caſe there be any, added to 2, or to a multiple of 2, gives the root of this number, correſponding to its *power*, *i. e.* the 2d, 6th, *&c.* root.

If the exponent of the *power* be an uneven number, *i. e.* if the number be raiſed to the 3d, 5th, 7th, *&c. power*; the double of this exponent will be the diviſor, which has the property mentioned.

Thus is it found in 6, double of 3, the exponent of the *power* of all the cubes: thus, alſo, 10 is the diviſor of all numbers raiſed to the 5th *power*, &c.

Commenſurable in POWER. See COMMENSURABLE.

POWER, of an hyperbola, in conics, is the ſquare of the right line C I, or A I (*tab. conics*, *fig.* 20.).

The *power* of the hyperbola, is the fourth part of the ſquare of the conjugate ſemi-axis; or the ſixteenth part of the ſquare of the conjugate axis. See HYPERBOLA.

POWER *of the county*. See POSSE *comitatus*.

POX, in medicine, a diſeaſe, whereof phyſicians admit ſeveral kinds: as, *ſmall pox*, *French pox*, *chicken pox*, *ſwine pox*, &c.

Small POX, *variolæ*, is a contagious diſeaſe appearing on the cutis, which it covers with puſtules, or ulcerous eruptions, that leave eſchars behind them. Or, it is a general eruption of particular puſtules tending to ſuppuration, and attended with a fever. See PUSTULE, SUPPURATION, and FEVER.

The origin of the diſeaſe is uncertain: we find no mention of it before the Arab phyſicians.---It bears a great reſemblance to the meaſles; ſo that for the two or three firſt days it is difficult to diſtinguiſh them: they both ariſe from an impure blood, and corrupt humours; with this difference, that in the *ſmall pox*, the peccant matter is more thick and viſcid; in the meaſles more ſubtile, hot, and bilious; and neither of them are known to return after having paſſed them once. See MEASLES.

Dolæus ſays, that the cauſe of the *ſmall pox* is brought into the world with us, and lies hid till it find an opportunity of burſting forth: he adds, that there is ſcarce one in many thouſands that eſcapes it all his life.

Dr. Drake obſerves, that the *ſmall pox* not being founded in any permanent habitual diſpoſition, has its period within a limited time neceſſary for the extruſion of the peccant matter out of the pores of the skin. For the ſalt ſerum of the blood being in this diſeaſe, by an accidental fever, thrown out in great quantities on the glands of the skin, acts much after the manner of the lepra Arabum; but when the blood is deſpumated, the ſcales dry, and fall off. So that he thinks it would be no great impropriety to call the *ſmall pox*, a temporary, critical *lepra*. See LEPROSY.

The *ſmall pox* are of two kinds: the *diſtinct*, where the puſtules ſtand apart; and the *confluent*, where they run into one continued cake.

The diſtinct, or *regular ſmall* POX, Sydenham obſerves, begin with a ſhuddering and chillineſs, which is ſucceeded by an intenſe heat, violent pain of the head and back, vomiting, drowſineſs, eſpecially in children, and ſometimes epileptic fits; which ſhew the *pox* to be ready to burſt forth, and that they will be mild.

The eruptions are uſually on the fourth day; upon which the feveriſh ſymptoms vaniſh, except that adults are prone to ſweat. The puſtules firſt appear in the face, then the neck, *&c.* They are at firſt reddiſh, by degrees ſwell and grow whiter; on the eleventh day the ſwelling and inflammation of the face vaniſh, and the puſtules begin to wither. If ever this kind kill, it is on the fourteenth or fifteenth day.

The ſymptoms of the *diſtinct ſmall pox*, as enumerated by Dr. Shaw, are, 1. A pain in the head, back, and ſcrobiculum cordis. 2. A fever, which decreaſes as the eruptions increaſe, with redneſs of the eyes. 3. Nauſea and retchings. 4. Little reddiſh ſpots, or beginning puſtules, appearing on the neck, face, breaſt, *&c.* about the third or fourth day incluſive, from the beginning of the illneſs. 5. Reſtleſſneſs. 6. About the ſeventh or eighth day, other little red ſpots uſually appear between the growing puſtules. 7. The puſtules about the ninth day are at their ſtate; being then generally as big as a large pea, the matter in them well concocted, of a whitiſh colour inclined to yellow; at which time, 8. The patient is uſually light-headed and feveriſh. 9. About the tenth day the puſtules begin to dry on the face. 10. And about the fifteenth they appear ſhrunk, and begin to ſcale off; and now the danger is eſteemed to be over.

The *diſtinct* kind is here conſidered unattended with a looſeneſs, and other ſymptoms, which ſometimes happen in it, as well as in the other.

The confluent, or *flux ſmall* POX have the ſame ſymptoms with the *diſtinct*, only in a more violent degree: they uſually come out on the third day; not ſeparate, as in the *diſtinct* kind, but ſpread into one another; and at length appear all like one whitiſh pellicle, over the whole skin. After the eighth day, the pellicle darkens. In adults this kind is attended with a ſalivation; in children with a diarrhœa. The ſalivation frequently ſucceeds immediately after eruption; the diarrhœa latter. The *confluent* kind uſually kill on the eleventh day.

The ſymptoms of the *confluent* kind, according to Dr. Shaw, are, 1. Violent pain in the head, back, and ſcrobiculum cordis. 2. Nauſea and retching, with a fever, which rather increaſes than decreaſes after the eruption. 3. In children a diarrhœa, which uſually precedes the eruption, and attends the diſtemper throughout. 4. A ptyaliſmus in adults, and but ſeldom a diarrhœa. 5. Deliria, convulſions, hoarſeneſs, difficulty of breathing, fixedneſs of the eyes, and reſtleſſneſs; which may alſo in a leſſer degree attend the *diſtinct* ſort. 6. The ſpots are here more red, thick, and cloſe, than in the *diſtinct*; and the ſpaces between them more inflamed and ſwelled; purple or livid ſpots alſo often appear in theſe ſpaces; whence the *ſmall pox with purples*. At other times in theſe ſpaces, or on the heads of the eruptions, appear bladders full of clear water, vulgarly called the *white hives*. Laſtly, theſe eruptions are frequently depreſſed in the middle, and there turn black; whence the *black ſmall pox*.

The eruptions often riſe and ſink in the progreſs of the diſtemper. They uſually firſt appear about the fourth or fifth day, and come to their ſtate about the fifteenth.

Morton divides the diſeaſe into four ſtages: the *apparatus* or preparation, from the time of the firſt infection to the eruption of the puſtules. The *eruption*, which comprehends three ſtates; *eruption*, *maturation*, and *declenſion*, wherein the puſtules are firſt incruſtated with a ſcab, then wither and dry off.

When the eruptions are very round, diſtinct, encompaſſed with a red margin, *&c.* they are ſaid to be *benign*; otherwiſe *malignant*.

There are four degrees of malignancy: *viz.* when the puſtules are univerſally confluent; particularly confluent; diſtinct, but very ſmall and coherent; and diſtinct, with petechiæ and miliary eruptions. See PETECHIÆ, *&c.*

Dr. Freind, Dr. Cade, *&c.* recommend purging and phlebotomy after an imperfect criſis of the *ſmall pox*; *i. e.* where the fever remains after the puſtules decline: many oppoſe it: indeed reaſon ſeems on its ſide; but preſcription is againſt it. Alſaharavius, in the firſt ſtage of the *ſmall pox*, preſcribes phlebotomy, even to a ſwooning, and great quantities of cold water to be drank. In the malignant *ſmall pox*, Dr. Liſter found the blood, when cold, exceſſively tender and friable, ſo as the ſofteſt feather would eaſily divide its globules. Etmuller ſays there is nothing to be more regarded than the breath and voice; where theſe are good, it is an excellent ſign. He adds that horſe-dung is an admirable medicine, in that it promotes ſweat, ſaves the throat, *&c.*

A method of managing the *ſmall pox*, lately introduced from abroad, is by inoculating them. *For the reaſon, proceſs, and advantages whereof*, ſee INOCULATION.

Why the *ſmall* POX ſcarce ever viſit a perſon above once, is a famous problem; long canvaſſed, and with little ſucceſs! Dr. Drake accounts for it very plauſibly from the alteration made in the skin by that diſeaſe. For the diſtention the glands and pores of the skin ſuffer therein is ſo great, that they ſcarce ever recover their tone again, ſo as to be able any more to arreſt the matter in its courſe outwards long enough, or in quantity enough, to create thoſe ulcerous puſtules which are the diagnoſtics of the diſeaſe. For though the ſame feveriſh diſpoſition ſhould ariſe again in the blood, yet the paſſages through the skin being more open, the matter will never be ſtopped, ſo as to exhibit the appearance of the *ſmall pox*.

Accordingly we find, that in perſons ſeverely handled with this diſeaſe, the face (which is uſually the fulleſt, from the extraordinary obſtruction the matter meets with by the great conſtipation of the pores) ſeldom returns to its former dimenſions; which inlargement he accounts for from the dilatation of the areolæ of the glands and pores of the skin, not from any augmentation of the ſubſtance itſelf.

What confirms this hypotheſis, is, that nurſes, &c. who attend perſons ſick of the *ſmall pox*, are frequently a little affected with it, and have now-and-then two or three eruptions: that they have no more, ſeems to follow from the free courſe of the matter through the skin. With this, too, agrees that conſtant obſervation, that people of coarſe skins, in whom the pores are largeſt, are always more favourably treated by this diſtemper than others; and that it conſtantly leaves fine skins coarſer than it found them.

This ſolution would ſeem more probable, were it not that ſome have ſo very few of theſe eruptions, perhaps not above twenty or thirty; which cannot fairly be allowed ſo far to inlarge the pores of the skin, as to prevent any return.

Others hold, that in a genuine eruption, the cauſe of the diſtemper is ſo far evacuated, as ſcarce to leave a poſſibility of a return; and that if part of the original cauſe did remain behind, it might, when the air favours it, or when by other accidents it is ſecreted from the blood, appear in the form of eruptions, and ſo prove to be the meaſles, chicken *pox*, &c.

It may, indeed, be objected, that theſe laſt-mentioned often happen before the *ſmall pox*: but whatever be the cauſe of the *ſmall pox*, the ſeparating power muſt be in ſuch a determined proportion, or it will fail to cauſe a regular *ſmall pox*, and ſo acting proportionably, may produce any of the other diſtempers juſt mentioned.

The *occaſional cauſes* of the *ſmall* Pox may be, 1. Some alteration in the air; ſince they happen moſt frequently about the ſpring-ſeaſon; and both in Europe, and elſewhere, are more epidemical and mortal at particular times. 2. From fear; which appears more evident, than eaſy to explain. 3. From ſurfeits, as by eating any thing too chilling to the blood, as cucumbers, oranges, &c. in hot ſeaſons; or when the body is heated by motion, the drinking of cold liquors. 4. From too plentiful feeding. 5. From any over-heating the blood, or too ſuddenly cooling it after it is heated, whereby a ſudden check is given to perſpiration; and this more eſpecially, if the air favours ſuch an eruption.

As to *prognoſtic ſigns* of the *ſmall* Pox; 1. The ſooner they appear in the ſpring, and the more the air is diſpoſed to favour the diſtemper, the more fatal they prove. 2. The confluent ſpecies both in adults and children, is dangerous; and the more ſo, if attended with a ſuppreſſion of urine, nauſea, retching, delirium, purple ſpots, cryſtallines, bloody urine, &c. after the eruption; but the blackneſs of them is not dangerous before the criſis. 3. Diarrhœas in the confluent kind, are not ſo bad in children as in adults. 4. A ptyaliſmus is a regular attendant of the confluent kind in adults from the ſixth or ſeventh day till after the criſis; and is ſo neceſſary, that if it ſtop ſuddenly, and return not for twenty-four hours, the patient is ſuppoſed to be in great danger. 5. A quincy here is highly dangerous. 6. The eruptions ſwelling, and ſinking ſuddenly, are bad ſigns. 7. The danger is not over till about the twentieth day in the confluent ſpecies. But if the eruptions be diſtinct, few, round, plump, riſe full, and grow up ſharp at the top; if the ſickneſs, vomiting, &c. go off, or remit upon the appearance of the eruptions, and the patient be under no dreadful apprehenſions; the danger is uſually over about the tenth day in the diſtinct kind. Convulſions attending the firſt ſymptoms of the *ſmall pox* in children, are ſaid to foreſhew the appearance of eruptions within twelve hours; which then generally prove diſtinct, and the patient does well. The *ſmall pox* ſucceeding a debauch in liquors, or happening upon an irregular courſe of life, is uſually mortal.

Chicken Pox, a cutaneous diſeaſe, frequent in children, wherein the skin is covered with puſtules like thoſe of the *ſmall pox* as to figure and magnitude; and only diſtinguiſhable therefrom, in that thoſe of the *ſmall pox* appear with a redneſs and inflammation, and thoſe of the *chicken pox* whiter, reſembling veſiculæ full of a ſerous humour; which in three days time burſt, and dry away, without any danger, and uſually without any fever.

The *chicken pox* and *ſwine pox* ſeem to be the *ſmall pox* in a leſs degree, though they ſometimes precede, and ſometimes ſucceed the *ſmall pox*. The puſtules appear to be of the ſame kind; only in the *ſwine pox* they are much larger, and in the *chicken pox* ſomewhat leſs than in the *ſmall pox*. There commonly appear five or ſix, ſometimes twenty or thirty on the face, and but very few on the body.

The patient is very little indiſpoſed, either before, at, or after their appearance; though the ſudden ſinking of them often cauſes ſome diſorder; but it is preſently relieved by a little ſack and ſaffron, or a doſe of treacle-water.

Grown perſons ſeldom keep within doors for either; and upon that account the eruptions may continue the longer, becauſe the cold air is ſuppoſed to hinder their ripening; ſo that it is ſometimes three weeks or a month before they totally diſappear.

French Pox, a contagious diſeaſe, contracted by a poiſonous humour, uſually in coition; and manifeſting itſelf in ulcers and pains. See VENEREAL *diſeaſe*.

The French call it *mal de Naples*, the Neapolitan diſeaſe, becauſe firſt obſerved among the ſoldiery at the ſiege of Naples under Charles VIII. The Italians call it *mal Franceſe*, and we the *French diſeaſe*, becauſe firſt caught by the French. The Spaniards call it *las bubas*, or *ſarva des Indias*, becauſe firſt brought from the Weſt-Indies. Trev.

POYNING's *law*, an act of parliament made in Ireland under Henry VII. whereby all the ſtatutes of force in England were made of force in Ireland; which before that time they were not.—Nor are any now in force there, made in England ſince that time.

The law took its name from Sir Edward Poyning, lord lieutenant of that kingdom at the time of its making.

POZZOLANA, a reddiſh kind of earth, uſed in Italy for ſand. See SAND.

The beſt is found about Pozzuoli, Baiæ, and Cumæ, in the kingdom of Naples, from the firſt of which places it takes its name.

Pozzolana, mixed with lime, makes the beſt morter in the world. See MORTER.---It hardens and petrifies in water: it penetrates black flints, and whitens them. It is of particular ſervice in making moles, and other buildings, in maritime places. Agricola takes it to be of an aluminous and ſulphurous nature. See Vitruvius, Pliny, de Lorme, &c. who ſet a great value on it.

PRACTICAL *arithmetic*,		ARITHMETIC.
PRACTICAL *geometry*,		GEOMETRY.
PRACTICAL *mathematics*,	See	MATHEMATICS.
PRACTICAL *muſic*,		MUSIC.
PRACTICAL *philoſophy*,		PHILOSOPHY.

PRACTICE, in arithmetic, PRACTICA *Italica*, or *Italian uſages*; certain compendious ways of working the rule of proportion, or golden rule; eſpecially where the firſt term is 1, or unity. See GOLDEN *rule*.

They were thus called from their expediting of *practice* and buſineſs; and becauſe firſt introduced by the merchants and negotiants of Italy. See RULE.

The moſt uſeful of theſe *practices* are as follow:---1. Since the uſe of the rule of three is to find a fourth proportional to three given numbers, divide the firſt and ſecond, or the firſt and third, by ſome common number, if that can be done exactly; and work with the quotients in their ſtead: as in the following example.

Price of 3 ℔ is 9 ſh. What is the price of 7 ℔?

3) 1 3 3

facit 21 ſhil.

Price of 14 ℔ is 26 ſhill. What is the price of 7 ℔?

7) 2 2)— 1

facit 13 ſhil.

2. If the firſt term be 1, and the ſecond an aliquot part of a pound, ſhilling, or penny; divide the third by the aliquot part: the quotient is the anſwer. Note, To find the aliquot part; thoſe who cannot do it otherwiſe, may ſee the table of aliquot parts of a pound under the article ALIQUOT.

E. gr. If 1 ell coſt 10 ſhil. What coſt 957 ells?

facit l. 478: 10 *s.*

3. If the firſt or third number be 1; the other not exceeding large; and the middle term a compound, *i. e.* conſiſt of ſeveral denominations; it may be wrought without reduction thus:

Price of 1 ℔ is 3 *s.* 8 *d.* 3 *q.* What is the price of 5 ℔?

5

facit 18 *s.* 7 *d.* 3 *q.*

For 4 farthings making a penny, 5 times 3 farthings make 3 *d.* 3 *q.* and 12 pence making 1 ſhilling, five times eight pence make 3 *s.* 4 *d.* which, with 3 *d.* from the place of farthings, make 3 *s.* 7 *d.* Laſtly, five times 3 ſhillings make 15 ſhillings, and with the 3 ſhillings from the place of pence, 18 *s.* The price required therefore is 18 *s.* 7 *s.* 3 *d.*

4. If the middle term be not an aliquot, but an aliquant part, reſolve the aliquant part into its aliquot parts; divide the middle term by the ſeveral aliquots, the ſum of the quotients is the anſwer. To find the aliquot parts contained in an aliquant, ſee the table of aliquant parts of a pound under the article ALIQUANT.

For an inſtance of this rule:

If 1 ell coſt 15 ſhil. What coſt 124 ells?

$\frac{1}{2}$ $\frac{1}{2}$)62

$\frac{1}{4}$ 31

facit 93 *l.*

5. If the firſt or ſecond term be 1; and in the former caſe, the ſecond or third, in the latter the firſt, be reſolvible into factors; the whole operation may be performed in the mind without writing down any figures; as in the following example.

Price of 1 ℔ is 24 ſhil. What is the Price of 20 ℔?

4 4

6

80

6

facit 48: 0 *s.*---24 *l.*

6. Where one of the given numbers is 1, we have ſeveral compendious uſages, to ſave multiplication and diviſion. *E. gr.* If 9 ℔ coſt 20 ſhil. What does 1 ℔ coſt?

It is obvious the ſum required is had by adding to the tenth part of 20 *s.* *viz.* 2 *s.* the ninth part of that tenth, *viz.* 3 *d.* $\frac{1}{2}$, and $\frac{2}{9}$ of a penny; the anſwer therefore is 2 *s.* 3 *d.* $\frac{1}{2}$ and $\frac{2}{9}$.

Again: If 5 ℔ coſt 64 ſhil. What coſts 1 ℔?

Since 5 is half of 10, the double of the tenth part of the given price, *viz.* 10 *s.* 9 *d.* $\frac{2}{4}$ *q.* is the ſum required.

Again: If 1 ℔ coſt 18 *d.* What will 19 ℔ coſt?

Since 19=20—1; from the given price doubled, and increaſed by a cypher, *viz.* 360, ſubtract the ſimple 18; the remainder is 342 *d.*=28 *s.* 6 *d.* the ſum required.

7. If two terms of the ſame denomination differ by an unit, we have a peculiar kind of compend, which will be clear from the following examples. *E. gr.* If 5 ℔ coſt 30 *s.* What will 4 ℔ coſt?

Since the price of 4 ℔ is one fifth part ſhort of that of 5 ℔, divide the given price 30 by 5; the quotient 6 being ſubtracted from the dividend, the remainder, *viz.* 24 *s.* is the ſum required.

Again: If 8 ℔ coſt 24 *s.* What coſt 9 ℔?

Since the price of 9 ℔ exceeds that of eight by one eighth part; divide the given price 24 by 8; and add the quotient 3 to the dividend; the ſum 27 is the anſwer.

8. Sometimes one may uſe ſeveral of theſe compends or *practices* in the ſame queſtion. *E. gr.* If 100 ℔ coſt 30 *s.* 4 *d.* What coſts 50 ℔?

50)2. 2
—
facit 15 *s.* 2 *d.*

Again: 60 ℔ coſt 4 *s.* What coſt 2520?

$$\begin{array}{rr} 6 & 42 \\ \hline 24 & 6 \\ 7 & 7 \\ \hline 168\,l. & \end{array}$$

PRÆ, a Latin prepoſition, literally ſignifying *before*; uſed in compoſition with ſeveral words in our language, to denote the relation of priority. See PREPOSITION and COMPOSITION.

Of late, our writers, in Latin words angliciſed, for *præ*, uſually write *pre*, reſtraining the Latin orthography to words that are ſtill Latin, or uſed as ſuch. Hence, for

PRÆADAMITE,	See the articles	PREADAMITE.
PRÆBENDARY,		PREBENDARY.
PRÆCEPTORY,		PRECEPTORY.
PRÆCESSION,		PRECESSION.
PRÆCINCTA *toga*,		TOGA.
PRÆCIPE,		PRECIPE.
PRÆCONTRACT,		PRECONTRACT.
PRÆCORDIA,		PRECORDIA.
PRÆDECESSOR,		PREDECESSOR.
PRÆDESTINATION,		PREDESTINATION.
PRÆDETERMINATION,		PREDETERMINATION.
PRÆDICTION,		PREDICTION.
PRÆDOMINANT,		PREDOMINANT.
PRÆEMPTION,		PREEMPTION.
PRÆEXISTENCE,		PREEXISTENCE.
PRÆFECTUS,		PREFECT and AUGUSTALIS.
PRÆMIUM,		PREMIUM.
PRÆMONSTRANTES,		PREMONSTRANTES.
PRÆNESTINÆ *ſortes*,		SORTES.
PRÆNOMEN,		PRENOMEN.
PRÆPARANTIA,		PREPARANTIA.
PRÆPOSITUS,		PREPOSITUS.
PRÆPUTIUM,		PREPUTIUM.
PRÆROGATIVUM *omen*,		OMEN.
PRÆSEPE,		PRESEPE.
PRÆTEXTA,		PRETEXTA.
PRÆTOR,		PRETOR.
PRÆTORIAN, *&c.*		PRETORIAN, *&c.*

PRAGMATIC * *ſanction*, in the civil law, is defined by Hottoman, a reſcript, or anſwer of the ſovereign, delivered by advice of his council, to ſome college, order, or body of people, upon their conſulting him on ſome caſe of their community.

* **The word is formed from the Greek** *πραγμα*, *negotium*, **buſineſs.---It is ſometimes alſo called abſolutely** *pragmatic*, *το πραγματικον*.

The like anſwer given to any particular perſon, is called ſimply *reſcript*, *reſcriptum*. See RESCRIPT.

The term *pragmatic ſanction* is chiefly uſed among the modern writers, for that famous ordonnance of Charles VII. of France, publiſhed in 1268. containing a regulation of eccleſiaſtical diſcipline, conformable to the canons of the council of Baſil; and ſince uſed by the Gallican church, as a barrier againſt the enterprizes and encroachments of the court of Rome.

The ſcope of the *pragmatic ſanction* was, to regulate the form of elections made by the clergy; to declare the collations to belong to ordinaries, the prevention alone reſerved to eſtabliſh prebends; to aſſign a third of the benefices to graduates; to aboliſh reſervations, annates, and other like grievances.

Pope Pius II. obtained an abrogation of this ſanction from Louis XI. on which occaſion the court of Rome, tranſported with joy, dragged the *pragmatic* through the ſtreets, whipping it all the way, as Xerxes anciently did the Helleſpont.

But the parliament oppoſed this abrogation with a great deal of vigour, and refuſed its conſent to the laſt. So that maugre all the efforts of Rome, the *ſanction* ſtill held in force; till the concordat paſſed between pope Leo X. and Francis I. in 1515. when the *pragmatic ſanction* was aboliſhed. See CONCORDAT.

The parliament of Paris again oppoſed the innovation, and refuſed to confirm the concordat; and was not brought to give its conſent at laſt, till after repeated orders of the king; together with a ſecret reſolution taken, always to judge conformably to the tenor of the *pragmatic ſanction*.

PRAGMATICAL, PRAGMATICUS, a term ſometimes uſed in the ſame ſenſe as *practical*, *mechanical*, or *problematical*.

Stevinus, in his hydroſtatical elements, calls certain mechanical or practical experiments, which he undertakes to inſtruct his reader how to make, by the name of *pragmatical* examples: and in the like ſenſe is the word ſometimes uſed by other naturaliſts.

PRATIQUE *, or PRATTIC, in commerce, a negotiation or communication of commerce, which a merchant-veſſel obtains in the ports it arrives in, and the countries it diſcovers.

* **The word is French, and ſignifies, literally,** *practice*.

Hence to obtain *pratique*, is to obtain a liberty to frequent a port, to go aſhore, buy and ſell, *&c.* We could never have any *pratique* with the inhabitants of Nova Zembla.

PRATIQUE is particularly uſed for a licence to traffick, granted to the maſter of a ſhip in the parts of Italy, upon a bill of health; that is, a certificate that the place whence he came, is not annoyed with any infectious diſeaſe.

PRAXEANS, a ſect of heretics, ſo called, from their author Praxeas.

This hereſiarch was of Aſia, and lived in the ſecond century. He was at firſt a diſciple of Montanus, but quitted him, and ſoon after ſet up a ſect of his own; teaching, that there was no plurality of perſons in the godhead; and that it was the Father himſelf that ſuffered on the croſs. Which ſentiment was afterwards adopted by the Monarchici, Sabellians, and Patripaſſians. See SABELLIAN, PATRIPASSIAN, *&c.*

PRAYER, in theology, a petition put up to God, either for the obtaining of ſome future favour, or the returning of thanks for a paſt one. See WORSHIP.

Divines diſtinguiſh three kinds of *prayer*:

Vocal, which is cloathed in words and ſounds to be uttered with the mouth. See VOCAL.

Mental, which is only formed or conceived in the mind, and not delivered in words. See MENTAL.

Ejaculatory, which is a ſhort, ſudden flight, without ſtudy, order, or method.

Myſtic divines, again, diſtinguiſh *prayer* into *active* and *paſſive*. See ACTIVE and PASSIVE.

Among us, *prayer* is frequently conſidered under the diviſions of *preconceived* and *extemporary*.

Under the firſt come all ſet forms, whether public or private, by which the mind is directed in the order, manner, expreſſion, *&c.* of its petitions. See LITURGY.

The ſecond is that where the mind is left to itſelf, its own conduct, both as to matter, manner, words, *&c.*

The Romaniſts alſo prefer *prayers* to ſaints, the virgin, the angel Gabriel, *&c.* See SAINT, OFFICE, AVE *Mary*, &c.

PREACHING *, in theology, the declaration, or promulgation of the word of God, in public, by a perſon authorized, and in a place appointed for the purpoſe. See SERMON, PRIEST, GOSPEL, *&c.*

* **The word is derived from the Hebrew** *paraſch*, *expoſuit*, **he expounded.**

Anciently, none but biſhops were allowed to *preach*: now, not only prieſts, but deacons, are qualified. See BISHOP and DEACON.

Biſhop Wilkins has delivered the art of *preaching*, in a treatiſe called *Eccleſiaſtes*, or the preacher. See ECCLESIASTES.

The religious of the order of St. Dominic aſſume the quality of *preaching-brothers*, friers-predicant, or predicants. See DOMINICAN.

PREADAMITE, PRÆADAMITA, a denomination given to the inhabitants of the earth, conceived, by ſome people, to have lived before Adam.

Iſaac de la Pereyra, in 1655. publiſhed a book to evince the reality of *Preadamites*, by which he gained a conſiderable number of proſelytes to the opinion: but the anſwer of Demarets, profeſſor of theology at Groningen, publiſhed the year following, put a ſtop to its progreſs; though Pereyra made a reply.

His ſyſtem was this: The Jews he calls *Adamites*, and ſuppoſes them to have iſſued from Adam; and gives the title *Preadamites* to the Gentiles, whom he ſuppoſes to have been a long time before Adam.

But this being expreſly contrary to the firſt words of Geneſis, Pereyra had recourſe to the fabulous antiquities of the Egyptians and Chaldeans, and to ſome idle rabbins, who imagined there had been another world before that deſcribed by Moſes.

He was apprehended by the inquiſitors in Flanders, and very roughly uſed, though in the ſervice of the Dauphin. But he appealed from their ſentence to Rome; whither he went in the time of Alexander VII. and where he printed a retractation of his book of *Preadamites*.

PREAMBLE, in law, the beginning of an act of parliament, *&c.* ſerving, as it were, for a key, to open the intent of the makers of the act, and the miſchiefs intended to be prevented or remedied thereby. See Act.

PREBEND, Præbenda, the portion a prebendary receives for his maintenance out of the eſtate of a cathedral, or collegiate church. See Prebendary.

The term *prebend* is uſually confounded with *canonicate*, or *canonica*; yet there is a real difference. A *prebend* is properly a right which an eccleſiaſtic has in a cathedral, or collegiate church where he officiates, to receive certain eccleſiaſtical revenues, and to enjoy certain dues, either in money or in kind; (ſo called *à præbendo*, q. d. *afforded* or *allowed* him; not *à præbendo auxilium* or *conſilium epiſcopo*) whereas *canonica* is a mere title, or ſpiritual quality, which a perſon enjoys independent of any præſtation, or any temporal revenue: ſo that the *prebend* may ſubſiſt without the canonicate; but the canonicate is inſeparable from the *prebend.*

For it is not to the *prebend* that the right of ſuffrage, and other ſpiritual rights are annexed, but to the canonicate; and when the *prebend* is joined to the canonicate, it becomes ſpiritual by virtue of the canonicate to which it is attached. See Canonica.

Anciently the pope created canons with a right of having place in the choir, a deliberative voice in the chapter, and an expectation of the firſt *prebend* that ſhould become vacant; but this was prohibited by the council of Trent: yet the pope ſtill confers the canonicate without any *prebend*, when he would confer a dignity in a church, for the obtaining whereof, it is required the candidate be a canon.

This they call a canonicate *ad effectum*, and ſometimes *jus ventoſum*, which is no more than an empty title, conferred purely to qualify a man for a dignity reſtrained to the capacity of canon.

In ſome churches there are *double prebends*, and in others *ſemi-prebends.*

Originally the *prebend* was only a livery, or portion of things neceſſary to life, given daily; at preſent the rents and profits of the church are divided into fixed portions, called *prebends*, which are enjoyed independently. The nomination to *prebends* is in the king. In France it is one of the honorary rights of the king, on his joyful acceſſion to the crown, to nominate to the firſt *prebends* vacant by death in the cathedral and collegiate churches.

Prebends are either *ſimple*, or with *dignity*.--The latter are ſuch as, beſide their *prebends*, have ſome juriſdiction annexed to them.

Theological, or *divinity* Prebend, is a *prebend* appropriated to a doctor in divinity, in each cathedral and collegiate church throughout France, for preaching on ſundays, and making a public lecture thrice a week.

Preceptorial Prebend, is that *prebend* whoſe revenues are deſtined for the ſupport of a preceptor or maſter, who is obliged to inſtruct the youth of the place *gratis*.

The canonicate is not here neceſſary to the *prebend.*

Panorm. obſerves, that in the cathedral church of Chartres, there are *prebends* appropriated to laymen, and for the ſubſiſtence of ſome perſons of birth and diſtinction.

PREBENDARY, Præbendarius, an eccleſiaſtic who enjoys a prebend. See Prebend.

Prebendaries and canons of cathedral and collegiate churches have this in common, that they have each a portion of the revenues of the church for their ſubſiſtence; the one under the title of *præbenda*, prebend; the other under the title of *canonica*, or *canonicate*; and have each places, and voices in the chapter: but they differ in this, that the former receives his portion or prebend in conſideration of his officiating and ſerving in the church; but the latter without any ſuch conſideration, mereby by his being received into the cathedral or college, *per aſſignatum ſtallum in choro, & locum in capitulo.* See Canon, *&c.*

Golden Prebendary *of Hereford*, called alſo *præbendarius epiſcopi*, is one of the the twenty-eight minor *prebendaries*, who has, *ex officio*, the firſt canon's place that falls.

He was anciently confeſſor of the biſhop and cathedral, and had the altarages; on which account he was called the *golden prebendary.*

PRECARIÆ, or Preces, in our ancient law-books, days works, which the tenants of certain manors are bound to give their lords, in harveſt-time.

Theſe, in ſome places, are corruptly called *bind-days*, for *biden-days*, from the Saxon, *biddan*, to pray.

Magna Precaria was a great or general reaping-day.

The lord of the manor of Harrow in Middleſex had, 21 *Ric.* 2. a cuſtom, that by ſummons of his bailiff on a general reap-day, then called *magna precaria*, the tenants ſhould do one hundred ninety-nine days work for him; every tenant that had a chimney ſending a man.

PRECARIOUS, in commerce, an appellation given to a kind of trade carried on between two nations at war, by the intervention of a third at peace with them both.

Thus the Engliſh hold a *precarious* commerce with the Spaniards by means of the Portugueſe; when the two former nations being at war, the third lends its veſſels, its colours, and name, to continue their trade.

Precarious, in juriſprudence, is applied to a fund or ſtock, of which a perſon has not the full propriety, whereof he cannot diſpoſe abſolutely, and which is moſt of it borrowed.

PRECE *partium*, in law, the continuance of a ſuit by conſent of both parties. See Continuance.

PRECEDENCE, Precedency, or Præcedency, a place of honour which a perſon is intitled to in companies; either ſitting, or walking. See Rank.

Precedency is either of *courteſy*, or *de jure*, of right.

The former is that which is due to age, to eſtate, *&c.* which is regulated by cuſtom and civility.

The latter is ſettled by authority, and where broken in upon, gives an action at law. See Nobility.

The point of *precedency* is thus ordered by the heralds:---After the king, the princes of the blood, *viz.* the ſons, grandſons, brothers, and nephews of the king, take place; then the great officers of the church and crown, *viz.* the archbiſhop of Canterbury; then the lord chancellor, or lord keeper of the great ſeal; next, the archbiſhop of York; the lord high treaſurer; the lord preſident of the privy-council; the lord privy-ſeal: next, dukes, then marquiſes, dukes eldeſt ſons, earls, marquiſes eldeſt ſons, dukes younger ſons, viſcounts, earls eldeſt ſons, marquiſes younger ſons, biſhops, barons, viſcounts eldeſt ſons, earls younger ſons, barons eldeſt ſons, privy-counſellors, judges, maſters in chancery, viſcounts younger ſons, barons younger ſons, knights bannerets, baronets, knights of the bath, knights batchelors, colonels, ſerjeants at law, doctors, eſquires, lieutenant colonels, majors, captains, batchelors of divinity, law, *&c.* maſters of arts, gentlemen, yeomen, tradeſmen, mechanics.

Note, That great officers of court, of what degree ſoever they are, take place above all others of the ſame degree or order of nobility; *viz.* the maſter of the horſe, lord great chamberlain of England, lord high conſtable of England, lord marſhal of England, lord admiral of England, lord ſteward, and lord chamberlain of his majeſty's houſhold.---So the ſecretaries of ſtate, if peers, take place of all of that degree, except the great officers aforeſaid.---Dukes, marquiſes, earls, barons, *&c.* not having any of the ſaid offices, nor being deſcended of the blood-royal, take place according to the ſeniority of their creation.---The ladies take place, or *precedency*, according to the degree of quality of their huſbands.

PRECEDENT, in law, frequently denotes an original, authentic inſtrument, or writing; ſerving as a form to draw others by. See Original, *&c.*

Hence *precedent-books*, *&c.* full of draughts of deeds, conveyances, *&c.* for attornies.

PRECENTOR*, Præcentor, a dignitary in cathedral churches, popularly called the *chantor*, or *maſter of the choir.* See Chantor.

* The *præcentor* is ſo called, from the Latin *præ*, and *cano*; becauſe he is ſuppoſed to lead the choir, and *ſing before* the reſt.

PRECEPT, Præceptum, in law, a command in writing, ſent by a chief juſtice, juſtice of peace, or other like officer, for the bringing of a perſon, record or other matter, before him.

Precept is alſo uſed for the command, or incitement, whereby one man ſtirs up another to commit felony, theft, *&c.*---Bracton ſpeaks of three diverſities of offending in murder; *viz. præceptio, fortia, conſilium.*

Præceptio, is the inſtigation uſed before-hand; *fortia*, the aſſiſtance in the fact; *conſilium*, the advice either before or after. See Murder, Abettor, *&c.*

PRECEPTORIAL *prebend.* See the article Prebend.

PRECEPTORY, Præceptoria, *commandry*; a kind of benefice held by the more eminent among the ancient knights-templars, who were created by the grand maſter, with the title of *præceptores templi*, i. e *maſters of the temple.* See Templar.

Stephens, *de juriſd. lib.* 4. ſays, the *preceptories* were only a kind of cells, all ſubordinate to their principal manſion, the temple in London. See Temple.

Of theſe *preceptories*, Dugdale ſays, he finds ſixteen recorded, as anciently belonging to the templars in England, *viz.* Creſſing Temple, Balſhal, Shengay, Newland, Yevely, Witham, Temple-Bruere, Willington, Rotheley, Ovenington, Temple-Comb, Trebigh, Ribſtane, Mount St. John, Temple-Newſum, and Temple-Hurſt. But there were more. See Commandry.

PRECES. See the article Precariæ.

PRECESSION, Præcessio, in aſtronomy, a term applied to the equinoxes, which, by a very ſlow inſenſible motion, change their place, going backwards, or weſtward, *i. e. in antecedentia*, as aſtronomers call it, or contrary to the order of the ſigns. See Equinox.

It is ſhewn, in the new aſtronomy, that the pole, the ſolſtices, the equinoxes, and all the other points of the ecliptic, have a retrograde motion; and are continually moving from eaſt to weſt, or from aries towards piſces, *&c.* by means whereof the equinoctial points are carried further and further back, among the preceding ſigns of ſtars, at the rate of about 50 ſeconds each year; which retrograde motion is called the *preceſſion, receſſion*, or *retroceſſion of the equinoxes.*

Hence, as the fixed ſtars remain immoveable, and the equinoxes go backward, the ſtars will ſeem to move more and more eaſtward with reſpect thereto; whence the longitudes of the ſtars, which are reckoned from the firſt point of aries, or the vernal equinox, are continually increaſing. See Longitude and Star.

Hence it is that the conſtellations have all changed the places aſſigned them by the ancient aſtronomers: in the time of Hipparchus, and the oldeſt aſtronomers, the equinoctial points were fixed to the firſt ſtars of aries and libra; but the ſigns are now no longer in the ſame points; and the ſtars which were then in conjunction with the ſun when he was in the equinox, are now a whole ſign, or 30 degrees, to the eaſt thereof: thus the firſt ſtar of aries is now in the portion of the ecliptic called *taurus*; and the firſt ſtar of taurus now reſides in gemini; and gemini is advanced into cancer, *&c.* See SIGN and CONSTELLATION.

The equinoxes will have made their revolution weſtward, and will be returned to aries again; or the conſtellations will have made theirs eaſtward, and will again fall into their former places, with regard to the equinoxes, in 25816 years, according to Tycho; in 25920, according to Ricciolus, and in 24800, according to Caſſini.

The ancients, and even ſome among the moderns, have taken the equinoxes to be immoveable; and aſcribed that change of diſtance of the ſtars herefrom, to a real motion of the orb of the fixed ſtars, which they ſuppoſed to have a ſlow revolution about the poles of the ecliptic; ſo as that all the ſtars perform their circuits in the ecliptic, or its parallels, in the ſpace of 25920 years; after which they ſhould all return again to their former places.

This period the ancients called the *Platonic*, or *great year*; and imagined, that at its completion every thing would begin as at firſt; and all things come round in the ſame order they have already done. See *Platonic* YEAR.

The phyſical cauſe of the *preceſſion* of the equinoxes, Sir Iſaac Newton demonſtrates, does ariſe from the broad ſpheroidal figure of the earth; which again ariſes from the earth's rotation around its axis. See EARTH.

PRECIOUS, or PRETIOUS *ſtone*, called alſo *gem* and *jewel*, is a ſtone extraordinarily hard, durable, tranſparent, and of a beautiful colour or water. See STONE and GEM.

Of theſe we may diſtinguiſh three kinds:

1. Such as are intirely tranſparent; which again may be divided into ſuch as are either colourleſs, as the *diamond*, or coloured, as the *emerald*:---which diviſion of coloured gems may be ſubdivided into thoſe of one colour, as the *ruby*; and thoſe with ſeveral, as the *amethyſt*.

2. Brilliant, or ſhining, as the *Bohemian granate*.

3. Semi-tranſparent, as *opal*. See OPAL.

Biſhop Wilkins divides *precious* ſtones into *more* and *leſs tranſparent*.

The *leſs tranſparent* he diſtinguiſhes by their colours; into red, as the ſardian and cornelian; pale, fleſhy colour, like that of a man's nail, as the onyx; bluiſh, as the turquois; pale purple, as the chalcedony; and thoſe of various colours, as opal and cat's eye.

The *more tranſparent* he diſtinguiſhes into ſuch as are colourleſs, as the diamond and white ſapphire; and coloured, which are either red, as the ruby, carbuncle, and granate; yellow, as the chryſolite and topaz; green, as the emerald, ſmaragd, and beryl; bluiſh, as the ſapphire; and purple or violaceous, as the amethyſt and hyacinth.

Dr. Woodward divides *precious* ſtones ſomewhat more preciſely, into *opake*, *ſemi-opake*, and *tranſparent*.

The *opake* are either of one colour, as the turquois; or of various colours, as lazuli, and jaſper.

Semi-opake either have their colours *permanent*, as the agat, chalcedony, onyx, ſardonyx, cornelian, and beryl; or their colours *vary* according to the poſition of the light, as the oculus cati, and opal.

Tranſparent ſtones are either *with colours*; as the topaz and hyacinth, yellow, or partaking thereof; granate, ruby and amethyſt, red; ſapphire, water-ſapphire, and aquemarine, blue; and emerald, or chryſolite, green, or partaking thereof:---or *without colours*, as the cryſtal, pſeudo-diamond, white ſapphire, and diamond.

The natural hiſtory, characters, properties, &c. *of each ſtone, ſee under its proper article,* DIAMOND, CORNELIAN, RUBY, TURQUOIS, ONYX, EMERALD, CHRYSOLITE, *&c.---For the medicinal virtues of* precious *ſtones, or gems, in the general, ſee* GEM.---*The origin and formation of* precious *ſtones, ſee under* STONE.---*For the art of engraving on* precious *ſtones, ſee* ENGRAVING.---*The art of cutting them, ſee under* LAPIDARY. *Moſaic work of* precious *ſtones, ſee* MOSAIC.

PRECIPE, or PRÆCIPE *quod reddat*, a writ of great diverſity both as to form and uſe; extending as well to writs of right, as to other writs of entry and poſſeſſion.

It is ſometimes called a *writ of right cloſe*, as when it iſſues out of the court of chancery cloſe; ſometimes a *writ of right patent*, as when it iſſues out of chancery patent, or open, to any lord's court, for any of his tenants deforced, againſt his deforceor. See WRIT.

PRECIPITANT, PRÆCIPITANS, in chymiſtry, a term applied to any liquor, which, being poured on a diſſolution, ſeparates what is there diſſolved, and makes it *precipitate*, i. e. fall to the bottom of the veſſel. See DISSOLUTION.

Thus oil of tartar, and the volatile ſpirit of ſal armoniac, are *precipitants* with regard to the diſſolurion of gold in aqua regalis; and common water is a *precipitant* with regard to the diſſolution of jalap in ſpirit of wine. See PRECIPITATION.

PRECIPITANT is alſo uſed in medicine, for a remedy which ſeparates and precipitates any heterogeneous matter contained in the maſs of blood; and by this means abates any irregular fermentations, effervefcences, or the like diſorders, which that matter had excited.

Among the number of *precipitants*, are ranked harts-horn, crabs-eyes, ivory, bezoard, barks of oak, and guaiacum, iron, quinquina, chalk, *&c.*

PRECIPITATE, PRÆCIPITATUS, in chymiſtry, a ſubſtance which having been diſſolved in a proper menſtruum, is again ſeparated from its diſſolvent, and thrown down to the bottom of the veſſel, by the pouring in of ſome other liquor. See PRECIPITANT.

The chymiſts make various *precipitates* of mercury, which are of various colours, as the precipitants vary; *viz. white*, *red*, *yellow*, *green*, *&c.* See MERCURY.

White, called alſo *ſweet* PRECIPITATE, is prepared of mercury diſſolved in ſpirit of nitre, and precipitated with ſalt-water, or ſpirit of ſalt, into a white powder.

If, in lieu of the former precipitants, hot urine be poured on the diſſolution, we have a *pale roſe-coloured precipitate*.

To make the *red* or *corroſive* PRECIPITATE, they take the diſſolution of mercury made in ſpirit of nitre; evaporate all the humidity over a gentle fire, till nothing remains but a white maſs; which, by increaſing the fire, they rubify, or raiſe to a red colour.

Green PRECIPITATE is made with mercury, copper, and acid ſpirits;---*yellow precipitate* with mercury, and oil of vitriol. But theſe three laſt are improperly called *precipitates*, becauſe not procured by PRECIPITATION. See PRECIPITATION.

PRECIPITATION, PRÆCIPITATIO, an operation in chymiſtry; being a kind of ſeparation, whereby a body diſſolved and ſuſpended in any menſtruous liquor, is detached therefrom, and falls down to the bottom of the veſſel. See OPERATION.

Precipitation is either *ſpontaneous*, or *artificial*.

Spontaneous PRECIPITATION is, when the particles of the diſſolved body ſeparate of themſelves from their diſſolvent.

Artificial PRECIPITATION is, when ſome other body, called a *precipitant*, is added to procure this ſeparation. See PRECIPITANT.

There is alſo a *total precipitation*, wherein the diſſolved parts are all ſeparated, and ſunk to the bottom; and a---*partial precipitation*, wherein ſome of the parts diſſolved are ſtill ſuſpended in the fluid, and do not fall down.

To account for the operation of PRECIPITATION: It may be obſerved, that a fluid menſtruum may be made to ſuſtain a body ſpecifically heavier than itſelf, either by making the reſiſtance, ariſing from the coheſion of the parts of the fluid, equal to the exceſs of ſpecific gravity of thoſe bodies above that of the menſtruum. See MENSTRUUM.

Or, by the heavy body's being joined to ſome lighter one; ſo that the two together only make one whole, equal in weight to the fluid.

In the firſt caſe, the reſiſtance, we know, is ſtill proportional to the ſurface of the corpuſcles; ſo that the ſurface being diminiſhed, the reſiſtance is weakened: the proportion therefore of the tenacity of the menſtruum, to the gravity of the corpuſcles, being thus deſtroyed, a *precipitation* muſt enſue.

Precipitation, then, may be effected two ways, on this foundation; *viz.* either by the dropping in a liquor ſpecifically lighter, or ſpecifically heavier. In the former caſe, the gravity of the menſtruum, which is always proportional to the compound gravities of both, will by this mixture become lighter: thus, the menſtruum being diluted, the force of coheſion is alſo weakened, ſo as to become unable any longer to ſuſtain the bodies; ſo hydrometers, which are eaſily ſuſtained in water, upon pouring in a good deal of any burning ſpirits, ſink to the bottom of the glaſs.

And this agrees not only with the laws of mechanics, but with experiments: thus ſpirit of ſal armoniac does very plentifully precipitate the filings of metals, diſſolved in acid menſtruums; though it be abundantly lighter than any of them.

The ſame thing is done quicker by ſpirit of wine, whoſe gravity is known to be almoſt the leaſt of any liquor.

By this ſpirit alſo, all ſalts, which are ſuſpended in water, are precipitated, and ſo unite into cryſtals. So, if you drop diſtilled vinegar in the ſcoria of antimony diffuſed in water, it falls to the bottom, and affords the golden ſulphur.

After the ſame manner, water, vinegar, *&c.* make a *precipitation* from acids, though more ſparingly: nay, acids themſelves, being poured upon others, which are heavier, will precipitate whatever is ſwimming in them. Thus ſpirit of ſalt precipitates either lead, copper, or tin, diſſolved in oil of vitriol: ſo little need is there of alkalies in this buſineſs, though the chymiſts have unanimouſly contended for them as abſolutely neceſſary.

In the ſecond caſe, *precipitation* will ſucceed by the addition of a heavier liquor to the menſtruum. For the particles of this liquor, what with their weight, and what with the impetus they acquire in their deſcent, carry down and ſink all the ſolid corpuſcles they meet with in their way; ſo that the corpuſcles being thus forced down, and kept there by this adventitious liquor, cannot mount up into their former ſituation.

To try the truth of this reaſoning by experiments; not only acid ſpirits, but even mere water, will be found to precipitate tinctures of vegetables extracted by ſpirit of wine: and the very ſame tinctures, extracted with water or wine, are precipitated very copiouſly by acid ſpirits, which are heavier.

Metals, when diſſolved in ſpirit of ſal armoniac, are precipitated with oil of vitriol, or ſpirit of nitre. When ſuſpended in aqua fortis, they are precipitated with oil of vitriol, or bezoartic ſpirit of nitre.

As to bodies ſuſpended by means of their union with other lighter ones: this is properly the caſe of diſſolved metals; and to this may the laſt caſe of *precipitation* be reduced. Here, the particles of a metal being ſeparated by a diſſolvent, and rendered imperceptible by their extreme littleneſs, only float, becauſe united to very light particles of the acid ſpirit, which keeps them ſuſpended; though the great ſurface they have, both on account of their ſmallneſs, and of their union with the acids, frequently contributes to the effect.

Now, as they are in a forced equilibrium with the fluid wherein they ſwim; and as the cauſes that ſuſtain them, are only accidental; they muſt of courſe be precipitated to the bottom, when the acid or menſtruum abandons them; from whatever cauſe it be: it is even ſometimes ſufficient, that the quantity of the fluid, wherein they are ſuſtained, be diminiſhed. For then ſeveral of the metallic particles, though ſtill joined to their acid, coming to meet and unite, aſſume a ſmaller ſurface, with regard to their maſs; thus, being no longer held up by the largeneſs of their ſurfaces, they ſubſide to the bottom.

When the menſtruum abandons a diſſolved body; if that body be lighter than the menſtruum, the contrary to *precipitation* will enſue, *i. e.* the body will riſe: thus camphor being mixed in oil of olives, and the whole diſſolved, the camphor riſes firſt, *&c.*

If it happen, that the particles, when abandoned by the diſſolvent, are equally heavy with the ſuſtaining fluid, they will neither riſe nor fall; only ſeveral of them now reuniting, form little maſſes, ſufficient to ſpoil the limpidneſs and tranſparency of the fluid; as is the caſe in reſin diſſolved in ſpirit of wine, and water poured over them: where the water uniting cloſely with the ſpirit of wine, makes it let go the greateſt part of the reſinous particles.

Thus is effected what we call an *imperfect precipitation*; which, in reality, is no more than a diſpoſition to precipitate.

If in this caſe, the aqueous particles of the fluid be hid, and, as it were, abſorbed among the groſs moleculæ of the diſſolved matter; it forms what they call a *coagulum*. See COAGULATION.

Sometimes, when the liquors are poured on one another, the ſalts with which they abound, being put into motion, by their attractive force, they run mutually to embrace one another; and becauſe they do not recoil far back after the congreſs, they are at length ſo united, as to become like a ſolid, there being very little phlegm remaining, as is very obſervable in tartarum vitriolatum.

In theſe experiments there happens ſuch a conflict and efferveſcence, as evaporates almoſt all the moiſture, with which the ſalts are diluted. And upon this depends the rationale of chymical coagulation, a thing of very great conſequence in the buſineſs of *precipitation.* Nor can we account for oil of tartar's precipitating bodies diſſolved in acids, any otherwiſe than from its making a kind of coagulum with theſe corpuſcles, and thereby becoming too heavy for, and exceeding the tenacity of, the menſtruum.

Such are the general principles of *precipitation.*

PRECIPUT *, *q. d. precipuate*, in the French juriſprudence, an advantage belonging to any one, in a thing to be divided; or a portion taken off, and ſet by, in his favour, ere the diviſion be made.

* **The word is formed from the Latin *præcipuus*, chief, principal.**

In noble partition, the eldeſt has always the principal fief, or manor, for his *preciput*.---In which view, the *preciput* coincides with the right of primogeniture. See PRIMOGENITURE.

PRECISION, PRÆCISIO, in the ſchools, the ſame with *abſtraction.* See ABSTRACTION.

PRECONISATION, a propoſition or declaration, which the cardinal patron makes in the conſiſtory at Rome, of a perſon nominated by ſome prince to a prelature, by virtue of letters whereof he is the bearer; which the pope complying with, gives his collation. See COLLATION.

The date of the bulls is diſpatched on the ſame day with the *preconiſation.* See BULL.

PRECONTRACT, PRÆCONTRACTUS, a contract made before, or prior to another: chiefly uſed in relation to marriages. See CONTRACT.

PRECORDIA, or PRÆCORDIA, *&c.* the parts about the heart; *e. gr.* the pericardium, the diaphragm, the hypochondria, and even the heart itſelf, with the lungs, ſpleen, *&c.* See HEART.

The word is alſo ordinarily uſed for the fore-part of the region of the thorax. See THORAX.

Pliny, and ſome other authors, uſe it for all the viſcera or entrails: *Præcordia vocamus uno nomine exta in homine.* See VISCERA.

One of the principal differences between men and brutes conſiſts in this; that there is a greater correſpondence and communication between the head and heart of the former than the latter: which correſpondence is effected by means of a greater number of nerves, ſent from the brain to the heart and *precordia*; brutes only receiving nerves to the *precordia* by the branches of the par vagum; and man, likewiſe, by the intercoſtal pair.

The reaſon, Dr. Willis well obſerves, is, that brutes being void of diſcretion, and but little ſubject to paſſions, need not, like man, a double paſſage for the ſpirits, the one for the ſervice of the vital functions, the other for the reciprocal impreſſion of the affections. See NERVE, SPIRIT, BRAIN, *&c.*

PRECURSOR, PRÆCURSOR, *fore-runner*, in theology, a perſon who goes before any one to notify his coming.

The term is peculiarly applied to St. John Baptiſt, who is ſtyled the *precurſor* of Jeſus Chriſt, from what is ſaid of him by St. Luke; *Thou, child, ſhalt* go before *the face of the Lord, to prepare his way.*

PREDECESSOR, a perſon who has preceded another in the ſame office or employ. See ANCESTOR.

PREDESTINARIAN, a perſon who adheres to the doctrine of abſolute predeſtination. See PREDESTINATION.

St. Auguſtin is looked on as the founder of the ſect of *predeſtinarians*; he being the firſt of the fathers that ſeems to have aſſerted the doctrine in ſuch expreſs terms; though the Janſeniſts and Jeſuits are ſtill greatly divided about the real doctrine of St. Auguſtin, in this article; each interpreting him conſiſtently with their own ſcheme. See JANSENISM, *&c.*

Father Sirmond contends for an ancient ſect of *predeſtinarians*, or *predeſtinatians*, *prædeſtinatiani*, cotemporary with St. Auguſtin himſelf, and who had their riſe in Africa, in the monaſtery of Adrumetum; from a miſunderſtanding of St. Auguſtin's doctrine. It is added, that the opinion ſpread thence throughout the Gauls; where one of them, a prieſt, named Lucidus, was condemned by Fauſtus biſhop of Rheggio; and his ſentence confirmed by two councils.

The doctrine was again broached in the ninth century, by Godeſchalcus a Benedictine; who, as Hincmar in a letter to Pope Nicolas, ſays, maintained with the ancient *predeſtinarians*, who had been already anathematized, that God *predeſtinated* ſome to eternal life, and others to eternal death; that God did not will all people to be ſaved; that Jeſus Chriſt did not die for all, but only the elect, or thoſe that are ſaved, *&c.* See GRACE, *&c.*

This doctrine was again condemned in a ſynod held at Mentz: but the Janſeniſts, particularly the friends of Meſſ. de Port-Royal, and among the reſt, the preſident Mauguin, have refuted F. Sirmond; and ſhewn, that the hereſy of the *predeſtinarians* is a mere chimæra; adding, that St. Fulgentius, St. Proſper, and the other diſciples of St. Auguſtin, only looked on it as an imaginary hereſy, invented by the enemies of St. Auguſtin's doctrine, to traduce it.

In effect, the chief evidences father Sirmond produces to the contrary, are the prieſts of Marſeilles, who are ſuſpected of ſemi-pelagianiſm. See SEMI-PELAGIAN.

PREDESTINATION, PRÆDESTINATIO, in theology, a judgment, or decree of God, whereby he has reſolved, from all eternity, to ſave a certain number of perſons, hence named elect. See ELECT.

Others define *predeſtination*, a decree to give faith in Jeſus Chriſt, to a certain number of men; and to leave the reſt to their own malice, and hardneſs of heart. See FAITH.

The Remonſtrants define *predeſtination* more laxly and generally, the decree of ſaving believers, and damning unbelievers. See ARMINIAN.

The greateſt difficulties wherewith the modern theology is clogged, turn on the article of *predeſtination:* both the Romiſh and Reformed churches are divided about it: the Lutherans ſpeak of it with horror; the Calviniſts contend for it with the greateſt zeal; the Moliniſts and Jeſuits preach it down as a moſt dangerous doctrine; the Janſeniſts aſſert it as an article of faith: the Arminians, Remonſtrants, and Pelagians, are all avowed enemies of *predeſtination.* See JANSENIST, MOLINIST, CALVINISM, PELAGIAN, *&c.*

Thoſe ſtrenuous patrons of Janſeniſm, the Port-Royaliſts, teach, that God *predeſtinates* thoſe who he foreſees will co-operate with his grace to the end. Du Pin adds, that men do not fall into ſin, becauſe not *predeſtinated*; but they are not *predeſtinated*, becauſe God foreſaw their ſins. See ELECTION, REPROBATION, *&c.*

PREDESTINATION is alſo uſed for a concatenation of ſecond cauſes appointed by providence, in virtue whereof, things are brought to paſs by a fatal neceſſity; contrary to all appearances, and maugre all oppoſition. See FATE and DESTINY.

The Turks are great *predeſtinarians*; they eſteem the lighteſt accident predetermined; and on this account, are much more daring in battle, and run greater riſques of their lives, than they would otherwiſe do. See MAHOMETANISM.

PREDETERMINATION, PRÆDETERMINATIO, in philoſophy and theology.---The ſchoolmen call that concurrence of God, which makes men act, and determines them in all their actions both good and evil, *phyſical predetermination*, or *premotion.* See PREMOTION and ACTION.

Divines hold, that God has no part in ſin; inaſmuch as he only affords his concurrence to the phyſical part of human actions, not to the *moral* part. See LIBERTY and NECESSITY.

Phyſical predetermination, or *premotion*, if there be any ſuch thing, is that action of God, whereby he excites a ſecond cauſe to act; or by which, antecedently to all operation of the creature, or before it could operate in conſequence either of the order of nature or reaſon, he really and effectually moves, and occaſions it to produce all its actions: that is, whatever the creature does or acts, is really done and acted by the agency of God on the creature, who is all the time paſſive. So that without ſuch *predetermination* of God, all creatures muſt remain in an eternal ſtate of inactivity; and with ſuch *predetermination*, it is impoſſible but they ſhould do what they are thus put upon doing.

It is ſtrongly controverted, whether or no ſuch a *phyſical predetermination* be neceſſary to the action of natural cauſes? The Scotiſts maintain the negative; urging, that all natural cauſes are, of their own nature, determined to a certain action; whence it ſhould ſeem needleſs to call in a new *predetermination* of God, *e. gr.* to fire, to make it warm the hand. For if an object be, by the courſe of divine providence, applied to fire; what need a ſecond application of the fire, to make it warm the object applied thereto? ſince beings are not to be multiplied unneceſſarily. See Cause.

And ſuch *predetermination* ſome philoſophers hold ſtill leſs requiſite to produce the acts of the will: at leaſt, ſay they, the human mind muſt be allowed the common power and privilege of a ſecond cauſe; and therefore be intitled to produce its own acts, as well as other ſtrictly natural agents. See Will.

The Thomiſts, on the other hand, ſtand up ſtrenuouſly for the *phyſical predetermination*: one of their principal arguments is drawn from the ſubordination of ſecond cauſes to the firſt. Where there are ſeveral ſubordinate agents, ſay they, the lower agents do not act, unleſs firſt moved and determined thereto by the firſt; this being the very eſſence of ſubordination.

Again, the like they argue from the dominion of God over all his creatures: it is of the eſſence of dominion, ſay they, to apply and direct things ſubject thereto, to its own operations; and this, if the dominion be only moral, morally; but if it be alſo phyſical, phyſically. And that this is the caſe in reſpect of God and his creatures, is confeſſed. See God.

PREDIAL *tithes*, *decimæ* Prædiales, are tithes paid of things which grow from the ground only; as corn, hay, fruit, *&c.* See Tithe.

PREDIATORY *debt*. See the article Debt.

PREDICABLE, Prædicabile, in logic, a general quality, or epithet, which may be predicated of, or applied to, ſeveral ſubjects.

Thus animal is *predicable* both of man and beaſt: man is *predicable* of Peter and James: triangle is *predicable* of an hundred different kinds of figures; as right angles, ſcalanes, iſoſceles's, *&c.* See Predicate.

The ſchoolmen reduce the *predicables* to five claſſes, *viz. genus*, *ſpecies*, *proprium*, *differentia*, and *accidens*; under one or other of which all that can be *predicated* of any ſubject, is included. See Genus, Species, Proper, *&c.*

A *predicable* is alſo called *univerſale logicum*, as having reſpect to other particular, and inferior, or ſubject things: thus animal is an univerſal, with regard to man and beaſt.

It is called a *logical univerſal*, to diſtinguiſh it from a metaphyſical one; which is a common being, conſidered in itſelf, and therefore denominated univerſal in eſſendo; whereas the logical one is only univerſal as to our conception and application. See Universal.

Among the ſchoolmen, *predicable* is uſually defined *unum*, *aptum* prædicari *de multis*, *univoce*, *& diviſim*: or, ſomewhat more clearly, a *predicable* is a nature which may be predicated univocally of all things to which it is common; and which, as it is dividually multiplied in all its ſubordinates, may be aptly predicated of them all.

Thus, when the appellation of *virtue* is attributed to juſtice, prudence, temperance, fortitude, charity, *&c.* the ſame reaſon may be given why each is diſtinguiſhed by ſuch name; as being all founded in a mediocrity, and being agreeable to right reaſon, which is the character of virtue.

Hence, if there be ſeveral things called by ſome common name; but the reaſon of ſuch name is not the ſame in all, but different; theſe do not come under the number of *predicables*. As in the inſtance, *canis*, dog, which is both applied to a domeſtic animal, diſtinguiſhed by its barking; to a conſtellation of the heavens; and to a ſea-fiſh.

The way by which the mind comes to form ſuch *predicables*, or univerſals, is this: among thoſe things which fall under our obſervation, we find ſome characters and properties common to ſeveral, and others peculiar to each: what we find common, we conſider apart; and thus form an univerſal equally applicable to all. See General.

PREDICABLY, prædicabiliter, is uſed in the ſchools in oppoſition to *predicamentally*.---Thus, matter is ſaid to be united to form *predicably*, or *per accidens*; to exclude the notion of a predicamental accident.

PREDICAMENT, Prædicamentum, in logic, a claſs, or order of beings, or ſubſtances, ranged according to their natures; called alſo *category*, and ſometimes *categorema*. See Category, Categorema, Postpredicament, *&c.*

The word *prædicamentum* was firſt introduced by Boethius, in lieu of the Greek κατηγορια; and is uſed among the ſchoolwriters with a good deal of latitude and variety: for it either ſignifies the act of *predicating*, or a common *predicate* itſelf; or, the genus or baſis of any category; or, the collection of ſeveral common predicates diſpoſed in a certain order:---which laſt is its moſt uſual acceptation.

Hence ſome define *predicament*, a ſeries of predicates traced from the genus, or higheſt term, through all the inferior genera and ſpecies.---Thus, a ſeries of *ſubſtance* drawn from *ſubſtance* through *body*, *living*, *animal*, *man*, to *Peter*, is called the *predicament* of ſubſtance.

The uſual definition among logicians is, that *predicament* is a natural order, or ſcheme, of ſome moſt general or univerſal thing, and of all that is contained under the ſame; that is, all the ſubordinate genera, ſpecies, and individuals.

The properties of a *predicament*, *ex parte vocis*, i. e. of the term or word whereby the *predicament* or *predicamental* ſeries is denoted, the logicians hold, are, that it be *one*, *ſimple*, *preciſe*, and *concinnous*.

Vox una, & ſimplex, rebus concinna locandis.

The conditions requiſite *ex parte rei*, or of the thing to be ranged in a *predicament*, are contained in the following verſe:

Entia per ſeſe, finita, realia, tota.

i. e. it muſt be a *poſitive being*, in excluſion of non-entities, negations, privations, impoſſibilities, *&c.* and a being *per ſe*, to exclude accidental things, factitious things, *&c.* and *finite*, that is, of a limited nature and extent, to exclude God and other tranſcendentals: *real*, ſince its intention is for the better and more commodious diſpoſing of things in their places, to be the more diſtinctly known and conceived; and *whole*, or complete, as not being in the relation of a component part, or as only acceſſary to ſome other.

PREDICAMENTAL *accident*. See the article Accident.

PREDICATE, Prædicatum, in logic, that part of a propoſition which affirms or denies ſomething of the ſubject. See Proposition.

Thus, in, *God made the world*; *made the world* is the *predicate*; *God*, the ſubject. See Subject.

A *predicate*, ſay the ſchoolmen, is properly a name *predicated* or ſpoken of another, as its ſubject: as *man*, in the propoſition, *Peter is a man.*

It is a celebrated rule or law of *predicates*, that nothing is eſteemed to be abſolutely ſpoken or affirmed of another, unleſs it be affirmed thereof in ſuch manner, or by ſuch an affirmation, as wants nothing either in the ſubject, *predicate*, or copula, to make it true.

This alſo is a noted property of a *predicate*, that it contains, in ſome meaſure, its own ſubject: thus, metal contains gold, copper, iron, *&c.* of which it is *predicated.*

The word *predicate* is ſometimes uſed indifferently with *attribute*; but the more accurate writers make a diſtinction. Every *predicate* is indeed an attribute, ſince whatever is *predicated* of a thing, is attributed to it: ſo, if animated be *predicated* of man, it is alſo attributed to him: but every attribute is not a *predicate*: thus ſoul, learning, *&c.* are attributed to man, but not *predicated* of him. See Attribute.

PREDICATING, in logic, is properly the act of affirming or denying ſomewhat of ſomething.---As, *Man is not a ſtone*; *body is a ſubſtance.* The thing thus predicated, is called *predicate.* See Predicate.

In the doctrine of univerſals, or predicables, to *predicate* is to ſpeak or declare a thing truly, directly, and affirmatively. Thus man is *predicated* of ſeveral, *i. e.* it is truly and directly affirmed that theſe ſeveral are men; as when I ſay, *Socrates is man*, *Plato is man*, *Ariſtotle is man*, &c. See Predicable.

The things *predicated* of others are reducible to three claſſes: *genera*, as animal, of man, *&c.* *forms*, as whiteneſs, of a ſwan, *&c.* and *equals*, of things of equal extent, as ſpecies, difference, proprium, *&c.*

The ſchoolmen diſtinguiſh ſeveral ways of *predicating*; as, 1. *In quod tantum*, which is to *predicate* eſſentially, both as to the thing and the manner; as, *Juſtice is a virtue.* 2. *In quale tantum*, which is to *predicate* accidentally, both as to the thing and the manner; as, *Peter is learned.* And, 3. *In quale quid*, or *in quale poſt quid*, which is to *predicate* both eſſentially and accidentally; as, *Man is rational.*

PREDICTION, Prædictio, divination, prophecy, or foretelling of what is to come; either by divine revelation, by art and human invention, or by conjecture. See Divination, Revelation, *&c.*

Divines labour hard to make the *predictions* in the Old Teſtament tally with the events in the New. See Prophecy.

The *predictions* of oracles were all dark and ambiguous. See Oracle.

PREDOMINANT, Prædominans, that which prevails, appears moſt, or has ſome ſuperiority or aſcendance over another thing.

Thus we ſay, bitterneſs is the *predominant* quality among taſtes, or that which is moſt perceived. It is a rule, that ſugar is never to *predominate* in confections, nor pepper in ragouſts.

PRE-EMPTION, Præemptio, a privilege anciently allowed the king's pourveyor, of having the choice and *firſt buying* of corn and other proviſions for the king's houſe; but taken away by the *ſtat.* 19 *Car.* 2. See Pourveyor.

PREENING, in natural hiſtory, the action of birds, cleaning, compoſing and dreſſing their feathers, to enable them to glide more eaſily through the air. See Feather.

For their uſe herein, nature has given them an admirable piece of furniture; *viz.* two peculiar glands, which ſecrete an unctuous matter into an oil-bag, perforated; out of which the bird, on occaſion, draws it with his bill. See OIL-BAG.

PRE-ESTABLISHED *harmony*. See the article HARMONY.

PRE-EXISTENCE, PRÆEXISTENTIA, the ſtate of a thing actually in being before another. See EXISTENCE.

The ancient Pythagoreans and Platoniſts all aſſerted the *pre-exiſtence* of human ſouls, *i. e.* that they were in being before they were joined to our bodies. See METEMPSYCHOSIS and TRANSMIGRATION.

Origen alſo held the eternal *pre-exiſtence* of ſouls. See SOUL.

The orthodox believe, that God created the world out of nothing; and not of a *pre-exiſtent* matter. See WORLD, *&c.*

Some perſons have held mankind *pre-exiſtent* to Adam. See PRE-ADAMITE.

PREFACE*, PRÆFATIO, an advertiſement in the beginning of a book, to inform the reader of the deſign, order, method, *&c.* obſerved therein; of what is neceſſary to receive its full effect, and facilitate the underſtanding thereof. See BOOK.

*** The word is formed from the Latin *præ* and *fari*, q. d. to ſpeak before.**

There is no part of writing that requires more art, or that fewer authors ſucceed in, than *prefaces*. *Prefacing* is, in effect, a particular ſpecies of writing, and has its peculiar character and taſte, to diſtinguiſh it from all others. It is neither argumentation, diſcourſe, narration, nor apology.

PREFACE *of the maſs*.---The Romaniſts call that part of their maſs which precedes the conſecration, and which is to be rehearſed in a peculiar tone, *preface*. See MASS.

The uſe of *prefaces* in the church, they contend, is very ancient; and conjecture, from ſome paſſages of St. Cyprian, *&c.* that it was in uſe in the times of the apoſtles.

The *preface* to the maſs anciently had, and ſtill has, very different names in different churches. In the Gothic, or Gallican rite, it is called *immolation*; in the Mozarabic rite, *illation*; anciently among the French, it was called *conteſtation*; in the Roman church alone, it is called *præfatio*, *preface*.

PREFECT, PRÆFECTUS, in ancient Rome, was one of their chief magiſtrates, who governed in the abſence of the kings, conſuls, and emperors. See PROPREFECT.

His power was ſomewhat different at different times; but was always greateſt under the emperors. His principal care was the government and adminiſtration of the city of Rome.

He took cognizance of all crimes committed in the city, or within an hundred miles thereof. He judged capitally and finally, no appeal lying from him; and even by the 62d novel, he preſided in the ſenate, taking place before all the patricii and conſulares, *&c.*

He had the ſuperintendence of the proviſions, policy, buildings, and navigation.

There is ſtill a *prefect* of modern Rome, who is a kind of governor; differing little from the ancient *præfectus*, except that his authority only extends to 40 miles round the city, whereas that of the *prefect* of ancient Rome reached 100 miles round.

PREFECT *of the pretorium*, PRÆFECTUS *prætorii*, was the chief or leader of the pretorian bands, or cohorts, deſtined for the emperor's guard. See PRETORIAN.

The pretorian legion, according to Dion, conſiſted of ten thouſand men. Suetonius refers the inſtitution of *præfectus prætorii* to Auguſtus. It is added, that he was uſually taken from among the Roman knights.

By the favour of the emperors, his authority grew very conderably; inſomuch that he became the arbiter and ſupreme judge of all affairs.

To reduce this extravagant authority, Conſtantine divided the *prefecture* of the pretorium into four *prefectures*; and each of theſe he again ſubdivided into civil and military departments; though the name was only reſerved to him who was inveſted with the civil authority; and that of *comes belli* given him who had the command of the cohorts. See COUNT.

Thus the office of *prefect* of the pretorium, which, in its origin, and till the time of Conſtantine, was military, and ſucceeded to that of *magiſter equitum*, now commenced a purely civil magiſtrature; and at length became the prime dignity of the empire.

The ſucceeding emperors, following Conſtantine's diviſion, divided the empire into four *prefectures prætorii*, as into four dioceſes; *viz.* the Gauls, Illyria, Italy, and the Eaſt. See DIOCESE.

The provinces whereof theſe dioceſes conſiſted, had their particular governors; at the head of whom was the *prefect*, who, though he had not the command of the army, yet had the power of the ſword, decided ultimately of all cauſes, and had all the marks and honours of ſovereignty.

Juſtinian created a fifth *prefect* of the pretorium for the government of Egypt, which had been torn off from the dioceſe of the Eaſt by the invaſion of the Vandals during the empire of that prince.

Under Auguſtus, the officer ſent to govern Egypt with a proconſular authority, was called *præfectus Auguſtalis*.

PREGNANCY, the ſtate of a woman when ſhe has conceived, or is with child. See CONCEPTION.

The ſame ſtate, with a view to the bearing of the child in the womb, is called *geſtation*. See GESTATION.

Hence alſo the act of *impregnating*. See GENERATION, FLOWER, SEED, *&c.*

PREGNANT.---*Negative* PREGNANT, in law. See NEGATIVE.

PREJUDICE, PRÆJUDICIUM, a falſe notion or opinion of any thing, conceived without a due previous examination thereof. See FALSHOOD, OPINION, *&c.*

Prejudice, q. d. pre-judgment, does not import a judgment merely as prior to another in reſpect of time, but as being prior thereto in reſpect of knowledge, or of ſufficient attention to the thing; the prepoſition *præ* expreſſing an anticipation, not ſo much of time, as of knowledge and due attention. See ERROR.

Hence *prejudice* is alſo called among the ſchoolmen, *anticipatio*, *& præventa cognitio*, a preconceived opinion, *&c.* See JUDGMENT, TRUTH, FALLACY, SENSE, *&c.*

PREJUDICIAL *action*. See the article ACTION.

PRELATE*, PRÆLATUS, an eccleſiaſtical ſuperior, raiſed to ſome eminent and ſuperior dignity of the church. See DIGNITARY.

*** The word comes from the Latin *prælatus*, of *præ*, before, and *fero*, I bear, carry.**

Patriarchs, primates, archbiſhops, biſhops, generals of religious orders, certain croſiered and mitred abbots, and even deans and archdeacons, are ranked among the number of *prelates*.

PRELATE *of the garter*, is the firſt officer of that noble order, and ancient as the inſtitution itſelf. See GARTER.

William de Edynton, then biſhop of Wincheſter, was the firſt *prelate* at the erection of the order; and it has been continued in that ſee ever ſince.

It is an office of great honour, but has neither ſalary nor fees; only a convenient lodging allowed in Windſor-caſtle; and as oft as the *prelate* comes thither, (by the ſovereign's command) he is to have court-livery allowed for himſelf and ſervants.

PRELIMINARY*, or PRÆLIMINARY, ſomething to be examined, diſpatched, or determined, ere an affair can be treated of thoroughly, and to purpoſe.

*** The word is formed from the Latin, *præ*, before, and *limen*, threſhold.**

Preliminaries of peace take up the greateſt part of treaties. They conſiſt in examining of powers, qualities of princes, ranks of ambaſſadors, *&c.*

PRELUDE, PRÆLUDIUM, in muſic, a ſymphony uſed by way of introduction or preparation to what follows.

A *prelude* is uſually a flouriſh, or an irregular air, which the muſician plays off-hand, to ſee if his inſtrument be in tune; and to lead him into the piece to be played.

PREMISES, PREMISSES, PRÆMISSÆ, in logic, the two firſt propoſitions of a ſyllogiſm. See SYLLOGISM.

When a ſyllogiſm is in form, the two *premiſes* being granted, the concluſion cannot be denied. See CONCLUSION.

The *premiſes*, ſays Chauvin, are properly the parts of the antecedent of an argument, when complex; and are called *præmiſſæ*, becauſe premiſed to the concluſion. See ANTECEDENT, *&c.*

Thus in the argument, ***Every man is an animal***, ***Peter is a man***, therefore ***Peter is an animal***: the propoſitions, *every man*, &c. and *Peter*, &c. are the *premiſes*. See PROPOSITION.

Premiſes are the principles of our reaſonings; as being clear, evident, and demonſtrative propoſitions, from the relations whereof to one another, we draw or infer new truths, propoſitions, *&c.* See REASONING, PRINCIPLE, AXIOM, *&c.*

The *premiſes* are either *equal*, where neither ſuffices alone for the drawing a concluſion, as in the inſtance above; or *unequal*, the one *major*, greater, from which alone the concluſion is drawn; the other *minor*, or leſs, which only ſerves in applying the antecedent to the conſequent. See CONSEQUENT.

In the common practice of the ſchools, however, every ſyllogiſm, or formal argument, of what kind ſoever, is ſaid to have a major and a minor, how equal ſoever the *premiſes* may be. See MAJOR and MINOR.

PREMISES, in law, the lands, *&c.* mentioned in the preamble or beginning of a deed, leaſe, conveyance, or the like.

PREMIUM, or PRÆMIUM, literally denotes a reward, or recompence.

Among merchants it is taken for that ſum of money, *viz.* 8 or 10 *per cent.* which is given to an inſurer, for inſuring the ſafe return of any ſhip or merchandize. See POLICY *of inſurance*.

PREMIUM is alſo uſed in the money and paper-trade, for what is given for a thing above *par*.

Thus, lottery-tickets, *&c.* are ſaid to bear ſo much, *e. gr.* 10 or 20*s.* *premium*, when they are ſold for ſo much beyond the prime coſt, at which the government iſſued them.

PREMONSTRANTES, or PRÆMONSTRATENSES, a religious order of regular canons inſtituted in 1120. by S. Norbert; and thence alſo called *Norbertines*.

The firſt monaſtery of this order was built by Norbert in the Iſle of France, three leagues to the weſt of Laon; and by him called *Præmonſtre*, *Præmonſtratum*, whence the order itſelf was denominated; though, as to the occaſion of that name, the writers of that order are divided.

The order was approved by Honorius II. in 1126. and again by ſeveral ſucceeding popes. At firſt the abſtinence from fleſh was rigidly obſerved. In 1245. Innocent IV. complained of its being neglected, to a general chapter. In 1288. their general, William, procured leave of pope Nicolas IV. for thoſe of the order to eat fleſh on journies. In 1460. Pius II. granted them a general permiſſion to eat meat, excepting from Septuageſima to Eaſter.

The religious of this order are cloathed in white, with a ſcapulary before the caſſock. Out of doors, they wear a white cloak and white hat; within, a little camail, and at church a ſurplice, *&c.*

In the firſt monaſteries built by Norbert, there was one for men, and another for women, only ſeparated by a wall. In 1137. by a decree of a general chapter, this practice was prohibited, and the women removed out of thoſe already built, to a greater diſtance from thoſe of the men.

PREMOTION, Præmotio, in the ſchools, the action of God co-operating with the creature, and determining him to act. See Predetermination and Action.

Phyſical premotion, according to Alvarez, Lemos, *&c.* is a complement of the active power, whereby it paſſes from the firſt act to the ſecond; *i. e* from a complete, and next power, to action. It is an influence or participation of the virtue of the firſt cauſe, which makes the ſecond cauſe actually active. See Cause.

PREMUNIENTES, in law, writs diſpatched to each biſhop to call them to parliament, warning them to bring with them the deans and archdeacons, one proctor for each chapter, and two for the clergy of his dioceſe. See Convocation.

PREMUNIRE *, Præmunire, a term uſed both for an offence, for a writ granted thereupon, and for the puniſhment thereof.

> * **The word is a corruption of the Latin, *præmonere*, q. d. to forewarn, or bid the offender take care; of which a reaſon may be drawn from the words of the ſtatute 27 *Edw.* 3. and the form of the writ, *Præmunire facias præfatum præpoſitum, & J. R. procuratorem, &c. quod tunc ſint coram nobis.***

Theſe will all be underſtood from one: anciently, then, the church of Rome, on pretence of her ſupremacy, and the dignity of St. Peter's chair, took upon her the diſpoſal of moſt of the biſhopricks, abbeys, and other eccleſiaſtical benefices of worth, by mandates, or bulls, called *expectative graces*, and *proviſiones*, before they become void. See Provision and Expectative.

Edward III. not brooking ſo intolerable an incroachment, made ſeveral ſtatutes againſt thoſe who drew the king's people out of the realm, to anſwer to things properly belonging to the king's court; and another to reſtrain the privilege of the pope.

The pontiff, however, ſtill perſiſted in his pretenſions; and the conflux of people from England to Rome, to ſue for them, was as great as ever.

This occaſioned Richard II. to make ſeveral ſtatutes of the like import with thoſe of Edward III. particularly one, where he aſſigned their puniſhment to be this; *That they ſhould be out of the king's protection, attached by their bodies*, i. e. *impriſoned during life*; *and loſe their lands, goods and chattels*; which is ſince called the *penalty of a* premunire.

Henry IV. made new ſtatutes againſt other abuſes of this kind not fully obviated in thoſe of his predeceſſors; adding certain new caſes, and laying on them the ſame penalty.

By later ſtatutes, the like penalty of *premunire* is laid on ſome other offenders; as, *e. gr.* by that 1 *Eliz.* on him who denies the king's ſupremacy a ſecond time.-- By 13 *Eliz.* on thoſe who aſſert the pope's authority, or refuſe the oath of ſupremacy; on ſeditious talkers of the inheritance of the crown; and ſuch as affirm the king or queen to be a heretic.---And by ſtatute 13 *Car.* 2. on thoſe who affirm that the parliament begun November 1640. is not yet diſſolved; or that there is any obligation in an oath or covenant, *&c.* to endeavour a change of government either in church or ſtate; or that the houſes of parliament have a legiſlative authority without the king.

Premunire is now chiefly uſed for the puniſhment appointed by the ſtatutes above-mentioned.---Thus, when it is ſaid a man for an offence *ſhall incur a* premunire, it is meant, he ſhall incur the penalty appointed by the ſtatute 16 *Ric.* 2. commonly called the *ſtatute of* premunire.

PRENDER *, in law, a power or right of taking a thing before it is offered. See Render.

> * **The word is formed from the French, *prendre*, to take.**

Such a thing *lies in* render, *but not in* prender. *Coke's Rep. part* 1. Sir John Peter's caſe.

Prender *de baron* is an exception to diſable a woman from purſuing an appeal of murder againſt the killer of her former huſband, taken from her having married a ſecond. See Appeal.

PRENOMEN, Prænomen, among the Romans, a proper name, or name prefixed to the general name of the family; as, Caius, Lucius, Marcus, *&c.* See Name.

The *prenomen* anſwers to our Chriſtian name, Peter, Paul, *&c.*

It was not introduced among the Romans till long time after the *nomen.* See Nomen.

The name of the family was given by the Romans to their children the day after thir birth; but the *prenomen* was not given them till they took the virile habit. See Virile.

Varro reckons up thirty *prænomina* among the Romans. The uſual ones may be reduced to eighteen.

The Greeks had no *prænomina*; they had but one name.

PRENOTION, Prænotio, or Præcognitio, a notice, or piece of knowledge preceding ſome other, in reſpect of time. See Notion.

Such is the knowledge of the antecedent; which muſt precede that of the concluſion. See Knowledge, Prejudice, *&c.*

PREPARANTIA, or Præparantia *vaſa*, in anatomy, the ſpermatic veſſels; being two arteries, and as many veins of the teſticles: thus called by the ancients, from an opinion that the ſeed began to be prepared herein. See Spermatic *veſſels*, Seed, and Generation.

PREPARATION, Præparatio, *apparatus*, in mathematics, makes one of the parts or branches of a demonſtration. See Demonstration.

If it be a propoſition in geometry that is to be demonſtrated, the *preparation* conſiſts in certain lines to be drawn in the figure: if a propoſition in arithmetic, in ſome computation to be made to come the more eaſily at the demonſtration.

Preparation, in chymiſtry and pharmacy, is applied to the ſeveral manners of managing the materia medica, and of diſpoſing it to ſerve the ſeveral purpoſes.

There are various *preparations* of mercury, antimony, and other drugs to purify them, ſublime, calcine, edulcorate them, *&c.* See Mercury, *&c.*

Crude antimony is uſed in ſudorific decoctions; though, when it has undergone a certain *preparation*, it becomes a violent vomitive. See Antimony.

PREPARATORY *torture.* See the article Torture.

PREPARED *antimony.* See the article Antimony.

Prepared *opium.* See the article Opium.

PREPENSED, Præpensus, in law, denotes *fore-thought.* In which ſenſe we ſay, *prepenſed malice*, &c.

If, when a man is ſlain upon a ſudden quarrel, there were malice *prepenſed* formerly between them, it makes it murder; and, as it is called in ſome ſtatutes, *prepenſed murder.* See Murder.

PREPOSITION, Præpositio, in grammar, one of the parts of ſpeech or diſcourſe. See Speech.

The *prepoſition* is an indeclinable particle, which yet ſerves to govern the nouns that follow it. Such are *per*, *pro*, *propter*, *in*, *with*, *through*, *from*, *by*, &c. See Particle.

They are called *prepoſitions*, becauſe *præpoſitæ*, placed before the nouns they govern. See Noun.

F. Buffier does not allow the *prepoſition* to be a part of ſpeech, but merely a modificative of a part of ſpeech, *viz.* of the noun; ſerving only to modify or circumſtantiate it. See Modificative.

PREPOSITUS *villæ* is ſometimes uſed for the chief officer of the king, in a town, manor, or village.

In ancient records, the *prepoſitus villæ* was no more than the bailiff of the lord of the manor. See Bailiff.

Prepoſitus villæ is ſometimes alſo uſed, in later writers, for the conſtable of a town, or petty conſtable. See Constable.

Prepositus *eccleſiæ.* See the article Church *reve.*

Quatuor homines **prepositi**, in Crompton, *&c.* denote four men of each town, which are to appear before the juſtices of the foreſt in their circuit.

PREPUCE, Præputium, in anatomy, the *fore-skin*; a prolongation of the cutis of the penis, covering the glans, or extremity of the yard.---See *tab. anat.* (*ſplanch.*) *fig.* 10. *lit. cc.* See alſo Penis and Glans.

Dr. Drake obſerves, that nature does not ſeem more various in any part of her works than in the *prepuce*; for the figure and proportion whereof there does not ſeem any ſtandard

Hence, probably, aroſe the neceſſity of circumciſion, ſo generally practiſed throughout the oriental parts; not out of a view to religion, but to cleanlineſs, and to prevent diſeaſes, which a detention of the mucus of the *ſub-preputial* glands might breed in thoſe hot countries. For even here, the ſame author adds, he has known ſome, who, having large *prepuces*, called *filbert-prepuces*, have been frighted at the appearance of a mucus oozing out upon a mere plenitude from between the *prepuce* and glans: which, it is probable, the great legiſlator of the Jews might have a view to in the firſt inſtitution of circumciſion. See Circumcision.

The skin of the *prepuce* is double; at the connexion of the internal skin, to the other part, are ſeveral oval and roundiſh glandules placed irregularly about the joining of the glans to the corpora cavernoſa, and on the glans itſelf.

Their uſe is to ſeparate a liquor to render the agitation of the *prepuce* on the glans eaſy. When this liquor becomes rancid, as upon old age, or venereal contacts, it excoriates the glans and *prepuce*; and even ſometimes contracts the latter, and renders it neceſſary to be divided, to afford a paſſage to the glans. See Phimosis and Paraphimosis.

PREROGATIVE, Prærogativa, a privilege, or pre-eminence, which one perſon has over another. See Privilege, *&c.*

The word is borrowed from the appellation of a century in ancient Rome, which gave the firſt vote, or ſuffrage, in the *comitia*, or aſſemblies for the election of magiſtrates; *quaſi* prærogati; becauſe firſt asked, or their ſuffrage firſt required. See Suffrage and Century.

Their vote was called *omen prærogativum*, becauſe the reſt uſually gave their votes the ſame way. See Omen.

Prerogative *of the king*, Prærogativa *regis*, is that power, pre-eminence, and privilege, which the king hath over, not only other perſons, but over the ordinary courſe of the common law, in right of his crown.

Such are theſe, that the king may pardon a perſon condemned to die: that the king's perſon is ſubject to no man's ſuit: his poſſeſſions cannot be taken from him by any violence, or wrongful diſſeizin: his goods and chattels are ſubject to no tribute, toll, or cuſtom, nor diſtrainable, *&c.* See KING.

PREROGATIVE *court*, is a court belonging to the archbiſhop of Canterbury, wherein all wills are proved, and all adminiſtrations granted, that belong to the archbiſhop by his *prerogative*; that is, where the party at his death had bona notabilia, five pounds or upwards, out of the dioceſe where he died, and within the archbiſhop's province. See PROBATE, BONA NOTABILIA, *&c.*

All citations and decrees of this court run in the name of the archbiſhop. See ARCHBISHOP.

This court, for the province of Canterbury, is kept in the common-hall in Doctors Commons, in the afternoon, next day after the arches. See ARCHES.

The judge is attended by the regiſter, who ſets down the decrees and acts of court; and keeps records, *&c.* all original wills and teſtaments of parties dying, having bona notabilia.

The place is uſually called the *prerogative office*, now kept in Dean's court; where, for a moderate fee, one may have a copy of any ſuch will. See WILL.

The archbiſhop of York hath alſo the like court, called his *exchequer*.

PRESAGE, PRÆSAGIUM, an augury, or ſign of ſomething to come. See AUGURY.

The Romans judged of future events by certain ſigns, which their ſuperſtition, or the artifice of their prieſts, had invented. Their moſt celebrated *preſages* were founded on the flight of birds, or the entrails of victims: all night-birds paſſed for birds of ill *preſage*. See VICTIM, *&c.*

It is a popular error, that comets *preſage* misfortunes. See COMET.

Cloſe weather, and a ſouthern wind, *preſage* rain. See WEATHER, *&c.*

PRESBYTA, πρεσβυτης, in optics, a term applied to perſons in whom the configuration of the cryſtalline of the eye is too flat, ſo that they ſee diſtant things clearly, but thoſe near at hand confuſedly. See VISION.

The reaſon is, that in near objects, the viſual rays paſſing the retina before they unite, there can be no diſtinctneſs, ſince the diſtinct baſe falls too far off beyond the retina. See CRYSTALLINE and RETINA.

This defect is helped only with convex-glaſſes, or ſpectacles; which will make the rays converge ſooner, and if they are well fitted, fall exactly on the retina. See CONVEX and SPECTACLE.

The word is formed from the Greek, πρεσβυς, *ſenex*; becauſe old people are naturally ſubject to this defect; time, and the friction of the eye-lids, *&c.* gradually wearing the ball flat.

Presbytæ are oppoſed to *myopes*, in whom the cryſtalline is too round. See MYOPES.

If the diſtance between the retina and the cryſtalline be too ſmall, the perſon will likewiſe be a *presbyta*. See CRYSTALLINE, *&c.*

PRESBYTER, a *prieſt*, or perſon in prieſts orders. See PRIEST.

He is thus called, from the Greek, πρεσβυτερος, *elder*, of πρεσβυς, *old*; becauſe, anciently, none were ordained but ſuch as were advanced in years. See ELDER, AGE, *&c.*

The great diſpute between the retainers to the Geneva and the Roman diſcipline, is about the ſameneſs or difference of *preſbyters* and biſhops, in the times of the apoſtles. See BISHOP and EPISCOPACY.

The *presbyteral* character is held indelible. See CHARACTER.

PRESBYTERIANS, a name aſſumed by the Calviniſts of Great Britain. See CALVINISM.

The *presbyterians*, as to doctrine, agree with the church of England: their chief difference lies in the point of diſcipline, *viz.* who ſhall appoint the governors of the church, and what ſubordination there ſhall or ſhall not be between them? See HIERARCHY.

The *presbyterians* allow of no hierarchy, no ſubordination in the perſons of their miniſters: biſhops and prieſts, they maintain, in the times of the apoſtles, were the ſame; and therefore, though they allow epiſcopacy as now ſettled in the church of England to be very ancient, yet they deny it to be *jure divino*. See BISHOP and EPISCOPACY.

In lieu of a ſeries of miniſters one over another, in quality of prieſts, biſhops, and archbiſhops, their polity conſiſts in a ſeries of aſſemblies, or ſynods: thus every miniſter is to be obedient to the claſſis under which he lives; and that claſs to a ſynod, provincial, claſſical, or œcumenical. See CLASS, SYNOD, PRESBYTERY, *&c.*

The power of ordination, with them, reſides in a claſſis; and none are admitted to adminiſter the ſacrament, but thoſe ordained by the impoſition of hands of other miniſters.

They make uſe of deacons to take care of their poor; and in the government of the church, call in lay-elders; whence their name, from the Greek, πρεσβυτερος, ſignifying *ſenior*, *elder*. See ELDER.

This is now the reigning diſcipline in the church of Scotland; as it was, during the inter-regnum, in England.

PRESBYTERY, PRESBYTERIUM, πρεσβυτηριον, an aſſembly of the order of presbyters, or prieſts, with lay-elders, for the exerciſe of church diſcipline. See PRESBYTERIAN.

The kirk, or church of Scotland, is divided into ſixty-nine *preſbyteries*, each conſiſting of a number of pariſhes, not exceeding 24, nor leſs than twelve.

The miniſters of theſe pariſhes, with one ruling elder choſen half-yearly, conſtitute a *presbytery*; who, meeting in their chief town, whence the *presbytery* is denominated, chuſe a moderator, or rather prolocutor, half-yearly.

They determine all appeals from kirk ſeſſions, *i. e.* from the ſeveral parochial aſſemblies; but can try nothing at the firſt inſtance cognizable before a kirk ſeſſion. See KIRK *ſeſſion*.

They compoſe all differences between miniſters and people; for which end they hold *presbyteral* viſitations in each pariſh, where they examine the regiſters of the kirk ſeſſions, *&c.*

They inquire into repairs of churches; ſee that the glebe, *&c.* ſuffer no dilapidations; appoint ſchools in the pariſhes; and ſee that the funds be not miſapplied.

It is they alone can exclude from the communion, licenſe probationers, ſuſpend, depoſe, and, in effect, determine all eccleſiaſtical matters within their diſtrict. From the *presbytery* there lies an appeal in all caſes to provincial ſynods. See SYNOD.

PRESBYTERY, *presbyterium*, is ſometimes alſo uſed for the choir of a church, becauſe anciently appropriated to the presbyters. See CHURCH and CHOIR.

In oppoſition to the *nave*, or body of the church, which was for the people. See NAVE, *&c.*

PRESCIENCE, in theology, *previſion*, or *fore-knowledge*; that knowledge which God has of things to come.

The doctrine of predeſtination is founded on the *preſcience* of God, and on the ſuppoſition of all futurity's being preſent to him. See PREDESTINATION.

Human reaſon can ſcarce reconcile the *preſcience* of God with the free-agency of man. See LIBERTY and NECESSITY.

How are we to admire the depth of the *preſcience* and wiſdom of God; who, in giving the firſt motion to matter, foreſaw all the poſſible combinations this firſt impreſſion might undergo during infinite ages! Malebr.

PRESCRIPTION, PRÆSCRIPTIO, in law, a right or title acquired by uſe and time.

Preſcription is a ſort of title introduced for aſſuring the property of effects in favour of perſons who have poſſeſſed them a certain time; and to keep off any who would diſquiet them, or recover the thing poſſeſſed, after the term fixed by the laws. See POSSESSION.

Tourreil calls *preſcription* a penalty impoſed by the laws upon negligence; and adds, that poſſeſſors who have no other title to plead but *preſcription*, are only legal uſurpers.

In effect, however, the law of *preſcription* does not puniſh the indolence of proprietors; but only interprets their ſilence for their conſent; preſuming, that a man who neglects to aſſert his right for a long ſeries of years, gives it up.

There are ſome of the lawyers who doubt, whether time and unjuſt *preſcription* be any legitimate means of acquiring? Others, more favourable, call it the *patroneſs of mankind*; as being a general preſumption, under which the law will have men live in peace.

In the common law, *preſcription* is uſually underſtood of a poſſeſſion from time immemorial, or beyond the memory of man; as, when my anceſtors, or his from whom I have an eſtate, have enjoyed and uſed it all the time whereof any memory remains.

But in the civil law, and even in our common law, there are *preſcriptions* of a much ſhorter date. *Preſcription* of forty years excludes all actions whatever. *Reform. Leg. Eccleſ.*

The cuſtom of Paris allows of a *preſcription* of ten years, if the parties be preſent; and twenty, if abſent, in favour of peaceable poſſeſſors of an inheritance, if they have any title, however controverted; and of thirty years in favour of thoſe who poſſeſs without any title at all.

In Normandy, a *preſcription* of forty years peaceable poſſeſſion is equivalent to a title, to immoveables; and for moveables, and perſonal actions, a *preſcription* of thirty years ſuffices.

In Romiſh countries, *preſcription* does not avail againſt the church, if ſhort of an hundred years. In France, *preſcription* of twenty years is admitted againſt all crimes, except duelling, which was excluded by a declaration of the year 1679. In matters of adultery, five years ſuffice, *i. e.* provided there have been a diſcontinuance of proſecution all that time.

By our ſtatutes, a judge or clerk convicted of falſe entering pleas, *&c.* may be fined within two years; but, thoſe elapſed, he *preſcribes* againſt the puniſhment of the ſtatute.

The crime of maintenance or embracery, whereby perjury is committed by a jury, muſt be proſecuted within ſix days; otherwiſe the parties *preſcribe*. See JURY.

There is no *preſcribing* againſt a man's lord; no *preſcription* avails to take off any ſervitude or tenure: a title is always required there.

The author of the hiſtory of the inquiſition obſerves, that no time of *preſcription* avails in matters of hereſy; even death itſelf does not ſecure the ſuſpected from the reſearches of that tremendous court. See INQUISITION.

PRESCRIPTION, in medicine, the act or art of aſſigning a proper and adequate remedy to a diſeaſe; from an examination of the ſymptoms thereof, and an acquaintance with the virtues and effects of the materia medica. See REMEDY and DISEASE.

The methodus præſcribendi is the laſt, finiſhing piece of furniture of a phyſician, and is the reſult of all the reſt; joined with a ready, preſent thought. See MEDICINE and PHYSICIAN.

To *preſcribe* with judgment, elegance, *&c.* a moderate acquaintance with pharmacy, *i. e.* with the forms and preparations of medicines, is required. See PHARMACY.

The merits of a bill or *preſcription* conſiſt in its being conciſe, pertinent, efficacious, and agreeable; in the beſt and ſuitableſt materials being pitched on; thoſe aſſembled in the moſt judicious proportions, made up in the beſt and moſt convenient form, and applied in the juſteſt doſe; a due regard being ſtill had to the non-naturals, regimen, intervals of application, *&c.* Sydenham excelled in *preſcription.* See DOSE, DIET, *&c.*

Preſcription is either *officinal*, or *extemporaneous*; the former conſiſts in ordering the medicines which the apothecaries keep by them ready prepared according to their diſpenſatory. See OFFICINAL and DISPENSATORY.

Extemporaneous is that which the phyſician frames of himſelf, *pro re nata*, according to the circumſtances of the patient, to be made up by the apothecary according to the phyſician's bill. See EXTEMPORANEOUS.

PRESENCE, PRÆSENTIA, a term of relation, uſed in oppoſition to *abſence*; and ſignifying the exiſtence of a perſon in a certain place, or the ſtate of a perſon conſidered as co-exiſting with another. See CO-EXISTENCE.

In this ſenſe, an obligation is ſaid to be paſſed in *preſence* of a notary and witneſſes. At the breaking open a ſeal of a minor, or an abſent perſon, the *preſence* of a ſubſtitute is neceſſary.

The ſchoolmen hold, that *preſence*, in ſpeaking of bodies, denotes not only a co-exiſtence, but a ſort of contact.

They diſtinguiſh two kinds of *preſence*; the one *virtual*, in which ſenſe a ſpirit, or mind, is ſaid to be *preſent* to a body when it acts thereon; the other *corporeal*, which conſiſts in a phyſical contact.

The treaſurers, *&c.* of France have what they call a *right of preſence*, a certain ſum due on their actual attendance in their offices; to oblige them to be the more aſſiduous in their function.

A perſon abſent in the ſervice of the king, or a community, is reputed as *preſent.*

The Roman catholics believe the real *preſence* of Jeſus Chriſt in the euchariſt, both in body and ſoul. See TRANSUBSTANTIATION.

PRESENT, PRÆSENS, in grammar, the firſt tenſe, or inflexion of verbs; expreſſing the time *preſent*, or that which now is. See TENSE.

It is a particular piece of addreſs in eloquence, to make uſe of the *preſent* for a paſt tenſe, in order to expreſs a paſt action with the more force and warmth.---Thus, The fleet *is* no ſooner in full ſea, than the heavens *begin* to lour, the winds *riſe*, the waves *daſh* againſt each other, thunder *rolls*, and lightning *glares* on all ſides; the ſhips *loſe* their maſts and rudders, and *are* driven impetuouſly againſt the rocks.

PRESENTATION, PRÆSENTATIO, in the canon law, the act of a patron, nominating and offering his clerk to the biſhop or collator, to be inſtituted in a benefice of his gift, which is void. See PATRON, COLLATION, *&c.*

The *preſentation* muſt be tendered to the biſhop within an hundred eighty-two days after the living is vacant, elſe it lapſes to the biſhop; and if the biſhop do not collate in half a year more, it lapſes to the archbiſhop; and from him in a like time to the king, who may ſtay as long as he pleaſes; for *nullum tempus occurrit regi.*

By ſome cuſtoms, a lay-patron has only four months time to make his *preſentation* in; and if he have preſented a perſon incapable, he may vary it, and make a new *preſentation* within the four months. See BENEFICE.

The word is formed from the ancient phraſe, *præſentare ad eccleſiam*, which originally ſignified the patron's ſending, or placing a perſon in a church; and which itſelf is formed from *repræſentare*, which, Selden obſerves, is uſed in the council of Lateran, and elſewhere, for *præſentare*. See PARSON.

PRESENTATION *of the virgin*, is a feaſt of the Romiſh church held on the twenty-firſt of November, in memory of the holy virgin's being preſented by her parents in the temple, to be there educated. See VIRGIN.

It is pretended, that there were young women brought up in the temple of Jeruſalem; which ſome endeavour to prove from the ſecond book of Maccabees, *Sed & virgines quæ concluſæ erant, procurrebant ad* Oniam; which is the ſentiment of Eutochius on this paſſage. And Lyranus adds, that other more ancient authors obſerve, that young women were educated till marriage, either in the temple, or at leaſt in buildings contiguous thereto.

Emanuel Comnenus, who began to reign in 1143. makes mention of this feaſt in his conſtitution. Some even imagine it to have been eſtabliſhed in the eleventh century among the Greeks; and think they ſee evident proofs of it in ſome homilies of George of Nicomedia, who lived in the time of Photius; ſo that it ſeems a miſtake in ſome modern critics to refer its inſtitution to Gregory XI. in 1372.

Some take it to have been inſtituted in memory of the ceremony practiſed among the Jews for their new-born females; correſponding to the circumciſion on the eighth day for males. See CIRCUMCISION.

PRESENTATION *of our lady* alſo gives the title to three orders of nuns. See RELIGIOUS.

The firſt, projected in 1618. by a maid named *Joan of Cambray*. The habit of the nuns, according to the viſion ſhe pretended to have, was to be a grey gown of natural wool, *&c.* but this project was never accompliſhed.

The ſecond was eſtabliſhed in France about the year 1627. by Nic. Sanguin, biſhop of Senlis. It was approved by Urban VIII. This order never made any great progreſs.

The third was eſtabliſhed in 1664. when Fred. Borromeo, being apoſtolical viſitor in the Valteline, was intreated by ſome devout maids at Morbegnobourg to allow them to live in community in a retired place; which he granted, and erected them into a congregation, under the title of *congregation of our lady*. They live under the rule of St. Auguſtin.

PRESENTEE, in the canon law, a clerk preſented by a patron to a collator. See PRESENTATION.

PRESENTMENT, in law, a denunciation or information of the jurors themſelves, or of ſome other officer, as a juſtice, conſtable, ſearcher, ſurveyor, *&c.* of an offence, inquirable in the court whereto it is preſented. See JURY, *&c.*

Aſſiſe of darrein PRESENTMENT. See the article ASSISE.

PRESENTS, PRÆSENTIA, *free-gifts*, or *gratuities*; eſpecially thoſe given by the clergy, or the ſtates of a realm, to a king. See BENEVOLENCE.

They are ſo called, becauſe given into the hands of a perſon preſent; by which they are diſtinguiſhed from *munera*, gifts, which are ſent to the party, or delivered by the intervention of a third perſon.

Thus the XVIIIth law, *de verb. ſignif. Abſentibus res donari dicantur, munera autem mitti, &* præſentia *offerri.*

There is no accoſting the eaſtern princes without making them fine *preſents.* Kings uſually make rich *preſents* to embaſſadors ſent to their courts.

PRESEPE, or PRÆSEPE, in aſtronomy, a name given to three nebulous ſtars in the breaſt of the ſign cancer, or the crab; two of them of the ſeventh, the third of the ſixth magnitude.--Their longitudes, latitudes, *&c.* ſee among thoſe of the other ſtars in CANCER.

PRESERVATIVE, or PRÆSERVATIVE, in medicine, a remedy taken by way of precaution; or to ſecure a man from a diſeaſe that threatens him. See REMEDY.

The principal *preſervatives*, according to Boerhaave, are abſtinence, quiet, drinking of warm water; and after this, a gentle and continued motion till the firſt appearance of ſweat; then a profuſe ſleeping, the body well covered.

By ſuch means, craſs humours are diluted, the veſſels are relaxed, and noxious matter excreted. He adds, that the beſt defence againſt the force of external cold, is to leſſen the winter's cloathing late in the ſpring, and to increaſe the ſummer's cloathing ſoon in autumn.

In time of plague, *preſervatives* are very neceſſary againſt the contagion of the air, *&c.*---See PLAGUE and CONTAGION.

Generous wines, cardiacs, and ſudorifics, are *preſervatives.*

Dr. Alprunus tells us, he made inciſions with a lancet in inguine dextro & ſiniſtro, and put in ſetons, to give paſſage to the venom; which proved an excellent *preſervative* againſt the plague that raged at Prague in 1680.

Dr. Wenceſlaus Dobr. Zenſky de Nigro Ponte gives us an univerſal *preſervative* againſt infection in all diſeaſes. Whoever, ſays he, in converſing with patients of any kind, would *preſerve* himſelf from infection, muſt, while he is within the ſphere of their effluvia, never ſwallow his ſpittle, but ſpit it out: for he conceives it to be the ſpittle that firſt imbibes the infection. See SALIVA.

PRESERVING *of timber.* See the article TIMBER.

PRESIDENT, PRÆSES, an officer created, or elected, to *preſide* over a company, or aſſembly; ſo called in contradiſtinction to the other members, who are termed *reſidents.*

Lord PRESIDENT *of the council* is the fourth great officer of the crown; as ancient as the time of king John, when he was ſtyled *conciliarius capitalis.* See COUNCIL.

His office is to attend on the king, to propoſe buſineſs at the council-table, and to report to the king the ſeveral tranſactions there.

PRESIDIAL, a tribunal, or bench of judges, eſtabliſhed in the ſeveral conſiderable cities of France, to judge ultimately, or in the laſt reſort, of the ſeveral cauſes brought before them by way of appeal from the ſubaltern judges.

The *preſidials* make one company with the officers of the bailiages and ſeneſchauſſees, where they are eſtabliſhed.

The edict of 1551. eſtabliſhes *preſidials* under theſe two conditions; firſt, that they may judge definitely, and without appeal, to the ſum of 250 livres, or 10 livres *per annum.* And, 2. to the ſum of 1500 livres by proviſion.

When they judge in the former caſe, they are obliged to pronounce it with theſe words, *par jugement dernier*; in the ſecond, *par jugement préſidial.*

When they judge finally of appeals from inferior judges, they may not pronounce the ſentence or appeal, *au neant*, void; that form only belonging to the ſovereign courts: but are to pronounce ſimply, that *it has been well or ill-judged.*---To judge *preſidially* and finally, they muſt be at leaſt ſeven in number.

PRESS, Prelum, in the mechanic arts, a machine made of iron or wood; ſerving to ſqueeze or compreſs any body very cloſe. See Machine and Compression.

The *ordinary preſſes* conſiſt of ſix members or pieces; *viz.* two flat, ſmooth planks, between which the things to be preſſed are laid; two ſcrews, or worms, faſtened to the lower plank, and paſſing through two holes in the upper; and two nuts in form of an S, ſerving to drive the upper plank, which is moveable, againſt the lower, which is ſtable, and without motion.

Presses *uſed for expreſſing of liquors*, are of various kinds; ſome, in moſt reſpects the ſame with the common *preſſes*, excepting that the under plank is perforated with a great number of holes, to let the juice expreſſed run through into a tub, or receiver, underneath.

Others have only one ſcrew, or arbor, paſſing through the middle of the moveable plank; which is made to deſcend into a kind of ſquare box, full of holes on all ſides, through which the juices flow in proportion as the arbor is turned, by means of a little lever applied thereto.

Press *uſed by joiners*, to keep cloſe the pieces they have glued, eſpecially panels, *&c.* of wainſcot, is very ſimple; conſiſting of four members, *viz.* two ſcrews and two pieces of wood, four or five inches ſquare, and two or three feet long, whereof the holes at the two ends ſerve for nuts to the ſcrews.

Press *uſed by inlayers*, reſembles the joiners preſs, except that the pieces of wood are thicker, and that only one of them is moveable; the other, which is in form of a treſſel, being ſuſtained by two legs, or pillars, jointed into it, at each end.

This *preſs* ſerves them for ſawing and cleaving the pieces of wood required in marquetry, or inlaid work. See Marquetry.

Founders Press, is a ſtrong ſquare frame, conſiſting of four pieces of wood firmly joined together with tenons, *&c.*

This *preſs* is of various ſizes, according to the ſizes of the moulds; two of them are required to each mould, at the two extremes whereof they are placed; ſo as that by driving wooden wedges between the mould and the ſides of the *preſſes*, the two parts of the mould wherein the metal is to be run, may be preſſed cloſe together. See Foundery.

Printing Press is a very complex machine, ſerving to *preſs* the ſheet of paper upon the forms, which the workman has firſt ſmeared or *beat* over with ink; ſo as that the characters, or types, whereof the forms are compoſed, may leave their marks or impreſſions thereon. See Printing.

The parts of this *preſs* are the two *cheeks*; ſee Cheek; the four planks, *viz.* the *cap*, *head*, *ſhelves*, and *winter*, the *back* of the *preſs*, where the ink is placed, the *ſpindle* with its *nut*, the *hoſe* with its *books*, the *platten-plate* with its *plug*, the *carriage*, the *coffin*, *gallows*, *tympan* and its *joints*, &c. Laſtly, the *handle*, to bring the *plank* on which the *coffin* is fixed backwards and forwards; and the *bar* to work the ſpindle, and preſs the *platten* on the forms.

See the form and uſe of theſe ſeveral parts deſcribed under the article Printing *preſs*.

Meſſenger of the Press. See the article Messenger.

Rolling Press, is a machine uſed for the taking off prints from copper-plates.

It is much leſs complex than that of the letter-printers. See its deſcription and uſe, under the article *rolling preſs* Printing.

Press, in coining, is one of the machines uſed in the ſtriking of money; differing from the balance, in that it has only one iron-bar to give it motion, and preſs the moulds or coins; is not charged with lead at its extreme, nor drawn by cordage. See Coining.

Binders Press, or *cutting* Press, is a machine uſed equally by book-binders, ſtationers, and paſtboard-makers; conſiſting of two large pieces of wood, in form of cheeks, joined by two ſtrong wooden ſcrews; which being turned by an iron bar, draw together, or ſet aſunder, the cheeks, as much as is neceſſary for the putting in of the books, or paper, to be cut.

The cheeks are placed flat on a wooden ſtand, in form of a cheſt, into which the cuttings fall. A-ſide of the cheeks are two pieces of wood, of the ſame length with the ſcrews; ſerving to direct the cheeks, and prevent their approaching or opening unequally upon turning the ſcrew.

Upon the cheeks is the ſhaft or fuſt, to which the cutting-knife is faſtened by a ſcrew, which has its key to diſmount it on occaſion, to be ſharpened.

The ſhaft conſiſts of ſeveral parts; among the reſt, a wooden ſcrew or worm, which catching within the nuts of the two feet that ſuſtain it on the cheeks, bring the knife to the book or paper, which is faſtened in the *preſs* between two boards. This ſcrew, which is pretty long, has two directories, or pieces of wood, which, both as to their form and effect, reſemble thoſe of the ſcrews of the cheeks. To make the ſhaft ſlide ſquare and even on the cheeks, ſo that the knife puſhed along by the workman may make an equal paring; that foot of the ſhaft where the knife is not fixed, has a kind of groove, directed by a thread faſtened along one of the cheeks. Laſtly, the knife is a piece of ſteel, ſix or ſeven inches long, flat, thin and ſharp; terminating at one end in a point like that of a ſword; and at the other in a ſquare form, which ſerves to faſten it to the ſhaft. See Book *binding*.

Press, in the woollen manufactory, is a large wooden machine, ſerving to preſs cloths, ſerges, rateens, *&c.* thereby to render them ſmooth and even, and to give them a gloſs. See Cloth, *&c.*

This machine conſiſts of ſeveral members; the principal whereof are the *cheeks*, the *nut*, and the *worm* or *ſcrew*, accompanied with its bar, which ſerves to turn it round, and make it deſcend perpendicularly on the middle of a thick wooden plank, under which the ſtuffs to be preſſed are placed. See Pressing.

The calender is alſo a kind of *preſs*, ſerving to preſs or calender linens, ſilks, *&c.* See Calender.

PRESSING, in the manufactures, the action of violently ſqueezing a cloth, ſtuff, linen, *&c.* in a *preſs*, to render it even, ſmooth, poliſhed, and gloſſy. See Cloth, *&c.*

This, in the ſilken and linen manufactures, they properly call *calendering*. See Calender.

There are two manners of *preſſing*; the one *hot*, the other *cold*.

Method of Pressing *cold*.---After the ſtuff has had all its preparations, *i. e.* has been ſcoured, fulled, and ſhorn, (ſee Fulling and Sheering) it is folded ſquare, in equal plaits; and a ſkin of velum, or fine ſmooth paſtboard, put between each plait. Over the whole is laid a ſquare wooden plank; and in this condition it is put in the preſs; which is driven tight down by means of the ſcrew turned full upon it, by the hands aſſiſted with levers.

After it has lain a ſufficient time under the preſs, they take it out, remove the paſtboards or velums; and lay it up to keep. It may be obſerved, that ſome do not uſe a preſs with a ſcrew in *preſſing cold*; but content themſelves with laying the ſtuff on a firm table, after plaiting and paſtboarding it as before; covering the whole with a wooden plank, and loading this with a weight, greater or leſs, as is judged neceſſary.

Method of Pressing *hot*.---The ſtuff having received all its preparations, as before, it is ſprinkled a little with water, ſometimes with gum-water ſpurted over it with the mouth; then plaited equally; and between each two plaits are put leaves of paſtboard; and between every ſixth and ſeventh plait, as well as over the whole, an iron or braſs plate, well heated in a kind of furnace for the purpoſe.

This done, it is laid upon the preſs; and a ſcrew brought forcibly down upon it, by means of a long iron bar.

Under this preſs are laid five or ſix pieces one over another, at the ſame time; all furniſhed with their paſtboard and iron plates. When the plates are well cold, they take the ſtuffs from under the preſs, remove the paſtboards and plaits, and ſtitch it a little together, to keep it in the plaits.

This manner of *preſſing* woollen ſtuffs is very pernicious, and was only invented by the manufacturers to cover the defects of the ſtuffs, and excuſe their not giving them all the ſhearings, dyes, and preparations, that are neceſſary to render them perfect. Accordingly it has been frequently prohibited.

Pressing *to death*. See the article Paine *fort & dure*.

PRESSION, or Pressure, in the Carteſian philoſophy, an impulſive kind of motion, or rather endeavour to move, impreſſed on a fluid medium, and propagated through it. See Motion, Fluid, and Cartesian.

In ſuch a *preſſion* the Carteſians ſuppoſe the action of light to conſiſt; ſee Light. And in the various modifications of this *preſſion* by the ſurfaces of bodies, whereon that medium is thus preſſed, they ſuppoſe the various colours to conſiſt, *&c.* See Colour.

But Sir Iſaac Newton has taught us better: for if light, *e. gr.* conſiſted only in a *preſſion* propagated without actual motion, it could not agitate and warm ſuch bodies as reflect and refract it, as we actually find it does; and if it conſiſted in an inſtantaneous motion, or one propagated to all diſtances in an inſtant, as ſuch *preſſion* ſuppoſes, there would be required an infinite force to produce that motion every moment in every lucid particle.

And if light conſiſted either in *preſſion*, or in motion propagated in a fluid medium, whether inſtantaneouſly, or in time, it muſt follow, that it would inflect itſelf *ad umbram*; for *preſſion* or motion in a fluid medium, cannot be propagated in right lines beyond any obſtacle which ſhall hinder any part of the motion; but will inflect and diffuſe itſelf every way into thoſe parts of the quieſcent medium, which lie beyond the ſaid obſtacle.

Thus the force of gravity tends downwards, but the *preſſion* which ariſes from that force of gravity, tends every way with an equable force; and with equal eaſe and force is propagated in crooked lines as in ſtrait. Waves on the ſurface of water, while they ſlide by the ſides of any large obſtacle, do inflect, dilate, and diffuſe themſelves by degrees into the quieſcent water lying beyond the obſtacle. The waves, pulſes, or vibrations of our air, in which ſounds conſiſt, do manifeſtly inflect themſelves, though not ſo much as the waves of water; for the ſound of a bell, or of a cannon, can be heard over a hill, which intercepts the ſonorous object from our ſight; and ſounds will be propagated as eaſily through crooked tubes as through ſtrait.

But light is never obſerved to go in curve lines, nor to inflect itſelf *ad umbram*. For the fixed ſtars do immediately diſappear on the interpoſition of any of the planets, as well as ſome parts of the ſun's body by the interpoſition of the moon, Venus, or Mercury.

PRESSURE *of the air*. See the article AIR.

Moſt of the effects anciently aſcribed to the fuga vacui, are now accounted for from the weight and *preſſure* of the air. See VACUUM.

The *preſſure* of the air on the ſurface of our earth, is balanced by a column of water of the ſame baſe, and about thirty-five feet high; or one of mercury of about twenty-nine inches. See TORRICELLIAN *experiment*, and BAROMETER.

The *preſſure* of the air on every ſquare inch on the ſurface of the earth, is computed to be about fifteen pounds avoirdupois. See BATHING.

PRESSURE *of fluids*. See the article FLUID.

PREST*, a duty in money, paid by the ſheriff upon his accounts in the exchequer, for money left or remaining in his hands.

*** The word is French, *preſt*, where it ſignifies ready.**

PREST-MONEY is a ſum of money which binds thoſe who receive it, to be ready at command, at all times appointed: chiefly underſtood in the liſting of ſoldiers.

PREST-SAIL, in the ſea language, is when a ſhip carries all the ſail ſhe can poſſibly croud.

This is ſometimes done in giving chace, *&c.* but it is a dangerous experiment, leſt the ſhip over-ſet, or bring her maſts by the board; in which latter caſe ſhe becomes an eaſy prey.

Auditors of the PREST. See the article AUDITOR.

PRESTATION-MONEY, a ſum of money paid yearly by archdeacons, and other dignitaries, to their biſhop, *pro exteriori juriſdictione*.

PRESTATION, PRÆSTATIO, was alſo anciently uſed for other payments: *Et quieti ſint de* præſtatione *muragii*, Chart. Hen. 7. ---Sometimes alſo for *pourveyance*.

PRESTER*, a meteor, conſiſting of an exhalation thrown from the clouds downwards with ſuch violence, as that by the colliſion it is ſet on fire. See METEOR.

*** The word is Greek, *πρηστηρ*, the name of a kind of ſerpent, called alſo *dipſas*, to which this meteor is ſuppoſed to bear a reſemblance.**

The *preſter* differs from the thunder-bolt in the manner of its inflammation; and in its burning and breaking every thing it touches with greater vehemence. See THUNDER-BOLT.

PRESTER *John*, or *Jean*, an appellation given the emperor of the Abyſſinians; becauſe anciently the princes of this country were really prieſts, and the word *jean* in their language ſignifies *king*.

It was the French who firſt made him known in Europe under this title. His empire was anciently of vaſt extent; at preſent it is confined to ſix kingdoms, each about the bigneſs of Portugal.

The name *Preſter John* is altogether unknown in Ethiopia, and took its riſe hence, that the people of a province where this prince uſually reſides, when they requeſt any thing, ſay, *Jeancoi*, i. e. my king. His proper title is, *The Grand Negus*.

There is alſo a *Preſter John* of Aſia, mentioned by M. Polo the Venetian. His juriſdiction is in the country of Cangingu, between China, Siſan, and Thibet; a kingdom mightily valued by the Chineſe for its policy, and the number of its fortified cities; though they have uſually the utmoſt contempt for foreign countries.

Some ſay this latter is ſo called from a Neſtorian prieſt, mentioned by Albericus, towards the year 1145. to have mounted the throne. Others, that he takes the name from a croſs which he bears in his hand as a ſymbol of his religion.

PRESTIMONY, PRÆSTIMONIA, in the canon law, a term about which authors are much divided.---It is derived *à præſtatione quotidiana*, and is by ſome defined a kind of benefice ſerved by a ſingle prieſt: in which ſenſe, *preſtimony* is the ſame with a presbyterial chapel. See BENEFICE.

Others will have *preſtimony* to be the incumbency of a chapel, without any title or collation; ſuch as are moſt of thoſe in caſtles, where prayers or maſs are ſaid; and which are mere oratories un-endowed.---Whence alſo the term is applied in the Romiſh church to certain perpetual offices beſtowed on canons, religious, or others, for the ſaying of maſſes, by way of augmentation of their livings.

Others, again, will have *preſtimony* to be a leaſe or conceſſion of any eccleſiaſtical fund, or revenue belonging to a monaſtery, to be enjoyed during life.

Du Moulin makes *preſtimony* a profane benefice, which, however, has a perpetual title, and an eccleſiaſtical office with certain revenues attached to it; which the incumbent is allowed to ſell, and which may be poſſeſſed without tonſure: ſuch as the lay church-wardens of Notre-dame. He adds, that in propriety, the canonries of chapels are benefices of this nature.

Upon the whole, the ſureſt opinion ſeems to be this, that *præſtimony* is a fund or revenue appropriated by the founder for the ſubſiſtence of a prieſt, without being erected into any title of benefice, chapel, prebend, or priory; and which is not ſubject either to the pope, or to the ordinary; but whereof the patron, and thoſe who have a right from him, are the collators, and nominate and confer, *pleno jure*.

PRESUMPTION, PRÆSUMPTIO, in law, a ſuſpicion, or conjecture founded on a veriſimilitude.

Preſumption is of three ſorts.---1. *Violent*, which many times is allowed a full proof; as if one be killed in a houſe, and a man is ſeen to come out of the houſe with a bloody ſword, and no other perſon was at that time in the houſe; this, though but a *preſumption*, is a proof.---2. *Probable*, which has but a ſmall effect.---3. *Light*, or *temerarious*, which is of no prevalency at all.

In caſes of a charter, or feoffment, if all the witneſſes to the deed be dead; the violent *preſumption* that ſtands for a proof, gives continual and quiet poſſeſſion: *Stabit* præſumptio, *donec probetur in contrarium*. Coke on Lit.

PRESUMPTION was alſo anciently uſed for *intruſion*. See INTRUSION.

PRESUMPTIVE *heir*, the next relation, or heir at law, to a perſon; who is to inherit from him *ab inteſtato*; and who, it is preſumed, will be heir: nothing but a contrary diſpoſition of the teſtator being able to prevent him. See HEIR.

PRETENCE, in heraldry. See the articles INESCUTCHEON and ESCUTCHEON *of pretence*.

PRETENSED, or PRETENDED *right*, in law, is where one is in poſſeſſion of lands and tenements, which another, who is out, claims and ſues for.---Here the *pretenſed right* is in him who ſo claims or ſues.

PRETER *naturam*, in medicine, *&c.* See the article NATURE.

PRETER, or PRETERIT, PRÆTERITUS, *paſt*, in grammar, an inflexion of verbs, expreſſing the tenſe or time paſſed. See VERB.

Preter, or *preterit*, is a general name that comprehends all the inflexions correſponding to the ſeveral tenſes, or ſeveral circumſtances and relations of the time paſt; all which the Latins, *&c.* diſtinguiſh by particular inflexions or terminations of the verb; which make the proper notion of tenſes. See TENSE.

The modern languages, particularly the Engliſh, in lieu of different terminations of the verbs themſelves, have uſually recourſe to thoſe of their auxiliaries and participles. See VERB and PARTICIPLE.

The *preter*, or paſt time, is ſubdivided by grammarians into *preter-imperfect*; as, *e. gr. I had, I thought*; in the Latin, *Habebam, cogitabam*; in the French, *J'avois, je penſois*;---the *preter-perfect*, as, *I have had, I have thought, habui, cogitavi, j'ai eu, j'ai penſé*;---and *preter-pluperfect*, as, *I had thought, I had had, habueram, cogitaveram, j'eus eu, j'eus penſé*.

The Engliſh have properly but two caſes or kinds of the *preter* tenſe; *viz.* the *preter* time of the imperfect action; as, *I was at ſupper then*, but had not yet done it: and the *preter* time of the perfect action; as, *I had then ſupped*, and it was then done.---The *preter* tenſe is ofteneſt formed of the preſent tenſe, by adding *ed*; as, *I burned*.

The French have a particular caſe of the *preter-perfect*, which F. Buffier calls the *preterit-ſimple*, in oppoſition to the former, called the *preterit-compoſite*; others call it the *preterit-indefinite*, becauſe expreſſing a thing done indeterminately; as, *j'ecrivis hier*. This anſwers to the aoriſtus of the Greeks; and in the diſtinction of this from the compound *preterit* does one of the greateſt niceties in the practice of the French language conſiſt. See AORISTUS.

In the paſſive voice, the Latins, French, *&c.* have recourſe to participles and auxiliaries, like the Engliſh, to form their *preter* tenſes; as, *I was loved, amatus eram, j'etois aimé*, &c.

PRETERIT, PRÆTERITUS, in the Roman juriſprudence.--*Infans* PRÆTERITUS is that of whom the father has forgot to make mention in his teſtament; which renders it intirely null. See TESTAMENT.

Exheredation of his ſon is allowed in a father, but never *preterition*.

PRETERITION, or PRETERMISSION, in rhetoric, a figure whereby, in pretending to paſs over a thing untouched, we make a ſummary mention thereof. See PARALEPSIS.

I will not ſay he is valiant, he is learned, he is juſt, &c.

The moſt artful praiſes are thoſe given by way of *preterition*. See RETICENCY.

PRETERNATURAL *rains*. See the article RAIN.

PRETEXT, or PRETENCE, a colour, motive, or cauſe, either real, or apparent. See COLOUR.

PRETEXTA, or PRÆTEXTA, among the Romans, was a long white gown, or toga, having a band or border of purple at bottom. See TOGA.

It was worn by children of quality till the age of puberty, *i. e.* by boys till ſeventeen, at which time they laid it aſide, and aſſumed the virile gown. Girls wore it till marriage. See VIRILE.

It took its name *pretexta*, according to Godwyn, *quod ei purpura* prætexta *erat*, becauſe guarded about with purple ſilk.

The *pretexta*, at firſt, was a robe of ſtate, or ceremony, worn only by the chief magiſtrates, and the prieſts; nor was it lawful for ſuch who wore this gown to be arraigned, or ſentence to paſs againſt them, till it was pulled off.

In continuance of time it was permitted to noblemens children; and, at length, even to all Roman children in general.

PRETIOUS. See the article PRECIOUS.

PRETIUM *ſepulchri*, in old law-books, *&c.* thoſe goods accruing to the church wherein a corps is buried.

In the Iriſh canons, *lib.* 19. *cap.* 6. it is ordered, that along with every body that is buried, there go his cow, horſe, apparel, and the furniture of his bed; none of which may be diſpoſed of otherwiſe than for the payment of debts, *&c.* as being familiars and domeſtics of the deceaſed. See HERIOT, MORTUARY, *&c.*

PRETOR, PRÆTOR, an eminent magiſtrate, or miniſter of juſtice, in ancient Rome. See JUDGE and JUSTICE.

In the firſt ages of the commonwealth, all the great magiſtrates were ſtyled *pretors*; afterwards, the title was beſtowed on all the principal officers of the army: at laſt, *pretor* became reſtrained to a particular magiſtrate.

About the year of Rome 388. the people ſoliciting to have one of the conſuls always choſen from among themſelves, the ſenators granted it, on condition that a new magiſtracy ſhould be erected, to be filled wholly from among the patricians: ſuch was the origin of the *preture*, *prætura*; which, Livy obſerves, was firſt diſcharged by Spurius Furius; and whoſe office was to look to the adminiſtration of juſtice and equity between man and man; much in quality of a lord chief juſtice, or lord chancellor, or rather both in one.

But buſineſs increaſing in proportion as the empire was inlarged, a ſecond *prætor* was created, to take cognizance of the affairs of foreigners reſiding at Rome: upon which the former was diſtinguiſhed by the title of *prætor urbanus*, or *major*; and the latter by that of *prætor peregrinus*, or *minor*.

The number, in after-times, was much increaſed: under the reign of Auguſtus there were twelve *pretors*, and afterwards eighteen; two whereof were called *prætores cereales*, as being charged with the providing of corn and grain; and two others *prætores fidei commiſſarii*..---In the code, *l.* I. *t.* 39. we find a law of the emperors Valentinian and Marcian, which reduces the *pretors* to three.

The office of the *pretor*, or *prætor urbanus*, was to render juſtice in the city: he had a power to interpret the laws, to ſupply and reform them; and even to make new ones, when the public good required it. See CIVIL *law*.

In the inſtitutes, the edicts of the *pretors* are called *jus honorarium*; whence it ſhould ſeem, they had only the force of laws out of reſpect to that eminent magiſtrature; the buſineſs of the *pretor* being rather to look to the obſervation of the old laws, than to make new ones. See EDICT.

Some are of opinion, he had not the *jus gladii*, the power of the ſword; the cognizance of criminal matters being the ſpecial province of the prefect of Rome. See PREFECT.

But others are of another ſentiment. In the general, it is very difficult to fix preciſely how far his power extended. When he walked, he was preceded by ſix lictors; and was cloathed with the robe called *trabea*.

His authority, like that of the other magiſtrates, was very much weakened and reduced under the emperors. In the Digeſt and Code is a title *de officio prætoris*.

PRETOR was alſo a title among the Romans, given the governor of a province, who had ſerved the office of *pretor*. See PROPRETOR.

Whence provinces governed by *pretors*, or reſtrained to thoſe who had diſcharged that office, were called *pretorian provinces*. See PROVINCE.

PRETORIAN *guards*, PRÆTORIÆ *cohortes*, were the ſoldiers of the emperors guard; ſo called, as ſome imagine, from their place or ſtation in the palace or court called *prætorium*. See PRETORIUM.

Their inſtitution is owing to Scipio Africanus, who firſt eſtabliſhed a company of the braveſt men in his army, picked out for the purpoſe, to be his guard, and never to ſtir from his ſide in battle. See GUARD.

Their number was at length increaſed, as Dion tells us, to ten thouſand. They were commanded by an officer created by Auguſtus, called *præfectus prætorii*. See PREFECT.

PRETORIUM, PRÆTORIUM, among the Romans, the place, hall, or court, wherein the pretor of a province lived, and wherein that magiſtrate ſat to adminiſter juſtice to the people. See PRETOR.

There were of theſe *pretoriums* in all the cities of the Roman empire.---The ſcripture mentions that of Jeruſalem under the name of *judgment-hall*; and there are ſtill ſome remains of one at Niſmes in Languedoc.

PRETORIUM was alſo the tent or pavilion of the general of the Roman army; wherein councils of war, *&c.* were held. See TENT and PAVILION.

From the time of Auguſtus, the emperor's tent in the camp was diſtinguiſhed by the title of *prætorium Auguſtale*.

PRETORIUM was alſo a place in Rome where the pretorian guards were lodged. See PRETORIAN.

Some will have the *pretorium* to be properly the tribunal of the *præfectus prætorii*; or an auditory deſtined for the rendering of juſtice in the emperor's palace. See PREFECT.

This they argue from St. Paul's epiſtle to the Philippians; and from this place called *prætorium*, they will have the guards to have been denominated *prætoriani*, becauſe aſſembled here for the emperor's ſafety.

Others will not allow the *pretorium* to be any tribunal, or ſeat of juſtice, but merely the imperial guard-houſe.

Perizonius has an expreſs diſſertation to prove, that the *pretorium* was no court of juſtice in St. Paul's time; but the camp or place where the *pretorian* guards were quartered. He adds, that the name *pretorium* was not given to places where juſtice was adminiſtered till long time after; when the office of the *præfectus prætorii* was converted into a civil function.

PREVARICATION, PRÆVARICATIO, in the civil law, is where the informer colludes with the defendant, and ſo makes only a feigned proſecution.

Sylvius, in his comments on Cicero, *pro Cluentio*, gives us the difference between the three terms, *calumniari*, *prævaricari*, and *tergiverſari*. He who in his accuſation forges faults never committed, is ſaid *calumniari*: he who undertakes one's ſuit, and either will not add reaſons in behalf of his client, or not anſwer the objections of his adverſary, when he is able, is ſaid *prævaricari*: and he who deſiſts in his accuſation, and lets the ſuit drop, *tergiverſari*.

PREVARICATION, in our law, is when a man falſly and deceitfully ſeems to undertake a thing, with intention that he may deſtroy it: *e. gr.* where a lawyer pleads booty, or acts by colluſion, *&c.*

PREVARICATION is alſo uſed for a ſecret abuſe committed in the exerciſe of a public office, or of a commiſſion given by a private perſon.

PREVARICATOR, PRÆVARICATOR, in the univerſity of Cambridge, is a maſter of arts, choſen at a commencement, to make an ingenious, ſatirical ſpeech, reflecting on the miſdemeanors of the principal members. See TERRÆ *filius*.

PREVENTION, PRÆVENTIO, in the cannon, *&c.* law, the right which a ſuperior perſon or officer has to lay hold of, claim, or tranſact an affair, prior to an inferior one, to whom otherwiſe it more immediately belongs.

The word is chiefly uſed in ſpeaking of the pope's *preventing* the ordinary collators; and of the royal judges *preventing* ſubaltern ones. See COLLATION, JUDGE, JURISDICTION, *&c.*

The Roman canoniſts maintain, that the pope, who is the ſource of all juriſdiction, has not tranſmitted it privatively to the ordinary collators; but that he may ſtill not only collate concurrently with them, but alſo *prevent* them by uſing his original power as head of the church. See EXPECTATIVE and PROVISION.

Theſe *preventions* are grown odious in ſeveral countries, where they do not now obtain without a world of modifications and reſtrictions; and the civil power in France always judges in favour of the ordinary collators. See PREMUNIRE.

The pope has no *prevention* to the prejudice of lay-patrons; but by the concordat he has reſerved to himſelf the right of conferring elective benefices by *prevention*, and even cathedral and collegiate dignities. See CONCORDAT.

If the proviſions of the pope, and collations of the ordinary, bear date on the ſame day, the Ultramontane canoniſts give the preference to the pope; the French to the ordinary.

The cardinals have a particular indulgence not to be *prevented* by the pope within ſix months.

PRIAPEIA, in poetry, a name given to certain obſcene epigrams, and other pieces, compoſed on the god Priapus; whereof we have many inſtances in the Greek Catalecta. See PRIAPUS.

PRIAPISM, πριαπισμος, in medicine, a continual and painful erection or tenſion of the yard. See ERECTION and PENIS.

The term is derived from *Priapus*, a heathen god, whom the poets and painters repreſent with a yard always ſtiff and erect. See PRIAPUS.

As ſatyrs are uſually painted after the ſame manner, the diſeaſe is alſo called *ſatyriaſis*, or *ſatyriaſmus*.

Some, however, diſtinguiſh between the *ſatyriaſis* and *priapiſmus*; in that the latter is without any effuſion, or deſire of coition; but the former attended with both.

The immediate cauſe of a *priapiſm* is the heat, pungency, or acrimony of the ſemen, accompanied with a convulſion of the muſcles of the part, which compreſſing the veins and cavernous bodies, prevent the return of the blood.

The more remote cauſes are too hot, ſharp, ſtimulating foods; cantharides are alſo found to perform the ſame effect, but with much more violence. There are inſtances of people, eſpecially old men, who, making uſe of cantharides to enable them to ſatisfy their paſſions the better, have been ſeized with a *priapiſm*, which has been followed with univerſal convulſious, and even death. See CANTHARIDES..

PRIAPUS, πριαπος, a term ſometimes applied to the genital parts of men, *viz.* the penis, and teſtes. See GENITAL.

The name took its riſe from *Priapus*, a fabulous deity, particularly adored at Lampſacus, the place of his birth; who, for the extraordinary ſize of his parts, was exceedingly revered by the women; inſomuch that the ſcripture ſeems to tell us, king Aſa dethroned his mother Maachah, becauſe ſhe had conſecrated a grove to Priapus, and preſided at his ſacrifices.

PRICE, PRETIUM, the value of a thing. See VALUE.

PRICE *current*, in commerce, a weekly account of the current value of moſt commodities. See CURRENT.

PRICK *poſt*, in building. See POST.

PRICKED *wine*. See the article WINE.

PRICKING, in the ſea-language.—To prick *the plat*, or chart, is to make a point therein, near about where the ſhip is now, or is to be at ſuch a time; in order to find the courſe they are to ſteer. See Course, Chart, *&c.*

PRIER *age*. See the article Age.

PRIER *aid*. See the article Aid.

PRIEST, *ſacerdos*, a perſon ſet apart for the performance of ſacrifice, and other offices and ceremonies of religion. See Sacrifice, Religion, *&c.*

Thus the falſe gods and goddeſſes of the heathens had their *prieſts*; *prieſts* of Mars, of Bacchus, of Hercules, of Iſis; and ſome of them their prieſteſſes. See Pontiff, *&c.*

The Jews had two orders, *viz. prieſts* and *levites*, who ſerved in the temple. See Levite, *&c.*

The Mahometans have their *prieſts* called *ſcheik* and *muphti*; and the Indians and Chineſe their *bramins* and *bonzas*. See Muphti, Brachman, *&c.*

Priest, Presbyter, in the Chriſtian church, is a perſon inveſted with holy orders; in virtue whereof, he has a power to preach, pray, adminiſter the ſacraments, *&c.* and, in the Romiſh church, alſo, to bleſs, abſolve, *&c.* See Orders.

By the canons, a man muſt be twenty-four years of age ere he be admitted to the prieſthood; anciently thirty years were required. See Ordination.

The holy ſcripture uſually confounds the title of *prieſt*, *preſbyter*, with that of *biſhop*, *epiſcopus*; and does not ſeem to give any ſuperiority to the one over the other: and yet, the abſolute equality among all the *prieſts* in the government of the church has few inſtances, but what are conteſted. See Presbyter.

Blondel and Salmaſius maintain with a world of reaſon, that in the primitive church, the *prieſts* governed with perfect equality, and without any other preeminence beſide that of age; and yet to conſult the fathers, and tradition, the *presbyterian* form of government would ſcarce ſeem to have been known among the ancients. See Presbyterian.

In effect, the primitive writers ſpeak of nothing but epiſcopacy; and of that too, frequently in ſuch terms, as if they eſteemed it of apoſtolical inſtitution. See Episcopacy and Bishop.

As, in the ancient church, the deacons had the management and adminiſtration of the revenues of the church, their authority grew apace, and in a little time they were got above the *prieſts*. St. Jerom uſed his utmoſt endeavours to prove, that deacons were originally inferior to *prieſts*; and the council of Nice decided the queſtion in favour of the latter. See Deacon.

Indeed, an order of deacons having been inſtituted without any other function than to aſſiſt the *prieſt* at the altar; theſe have made no difficulty of owning the ſuperiority of the *prieſts*. Add to this, that the order of a deacon being now become neceſſary to arrive at that of a *prieſt*, there is no room to diſpute the precedency: but the deacons who had retained their function, had the diſpoſal of the revenues, and paid the *prieſts* their penſions, ſtill maintained the ſuperiority. Upon which, the ſixth council in Trullo pronounced once more on the diſpute, and gave the pre-eminence to the *prieſts*.

Arch Priest, ſee the article Arch *prieſt*.

Cardinal Priest, ſee the article Cardinal.

High Priest, ſee the article Pontifex.

Regular Priest, ſee the article Regular.

Priests *of the oratory*, ſee the article Oratory.

PRIEST'*s cap*, in fortification, ſee Bonnet *à pretre*.

PRIMA *naturalia*, in phyſics, atoms, or the firſt particles whereof natural bodies are primarily compoſed; called alſo *minima naturalia*, which ſee: ſee alſo Particle, Atom, *&c.*

Tria prima, in chymiſtry, ſee the article Tria.

PRIMÆ *viæ*, in medicine, the firſt paſſages of the chyle; including the œſophagus, ſtomach, inteſtines, and their appendices. See Chyle, *&c.* ſee alſo Viæ.

PRIMAGE, a duty at the water-ſide, appointed by a ſtatute of Henry VIII. to be paid to the maſter and mariners of the ſhip, by the merchants whoſe goods are loaded or unloaded.

It is paid to the maſter for the uſe of his cables and ropes, in moving the goods; and to the mariners for their ſervice and aſſiſtance.

This is different, in different places; in ſome 12 d. per tun, in others, a penny per pound; in others, ſix-pence per bale or pack. See Duty and Custom.

PRIMARY *planet*, a planet which revolves round the ſun as a centre. See Planet.

Such are Saturn, Jupiter, Mars, the Earth, Venus and Mercury; thus called in oppoſition to ſecundary planets, or ſatellites. See Saturn, Venus, *&c.*

Some authors reſtrain the *primary planets* to the ſuperior ones, *viz.* Saturn, Jupiter and Mars; but very impertinently.

Primary *affections*,	See the articles	Affection,
Primary *collateral points*,		Collateral,
Primary *dials*,		Dial,
Primary *motion*,		Motion,
Primary *place*,		Place,
Primary *qualities*,		Quality.

PRIMATE, Primas, an archbiſhop, inveſted with a juriſdiction over ſeveral archbiſhops, or biſhops. See Archbishop.

Father Sirmond derives the origin of *primates* hence; that the large provinces having been divided and ſubdivided by the emperors; the firſt diviſions were called firſts, others ſeconds, other thirds, *&c.* and the title *primate* given to the metropolitan, *i. e.* to the biſhop of the city which was the capital of the province, ere the diviſion was made. See Metropolis and Metropolitan.

This metropolitan *primate* had ſome juriſdiction over the biſhops of the inferior provinces; and was alſo called *patriarch*. See Patriarch.

The term *primate* is Latin, and ſignifies the firſt, or preſident of a ſociety: the Gree kword correſponding to it is ἔξαρχος, *exarch*. See Exarch.

Thoſe who hold for a ſtrict eccleſiaſtical hierarchy, maintain a *primate* to be he who has ſeveral metropolitans under him; as a patrirarch has ſeveral *primates*. Yet it is pretty evident from hiſtory, that *primates* were at firſt confounded with patriarchs: thus Socrates, enumerating ten patriarchs, does not make any diſtinction thereof from *primates*.

In Africa, after the diſtinction was made, the *primates* were not at all ſubject to the patriarch: thus the biſhop of Carthage, who was *primate*, paid no obedience to the biſhop of Alexandria, who was patriarch.

Nor, to be a *primate*, was it neceſſary to have metropolitans for ſuffragans: each province of Africa, except thoſe which compoſed the dioceſe of Alexandria, had its *primate*; this quality being given to age.

In France, the ſubdiviſion of provinces gave occaſion to the erection of *primates*: thus Aquitaine, *e. gr.* being divided into two provinces, the archbiſhop of Bourges became *primate* of the Aquitaines, becauſe Bourges was the capital of the firſt.

Thus alſo the diviſion of England into two provinces, Canterbury and York, in 1152. gave occaſion to the introduction of *primacies* among us; Canterbury, which was the metropolis before, thence giving the title of *primate of all England* to its prelate, though the archbiſhop of York ſtill claims that of *primate of England*. And accordingly, the firſt has ſome juriſdiction over all England, relating to adminiſtrations, *&c.* which the latter has only within his own province. See Province.

PRIME, Primus, the firſt in order, degree, or dignity, among ſeveral things of the ſame or like kind.

Thus we ſay, *prime miniſter*, *prime mover*, *prime coſt*, &c. See Minister, Mobile, *&c.*

Prime, or Prime *minute*, in geometry, denotes the ſixtieth part of a degree. See Degree.

Prime is ſometimes alſo uſed for the tenth part of an unit. See Decimal.

In weights, it is uſed for the twenty-fourth part of a grain. See Grain.

Prime *number*, in arithmetic, a number which can only be meaſured by unity; or whereof 1 is the only aliquot part: ſuch are 5, 7, 11, 13, *&c.* See Number.

Prime numbers inter ſe, among themſelves, are thoſe which have no common meaſure beſides unity; thus 12 and 19 are *prime numbers inter ſe*.

Prime *figure*, in geometry, is that which cannot be divided into any other figures more ſimple than itſelf. See Figure.

Such is a triangle among planes; and the pyramid in ſolids.—For all planes are made of the firſt, and all bodies or ſolids compounded of the ſecond.

Prime *vertical*, is the vertical circle which paſſes through the poles of the meridian. See Vertical.

Prime *verticals*, in dialing, or Prime *vertical dials*, are thoſe projected on the plane of the *prime* vertical circle, or on planes parallel thereto. See Dial.

Theſe are what we likewiſe call direct, erect, north or ſouth dials.—But ſince every plane hath that pole raiſed or depreſſed thereon, which lies open to it; therefore this plane (if a direct ſouth) hath the ſouth pole elevated, and conſequently the ſtyle (whoſe height muſt be the complement of the latitude of the place) will point downwards. Wherefore to find the hour's diſtance from the meridian upon this plane, the proportion is, As the radius is to the ſine of the ſtyle's height, or co-latitude; ſo is the tangent of the hour, or angle at the pole, to the tangent of the ſeveral hours diſtance from the meridian. By this canon, the hours requiſite for the plane, as alſo the half-hours, quarters, *&c.* being calculated and ſet in a table; the dial is deſcribed after the ſame manner, as the horizontal dial. North direct erect dials, are but the backſide of the ſouth, becauſe lying in the ſame azimuth with it; therefore it is no more but turning the ſouth dial upſide-down, and leaving out the ſuperfluous hours between 5 and 7, and 4 and 8, and the north dial is made. Only note, that the ſtyle muſt point upwards to the north pole. Harris.

Prime *of the moon* is the new moon at her firſt appearance, for about three days after her change. See New *moon*.

Prime is alſo uſed in the Romiſh church, for the firſt of the canonical hours, ſucceeding to lauds. See Hours, Laud, *&c.*

Prime, in fencing, is the firſt, and chief of the guards; which is that the body is in, immediately after drawing the ſword; being fitteſt to menace and terrify the enemy, by reaſon the point of the ſword is held higher up to the eye, than in any of the other guards. See Guard.

Prime, or Priming *of a gun*. See Priming.

PRIMICERIUS, in antiquity, the firſt, or chief perſon in any office or dignity. See CHIEF, PRINCIPAL, *&c.*

In this ſenſe the word occurs frequently in the code, and even in our old Engliſh laws: though it is there alſo occaſionally uſed for a nobleman; as, *Primicerius totius Angliæ.*

The Romans had great variety of *primicerii*, both in church, and the emperor's court; a *primicerius of the empreſs*, *primicerius auguſtalis*, *primicerius of the bardariotæ*, *primicerii of the legions*, *of the court*, *of the chamber*, *of the palace*, &c.

The *eccleſiaſtical primicerius*, Du Cange obſerves, was the ſame with the *chantor* among us. See CHANTOR.

In the church of Metz, the *primicerius* is the firſt dignitary of the dioceſe, and preſides at aſſemblies of the clergy, in prejudice of the biſhop.

At Venice, the dean of the church of St. Mark is called *primocirio*, or *primicerius*: he is independent of the patriarch of Venice, and enjoys epiſcopal privileges.

PRIMIER *ſeiſin*, in law, PRIMA *ſeiſina*, or the *firſt ſeiſin*; a branch of the king's prerogative, whereby he had the firſt poſſeſſion of all lands and tenements held of him in chief, whereof his tenant died ſeized in fee; and conſequently the rents and profits thereof: till the heir, if he were of age, did homage; and if under age, till he became of age.---But all charges ariſing by *primier ſeiſin*, are annulled by a ſtat. 12 *Car.* II. See SEISIN.

PRIMING, or PRIME *of a Gun*, is the gun-powder put in the pan or touch-hole of a piece, to give it fire by.

The *priming* is the laſt thing done in charging. See CHARGE.

For pieces of ordnance, they have a pointed iron-rod, to pierce the cartridge thro' the touch-hole; called *primer*, or *priming-iron.*

PRIMING, among painters, ſignifies the laying on of the firſt colour. See COLOUR and PAINTING.

PRIMIPILARII, or PRIMOPILARII, or PRIMIPILARES, in antiquity, were properly ſuch as had formerly borne the office of *primipilus*, or firſt centurion of a legion, to whom was entruſted the care of the banner. See COHORT.

Some will alſo have *primipilarii* to have been a denomination given to the ſoldiers of the firſt cohort of a legion.

The *primipilarii* had conſiderable advantages; one of the chief was, that moſt of the ſoldiers who died in the campaign, left them their heirs.

PRIMIPILUS, or PRIMOPILUS, or PRIMIPILI *centurio*, in antiquity, the centurion of the firſt cohort of a legion, who had charge of the Roman eagle. See CENTURION and COHORT.

PRIMITIÆ, the *firſt fruits* gathered of the earth; whereof the ancients made preſents to the gods. See FRUITS.

In Leviticus, the *primitiæ* of all fruits are injoined to be offered to God. See TITHE.

In our law, the *primitiæ* are one year's profits, after avoidance, of every ſpiritual living, as rated in the king's books. See FIRST *fruits.*

PRIMITIVE, in grammar, a *root*; or a word in a language, which is neither derived from any other language, nor compounded from any other words of the ſame. See ROOT, WORD, *&c.* Thus, *God* is a *primitive*; *Godly*, a derivative; *God-like*, a compound. See DERIVATIVE.

PRIMITIVE, in arithmetic. See PRIME and NUMBER.

PRIMO *beneficio eccleſiaſtico habendo*, in law, a writ directed from the king to the lord chancellor, appointing him to beſtow the benefice that ſhall firſt fall in the king's gift, above or under ſuch a value, upon this or that clerk. See BENEFICE.

Propoſitio de PRIMO *adjacente.* See PROPOSITION.

PRIMOGENITURE, PRIMOGENITURA, the right of firſt-born, or eldeſt ſon or child.

The *right of primogeniture* ſeems to be an unjuſt prerogative, and contrary to natural right: for ſince it is birth alone gives children a title to the paternal ſucceſſion, the chance of *primogeniture* ſhould not throw an inequality among them.

Accordingly, the right of *primogeniture*, which calls the elder-born to the crown, preferably to the other, was not introduced into France till very late: it was unknown to the firſt race of kings; and even to the ſecond.

The four ſons of Clovis ſhared the kingdom equally among themſelves; and Louis le Debonnaire did the ſame: it was not till the race of Hugh Capet, that the prerogative of ſucceſſion to the crown was appropriated to the firſt-born.

By the ancient cuſtom of *gavel-kind*, ſtill preſerved in ſome parts of our iſland, *primogeniture* is of no account; the paternal eſtate being equally ſhared by all the ſons. See GAVEL-KIND.

PRIMOPILUS. See the article PRIMIPILUS.

PRIMUM *ens.* See the article ENS.

PRIMUM *mobile*, in the Ptolemaic aſtronomy, the ninth or higheſt ſphere of the heavens, whoſe centre is that of the world, and in compariſon of which the earth is but a point. See MOBILE.

This they will have to contain all the other ſpheres within it, and to give motion to them, turning itſelf, and all them, quite round in twenty-four hours. See MOBILE.

PRIMUS *peronæus.* See the article PERONÆUS.

PRIMUS *ſcalenus.* See the article SCALENUS.

PRINCE, PRINCEPS, in politics, a perſon inveſted with the ſupreme command of a ſtate or country; independent of any ſuperior. See SOVEREIGN, MONARCH, KING, *&c.*

PRINCE is alſo uſed for a perſon who is ſovereign in his own territory; yet holds of ſome other, as his ſuperior or lord, and pays homage or tribute to him.

Thus all the *princes* of Germany are feudataries of the emperor: they are as abſolute in their reſpective principalities, as the emperor himſelf; yet are all bound in certain ſervices to him. See EMPEROR. See alſo ELECTORS, ELECTORAL, and COLLEGE.

PRINCE, in ancient records, frequently ſignifies no more than *lord.*---Du Cange gives a great number of inſtances of this uſage. See LORD.

In effect, the word *princeps* in Latin, whence *prince* in Engliſh, originally ſignifies only the *chief*, or *firſt*: it is compounded of the Latin *primus*, and *caput*; and is properly a word of dignity and office, not of property and ſovereignty.

Thus, in the charter of king Offa, after the biſhops had ſubſcribed their names, we read, *Brordanus patritius*, *Binnanus princeps*; and afterwards the dukes ſubſcribed their names.

And in a charter of king Edgar, in *Mon. Angl. tom.* 3. *p.* 301. *Ego Edgarus rex rogatus ab epiſcopo meo Deorwolfe*, *&* principe *meo Aldredo*, &c. And in Mat. Paris, *p.* 155. *Ego Halden* princeps *regis pro viribus aſſenſum præbeo*, *& ego Turketillus dux concedo.*

PRINCE *of the youth.*---Among the ancient Romans, it was the cuſtom for the emperor in his life-time to nominate him whom he would have to ſucceed in the empire, under the title of *princeps juventutis*, *& Cæſar.* See CÆSAR.

In the *ludus Trojanus*, the youth who was choſen captain, was alſo called *princeps juventutis.* See TROJANUS.

PRINCE is alſo a title given to the iſſue of *princes*, or thoſe of the royal family. See SON and DAUGHTER.

In which ſenſe they are called, particularly in France, *princes of the blood*; as partaking of the blood to which the ſovereignty is appropriated: and not by any hereditary right, but as a patrimony ſubſtituted to all the royal race. See BLOOD.

In England, the king's children are called *ſons and daughters of England*: the eldeſt ſon is created *prince of Wales.* See PRINCE *of Wales.* The cadets, or younger, are created dukes or earls, with what title the king pleaſes. They have no apanages, as in France; but only what the good pleaſure of the king beſtows on them. See APANAGE.

The ſons are all by birth counſellors of ſtate: the daughters are ſtyled *princeſſes*; to violate the eldeſt of which, unmarried, is at this day high treaſon.

To all the king's children belongs the title of *royal highneſs*: all ſubjects are to kneel, when admitted to kiſs their hand; and at table, out of the king's preſence, they are ſerved on the knee.

The firſt *prince* of the blood in France is called abſolutely *monſieur le prince.*---The quality of *prince of the blood* gives a rank and precedency, but does not include any juriſdiction; they are *princes* by order, not by office.

Wicquefort obſerves, that it is not fifty years ſince the *princes* of the blood of France gave place to all embaſſadors, even thoſe of republics; and it was at the king's requeſt, that they were ſince allowed the precedency.

The moment a pope is elected, all his relations become *princes.* See POPE, NEPOTISM, *&c.*

PRINCE *of Wales*, the eldeſt ſon of England. See SON.

He is born duke of Cornwall; and immediately intitled to all the rights, revenues, *&c.* belonging thereto; as being deemed, in law, at full age on his birth-day.

He is afterwards created *prince of Wales*; the inveſtiture whereof is performed by impoſition of a cap of ſtate, and a coronet, a verge of gold, and a ring. He holds the principality by patent, granted him and his heirs, kings of England.

The title and principality were firſt given by king Edward the firſt to his eldeſt ſon: till that time, the eldeſt ſon of England was called *lord prince.* While Normandy remained to the king of England, the eldeſt ſon was always ſtyled duke of Normandy: ſince the union, his title is *Magnæ Britanniæ princeps.*

He is reputed, in law, the ſame perſon with the king: to imagine his death, or to violate his wife, is high-treaſon. His revenues, as duke of Cornwall, are computed at 14000 *l. per annum.* The revenues of the principality were eſtimated, 300 years ago, at 4680 *l. per ann.*

PRINCE'S *metal.* See the article METAL.

PRINCIPAL, PRINCIPALIS, the chief, moſt conſiderable, or neceſſary part of a thing.

Thus we ſay, the mayor is the *principal* magiſtrate of a city or town: a council of war conſiſts of the *principal* officers. In a peroration, the *principal* points inſiſted on, are to be briefly ſummed up. The *principal* of a college, or hall, is the maſter thereof. See UNIVERSITY.

PRINCIPAL, in commerce, is the capital of a ſum due or lent; in which ſenſe the word is uſed in oppoſition to *intereſt.* See INTEREST.

PRINCIPAL is alſo uſed for the firſt fund or ſum put by partners into common ſtock; by which it is diſtinguiſhed from the calls or acceſſions ſometimes required, when the former proves inſufficient.

PRINCIPAL *point*, in perſpective, is a point in the perſpective plane; upon which a line drawn from the eye, perpendicular to the plane, falls. See POINT.

This point is in the interſection of the horizontal and vertical plane, and is alſo called *the point of ſight*, and *point of the eye.* See SIGHT, *&c.*

PRINCIPAL *ray*, in perſpective, is that which paſſes perpendicularly from the ſpectator's eye to the perſpective plane, or picture. See RAY.

Whence the point, where this ray falls on the plane, is by ſome alſo called *the principal point*, which other writers call *the centre of the picture*, and *the point of concurrence*. See POINT.

PRINCIPAL, **PRINCIPALIUM**, in old law-writers, is ſometimes uſed for a *heir-loom*. See HEIR-LOOM.

In Urchenfield *com. Hereford*, certain *principals*, as the beſt beaſt, beſt bed, beſt table, *&c.* paſs to the eldeſt child, and are not ſubject to partition.

PRINCIPAL is ſometimes alſo uſed for a *mortuary*, or *corſe preſent.* ——— *Item lego equum meum vocatum* le bay gelding, *ut offeratur ante corpus meum in die ſepulturæ meæ, nomini* principalii. *Teſt Joh. de Macclesfield*, 9 *Hen.* 5.

PRINCIPAL *cauſe*, **PRINCIPAL** *challenge*, **PRINCIPAL** *officers of the navy*, **PRINCIPII** *petitio*,	See the articles	CAUSE, CHALLENGE, NAVY, PETITIO.

PRINCIPLE, **PRINCIPIUM**, a term frequently uſed for the cauſe, ſource, or origin of any thing. See CAUSE, *&c.*

In which ſenſe we ſay, the *principle of thinking*, *of willing*, &c.

In phyſics, we muſt ever have recourſe to a firſt *principle*, which is God. See CAUSE.

The Manichees admit of two *principles*, the one of good, the other of evil; which they eſtabliſh in quality of two contrary deities, conſtantly oppoſing each other. See MANICHEE. See alſo GOOD and EVIL.

According to the doctrine of Pelagius, our own wills are the *principles* of our good actions, and we ourſelves the *principles* of our good wills. See PELAGIANS.

PRINCIPLE is defined, among the ſchool philoſophers, to be that from which any thing is, is done, or known: *unde aliquid eſt, fit, aut cognoſcitur*; which is a very extenſive ſignification, and agrees to all kinds of *principles*.

Thus, the premiſes are *principles*, in reſpect of the concluſion; and thus fire, and every other agent, are the *principles* of things which they produce. See ACTION and AGENT.

The Thomiſts define *principle* to the like effect: *id à quo aliquod procedit aliquo modo.*

Philoſophers uſually diſtinguiſh *principles*, into thoſe of *being*, *principia eſſendi*; and thoſe of *knowing*, *principia cognoſcendi*: or, *principia rei*, and *cognitionis*.

Of the firſt they make two kinds; *viz.* *principles* of *origination*, which are thoſe from which ſomething proceeds really the ſame with the *principle*; as in the proceſſion of the Son and Spirit from the Father in the Trinity.---And *principles* of *dependency*; in which ſenſe, any cauſe is a *principle*, in reſpect of the thing cauſed; or a ſubject, in reſpect of the accidents inherent in it.

The *ſecond* is that from which we borrow, or derive our knowledge of ſome other thing; or, it is that which makes the thing be known.---Such are *axioms*, *definitions*, *hypotheſes*; ſuch alſo are *examples*, *explanations*, *&c.* See KNOWLEDGE.

Innate **PRINCIPLES**. See the article INNATE.

PRINCIPLE, in phyſics, or **PRINCIPLE** *of a natural body*, is ſomething that contributes to the eſſence of a body; or, whereof a natural body is primarily conſtituted. See BODY.

Ariſtotle defines *principles* to be thoſe things which are not made or conſtituted of themſelves, nor of other things, but all things of them: *Quæ non fiunt ex ſe invicem, nec ex aliis, ſed ex iis omnia.*

To give an idea of natural *principles*, conſider a body in ſeveral ſtates; a coal, *e. gr.* that was juſt now a piece of wood: it is evident there is ſomething in the coal, which before exiſted in the wood; this, whatever it is, is a *principle*, and is what we call *matter*. See MATTER.

Again, there muſt be ſomething joined with this matter, to make it wood rather than fire, or fire rather than wood: this is another *principle*, and is what we denominate *form*. See FORM.

Matter and form, then, are univerſal *principles* of natural bodies. The *Peripatetics* add a third *principle*, viz. *privation*; for though, ſay they, a thing is not made from nothing; yet it muſt be made from its not being that thing before.---This Ariſtotle calls *privation*, and admits it as a third *principle*.---But the moderns reject it: for if *privation* be a *principle*, it is at leaſt ſo in a very different ſenſe from matter and form. See PRIVATION.

Some late philoſophers admit no *principles* but *acid* and *alkali*. See ACID and ALKALI.

Ariſtotle diſtinguiſhes two ſorts of natural *principles*, as they concur in the generation, or in the compoſition of bodies.

PRINCIPLES *of generation*, or of a body *in fieri*, are thoſe without which a natural generation can neither be, nor be conceived. ---Such are the three *principles* above-mentioned, *matter*, *form*, and *privation*.

PRINCIPLES *of compoſition*, or of a body *in facto eſſe*, already made, are thoſe whereof natural bodies really conſiſt.---Such, according to him, are *matter* and *form*; to which ſome add a third, *viz.* *union*, to connect the two others together.---But this is only neceſſary upon ſuppoſition of ſubſtantial forms. See *ſubſtantial* FORM.

Principles are uſually confounded with *elements*; yet is there a real difference: elements are properly the firſt and ſimpleſt beings, ariſing from the firſt determination or aſſemblage of *principles*. They are the ſimpleſt things in which matter and form are combined.---Elements and *principles*, therefore, differ in this, that a *principle*, as matter, is only a begun, not a complete nature; but an element is perfect and complete. See ELEMENT.

To this head may likewiſe be referred what we call *mechanical principles of bodies*, which ſerve to account for the mechaniſm or artificial ſtructure of things, and all the varieties and differences of bodies from motion, figure, and other common affections. See MECHANICAL.

Theſe *principles* are differently maintained by three or four different ſects of philoſophers; *viz.* the ancient Epicureans, or Corpuſcularians, to whom may be added the modern Gaſſendiſts; the Carteſians; and the Newtonians. See EPICUREAN, CORPUSCULARIAN, CARTESIAN, and NEWTONIAN.

PRINCIPLES, in chymiſtry, are the firſt and ſimpleſt parts whereof natural bodies are compounded; and into which they are again reſolvible by fire. See PART.

Theſe are more properly, as well as more commonly, called *elements*. See ELEMENT.

The chymiſts make five *principles*; three whereof are called *active principles*; which are ſuppoſed to act of themſelves, and do not need to be put in motion by others: ſuch as ſalt; ſulphur, or oil; and mercury, or ſpirit. See ACTIVE.---The ſalt they ſuppoſe the foundation of all ſavours; ſee SALT. The ſulphur, of odours; ſee SULPHUR: and the ſpirit, or mercury, of colours; ſee SPIRIT.

The two *paſſive principles*, which have no force inherent in themſelves, and only act by being join'd with ſome of the others, are phlegm, and caput mortuum, which they alſo call *elementary principles*. See PASSIVE and PHLEGM, *&c.*

PRINCIPLES, among Hermetic philoſophers.---According to theſe gentlemen, the two *univerſal principles* of ſenſible nature, are ſubtile and ſolid, which being joined in a greater or leſs degree, generate all that beautiful variety of beings in the univerſe.

The three *natural principles* are ſalt, ſulphur, and mercury. Theſe *principles* generate the four elements; and are, as it were, ſecondary elements, inaſmuch as they are contained in all mixed bodies. Sulphur is the firſt, and ſtands in the place of male; mercury the ſecond, ſtanding in the place of female; and ſalt the third, which copulates the others together. *Dict. Hermet.*

PRINCIPLE is alſo applied to the foundations of arts and ſciences. See ART and SCIENCE.

In this ſenſe we ſay, *principles* are not to be proved; they muſt be common notions. See NOTION and AXIOM.

There is no diſputing againſt a man that denies *principles*: the worſt reaſoning is that which includes a *petitio principii*, i. e. which ſuppoſes a *principle* that ought to be proved.

PRINCIPLE is alſo applied by extenſion to the firſt rules or maxims of an art. See RUDIMENT.

In this ſenſe we ſay, a man is ignorant of the *principles* of geometry; meaning, he has not learnt Euclid's elements.---The *principles* of moſt arts and ſciences are found in this dictionary, under their reſpective heads.

PRINTER, *typographus*, a perſon who compoſes, and takes impreſſions from moveable characters, ranged in order, or from plates engraven, by means of ink, and a preſs. See PRINTING.

Fuſt, Guttemberg, Scheffer, Mentel, and Koſter, were the *firſt printers*. The firſt that practiſed it in England was Fred. Corſeilles, brought over from Haerlem, under king Henry VI. In France, Gering; at Rome, Conrad Sweynheim, and Arnold Pannarts, both Germans; at Naples, Sixtus Ruſinger.

The *great printers* were Aldus, and Paulus Manutius; the two Badii; William and Frederick Morel; Oporin; Frobenius; Rob. Hen. and Char. Stephens; Gryphius, Turnebus, Torres, Commelin, Plantin, Raphelengius, Vaſcoſan, Bleau, Criſpin, and the two Elzevirs.---The *learned printers* were, the Manutii, the Stephens's, the Badii, Turnebus, Wechel, Morel, Juntæ, *&c.*

Plantin had the title of *arch-printer*, archi-typographus, given him by the king of Spain, in conſideration of his printing the polyglot of Antwerp.

The names, characters, and eloges of all the famous *printers* are found in part II. of the firſt tome of the *jugemens des ſcavans.*

The *printers*, ſince the eſtabliſhment of that art, are eſteemed a part of the company of ſtationers and bookſellers: before that eſtabliſhment, the company conſiſted only of bookſellers, binders, writers, illuminers, and parchment-makers.---The *parchment-makers* prepared the ſkins, and made the parchment or velum; which were then almoſt the only matters books were written on. The *writers*, or *copyiſts*, wrote and tranſcribed books after copies given them by the bookſellers. The *binders* were charged with the binding of thoſe days, which was very coarſe; only conſiſting of two ſlight boards covered with ſome paltry leather. The *illuminers* painted in miniature, and gilt initial letters, head-pieces, tail-pieces, and other compartiments. Laſtly, the *ſtationers* or *bookſellers* ſet the *writers* to work, and ſold their copies in ſhops, and other places, on the days allowed them by the ſtatutes to expoſe the ſame. See BOOK, BOOKSELLER, BOOKBINDING, LIBRARIUS, *&c.*

PRINTING, *typographia*, the art of taking impreſſions with ink, from characters and figures moveable or immoveable, upon paper, velum, or the like matter. See CHARACTER, LETTER, INK, PAPER, *&c.*

There are two kinds of *printing*; the one for books, the other from copper-plates, for pictures.---The firſt called *common-preſs-printing*, the ſecond *rolling-preſs-printing*.

The prime difference between the two conſiſts in this, that the characters of the former are caſt in relievo, and thoſe of the latter ingraven in creux. See RELIEVO, ENGRAVING, &c.

The art of *printing* is a modern invention: it is, indeed, of a very ancient ſtanding among the Chineſe; but then their *printing* is very different from ours. It muſt be owned, the European *printing*, in its original, was much the ſame with the Chineſe; yet, as there was at that time no commerce or correſpondence between Europe and China, the paſſage into the eaſt by the cape of Good Hope being as yet undiſcovered by the Portugueſe; there is no room to charge the Europeans with borrowing their art from the Chineſe: but each muſt be owned to have fallen on the ſame thing, though at very different times.

Father Couplet aſſures us, that *printing* has been in uſe in China from the year 930. Father le Comte ſpeaks more largely; ſaying, that it has been there from almoſt all ages: he adds, that there is this difference between theirs and ours, that, whereas we have but a very ſmall number of letters in our alphabets, and by the various arrangement of theſe, are able to form infinite volumes; we have the advantage, by making our characters moveable, to print the largeſt works with an inconſiderable quantity of letter; thoſe that ſerved for the firſt ſheets, ſerving over again for the ſucceeding ones: the Chineſe, on the contrary, by reaſon of the prodigious number of their letters, are precluded this reſource; and find it more eaſy, and leſs expenſive, to cut all their letters on wooden blocks; and thus to make as many blocks as there are pages in a book, and theſe of no further uſe but for that ſingle work. *Their method of* printing *ſee hereafter.*

Origin of PRINTING.---Who the firſt inventors of the *European printing* were, in what city, and what year, it was firſt ſet on foot, is a famous problem long diſputed among the learned. In effect, as the Grecian cities contended for the birth of Homer, ſo do the German cities for that of *printing*.

Mentz, Haerlem, and Straſbourg, are the warmeſt on this point of honour: Italy alſo would have entered the liſts; but the ſuffrages being at firſt divided between the firſt three pretenders, they are left in poſſeſſion of the queſtion, which, in reality, is not yet juſtly decided; though it muſt be owned, Mentz has always had the majority of voices.

We ſhall not enter into a nice diſquiſition of the merits of the cauſe, but only propoſe the pretenſions of each.---John Mantel of Straſbourg, John Guttemberg and John Fuſt of Mentz, and L. John Koſter of Haerlem, are the perſons to whom this honour is ſeverally aſcribed, by their reſpective countrymen; and have all their advocates among the learned.

Mantel, a phyſician of Paris, enters the liſts in behalf of his name-ſake of Straſbourg; and contends that it was he firſt invented *printing* in the year 1442. and that in conſideration hereof, the emperor Frederic III. gave him a coat of arms correſponding thereto: he adds, that Guttemberg, whom he had taken in as a partner or aſſociate, carried it to Mentz, where he took in Fuſt a partner.

The Haerlemers, with Boxhornius, Schrevelius, &c. refer the firſt invention to Laurenzs Janzs Koſter of Haerlem, in the year 1430. adding, that his aſſociate Guttemberg ſtole away his tools while he was at church, and carried them to Mentz, where he ſet up for the firſt inventor; though others attribute this theft, &c. to his partner Fuſt.

Munſter, Polydore Virgil, Paſquier, &c. will have Guttemberg, or Guttemburgh, to have really been the inventor of *printing*; and add, that he took in Fuſt and Schoeffer for aſſociates.

Naude, in his Maſcurat, eſpouſes the cauſe of Fuſt, or Fauſt, or Fauſtus; and will have him to be the firſt *printer* in Europe, and that he took in Guttemberg for a partner. His reaſon for putting Fuſt in poſſeſſion of this privilege, is, that the firſt books that were printed, appear to have been all of his impreſſion. It is more than probable, had Guttemberg or Koſter had a greater or an equal ſhare in the invention, they would not have allowed him to attribute the whole to himſelf and his ſon-in-law Schoeffer, as he has done, without ever offering to do the like, or in the leaſt contradicting him, and aſſerting their own right.

Theſe editions are, 1. The *Catholicon Januenſis*, dated in 1460. and now in the king's library. Fuſt's name, indeed, is not to this; but it is perfectly like the following ones, where it is. 2. The Latin bible of 1462. now in the French king's library. 3. Tully's Offices, in 4to; (the reſt being all folio's) in the year 1465. and 1466. for there are copies in the Bodleian, and the library of C. C. college, Oxon, of both thoſe dates. 4. Other Bibles of 1471. 5. St. Auguſtine *de civitate Dei*, 1473. 6. Mercurius Triſmegiſtus *de poteſtate & ſapientia Dei*, in 1503. 7. Titus Livius, in 1518.

Add to this, that at the beginning of Livy, is a privilege granted by the emperor Maximilian to Schoeffer, for the ſole power of *printing* that author for ten years; and for ſix years, to all the other books he ſhould print thereafter, in conſideration of his father-in-law, Fuſt's, having invented the art of *printing*. This privilege is dated 1518. and ſigned Jac. Spiegel.

Eraſmus, however, in the epiſtle after that privilege, does not poſitively aver the fact; he only obſerves, that the firſt, or the chief inventor of that art is held to be J. Fuſt. In the advertiſement to the ſaid book, Nic. Carbachius ſpeaks to the ſame effect as the privilege, and Eraſmus.

As to Guttemberg, Mantel, and Koſter, Naude obſerves, the perſon is not yet born that can ſay he has ever ſeen books printed by any of them, before, or as early as thoſe of Fuſt. All that is urged on their behalf, is only founded on reports, conjectures, probabilities, forged authorities, and the jealouſies of cities againſt one another.

Yet Salmuth, in his additions to Pancirollus, cites a public act, whereby it appears, that Fuſt, after having invented *printing*, and ſuſtained it a long time on his own footing; at length took in Guttemberg as a partner, to contribute to the expence; which was very great, by reaſon the firſt books were moſt of them printed on velum, or at leaſt parchment, and after the Chineſe way.

But the cauſe is not thus decided: the advocates for Koſter urge divers things, to put him in the place here aſſigned to Fuſt. Mr. Ellis, in the philoſophical tranſactions, fathers books on him prior to any of thoſe above referred to Fuſt; and even ſome as early as 1430. and 1432. It is certain, the Haerlemers ſhew printed books of that date, which agreeing ſo well with the account given by Theod. Schrevelius, and others, leaves Mr. Ellis little room to doubt, whether the honour of the invention be his or the other's due. All that belongs to Fuſt, according to this writer, is the honour of eſtabliſhing the art in greater luſtre and perfection at another place many years after.

But the difficulty lies, either in ſhewing why the practice ſhould be at a ſtand from 1432. to the reviving of it at Mentz by Fuſt and Schoeffer, in 1465. or elſe in giving ſome account of the condition and progreſs of this invention during that interval.

Now, Boxhornius, Schrevelius, and other authors, expreſly affirm, that ſo large a work as the *De Spiegel, Speculum Salutis*, of Koſter, ſhewn at Haerlem for the firſt printed book, could never be his firſt eſſay: he muſt have had the art in its rougher rudiments before, and have made many trials on leſſer works: no doubt his firſt attempts were on looſe ſheets, which we may ſuppoſe were eaſily loſt. In effect, it muſt be allowed no inconſiderable argument in Koſter's behalf, that the rudeſt and moſt artleſs performances ſeem to be his: Mr. Ellis mentions ſome things of this kind without date, which he had ſeen in the king's library at St. James's, in that of Bennet college and the Bodleian at Oxford, with all the marks of the utmoſt ſimplicity, and which might fairly bid for firſt eſſays. There is ſomething ſo aukward and coarſe in them, that any body almoſt might have done them; mere nature being ſufficient, without any art or experience at all. The ink was only common writing ink, unartfully ſpread upon wooden blocks, very clumſily cut, &c.

By this time we have traced up the art to ſuch a ſtate, that it may, perhaps, ſcarce ſeem worth the conteſting who it was invented it; and no doubt, *printing*, as it now ſtands, owes more to the genius and addreſs of ſome of the later improvers, than it did to its firſt author.

The ſame conſideration may make us more eaſy under our preſent ignorance of the inventors of moſt other arts; many of which had ſuch ſimple unmeaning originals, that you or I ſhould, perhaps, think it no mighty credit to be eſteemed the authors of inventions nothing leſs artful and ingenious.

Progreſs of PRINTING.---The firſt printers, then, whoever they were, whether Koſter, Fuſt, Schoeffer, or Guttemberg, made their firſt eſſays on wooden blocks, or forms, after the Chineſe manner.

It is not improbable, ſays Mr. Bagford, they might take the hint from ancient medals and ſeals; but others rather imagine it to have come from the method of making playing cards, which, it is certain, bears a near reſemblance to the primitive proceſs of *printing*; as appears from the firſt ſpecimens of that art above-mentioned. See CARDS.

The book at Haerlem, the vocabulary called *Catholicon*, and the pieces in the Bodleian and Bennet's college, are all performed in this way; and the impreſſion appears to have been only given on one ſide the leaves; after which the two blank ſides were paſted together.

But they ſoon found the inconveniencies of this method; and therefore bethought themſelves of an improvement; which was by making ſingle moveable letters, diſtinct from one another.

Theſe being firſt done in wood, gave room for a ſecond improvement; which was the making of them, at length, of metal; and, in order to that, cutting moulds, matrices, &c. for caſting them.

From this ingenious contrivance, we ought to date the origin of the preſent art of *printing*, as practiſed throughout Europe; contradiſtinguiſhed from the methods of the Chineſe abroad, and the card-makers at home, which were the ſame art, only practiſed in a different place, or with a different view.

And of this, Schoeffer, or Scheffer, firſt ſervant, and afterwards partner, and ſon-in-law, of Fuſt, at Mentz, above-mentioned, is pretty generally allowed the inventor: ſo that he was properly the firſt printer; and, in ſtrictneſs, the bible, which was printed with moveable letters in 1450. was the firſt printed book; the next was Auguſtine *de civitate Dei*, then Tully's Offices, &c. about the year 1461.

But the art being yet in its infancy, there were ſome imperfections in the books they printed; among the reſt was the want of capital letters: hence they left the places of the initial letters blank, and gave them to the illuminers to paint in gold, or azure: though, others ſay, this was done deſignedly, to enable them to paſs off their books for manuſcripts.

Some authors tell us, that Fuſt carrying a parcel of his bibles to Paris, and offering them to ſale as MSS. the French, upon conſidering the number of books, and their exact conformity with one another, even to a point, and that the beſt book-writers could not be near ſo exact, concluded there was witchcraft in the caſe; and, by either actually indicting him as a conjurer, or threatening to do ſo, extorted the ſecret. And hence the origin of the popular ſtory of Dr. Fauſtus.

From Mentz, the art of *printing* ſoon ſpread itſelf throughout a good part of Europe; Haerlem and Straſburg had it very early; which, as the current of authors repreſent it, occaſioned their pretending to the honour of the invention.

From Haerlem it paſſed to Rome in 1467. and into England in 1468. by means of Tho. Bourchier, archbiſhop of Canterbury, who ſent W. Turner, maſter of the robes, and W. Caxton, merchant, to Haerlem, to learn the art. Theſe privately prevailing with Corſeilles, an under-workman, to come over, a preſs was ſet up at Oxford; and an edition of Ruffinus on the creed printed the ſame year in a broad octavo on paper.

From Oxford, Caxton brought it to London about the year 1470. In the ſame year it was carried to Venice, and to Paris, where Gering, Grantz, and Friburger, all Germans, invited thither by two doctors of the Sorbonne, ſet up a preſs in that learned houſe.

Hitherto there had been nothing printed but in Latin, and the vulgar tongues; firſt in Roman characters, then in Gothic, and at laſt in Italic. But in 1480. and, as ſome ſay, in 1476. the Italians caſt a ſet of Greek types; and it was at Venice, or, as ſome ſay, at Milan or Florence, that the firſt editions in that language appeared.

The Italians too have the honour of the firſt Hebrew editions, which were printed about the ſame time with the Greek, at Soucino, a little city in the duchy of Milan; under the direction of two Jewiſh rabbins, Joſhua and Moſes, whoſe works are dated in the year of the world 5240. anſwering to the year 1480. of the chriſtian æra.

Towards the end of the 16th century, there appeared various editions of books in Syriac, Arabic, Perſian, Armenian, Coptic, or Egyptian characters; ſome to gratify the curioſity of the learned, and others for the liturgic uſes of the Chriſtians of the Levant, printed chiefly at Paris; whither puncheons and matrices were ſent from Conſtantinople by M. Savary, then embaſſador at the Porte.

Out of Europe, the art of *printing* has been carried into the three other quarters of the world: for Aſia, we ſee impreſſions of books at Goa, and in the Philippines; at Lima, Boſton, Mexico, *&c.* for America; and at Morocco for Africa.

The Turks, indeed, rigorouſly prohibit *printing* throughout their empire, as imagining that the too free communication with books, might occaſion ſome change in religion or government; yet the Jews have ſeveral editions of their books printed at Conſtantinople, Theſſalonica, *&c.*

Method of PRINTING.---The *printing* letters, characters, or *types*, as they are ſometimes called, we have already ſpoken of, under the articles LETTER and CHARACTER.

Of the method of forming or caſting them, under the article *letter* FOUNDERY.

and of the art of engraving the puncheons, matrices, *&c.* in order thereto, under the articles ENGRAVING, PUNCHEON, MATRICE, *&c.*

The workmen employed in the art of *printing* are of two kinds; *compoſitors*, who range and diſpoſe the letters into words, lines, pages, *&c.* according to the copy delivered them by the author: And *preſſmen*, who apply ink upon the ſame, and take off the impreſſion. See COMPOSITION, *&c.*

Office of the compoſitor.---The types being caſt, *&c.* are diſtributed, each kind by itſelf, among the diviſions of two long wooden frames, an upper, and under one, called *caſes*; each of which is divided into little cells, or boxes, of different ſizes.

The boxes of the upper caſe are in number 98; and in theſe are diſpoſed the capitals, ſmall capitals, accented letters, *&c.*

In the cells of the lower caſe, which are fifty-four, are diſpoſed the common running letters, with the points, comma's, ſpaces, quadrats, *&c.*

Each caſe is placed a little ſlope, like a reading-deſk; that the operator may reach the upper boxes the better, and be in leſs danger of mixing the letters by ſtretching his arm over them. See CASE.

The compoſitor's poſt is againſt the middle of the caſe, and he works ſtanding, holding an inſtrument, uſually made of iron, called the *compoſing-ſtick*, in one hand; with the other he takes the letters, points, comma's, *&c.* as he needs them, out of the boxes; ranges them on a ſlip of braſs, called a *rule*, in his compoſing-ſtick; and, putting a ſpace, to make a blank between each two words, forms one line after another; till the ſtick being full, he empties it out upon another inſtrument, called the *galley*; ſeveral of which ranged in a frame, called a *chaſe*, are ready for the preſs.

This ſhort view of compoſing may need to be further illuſtrated and inlarged upon.---The *compoſing-ſtick*, then, (repreſented *tab.* MISCELLANY, *fig.* 9.) conſiſts of a plate, or ſlip of iron, braſs, wood, *&c.* more or leſs broad, and contrived ſo as to be made more or leſs long according to the width of the page, and the number of lines to be compoſed in it.

From the right ſide of this plate ariſes a ledge *a a*, about half an inch high, running the whole length of the plate, and ſerving to ſuſtain the letters, the ſides of which are to reſt againſt it; from the ſame plate likewiſe ariſe three other leſſer pieces, *b* and *c c*, two of which, *c c*, are contrived to ſlide along it, that ſo the two pieces may be either approached or withdrawn at pleaſure, to adjuſt the length of the line to the meaſure intended. Add, that where marginal notes, references, *&c.* are required in a work, the two ſliding pieces *c c* are opened in the compoſing-ſtick, to a proper diſtance from each other.

Ere the workman proceeds to compoſe, a rule, or thin ſlip of braſs plate, cut to the length of the line, and of the ſame height as the letter, is placed in the compoſing-ſtick againſt the ledge thereof, for the letter to bear immediately againſt.

Things thus prepared, the compoſitor having the copy lying before him, and the ſtick in his left hand, with the right he picks up the letters, ſpaces, *&c.* and places them againſt the rule; while with the thumb of the left he preſſes them cloſe to the upper ſcrew, or check; and thus keeps them tight and ſteady; while the other hand is conſtantly employed in ſetting in more letters: the whole being performed with a degree of expedition and addreſs, not eaſy to be imagined.

A line being thus compoſed, if it end with a word or ſyllable, and fill the meaſure, there needs no further care; otherwiſe more ſpaces are to be put between the ſeveral words to juſtify the lines, *i. e.* to make the meaſure quite full, ſo that every line may end even; and thus he proceeds to another line.

The ſpaces here uſed are a ſort of blanks, of the like dimenſions as the letters, but leſs high; and whoſe faces, therefore, when ſet, do not appear, nor give any impreſſion. They are of ſeveral kinds according to the dimenſions of the whites or intervals to be made by them, *viz.* quadrats, to fill up a break at the end of a paragraph, or the like; m quadrats, which are ſquare, and of the thickneſs of an m, ſerving to make the diſtance after a period, or between ſentence and ſentence; n quadrats, of the thickneſs of an n, to be placed after colons, ſemicolons, and comma's; and thick or thin ſpaces, to be uſed between the words in juſtifying, as above.

For marginal notes, in the ſpaces reſerved for them, between the two ſliding-pieces of the compoſing-ſtick, are put little quadrated pieces of metal, called *quotations*; which are juſtified by other ſmaller pieces; a ſlip of ſcaleboard being placed from the top of the page to the bottom, to keep the note and text at a due diſtance.

The firſt line thus completely juſtified, the compoſitor advances to the next; in order to which, he moves the braſs rule from behind the former, and places it before it, and thus compoſes another line againſt it, after the ſame manner as the former: and thus he goes on till his ſtick be full, which he empties into the galley, after the manner following.

Taking the rule from behind the laſt line, he places it before it; and with his two middle fingers ſqueezes the lines in the ſtick cloſe; his two fore-fingers at the ſame time being applied on the outſide of the rule: thus he lifts them out of the ſtick, and clapping his two thumbs behind the firſt line, lifts them into the galley; taking care to diſengage his two thumbs without breaking the lines.

The compoſitor having thus ſet the proper number of lines in his ſtick, *viz.* four, five, ſix, or more, and emptied them out into the galley; he again fills, and empties, as before, till a complete page be formed; remembering at the bottom of every page to ſet a line of quadrats, and at the end thereof the firſt word of the page enſuing, for a catch-word; and, if it be the firſt page of the ſheet, one of the letters for a ſignature.

The galley is a flat wooden inſtrument, in form of a long ſquare; of a length and breadth proportionable to that of the page: it conſiſts of two parts, the upper, called the *ſlice*, whereby the pages of large volumes, when compoſed, are ſlidden upon the ſtone; the other, which is the body of the galley, is ledged on three ſides, to contain the ſlice; the inner ledge not to exceed half an inch in height, that the compoſed page riſing above it by one half the height of the letter, may be tied up, or bound down, and removed without danger.

This galley is placed at the top of the caſe, and detained by two wooden pins from ſliding down the boxes. See GALLEY.

The page, then, compoſed and ranged in the galley, he ties it up therein with a cord or packthread, and ſets it by; and proceeds to the next, till the number of pages of the ſheet be completed: which done, he carries them to the impoſing or correcting-ſtone, there to range them in order, in a chaſe; which they call *impoſing*.

The chaſe is a rectangular iron frame of different dimenſions, according to the ſize of the paper to be printed on; having two croſs pieces of the ſame metal, called a *long* and *ſhort croſs*, mortiſed at each end, into the frame, ſo as to be taken out occaſionally.

By the different ſituations of theſe croſſes, the chaſe is fitted for different volumes; for quarto's and octavo's, one traverſes the middle lengthwiſe, the other broadwiſe, ſo as to interſect in the centre; which is the moſt cuſtomary ſituation: for twelves and twenty-fours, the ſhort croſs is ſhifted nearer to one end of the chaſe: For folio's, the long croſs is left intirely out, and the ſhort one placed in the middle; and for broadſides, or ſheets printed on one ſide only, both croſſes are ſet aſide.

To dreſs the chaſe, or range and fix the pages therein, they make uſe of a ſet of furniture, conſiſting of reglets, or ſlips of wood of different dimenſions, and about half an inch high, that they may be lower than the letters: ſome of theſe are placed at the top of the pages, called *head-ſticks*; others between them, to form the inner margin, called *gutter-ſticks*; others at the ſides, called *ſide-ſticks*; and others at the bottom, called *foot-ſticks*.

The pages, then, placed in order on the ſtone, the chaſe is put over them, and the reglets applied between the letter and the chaſe, in the poſition above-mentioned; the whole is locked up by means of ſmall pieces of wood, cut in the wedge-form, called *quoins*, which are driven with a mallet and ſhooting-ſtick, to a ſufficient tightneſs.

Before the form be quite locked up, they dreſs down the ſame, by paſſing a ſmooth piece of wood, called the *plainer*, over the letters, to make their ſurfaces ſtand flat and even; and, when locked up, they ſhake it, to ſee that nothing ſtir.

In this condition the work is called a *form*, containing more or fewer pages, according to the volume. See FORM.

As there are two forms required for every ſheet, when both ſides are to be printed, it is neceſſary they be exactly of the ſame length and breadth; *i. e.* the correſponding reglets, head-ſticks, *&c.* are to be equal in both forms, that the pages may fall exactly on the back one of another, which is called *regiſter*.

Here, then, properly ends the compoſitor's office; the form, thus finiſhed being to be committed to the preſsman.

Indeed, as it is impoſſible but there muſt be miſtakes in the work, either through the overſight of the compoſitor, or by the caſual tranſpoſition of the letters in the caſes; after drawing off a proof, it is delivered to the corrector, who reading it over, and rectifying it by the copy, it is remanded to the former operator, to be corrected accordingly.---*For the characters uſed in correcting a ſheet for the compoſitor*, ſee CORRECTION.

The compoſitor, then, unlocking the form upon the correcting-ſtone, by knocking out or looſening the quoins; and ſpreading his corrected proof ſo, as that the lines thereof range with the reſpective ones of the metal; by running his eye along both, he eaſily ſpies where corrections are to be made: according to which, he proceeds to pick out the faulty letters, points, *&c.* with a ſharp-pointed ſteel bodkin, and puts others in their places.

Where the alterations are conſiderable, and particularly where inſertions or omiſſions are to be made, there uſually ariſes a neceſſity of over-running; in order to which they muſt decompoſe, or return the lines back from the chaſe into the galley, and from the galley again into the compoſing-ſtick, to be new-modelled and rectified accordingly.

If, *e. gr.* one or more words to be inſerted in a line, cannot be got in by changing the ſpaces of the line for leſſer ones; part of the line muſt be put back into the cloſe of the preceding one, or forward into the beginning of the ſubſequent one, or both, till room is got. If the inſertion be large, ſeveral lines will need to be over-run, either backward or forward, till a break is arrived at; when, if it be not got in, a line is to be driven out; and to get in that line, the next pages, either backward or forward, muſt ſometimes be over-run ere it can come in.

When an omiſſion is to be made, the contrary courſe muſt be taken. If it be but little, the compoſitor takes it out, and drives out the remaining matter, by either inlarging his ſpaces, or beſtowing the beginning of the following, or the cloſe of the preceding line therein. If it be conſiderable, he may be obliged to over-run ſeveral pages ere it can be driven out.

Preſsman's office, or PRINTING *properly ſo called.*---To work off the form thus prepared and corrected by the compoſitor, there are three things required, paper, ink, and a preſs.

To fit the paper for uſe, it is to be firſt wet or moiſtened, by dipping ſeveral ſheets together in water: theſe are afterwards laid in a heap over one another; and to make them take the water equally, are all preſſed cloſe down with a weight a-top.

As to the degree of wetting, it muſt be according to the quality of the paper, and the ſize of the letter; ſmall letters, and ſtiff paper, requiring moſt wetting.

A PRINTING-HOUSE is a place deſtined for *printing*, and fitted up for that purpoſe with preſſes, caſes, and other furniture.

The moſt conſiderable *printing-houſes* in the world are thoſe of the Louvre and Vatican.---The firſt, begun under Francis I. was carried to its utmoſt perfection under Louis XIII. by the care of cardinal Richelieu; and removed into the galleries of the Louvre by Louis XIV.

The Vatican *printing-houſe*, called alſo the *apoſtolical printing-houſe*, becauſe the pope's bulls, decrees, *&c.* are printed therein, was begun by Pius IV. and furniſhed with great magnificence by Sixtus V. See VATICAN.

Out of both theſe *printing-honſes* have come forth very beautiful and ſplendid editions of the ancient authors. The Vatican was the firſt that printed books in the Arabic language.

The Clarendon *printing-houſe* at Oxford (ſo called, becauſe built, in great meaſure, with the profits ariſing from the copy of lord Clarendon's hiſtory, which had been given to the univerſity) promiſes well: it has already furniſhed us with a very fine Engliſh bible.

The PRINTING *ink* is of two kinds, black and red: the laſt occaſionally uſed in title-pages, calendars, *&c.* the firſt for the body of books. The compoſition of each, though now reckoned no part of the printers buſineſs, but uſually furniſhed them by other hands, is as follows:

For black ink: An hundred pounds of nut, or linſeed oil, being reduced, by boiling, to the conſiſtence of a ſyrup, is cleanſed and purified by throwing into it two pounds of coarſe bread, and about a dozen onions. They then boil thirty or thirty-five pounds of turpentine apart, till ſuch time as they find, upon its cooling on paper, that it breaks clean, like glaſs, without pulverizing; for if it pulverize eaſily, it is a ſign it is burnt. The oil and turpentine thus prepared, the firſt is gently poured, half cold, into the latter; and the two ſtirred together with a ſtick till they be well mixed; after which, the compoſition, which is called the varniſh, is ſet by, to be uſed occaſionally.

Now, to proceed to make ink, they take a quantity of this mixture, and add to it a certain quantity of lamp-black; working it up with a kind of wooden mullet, or brayer, till the whole be incorporated, and reduced into a kind of pulp; which is the ink for uſe.

Where, note, that its thickneſs or ſtrength is always to be proportioned to that of the paper, and the warmth of the weather; ſtrong paper, and hot weather, requiring ſtrong ink; and that the ſtrength or weakneſs of the ink depends on the greater or leſs degree of coction of the varniſh.

For red ink: They uſe the ſame materials as for black, excepting that inſtead of lamp-black they add a proper quantity of vermilion. Some hold, that by mixing and incorporating the bigneſs of a nut of fiſh-glue, or brandy, or the white of an egg with the ink, the vermilion acquires a greater luſtre.

The ink is applied upon the forms by balls, which are a kind of wooden funnels, the cavities whereof are filled with wool covered with leather nailed to the wood. One of theſe the preſſman takes in each hand, and applying them on the ink-block, to charge them with ink, he rubs them one againſt the other to diſtribute the ink equally; and, at laſt, ſmears over the form by beating or dabbing them ſeveral times over the whole face thereof: this leaves the form in a condition to be paſſed under the preſs, with the moiſtened paper laid thereon.

The PRINTING *preſs* (repreſented *tab. miſcel. fig.* 8.) is a very complex machine: its two principal parts, each whereof conſiſts of ſeveral others, are the *body* of the preſs, which ſerves to give the pinch or ſtroke for the impreſſion; and the *carriage*, on which the form is laid to undergo the ſame. See PRESS.

The body conſiſts of two ſtrong cheeks *b b*, placed perpendicularly, and joined together by four croſs pieces or planks. See CHEEK.

The firſt plank *c c*, called the *cap* of the preſs, is fixed, and ſerves to keep the two cheeks together at the due diſtance, at-top: the ſecond *d d*, called the *head*, is moveable; being ſuſtained by two iron pins or *long bolts*, that paſs the cap: in this plank is fixed a female ſcrew or *worm*, with a *braſs nut*, ſuſtained by two *ſhort bolts*, which keep it up: the third plank *e e*, called the *ſhelves*, ſerves to keep ſteady a part called the *hoſe*, in which the *ſpindle* (to be ſpoken of hereafter) is incloſed: the fourth plank *f f*, called the *winter*, is moveable; it bears the carriage, and ſuſtains the effort of the preſs beneath, as the head does above; each giving way a little, the one upwards, the other downwards, to make the pull the eaſier.

The *ſpindle g g* is an upright piece of iron pointed with ſteel, of different dimenſions; having a male ſcrew, which goes into the female of the head about four inches. Through the eye *h* of this ſpindle, is rivetted the *bar*, by which the preſſman works the preſs.

The lower part of the ſpindle paſſes through the ſhelves, being incloſed in a ſquare wooden frame *i*, called the *hoſe*; and its point works into the plug, fixed in a braſs pan ſupplied with oil; which pan is fixed to an iron plate let into the top of the platten. The preſſman, then, by pulling or turning the bar fixed in the eye by an iron key, preſſes upon a ſquare ſmooth piece of wood called the *platten*, and enables it to compreſs the form covered with the paper, tympans, and its blankets, which, in order hereto, are brought under the platten.

At each corner of the hoſe, is an iron hook faſtened to thoſe at each corner of the platten, with cords or packthread, very exactly.

The *carriage l l l l*, which makes the ſecond principal member of the preſs, is placed a foot below the platten, having its fore-part ſupported by a wooden prop *m*, called the *fore-ſtay*, while the other reſts on the winter. On this carriage, which ſuſtains the plank, are nailed two long iron bars, or *ribs*, *o o*; and on the plank are nailed ſhort pieces of iron or ſteel *p p*, called *cramp-irons*, equally tempered with the ribs, and which ſlide upon them when the preſs is turned in or out.

Under the carriage is fixed a ſmall piece of iron called the *ſpit*, with a double wheel in the middle, round which leather *girts* are faſtened, nailed to each end of the plank. To the outſide of the ſpit is fixed a handle, or rounce, by which the preſſman turns the plank in or out at pleaſure.

Upon the plank is a ſquare wooden frame or *coffin q q*, wherein is incloſed a marble, or poliſhed ſtone for the form to be laid on. To this coffin are faſtened leather ſtay-girts, one to each ſide; which being again faſtened to the cheeks of the preſs, prevent the plank from running too far out, when drawn from under the platten. On the fore-part of the plank is a gallows *r r*, which ſerves to ſuſtain the tympans, when taken from off the form.

On the front of the coffin are three frames much alike, though ſerving for different purpoſes, *viz.* the two tympans and friſket: the tympans *s s* are ſquare, made of three ſlips of very thin wood, and at-top of a ſlip of iron, ſtill thinner, called a *head-band:* that called the *outward tympan* is faſtened with iron joints to the coffin. They are both covered with parchment; and between the two are placed blankets, which ſerve to make the impreſſion of the platten upon the ſurface of the letters more equable; as alſo to prevent the letters from being broken by the force of the preſs. The friſket *t t* is all of iron, very thin, faſtened at-top to the great or outward tympan, and ſuſtained by a ſlip of wood hanging from the cieling, when opened to take out the printed ſheets, and put in others. It is alſo covered with parchment or paper, cut in the neceſſary places, that the ſheet, which is between the great tympan and friſket, may receive the ink, and that nothing may hurt the margins. On the parchment of the great or outward tympan it is, that the blank ſheet is laid to be printed.

To regulate the margins, and make the lines and pages anſwer each other when printed on the other ſide; in the middle of the wood, in the ſides of this tympan, are two iron points, which make two holes in the ſheet, to be placed on the ſame pins, when the ſheet is returned for an impreſſion on the other ſide, called the *reiteration.*

Every thing now about the tympans being prepared for printing, and the preſſman having inked or beat his form now placed on the ſtone, he brings the tympans and friſket down from the gallows upon the form; and advancing the plank under the platten by means of the ſpit-handle, or rounce, gives two ſtrokes or pulls with the bar; and with the ſame handle turned the contrary way, brings back the plank, to take out the printed ſheet, and put in a freſh one; and this he repeats till he have taken off the full number of ſheets the edition is to conſiſt of.

One ſide of the ſheet being thus printed, it is remanded to the preſs for the other; and ſo diſpoſed, as that the iron points paſs through the holes already made in the ſheet.

Sometimes it is required to cut the friſket afreſh, where the ſecond ſide is to be more or leſs full of *printing* than the firſt; as is frequently the caſe at the beginning and ending of books, *&c.*

The number of ſheets of the edition being complete, and the form to be ſeparated, to reſtore the letters into the caſes, they firſt waſh it in a boiling lye to take out the remains of the ink, ſcouring it with a bruſh, and then with fair water. This done, it is carried to a wooden frame to be unlocked, and the furniture, *i. e.* the ſticks, *&c.* taken off to diſengage it from the chaſe. Then the compoſitor taking out ſeveral lines at once upon a little wooden ruler, he replaces each letter in its proper box, to be again uſed in the remainder of the impreſſion; which laſt operation they call *diſtribution.*

Beſide the ſeveral kinds of letters and characters above-mentioned, uſed in *printing*, they have likewiſe rules for blank lines, borders, and head and tail-pieces, accommodated to the ſeveral kinds of letters.

The *rules* for blank-lines are of braſs, and made exactly the height of the letter; otherwiſe they will either hinder the neighbouring letters from *printing*, or will themſelves be hindered by them. Theſe the compoſitor occaſionally cuts into proper lengths, as his work requires.

The *borders* are a kind of ornaments in form of long bars, ſerving for the diviſions of books, chapters, *&c.* Their depth is proportioned to the letter, and their length adjuſted to the page; for being compoſed of ſeveral moveable pieces, it is eaſy lengthening or ſhortening them.

The *head* and *tail-pieces*, cut either in wood or pewter, are compartiments uſed at the beginnings and endings of books.

The initial letters are ſometimes cut in wood, and figured; ſometimes caſt like the other characters.

For the conveniency of the binding, the *printers* had early recourſe to ſignatures, *i. e.* letters of the alphabet placed at the bottom of the ſheet, which ſhew the order they are to be bound in; as well as whether the quires be complete.

The *catch-words* ſerve nearly the ſame purpoſe: theſe are the firſt words of each page, which are inſerted at the bottom of the preceding pages. The number of the pages are equally ſerviceable to the reader and the binder, to guide to references, and to warrant the book duly bound and collated: ſome *printers* formerly put them at the bottoms of the pages; but cuſtom has carried it for the tops.

In the infancy of *printing*, they had likewiſe a regiſtrum chartarum for the convenience of the binders: to draw this, at the end of each volume, they collected the ſignatures, and the firſt words of the four firſt ſheets of each alphabet. To abridge it, they afterwards contented themſelves to expreſs the ſignatures, and how oft each letter was repeated: but the regiſtrum has been long diſuſed.

As to the faults which eſcape the corrector and compoſitor, they are uſually noted in what we call *errata.* The ancient editions had no errata; but in lieu thereof they corrected the faults in each printed copy with a pen; which was eaſy enough in thoſe days, though impracticable now. In effect, we have anciently had *printers* who did not need an errata of above five articles in a volume of five hundred ſheets: how different from ſome of the preſent ſet, who might make an errata of five hundred articles in a book of five ſheets!

Chineſe PRINTING.---There are three opinions as to the antiquity of the Chineſe *printing*, one fixing it 300 years before Chriſt; another 900 years after him; and a third carrying it ſtill farther back, and making it coeval with that mighty empire; though it muſt be allowed the laſt is much the leaſt probable of the three.

Their manner of *printing* we have already hinted to be very different from that which now obtains among the Europeans: it is true, it has ſome advantage over ours in correctneſs, and the beauty of the character; but in other reſpects it comes far ſhort, the ſingle advantage of moveable characters making more than amends for all that is urged againſt us by ſome zealous advocates for this oriental *printing.*

Books are printed in China from wooden planks, or blocks, cut like thoſe uſed in *printing* of callico, paper, cards, *&c.* among us. See CARDS, *&c.*

Theſe blocks are made of a ſmooth, firm, cloſe wood, and of the ſize of the leaf required. On the face-ſide they glue a paper, upon which ſome able penman draws out the ſeveral letters and characters, with a Chineſe pen, which is a kind of pencil. This is the principal part of the work, and that whereon the ſucceſs of the reſt depends.

When finiſhed, the block is put into the hands of a ſculptor, or cutter in wood; who, following the ſeveral ſtrokes of the writer with his gravers, and other ſharp little inſtruments, makes them all appear in relievo on the wood. See CUTTING *in wood.*

When the carving or cutting is finiſhed, they moiſten what remains of the paper, and rub it gently off.

The ink they uſe in *printing* is the ſame with the common Chineſe ink, wherewith they alſo write; and is made of lamp-black, mixed up with oil.

Their preſs reſembles our rolling-preſs, much more than the letter-preſs. See ROLLING *preſs.*

As to their paper, it is inferior to ours: it is made of the inner bark or rind of a kind of ruſhes, beat up with water into a pulp or paſte, and formed in moulds, much like ours. See PAPER.

The advantages of the Chineſe *printing* conſiſt in this, that they are not obliged to take off the whole edition at once, but print their books as they need them; that the blocks are eaſily retouched, and made to ſerve afreſh; and that there needs no corrector of the preſs.

Its diſadvantages are, that a large room will ſcarce hold all the blocks of a moderate volume; that the colour of the ink eaſily fades; and that the paper is apt to tear, and is ſubject to worms: whence it is that we ſee ſo few ancient books in China.

Rolling-preſs PRINTING is employed in taking off prints or impreſſions from copper-plates engraven or etched. See ENGRAVING and ETCHING.

It differs, as we have before obſerved, from *letter-printing*; in that the marks and characters, whoſe impreſſions are to be taken, in the former caſe, are indented, or cut inwards; and in the latter, are in relievo, or ſtand out.

This art is ſaid to be as ancient as the year 1460. and to owe its origin to Finiguerra, a Florentine goldſmith, who caſting a piece of engraven plate in melted brimſtone, found the exact print of the engraving left in the cold brimſtone, marked with black licked out of the ſtrokes by the liquid ſulphur.

Upon this he attempted to do the ſame on ſilver plates with wet paper, by rolling it ſmoothly with a roller; and this ſucceeded.

This novelty tempted Baccio Baldini, a goldſmith of the ſame city, to attempt the ſame, which he did with ſucceſs; engraving ſeveral plates of Sandro Boticello's deſign, and *printing* them off this new way: in which he was followed by Andrew Mantegna, then at Rome.

This knowledge getting into Flanders, Martin of Antwerp, a famous painter, graved abundance of plates of his own invention, and ſent ſeveral prints into Italy, marked thus, *M. C.* After him Albert Durer appeared, and gave the world a vaſt number of prints both in wood and copper. About this time one Hugo de Carpi, an Italian painter, found out a way, by means of ſeveral plates of wood, to make prints reſemble deſigns of chiaro ſcuro; and ſome years after, the invention of etching was diſcovered, which was ſoon made uſe of by Parmeggiano.

The art was not uſed in England till the reign of king James I. when it was brought from Antwerp, by Speed.

The fabric of the rolling-preſs, and the compoſition of the ink uſed therein, with the manner of applying both in taking off prints, are as follow.

Structure of the rolling-preſs.---This machine, like the common preſs, may be divided into two parts; the *body* and *carriage*, analogous to thoſe in the other.

The body conſiſts of two cheeks of different dimenſions; ordinarily about four ½ feet high, a foot thick, and two ½ apart; joined at-top and bottom by croſs pieces. The cheeks are placed perpendicularly on a wooden ſtand, or foot, horizontally placed, and ſuſtaining the whole preſs.

From the foot likewiſe riſe four other perpendicular pieces, joined by other croſs or horizontal ones; which may be conſidered as the carriage of the preſs, as ſerving to ſuſtain a ſmooth, even plank, which is about four ½ feet long, two ½ feet broad, and an inch ½ thick; upon which the engraven plate is to be placed.

Into the cheeks go two wooden cylinders, or rollers, about ſix inches in diameter, borne up at each end by the cheeks; whoſe ends, which are leſſened to about two inches diameter, and called *trunnions*, turn in the cheeks between two pieces of wood, in form of half-moons, lined with poliſhed iron, to facilitate the motion.

The ſpace in the half moons, left vacant by the trunnion, is filled with paper, paſtboard, *&c.* that they may be raiſed and lowered at diſcretion; ſo as only to leave the ſpace between them neceſſary for the paſſage of the plank, charged with the plate, paper, and blankets.

Laſtly, to one of the trunnions of the upper roller is faſtened a croſs conſiſting of two levers, or pieces of wood, traverſing each other. The arms of this croſs ſerve in lieu of the handle of the common preſs; giving a motion to the upper roller, and that to the under: by which means the plank is protruded, or paſſed between them.

Preparation of the ink.---The ink uſed in rolling-preſs *printing*, is a compoſition of black and oil mixed and boiled together in a due proportion.

The black is a factitious matter, made of the ſtones of peaches and apricots, bones of ſheep's-feet, and ivory; all well burnt, beaten, ſifted, and mixed together with ſpirit of wine, and ſometimes only with water.

This black is uſually brought hither ready prepared from Francfort on the Maine; whence our printers call it ***Francfort black.*** See BLACK.

The oil wherewith they dilute this black, is nut-oil; which is boiled up differently, according to the different works it is to be uſed in.

They uſually make three kinds, *thin*, *thick*, and *ſtrong*; only differing in the degree of coction: the ſtrong is that uſed in the fineſt works, *&c.*

To make the ink, they pulverize the black ſtone very carefully, and paſs it through a fine ſieve; then mix it up on a marble with the proper oil, by means of a mullet, after the ſame manner as the painters do their colours.

Method of PRINTING *from copper plates.*---The ink being prepared, they take a little quantity of it on a rubber, made of linen rags, ſtrongly bound about one another; and therewith ſmear the whole face of the plate, as it lies on a grate, over a charcoal fire.

The plate ſufficiently inked, they firſt wipe it coarſely over with a foul rag, then with the palm of the left hand, then of the right; and, to dry the hand, and forward the wiping, rub it from time to time on whiting.

In wiping the plate perfectly clean, yet without taking the ink out of the engraving, conſiſts a good part of the addreſs of the workman. The French printers uſe no whiting, as being detrimental to the colour of the ink; nor do they lay the plate on the grate to warm, till after inking and wiping it.

The plate thus prepared, is laid on a thick paper, fitted upon the plank of the preſs: over the plate is laid the paper, firſt moiſten'd to receive the impreſſion; and over the paper, two or three folds of blanketing, or other ſtuff.

Thus diſpoſed, the arms of the croſs are pulled; and by that means, the plate with its furniture paſſed through between the rollers; which pinching very ſtrongly, yet equably, preſſes the moiſtened paper into the ſtrokes of the engraving, whence it licks out the ink.

Some works require being paſſed twice through the preſs, others only once, according as the graving is more or leſs deep, or the greater or leſs degree of blackneſs the print is deſired to have.

It muſt be obſerved, that the ſtronger and thicker the ink is, the ſtronger muſt the rollers pinch the plate: this tempts many of the workmen to uſe a thinner oil, in order to ſave labour; which proves prejudicial to the impreſſion.

The wetting of the paper ought to be done two or three days before *printing* it, to render it the more ſupple and mellow: as the prints are drawn off, they are hung up to dry on lines, *&c.*

Laſtly, after the number of prints deſired have been wrought off from the plate, they rub it over with oil of olives, to prevent its ruſting, and ſet it by againſt a new impreſſion. If the ſtrokes of the graving be perceived full of ink hardened therein, in the courſe of the *printing*, they boil it well in a lye, ere the oil be applied.

PRIOR, *before*, ſomething that is nearer the beginning, than another to which it is compared. See PRIORITY.

PRIOR is particularly uſed for a ſuperior of a convent of monks, or the ſecond perſon after the abbot. See SUPERIOR and MONASTERY.

Priors are either *clauſtral*, or *conventual.*

Conventual PRIORS are the ſame as abbots; all the difference between them being in name; both having the ſame rights, and both alike governors of monaſteries. See ABBOT and CONVENTUAL.

Clauſtral PRIOR is he who governs the religious of an abbey, or priory, *in commendam*; ſo called, becauſe he has ſuperiority in the cloiſter or monaſtery. See COMMENDAM.

His juriſdiction is wholly from the abbot; and ends with the abbot's death, unleſs he have been elected by the whole convent.

Conventual priors are of two kinds, *viz.* ***regular conventual priors***, who govern religious living in community; and ***ſecular*** or ***commendatary-conventual priors.***

Conventual ***priors*** are obliged to take up the prieſthood within a year, or at moſt two, from the dates of their proviſion; in default whereof, their benefices are declared vacant.

Priors muſt be twenty-five years old, ere they can govern the convent; and twenty, if the convent be governed by another.

Grand PRIOR, is the ſuperior of a large abbey, where ſeveral ſuperiors are required; as in the abbeys of Cluny and Fecamp

In the monaſtery of St. Denys, there were anciently five ***priors***; the firſt whereof was called the ***grand prior.***---In moſt monaſteries there is alſo a ***ſub-prior.***---There are alſo ***grand priors*** in the military orders; as in that of Malta, or St. John of Jeruſalem, *&c.*

PRIORS *aliens*, certain religious, born in France and Normandy, ſuperiors of religious houſes, erected for their country-folks here in England. See ALIEN.

Theſe, Henry V. deeming no good members for this land, ſuppreſſed; and their livings were afterwards given by Henry VI. to other monaſteries, and houſes of learning; but chiefly, as Stow obſerves, to the erecting of thoſe two famous colleges, called the *king's colleges of Cambridge* and *Eaton.*

Arch PRIOR, ſee the article ARCH *prior.*

PRIORITY, PRIORITAS, the relation of ſomething, conſidered as it is *before*, or *prior* to another, *i. e.* nearer to the beginning, or the firſt. See POSTERIORITY.

The principal modes of ***priority*** are five, *viz.* in reſpect of ***time***; as when we ſay, that the Grecian empire was *prior* to the Roman; ***nature***, as when we ſay one is *prior* to two; ***order***, ***dignity***, and *cauſality:* which are all ſummed up in the technical diſtich;

> ***Tempore, natura, prius ordine, dic & honore;***
> ***Effecto cauſam dicimus eſſe prius.***

PRIORITY, in law, denotes an antiquity of tenure, in compariſon of another leſs ancient. See TENURE.

To hold by priority, is to hold of one lord more anciently than of another; in reſpect whereof the tenant is ſaid to *hold in poſteriority.* See POSTERIORITY. The lord of the *priority* ſhall have the cuſtody of the body. *Cromp. Juriſd.*

PRISAGE, PRISAGIUM, that ſhare which belongs to the king, or admiral, out of ſuch merchandizes as are taken at ſea, as lawful prize: which is uſually a tenth part. See PRIZE.

PRISAGE *of wines*, a cuſtom in certain ports, whereby the king challenges out of every veſſel laden with wine, containing twenty tuns, or upwards, two tuns of wine, the one before, the other behind the maſt, at his own price; which is twenty ſhillings *per* tun. See DUTY.

This cuſtom varies a little, in various places: at Boſton, *e. gr.* every bark laden with ten tuns of wine pays *priſage.*

The term is now grown into diſuſe; and in lieu of *priſage*, the cuſtom, ſays Cowel, is popularly called ***butlerage***; becauſe it is the king's chief butler that receives it. See BUTLERAGE.

PRISCILLIANISTS, PRISCILLIANISTÆ, ancient heretics, who aroſe in Spain, or rather were derived thither from Egypt, towards the end of the fourth century.

The origin of this hereſy is not well known; but it appears to have been brought into Spain by one Marcus of Memphis, who had for his diſciple the rhetor Helpidius, under whom *Priſcillian* was educated.

What their particular tenets were, is not eaſy to diſcover; but they are charged by their adverſaries with indulging all kinds of ſecret filthineſs, and nocturnal mixtures, under a religious notion.---Among their dogmata, this is ſaid to have been one: ***Jura, perjura, ſecretum prodere noli.*** See FLORINIANS.

They held, that ſouls are of the ſame nature and ſubſtance with God: they admitted all the books of ſcripture, but allegorized them into their own ſenſe. ***Forbes.***

Priſcillian, their leader, was a man of great birth, fortune, parts, and learning: he was condemned with ſome biſhops his adherents, in a council at Saragoſſa, and in another at Bourdeaux; but he appealed to the emperor Maximus, and had a hearing at Treves; where, being convicted of broaching novelties, he was condemned to death, with ſeveral of his followers. See LIBERTINES.

PRISE, or PRIZE, in navigation, a veſſel taken at ſea from the enemies of the ſtate, or from pirates, by a man of war, or a merchant-man, having commiſſion from the admiral.

Veſſels are looked on as lawful *priſe*, if they fight under any other ſtandard than that of the ſtate from whom they have their commiſſion; if they have no charter-party, invoice, or bill of lading aboard them; if they be loaden with effects belonging to the king's enemies, or with contraband goods.

Thoſe of the king's ſubjects recovered from the enemy, after having remained twenty-four hours in their hands, are deemed lawful *priſe.*

Veſſels that refuſe to ſtrike their ſails, after having been ſummoned thereto by the king's ſhips, may be conſtrained to do it; and if they make reſiſtance, and fight, are lawful *priſe.*

PRISE, in our ſtatutes, is uſed for things taken of the ſubjects by the king's pourveyors. See POURVEYOR.

Spelman deſcribes *priſes* to be corn and other proviſions taken from the country people, at lower rates than ordinary, for the maintenance of the king's houſhold, gariſons, *&c.*

Roger de Monte alto, who married the ſiſter of Hugo de Albeney, claimed the following privileges, *viz.* his caſtle of Reſinge *cum* priſis 40 *dierum*, with *priſes* of 40 days: which phraſe the ſame author underſtands of the liberty of taking proviſions for the ſupport of the gariſon of his caſtle, upon paying for them within 40 days. See *ſtat.* 12. *Car.* II. *cap.* 34.

PRISM *, **Prisma**, in geometry, an oblong ſolid or body, contained under more than four planes, and whoſe baſes are equal, parallel, and alike ſituated. See Solid, *&c.*

* It is thus called from the Greek πρισμα, ſomething *ſawn*, or *cut off*.

The *priſm* is generated by the motion of a rectilinear figure, as ACB (*tab. geom. fig.* 16.) deſcending alway parallel to itſelf, along the right line AE.

If the deſcribent be a triangle, the body is ſaid to be a *triangular priſm*; if ſquare, a *quadrangular* one, *&c.*

From the geneſis of the *priſm*, it is evident it has two equal and oppoſite baſes; that it is terminated by as many parallelograms as the baſe conſiſts of ſides; and that all the ſections of a *priſm* parallel to its baſe are equal.

Every triangular *priſm* may be divided into three equal pyramids. See Pyramid.

To meaſure the ſurface and ſolidity of a Prism.---Find the area of the baſe, *e. gr.* ABC, (ſee Triangle) and multiply it by 2; find the areas of the planes or parallelograms, that include or circumſcribe it, and add their ſum to the former product. The ſum is the whole ſurface of the *priſm*.

Multiply then the baſe BAC, by the altitude CD; the product is the ſolidity of the cube ABCDEF. See Centrobaric.

All *priſms* are in a ratio compounded of their baſes and altitudes: if then their baſes be equal, they are to each other as their heights; and *vice verſa*. Similar *priſms*, *&c.* are in a triplicate ratio of their homologous ſides, as alſo of their altitudes.

Prism, in dioptrics, is a glaſs in form of a triangular *priſm*, much uſed in experiments about the nature of light and colours. See Light, *&c.*

The phænomena and uſe of the *priſm* ariſe from its ſeparating the rays of light in their paſſage through it. See Ray.

The more general of theſe phænomena are as follow: for, to enumerate all would be endleſs; and even theſe are ſufficient to demonſtrate, that colours do not either conſiſt in the contorſion of the globules of light, as Des Cartes imagined; nor in the obliquity of the pulſes of the ethereal matter, as Hook fanſied; nor in the conſtipation of light, and its greater or leſs concitation, as Dr. Barrow conjectured; but that they are original and unchangeable properties of light itſelf.

Phænomena of the Prism.---1. The ſun's rays tranſmitted through a *priſm* to an oppoſite wall, project an image like the rainbow, of various vivid colours; the chief whereof are red, yellow, green, blue, and violet. See Rainbow.

The reaſon is, that the various coloured rays, which were before mixed and blended together, are now, in virtue of their different refrangibilities, ſeparated by refraction, in paſſing through the *priſm*, and thrown, each colour, by itſelf. See Refrangibility.

For the blue rays, *e. gr.* repreſented by the dotted lines, (*tab. opt. fig.* 50.) beginning to be ſeparated from the reſt in the ſide *c a*, of the *priſm a b c*, by the firſt refraction in *d d*, are again ſeparated further in the other face of the *priſm b c*, by a ſecond refraction the ſame way in *e e*: whereas in a plain glaſs, or even in a *priſm* in a different poſition, the blue rays ſeparated by the firſt refraction in the firſt ſurface, are again mixed by the ſecond refraction at the other ſurface, which is made a contrary way. See Refraction.

2. The image thus projected, is not round; but when the angle of the *priſm* is 60 or 65 deg. about five times as long as broad.

Becauſe ſome of the rays are refracted more than others, and therefore exhibit ſeveral images of the ſun ſtretched out in length, as if it were but one.

3. Thoſe rays which exhibit the yellow colour, ſwerve more from the rectilinear courſe, than thoſe which exhibit the red; and the green more than the yellow; and the violet moſt of all.

4. If the *priſm*, through which the rays are tranſmitted, be turned about its axis; ſo as the red, yellow, green, *&c.* rays be received in order on another *priſm* about twelve feet diſtant from the former, through a little hole, and thence projected further, the yellow, red, *&c.* rays, though they fall in the ſame manner on the ſecond *priſm*, yet will not be projected on the ſame place as the red, but will be deflected further that way towards which the refraction is.

And if, in lieu of the ſecond *priſm*, they be received on a lens a little convex; the yellow, green, *&c.* rays, will be collected, each in its order, into a nearer focus than the red ones.---The reaſon of which two laſt phænomena is, that the yellow rays are refracted more than the red ones, the green ones more than the yellow ones, and the violet ones moſt of all.

5. The colours of coloured rays well ſeparated, can neither be deſtroyed, nor in any manner altered by repeated refractions through a number of *priſms*; nor by paſſing through an illumined ſpace, nor by their mutual decuſſations, nor by the neighbourhood of the ſhade, nor by being reflected from any natural bodies.

Becauſe their colours are not modifications ariſing from refraction, but original and immutable properties thereof. See Colour.

6. All coloured rays collected together in any manner, either by ſeveral *priſms*, or a convex lens, or concave ſpeculum, form whiteneſs; but being again ſeparated after decuſſation, each exhibits its proper colour. See Whiteness.

Becauſe, as the ray was white ere its parts were ſeparated by refraction; ſo thoſe parts being remixed, it recovers its whiteneſs; and the coloured rays, when they meet, do not deſtroy one another, but only intermix.

Hence duſts, or powders, red, yellow, green, blue, violet, *&c.* mixed in a certain proportion, become grey; or of the colour ariſing from a mixture of black and white; and would be perfectly white, but that ſome of the rays are abſorbed.

Thus, if a circle of paper be ſmeared with all theſe colours apart; in a certain proportion, and turned ſwiftly about its centre, ſo that the ſpecies of the ſeveral colours may be confounded in the eye by the velocity of the motion, the ſeveral colours will diſappear, and the whole be ſeen of one uniform colour between black and white.

7. If the ſun's rays ſtrike very obliquely on the inner ſuperficies of a *priſm*, the rays reflected will be violet; thoſe tranſmitted, red.

8. If there be two *priſms*, the one full of a red liquor, the other of a blue one; the two joined together will be opake; though, if both be filled either with a blue or a red liquor, they will, together, be tranſparent: for the one tranſmitting none but blue, the other none but red rays, the two together will tranſmit none at all. See Blue.

9. All natural bodies, eſpecially white ones, viewed through a *priſm* held to the eye, ſeem fringed or hemmed on one ſide with red and yellow, on the other with blue and violet.

10. If two *priſms* be ſo placed, that the red of the one, and the purple of the other, meet on a paper encompaſſed with darkneſs, the image will be pale; but viewed through a third *priſm* held to the eye at a due diſtance, will appear double, red, and purple.

And if two kinds of powder, the one perfectly red, the other blue, be mixed, a little body being covered thick with the mixture, will exhibit a double image, the one red, the other blue, through a *priſm* applied to the eye.

11. If the rays tranſmitted through a convex lens be received on a paper before they meet in the focus, the confine of light and ſhadow will ſeem tinged with a red colour; if beyond the focus, with a blue.

12. If the rays about to be tranſmitted through one part of the pupil, be intercepted by the interpoſition of ſome opake body near the eye, the extremes of bodies lying beyond it, will ſeem tinged with colours, as if ſeen through a *priſm*, though leſs vivid.

Becauſe the rays tranſmitted through the reſt of the pupil, are ſeparated by refraction into divers colours; and the intercepted rays, which would be refracted a contrary way, are prevented from mixing and diluting them: whence alſo it is, that a body viewed with both eyes through two little holes made in a paper, does not only appear double, but tinged with colours too.

PRISMOID, **Prismoides**, in geometry, a ſolid figure, bounded by ſeveral planes, whoſe baſes are right-angled parallelograms, parallel, and alike ſituated. See Prism.

PRISON. See the article Gaol.

PRISONER, in law, one that is reſtrained of his liberty upon any action civil or criminal; or upon commandment.

A man, again, may be *priſoner* either upon matter of fact, or of record.

Prisoner *upon matter of record*, is he who being preſent in court, is by the court committed to priſon.

Prisoner *upon matter of fact*, is he who is committed upon an arreſt, be it by the ſheriff, conſtable, or other. See Arrest.

PRIST.---*Unques* prist. See the article Unques.

PRIVATE *average*, } See the articles { Average,
Private *charters*, } See the articles { Charter,
Private *ſpirit*, } See the articles { Spirit.

PRIVATION, **Privatio**, the abſence, want, or defect of ſomething needed, or neceſſary.

In the canon law, *privation* is uſed for an interdiction, or ſuſpenſion. See Deprivation.

Myſtic divines uſe the phraſe, *privation of God*, for thoſe drineſſes which the ſoul experiences, to whom God does not make himſelf felt.

The church of Rome teaches, that children dying without baptiſm, go into a limbus, where they undergo a *privation* of the ſight of God.

Privation, in phyſics, is a negative principle, which, with matter and form, the Peripatetics ſuppoſe, conſpires to conſtitute natural bodies. See Matter and Form.

Privation ſignifies no more than the abſence of the future form: thus every thing, according to Ariſtotle, is formed of this, that it was not that thing before; *e. gr.* a chick ariſes hence, that it was not a chick before it was generated; which is what the philoſopher calls *privation*. See PRINCIPLE.

Ariſtotle is very angry with the ancients, for not admitting *privation* as a principle, and imputes it to their ignorance thereof. But it is an injuſtice to reproach them with ignorance of what it is impoſſible to be ignorant of; and it is an illuſion to produce this poor principle of *privation* as ſuch a mighty myſtery; there being nobody but ſuppoſes it a thing known, that a thing is not before it is made. See ARISTOTELIAN, *&c.*

PRIVATIVE, in grammar, a particle, which, prefixed to a word, changes it into a contrary ſenſe. See PARTICLE.

Thus, among the Greeks, the *α* is uſed as a *privative*; as in *α-θεος*, *atheiſt*, *acephalus*, &c.---The Latins have their *privative in*; as, *incorrigibilis*, *indeclinabilis*, &c.---The Engliſh, French, *&c.* on occaſion, borrow both the Latin and Greek *privatives*.

PRIVATIVE *modes*. See the article MODE.

PRIVATIVE *quantity*, in algebra, denotes a quantity leſs than nothing; called alſo a *negative quantity*; in oppoſition to affirmative or poſitive quantities. See QUANTITY, NEGATIVE, *&c.*

Privative quantities are denoted by the character of ſubtraction — prefixed to them. See CHARACTER.

PRIVILEGE*, PRIVILEGIUM, in the general, any kind of right, prerogative, or advantage, attached to a certain perſon, condition, or employment, excluſive of others.

* The word is formed from the Latin *privata lex*.

PRIVILEGE, in law, is a particular right granted to a ſingle perſon, place, community, or the like, whereby they are exempted from the rigour of the common laws.

Privilege is either *perſonal* or *real*:

Perſonal PRIVILEGE is that which is granted to any perſon either againſt or beyond the courſe of the common law.

Such, *e. gr.* is that of a member of parliament, who may not be arreſted, nor any of his ſervants, during the ſitting of parliament, nor for a certain time before and after. See PARLIAMENT.

Real PRIVILEGE is a franchiſe granted to a place. See FRANCHISE.

Such is that granted to our univerſities, by which none who are members thereof may be called to Weſtminſter-hall upon any contract made within their own precincts.

So alſo, a perſon belonging to the court of chancery cannot be ſued in any other court, certain caſes excepted; and if he be, he may remove it by *writ of privilege*.

It is an ancient *privilege* for men to be exempted from arreſts within the verge of the court, *i. e.* in or near the palace where the king is reſident: becauſe, in ſuch caſes, quarrels frequently happen; and the peace ought to be ſtrictly kept there. See PAX.

In the laws of Hen. I. it is expreſſed, that peace ought to be maintained religiouſly and reverently within four miles of the king's doors towards the four quarters; and forty-nine acres, nine feet, nine palms, and nine barley-corns around. See PEACE.

Attachment of PRIVILEGE. See the article ATTACHMENT.

PRIVILEGE, in commerce, is a permiſſion from a prince or magiſtrate, to make and ſell a certain merchandize, or to engage in a certain commerce, either excluſively of others, or concurrently with them.

The firſt is called an *excluſive privilege*; the latter, ſimply, *privilege*.

Excluſive privileges are to be granted rarely, by reaſon of the hindrance they are of to trade; yet they are ſometimes very juſt and reaſonable, by way of reward for the invention of uſeful machines, manufactures, *&c.*

Excluſive privileges for foreign commerce are uſually granted on the following conditions:---That the commodities be brought from remote parts, where there is no going without running great riſques: that the *privilege* be only for a limited time: that the perſons *privileged* be not allowed to monopolize, *i. e.* to raiſe and lower their commodities at pleaſure; but that the ſale and price be always proportionable to the expence, intereſts, *&c.* and that the *privilegees* aſſiſt the ſtate, on occaſion, with part of their gains.

PRIVILEGE *for the impreſſion of books*, is properly excluſive; being a permiſſion which an author, or bookſeller, obtains under a prince's ſeal, to have alone the impreſſion of a book, with a prohibition of all others to print, ſell, or diſtribute the ſame, within a certain term of years, uſually 14, under the clauſes and penalties expreſſed therein.

Theſe *privileges* were unknown till the beginning of the 16th century, when they were introduced in France: the oldeſt is ſaid to bear date in the year 1507. and to have been occaſioned by ſome printers counterfeiting the works of others as ſoon as they appeared.

But people were yet at liberty to take or let them alone at pleaſure, till the intereſts of religion, and the ſtate, occaſioned the reſtraining of this liberty.

In 1563. Charles IX. publiſhed a celebrated ordonnance, forbidding any perſon, on pain of confiſcation of body and goods, to print any letter, ſpeech, *&c.* without permiſſion.

The like has been ſince done in England; though, at preſent, *privileges* are not only not required, but by the late act for ſecuring the properties of books, ſeem needleſs.

PRIVILEGES *of the clergy*. See the article CLERGY.

PRIVILEGE *of the tabouret*. See the article TABOURET.

PRIVILEGED *debt*. See the article DEBT.

PRIVITIES, the natural parts of either ſex; or thoſe immediately miniſtering to the buſineſs of generation. See GENITALS.

PRIVITY, an intimate freedom, or private familiarity between two perſons. See PRIVY.

The lawyers ſay, if there be lord and tenant, and the tenant hold of the lord by certain ſervices; there is a *privity* between them in reſpect of the tenure.

PRIUS.---*Niſi* PRIUS, in law. See NISI.

PRIVY, in law, a perſon who is partaker, or has an intereſt in an action or thing.

In this ſenſe they ſay, *privies in blood*: every heir in tail is *privy* to recover the land intailed.

In old law-books, *merchants privy* are oppoſed to merchants ſtrangers.

Coke mentions four kinds of *privies*.---*Privies in blood*, as the heir to his father; *privies in repreſentation*, as executors and adminiſtrators to the deceaſed; *privies in eſtate*, as he in reverſion, and he in remainder; donor and donee; leſſor and leſſee; laſtly, *privy in tenure*, as the lord by eſcheat, *i. e.* when land eſcheats to the lord for want of heirs.

PRIVY *council*, a council of ſtate, held by the king with his counſellors, to concert matters for the public ſervice, the honour and ſafety of the realm, *&c.* See COUNCIL.

The *privy council* is, or ought to be, the primum mobile of the ſtate, and that which gives the motion and direction to all the inferior parts. It is likewiſe a court of juſtice of great antiquity; the primitive and ordinary way of government in England being by the king and *privy* council.

It has been frequently uſed by all our kings for determining controverſies of great importance: the ordinary judges have ſometimes declined giving judgment till they had conſulted the king and *privy* council; and the parliament have frequently referred matters of high moment to the ſame; as being by long experience better able to judge of, and by their ſecrecy and expedition, to tranſact, ſome ſtate-affairs, than the lords and commons.

At preſent, the *privy* council takes cognizance of few or no matters except ſuch as may not be well determined by the known laws, and ordinary courts; ſuch as matters of complaint, and ſudden emergencies.

The oath of a *privy* counſellor is, to the utmoſt of his power and diſcretion, truly and juſtly to counſel the king, and to keep ſecret the king's counſels.

Anciently, to ſtrike in the houſe of a *privy* counſellor, or elſewhere in his preſence, was grievouſly puniſhed: to conſpire his death, is felony; and to effect it, treaſon.

With the advice of this council, the king iſſues proclamations that bind the ſubject, provided they be not contrary to law. See PROCLAMATION.

In debates, the loweſt delivers his opinion firſt, the king laſt; and thereby determines the matter.

A council is never held without the preſence of a ſecretary of ſtate. See SECRETARY.

The members of the *privy* council in the year 1710. were in number 57; their officers, four clerks of the council, three clerks extraordinary, three clerks in the council-office, a keeper of the records, and two keepers of the council-chamber.

Lord preſident of the PRIVY *council*. See PRESIDENT.

PRIVY *ſeal*, a ſeal which the king uſes, previouſly, to ſuch grants, *&c.* as are afterwards to paſs the great ſeal.

Yet the *privy* ſeal is ſometimes uſed in matters of leſs conſequence, which do not require the great ſeal. See SEAL.

Lord PRIVY *ſeal* is the fifth great officer of the crown, through whoſe hands paſs charters and grants of the king, and all pardons ſigned by him, before they come to the great ſeal: alſo matters of leſs moment, which do not paſs the great ſeal, *v. gr.* for payments of money, *&c.*

He is a lord by office, and a member of the *privy* council: he was anciently chief judge of the court of requeſts. See PRIVY *ſeal*, and LORD.

Clerks of the PRIVY *ſeal*. See the article CLERK.

PRIVY *chamber*. See the article CHAMBER.

PRIZE. See the article PRISE.

PRO *confeſſo*. See the article PRO-CONFESSO.

PRO *indiviſo*. See the article PRO-INDIVISO.

PROBABILISTS, a ſect, or diviſion, among the Romaniſts, who adhere to the doctrine of *probable opinions*; holding, that a man is not always obliged to take the more probable ſide, but may take the leſs probable, if it be but barely probable. See PROBABLE.

The Jeſuits and Moliniſts are ſtrenuous *probabiliſts*. See JESUIT, *&c.*

Thoſe who oppoſe this doctrine, and aſſert, that we are obliged, on pain of ſinning, always to take the more probable ſide, are called *probabilioriſts*.

The Janſeniſts, and particularly the Port-royaliſts, are probabilioriſts. See JANSENISM, *&c.*

PROBABILITY, in reaſoning, *veriſimilitude*; or an appearance of truth. See TRUTH.

To define it philoſophically, *probability* is the appearance of the agreement or diſagreement of two things by the intervention of proofs, whoſe connection is not fixed or immutable, or is not perceived to be ſo; but is, or appears, for the moſt part, to be ſo; ſo as to ſuffice to induce the mind to judge the propoſition to be true or falſe, rather than the contrary. See EVIDENCE.

That propoſition, then, is *probable*, for which there are arguments and proofs to make it paſs, or be received for true See PROBABLE.

The entertainment the mind gives to this ſort of propoſitions, is called *belief*, *aſſent*, or *opinion*. See FAITH.

Probability, then, being to ſupply the defect of our knowledge, is always converſant about propoſitions whereof we have no certainty, but only ſome inducements to receive them for true. See OPINION.

According to Ariſtotle, a propoſition is *probable*, if it ſeem true to all or moſt people, and thoſe the wiſer and more reputable ſort: But by *ſeem*, he means, what, after a cloſe inquiry, ſhall ſeem to be true.

Of *probability* there are various degrees, from the confines of certainty and demonſtration, down through improbability and unlikelineſs to the confines of impoſſibility; and alſo degrees of aſſent from certain knowledge, and, what is next to it, full aſſurance and confidence, quite down to conjecture, doubt, diſtruſt, and diſbelief.

The grounds of *probability* are, in ſhort, theſe two following; *viz.* the conformity of any thing with our own knowledge, experience, or obſervation, called *internal probability*; and the teſtimony of others vouching their obſervation, or experience, called *external probability*. See CREDIBILITY.

PROBABILITY, in poetry, denotes the appearance of truth in the fable or action of a poem. See ACTION and FABLE.

There are four kinds of actions; for a thing may be either only true, or only probable; or true and probable at the ſame time; or neither the one nor the other. See ACTION.

Theſe four kinds of actions are ſhared between four arts: hiſtory takes the firſt, ſtill keeping to truth, without regard to *probability*. See HISTORY.

Epic and dramatic poetry have the ſecond, and ſtill prefer *probability*, though falſe, to an *improbability*, though true: thus the death of Dido, who killed herſelf on her being deſerted by Æneas, though falſe in itſelf, is a fitter ſubject for a poem, than the action of Samſon, or the maid of Orleans.

Moral philoſophy takes the third; and the fabuliſts, as Æſop, *&c.* the fourth. See FABLE.

Boſſu adds, that the epopœia, in its nature and eſſence, uſes truth and *probability* like morality; yet in its certainty and expreſſions takes a liberty like that of Æſop: inſtances of each we have in the Æneid.

Poetical *probability* may be ſo either in reſpect of the rules of theology, of morality, nature, reaſon, experience, or opinion.

As to theology, there is ſcarce any thing but is probable, in reſpect hereof; becauſe nothing is impoſſible to God. This is an expedient the poets have frequent recourſe to, in order to bring things feigned contrary to the order of nature, within the bounds of *probability*. See this conſidered under the article MACHINE.

As to *morality*, we have obſerved, it requires both truth and veriſimilitude: an ancient poet was condemned on the theatre for a ſlip herein, *viz.* for making a perſon, whom he repreſented as an honeſt man, ſay, that *though his tongue ſwore, his mind did not*.

Seneca accuſes Virgil of an offence againſt *natural probability*, in ſaying, that the winds were pent up in caves; for, ſays that philoſopher, wind being only air in motion, to ſuppoſe it at reſt, is to deſtroy its nature. To which Voſſius anſwers, that the poet only ſpeaks of the natural origin of winds; which are produced in mountains by vapours, *&c.* pent there: juſt as we ſhould ſay, the winds are incloſed in an *æolipyle*.

Virgil, likewiſe, committed an offence againſt *natural probability*, by making Æneas find deer in Africa; becauſe that country produces none.

Indeed theſe faults are excuſable, becauſe, as Ariſtotle finely obſerves, they are not faults in the poet's art, but ariſe from his ignorance of ſomething taught in the other arts.

However, care muſt be taken they be not too groſs; there being ſome *probabilities* of this kind, which Æſop himſelf could not diſpenſe withal: he would never be forgiven, were he to repreſent a lion fearful, a hare daring, a fox ſtupid, *&c.*

Probability, in reſpect of *reaſon*, is frequently broken in upon by thoſe who affect nothing but the *merveilleux*. Here Statius is a notorious criminal: Tydeus, being ſurprized in an ambuſcade by fifty bravoes, who had vowed his death, kills forty-nine of them, and pardons the laſt.

Again, two young kings, whereof this ſame Tydeus was one, the other Polynices, upon a quarrel, go together by the ears, and box it out; their ſwords all the while by their ſides.

——Scrutatur & intima vultus
Unca manus, penituſq; oculis cedentibus inſtat.

Scaliger accuſes Homer of an offence againſt *experience*, in ſaying, that *Jupiter thundered and ſnowed at the ſame time*. This, ſays the critic, was never known; and yet have there been inſtances hereof even in our time.

But the principal and moſt important kind of *probability*, is that in reſpect of *common opinion*. A thing is probable when it looks like truth: but ſometimes it ſhall appear true to the people, and falſe to the learned; and *vice verſâ*. When, then, the learned and the people are divided, to which ſide muſt the poet adhere? Suppoſe, for inſtance, the adventure of Penelope, the hiſtory of Medea, Helena, or the like: what Virgil and Homer have written of them, ſhall appear probable to the populace; yet the learned read the contrary in hiſtory; ſome authors having written, that Dido was chaſte, and Medea innocent; that Penelope was divorced and baniſhed by Ulyſſes for abuſing his abſence; and that Helena never ſaw Troy.

This point is ſoon decided: Homer and Virgil make no ſcruple of leaving hiſtory, to improve their fables: Horace does not ſend the poets to the truths of hiſtory; but either to fables already invented, or to common fame.

All which is confirmed by Ariſtotle; where he ſays, that a poet does not tell, like an hiſtorian, what kind of perſon Alcibiades was, nor what he really did or ſaid on this or that occaſion; but what he probably might have done or ſaid. Add to this, that Ariſtotle approves of the fable of Oedipus and Iphigenia, though it can never be imagined the truth of thoſe ſtories was believed by the learned in thoſe days.

In effect, every one finds his account in this conduct: the people think they ſee truth; and the learned do really ſee truths, and more ſolid ones too, than thoſe the people look for; and more certain than thoſe of the hiſtory, which the poet neglects. The more underſtanding they are, the leſs will they deſire theſe hiſtorical truths in a poem, which is intended for other and deeper ends. The truths they require, are moral and allegorical truths. The Æneid was not written to teach us the hiſtory of Dido, but to ſhew, under that name, the genius and conduct of the republic founded by her, and the ſource and ſeries of its differences with Rome. This we ſee with pleaſure; and theſe truths are more agreeable, more certain and notorious, than any the poet could take from a hiſtory, ſo little known in his time.

To theſe kinds of *probability* may be added another, which we call *accidental probability*: it conſiſts not in the uſing of ſeveral incidents, each probable apart; but in diſpoſing them ſo as to hang probably together.

A man, *e. gr.* may probably die of an apoplexy; but that this ſhould happen juſt in the nick, when the poet wanted it for an unravelling, is highly *improbable*.

It is an offence againſt this kind of *probability* to produce an incident all at once, and without any preparation, which yet needed one. Virgil is wonderfully exact in this point: Juno prepares the tempeſt raiſed in the firſt book; Venus in the ſame book prepares the amours of the fourth. The death of Dido in the end of the fourth, is prepared on the firſt day of marriage; Helenus in the third diſpoſes the whole matter of the ſixth; and in the ſixth, the Sibyl predicts all the wars that follow.

PROBABLE *opinion*, a term long time controverted among the Romiſh caſuiſts; uſually defined an opinion founded on a grave motive, or an apparently good foundation, and which has authority enough on its ſide to perſuade a wiſe diſintereſted perſon to aſſent to it. See PROBABILITY.

Others define a *probable opinion* to be that which being compared to the contrary opinion, becomes problematical, by a perfect equality of the reaſons on each ſide; ſo that there is nothing in reaſon or nature to determine a man to this ſide rather than that.

But the Jeſuits go ſtill farther, and maintain, that to render an *opinion probable*, it ſuffices, that it be either built on a reaſon of ſome conſequence, or on the authority of ſome one grave doctor. With theſe qualifications it is allowable to follow it, even though it be leſs *probable*, and leſs certain, than the contrary opinion: here it is the venom of *probability* lies.---This doctrine is attacked with infinite addreſs by M. Paſchal in the *provincial letters*.

One of the twenty-four patriarchs of the Jeſuits, Caſtro Palaio, aſſerts, that a judge, in a queſtion of right, may give ſentence according to a *probable opinion*, againſt a more *probable* one; and this, contrary to the judgment and perſuaſion of his own mind; *imo contra propriam opinionem*. Eſcobar, *tr.* 6. *ex.* 6. *n.* 45.

So Vaſquez maintains, that it is lawful to follow the leſs *probable* and leſs ſecure *opinion*, diſcarding the more *probable*, and more ſecure one.

Leſſius and Eſcobar, treating of the queſtion, Whether a man may kill another for giving him a box on the ear? decide it to be a *probable opinion*, and ſpeculatively true; though there may be ſome inconveniencies in the practice, for which it would be as well to let it alone. *In praxi tutam &* probabilem *judicarunt---ſed non facile admittendam.* Let. provinciales, p. 307, 308.

PROBANDA *proprietate*. See the article PROPRIETATE.

PROBATE, *of a will*, or *teſtament*, in law, is the exhibiting and proving a will and teſtament, before the eccleſiaſtical judges delegated by the biſhop, who is ordinary of the place where the party dies. See WILL and TESTAMENT.

The ordinary is known by the quantity of goods the deceaſed hath out of the dioceſe wherein he departed; for if all his goods be in the ſame dioceſe, then the biſhop of the dioceſe, or the archdeacon, according as their compoſition leads, has the *probate* of the teſtament.---If the goods be diſperſed in ſeveral dioceſes, ſo that there be any ſum of note, *bona notabilia*, as five pounds, out of the dioceſe where the party lived; then is the archbiſhop of Canterbury the ordinary by *prerogative.* See BONA *notabilia*, and PREROGATIVE.

This *probate* may be made two ways; either in *common form*, or *per teſtes*.---The proof in *common form* is only by the oath of the executor, or party exhibiting the will, who ſwears upon his belief, that the will exhibited by him, is the laſt will and teſtament of the deceaſed. See EXECUTOR.

The proof *per teſtes, by witneſſes*, is, when over and beſides his own oath, he alſo produces witneſſes, or makes other proof to confirm, that it is the laſt will of the deceaſed; and this in the preſence of ſuch as may pretend ſome intereſt in the goods of the deceaſed; or at leaſt in their abſence, after they have been lawfully ſummoned to ſee ſuch a will proved, if they think fit.

The latter courſe is commonly taken when there is fear of ſtrife, or diſpute about the deceaſed's goods: for ſome hold, that a will proved in common form only, may be called in queſtion any time within thirty years after.

Where a will diſpoſes of lands and tenements of freehold, it is now frequently proved by witneſſes in chancery.

PROBATICA *piſcina*. See the article PISCINA.

PROBATION, in a monaſtic ſenſe, a time of trial; or the year of noviciate, which a religious muſt paſs in a convent to prove his virtue and vocation, and whether he can bear the ſeverities of the rule. See NOVICIATE.

The year of *probation* commences from the day of novices taking the habit.

PROBATION, in the univerſities, denotes the examination and trial of a ſtudent who is about to take his degrees. See DEGREE.

PROBATIONER, in the presbyterian diſcipline, a perſon licenſed by a presbytery to preach; which is uſually done a year before he be ordained. See PRESBYTERY.

A ſtudent in divinity is not admitted *probationer* till after ſeveral trials: the firſt, private, before a presbytery; the ſecond, public, before a congregation, the presbytery being preſent.

The private trials are a homily and exegeſis; *i. e.* a theological ſubject is given in to the presbytery in theſes, and the candidate anſwers any objections ſtarted againſt it.

The public trials are a popular ſermon, and an exerciſe and addition; *i. e.* a text is handled, half an hour, logically and critically; and half an hour more, practically.

If he acquit himſelf to the ſatisfaction of the presbytery, he ſigns the confeſſion of faith, owns the presbyterian government, *&c.* Upon which he receives a licence to preach.

PROBATOR, in law, an accuſer, or approver; one who undertakes to prove a crime charged upon another: properly, an accomplice in the crime, who impeaches others. See APPROVER and PROVER.

PROBATUM *eſt, q. d. it is proved*; a term frequently ſubjoined to a receipt, for the cure of ſome diſeaſe. See RECIPE.

PROBE, a ſurgeon's inſtrument, wherewith to ſound and examine the circumſtances of wounds, ulcers, and other cavities. See SPECULUM.

PROBLEM*, PROBLEMA, in logic, a doubtful queſtion; or a propoſition that neither appears abſolutely true, nor falſe; but which is probable on both ſides, and may be aſſerted either in the negative or affirmative, with equal evidence.

* The word is originally Greek, προϐλημα, ſignifying the ſame thing.

Thus, that the moon and the planets are inhabited by animals in ſome reſpect like us, is a *problem:* that the fixed ſtars are all ſuns, and each the centre of a ſeveral ſyſtem of planets and comets, is a *problem*. See PLANET, STAR, *&c.*

PROBLEM is alſo a propoſition expreſſing ſome natural effect, propoſed in order to a diſcovery of its apparent cauſe.---Such are the *problems* of Ariſtotle.

A logical or dialectical *problem*, ſay the ſchoolmen, conſiſts of two parts; a ſubject, or ſubject matter, about which the doubt is raiſed; and a predicate or attribute, which is the thing doubted whether it be true of the ſubject or not. See SUBJECT and PREDICATE.

There are four topical predicates, *viz. genus*, *definitio*, *proprium*, and *accidens*; whence ariſe four different kinds of dialectical *problems*.

The firſt, when the thing attributed to the ſubject is in the relation of a genus: as, whether fire be an element or not? See GENUS.

The ſecond, when the thing attributed has the effect of a definition: as when it is asked, whether or no rhetoric be the art of ſpeaking? See DEFINITION.

The third, when the attribute imports a propriety: as, whether it belong to juſtice to give every one their due? See PROPER.

The laſt is when the thing attributed is adventitious: as, whether juſtice is to be deſired? See ACCIDENT.

Problems, again, may be divided into thoſe relating to things to be done, or avoided, called *ethical*; thoſe relating to the knowledge of nature, called *phyſical*; thoſe relating to ſpirits, called *metaphyſical problems*, &c.

PROBLEM, in geometry, denotes a propoſition wherein ſome operation, or conſtruction, is required; as, to divide a line, to make an angle, to draw a circle through three points not in a right line, *&c.* See PROPOSITION.

Meſſieurs of the Port-Royal define a *geometrical problem*, a propoſition given to be demonſtrated, wherein ſomething is required to be done; and what is done, to be proved to be the thing required.

A *problem*, according to Wolfius, conſiſts of three parts. The propoſition, which expreſſes what is to be done. See PROPOSITION.

The reſolution, or ſolution, wherein the ſeveral ſteps, whereby the thing required is to be effected, are orderly rehearſed. See RESOLUTION.

The demonſtration, wherein is ſhewn, that by doing the ſeveral things preſcribed in the reſolution, the thing required is obtained.

Accordingly, the general tenor of all *problems* is this: The things preſcribed in the reſolution being done, the thing required is done. See DEMONSTRATION.

PROBLEM, in algebra, is a queſtion or propoſition which requires ſome unknown truth to be inveſtigated or diſcovered; and the truth of the diſcovery demonſtrated.

In this ſenſe it is a *problem*, to find a theorem. See THEOREM and INVESTIGATION.---Algebra is defined to be the art of reſolving all *problems* that are reſolvible. See ALGEBRA.

Kepler's PROBLEM, in aſtronomy, is the determining of a planet's place from the time; thus called from the aſtronomer Kepler, who firſt propoſed it. See PLANET and PLACE.

The *problem*, ſtated in form, ſtands thus: To find the poſition of a right line, which paſſing through one of the foci of an ellipſis, ſhall cut off an area deſcribed by its motion, which ſhall be in any given proportion to the whole area of the ellipſis.

The propoſer knew no way of ſolving the *problem* directly and geometrically; and therefore had recourſe to an indirect method; for which he was taxed with an αγεωμετρησια, or want of geometry; and his aſtronomy charged with not being geometrical. But the *problem* has ſince been ſolved directly and geometrically ſeveral ways, by ſeveral authors; particularly Sir Iſaac Newton, Dr. Keill, *&c.* See PLANET, PLACE, *&c.*

Determinate PROBLEM,	See	DETERMINATE.
Limited PROBLEM,		LIMITED.
Linear PROBLEM,		LINEAR.
Local PROBLEM,		LOCAL.
Plain PROBLEM,		PLAIN.
Solid PROBLEM,		SOLID.
Surſolid PROBLEM,		SURSOLID.
Unlimited PROBLEM,		UNLIMITED.

Deliacal PROBLEM, in geometry, is the doubling of a cube. See CUBE.

This *problem* was ſo called from the people of Delos, who, upon conſulting the oracle for a remedy againſt a plague they were then infeſted with, were anſwered, that the plague ſhould ceaſe, when Apollo's altar, which was in form of a cube, ſhould be doubled. See DUPLICATION.

This *problem* coincides with that for finding two mean proportionals between two given lines; whence that alſo is called the *Deliac problem*. See PROPORTIONAL.

PROBLEMATICAL *reſolution*, in algebra, a method of ſolving difficult queſtions by certain rules, called *canons*. See SOLUTION and CANON.

PROBOSCIS*, in natural hiſtory, the *trunk* or ſnout of an elephant, and ſome other animals. See TRUNK.

* The word is Greek, προβοσκις, where it has the ſame ſignification.

The *proboſcis* is a member iſſuing out of the middle of the forehead, ſerving inſtead of a hand; and having a little appendix faſtened to the end thereof, in form of a finger.---By the *proboſcis* the ſhe-elephant ſucks herſelf; and by the ſame conveys the milk to her young.

The *proboſcis*, Mr. Derham obſerves, is a member ſo admirably contrived, ſo curiouſly wrought, and with ſo great agility applied by that unwieldy animal, that it may paſs as an inſtance of the Creator's skill, *&c.*

All quadrupeds have the length of their neck equal to that of their feet; the elephant alone excepted; in whom the ſhortneſs of the neck is compenſated by the length of the *proboſcis*.

The chameleon has alſo a kind of trunk or *proboſcis*, which is its tongue; and which it darts nimbly out of its throat, as if it ſpat it; and draws it in again inſtantaneouſly. It ſerves, like the elephant's trunk, to lay hold on, and take in its food. See CAMELEON.

The microſcope ſhews us a little trunk in flies and gnats, by means whereof they ſuck the blood of animals, or liquors, for their food.

PROCATARCTIC* *cauſe*, the original, primitive, or pre-exiſtent cauſe, or occaſion, of an effect.

* The word is Greek, προκαταρκτικος; formed from the verb προκαταρχω, I pre-exiſt, I go before.

Such, *e. gr.* is a diſeaſe which co-operates with ſome other diſeaſe, ſubſequent thereto.---Thus, anger, or heat of a climate, bring on ſuch a diſpoſition of the juices, as occaſions a fever; where the ill diſpoſition is the immediate cauſe, and the heat or anger, the *procatarctic* cauſe.

PROCEDENDO, in law, a writ whereby a plea or cauſe, formerly called from an inferior court to the chancery, king's bench, or common pleas, by writ of privilege, habeas corpus, or certiorari, is releaſed, and returned to the other court to be *proceeded* in; upon its appearing that the defendant has no cauſe of privilege, or that the matter comprized in the party's allegation is not well proved.

Non PROCEDENDO *ad aſſiſam rege inconſulto*. See NON.

PROCEDURE, PROCEEDINGS in law, the courſe of the ſeveral acts, expeditions, and inſtructions of a proceſs, or lawſuit. See PROCESS.

Procedure is either civil or criminal.---*Civil procedure* is that where the eſtate alone is concerned: *criminal*, or *extraordinary procedure*, is that where the perſon is proſecuted.

PROCEED, among merchants, that which ariſes from a thing. ---In which ſenſe they ſay, the *net proceed*. See NET.

PROCELEUSMATICUS, προκελευσματικὸς, in the ancient poetry, a foot conſiſting of four ſhort ſyllables: as, *arietat*. See FOOT.

PROCESS, PROCESSUS, in law, is uſed for all the proceedings in any cauſe or action, real or perſonal, civil or criminal, from the original writ, to the end. See ACTION.

In France they carry on a formal *proceſs* againſt the memory of people killed in duels; or that have murdered themſelves.---Pirates, when taken in the fact, are hanged without any *proceſs*; as are ſometimes alſo robbers.

PROCESS is alſo uſed in a more reſtrained ſenſe, for that by which a man is firſt called into any temporal court; this being the beginning, or principal part, and that by which the reſt of the buſineſs is directed.

The difference between *proceſs* and *precept* or *warrant* of the juſtices, is this; that the precept or warrant is only to attach or convene the party, before any indictment or conviction, and may be made either in the name of the king, or the juſtice: but *proceſs* is always in the king's name, and uſually after an indictment. See PRECEPT.

PROCESS *by attainder*. See the article ATTAINDER.

PROCESS, in chymiſtry, the whole courſe of an operation, or experiment. See OPERATION and EXPERIMENT.

PROCESS, PROCESSUS, in anatomy, is a term of equal import with *apophyſis*, *prominence*, *protuberance*, or *production*. See APOPHYSIS, *&c.*

Proceſs is particularly applied to certain eminences of the bones, and other parts; diſtinguiſhed by peculiar names, expreſſing their place, form, or the like. See BONE.

Such are the *proceſſus peritonæi*, *proceſſus vermiformes*, *proceſſus papillares*, *ciliares*, &c. See VERMIFORMES, PAPILLARES, CILIARE, PERITONÆUM, *&c.*

PROCESSUS *aliformis*,	See	ALIFORMIS.
PROCESSUS *cornicularis*,		CORNICULARIS.
PROCESSUS *pyrenoides*,		PYRENOIDES.

PROCESSION, PROCESSIO, in theology, a term uſed for the manner wherein the Holy Spirit is conceived to iſſue from the Father and the Son, in the myſtery of the Trinity. See SPIRIT, TRINITY, PERSON, *&c.*

The Greeks and Latins are not agreed about the *proceſſion* of the Holy Spirit. See GREEK.

PROCESSION alſo denotes a ceremony in the Romiſh church, conſiſting in a formal march of the clergy in their robes, and the people after them, putting up prayers, ſinging hymns, *&c.* and in this manner making a viſit to ſome church, or other holy place.

There are general *proceſſions* of all the people in jubilees, and in public calamities. See JUBILEE.---The *proceſſions* of the holy ſacrament are very ſolemn.---They have alſo *proceſſions*, frequently, around the church, at the ſalutations, *&c.* in the maſs.

Anciently, among us, there were, in each pariſh, cuſtomary *proceſſions* of the pariſh-prieſt, and the patron of the church, with the chief flag, or holy banner, attended by the other pariſhioners, each aſcenſion-week; to take a circuit round the limits of the pariſh, and pray for a bleſſing on the fruits of the earth.---Of which cuſtom there ſtill remains a ſhadow in that annual perambulation, ſtill called *proceſſioning*; though the order and devotion of the ancient *proceſſions* be almoſt loſt.

PROCESSUM *continuando*, a writ for the continuance of a *proceſs*, after the death of the chief juſtice, or other juſtices in the commiſſion of oyer and terminer. *Reg. orig.* 128.

Recordo & PROCESSU *mittendis*. See RECORDO.

PROCHEIN *amy*, PROXIMUS *amicus*, in law, the *neareſt friend*, or perſon next a-kin, to a child in nonage; and who, in that reſpect, is allowed in law to deal and negotiate for him, to manage his affairs, to ſee him redreſſed of any wrong, and to be his guardian, if he hold land in ſocage. See GUARDIAN.

By *prochein amy* is commonly underſtood the guardian in ſocage: though, in propriety, it is he who appears in court for an infant who ſues any action, and aids the infant in purſuit thereof.---For, to ſue, an infant is not allowed to make an attorney; but the court will admit his *prochein amy*, next friend, as plaintiff; or his guardian, as defendant.

PROCIDENTIA, or PROLAPSUS *ani*, in medicine, is when, upon a diſcharge by ſtool, the inteſtinum rectum is protruded ſo far, as that it cannot be drawn back again into the body; or when drawn back, falls again. See RECTUM.

This is ſometimes a chronical diſeaſe, eſpecially when it ariſes from a palſy: its cauſes are a relaxation of the fibres of the rectum, or of the ſphincter muſcle; either from the adſtriction of the alvus, a diarrhœa, dyſentery, or teneſmus.

It is very difficultly cured, when attended with hæmorrhoids: The principal cure is by aſtringents.---External aſſiſtance is alſo required to reduce the fallen gut; which, if it be not ſoon had is apt to tumefy and mortify, by the contact of the air.

It is ſubject to relapſe after reduction in children, eſpecially upon violent crying; and is difficult to keep up, in caſe of a diarrhœa.

PROCIDENTIA *uteri*, the deſcent, or falling down of the womb, cauſed by a relaxation of the ligaments which ſhould hold it in its place. See UTERUS.

If the uterus fall into the vagina, ſo that its orifice may be either perceived with the finger within, or by the eye juſt without, the labia vulvæ; it is called a *bearing down* of the womb.---If it fall quite down, ſo as to hang pendulous without the labia, but ſo as that no more of the inſide than the orifice is ſeen, it is called a *prolapſus*, or *procidentia*.---If falling thus low, it be turned inſide out, and hang like a fleſhy bag, with a rugged unequal ſurface, it is called a *perverſio uteri*.

Theſe diſorders may proceed from violent motions, vehement coughing, ſneezing, fluor albus. They appear moſt frequent in women with child, from the weight preſſing and bearing hard upon the uterus; but eſpecially if the fœtus be dead, lie in a wrong poſture, or be violently extracted.

After replacing the part, reſtringents both inwardly and by injection are here uſed; ſuch as obtain in diarrhœa's, hæmorrhoids, the gonorrhœa ſimplex, *&c.*

PROCIDENTIA, or PROLAPSUS, *uvulæ*, the deſcent or relaxation of the uvula, or almonds of the ears. See UVULA.

PROCLAMATION *, PROCLAMATIO, an inſtrument diſpatched by the king, with the advice of his privy-council, whereby the people are advertiſed of ſomething which his majeſty thinks fit for them to know; and whereby they are ſometimes required to do, or not to do, certain things. See KING and PRIVY *council*.

* The word is of Latin origin, formed from *proclamare, palam & valde clamare*.

Proclamations have the force of laws; but then they are ſuppoſed to be conſiſtent with the laws already in being; otherwiſe they are ſuperſeded. See LAW.

PROCLAMATION is alſo uſed for a ſolemn denunciation, or declaration of war or peace. See WAR, *&c.*

PROCLAMATION alſo denotes the act of notifying to the people the acceſſion of a prince to the crown. See ACCESSION.

The *proclamation* does not inveſt the prince with the regal authority; it ſuppoſes him already inveſted therewith, and only gives notice thereof to the people.

PROCLAMATION *of a fine* is a notice openly and ſolemnly given thereof in the court of common pleas where it paſſed, and at all the aſſizes in the county held within one year after the ingroſſing it. See FINE.

Theſe *proclamations*, at the aſſizes, are made on tranſcripts of the fine, ſent by juſtices of the common pleas to the juſtices of the aſſize, and of the peace.

PROCLAMATION, in a monaſtic ſenſe, is the accuſation of a frier or brother, by another brother, in open chapter, and in preſence of the ſuperior and community, for ſome external crime he has ſeen him commit.

PROCONDYLUS, προκόνδυλος, an appellation given to the firſt point of each finger. See CONDYLUS and FINGER.

PRO-CONFESSO, in law.---When, upon a bill exhibited in chancery, the defendant appears, and is in contempt for not anſwering, and in cuſtody: upon an habeas corpus (which is granted by order) to bring him to the bar, the court aſſigns him a day to anſwer; which being expired, and no anſwer put in, a ſecond habeas corpus is granted, and a farther day aſſigned; by which day, if he anſwer not, the bill, upon the plaintiff's motion, ſhall be taken *pro confeſſo*, or as allowed, unleſs cauſe be ſhewn by a day, which the court uſually gives.

For want of ſuch cauſe ſhewed, upon motion, the ſubſtance of the plaintiff's bill ſhall be decreed, *as if it had been confeſſed* by the defendant's anſwer: or, after a fourth inſufficient anſwer made to the bill, the matter of fact not ſufficiently anſwered unto, ſhall be taken *pro confeſſo*.

PROCONSUL, a Roman magiſtrate, ſent to govern a province with a conſular authority. See CONSUL and PROVINCE.

The *proconſuls* were appointed out of the body of the ſenate; and ordinarily, as the year of any one's conſulate expired, he was ſent *proconſul* into ſome province.

The *proconſuls* had the ſame honours, *&c.* with the conſuls themſelves; except that they had only ſix lictors and faſces before them. See FASCES.

The *proconſuls* did not ordinarily hear and determine proceſſes in perſon, but had that office performed by their aſſeſſors, or other judges, conſtituted or delegated by them.

As the *proconſuls* had the direction both of juſtice, of war, and of the revenues; they had their ſeveral lieutenants in each capacity: theſe were called *legati*, and were ordinarily nominated by the ſenate. See LEGATUS.

The *proconſular* function only held a year. The charges of their journey backwards and forwards, were borne by the public, and were called *viaticum*. See VIATICUM.

After the partition of the provinces between Auguſtus and the people, thoſe who preſided over the provinces of the people were called eſpecially *proconſuls*.

PROCONSUL, in our ancient law-books, is ſometimes uſed for a *juſtice in eyre*, or *juſtice errant*. See JUSTICE.

PROCREATION, Procreatio, the action of begetting, and bringing forth children. See Generation.

PROCTOR, Procurator, a perſon commiſſioned to act as proxy, or delegate, in behalf of another. See Procurator.

Proctor, *procurator*, in the civil law, is an officer appointed to appear in court, and manage the cauſes of parties who will make uſe of his procuration. See Civil *law*.

Anciently every body was obliged to appear in perſon; and when the affair happened to be drawn out to a great length, was allowed to create a *proctor*, or proxy, in his cauſe.

But this was a favour only granted for a certain time; till towards the middle of the 16th century, when it was decreed, that all procuration ſhould hold till revoked.

Proctors *of the commons*, are perſons ſkilled in the civil and eccleſiaſtical laws, who exhibit their proxies, and make themſelves parties for their clients, to draw up acts and pleadings, produce witneſſes, prepare cauſes for ſentences, and attend the advocates with the proceedings. See College.

They are thirty-four in number; are admitted by the archbiſhop's fiat; and wear black robes, and hoods lined with white furs.

Proctors *of the clergy*, are deputies, or repreſentatives choſen by the clergy of each dioceſe, two for each; and by the cathedral and collegiate churches, one for each: to ſit in the lower houſe of convocation. See Convocation.

Proctors *in the univerſity*, are two officers, choſen from among the ſtudents, to ſee good orders, and exerciſes daily performed there. See University.

PROCUMBENT *leaves*, in botany, ſuch leaves of plants as lie flat, or trailing on the ground. See Leaf.

PROCURATION, or Procuracy, an act, or inſtrument, whereby a perſon is impowered to treat, tranſact, receive, &c. in another's name, as if he himſelf were actually preſent. See Procurator.

When a man treats in behalf of another, the firſt thing is to examine his *procuration*, or *procuracy*.

Procuration is now little uſed in this ſenſe, except in the caſe of a perſon who collects the fruits of a benefice for another.

Procuration, in the canon law, is uſed for the repaſt or entertainment anciently given to church-officers or ordinaries, who came to viſit in churches or monaſteries, whether they were biſhops, archdeacons, or viſitors. See Visitation.

Procuration was due to the pope's legates, and even to popes themſelves, when they came into France; and the charge was comprized in the bulls then granted.

Complaints were frequently made to the pope, of the exceſſive charges of the *procurations* of biſhops and archdeacons, upon which they were prohibited by ſeveral councils and bulls.

That of Clement IV. mentioned in the Monaſticon, is very expreſs; wherein that pope tells us, complaint had been made, that the archdeacon of Richmond, viſiting the dioceſe, travelled with one hundred and three horſes, twenty-one dogs, and three hawks; and did ſo grievouſly oppreſs a religious houſe with that vaſt equipage, that he cauſed the monks to ſpend in an hour as much as would have maintained them a long time.

Procuration is now uſed for a ſum of money paid yearly by pariſh-prieſts to the biſhop, or archdeacon, in lieu of this entertainment, towards defraying the charge of their viſitation. See Visitation.

PROCURATOR, Proctor, or Proxy, a perſon who has a charge or office committed to him, to act in behalf of another. See Procuration, and Proctor.

Thus the *proxies* of the lords in parliament, in our law-books, are called *procurators*. See Proxy.

The word is alſo uſed for a vicar, or lieutenant.---Thus in Petrus Bleſenſis, we read of a *procurator regni*.

Thoſe who manage cauſes in Doctors Commons, are alſo called *procurators*, or *proctors*. See Proctor.

The biſhops are ſometimes called *procuratores eccleſiarum*, and the repreſentatives ſent by the clergy to convocation, *procuratores cleri*. See Convocation.

In our ſtatutes, a perſon who gathers the fruits of a benefice for another, is particularly called *procurator*; and the inſtrument impowering him to receive the ſame, *procuracy*.

Procurator is alſo a kind of magiſtrate in ſeveral cities of Italy, who takes care of the public intereſts.--There are *procurators* of St. Mark, *procurators* at Venice, at Genoa, &c.

Originally there was but one *procurator* of St. Mark at Venice: In 1442. the number was augmented to nine, when the ſenate made a decree, appointing, that for the future none ſhould be admitted to the dignity but after the death of ſome of the nine. But in the neceſſities of the republic, the number was afterwards inlarged to forty; though of theſe there are only nine that bear the title of *procurators*, and whoſe place is regularly filled. They are adminiſtrators of the church of St. Mark, and of the revenues attached thereto, the patrons of orphans, and the executors of teſtaments.

This office receives more luſtre from the merit of thoſe who diſcharge it, than from its authority.--They are cloathed in black, or violet, with ducal ſleeves.

Procurator *monaſterii*, anciently, was the advocate of a religious houſe, who was to ſolicit the intereſt, and plead the cauſes of the ſociety. See Advocate and Advouee.

Procuratores *eccleſiæ parochialis*, are the church-wardens, whoſe office is to act as *proxies* and repreſentatives of the church. See Church *warden*.

PROCYON, in aſtronomy, a fixed ſtar of the ſecond magnitude in canis minor. See Canis *minor*, and Canicular.

PRODES *hommes*, *q. d.* wiſe or diſcreet men, in our ancient cuſtoms, a title given to the barons, and other military tenants, who are called to the king's council, and were to give advice according to the beſt of their prudence, and knowledge. See Thane, Baron, &c.

PRODICTATOR, among the Romans, a magiſtrate who had the power, and did the office of a dictator. See Dictator.

The Romans ſometimes created a *prodictator*, in caſes where they could not have a dictator. Fabius Maximus was *prodictator*.

PRODROMUS, προδρομος, literally denotes a forerunner, a harbinger.--Hence,

Prodromus *morbus*, among phyſicians, is uſed for a diſeaſe which precedes or foreruns a greater.

Thus a ſtraitneſs of the breaſt is a *prodromus* of a conſumption, &c. a vertigo is ſometimes a *prodromus* of an apoplexy. See Phthisis, Apoplexy, Vertigo, &c.

PRODUCE,---*Net* Produce. See the article Net *produce*.

PRODUCING, in geometry, denotes the continuing a right line, or drawing it out farther, till it have any aſſigned length. See Line.

PRODUCT, in arithmetic and geometry, the factum of two numbers; or the quantity ariſing from, or produced by, the multiplication of two or more numbers, lines, &c. into one another. See Factum.

Thus, if 6 be multiplied by 8, the *product* is 48. See Multiplication.

In lines it is always (and ſometimes in numbers) called the *rectangle* between the two lines, multiplied by one another. See Rectangle.

PRODUCTION, in anatomy, a continuation, or proceſs. See Process.

PROEDRUS, προεδρος, in antiquity. See Epistates.

PROEM, Prooemium, a term anciently uſed for *preface*. See Preface.

PROEMPTOSIS, in aſtronomy, that which makes the new moons appear a day later, by means of the lunar equation, than they would do without that equation. See Moon and Equation.

PROFANATION, in religion, the doing of ſomething diſreſpectful to holy or ſacred things. See Profane.

PROFANE, a term uſed in oppoſition to *holy*, *ſacred*. See Sacred, &c.

Except churches, and church-yards, all places are eſteemed *profane*.--By the canon law, a ſacred chalice, or cup, becomes *profane*, by giving it a blow with an hammer.

Profane is alſo applied in general to all perſons who have not the ſacred character, and all things which do not belong to the ſervice of religion.

In this ſenſe, Xenophon, Seneca, &c. are *profane* authors.---The Heathen prieſts, pontiffs, &c. alſo paſs with us for *profane*.

PROFECTITIOUS. See Adventitious.

PROFER*, in law, the time appointed for the accounts of ſheriffs, and other officers, to be given into the exchequer; which, by ſtat. 51. Hen. 3. is to be twice in the year. See Sheriff and Exchequer.

* The word is formed of the French *proferer*, to produce.

Profer, is alſo uſed for an offer, or endeavour to proceed in an action by a perſon concerned ſo to do.

Trinity-term ſhall begin the monday next after Trinity-ſunday, whenever it ſhall happen to fall, for the keeping of the eſſoins, *profers*, returns, and other ceremonies heretofore in uſe. *Stat. an.* 32. *Hen.* 8.

Profer *the half-mark*. See the article Half *mark*.

PROFESSED *monk*, or *nun*, one who having made the vow, is admitted of a religious order. See Vow, Monk, and Religious.

In this ſenſe the word is uſed in oppoſition to *novice*. See Novice and Probation.

PROFESSIO *viduitatis*. See the article Viduitatis.

PROFESSION, Professio, in a monaſtic ſenſe, the entering into a religious order; or an action whereby a perſon offers himſelf to God, by a vow of obſerving three things, *viz.* obedience, chaſtity, and poverty, which he promiſes inviolably to maintain. See Vow, Order, &c.

This is called *ſanctæ religionis profeſſio*, and the perſon a *religious profeſſed*. See Religious.

Perſons are not admitted to make *profeſſion* till after a year of probation. See Probation, Noviciate, &c.

PROFESSOR, in the univerſities, a perſon who teaches, or lectures publicly, ſome art or ſcience, in a chair eſtabliſhed for that purpoſe. See Chair.

The *profeſſors* in foreign univerſities teach the arts, and have their claſſes of pupils; thoſe in our univerſities only read public lectures in term-time. See Term.

Of *profeſſors* we have a great number, ſome denominated from the arts they profeſs, as *caſuiſtical profeſſor*, *Hebrew profeſſor*, *phyſic profeſſor*, *divinity profeſſor*, &c.

Others from thoſe who founded the *profeſſorſhip*, or aſſigned a revenue for the ſupport of the *profeſſor*; as the *Savilian profeſſors* of aſtronomy and geometry, the *Lucaſian profeſſor* of mathematics, *Margaret profeſſor* of divinity, &c.

Regius Professors. See the article Regius.

PROFICISCENDUM.----*Capias conductos ad proficiſcendum.* See Capias.

PROFILE, in architecture, the figure, or draught of a building, fortification, or the like, wherein are expreſſed the ſeveral heights, widths, and thickneſſes, ſuch as they would appear, were the building cut down perpendicularly from the roof to the foundation.

Whence the *profile* is alſo called the *ſection*, ſometimes *orthographical ſection*; and by Vitruvius alſo, *ſciagraphy*. See Section and Orthography.

Profile, in this ſenſe, amounts to the ſame with *elevation*; and ſtands oppoſed to a *plan*, or *ichnography*. See Plan and Ichnography.

Profile is alſo uſed for the contour, or out-line of a figure, building, member of architecture, or the like; as a baſe, a cornich, &c.

Hence *profiling* is ſometimes uſed for deſigning, or deſcribing the member with rule, compaſs, &c.

Profile, in ſculpture and painting.---A head, a portrait, &c. are ſaid to be in *profile*, when they are repreſented ſide-ways, or in a ſide-view.

As, when in a portrait there is but one ſide of the face, one eye, one cheek, &c. ſhewn, and nothing of the other.---On almoſt all medals, the faces are repreſented in *profile*. See Medal.

PROFITS, *pernor of*. See the Article Pernor.

PROFLUVIUM, in medicine, any kind of flux, or liquid evacuation. See Flux. Whence,

Profluvium *ventris*, flux of the belly, denotes a diarrhœa. See Diarrhoea.

PROFUNDUS. See Muscle.

PROGNOSTIC *, **Prognosis**, in medicine, a judgment of the event either of a ſtate of health, or of a diſeaſe: as, whether it ſhall end in life, or death; be long, or ſhort; mild, or malignant, &c. taken from certain ſymptoms thereof. See Signum and Symptom.

* The word comes from the Greek προγνωσις, *fore-knowledge*: whence alſo προγνωϛικον, a *prognoſtic ſign*.

In all continued fevers, Morton tells us, a ſtrong equable pulſe is a *good prognoſtic*, and always preſages well, whatever other threatening ſymptoms attend it; on the contrary, a quick, feeble, intermitting pulſe is a *prognoſtic* of death, how much ſoever the other ſymptoms may flatter. See Pulse.

Hippocrates obſerves, that all predictions and *prognoſtics* of acute diſeaſes are very fallacious; Diemerbroeck, however, adds, that in the plague of Nimeguen, ſixth day criſes were conſtantly found fatal *prognoſtics*; alſo to be infected about the new, or full moon; faintings in the beginning of the diſeaſe, and palpitations of the heart, were found deadly *prognoſtics*; on the contrary, a pleuriſy, and ſuppreſſion of ſtool, were good *prognoſtics*.

The *prognoſis* is a part of ſemeiology. See Semeiology.

Prognostics *of the weather*. See the article Weather.

PROGRAMMA, anciently denoted a letter ſealed with the king's ſeal. See Seal.

Programma is alſo a college term, ſignifying a billet, or advertiſement poſted up, or given into the hand, by way of invitation to an oration, or other college ceremony, containing the argument, or ſo much as is neceſſary for the underſtanding thereof.---*Programma's* are ſent to invite people to aſſiſt at declamations, dramatic performances, &c.

PROGRESSION, **Progressio**, an orderly advancing, or going forward, in the ſame manner, courſe, tenor, &c.

Progression, in mathematics, is either *arithmetical*, or *geometrical*.

Arithmetical **Progression** is a ſeries of quantities equidiſtant from each other; *i. e.* either increaſing or decreaſing by the ſame common interval or difference. See Series.

Thus 3, 6, 9, 12, 15, 18, &c. make an *arithmetical progreſſion*; becauſe increaſing, or differing equally, by 3: Thus alſo 25, 20, 15, 10, and 5, are in *arithmetical progreſſion*, decreaſing by a common difference, 5.

In every *arithmetical progreſſion*, whether increaſing or decreaſing, the ſum of the firſt and laſt term is equal to the ſum of any two intermediate terms equidiſtant from the extremes; as alſo, if the number of terms be uneven, to the double of the middle term.---For inſtance:

$$\begin{array}{ccccccc} 3, & 6, & 9, & 12, & 15, & 18, & 21 \\ & & & 12, & 9, & 6, & 3 \\ \hline & & & 24, & 24, & 24, & 24 \end{array}$$

Hence 1°. we find the ſum of any *arithmetical progreſſion* by multiplying the ſum of the firſt and laſt term by half the number of terms.

2°. Having therefore the firſt term, the difference, and the number of terms given; the ſum of the *progreſſion* is had by multiplying the firſt term by the number of terms, and to the product adding the product ariſing from the difference multiplied into the ſemi-difference of the number of terms from the ſquare of that ſame number.

Thus, ſuppoſe the firſt term 3, the number of terms 7, and the difference 3; the product of 3 and 7 = 21 being added to the product 63, of the difference 3 multiplied into the ſemi-difference of the number of terms 7, from the ſquare thereof 49, = 21, gives 84, the ſum of the *progreſſion*.

3°. The number of terms leſſened by one, being multiplied by the common difference, and the firſt term added to the product, the ſum is the laſt term. Thus in a *progreſſion* of 52 places, where the difference is 3, and the firſt term 5; 51 being multiplied by 3, produces 153, to which adding 5, the ſum 158 is the laſt term required.

4°. If the *progreſſion* begin with 0, the ſum of all the terms is equal to half the product of the laſt term multiplied by the number of terms.

Whence it follows, that the ſum of a *progreſſion* beginning from 0, is ſubduple the ſum of ſo many terms, all equal to the greateſt.

5°. In an *arithmetical progreſſion*, as the difference of the ſum of the firſt and laſt term from double the ſum of the *progreſſion*, is to the difference of the firſt term from the laſt; ſo is the ſum of the firſt and laſt terms to the *progreſſional* difference.

Geometrical **Progression**, is a ſeries of quantities increaſing or decreaſing in the ſame ratio or proportion; or a ſeries of quantities that are continually proportional. See Proportion and Geometrical.

Thus 1, 2, 4, 8, 16, 32, 64, &c. make a *geometrical progreſſion*; or 729, 243, 81, 27, 9, 3, 1.

1°. In every *geometrical progreſſion*, the product of the extreme terms is equal to the product of two intermediate terms equidiſtant from the extremes; as alſo, if the number of terms be uneven, to the ſquare of the middle term.---For example:

$$\begin{array}{cccccc} 3, & 6, & 12, & 24, & 48, & 96 \\ & & & 12, & 6, & 3 \\ \hline & & & 288, & 288, & 288 \end{array}$$

2°. If the difference of the firſt and laſt term of a *geometrical progreſſion* be divided by a number leſs than the denominator of the ratio, *i. e.* than the quotient of a greater term divided by a leſs; the quotient will be the ſum of all the terms except the greateſt: Hence, by adding the greateſt ſum, we have the ſum of the whole *progreſſion*.

Thus, in a *progreſſion* of 5 terms, beginning with 3, and the denominator being likewiſe 3, the greateſt term will be 243. If then the difference of the firſt and laſt term 240, be divided by 2, a number leſs by 1 than the denominator; the quotient 120, added to 243, gives 363, the ſum of the *progreſſion*.

Hence, 3°. the firſt or leaſt term of a *progreſſion*, is to the ſum of the *progreſſion*, as the denominator leſſened by 1, to its power likewiſe leſſened by 1; the exponent of which power is equal to the number of terms.

Thus, ſuppoſing the firſt term 1, the denominator 2, and the number of terms 8; the ſum will be 255.

4°. Hence alſo the difference between the laſt term and the ſum is to the difference between the firſt term and the ſum, as unity to the denominator: Wherefore, if the difference between the firſt term and the ſum, be divided by the difference between the ſum and the laſt term, the quotient is the denominator.

Arch of **Progression**. See the article Arch.

PROHIBITED *goods*, in commerce, ſuch commodities as are not allowed to be either imported or exported. See Contraband.

PROHIBITIO *de vaſto directa parti*, is a writ judicial, directed to the tenant, *prohibiting* him from making waſte upon the land in controverſy, during the ſuit.---It is ſometimes alſo directed to the ſheriff.

PROHIBITION, **Prohibitio**, the act of forbidding, or inhibiting any thing.

It is the *prohibition* of the law that makes the ſin: A teſtator frequently bequeaths things with a *prohibition* to alienate.

Prohibition, in common law, denotes a writ iſſued out of th chancery, king's-bench, or common-pleas, to forbid ſom other court, either ſpiritual or ſecular, to proceed in a cau there depending; upon ſuggeſtion, that the cognizance there belongeth not to that court.

It is now uſually taken for that writ which lieth for one, wh is impleaded in the court Chriſtian, for a cauſe belonging to th temporal juriſdiction, or the cognizance of the king's courts whereby, as well the party and his council, as the judge him ſelf, and the regiſter, are forbid to proceed any farther in th cauſe. See Court, Civil Law, &c.

PROJECTILE, or **Project**, in mechanics, a heavy bod which being put into a violent motion by an external force im preſſed thereon, is diſmiſſed from the agent, and left to purſ its courſe. See Motion.

Such, *e. gr.* is a ſtone thrown out of the hand or a fling, arrow from a bow, a bullet from a gun, &c. See Pr jection.

The cauſe of the continuation of the motion of **Projectil** or what it is determines them to perſiſt in motion, after the f cauſe ceaſes to act, has puzzled the philoſophers. See M tion and Communication.

The Peripatetics account for it from the air, which being v lently agitated by the motion of the *projecting* cauſe, *e. gr.* hand and fling, and forced to follow the *projectile*, while ac lerated therein, does, upon the diſmiſſion of the *projec* p preſs after it, and protrude it forward, to prevent a vacuum. See VACUUM.

The moderns account for the motion of *projectiles* on a much more rational and eaſy principle; it being, in effect, a natural conſequence from one of the great laws of nature; *viz.* That all bodies being indifferent as to motion or reſt, will neceſſarily continue the ſtate they are put into, except ſo far as they are hindered, and forced to change it by ſome new cauſe. See NATURE.

Thus a *project* put in motion muſt continue to move eternally on in the ſame right line, and with the ſame velocity; were it to meet with no reſiſtance from the medium, nor had any force of gravity to encounter.

The doctrine of the motion of *projectiles* is the foundation of all gunnery. See GUNNERY.

Laws of the motion of PROJECTILES.---1. If a heavy body be *projected* perpendicularly, it will continue to aſcend or deſcend perpendicularly: becauſe both the *projecting* and the gravitating force are found in the ſame line of direction.

2. If a heavy body be *projected* horizontally, it will, in its motion, deſcribe a parabola; the medium being ſuppoſed void of reſiſtance.

For the body is equally impelled by the impreſſed force, according to the right line AR, (*tab.* MECHANICS, *fig.* 46.) and by the force of gravity according to the right line AC, perpendicular thereto. While then the body by the action of the impreſſed force is arrived in Q; by the force of gravity it will be arrived in QM; and, therefore will be found in M. But the motion in the direction AR will ſtill be uniform (ſee MOTION); and, therefore, the ſpaces QA and qA are as the times; and the ſpaces QM and qm, are likewiſe as the ſquares of the times. Therefore, $AQ^2 : Aq^2 :: QM : qm$. That is, $PM : pm :: AP : ap$.

The courſe or path therefore, AMm, of a heavy body *projected* horizontally, is a parabola. See PARABOLA.

Two hundred years ago, the philoſophers took the line deſcribed by a body *projected* horizontally, *e. gr.* a bullet out of a cannon, while the force of the powder exceeded the weight of the bullet conſiderably, to be a right line; after which it became a curve.

N. Tartaglia was the firſt who perceived the miſtake, and maintained the path of the bullet to be a crooked line, throughout its whole extent; but it was Galileo who firſt determined the preciſe curve the bullet deſcribed; and ſhewed the path of the bullet, *projected* horizontally from an eminence, to be a parabola; the vertex whereof is the point where the bullet quits the cannon.

3. If a heavy body be *projected* obliquely, either upwards or downwards, in a medium void of reſiſtance; it will likewiſe deſcribe a parabola.

Hence, 1°, the parameter of the diameter of the parabola AS (*fig.* 47.) is a third proportional to the ſpace through which the body deſcends in any given time, and the celerity, which is defined by the ſpace paſſed over in the ſame time; *i. e.* to AP and AQ.---2°. Since the ſpace deſcribed by a body falling perpendicularly in one minute, is $15\frac{1}{12}$ Paris feet in a ſecond; the parameter of the diameter of the parabola to be deſcribed is found, if the ſquare of the ſpace paſſed over by the *projectile* with the impreſſed force in a ſecond, be divided by $15\frac{1}{12}$.---3°, If then the velocity of the *projectiles* be the ſame, the ſpaces deſcribed in the ſame time by the force impreſſed, are equal; conſequently the parameter of the parabola's paſſed over by the compound motion, is the ſame.---4. If from the parameter of the diameter be ſubtracted quadruple the altitude of AP, the remainder is the parameter of the axis; the fourth part whereof is the diſtance of the vertex of the axis from the focus of the parabola. Hence the celerity of the *projectile* being given, the parabola deſcribed by the *projectile* may be laid down on paper.---5. The line of direction of the *projectile* AR is a tangent to the parabola in A.

Sir Iſaac Newton ſhews, in his *principia*, that the line a *projectile* deſcribes, approaches nearer to an hyperbola than a parabola.

4. A *projectile* in equal times deſcribes portions of its parabolic path, as AM, Am, which are ſubtended by equal ſpaces of the horizon AT, Tt; *i. e.* in equal times it paſſes over equal horizontal ſpaces.

5. The quantity or amplitude of the path AB, *i. e.* the range of the *projectile*, is to the parameter of the diameter AS, as the ſine of the angle of elevation RAB to its ſecant.

Hence, 1. The ſemiparameter is to the amplitude of the path AB, as the whole ſine to the ſine of double the angle of elevation.---2. If then the celerity of two *projectiles* be the ſame, the parameter is the ſame. Wherefore, ſince the ſemiparameter of the path, in the one caſe, is to the amplitude, as the whole ſine to the ſine of double the angle of elevation; and the ſemiparameter of the path in the other caſe is to the amplitude, as the whole ſine to the ſine of double the angle of elevation: We may ſay farther, as the amplitude is to the ſine of the angle of double the elevation in the one caſe, ſo is the amplitude to the ſine of the angle of double the elevation in the other caſe. The amplitudes therefore, or magnitudes of the paths, are as the ſines of double the angles of elevation; the velocity of the *projectile* remaining the ſame.

6. The celerity of the *projectile* being the ſame, the amplitude AB is greateſt, *i. e.* the range of the *projectile* is greateſt, at an angle of elevation of 45°; and the amplitudes or ranges, at angles of elevation equally diſtant from 45°, are equal.

This is found by experiment; and is likewiſe demonſtrable thus: Since the ratio of the ſine of double the angle of elevation to the amplitude is always the ſame, while the celerity of the *projectile* remains the ſame; as the ſine of double the angle of elevation increaſes, the amplitude will increaſe. Wherefore, ſince the ſine of double the angle of elevation of 45° is radius, or the largeſt ſine; the amplitude, or range in that elevation, muſt be the greateſt. Again, ſince the ſines of angles equidiſtant from right angles; *e. gr.* 80° and 100° are the ſame; and the double angles muſt be equidiſtant from a right angle, if the ſimple ones be ſo; the amplitudes or ranges at elevations equidiſtant from 45°, muſt be equal.

Hence, ſince as the whole ſine is to the ſine of double the angle of elevation; ſo is the ſemiparameter to the amplitude; and the whole ſine is equal to double the ſine of the angle of elevation, if that be 45°: Under the angle of elevation 45°, the amplitude is equal to the ſemiparameter.

7. *The greateſt range or amplitude being given; to determine the amplitude or range under any other given angle of elevation; the celerity remaining the ſame.* Say thus; As the whole ſine is to the ſine of double the angle of any other elevation; ſo is the greateſt amplitude or range, to the amplitude required.

Thus, ſuppoſe the greateſt range of a mortar at 45°, to be 6000 paces, and the length of the range at 30°, required; it will be found 5196 paces.

8. *The velocity of a* projectile *being given, to find its greateſt range or amplitude.* Since the celerity of the *projectile* is given in the ſpace it will paſs over by the impreſſed force; *e. gr.* in one ſecond; there is nothing required but to find the parameter of the path (by *corol.* 2. of the 3d law); for half of this is the amplitude or range required.

Suppoſe, *e. gr.* the celerity of the *projectile* ſuch as that in one ſecond it will run over 1000 feet, or 12000 inches: If then 144000000 be divided by 181, the quotient will give the parameter of the path 795580 inches, or 66298 feet. The range or amplitude required, therefore, is 33149. Any object, therefore, found within this extent, may be ſtruck by the *projectile.*

9. *The greateſt range or amplitude being given; to find the velocity of the* projectile, *or the horizontal ſpace, it will paſs over in a ſecond.* Since double the greateſt amplitude is the parameter of the path; between double the greateſt amplitude, and the ſpace paſſed over in a ſecond by a body falling perpendicularly, *viz.* 181 Paris inches, find a mean proportional; for this will be the ſpace deſcribed by the *projectile* in the given ſecond.

Thus, if the greateſt amplitude be 1000 feet, or 12000 inches, the ſpace reqnired will be $=\surd\,(12000.181) = 120$ feet and 4 inches.

10. *To determine the greateſt altitude to which a body obliquely* projected *will riſe.* The rule is; biſect the amplitude AB in t, and from the point t erect a perpendicular tm; this tm will be the greateſt altitude to which the body *projected*, according to the direction AR, will ariſe.

11. *The range or amplitude* AB, *and the angle of elevation* BAR, *being given; to determine the greateſt alitude of the* projectile. If AR be taken for the whole ſine, BR will be the ſine, and AB the co-ſine of the angle of elevation BAR: Wherefore ſay, As the co-ſine of the angle of elevation is to the ſine of the ſame; ſo is the amplitude AB to a fourth number, which will be BR; the fourth part whereof is the greateſt altitude required.

Hence, ſince from the given velocity of a *projectile*, its greateſt range or amplitude, and thence its range under any other angle, is found; the velocity being given, the greateſt altitude of the *projectile* is likewiſe found.

12. The altitude of the range tm is to the eighth part of the parameter, as the verſed ſine of double the angle of elevation to the whole ſine.

Hence, 1. Since, as the whole ſine is to the verſed ſine of double the angle of elevation in one caſe; ſo is the eighth part of the parameter to the altitude of the range: And as the whole ſine is to the verſed ſine of double the angle of elevation in any other caſe; ſo is the eighth part of the parameter to the altitude: but the velocity remaining the ſame, the parameter, in different angles of elevation, will likewiſe be the ſame: The altitudes of the ranges under different angles of elevations are as the verſed ſines of double their angles.---2. Hence alſo, the velocities remaining the ſame, the altitudes of the ranges are in a duplicate ratio of the ſines of double the angles of elevation.

13. *The horizontal diſtance of any mark or object, together with its height above, or depth beneath the horizon, being given; to find the angle of elevation required to hit the ſaid object.*

Wolfius gives us the following theorem, the reſult of a regular inveſtigation: Suppoſe the parameter of the diameter AS, $=a$; $In=b$, $AI=c$, the whole ſine $=t$. Then, as c is to $\frac{1}{2}a+\surd\,(\frac{1}{4}a^2-ab-c^2\,:)$ ſo is the whole ſine t, to the tangent of the angle of elevation required RAB.

Dr. Halley gives the following eaſy and compendious geometrical conſtruction of the problem; which he likewiſe deduces from an analytical inveſtigation.

Having the right angle LDA, (*fig.* 48.) make DA, DF, the greateſt range, DG the horizontal diſtance, and DB, DC, the perpendicular height of the object; and draw GB, and make DE equal thereto. Then with the radius AC, and centre E, ſweep an arch, which, if the thing be poſſible, will interſect the line AD in H; and the line DH being laid both ways from F, will give the points K and L; to which draw the lines GL, GK.

Here the angles LGD, KGD, are the elevations required for hitting the object B.---But note, that if B be below the horizon, its deſcent $DC = DB$, muſt be laid from A, ſo as to have $AC =$ to $AD + DC$. Note likewiſe, that if in deſcents, DH be greater than FD, and ſo K fall below D; the angle KGD ſhall be the depreſſion below the horizon.

It may be here obſerved, that the elevation ſought conſtantly biſects the angle between the perpendicular and the object. This the author was not aware of, when he gave the firſt ſolution of the problem; but upon diſcovering it, obſerves, that nothing can be more compendious, or bid fairer for the perfection of the art of gunnery; ſince it is here as eaſy to ſhoot with a mortar at any object in any ſituation, as if it were on the level; nothing more being required but to lay the piece, ſo as to paſs in the middle line between the zenith and the object, and giving it the due charge. See MORTAR.

14. The times of the *projections* or caſts under different angles of elevation, the velocity remaining the ſame, are as the ſines of the angles of elevation.

15. *The velocity of a* projectile, *together with the angle of elevation* RAB, *being given* (fig. 47.); *to find the range, or amplitude* AB, *and the altitude of the range* tm, *and deſcribe the path* AmB. To the horizontal line AB erect a perpendicular AD, which is to be the altitude whence the *projectile* falling, might acquire the given velocity: on AD deſcribe a ſemicircle AQD, cutting the line of direction AR in Q: through Q draw C*m* parallel to AB, and make $CQ = Qm$. From the point *m* let fall a perpendicular *mt* to AB: laſtly, through the vertex M deſcribe the parabola A*m*B.

Here A*m*B is the path ſought, 4CQ its amplitude or range, *tm* the altitude of the range, and 4CD the parameter.

Hence, 1°. The velocity of a *projectile* being given, the amplitudes and altitudes of all the poſſible ranges are given at the ſame time. For, drawing EA, we have under the angle of elevation EAB, the altitude AI, and the amplitude 4IE: Under the angle of elevation FAB, the altitude AH, the amplitude 4HF. 2°. Since AB is perpendicular to AD, it is a tangent to the circle in A: hence the angle ADQ is equal to the angle of elevation RAB; conſequently AIM is double the angle of elevation; and therefore CQ, the fourth part of the amplitude, is the right ſine; AC the altitude of the range, the verſed ſine of double the angle of elevation.

16. The altitude *tm* of a caſt, or its amplitude AB, together with the angle of elevation RAB, being given; to find the velocity wherewith the *projectile* firſt moved, that is, the altitude AD, in falling from whence it would acquire the like velocity. Since $AC = tm$ is the verſed ſine, $CQ = \frac{1}{4} AB$, the right ſine of double the angle of elevation AIQ; to the verſed ſine of double the angle of elevation, find the whole ſine, and the height of the caſt. Or to the right ſine of double the angle of elevation, the whole ſine, and the fourth part of the amplitude, find a fourth proportional. This will be the radius IQ or IA, the double whereof AD is the altitude required.

PROJECTING *table*. See the article TABLE.

PROJECTION, in mechanics, the action of giving a projectile its motion. See PROJECTILE.

If the direction of the force whereby the projectile is put in motion, be perpendicular to the horizon, the *projection* is ſaid to be *perpendicular*; if parallel to the apparent horizon, it is ſaid to be a *horizontal projection*; if it make an oblique angle with the horizon, the *projection* is oblique. See OBLIQUE.

The angle ARB, (*tab. mechan. fig.* 47.) which the line of direction AR makes with the horizontal line AB, is called the *angle of elevation of the projectile*.

PROJECTION, in perſpective, denotes the appearance or repreſentation of an object on the perſpective plane. See PLANE.

The *projection*, *e. gr.* of a point, as A, (*tab. perſpect. fig.* 1.) is a point *a*, through which the optic ray OA paſſes from the objective point through the plane to the eye; or it is the point *a*, wherein the plane cuts the optic ray.

And hence is eaſily conceived what is meant by the *projection* of a line, a plane, or a ſolid. See PERSPECTIVE.

PROJECTION *of the ſphere, in plano*, is a repreſentation of the ſeveral points or places of the ſurface of the ſphere, and of the circles deſcribed thereon, or of any aſſigned parts thereof, ſuch as they appear to the eye ſituate at a given diſtance, upon a tranſparent plane placed between the eye and the ſphere. See SPHERE and PLANE.

For the laws of this *projection*, ſee PERSPECTIVE; the *projection of the ſphere* being only a particular caſe of perſpective.

The principal uſe of the *projection of the ſphere* is in the conſtruction of planiſpheres, and particularly maps and charts, which are ſaid to be of this or that *projection*, according to the ſeveral ſituations of the eye, and the perſpective plane with regard to the meridians, parallels, and other points and places to be repreſented. See PLANISPHERE, &c.

The moſt uſual *projection* of maps of the world is that on the *plane of the meridian*, which exhibits a right ſphere; the firſt meridian being the horizon: The next is that on the *plane of the equator*, wherein the pole is in the centre, and the meridians the radii of a circle, &c. This repreſents a parallel ſphere.

See the application of the doctrine of the projection of the ſphere, *in the conſtruction of the various kinds of maps, under the article* MAP.

The projection of the ſphere is uſually divided into *orthographic*, and *ſtereographic*, to which may be added *gnomonic*.

Orthographic PROJECTION, is that wherein the ſuperficies of the ſphere is drawn on a plane, cutting it in the middle; the eye being placed at an infinite diſtance vertically to one of the hemiſpheres. See ORTHOGRAPHIC.

Laws of the orthographic PROJECTION.---1. The rays by which the eye at an infinite diſtance perceives any object, are parallel.

2. A right line perpendicular to the plane of the *projection* is projected into a point, where that right line cuts the plane of the *projection*.

3. A right line, as AB, or CD, (*tab. perſpect. fig.* 17.) not perpendicular, but either parallel or oblique to the plane of the *projection*, is projected into a right line, as EF, or GH, and is always comprehended between the extreme perpendiculars AF, and BE.

4. The *projection* of the right line AB is the greateſt, when AB is parallel to the plane of the *projection*.

5. Hence it is evident, that a line parallel to the plane of the *projection*, is projected into a right line equal to itſelf; but if it be oblique to the plane of the *projection*, it is projected into one which is leſs.

6. A plane ſurface, as ABCD, (*fig.* 18.) at right angles to the plane of the *projection*, is projected into that right line; *e. gr.* AB, in which it cuts the plane of the *projection*.

Hence it is evident, that the circle BCAD, ſtanding at right angles to the plane of the *projection*, which paſſes through its centre, is projected into that diameter AB, in which it cuts the plane of the *projection*.

It is likewiſe evident, that any arch, as *cc*, is projected into *oo* equal to C*a*, C*b*, which is the right ſine of that arch; and the complemental arch *c*A is projected into *o*A, the verſed ſine of the ſame arch cc.

7. A circle parallel to the plane of the *projection*, is projected into a circle equal to itſelf; and a circle oblique to the plane of the *projection*, is projected into an ellipſis.

Stereographic PROJECTION, is that wherein the ſurface and circles of the ſphere are drawn upon the plane of a great circle, the eye being in the pole of that circle. See STEREOGRAPHIC.

Properties of the ſtereographic PROJECTION.---1. In this *projection*, a right circle is projected into a line of half tangents.

2. The repreſentation of a right circle, perpendicularly oppoſed to the eye, will be a circle in the plane of the *projection*.

3. The repreſentation of a circle placed oblique to the eye, will be a circle in the plane of the *projection*.

4. If a great circle be to be projected upon the plane of another great circle, its centre will lie in the line of meaſures, diſtant from the centre of the primitive by the tangent of its elevation above the plane of the primitive.

5. If a leſſer circle, whoſe poles lie in the plane of the *projection*, were to be projected; the centre of its repreſentation would be in the line of meaſures, diſtant from the centre of the primitive, by the ſecant of the leſſer circles diſtance from its pole, and its ſemidiameter or radius, be equal to the tangent of that diſtance.

6. If a leſſer circle were to be projected, whoſe poles lie not in the plane of the *projection*, its diameter in the *projection*, if it falls on each ſide of the pole of the primitive, will be equal to the ſum of the half tangents of its greateſt and neareſt diſtance from the pole of the primitive, ſet each way from the centre of the primitive in the line of meaſures.

7. If the leſſer circle to be *projected*, fall intirely on one ſide of the pole of the *projection*, and do not encompaſs it; then will its diameter be equal to the difference of the half tangents of its greateſt and neareſt diſtance from the pole of the primitive, ſet off from the centre of the primitive one; and the ſame way in the line of meaſures.

8. In the *ſtereographic projection*, the angles made by the circles of the ſurface of the ſphere, are equal to the angles made by their repreſentatives in the plane of their *projection*.

Gnomonic PROJECTION *of the ſphere*. See GNOMONIC *projection*.

Mercator's PROJECTION. See the article MERCATOR.

PROJECTION *of globes*, &c. See the article GLOBE, &c.

Polar PROJECTION. See the article POLAR.

PROJECTION *of ſhadows*. See the article SHADOW.

PROJECTION, in alchymy, the caſting of a certain imaginary powder, called *powder of projection*, into a crucible, or other veſſel, full of prepared metal, or other matter, which is to be hereby preſently tranſmitted into gold. See *powder of* PROJECTION.

Powder of PROJECTION, or of the philoſopher's ſtone, is a powder ſuppoſed to have the virtue of changing any quantity of an imperfect metal, as copper or lead, into a more perfect one, as ſilver or gold, by the admixture of a little quantity thereof. See TRANSMUTATION.

The mark to which the alchymiſts direct all their endeavours, is to find the *powder of projection*; which every one of them has been within an ace of, an hundred times. See ALCHYMY.

For the characters, properties, virtues, &c. *of this powder,* ſee PHILOSOPHER'S *ſtone.*

PROJECTION in building. See PROJECTURE.

PROJECTIVE *dialing*, a manner of drawing, by a method of projection, the true hour-lines, furniture of dials, *&c.* on any kind of ſurface whatſoever, without any regard had to the ſituation of thoſe ſurfaces, either as to declination, reclination, or inclination. See DIALING.

PROJECTURE, in architecture, the out-jetting, or prominency, which the mouldings and members have, beyond the plane or naked of the wall, column, *&c.* See NAKED, COLUMN, *&c.*

Theſe the Greeks call *ecphoræ*, the Italians *ſporti*, the French *ſailles*, our workmen frequently *ſailings over*, and the Latins *projecta*, from *projicio*, I caſt forward; whence the Engliſh, *projecture*.

Vitruvius gives it as a general rule, that all the *projecting* members in buildings have their *projectures* equal to their heights: but this is not to be underſtood of the particular members, or mouldings, as dentils, corona's, the faſciæ of architraves, the abacus of the Tuſcan and Doric capital, *&c.* but only of the *projectures* of intire cornices, *&c.* See CORNICE, *&c.*

The great point of building, according to ſome modern architects, conſiſts in knowing how to vary the proportions of *projectures*, &c. agreeably to the circumſtances of the building. Thus, ſay they, the nearneſs and remoteneſs, making a difference in the view, requires different *projectures*; but it is evident the ancients had no ſuch intention. See PROPORTION.

The *projecture* of the baſe and cornice of pedeſtals, M. Perrault obſerves, is greater in the antique than the modern buildings by one third; which ſeems to follow, in good meaſure, from the ancients proportioning this *projecture* to the height of the pedeſtals; whereas the moderns make the *projecture* the ſame in all the orders, though the height of the pedeſtal be very different.

The reaſon of this change, which the moderns have made of the antique, the ſame author refers to a view to the appearance of ſolidity. See PEDESTAL.

PRO-INDIVISO, in law, a poſſeſſion or occupation of lands or tenements, belonging to two or more perſons, whereof none can ſay which is his ſeveral portion, each having the whole, *&c.* as co-parceners before partition. See POUR *party*, COPARCENER and PARTITION.

PROKING, ſee FISHING.

PROLABIA, *fore-lips*; a term in anatomy for that part of the labia or lips which jets out. See LABIA.

PROLATE, in geometry, an epithet applied to a ſpheroid produced by the revolution of a ſemi-ellipſis about its longer diameter. See SPHEROID.

If the ſolid be formed by the revolution of a ſemi-ellipſis about its ſhorter diameter, it is called an *oblate ſpheroid*; of which figure is the earth we inhabit, and, perhaps, all the planets too; having their equatorial diameter longer than their polar. See OBLATE.

PROLATION, in muſic, the act of ſhaking, or making ſeveral inflections of the voice, on the ſame ſyllable.

PROLEGOMENA*, in philology, preparatory obſervations, or diſcourſes prefixed to a book, *&c.* containing ſomething neceſſary for the reader to be apprized of, to enable him the better to underſtand the book, to enter deeper into a ſcience, *&c.*

* The word is Greek, προλεγομενον, formed of προλεγω, *I preface*, or *ſpeak before*.

The generality of arts and ſciences require ſome previous inſtructions, ſome *prolegomena*. See PRELIMINARY.

PROLEPSIS, προληψις, a figure in rhetoric, by which we anticipate, or prevent what might be objected by the adverſary. See FIGURE.

Thus: *It may perhaps be objected*, &c.---*You will aſk*, &c.

But ſome man will ſay, how are the dead raiſed, or with what body do they come? Thou fool, that which thou ſoweſt, *&c.*

Where the objection is turned into an argument againſt the adverſary, as in the laſt inſtance, it is called *antiſtrophe*, or *inverſio*.---Where it is rejected as unſufferably abſurd, it is called *Apodioxis*. See ANTISTROPHE.

PROLEPTIC, προληπτικος, denotes a periodical diſeaſe, which anticipates, or whoſe paroxyſm returns ſooner and ſooner every time; as is frequently the caſe in agues, *&c.*

PROLIFIC, in medicine, ſomething that has the qualities neceſſary for generating. See FECUNDITY.

Some phyſicians pretend to diſtinguiſh whether or no the ſeed be *prolific*. See SEED.

PROLIXITY, in diſcourſe, the fault of entering into too minute a detail; of being too long, preciſe, and circumſtantial, to a degree of tediouſneſs. See STYLE.

Prolixity is the vice oppoſite to conciſeneſs and laconiſm. See LACONISM.---*Prolixity* is a fault commonly charged on Guicciardini, Gaſſendus, *&c.*---Formal harangues at the head of an army, and deliberations, of nauſeous *prolixity*, formerly ſo frequent, are now diſuſed in all the better hiſtories.

PROLOCUTOR *of the convocation*, the ſpeaker, or chairman of that aſſembly. See CONVOCATION.

The archbiſhop of Canterbury is, by his office, preſident, or chairman of the upper houſe of convocation.---The *prolocutor* of the lower is an officer choſen by the members the firſt day of their meeting, and to be approved of by the higher. It is by the *prolocutor* their affairs, debates, *&c.* are to be directed; and their reſolutions, meſſages, *&c.* delivered to the higher houſe: by him all things propounded to the houſe are read, ſuffrages collected, *&c.*

PROLOGUE*, PROLOGUS, in dramatic poetry, a diſcourſe addreſſed to the audience before the drama or play begin. See DRAMA.

* The word is formed from the Greek προλογος, *præloquium*, fore-ſpeech, formed of πϱο, and λογος, *ſermo*.

The original intention of the *prologue* was to advertiſe the audience of the ſubject of the piece, and to prepare them to enter more eaſily into the action; and ſometimes to make an apology for the poet.

This laſt article ſeems to have almoſt excluded the two former in the Engliſh drama; and to be in ſole poſſeſſion of the *prologue*.

The *prologue* is of a much more ancient ſtanding than the epilogue. See EPILOGUE.---The French have left off the uſe of *prologues*; thoſe few they now-and-then make have nothing in them of the genuine *prologue*, as bearing no relation to the ſubject, but being mere flouriſhes or harangues in praiſe of the king, *&c.*

In the ancient theatre, the *prologus* was properly the actor who rehearſed the *prologue*: the *prologus* was eſteemed one of the dramatis perſonæ, and never appeared in the piece in any other character; ſo that the learned are ſurpriſed to find Mercury in Plautus's Amphitryo, ſpeaking the *prologue*, and yet acting a conſiderable part in the play afterwards.

The *prologue*, therefore, among them, was a part of the piece; indeed, not an eſſential, but an acceſſary part;---with us, the *prologue* is no part at all; but ſomething intirely diſtinct and ſeparate: with them the drama was opened with the appearance of the *prologue*; with us it is not opened till after the *prologus* is retired: with us therefore the curtain is kept cloſe till after the *prologue*; with them it muſt have been withdrawn before.

Hence proceeds a ſtill more conſiderable difference in the practice of the *prologue*: for with us the *prologus* ſpeaks in his real or perſonal character; it is Mr. Booth or Mrs. Oldfield ſpeaks, not Cato or Andromache: with them the *prologue* ſpoke in his dramatic character, not as Turpius or Attilius, but as *prologus*.

With us, he directs his ſpeech to the audience, conſidered as in a play-houſe; to pit, box, and gallery: with them, he ought, in propriety, to have ſpoken as to a chorus of by-ſtanders, or perſons to be preſent at the real action: but this being in good meaſure inconſiſtent with the deſign of the *prologue*; their perſons ſpoke in their dramatic capacity to the audience in its perſonal capacity; which was an irregularity that either the good fortune, or the good ſenſe of the moderns, have freed them from.

They had three kinds of *prologues*; the firſt ὑποθετικος, wherein the poet delivered the argument of the piece; the ſecond συςατικος, wherein the poet recommended himſelf or his piece to the people; the third αναφοεικος, wherein objections were obviated, *&c.*

PROLONGED *face*. See the article FACE.

PROLUSION, PROLUSIO, in literature, a term applied to certain pieces, or compoſitions, made previouſly to others, by way of prelude or exerciſe.

Diomedes calls the culex of Virgil, and his other opuſcula, *proluſions*; becauſe written before the great ones.---The *proluſions* of Strada are very ingenious pieces. The famous M. Huet, biſhop of Avranches, had all Strada's *proluſions* by heart.

PROMETHEUS, in the ancient aſtronomy, was the name of a conſtellation of the northern hemiſphere, now called *Hercules*, or *Engonaſis*. See HERCULES.

PROMISE, in law, is when, upon a valuable conſideration, a man binds himſelf, by his word, to do or perform ſuch an act as is agreed on with another. See CONTRACT, PACT, COVENANT, *&c.*

PROMONTORY, in geography, a high point of land, or rock, projecting out into the ſea;---the extremity of which to the ſea-ward is uſually called a *cape*, or *headland*. See CAPE.

PROMOTERS, PROMOTORES, in law, thoſe perſons, who in popular and penal actions, do proſecute offenders in their name and the king's; and are intitled to part of the fines and penalties for their pains.

Theſe, among the Romans, were called *quadruplatores*, or *delatores*; in Engliſh alſo, *informers*.

Sir Tho. Smith obſerves, that *promoters* belong chiefly to the exchequer, and king's-bench. My lord Coke calls them, *turbidum hominum genus*, 3 Inſt.

PROMPT *payment*, ready money. See PAYMENT.

In many caſes there is a diſcount for *prompt payment*. See DISCOUNT, REBATE, *&c.*

PROMPTER, in the drama, an officer poſted behind the ſcenes, whoſe buſineſs is to watch attentively the actors ſpeaking on the ſtage, in order to ſuggeſt and put them forward when at a ſtand, to coorect them when amiſs, *&c.* in their parts.

PROMULGATED, PROMULGED, PROMULGATUS, ſomething publiſhed, or proclaimed.

In this ſenſe we ſay, the Jewiſh law was *promulgated* by Moſes: the *promulgation* of the new law was chiefly effected by the apoſtles and diſciples.

PRONAOS, πϱοναος, in the ancient architecture, a porch to a church, palace, or other ſpacious building. See PORCH.

PRONATION, among anatomiſts. The radius of the arm has two kinds of motions, the one called *pronation*, the other ſupination. See RADIUS.

Pronation * is, that whereby the palm of the hand is turned downwards; the oppoſite motion hereto is called *ſupination*, whereby the back of the hand is downwards.

* The word is formed from the Latin *pronus*, prone, that which lies on the foreſide, or with the face downwards.

M. Winſlow has lately advanced, that the *pronation* and ſupination of the hand are not effected ſolely by the motion of the radius; but that the cubitus in moſt caſes contributes equally thereto; and that both bones uſually move at the ſame time. *Vid. mem. acad. R. ſcienc. an.* 1729. *p.* 36.

There are peculiar muſcles whereby the *pronation* is effected, called *pronators*.---The radius has two other muſcles, called *ſupinators*, which have an oppoſite effect. See SUPINATOR.

PRONATORS, PRONATORES, in anatomy, two muſcles of the radius, which ſerve to turn the palm of the hand downwards. See PRONATION.

They are diſtinguiſhed by the names of *rotundus* and *quadratus*.

PRONATOR *radii quadratus*, or *brevis*, riſes broad and fleſhy, from the lower and inner part of the ulna; and paſſing tranſverſely over the ligament that joins the radius to the ulna, is inſerted into the ſuperior and external part of the radius: which it helps to pull inwardly; together with the

PRONATOR *radii rotundus*, or *teres*, a muſcle which riſes fleſhy, from the internal extuberance of the os humeri, where thoſe bending the carpus and fingers do ariſe; and firmly adhering to the flexor carpi radialis, deſcends obliquely downwards to its fleſhy inſertion a little above the radius, in the middle externally: its uſe is to move the radius and palm inwards. See *tab. anat. (myol.) fig.* 1. *n.* 27. *fig.* 2. *n.* 15.

PRONOUN, PRONOMEN, in grammar, a part of ſpeech uſed in lieu of a noun or name. See NOUN.

Whence the denomination, from *pro*, and *nomen*, q. d. *for-noun*, or *name*.

As it would have been diſagreeable to have been always repeating the ſame name, there are words invented in all languages, called *pronouns*, to ſave the neceſſity thereof, and to ſtand in the place of names; as, *I*, *thou*, *he*, &c.

As nouns are the marks or ſigns of things, *pronouns* are the ſigns of nouns.---Father Buffier, however, ſhews, that *pronouns* are real nouns or names; and that all the difference between what the grammarians call nouns, and *pronouns*, is, that the former are more particular, and the latter more general.

They are called *pronouns*, becauſe uſed in the place of particular nouns. Indeed ſometimes they do not fill the place of nouns intirely, but need other words to aſſiſt them, to expreſs the object ſpoken of: ſuch, *e. gr.* are *who*, *whoever*, &c. which do not expreſs any determinate object whereof a thing may be affirmed, unleſs accompanied with another word, eſpecially a verb: As, *Whoever labours*, *deſerves a reward*.

Theſe father Buffier calls *incomplete pronouns*, to diſtinguiſh them from thoſe which expreſs an object completely; as, *I*, *thou*, *he*, &c.

The grammarians ordinarily diſtinguiſh *pronouns* into four claſſes, with regard to their different ſignification, formation, *&c. viz. pronouns perſonal*, *relative*, *poſſeſſive*, and *demonſtrative*; to which may be added, *indeterminate pronouns*.

Perſonal PRONOUNS are thoſe uſed in lieu of names of particular perſons: ſuch are, *I*, *thou*, *he*, *we*, *ye*, *they*. See PERSON and PERSONAL.

PRONOUNS *relative*, which Buffier calls *modificative*, or *determinative*, are thoſe placed after nouns, with which they have ſuch affinity, that without them they ſignify nothing: ſuch are, *qui*, *who*, *that*, &c. See RELATIVE.

PRONOUNS *poſſeſſive* are thoſe which expreſs what each poſſeſſes, or what belongs to him; as, *mine*, *thine*, *his*, &c. See RELATIVE.

Theſe are pure adjectives, and only differ from the reſt by the relation they bear to *pronouns*, whence they are derived, and by ſome particular inflections, which they have in ſome languages. See ADJECTIVE.

PRONOUNS *demonſtrative*, thoſe which ſerve to indicate or point out the ſubject ſpoken of; as, *this*, *thoſe*, &c. See DEMONSTRATIVE.

PRONOUNS *indefinite*, are thoſe which expreſs their ſubject indeterminately; as *whoever*, *any*, &c.---Theſe coincide with what F. Buffier calls *incomplete pronouns*.

Pronouns are likewiſe divided into *ſubſtantive* and *adjective*.---To the firſt belong, *I*, *thou*, *he*: to the ſecond, *my*, *mine*, *who*, *what*, &c.

Pronouns may alſo be conſidered in two ſtates; the firſt, or foregoing ſtate, as *I*, *we*; the ſecond, or following one, as *me*, *us*.

PRONOUNCING, PRONUNCIATION, in painting, the marking and expreſſing the parts of all kinds of bodies with that degree of force neceſſary to make them more or leſs diſtinct and conſpicuous.

Thus the painters, in ſpeaking of a piece, ſay, theſe or theſe parts are well *pronounced*; which is a metaphorical way of ſpeaking; as when we ſay, that a man who talks well has a fine *pronunciation*. See EXPRESSION.

PRONUNCIATION, PRONUNTIATIO, in grammar, the manner of articulating, or ſounding the words of a language, repreſented to the eye by writing and orthography. See WORD, LANGUAGE, SOUND, *&c.*

From the definition it would ſeem, that the *pronunciation* were only the image of the orthography: but as we pronounce before we write, and only write to expreſs what we pronounce, it is more juſt to lay down the *prononunciation* as the rule and model of orthography. See ORTHOGRAPHY and WRITING.

Pronunciation makes much the moſt difficult article of a written grammar: in effect, a book only expreſſing itſelf to the eyes in a matter that concerns the ears; the caſe ſeems next akin to that of teaching the blind to diſtinguiſh colours. See GRAMMAR.

Hence it is, that there is no part ſo defective in the grammars as the *pronunciation*; for the writer has frequently no term whereby to give the reader an idea of the ſound he would expreſs; for want of a proper term, therefore, he frequently ſubſtitutes a vitious or precarious one.

Thus the French grammarians frequently tell us, that the vowels *a*, *e*, *i*, &c. are pronounced in French the ſame as in Latin; never conſidering, that there is not any known and determinate *pronunciation* of the Latin; but each nation, now, pronounces the Roman characters in the Latin, the ſame as it pronounces thoſe ſame characters in its own language: thus the Latin *cœcus* is pronounced by the Engliſh, *ſekus*; and by the Italians, *tchekous*, &c.

Hence it appears, that the relation between ſounds and characters, as well as between things and words, is purely arbitrary and national.

Indeed, Plato ſeems of a contrary ſentiment, and will have a natural relation between words and the things they expreſs, as there is a natural relation between the ſigns made by mutes, and the things they would intimate: ſo that, according to Plato, to every ſeveral word there muſt be a ſeveral motion of the mouth relative to the action expreſſed by the word.

Whether or no there might be ſuch a thing in the primitive language, we dare not undertake to ſay; but it is certain ſuch a relation would require a facility of contortions in the mouth, to which we are ſtrangers.

To give a juſt and preciſe idea of the *pronunciation* of a language, it ſeems neceſſary to fix, as nearly as poſſible, all the ſeveral ſounds employed in the *pronunciation* of that language: this Mr. Lodwick has done in his attempt towards an univerſal alphabet, where he enumerates forty-three ſeveral ſimple ſounds (ſome of them, indeed, ſtrangers to the Engliſh language); and F. Buffier, who gives thirty-three ſeveral ſounds in the French tongue, twenty-nine in the Italian, thirty in the German, twenty-two in the Spaniſh, and twenty-four in the Engliſh. See ALPHABET.

The French language is clogged with a difficulty in *pronunciation*, from which moſt others are free; and it conſiſts in this, that moſt of their words have two different *pronunciations*; the one in common proſe, the other in verſe.

In proſe, *e. gr.* they omit the *pronunciation* of the final *s* in the plural of nouns, and of the *t* in the third perſon of the plural of verbs, and of ſeveral other final conſonants; but in verſe they *pronounce* all.

Thus, in *à quoi bon reveiller mes muſes endormies?* the final *s* of *muſes* is *pronounced*: and in *mille & mille douceurs y ſemblent attachés*, the *t* of *ſemblent* is to be *pronounced*.

Add to this, that in proſe they ſoften the ſound of a great many words, pronouncing *craire* for *croire*; but in poetry the genuine *pronunciation* is retained. See ENGLISH, FRENCH, *&c.*

PRONUNCIATION is alſo uſed for the fifth and laſt part of rhetoric, which conſiſts in regulating and varying the voice and geſture agreeably to the matter and words; ſo as more effectually to perſuade and touch the hearers. See RHETORIC.

The *pronunciation* is of ſuch importance, that Demoſthenes called it the firſt, the ſecond, and the third part of eloquence. See ACTION.

Quintilian defines the *pronunciation*, *vocis*, *& vultus*, *& corporis moderatio cum venuſtate*; a decent, agreeable manner of managing the voice, geſture, and action of the whole body.

Cicero ſomewhere calls it *quædam corporis eloquentia*, a certain eloquence of the body; and in another place, *ſermo corporis*, the language or ſpeech of the body.

Pronunciation is the ſame with what we otherwiſe call *action*. See ACTION.---Some writers, particularly Mr. Henley, confound it with *elocution*, which is a very different thing. That author, when he ſtyles himſelf *reſtorer of the ancient elocution*, means of the ancient *pronunciation*. See ELOCUTION.

There are three things which come under the *pronunciation*; the memory, voice, and geſture. See each under its proper article.

Auguſtus, to avoid being balked by his memory, and at the ſame time ſave the trouble of getting off by heart, uſed to harangue from a writing; as we are told by Dio and Suetonius.

PRONUNCIATION, in painting. See the article PRONOUNCING.

PROOF, PROBATIO, in arithmetic, an operation whereby the truth and juſtneſs of a calculation is examined and aſcertained. See CALCULATION.

The proper proof is always by the contrary rule: thus ſubtraction is the *proof* of addition, and multiplication of diviſion; and *vice verſa*. See ADDITION, SUBTRACTION, *&c.*

---The *proof* of multiplication by 9 or by 7 is precarious. See Multiplication.

There would need no *proofs* in arithmetic, were it not that a man is liable to make miſtakes; for all the rules and operations being built on demonſtration, it is thence we are aſſured of their truth and certitude. See Demonstration.

The *proof*, then, does not confirm the rule, but only ſhews us whether or no we have applied it right. See Rule.

Proof, in law, logic, *&c.* denotes the mediums, or arguments uſed to evince the truth of any thing. See Truth and Semi*proof.*

By the French law, a *literal proof*, or *proof in writing*, called alſo *dead proof*, *probatio mortua*, is preferable to a teſtimonial, or *proof* viva voce, by witneſſes.--The ordonnance de Moulins excludes all *proof* by witneſſes for loans of above 1000 livres. See Evidence, Witness, Testimony, *&c.*

The *proof* of crimes was anciently effected among our anceſtors divers ways; *viz.* by duel or combat, fire, water, *&c.* See Purgation, Duel, Fire, Water, *&c.*

The *proof* by red-hot iron was very frequent: the accuſed, to purge himſelf, was here obliged to make an oath, as he touched the iron. The formula, ceremonies, prayers, *&c.* made on this occaſion, are ſtill extant in the notes at the end of the capitularies of Charlemaign. See Ordeal.

This cuſtom was abrogated by the emperor Frederic; but ſtill obtains in Mingrelia; as we are told by Lamberti, in his relation inſerted in Thevenot's voyages.

If they cannot have *proof* of a crime, a croſs is laid at the bottom of a caldron full of boiling water, out of which the accuſed is obliged to fetch it with his naked hand and arm: this done, the arm is put up in a bag, tied, and ſealed, and three days after opened; when, if there be no marks of the burn or ſcald, the accuſed is declared innocent.

In the kingdom of Siam, to have *proof* of a crime, the party is obliged to waſh his hands in boiling oil, or to walk on burning coals; from either of which he muſt come out untouched to be reputed innocent.

Sometimes they oblige the two contending parties to plunge under water; and he who ſtays there longeſt gains the cauſe; and ſometimes to ſwallow a grain of rice, prepared and charmed by their doctors: he who is able to ſwallow it is declared innocent, and carried home in triumph; and the accuſer puniſhed.--This looks like an imitation of what was done among the Jews to have *proof* of adultery.

The *proof* by combat is likewiſe ſaid to ſubſiſt among the Mingrelians. See Combat and Duel.

PROPAGATION, Propagatio, the act of multiplying the kind, or of producing the like in the way of natural generation. See Generation.

Some plants are only propagated by ſowing, as wheat, poppies, *&c.* The reaſon is, that the ſtem in theſe plants withers and dies away, and conſequently is incapable of being planted: and as to the root, the whole force and virtue thereof paſſes into the ear, or ſpica, which being the uſeful part of the plant, exhauſts the whole. See Plant, Seed, and Semination.

Sometimes plants are *propagated* by the roots, as the anemonies, *&c.* In which caſe there is a conſiderable ſtock of ſeminal or ſpermatic virtue ſtill reſerved in the root, ſo as to be in a condition for ſhooting new fibres upon any favourable occaſion. See Root.

Sometimes a branch lopped off, and ſet in the ground, ſhall ſhoot into a new plant; as we ſee in the willow, vine, poplar, *&c.* and ſometimes a truncheon ſhall do the ſame. In this caſe, the plants being of a very porous texture, readily imbibe nouriſhment, and take root.---This method of *propagation* is particularly remarkable in the vine, any part of which, put any how in the ground, will become a plant. The little chips of elm are ſaid to do the ſame. See Branch and Planting.

When a branch, or arm of a vine, ſhoots too great a length, or withers towards the extreme, or grows too ſmall to feed its grapes, it is uſual to cut pieces of it off, and put them in the ground, which readily grow into thriving plants.

Nay, ſometimes to bring up young plants, and make them grow and advance the faſter, eſpecially lemon, orange, and citron trees, they paſs a branch or ſhoot of an old tree, without cutting it off, through an aperture of a veſſel filled with good earth; upon which, the pores opening by the moiſture and warmth, roots preſently burſt forth, which, being furniſhed with food both from the earth and the parent plant, grow at a great rate, and are ſoon in a condition to be ſeparated from the parent, and ſhift for themſelves. See Stock, Dwarf, *&c.*---Laſtly, plants are ſometimes alſo propagated by bulbs. See Bulb.

PROPER, Proprium, ſomething naturally and eſſentially belonging to any being.

The ſchool-philoſophers, after Porphyry, diſtinguiſh four kinds of *propers*, or modes of *propriety*, which are expreſſed in the following verſe.---*Eſt medicus bipes, caneſcens, riſibiliſque.*

The firſt, called proprium *primo modo*, is what agrees to a ſingle ſpecies, but not to all the individuals: this they call *ſoli, ſed non omni.*---As, to be a geometrician, a phyſician, a divine, *&c.* which are things *proper* to man; but not to all men.

The ſecond, proprium *ſecundo modo*, is what agrees to the whole ſpecies, but agrees likewiſe to another; which they call *omni, ſed non ſoli.*--Thus, to have two feet is *proper* to a man, but is likewiſe *proper* to a bird.

The third, proprium *tertio modo*, is that which agrees to a ſingle ſpecies, but not at all times; *omni & ſoli, ſed non ſemper.*--As, to grow grey, according to Porphyry, is *proper* to a man, but it is to an old man.

The laſt, and higheſt, proprium *quarto modo*, is that which alone agrees to one kind, to all the individuals thereof, and at all times; *omni, ſoli, & ſemper.*--Thus, the faculty of laughing is *proper* to man, of neighing to horſes, *&c.* And it is this that Porphyry calls the *true proper*. See Essence, *&c.*

The firſt three ſpecies are only accidents of the fifth vulgar predicable, to which they directly belong. See Predicable.

The fourth is an univerſal agreeing to every individual, or ſubject of predication of any ſpecies, in ſuch manner as to be always found abſolutely in the ſpecies alone, but not at every determinate time: thus man alone is naturally riſible; not that he is always laughing, but has the faculty of laughing at all times. See Definition.

Proper, in reſpect of words, denotes their immediate and peculiar ſignification, or that directly and peculiarly attached to them. See Word and Signification.

In which ſenſe the word ſtands oppoſed to *figurative* and *metaphorical*. See Figurative, *&c.*

Proper is alſo uſed in a moral ſenſe, to denote ſomething that is uſually found in things: as, their particular or ſpecific virtues, *&c.*

In which ſenſe we ſay, magnanimity is the *proper* virtue of heroes. See Hero.

Proper is alſo uſed for the natural qualities neceſſary to ſucceed in a thing.

In which ſenſe we ſay, people of a hot vigorous temperament are *proper* for the army; the cold and phlegmatic are *proper* for ſtudy. The Romans became leſs *proper* for war, in proportion as they grew more learned and polite.

Proper, in grammar, is alſo applied to nouns or names, which are diſtinguiſhed into *proper* and appellative. See Noun.

Man is the appellative, Peter the *proper* name. See Appellative.

The *proper* name among Chriſtians is that impoſed at baptiſm. See Name and Baptism.

Proper *fraction* is ſuch a one whoſe numerator is leſs than its denominator. See Improper.

Such is $\frac{3}{4}$, or ^{5}, which is really leſs than unity; and therefore, *properly* ſpeaking, a fraction. See Fraction.

Proper, in the civil juriſprudence, is uſed in oppoſition to *acquired*, for an inheritance derived by direct or collateral ſucceſſion. See Acquest.

By the French laws, a teſtator can only diſpoſe of one fifth of his *proper* effects; the paternal relations inherit the paternal *propria*, and the maternal the maternal ones: ſo that *propria* always return to the line whence they proceed.

The origin of the law which fixes this difference between *proper* goods and acqueſts, is not known; neither the Greeks nor Romans having ever made any ſuch diſtinction.

Indeed it ſeems founded on this principle of natural equity, that men are uſually deſirous to preſerve and attach to their family the goods they have received from their forefathers, and to tranſmit them to thoſe deſcending from the ſame ſtock.

Proper ſometimes alſo ſtands as a reduplicative, ſerving to mark or deſign a thing more expreſly and formally.

In this ſenſe we ſay, Jeſus Chriſt came to redeem the world in his *proper* perſon. The king did ſuch and ſuch a thing of his own *proper* motion.

Proper *motion.* See the article Motion.

Proper *objects.* See the article Object.

PROPERTY, or Propriety, Proprietas, that which conſtitutes or denominates a thing *proper*; or, it is a particular virtue or quality, which nature has beſtowed on ſomething, excluſive of all others. See Proper and Essential.

Thus colour is a *property* of light; extenſion, figure, diviſibility, and impenetrability, are *properties* of body. See Colour, Body, *&c.* Every day diſcovers new *properties* in the loadſtone. See Magnet.

Property, or Propriety, in law, denotes *dominion*, or the higheſt right a man can have to a thing; and ſuch as no-ways depends on any other man's courteſy. See Right.

In this ſenſe, none in our kingdom have the *property* of any lands or tenements, except the king, in right of his crown; all other lands being of the nature of fee, and held of the king either mediately or immediately. See Fee, King, *&c.*

Property or *propriety*, however, is uſed for that right in lands or tenements, which common perſons have; importing as much as *utile dominium*, though not *directum*. See Dominium.

There are three manners of right or *property*; viz. *property* abſolute, *property* qualified, and *property* poſſeſſory. See Proprietor and Fee.

Incumbents have not the *propriety* of benefices, they have only the enjoyment thereof. See Benefice.--The monks have a long time diſputed whether they had the *propriety* of the bread they eat, or only the uſe?

One may give the *propriety* of an eſtate, yet reſerve the uſufruit; in which caſe, by the death of the uſufructuary, the uſufruit is conſolidated to the *propriety*. See Consolidation.

PROPHECY, ϖροφητεια, a prediction, made by divine inſpiration. See PROPHET and INSPIRATION.

A late author obſerves, that the Chriſtians have this in common with the Pagans, that they equally build their religions upon *prophecy* and *divination*. See DIVINATION and AUGURY.

He adds, That divination was an art learnt by the Romans in ſchools, or under diſcipline; as the Jews did *propheſying* in the ſchools and colleges of the prophets.

In theſe ſchools, as the learned Dodwell obſerves, the candidates for *prophecy* were taught the rules of divination practiſed by the Heathens; who were in poſſeſſion of the art long before them. It is added, that the gift of *prophecy* was not an occaſional thing, but a conſtant and ſtanding matter of fact; and ſome think they have diſcovered an eſtabliſhment of an order of prophets in the old teſtament, in analogy to the Heathen diviners.

This is certain, from many paſſages of ſcripture, that there were great numbers of prophets among them, who not only exerciſed their talents in matters of government and religion, but even in the diſcovery of loſt goods, and in telling of fortunes.

One of the greateſt difficulties in chriſtianity turns upon the completion of the ſcripture *prophecies*. In the prophets of the old teſtament are frequent predictions of the Meſſiah; which the writers of the new frequently urge to the Jews and Heathens as fulfilled in Jeſus Chriſt; and on this principle evince the truth of his miſſion: but theſe texts thus urged from the old, in the new teſtament, are ſometimes not to be now found in the old; and at other times, not urged in the new in the literal and obvious ſenſe which they ſeem to bear in the old; whence moſt of the Chriſtian commentators, divines, and critics, ancient and modern, judge them to be applied in a ſecondary, typical, allegorical, or myſtical ſenſe. See ALLEGORICAL, ACCOMPLISHMENT, *&c.*

Thus, *ex. gr.* St. Matthew, after an account of the conception of the Virgin, and the birth of Jeſus, ſays, "All this was done, "that it might be fulfilled which was ſpoken by the prophet, "ſaying, Behold, a virgin ſhall be with child, and ſhall bring "forth a ſon, and they ſhall call his name Emanuel." But the words, as they ſtand in Iſaiah, whence they are ſuppoſed to be taken, do, in their obvious and literal ſenſe, relate to a young woman who was to bring forth a child in the days of Ahaz; as appears from the context, and as is owned by Grotius, Huetius, Caſtalio, Curcellæus, Epiſcopius, Hammond, Simon, le Clerc, Lamy, *&c.*

This *prophecy* then not being fulfilled in Jeſus, in the primary, literal, or obvious ſenſe of the words, is ſuppoſed, like the other *prophecies* cited by the apoſtles, to be fulfilled in a ſecondary, typical, or allegorical ſenſe; *i. e.* this *prophecy*, which was firſt literally fulfilled by the birth of the prophet's ſon in the time of Ahaz, was again fulfilled by the birth of Jeſus, as being an event of the ſame kind, and intended to be ſignified either by the prophet, or by God, who directed the prophet's ſpeech.

Grotius obſerves this to be the caſe in moſt, if not all the *prophecies* and citations quoted from the old in the new teſtament; and Dodwell, with Sir John Marſham, refer even the famous *prophecy* in Daniel, about the ſeventy weeks, to the time of Antiochus Epiphanes; ſhewing, that the expreſſions taken thence by Chriſt, and urged by him as predicting the deſtruction of Jeruſalem by the Romans, have only in a ſecondary ſenſe a reſpect to that deſtruction.

And even that famous *prophecy* in the Pentateuch, "A pro- "phet will the Lord God raiſe up unto thee, like unto me; "to him ſhall ye hearken;" which St. Luke refers to as ſpoken of Jeſus Chriſt, is, by Simon, Grotius, Stillingfleet, *&c.* underſtood to ſignify, in its immediate ſenſe, a promiſe of a ſucceſſion of prophets.

It is allowed then, the apoſtles applied the *prophecies* they quote from the old teſtament, in a typical ſenſe; but unhappily the rules whereby they quoted are loſt. Dr. Stanhope laments the loſs of the Jewiſh traditions or rules for interpreting ſcripture received among the rabbins, and followed by the apoſtles. But this loſs Surenhuſius, Hebrew profeſſor at Amſterdam, thinks he has retrieved from the Jewiſh talmud, and the ancient Jewiſh commentaries; and has accordingly publiſhed to the world the rules whereby the apoſtles quoted the old teſtament.

But the truth is, theſe rules are too precarious, ſtrained, and unnatural, to gain much credit. See QUOTATION.

Mr. Whiſton condemns all allegorical explanation of the *prophecies* of the old teſtament cited in the new, as weak, enthuſiaſtic, *&c.* and adds, that if a double ſenſe of the *prophecies* be allowed, and there be no other method of ſhewing their completion, than by applying them ſecondarily and typically to our Lord, after having been in their firſt and primary intention long ago fulfilled in the times of the old teſtament, we loſe all the real advantages of the ancient *prophecies*, as to the proofs of Chriſtianity.

He therefore ſets up a new ſcheme in oppoſition thereto: he owns, that taking the preſent text of the old teſtament for genuine, it is impoſſible to expound the apoſtles citations of the *prophecies* of the old teſtament, on any other than the allegorical foundation; and therefore, to ſolve the difficulty, is forced to have recourſe to a ſuppoſition contrary to the ſenſe of all Chriſtian writers before him, *viz.* that the text of the old teſtament has been greatly corrupted ſince the apoſtolical age by the Jews. See TEXT.

His hypotheſis is, that the apoſtles made their quotations out of the old teſtament rightly and truly from the Septuagint verſion, which in their time was in vulgar uſe, and exactly agreed with the Hebrew original; and that, as they made exact quotations, ſo they argued juſtly and logically from the obvious and literal ſenſe of the ſaid quotations, as they then ſtood in the old teſtament: but that ſince their times, both the Hebrew and Septuagint copies of the old teſtament have been ſo greatly corrupted, and ſo many apparent diſorders and diſlocations introduced therein, as to occaſion many remarkable differences and inconſiſtencies between the old and new teſtament in reſpect to the words and ſenſe of thoſe quotations. See SEPTUAGINT, *&c.*

As to the manner wherein theſe corruptions were introduced, he ſays, the Jews in the ſecond century greatly corrupted and altered both the Hebrew and Septuagint, eſpecially in the *prophecies* cited by the apoſtles, to make their reaſoning appear inconcluſive: that in the third century, they put into Origen's hand one of theſe corrupted copies of the Septuagint; which Origen miſtaking for genuine, inſerted in his Hexapla, and thus brought into the church a corrupted copy of the Septuagint; and that in the end of the fourth century, the Jews put into the hands of the Chriſtians, who till then had been almoſt univerſally ignorant of the Hebrew, a corrupted copy of the Hebrew old teſtament.

The diſagreement then between the old and new teſtament, in reſpect to the ſaid quotations, he contends, has no place between the genuine text of the old teſtament, (now no-where exiſting) but only between the preſent corrupted text of the old and new teſtament: and therefore, to juſtify the reaſonings of the apoſtles, he propoſes to reſtore the text of the old teſtament, as it ſtood before the days of Origen, and as it ſtood in the days of the apoſtles: from which text thus reſtored, he doubts not it will appear, that the apoſtles cited exactly, and argued juſtly and logically from the old teſtament.

But this ſcheme of accompliſhing *prophecies* labours under difficulties at leaſt as great as the allegorical ſcheme. Its foundation is incredible, and its ſuperſtructure, from firſt to laſt, precarious. In effect, it is inconceiveable the old teſtament ſhould be ſo corrupted; and it may even be made appear, that the Hebrew and Septuagint diſagreed in the times of the apoſtles: add to this, that the means whereby he propoſes to reſtore the true text, will never anſwer that end; nor has he himſelf, from all the means he is yet poſſeſſed of, been able to reſtore one prophetical citation, ſo as to make that ſeem literally, which before only ſeemed allegorically applied. See PENTATEUCH, *&c.*

PROPHET[*], PROPHETA, ϖροφητης, a perſon inſpired by God with the knowledge of future events; and commiſſioned to declare his laws, his will, *&c.* to the world. See PROPHECY, and DIVINATION.

[*] The word is derived from the Greek προ, and φατος, ſaid; of φημι, I ſay; whence alſo the Latins derive their *fatus*, ſpoken.

Among the canonical books are thoſe of ſixteen *prophets*; four of which are denominated the *greater prophets*, *viz.* Iſaiah, Jeremiah, Ezekiel, and Daniel; ſo called from the length or extent of their writings, which exceed thoſe of the others, *viz.* Hoſea, Joel, Amos, Obadiah, Jonas, Micha, Nahum, Habakkuk, Haggai, Zechariah, and Malachi; who are called the *leſſer prophets*, from the ſhortneſs of their writings.

The Jews only reckon three *greater prophets*; Daniel they exclude, as no more to be ranked among the *prophets* than David: not but that both the one and the other foretold many important things; but becauſe their manner of life differed from that of the other *prophets*, David being a king, and Daniel a peer.

In the Greek church, the leſſer *prophets* are placed in order before the great ones; apparently becauſe many of the leſſer *prophets* are more ancient than the greater.

Among the Greeks too, Daniel is ranked among the leſſer *prophets*.---In the 48th chapter of Eccleſiaſticus, Iſaiah is particularly called the *great prophet*; both on account of the great things he foretold, and the magnificent manner wherein he did it.

Spinoſa ſays, the ſeveral *prophets* propheſied according to their reſpective humours; Jeremiah, *e. gr.* melancholy and dejected with the miſeries of life, propheſied nothing but misfortunes.

Dacier obſerves, that among the ancients the name *poet* is ſometimes given to *prophets*; as that of *prophet* is at other times given to *poets*. See POET.

PROPHETICAL *types*. See the article TYPE.

PROPHYLACTICE, ϖροφυλακτικη, that part of the art of medicine which directs the preventing or preſerving from diſeaſes. See MEDICINE, PRESERVATIVE, *&c.*

PROPITIATION, in religion, a ſacrifice offered to God to aſſuage his wrath, and render him propitious. See SACRIFICE, EXPIATION, and LUSTRATION.

Among the Jews there were both ordinary and public ſacrifices, as holocauſts, *&c.* offered by way of thankſgiving; and extraordinary ones offered by particular perſons guilty of any crime, by way of *propitiation*.

If it were a crime of ignorance, they offered a lamb or a kid; if done wittingly, they offered a ſheep: for the poor, a pair of turtles was injoined as a *propitiation*.

The Romiſh church believe the maſs to be a ſacrifice of *propitiation*

pitiation for the living and the dead. The reformed churches allow of no *propitiation*, but that one offered by Jeſus Chriſt on the croſs.

PROPITIATION alſo gives the name to a ſolemn feaſt among the Jews, celebrated on the tenth of the month Tiſri, which is their ſeventh month, and anſwers to our September.

It was inſtituted to preſerve the memory of the pardon proclaimed to their forefathers by Moſes on the part of God; who thereby remitted the puniſhment due for their worſhip of the golden calf.

PROPITIATORY, among the Jews, was the cover or lid of the ark of the covenant; which was lined both within and without-ſide with plates of gold; inſomuch that there was no wood to be ſeen. See ARK.

Some even take it to have been one piece of maſſive gold. The cherubims ſpread their wings over the *propitiatory*.

This *propitiatory* was a type or figure of Chriſt, whom St. Paul calls the *propitiatory* ordained from all ages.

PROPLASM, PROPLASMA, ϖροπλασμα, is ſometimes uſed for a mould, wherein any metal or ſoft matter, which will afterwards grow hard, is caſt. See MOULD and PLASM.

PROPLASTICE, ϖροπλαςικη, the art of making moulds, for caſting things in. See PLASTICE, MOULD, FOUNDERY, &c.

PROPOLIS, ϖροπολις, a thick yellow odorous ſubſtance, ſmelling like ſtorax, nearly akin to wax; wherewith the bees ſtop up the holes and crannies of their hives, to keep out the cold air, &c. See WAX.

The *propolis* is a friable matter, by ſome eſteemed ſovereign in diſeaſes of the nerves. It is alſo uſed to make holes in abſceſſes; and being heated on the fire, its vapour is received for inveterate coughs.

PROPORTION, PROPORTIO, in arithmetic, the identity or ſimilitude of two ratio's. See RATIO.

Hence quantities that have the ſame ratio between them, are ſaid to be *proportional*; *e. gr.* if A be to B, as C to D; or 8 be to 4, as 30 to 15; A, B, C, D, and 8, 4, 30, and 15, are ſaid to be in *proportion*, or are ſimply called *proportionals*. See PROPORTIONAL.

Proportion is frequently confounded with *ratio*; yet have the two, in reality, very different ideas, which ought by all means to be diſtinguiſhed.

Ratio is, properly, that relation or habitude of two things, which determines the quantity of one from the quantity of another, without the intervention of any third: thus we ſay, the ratio of 5 and 10 is 2; the ratio of 12 and 24 is 2. See RATIO.

Proportion is the ſameneſs or likeneſs of two ſuch relations: thus, the relations between 5 and 10, and 12 and 24, being the ſame, or equal; the four terms are ſaid to be in *proportion*. Hence ratio exiſts between two numbers; but *proportion* requires at leaſt three.

Proportion, in fine, is the habitude or relation of two ratio's, when compared together; as ratio is of two quantities. See QUANTITY.

Proportion again is frequently confounded with *progreſſion*. In effect, the two often coincide; the difference between them only conſiſting in this, that progreſſion is a particular ſpecies of *proportion*, wherein the ſecond of the three terms is a mean *proportional* between the other two, or has the ſame ratio to the third, which the firſt has to the ſecond.

Add to this, that *proportion* is confined to three terms, but progreſſion goes on to infinity (ſo that progreſſion is a ſeries or continuation of *proportions*); and that in four terms, 3, 6, 12, 24, *proportion* is only between the two couples 3 and 6, and 12 and 24; but progreſſion is between all the four terms. See PROGRESSION.

Proportion is ſaid to be *continual*, when the conſequent of the firſt ratio is the ſame with the antecedent of the ſecond; as, if 3 be to 6, as 6 to 12. See CONTINUED.

The *proportion* is ſaid to be *diſcrete*, or interrupted, when the conſequent of the firſt ratio differs from the antecedent of the ſecond; as, if 3 be to 6, as 4 to 8. See DISCRETE.

Proportion, again, is either ſaid to be *arithmetical*, or *geometrical*; as the ratio's are.

Arithmetical PROPORTION is the equality of two or more arithmetical ratios, or the equality of difference between three or more ſeveral quantities.

Thus, 1, 2, 3, and 2, 5, 8, 11, 14, are in *arithmetical proportion*; becauſe there is the ſame difference betwixt the numbers compared, which are 1 to 2, and 2 to 3; or 2 to 5, and 5 to 8.

If every term have the ſame ratio to the next, as the firſt has to the ſecond; the terms are ſaid to be in *continual arithmetical proportion*; as 5, 7, 9, 12, 15.

If the ratio between any two terms differ from that of any others; the terms are ſaid to be in *arithmetical proportion diſcrete*, or *interrupted*; as where 2 : 5 :: 6 : 9, the ratio's of 5 and 6 being different from that of 2 and 5.

A ſeries of more than four terms in *arithmetical proportion*, form an arithmetical progreſſion. See PROGRESSION.

1. If three numbers be in *arithmetical proportion*, the ſum of the extremes is equal to double the middle term: thus, in 3, 7, 11; the ſum of 3 and 11 is equal to twice 7; *viz.* 14.

Hence we have a rule for finding a mean *arithmetical proportional* between two given numbers; half the ſum of the two being the mean required: thus, half the ſum of 11 and 3, *viz.* 14, is 7.

2. If four numbers be in *arithmetical proportion*, the ſum of the extremes is equal to the ſum of the middle terms: thus, in 2 : 3 : 4 : 5; the ſum of 5 and 2 is equal to the ſum of 3 and 4, *viz.* 7.

Hence, four terms in *arithmetical proportion* are ſtill proportional, if taken inverſely, 5 : 4 : 3 : 2; or, alternately, thus, 2 : 4 : 3 : 5; or inverſely and alternately, thus, 5 : 3 : 4 : 2.

3. If two numbers in *arithmetical proportion* be added to other two, the leſs to the leſs, &c. their difference is in a duplicate ratio, *i. e.* double that of the reſpective parts added: thus, if to 3 : 5 be added 7 : 9, the ſums are 10 : 14; whoſe difference 4, is double the difference of 3 : 5, or 7 : 9. And if to this ſum you add other two, the difference of the laſt ſum will be triple the ſum of the firſt two, and ſo on.

If two *arithmetical proportionals* be ſubtracted from two others in the ſame ratio, the leſs from the leſs, &c. the arithmetical ratio of the remainder is 0. Thus, from 9 : 7 taking 5 : 3, the remainders are 4, 4.

Hence, if *arithmetical proportionals* be multiplied by the ſame number, the difference of their products will contain the firſt difference as oft as the multiplier contains unity: thus, 3 : 5, multiplied by 4, produce 12, 20, whoſe difference 8 is equal to 4 times 2, the difference of 3 and 5.

4. If two numbers in *arithmetical proportion* be added to, or multiplied by, other two in another ratio of the ſame kind, leſs by leſs, &c. the ſums are in a ratio which is the ſum of the ratio's added or multiplied: thus 2 : 4 and 3 : 9 being added, the ſums are 5 : 13, whoſe difference is 8, the ſum of 2 and 6, the differences of the numbers given.

Geometrical PROPORTION is the quality of two geometrical ratio's, or compariſons of two couples of quantities. See GEOMETRICAL.

Thus 4 : 8 : : 12 : 24, are in *geometrical proportion*; the ratio of 4 and 8 being equal to that of 12 and 24; *i. e.* 4 is contained as often in 8, as 12 is in 24. Again, 9, 3, 1, are in *geometrical proportion*, 9 being triple of 3, as 3 is of 1.

If, in a ſeries of terms, there be the ſame ratio between every two terms, that there is between the firſt and ſecond; they are ſaid to be *continual geometrical proportionals:* as 1 : 2 : 4 : 8.

If any two terms have a different ratio from that of the firſt and ſecond, they are ſaid to be in *disjunct*, or *interrupted geometrical proportion*; as are 2 : 4 : 3 : 6; where 2 is to 4, as 3 to 6; but not ſo as 4 to 3.

A ſeries or progreſſion of more than four *geometrical proportionals* is called a *geometrical progreſſion*. See PROGRESSION.

1. If three quantities be in continual *geometrical proportion*, the product of the two extremes is equal to the ſquare of the middle term: thus, in 6 : 12 : : 12 : 24, the product of 6 and 24 is equal to the ſquare of 12, *viz.* 144. Hence we have a rule,

2. To find a mean *geometrical proportional* between two numbers, *e. gr.* 8 and 72.

Multiply one of the numbers by the other, and from the product 576, extract the ſquare root 24; this will be the mean required.

3. To find a fourth proportional to the three given numbers, *e. gr.* 3, 12, 5; or a third proportional to two given numbers.

Multiply the ſecond 12 into the third 5, in the firſt caſe; and in the latter, multiply the ſecond into itſelf: divide the product by the firſt 3, the quotient 20 is the fourth *proportional* ſought in the one, or the third in the other.

The ſolution of this problem is what we popularly call the *rule of proportion*, or the *golden rule*, or *rule of three*. See RULE.

4. If four numbers be in *geometrical proportion*, the product of the extremes is equal to the product of the two middle terms: thus, in 2 : 5 : : 4 : 10, the product of 10 and 2 is equal to that of 5 and 4, *viz.* 20. Hence,

5. If four numbers repreſented $a : b :: c : d$ be either in *arithmetical*, or *geometrical proportion*; they will alſo be in the ſame, if taken inverſely, *viz.* $d : c :: b : a$; or alternately, as $a : c :: b : d$; or alternately and inverſely, as $d : b :: c : a$.

6. If the two terms of a geometrical ratio be added to, or ſubtracted from, other two in the ſame ratio, the leſs to or from the leſs, &c. the ſums or differences are in the ſame ratio: thus in 6 : 3 : 10 : 5, where the common ratio is 2; 6 added to 10, makes 16, as 3 to 5 makes 8; and 16 : 8 is in the ſame ratio as 6 : 3, or 10 : 5. Again, 16 being to 8, as 6 to 3, their differences 10 and 5 are in the ſame ratio.

The reverſe of which propoſition is likewiſe true; *viz.* if to or from any two numbers be added or ſubtracted other two, if their ſums or differences be in the ſame geometrical ratio as the firſt two, the numbers added or ſubtracted are in the ſame ratio. Hence,

7. If the antecedents, or the conſequents, of two equal geometrical ratio's, 3 : 6, and 12 : 24, be divided by the ſame 3; in the former caſe, the quotients 1 and 4 will have the ſame ratio's to the conſequents, *viz.* 1 : 6 : : 24; and in the latter, the antecedents the ſame ratio to the quotients, *viz.* 3 : 1 : : 12 : 4.

8. If the antecedents or conſequents of ſimilar ratio's, 2 : 6, and 3 : 9, be multiplied by the ſame quantity 6; in the former caſe the facta 12 and 18 have the ſame ratio to the conſequents, *viz.* 12 : 6 : : 18 : 9; and in the latter, the antecedents have the ſame ratio to the products, *viz.* 2 : 6 : : 3 : 9.

9. If in a *geometrical proportion* 3 : 6 : : 12 : 24, the antecedents be multiplied or divided by the ſame number 2; or divided by the ſame number 3; in the former caſe, the facta; in the latter, the quotients will be in the ſame *proportion*, *viz.* 6 : 18 : : 24 : 72, and 1 : 3 : : 4 : 12.

10. If in a *proportion* 4 : 2 : : 10 : 5, the antecedent of the firſt ratio be to its conſequent, as the antecedent of the ſecond to its conſequent; then, by compoſition, as the ſum of the antecedent and conſequent of the firſt ratio is to the antecedent or conſequent of the firſt, ſo is the ſum of the antecedent and conſequent of the ſecond to the antecedent or conſequent of the ſecond, *viz.* 6 : 2 : : 15 : 5, or 6 : 4 : : 15 : 10.

11. If in a *proportion* 6 : 4 : : 15 : 10, as the antecedent of the firſt ratio is to its conſequent, ſo is the antecedent of the other to its conſequent; then, by diviſion, as the difference of the terms of the firſt ratio is to its antecedent or conſequent, ſo is the difference of the terms of the ſecond ratio to its antecedent or conſequent, *viz.* 2 : 4 : : 5 : 10; or 2 : 6 : : 5 : 15.

12. If in a *proportion* 4 : 2 : : 6 : 3, as the antecedent of the firſt ratio is to its conſequent, ſo is the antecedent of the ſecond to its conſequent: and as the conſequent of the firſt is to another number 8, ſo is the conſequent of the ſecond to another number 12; *viz.* 2 : 8 : : 3 : 12; then will the antecedent of the firſt be to 8, as the antecedent of the ſecond to 12; *viz.* 4 : 8 : : 6 : 12.

13. If in a *proportion* 8 : 4 : : 12 : 6, as the antecedent of the firſt ratio is to its conſequent, ſo is the antecedent of the ſecond to its conſequent; and as the conſequent of the firſt is to another number 16, ſo is another number 3 to the antecedent of the ſecond; *viz.* 4 : 16 : : 12; then will the antecedent of the firſt be to 16, as 3 to the conſequent of the ſecond; *viz.* 8 : 16 : : 3 : 6.

14. Suppoſe any four proportional quantities, *viz.* 3 : 6 : : 12 : 24, and any other four proportional quantities 1 : 3 : : 9 : 27; if you multiply the ſeveral terms of the latter into thoſe of the former, the products will likewiſe be *proportional*, *viz.* 3 : 18 : : 108 : 648.

15. If there be ſeveral quantities continually *proportional*, A, B, C, D, *&c.* the firſt A is to the third C, in a duplicate ratio; to the fourth D, in a triplicate ratio, *&c.* of the firſt A to the ſecond B.

16. If there be three numbers in continual *proportion*, the difference of the firſt and ſecond will be a mean *proportional* between the difference of the firſt and ſecond term, and the difference of the ſecond and third, and the firſt term.

Harmonical or *muſical* PROPORTION is a third kind of proportion formed out of the other two, thus: of three numbers, if the firſt be to the third as the difference of the firſt and ſecond to the difference of the ſecond and third; the three numbers are in *harmonical proportion.* See HARMONICAL.

Thus 2 : 3 : 6 are harmonical, becauſe 2 : 6 : : 1 : 3. So alſo four numbers are harmonical, when the firſt is to the fourth, as the difference of the firſt and ſecond to the difference of the third and fourth.

Thus 24 : 16 : : 12 : 9 are harmonical, becauſe 24 : 9 : : 8 : 3. By continuing the *proportional* terms in the firſt caſe, there ariſes an harmonical progreſſion, or ſeries. See SERIES.

1. If three or four numbers in *harmonical proportion* be multiplied or divided by the ſame number; the products, or quotients, will alſo be in *harmonical proportion:* thus, if 6, 8, 12, which are harmonical, be divided by 2, the quotients 3, 4, 6, are alſo harmonical; and reciprocally their products by 2; *viz.* 6, 8, 12.

2. To find an harmonical mean between two numbers given: Divide double the product of the two numbers by their ſum, the quotient is the mean required; thus, ſuppoſe 3 and 6 the extremes, the product of theſe is 18, which doubled, gives 36; this divided by 9 (the ſum of 3 and 6) gives the quotient 4. Whence 3 : 4 : 6 are harmonical.

3. To find a third *harmonical proportional* to two numbers given.

Call one of them the firſt term, and the other the ſecond; multiply them together, and divide the product by the number remaining after the ſecond is ſubtracted from double the firſt; the quotient is a third *harmonical proportional:* thus, ſuppoſe the given terms 3 : 4, their product 12 divided by 2, (the remainder after 4 is taken from 6, the double of the firſt) the quotient is 6, the harmonical third ſought.

4. To find a fourth *harmonical proportion* to three terms given: Multiply the firſt into the third, and divide the product by the number remaining after the middle or ſecond is ſubtracted from double the firſt; the quotient is a third *harmonical proportional:* thus, ſuppoſing the numbers 9 : 12 : 16; a fourth will be found by the rule to be 24.

5. If there be four numbers diſpoſed in order, whereof one extreme and the two middle terms are in arithmetical *proportion*; and the ſame middle terms with the other extreme, are in *harmonical proportion*; the four are in geometrical *proportion:* as here, 2 : 3 : : 4 : 6, which are geometrical; whereof 2 : 3 : 4 are arithmetical, and 3 : 4 : 6 harmonical.

6. If betwixt any two numbers you put an arithmetical mean, and alſo an harmonical one, the four will be in geometrical *proportion:* thus, betwixt 2 and 6, an arithmetical mean is 4, and an harmonical one 3; and the four 2 : 3 : : 4 : 6 are geometrical.

We have this notable difference between the three kinds of *proportion*; that from any given number we can raiſe a continued arithmetical ſeries increaſing *in infinitum*, but not decreaſing; the *harmonical* is decreaſable *in infinitum*, but not increaſable; the geometrical is both. See SERIES.

Contra-harmonical PROPORTION is that relation of three terms, wherein the difference of the firſt and ſecond is to the difference of the ſecond and third, as the third to the firſt.

Thus, 3, 5, 6, are numbers in *contra-harmonical proportion*, becauſe 2 : 1 : : 6 : 3.

To find a mean in *contra-harmonical proportion* between two numbers: divide the ſum of the two ſquared by the ſum of the roots, the quotient is the mean required: thus, the ſum of the ſquares of 3 and 6, *viz.* 45, divided by 9, the ſum of the roots, gives 5.

Extreme and mean PROPORTION,	See	EXTREME.
Inordinate PROPORTION,		INORDINATE.
Reciprocal PROPORTION,		RECIPROCAL.
PROPORTION *of equality*,		EQUALITY.
Compoſition of PROPORTION,		COMPOSITION.
Rule of PROPORTION,		RULE.
Terms of PROPORTION,		TERM.

PROPORTION is alſo uſed for the relation between unequal things of the ſame kind, whereby their ſeveral parts correſpond to each other with an equal augmentation or diminution.

Thus, in reducing a figure into little, or in inlarging it, care is taken to obſerve an equal diminution, or inlargement, through all its parts; ſo that if one line, *e. gr.* be contracted by one third of its length; all the reſt ſhall be contracted in the ſame *proportion.*

The making of reductions of this kind is the great uſe of the proportional compaſſes. See COMPASSES. See alſo REDUCTION, DRAUGHT, *&c.*

PROPORTION, in law. See PRO RATA and ONERANDA.

PROPORTION, in architecture, denotes the juſt magnitude of the members of each part of a building, and the relation of the ſeveral parts to the whole; *e. gr.* of the dimenſions of a column, *&c.* with regard to the ordonnance of the whole building. See SYMMETRY and BUILDING.

One of the greateſt differences among architects, M. Perrault obſerves, is in the *proportions* of the heights of entablatures with reſpect to the thickneſs of the columns, to which they are always to be accommodated. See ENTABLATURE.

In effect, there is ſcarce any work, either of the ancients or moderns, wherein this *proportion* is not different; ſome entablatures are even near twice as high as others:---yet it is certain, this *proportion* ought of all others to be moſt regulated; none being of greater importance, as there is none wherein a defect is ſooner ſpied, nor any wherein it is more ſhocking. See COLUMN.

PROPORTION is likewiſe underſtood of the magnitudes of the members of architecture, ſtatues, or the like, with regard to the diſtance whence they are to be viewed.

The moſt celebrated architects are much divided in their opinions on this ſubject: ſome will have it, that the parts ought to be inlarged in *proportion* to their elevation; and others, that they ought to remain in their natural dimenſions. See STATUE.

PROPORTION, in painting, is the juſt magnitude of the ſeveral members of a figure, a groupe, *&c.* with regard to one another, to the whole figure, the groupe, and the intire piece. See PAINTING.

Proportion makes one of the moſt important articles in the art of painting, the principal ſubject it is employed in being the human body; for which reaſon, the curious in that art will not be diſpleaſed with the following ſcheme of the rules and laws thereof.

By the way, let it be obſerved, 1. That to meaſure and ſet off *proportions*, they either divide the module into twelve parts, and ſubdivide each of theſe into four; or divide the face into three lengths of the noſe, ſubdividing each length into twelve; or, laſtly, divide the whole face into three, and ſubdivide each of thoſe into four: which laſt method is what we ſhall here follow.

2. That the multiplicity of little meaſures are to be ſtudiouſly avoided, becauſe they confound, and becauſe they require great ſkill in oſteology to hit juſtly.

3. That in meaſuring there be a regard had to the relievo, or juttings out of figures.

Rules of PROPORTION *in painting.*---In the *proportions* of a human figure, regard is had to the *age*, *ſex*, and *quality.*

As to *age*; we conſider the ſtages thereof, infancy, youth, and manhood. For the firſt, at three years of age, we count five lengths of the face from top to toe; *viz.* from the tip of the head to the bottom of the belly, three; thence to the foot, two; breadth about the ſhoulders, one face, one eighth; and in the place of the hips, one face.

At four years, the height is ſix faces $\frac{1}{3}$; *viz.* from the top of the head to the bottom of the belly, three faces $\frac{1}{3}$; thence to the ſole of the foot, three faces; the breadth about the ſhoulders, one face $\frac{2}{3}$; about the haunches, one face $\frac{1}{7}$.

At five years, the height is ſix faces $\frac{1}{2}$, $\frac{1}{3}$ abated, the lower being ſhorter.

In youth at twelve years, we have two *proportions*; the one from nature, which gives nine faces for the height; the breadth about the ſhoulders, two faces; about the haunches, one face $\frac{1}{3}$. The other from the antique ſtatues, as that of Laocoon, &c. which give the height, ten faces $\frac{1}{2}$; the breadth from one ſhoulder to another, one face $\frac{2}{3}$; at the haunches, 1 $\frac{2}{3}$; at the place of the muſcle called *vaſtus externus*, 2; at the thigh, 1; the knee, $\frac{2}{3}$ and $\frac{1}{2}$, a ſubdiviſion; and at the ankles, $\frac{1}{3}$.

In the ſtate of manhood, when the proportions are arrived at perfection, we reckon the height ten faces: the firſt, from the top of the head to the noſtril; the ſecond, to the hole in the neck between the clavicles; the third, to the pit of the ſtomach, called *cartilago enſiformis*; the fourth, to the navel; the fifth, to the pyramidal muſcles; thence to the knee, 2 $\frac{2}{3}$; and as much to the ſole of the foot.---The extent of the arms is the ſame with the height; *viz.* from the tip of the long finger to the joint of the wriſt, one face; thence to the elbow, 1 $\frac{1}{3}$; thence to the juncture of the ſhoulders, 1 $\frac{1}{3}$; thence to the hole in the neck, 1 $\frac{1}{3}$; in all, five heads; which, with the five of the other arm, gives ten: the thickneſs of the arms to be adjuſted by the quality or character.

As to the breadth of the figure ſeen frontwiſe, the width of the ſhoulders acroſs the deltoides is 2 faces $\frac{2}{3}$; breadth of the pectoral muſcle, to the juncture of the arm, 2. About the haunches, where the obliqui externi are, 1 $\frac{2}{3}$, and the ſubdiviſions. The thighs, at the biggeſt place, 1. The knee, $\frac{1}{3}$, three ſubdiviſions $\frac{1}{2}$. The leg, at the thickeſt, $\frac{2}{3}$, and one ſubdiviſion. The extreme of the ankle, $\frac{1}{3}$, one ſubdiviſion $\frac{1}{2}$. The feet, $\frac{1}{3}$, and one half a ſubdiviſion. Their length, 1 face $\frac{1}{3}$, one ſubdiviſion.

Others, meaſuring by the length of the whole head, make only eight heads in height and breadth; thus: The head, one; thence to the bottom of the breaſts, one; thence to the navel, one; thence to the yard, one; thence to the middle of the thigh, one; thence to the lower parts of the knee, one; thence to the ſmall of the leg, one; thence to the bottom of the foot, one.

The breadth thus: From the end of the long finger to the wriſt, one; thence to the bend of the arm, one; thence to the bottom of the ſhoulder, one; thence over to the other ſhoulder, two; thence to the end of the other long finger, three.

To theſe general *proportions* may be added others, which uſually obtain; as, that the hand is the length of the face; the thumb the length of the noſe; and the great toe the ſame: the two nipples, and the hole in the neck, make a juſt equilateral triangle: the ſpace between the eyes is the breadth of an eye: the breadth of the thigh, at the thickeſt, is double that of the thickeſt part of the leg, and treble that of the ſmalleſt: from the top of the head to the noſe, the ſame as from the top of the noſe to the chin. The diſtance from the chin to the throat-pit, is the breadth of the throat; the diſtance of the centre of the eye to the eye-brow, the ſame as the prominence of the noſtrils, and the ſpace between them and the upper lip: the length of the fore-finger, the ſame as the ſpace thence to the wriſt; the ſpace from the tip of the fore-finger to the wriſt, the length of the face.

For the *ſex:* The *proportions* of man and woman differ in height, in that the woman has a longer neck; the parts at the breaſts, and the lower parts of the belly, bigger by half a part; which makes the ſpace from the breaſt to the navel leſs by one part; and the thigh ſhorter by a third part.

As to breadth, a woman has her breaſts and ſhoulders narrower, and haunches larger; and thighs, at the place of their articulation, larger; arms and legs thicker, feet ſtraiter; and becauſe women are more fat and fleſhy, their muſcles are leſs ſeen, and therefore the contours more ſmooth and even.

Young maids have little heads, long necks, low or down ſhoulders, ſlender bodies, haunches big, legs and thighs long, feet little.

Young men have the neck thicker than women, the ſhoulders and breaſts larger, the belly and haunches narrower, legs and thighs ſlenderer, and feet larger.

As to the *quality* of ſubjects, we are either to follow ſimple nature, or fine and agreeable nature, or to chuſe nature, or exceed it. In following *ſimple* nature, in common and country ſubjects, men of dull wit, and a moiſt temperament, are to be of an heavier and rougher *proportion*, the muſcles appearing but little diſtinguiſhed, the head big, neck ſhort, ſhoulders high, ſtomach little, knees and thighs thick, and feet large.

In nature, as *fine* and *agreeable*, for ſerious hiſtories, &c. the figures of the heroes to be well ſhaped, the haunches high and upright, the joints well knit, little and compact, free from fleſh and fat.

Military men, to have the head little, neck thick and nervous, ſhoulders large and high, body and paps elevated, haunches and belly little, thighs muſcly, principal muſcles raiſed up and knit together at the heads; the legs ſmooth, feet ſlender, ſoles hollow.

Nature is ſometimes to be *ſelected*, *i. e.* made up of parts from various good originals, to form extraordinary and perfect figures for great and heroic ſubjects, as in Roman hiſtories; giving, thus, a character of force ſufficient to execute actions agreeable to the deſcriptions the poets, &c. make.

Laſtly, ſometimes nature is to be *exceeded*, as in repreſentations of fabulous deities, of heroes and giants: in theſe the great pieces, which ſerve to form the body, are to be ſet out in meaſures agreeable to the height; only diverſifying them by their bigneſs.

In the rule of *proportions*, it is to be obſerved, that there is a difference in the contours of ſome parts, when put in different poſtures: thus, when the arm is bent, it is larger than when ſtrait; the ſame is true of the foot and knee, as is ſhewn by Leonardo da Vinci.

Rule of Proportion, in arithmetic, a rule whereby we find a fourth proportional to three numbers given.

This is popularly called the *golden rule*, and ſometimes *the rule of three.* See Rule.

Compaſs of Proportion, a name by which the French, and after them ſome Engliſh authors, call the *ſector.---See its conſtruction and uſe under the article* Sector.

PROPORTIONAL, relating to proportion. Thus we ſay proportional *compaſſes*, *parts*, *ſcales*, *ſpirals*, &c. See Compasses, &c.

Proportionals, in geometry, are quantities, either linear or numeral, which bear the ſame ratio, or relation to each other. See Ratio and Proportion.

Thus, if 3, 6, 12, be *proportionals*, then will 3 : 6 : : 6 : 12.

To find a fourth Proportional *to three given lines*, AB, AC, *and* BD, (*tab. geom. fig.* 62.) draw an angle FAG at pleaſure; from A ſet off the firſt of the lines to B; from A, the ſecond, to C; and from B, to D, the third: draw BC; and in D make an angle equal to ABC: then is CE the fourth *proportional* ſought; and AB : AC : : BD : CE.

If a third *proportional* be required to two given lines, AB and AC; make BD equal to AC, *i. e.* let AC be repeated twice: then AB : AC : : AC : CE.

To find a mean proportional *between two given lines*, AB *and* BE, (*fig.* 63.) join the two given lines into one continued right line, and biſect it in C. From C, with the interval of AC, deſcribe a ſemicircle ADE; and from B erect a perpendicular BD; this is the mean *proportional* ſought; and AB : BD : : BD : BE.

The geometricians have been theſe two thouſand years in ſearch of a method, for finding *two mean proportionals.* See Mean.

The ancients performed it mechanically, by the meſolabe deſcribed by Eutochius; and many of them attempted to give the demonſtration; ſome by the ſolid loci, as Menechmus; others by the plain loci, as Nicomedes, Diocles, and, in our times, Viety; and others by implicit motions, as Plato, Archytas, Pappus, and Sporus; others tentatively, by the deſcription of circles, as Hero and Apollonius, &c. but all in vain. See Problem and Quadrature.

To find a mean proportional *between two numbers:* Half the ſum of the two given numbers is an arithmetical mean *proportional*, and the ſquare root of their product a geometrical mean *proportional.* See Proportion *arithmetical* and *geometrical.*

To find a mean harmonical proportional. See Proportion *harmonical.*

Proportionals, in grammar. See Numerals.

Proportional *compaſſes*, an inſtrument for the ready drawing of lines and figures, in any given ratio to other lines or figures.--- *See their conſtruction and uſe under the article* Compasses.

Proportional *part.* See the article Part.

Proportional *ſcales*, called alſo *logarithmical ſcales*, are the artificial numbers or logarithms, placed on lines, for the eaſe and advantage of multiplying, dividing, &c. by means of compaſſes, or of ſliding-rules. See Logarithm and Scale.

They are, in effect, only ſo many lines of numbers, as they are called by Gunter, but made ſingle, double, triple, or quadruple; beyond which they ſeldom go. See Gunter's *ſcale*, &c.

Proportional *ſpirals.* See the article Spiral.

PROPORTIONALITY, a term uſed by Gregory de St. Vincent, for the proportion that is between the exponents of four ratio's. See Exponent and Ratio.

PROPORTUM, or Purport, in our law-books, the intention or meaning of any thing.--*Secundum* proportum *dicti chirographi inter eos confecti.*

PROPOSITION, Propositio, in logic, part of an argument, wherein ſome quality, either negative or poſitive, is attributed to a ſubject. See Enunciation, Attribute, &c.

Chauvin defines *propoſition*, a complete, conſiſtent ſentence, indicating or expreſſing ſomething either true or falſe, without ambiguity: As, *Xanthippe is a bad wife.---If an aſs fly, he muſt have wings.*

Others, more philoſophically, define *propoſition*, a ſpeech uttered or produced, to ſignify ſome judgment of the mind. See Judgment.

A *propoſition* conſiſts of two terms; the one, that whereof we affirm or deny, called the *ſubject:* the other, the thing affirmed or denied, called the *attribute* or *predicate.* See Subject and Predicate.

Theſe two are either joined, or ſeparated, by the intervention of ſome copula or disjunctive. See Copula.

Thus in the *propoſition*, *God is juſt*; the ſubject, *God*, is joined with the attribute, *juſt*, by the verb ſubſtantive, *is*.

The ſchoolmen call the two terms the *matter*, and the copula the *form* of the *propoſition.* See Form, &c.

Now, as terms may be either ſingular, or common and univerſal, if the ſubject of a *propoſition* be a common term, taken in all its extent, the *propoſition* is called *univerſal:* as, *Every atheiſt is blind.* See UNIVERSAL.

If the common term be only taken in an indeterminate part of its extent, the *propoſition* is called *particular:* as, *Some atheiſts are wicked.*

If the ſubject of the *propoſition* be ſingular, the *propoſition* is called *ſingular:* as, *George is king of England.*

Thoſe *propoſitions* which have only one ſubject, and one attribute, are called *ſimple*;---thoſe that have ſeveral ſubjects, or attributes, are called *compound.*

A ſyllogiſm conſiſts of three *propoſitions*, major, minor, and concluſion. See SYLLOGISM.---An enthymeme, of two. See ENTHYMEME.

The ſchoolmen make ſeveral other ſpecies and diviſions of *propoſitions*; as, a

PROPOSITION *de primo adjacente*, where the ſubject and predicate are both included under the verb: ſuch are, *veni, vidi, vici.*

PROPOSITION *de ſecundo adjacente* is, where either the ſubject or predicate is included in the verb: as, *I love*,---or, *I write.*

PROPOSITION *de tertio adjacente* is, where both the ſubject and predicate are expreſs, and ſtand diſtinct from the verb: as, *The king is juſt.*

This *propoſition* is the rule or ſtandard of all the other; ſo that whatever *propoſition* can be reduced thereto, is legitimate; and what cannot, is not.

Propoſitions, again, are divided into three claſſes: the firſt regarding the *matter*; the ſecond, the *form*; the third, the *thought.*

Thoſe of the firſt claſs are ſubdivided into *finite* and *infinite*, *direct* and *indirect*, *ſingle* and *manifold.*

Finite or *definite* PROPOSITION is that which declares ſomething determinate on a ſubject: as, *Man is biped.---The wind is not viſible.*

Infinite or *indefinite* PROPOSITION is that where either one or both of the terms are infinite, or have a negative prefixed to them: as, *Non homo eſt albus---Homo eſt non albus.*

Direct PROPOSITION is that wherein a higher or more general thing is predicated of a lower and more particular: as, *Man is an animal.*

Others will have it that, wherein the ſubject ſtands as a matter receiving, and the predicate, as a form received: as, *Peter is learned.*

Indirect PROPOSITION, according to ſome, is that wherein an inferior is predicated of a higher: as, *An animal is man.*---According to others, it is that wherein the ſubject ſtands as the form, and the predicate as the matter: as, *Every rational is man.*

Single PROPOSITION is ſuch, either ſimply, or by conjunction:---*Simply*, when it affirms or denies one thing of one other thing: as, *The ſun ſhines.*---By *conjunction*, when ſeveral *propoſitions* are joined and coupled together. Thus, *The ſun ſhines, and it is day*, are two *propoſitions*, which conjoined, make this one, *If the ſun ſhines, it is day.*

Of ſuch *conjunct propoſitions* there are divers kinds, *viz. hypothetical, disjunctive, copulative*, &c.

Hypothetical PROPOSITION is that conſiſting of ſeveral ſimple ones, affected with ſome conditional one: as, *If the ſun be ſet, it is night.* See HYPOTHETICAL and CONDITIONAL.

Disjunctive PROPOSITION is that conſiſting of ſeveral, affected with a disjunctive copula: as, *It is either day, or night.* See DISJUNCTIVE.

Copulative PROPOSITION is that conſiſting of ſeveral affected with a conjunction copulative: as, *Peter does not ſtand, and ſit.* See COPULATIVE.

Some add *diſcrete* or *adverſative propoſition:* as, *He is rich, but covetous.* See DISCRETIVE.

Compound PROPOSITION is that where one or both the terms excite ſeveral ideas in the mind: as, *A man is body and ſoul, and both together*; or, *a foundation, walls, and roof, are a houſe.*

Manifold PROPOSITION is that conſiſting of ſeveral ſubjects; as, *Peter and Paul preached*; or ſeveral predicates; as, *Simon reads and walks*; or both, as, *Peter and Paul preach and pray.*

In reſpect of *form, propoſitions* are divided into *affirmative* and *negative*; *true* and *falſe, pure* and *modal.*

Affirmative PROPOSITION is that whoſe attribute is joined to the ſubject; as, *God is a ſpirit.*

Negative PROPOSITION is that whoſe attribute is ſeparated from the ſubject; as, *Man is not a ſtone.*

True PROPOSITION is that which declares a thing to be what it really is; or not to be what it is not. See TRUTH.

Falſe PROPOSITION is that which ſignifies a thing to be what it is not; or not to be what it is. See FALSHOOD.

The truth of a *propoſition*, therefore, depends on the connecting of the ſubject with the attribute, which is done by that act of the mind, called *judgment.* See JUDGMENT, ERROR, *&c.*

PROPOSITIONS are ſaid to be *pure*, when they imply or involve nothing beſides their matter and form: as, *Man is rational.*

Modal PROPOSITION is that which, beſide the pure matter and form, involves ſome mode, or manner of diſpoſition: as, *It is neceſſary man be rational.*

Hence ſuch *propoſition* is ſaid to conſiſt of a mode, and a diction; the mode denotes ſome circumſtance which affects the *propoſition*; as, *It is neceſſary:* the diction is the reſt of the *propoſition, that man be rational.*

There are four of theſe modes very famous, *viz. neceſſary, poſſible, impoſſible*, and *contingent.* See NECESSARY, POSSIBLE, *&c.* Others produce other modes, as *true, falſe, certain, uncertain, probable*, &c.

To modal *propoſitions*, the philoſophers refer *excluſive, exceptive*, and *reſtrictive propoſitions*; all which are denoted by a common name, *exponible propoſitions*, becauſe requiring ſome explanation to make them clearly underſtood.

Excluſive PROPOSITION is that denoted by a ſign, or character of excluſion: as, *only, ſolely, alone*; as, *God alone is eternal*; which is expounded thus, *God is eternal, and no other being beſide him is ſo: Peter only plays*; which we expound, *Peter plays, and does nothing elſe.* See EXCLUSIVE.

Every *excluſive propoſition* is expounded by two *propoſitions*, one of which is affirmed, and the other denied.

Exceptive PROPOSITION is that denoted by an exceptive ſign; as, *beſide, unleſs*, &c.---Thus, *Every animal, beſide man, is irrational.* See EXCEPTIVE.

Every *exceptive propoſition* is to be reſolved, or expounded by three *propoſitions*; as that, *e. gr.* above-mentioned, by theſe: *Every animal that is not man is irrational: every man is an animal: no man is irrational.*

Reſtrictive, or *limitative* PROPOSITION, is that affected with a reſtrictive ſign; as, *according to, ſo far as, conſidered as, quatenus*, &c. Thus, *man*, quatenus *an animal, perceives.*

Complex PROPOSITION, *Reduplicative* PROPOSITIONS, *Relative* PROPOSITION, *Reduction of* PROPOSITIONS.	See the articles	COMPLEX, REDUPLICATIVE, RELATIVE, REDUCTION.

PROPOSITION, in mathematics, is either ſome truth advanced, and ſhewn to be ſuch by demonſtration; or ſome operation propoſed, and its ſolution ſhewn.

If the *propoſition* be deduced from ſeveral theoretical definitions compared together, as this; A parallelogram is double of a triangle, ſtanding on the ſame baſe, and of the ſame altitude: it is called a *theorem.* See THEOREM.

If it be deduced from a praxis or ſeries of operations, it is called *a problem:* as, to find a third proportional to two given quantities. See PROBLEM.

Indeed, in ſtrictneſs, the *propoſition* is only part of a theorem, *viz.* that which ſhews what agrees to ſuch a thing under ſuch conditions, and what not: in which ſenſe it is diſtinguiſhed from the *demonſtration*, which ſhews the reaſons why the underſtanding conceives that to agree to it. See DEMONSTRATION.

Again, ſtrictly ſpeaking, the *propoſition* is only a member of a problem, *viz.* that which ſhews what is required to be done: in which ſenſe it is diſtinguiſhed from the *ſolution*, which rehearſes the ſeveral things to be done in order to effect what is required; and from the *demonſtration*, which proves, that by doing the things injoined in the ſolution, the thing required in the *propoſition* is truly done. See RESOLUTION.

PROPOSITION, in poetry, denotes the firſt part of an epic poem, wherein the author propoſes, or lays down, briefly and in general, what he has to ſay in the courſe of his work. See POEM, EPIC, *&c.*

The *propoſition*, F. Boſſu obſerves, is to contain the bare matter of the poem, *i. e.* the action, and the perſons that are to execute it, both human and divine.

This is what we have both in the Iliad, the Odyſſee, and the Æneid. The action propoſed in the Iliad, is the wrath of Achilles; that of the Odyſſee, the return of Ulyſſes; and that of the Æneid, the tranſlation of the Trojan empire into Italy.

The ſame author obſerves, that the divine perſons are named in all the three *propoſitions.* Homer, *e. gr.* declares, that what happens in the Iliad, is by the will of Jupiter; and that Apollo was the cauſe of the quarrel between Agamemnon and Achilles: the ſame poet ſays, it was Apollo prevented the return of Ulyſſes's companions; and Virgil mentions the deſtinies, the will of the gods, and the anger of Juno.---But they all three dwell chiefly on the perſon of the hero, as if he were the matter of the poem. See HERO.

Yet there is ſome difference, in this reſpect, in the three poems; in that Achilles is named in the Iliad; but Ulyſſes and Æneas are not: they are only pointed at, and that in ſuch general terms, as if it were ſuppoſed they were known before.

This practice ſeems to fall in with the firſt intention of the poet; who is to feign an action without names, and who, as Ariſtotle ſays, does not relate the action of Achilles, nor Ulyſſes, nor Æneas, nor any particular perſon, but of an univerſal, general, and allegorical perſon. See FABLE and ACTION.

Add to this, that the character which the poet is to give his hero, and his whole work, is expreſſed in the *propoſition*, both by Homer and Virgil. See CHARACTER.

The whole Iliad is anger and violence; it is Achilles's character, and it is what the poem commences with: Μηνιν αειδε. The Odyſſee preſents us in the firſt verſe with the prudence, diſſimulation, and addreſs, which make the character of Ulyſſes, and the buſineſs of the poem: Ανδρα πολυτροπον. And we ſee the piety and mildneſs of Æneas in the beginning of the Latin poem: *Inſignem pietate virum.*

As to the manner of the *propoſition*, Horace contents himſelf to preſcribe modeſty and ſimplicity; not to promiſe much, nor raiſe great expectations in the reader. *Do not begin*, ſays he, *like that wretched poet, who ſet out with,* Fortunam Priami cantabo, & nobile bellum. *How much better is that of Homer,* Dic mihi, muſa, virum! *&c. He does not ſpend all his fire at once, and leave nothing but ſmoke: from this feeble beginning, you ſhall ſoon ſee him riſe to the wonders of Antiphates, Scylla, Charybdis, and Polypheme.*

The ſame modeſty we find in the *propoſition* of the Æneid: if that of the Iliad be a little more furious, it is, perhaps, in conformity to the character of the poem, which is a ſeries of violences and extravagances.

Add, that if the poet be to ſpeak with modeſty of his hero; much more is he to do ſo of himſelf: thus Virgil only ſays, *I ſing the action of Æneas.* Homer begs his muſe to *ſay* or *ſing.* How far does Claudian ſwerve from theſe examples?

-----------------Audaci promere cantu
Mens congeſta jubet; greſſus removete, profani:
Jam furor humanos noſtra de pectore ſenſus
Expulit, & totum ſpirant præcordia Phœbum.

A ſhort poem, *e. gr.* an ode, *&c.* wherein the violent ſtrain could be purſued to the end, might admit of ſuch a pompous beginning. Thus we find Horace begin an ode much after the manner of Claudian:

Odi profanum vulgus, & arceo-----
-----Carmina non prius
Audita Muſarum ſacerdos
Virginibus puerïſque canto.

But the length of an epic poem quite excludes all pompous *propoſitions.*

There is ſcarce any fault we have yet obſerved a *propoſition* liable to, but there is an inſtance of in the *propoſition* of Statius's Achilleid: he bids his *muſe rehearſe the deeds of the magnanimous ſon of Æacus, who was formidable even to the Thunderer.* He adds, *That he has worthily diſcharged a former undertaking; and that Thebes eſteems him a ſecond Amphion.*

Magnanimum Æacidem, formidatamque Tonanti
Progeniem, & patrio vetitam ſuccedere cœlo,
Diva, refer.------
Tu modo, ſi veteres digno deplevimus hauſtu,
Da fontes mihi, Phœbe, novos, &c.

PROPREFECT, Propræfectus, among the Romans, the prefect's lieutenant; or an officer whom the prefect of the pretorium commiſſioned to do any part of his duty in his place. See Prefect.

In Gruter, *p.* CCCLXX. the third inſcription mentions *proprefects* of the pretorium under Gratian, in the city of Rome, and the neighbouring parts. See Pretorium.

PROPRETOR, or Proprætor, a Roman magiſtrate, who having diſcharged the office of pretor at home, was ſent into a province to command there with his former pretorial authority. See Pretor.

Propretor was alſo an appellation given to thoſe, who, without having been pretors at Rome, were ſent extraordinarily into the provinces, to adminiſter juſtice with the authority of pretors.

Propretor is alſo a denomination given by ſome to thoſe ſent by the emperors into the provinces, which, upon partition in Auguſtus's time, fell to their lot: as the name *proconſul* was given to thoſe ſent into the provinces that fell to the people's ſhare. See Proconsul.

PROPRIETARY *monks*, were ſuch as had reſerved goods and effects to themſelves, notwithſtanding their formal renunciation of all at the time of their profeſſion.

They are frequently mentioned in the *Monaſt. Anglic. &c.* and were to be very ſeverely dealt withal; to be excommunicated, deprived of burial, *&c.*---Monachi proprietarii *excommunicentur ab abbatibus, & ſi in morte* proprietarius *inventus fuerit, eccleſiaſtica careat ſepultura,* &c. Addit. ad Matt. Par.

PROPRIETATE *probanda* is a writ to the ſheriff to inquire of the property of goods diſtrained, when a defendant claims a property upon a replevin ſued.

Where a property is proved by the defendant, a replegiari properly lies not. See Replevin and Distress.

Proprietatis *elixir.* See the article Elixir.

PROPRIETOR, or Proprietary, he who has the property or propriety of any thing. See Property.

Proprietor, in law, is ſtrictly ſuch a one as has or poſſeſſes any thing as his own in the utmoſt degree: *Quæ nullius arbitrio eſt obnoxia.*

The term was formerly applied in a particular manner to him who had the fruits of a benefice to himſelf and his ſucceſſors; as in ancient time abbots and priors had.

PROPRIETY, in grammar, is where the direct and immediate ſignification of a word agrees to the thing it is applied to. See Proper and Impropriety.

In which ſenſe *propriety* is uſed in oppoſition to a figurative or remote ſignification. See Figurative, *&c.*

PROPYLÆUM*, the porch of a temple, or great hall. See Porch.

* The word is Greek, ϖροπυλαιον, which ſignifies the ſame.

Hence *propylæum* is alſo uſed figuratively in matters of learning, for an introduction, apparatus, or prodromus to ſome greater work.---In this ſenſe we ſay, the *propylæum* of the Jeſuits at Antwerp, *&c.*

PROQUESTOR, Proquæstor, the queſtor's lieutenant, or a perſon who diſcharged the office of queſtor in his ſtead. See Questor.

The word is chiefly applied to an officer appointed by the governor of a province to diſcharge the queſture after the deceaſe of the queſtor, till the ſenate and people ſhould ſend a new one.

PRORÆ *os,* in anatomy, a bone of the cranium, called alſo *os occipitis.* See *os* Occipitis.

PRO RATA, in commerce, a term ſometimes uſed among merchants, for *in proportion.* See Proportion.

Thus, when in ſpeaking of any undertaking they ſay, Each perſon muſt reap the profit, or ſuſtain the loſs, *pro rata* to his intereſt; it is meant, each ſhall gain or loſe, in proportion to the ſum he put in ſtock.

Pro rata *portionis,* in law. See Onerando *pro rata portionis.*

PROROGANDA *aſſiſa.* See the article Assisa.

PROROGATION, Prorogatio, the act of prolonging, adjourning, or putting off to another time.

The difference between a *prorogation* and an *adjournment* of parliament is, that by *prorogation* the ſeſſion is ended; and ſuch bills as paſſed in either houſe, or both houſes, and had not the royal aſſent, muſt at the next aſſembly begin again; for that every ſeſſion of parliament is, in law, a ſeveral parliament: whereas, if the parliament be only *adjourned,* there is no new ſeſſion; and, conſequently, all things continue in the ſame ſtate they were in before the adjournment. See Adjournment.---But this difference between *prorogation* and adjournment is of no long ſtanding: anciently they were uſed as ſynonymous. Prorogetur *curia de hora in horam, quouſque placitum terminetur. MS. de L L.*

To *prorogue* the parliament, the king goes in perſon, with his crown on his head, and ſends the black rod for the houſe of commons to attend him at the bar of the houſe of lords; where, after giving an anſwer to each bill ſignified to him, he makes a ſpeech; and the lord chancellor, by command, ſignifies the parliament to be *prorogued.* See Parliament.

The proroguing of the lower houſe of convocation is a power veſted in the archbiſhop with the conſent of the ſuffragans. See *Life of Queen Anne, p.* 87.

PROSAIC *numbers.* See the article Number.

PROSCENIUM, in the ancient theatre, an eminence whereon the actors performed their parts. See Theatre.

The *proſcenium* anſwered to our ſtage.---It conſiſted of two parts among the Greeks; one particularly ſo called, where the actors performed: the other was the *logeion,* where the ſingers and the mimics acted their parts.---Among the Romans, the *proſcenium* and *pulpitum* were the ſame thing. See Pulpitum.

PROSCRIPTION, Proscriptio, a publication made in the name of the chief or leader of a party, whereby he promiſes a reward to any one who ſhall bring him the head of one of his enemies.

Sylla and Marius by turns *proſcribed* each other's adherents.---Under the triumvirate, a great part of the beſt and braveſt of the Romans fell by *proſcription.*

The term took its riſe from the practice of writing down a liſt of the perſons names, and poſting it in public: from *pro,* and *ſcribo;* I write.

PROSE*, Prosa, the natural language of mankind, looſe, and unconfined by poetical meaſures, rhymes, *&c.*---In which ſenſe it ſtands oppoſed to *verſe.* See Verse.

* The word comes from the Latin *proſa,* which ſome will have derived from the Hebrew *poras,* which ſignifies *expendit:* others deduce it from the Latin *prorſa,* of *prorſus,* going forwards; by way of oppoſition to *verſa,* or turning backwards, as is neceſſary in writing verſe.

Though *proſe* have its connections, which ſuſtain it, and a ſtructure, which renders it numerous; it ought ſtill to appear free: its character conſiſts in running eaſy and unreſtrained. See Style, Numbers, *&c.*

Poets very rarely have the talent of *proſe:* the habit of wearing chains ſits faſt upon them, even when the chains are off.

St. Evremond compares *proſe* writers to foot-travellers, who walk with leſs noiſe, but more ſecurity, than the cavaliers.

PROSECUTOR, in law, is he that purſues a cauſe in another's name. See Promoter.

PROSELYTE*, Proselytus, a new convert to the faith. See Convert.

* The word is pure Greek, ϖροσηλυτος, which, in Latin, ſignifies *advena;* in Engliſh, *ſtranger,* or one arrived out of another country.

The term was much uſed in the primitive church.---The Jews too had their *proſelytes,* who from Gentiles embraced Judaiſm. See Neophyte and Catechumen.

PROSODY*, Prosodia, that part of grammar which teaches and directs the pronunciation and manner of rehearſal; marks the accents, and diſtinguiſhes the long and ſhort ſyllables. See Grammar, Pronunciation, *&c.*

* The word is formed from the Greek ϖροσωδια, compounded of ϖρος, and ωδη, *cantus,* ſinging.

Proſody is properly that branch of grammar which relates to ſyllables; treating of their true pronunciation in reſpect of accent, and time or quantity. See Syllable and Accent, *&c.*

The Engliſh *proſody* turns chiefly on two things: *numbers,* that is, a certain number of feet or ſyllables; ſee Numbers:---and *rhyme,* or a ſimilitude of ſound between the laſt ſyllables of words. See Rhyme.

The Greek and Roman *proſodies* were unacquainted with rhyme; but in lieu thereof had ſomething to make their verſe harmonious, without, *viz. quantity*. See QUANTITY.

PROSONOMASIA, προσωνομασια, a figure in rhetoric, whereby alluſion is made to the likeneſs of a ſound in ſeveral names or words; much the ſame with *paronomaſia*, or *agnominatio*. Ses PARONOMASIA.

PROSOPOPOEIA *, προσωποποιια, in rhetoric, a figure, whereby we make perſons that are abſent, or dead, or even things which are inanimate, as cities, *&c.* to ſpeak. See FIGURE.

* The word is formed from the Greek, προσωπον, *perſon*, and ποιεω, *I make*, or *feign*.

The poets, in their fictions, make frequent uſe of the *proſopopœia*; as alſo do the orators, in their painting of violent paſſions, which ſeem to tranſport, and make them forget themſelves.

There are two kinds of *proſopopœia's*; the one *direct*, the other *indirect*.---For an inſtance of the latter: *Juſt gods, protectors of the innocent, permit the order of nature to be interrupted for one moment, and let this carcaſe reſume the uſe of ſpeech*, &c.

Inſtances of the former are found every-where among the orators and poets: that which follows is a very beautiful one, found by way of epitaph on a tomb-ſtone: the dead wife addreſſes her ſurviving huſband thus:

Immatura peri: ſed tu felicior, annos
Vive tuos, conjux optime, vive meos.

PROSPECT, } See { PERSPECTIVE.
PROSPECTIVE *glaſs*, } { PERSPECTIVE *glaſs*.

PROSPHYSIS, ſee ADHESION.

PROSTATÆ, προστάται, in anatomy, two white, ſpongy, glandulous bodies ſituate at the root of the penis, or juſt below the neck of the bladder, and about the ſize of walnuts.---See *tab. anat.* (ſplanch.) *fig.* 8. *lit.* pp. *fig.* 15. *lit.* cc. See alſo GLAND and PENIS.

Authors aſcribe two kinds of ſubſtance to the *proſtatæ*, the one glandulous, the other ſpongeous, or porous; which laſt ſeems nothing but a congeries of minute veſſels and cells, through the middle of which paſs the veſiculæ ſeminales, without any communication therewith.

The *proſtatæ* have excretory ducts of their own, pretty numerous: De Graaf does not remember to have known them fewer than ten in the *proſtatæ* of a man; in dogs they are ſometimes an hundred, each of which diſcharges itſelf into the urethra, ſome above, ſome below the caput gallinaceum; each having its proper caruncle.

Out of theſe iſſues a whitiſh, ſlimy humour, ſecreted in the glandular part of the *proſtatæ*, and conveyed into the cavity of the urethra.

The uſe of this humour is to line and lubricate the cavity of the urethra, and prevent it from being annoyed with the acrimony of the urine in its paſſage through it; and to ſerve as a vehicle to the ſeed, in the time of ejaculation. See URINE, URETHRA, *&c.*

Some take it for a third kind of ſeed, but without much reaſon. See SEED.--Boerhaave thinks it may ſerve to nouriſh the animalcule during the firſt moments after coition.---This humour, he adds, remains after caſtration, but is not prolific.

The ſame author, from the memoirs of the French academy, makes the *proſtatæ* to conſiſt of an aggregate of twelve glands, each of which terminates by its excretory duct in a little bag, into which it diſcharges its humour. Theſe twelve bags open by as many excretory ducts into the cavity of the urethra, ſo as to encompaſs the exit of the veſiculæ; whence the ſeed and the humour of the *proſtatæ* are the more accurately mixed.

PROSTHAPHÆRESIS *, in aſtronomy, the difference between the true and mean motion, or true and mean place, of a planet; called alſo *equation of the orbit*, or *of the centre*, and ſimply *the equation*. See EQUATION.

* The word is formed from the Greek προσθε, *ante*, *ſuper*; and αφαιρεσις, *ademptio*.

Proſthaphæreſis amounts to the difference between the mean and equated anomaly. See ANOMALY.

Thus, ſuppoſe the circle ALMPNR (*tab. aſtron. fig.* 51.) the orbit of the earth, ſurrounded by the ecliptic ♈, ♋, ♎, *&c.* and ſuppoſe S the ſun, and the earth in R, the mean anomaly will be the arch APR, or, caſting away the ſemicircle, the arch PR, or the angle PCR; and the true anomaly, rejecting the ſemicircle, will be PSR, which is equal to PCR and CRS: if then to the mean anomaly, we add the angle CRS, we ſhall have the true anomaly PSR, and the earth's place, in the ecliptic. See PLACE, *&c.*

And here the angle CLS, or CRS, is called the *proſthaphæreſis* or *equation*, by reaſon it is ſometimes to be added, and ſometimes to be ſubtracted from the mean motion, that we may have the true motion or place of the earth. See EARTH.

PROSTHESIS, προσθεσις, in grammar, a ſpecies of metaplaſm; being the prefixing of ſome letter or ſyllable at the beginning of a word:---As in, *gnavus*, *pro navus*.

This is alſo called *appoſition*. See APPOSITION.

PROSTHESIS, among ſurgeons, is the filling up of what was before wanting, by the appoſition of new matter.

Such, *e. gr.* is the filling up of fiſtulous ulcers with new fleſh. See INCARNATION, *&c.*

PROSTYLE *, προστυλος, in the ancient Greek architecture, a range of columns in the front of a temple. See TEMPLE and AMPHIPROSTYLE.

* The word is formed from the Greek προ, *before*, and στυλος, *column*.

PROSYLLOGISM, PROSYLLOGISMUS, is uſed by ſome ſchool-writers, for a reaſon or argument produced to ſtrengthen or confirm one of the premiſes of a ſyllogiſm. See SYLLOGISM and PREMISE.

Others define *proſyllogiſm*, an argument compoſed of two ſyllogiſms; ſo diſpoſed, as that the concluſion of the former is the major or minor of the latter.---*e. gr.* Every rational is riſible; but every man is rational, therefore every man is riſible; but no aſs is riſible, therefore no aſs is a man.

The major, or the ſecond ſyllogiſm, may be omitted or underſtood; and ſome even contend that it ought to be ſo: ſo that on their principle, a *proſyllogiſm*, or redundant ſyllogiſm, is when two ſyllogiſms are ſo contained in five propoſitions, as that the concluſion of the former is the major or minor of the latter. See SYLLOGISM.

PROTASIS *, προτασις, in the ancient drama, the firſt part of a comic or tragic piece; wherein the ſeveral perſons of the play are ſhewn, their characters and manners intimated, and the action, which is to make the ſubject of the piece, propoſed, and entered upon. See DRAMA, TRAGEDY, &c.

* The word is formed from the Greek προτεινω, *porrigo*, *I hold forth*.

The ancient *protaſis* might go about as far as our two firſt acts. See ACT.---Where the *protaſis* ended, the epitaſis commenced. See EPITASIS.

PROTATICUS, προτατικος, in the ancient drama, a perſon who never appeared but in the *protaſis*, or firſt part of the play; as Soſia in Terence's Andria, *&c.*

PROTECTION, PROTECTIO, the ſhelter, defence, authority, and aid, employed by any one in behalf of the helpleſs or unhappy. See PROTECTOR.

Active protection ſuppoſes power, intereſt, favour, *&c.* in the perſon that protects.---*Paſſive protection*, on the contrary, implies neceſſity, weakneſs, and dependence, in the perſon protected. See SAFEGUARD.

PROTECTION is alſo uſed for a privilege belonging to embaſſadors, members of parliament, *&c.* whereby they and their domeſtics are ſecur'd from arreſts, *&c.* See PRIVILEGE, *&c.*

PROTECTION is ſometimes alſo underſtood of the perſon of the protector. Such a cardinal has the *protection* of France.---The *protection* of Spain is become vacant by the death of ſuch a cardinal. See PROTECTOR.

PROTECTION, in law, in its general ſenſe, denotes that benefit and ſafety which every ſubject, denizen or alien, ſpecially ſecured, hath by the laws. See LAW.

PROTECTION, in a more ſpecial ſenſe, is uſed for an exemption, or immunity, given by the king to a perſon, to ſecure him againſt ſuits in law, or other vexations, upon reaſonable cauſes moving him thereunto, and for a certain time.

Of this, Fitzherbert makes two kinds: the *firſt* he calls a *protection*, *cum clauſula volumus*; whereof he mentions four caſes: ---1°. A *protection*, *quia profecturus*, for him that is to paſs over-ſea in the king's ſervice.---2°. A *protection*, *quia moraturus*, for him who is already abroad in the king's ſervice; as an embaſſador, *&c.*---3°. A *protection* for the king's debtor, that he be not ſued or attached, till the king be paid his debt.---4°. A *protection* for a perſon in the king's ſervice beyond ſea, or in the marches of Scotland.

The *ſecond* form of *protection* is *cum clauſula nolumus*, which is moſt commonly granted to a ſpiritual company, for their immunity from having their cattle taken by the king's miniſters. ---But it may be alſo granted to a ſingle perſon, either ſpiritual or temporal.

Protection extends not to pleas of dower, quare impedit, aſſize of novel diſſeiſin, darrein preſentment, attaints, nor pleas before juſtices in eyre.

PROTECTOR, a perſon who undertakes to ſhelter and defend the weak, helpleſs, or diſtreſſed. See PROTECTOR and PATRON.

God, and the magiſtrate, are the *protectors* of the widow and orphan.---Among the heathens, Minerva was eſteemed the *protectreſs* of arts.

Every catholic nation, and every religious order, has a *protector* reſiding at the court of Rome, who is a cardinal, and called the *cardinal protector*. See CARDINAL.

PROTECTOR is ſometimes alſo uſed for a regent of a kingdom, made choice of to govern it during the minority of a prince.---Cromwell aſſumed the title and quality of *lord protector of the commonwealth of England*.

PROTEST, in law, is uſed for a caution, or call of witneſs, or an open affirmation, that a perſon does either not at all, or but conditionally, yield his conſent to any act; or to the proceeding of any judge in a court, wherein his juriſdiction is doubtful; or to anſwer upon his oath farther than by law he is bound. See PROTESTATION.

Any of the lords in parliament have a right to *proteſt* their diſſent to any bill paſſed by a majority; which *proteſt* is entered in form.---This privilege is ſaid not to be very ancient: the commons have no right to *proteſt*. See PARLIAMENT.

PROTEST, in commerce, is a ſummons made by a notary public to a merchant, banker, or the like, to accept or diſcharge a bill of exchange drawn on him, after his having refuſed either to accept or pay the ſame. See BILL *of exchange*.

It is called a *proteſt*, becauſe containing a proteſtation, that the party will return the bill, and even take up money at intereſt; and charge all coſts, damages, carriage and recarriage, on the refuſer.

There are two kinds of *proteſts*; the one for want of acceptance, the other for want of payment. See ACCEPTANCE, *&c.*

The firſt, to be made by the bearer of the bill at the time of preſenting it, in caſe the perſon, on whom it is drawn, refuſe to accept it for the time, or the ſum there expreſſed.---The latter is made as the bill falls due, whether it have been accepted or not. See EXCHANGE.

The bearers of bills of exchange, that have been accepted, or which become payable at a certain day, are obliged to have them either paid or *proteſted* within three days after due; on the penalty of anſwering for the omiſſion: and it muſt be obſerved, that if the third day happen to be a holy-day, the *proteſt* is to be made on the eve thereof.

At Paris and Hambourg, the *proteſt* is to be made within ten days: at Venice, where all bills are paid in banco, the *proteſt* for want of payment is to be made within ſix days; but then the bank is ſuppoſed open, otherwiſe no *proteſt* to be made: at Rome, *proteſts* for want of payment are to be made within fifteen days: at Leghorn, Milan, and Bologna, there is no time fixed: at Amſterdam, they are to be made within five days: at Venice, the third day.

The negotiants of ſome places, as thoſe of Rome, M. Savary obſerves, do not look on themſelves as obliged to *proteſt* in default of payment; but this opinion is contrary to univerſal cuſtom, and natural reaſon; ſince, till after *proteſtation*, they have no remedy or reſource againſt the drawer or indorſer, nor any title to be reimburſed.

M. Ricard adds, that bills of exchange drawn from Amſterdam, or Antwerp, or Spain, are to be *proteſted* in default of payment within fourteen days after they fall due; after which time the bearer ſtands the riſque and chance of the *non-proteſted* bill, not the drawer or indorſer, in caſe the party happens to fail after the ſaid fourteenth day.

PROTESTANT, a name firſt given in Germany to thoſe who adhered to the doctrine of Luther; becauſe in 1529. they *proteſted* againſt a decree of the emperor Charles V. and the diet of Spires; and declared, that they appealed to a general council. See REFORMATION.

The name has been ſince alſo given to thoſe who adhere to the ſentiments of Calvin, and is now become a common denomination for all thoſe of the reformed churches. See LUTHERAN, CALVINIST, PRESBYTERIAN, *&c.*

Great endeavours have been made to unite the Lutheran *proteſtants* with the Calviniſts; but hitherto in vain.

PROTESTATION, a ſolemn declaration made by ſome judiciary act or proceeding, againſt an oppreſſion, violence, or injuſtice; or againſt the legality of a ſentence, judgment, decree, or other procedure; importing, that the party is determined to oppoſe it at the proper time, *&c.* See PROTEST.

Proteſtation is defined by juſtice Walſh, a defence or ſafeguard to the party that makes it, from being concluded by the act he is about to do; ſo that iſſue cannot be joined upon it.

Proteſtation is defined by Plowden, a form of pleading, when one does not either directly affirm or deny any thing alledged by another, or which he himſelf alledges. Plowd. *fol.* 276.

PROTHESIS, a little altar in the Greek churches, whereon a ceremony is performed, called by the ſame name ϖροθεσις. See ALTAR.

On this altar the prieſt, with the other miniſters, prepares every thing neceſſary to the celebration of maſs; *viz.* the bread, wine, *&c.*---After which they go in proceſſion from this to the great altar, to begin maſs, carrying with them the ſpecies thus prepared.

PROTHONOTARY, PROTONOTARIUS, PROTONOTARY, a term properly ſignifying *firſt notary*; and which was anciently the title of the principal notaries of the emperors of Conſtantinople. See NOTARY.

With us, *prothonotary*, called alſo *preignotary*, is uſed for an officer in the courts of king's-bench and common-pleas; the latter whereof has three, the former one. See COURT, *&c.*

PROTHONOTARY *of the king's-bench* records all actions civil ſued in that court; as the clerk of the crown-office doth all criminal cauſes. See KING'S-*bench*, RECORD, *&c.*

PRROTHONOTARIES *of the common-pleas* enter and inroll all declarations, pleadings, aſſizes, judgments, and actions: they alſo make out all judicial writs; as the venire facias, after iſſue joined; habeas corpus, for bringing in of the jury; diſtringas jurator. writs of execution and ſeiſin, of ſuperſedeas, of privilege, *&c.* they inroll all recognizances acknowledged in that court, all common recoveries; make exemplifications of records, *&c.*

PROTHONOTARY, or PROTONOTARY, is alſo an officer in the court of Rome, who has a degree of pre-eminence over the other notaries. See NOTARY.

There is a college of twelve *prothonotaries*, called *participantes*, becauſe partaking in the fees of the expeditions in chancery. See PARTICIPATION.

They are ranked among the number of prelates, wear the violet rochet, the hat, *&c.* They aſſiſt at all grand ceremonies, and have a place in the pope's chapel.

Their office is to diſpatch the acts in grand cauſes, which the ſimple apoſtolical notaries diſpatch in leſſer cauſes: they may create apoſtolical notaries and doctors, to officiate out of the city.

Thoſe out of the college have none of the privileges of the others, except the habit.

The *prothonotaries* were firſt eſtabliſhed at Rome by pope Clement I. with deſign to write the lives of the martyrs. See NOTARY.

PROTHYRIS, in the ancient architecture, is ſometimes uſed for a quoin, or corner of a wall; otherwiſe called *anco*. See ANCO.

Sometimes alſo for a croſs-beam, or over-thwart rafter.

PROTHYRIS is alſo uſed by Vignola for a particular ſort of key of an arch, an inſtance of which we have in his Ionic order, conſiſting of a roll of water-leaves, between two reglets and two fillets, crowned with a Doric cymatium; its figure being much like that of a modillion.

PROTHYRUM, ϖροθυρον, a porch at the outward door of an houſe, or portal. See PORCH and VESTIBLE.

PROTO*, a word uſed in compoſition with divers terms in our language, to expreſs a relation of priority; as in *proto-martyr*, *proto-type*, &c.

* It is formed of the Greek ϖρωτος, *primus*, firſt.

PROTOCOLLUM, ϖρωτοκολλον, a term uſed in the ancient juriſprudence, for the firſt leaf of a book, wherein was the mark of the paper or parchment.

It was even ſometimes uſed for the mark itſelf; which was uſually in the margin, but ſometimes at the top of the page.

The xlivth novel of Juſtinian forbids cutting the *protocollum* of charters, which ſhew the year wherein the paper or parchment were made, and the officer commiſſioned for the delivery of them; by means whereof frauds were frequently detected.

PROTOCOLLUM was alſo uſed for the firſt minute, draught, or ſummary, of an act to be paſſed; which the notary drew up in ſhort, in little table-books, to be afterwards inlarged at leiſure. See NOTARY.

PROTO-FORESTARIUS was he whom our ancient kings made chief of Windſor-foreſt, to take cognizance of all cauſes of death or mayhem there; after the manner of a lord chief juſtice in eyre. See FOREST, FORESTER, JUSTICE, *&c.*

PROTO-MARTYR*, the *firſt martyr*, or witneſs, who ſuffered death in teſtimony of the truth; as Abel in the old teſtament, and St. Stephen in the new. See MARTYR.

* The word is compounded of ϖρωτος, *firſt*, and μαρτυς, *witneſs*.

PROTONOTARY. See PROTHONOTARY.

PROTOPLAST, PROTOPLASTUS, a title ſometimes given to our firſt father Adam: from the Greek ϖρωτοπλαστος, *q. d.* firſt formed. See PLASTIC.

PROTOTYPE, πρωτοτυπος, the original or model, whereby a thing is formed. See TYPE and ARCHETYPE.

It is chiefly uſed for the patterns of things to be engraven, moulded, or caſt. See MODEL, MOULD, *&c.*

PROTOTYPON, ϖρωτοτυπον, in grammar, is ſometimes uſed for a primitive or original word. See PRIMITIVE.

PROTRACTING, or PROTRACTION, in ſurveying, the act of plotting, or laying down the dimenſions taken in the field, by means of a *protractor*, &c. See PROTRACTOR and PLOTTING.

Protracting makes one half of ſurveying. See SURVEYING.

PROTRACTING *pin*, a mathematical inſtrument; or rather, an appendage of an inſtrument called a *protractor*.

The *protracting pin* is a fine needle, fitted into a handle, uſed to prick off degrees and minutes from the limb of the *protractor*. See PROTRACTOR.

PROTRACTOR, an inſtrument uſed in ſurgery, to draw out any foreign or diſagreeable bodies from a wound or ulcer; in like manner as the forceps. See FORCEPS.

PROTRACTOR is alſo an inſtrument uſed in ſurveying; whereby the angles taken in the field with a theodolite, circumferentor, or the like, are plotted or laid down on paper. See PLOTTING.

The *protractor* conſiſts of a ſemicircular limb B A G (*tab.* SURVEYING, *fig.* 29.) of braſs, ſilver, horn, or the like, divided into 180°, and ſubtended by a diameter B A; in the middle whereof is a little notch or lip, *o*, called the *centre of the protractor*.

On the limb of the *protractor* are ſometimes alſo placed numbers, denoting the angles at the centres of regular polygons: thus, againſt the number 5, denoting the ſides of a pentagon, is found 72, the angle at the centre of a pentagon. See POLYGON.

Uſe of the PROTRACTOR.---1. *To lay down an angle of any given quantity, or number of degrees.* Suppoſe, *e. gr.* an angle of 50° with the line A *o* B, required on the point *o*. Lay the centre of the *protractor* on the given point, and the diameter of the *protractor* on the given line. Make a mark againſt the given degree 50, on the limb of the *protractor*; through which, from the given point, draw a line *o p*: this gives the angle required.

2. *To find the quantity of a given angle: e. gr.* the angle *p o* A. Lay the centre of the *protractor* on the point of the angle *o*, and the diameter on the line. The degree of the limb cut by the other line *o p*, *viz.* 50, is the number of degrees of the angle required.

3. *To inſcribe any given regular polygon*, e. gr. *a pentagon in a circle.* Lay the centre and diameter of the *protractor* on the centre and diameter of the circle; and make a dot againſt the number of degrees of the angle at the centre, *viz.* 72. Through this dot, and the centre of the circle, draw a line cutting the circumference of the circle. To the point of interſection, from the point where the diameter cuts the circumference, draw a right line: this line will be a ſide of the pentagon, which being taken in the compaſſes, and ſet off as often as it will go in the circumference, will give points, which being connected by lines, will form the pentagon required. See POLYGON.

4. *To deſcribe any regular polygon*, e. gr. *an octagon on a given line.* Subtract the angle at the centre, which the *protractor* gives, 45° from 180, the remainder 135 degrees is the angle included between two ſides of the octagon; one half whereof is 67½. Applying then the diameter of the *protractor* over the given line, with the centre over one extreme; make a dot againſt 67½, to which from the centre draw a line. Apply the *protractor* to the other end of the line, ſo as the centre be over the extreme, and there ſet off another angle of 67° ½. From the point where the two lines thus drawn interſect as a centre, deſcribe a circle with the interval of the given line. The given line will be one ſide of the octagon, which being ſet off as often as it will go in the circumference thus drawn, will give points, which being connected, will form the octagon required.

PROTRACTOR *improved*, is an inſtrument much like the former, only furniſhed with a little more apparatus, whereby we are enabled to ſet off an angle to a minute; which is impracticable in the other.

The chief addition is an index fitted on the centre, and moveable thereon; ſo as to play freely and ſteadily over the limb. Beyond the limb the index is divided, on both edges, into 60 equal parts of the portions of circles, intercepted by two other right lines drawn from the centre; ſo as each makes an angle of one degree with lines drawn to the aſſumed points from the centre.

To ſet off an angle of any number of degrees and minutes with this *protractor*. Move the index, ſo that one of the lines drawn on the limb, from one of the fore-mentioned points, may fall upon the number of degrees given; and prick off as many of the equal parts on the proper edge of the index, as there are minutes given: thus, drawing a line from the centre to that point ſo pricked off, you have an angle with the diameter of the *protractor*, of the propoſed number of degrees and minutes.

Indeed, it may be of good uſe to lay down an angle to a minute, when we are able to take it to a minute: but till we have other-guiſe needles, and juſter theodolites, than are yet made, the old *protractor* may ſerve very well. See THEODOLITE.

PROTUBERANCE, PROTUBERANTIA, in anatomy, any eminence, whether natural or preternatural, that projects, or advances out beyond the reſt. See APOPHYSIS, PROCESS, &c.

The *orbicular protuberances* of the third ventricle of the brain are called *nates*; and the apophyſes of the *orbicular protuberances* are called *teſtes*. See NATES and TESTES.

The *annular protuberance* is a proceſs of the medulla oblongata, in form of a ring; whence its name, firſt given it by Willis. See MEDULLA *oblongata* and ANNULAR.

PROVEDITOR, PROVEDITOUR, or PROVEDITORE, an officer in ſeveral parts of Italy, particularly at Venice.

There are various kinds of *proveditors* in Venice: as *proveditor of the commons*, who is nearly the ſame with *ædile* among the Romans, conſul in Languedoc, and eſchevin in other cities.---Of theſe *proveditors* there are three:

The *proveditores alle ragioni vecchie*, *alla biave*, *alla giuſtitia*, &c. have the direction of matters relating to policy throughout the ſignory.

PROVEDITOR *general of the ſea*, is an officer whoſe authority extends over the whole fleet, when the captain-general is abſent.--He has, particularly, the diſpoſal of the caſh, and pays the ſeamen and ſoldiers.

The captain-general and *proveditor* are mutually ſpies over one another: though the *proveditor* be inferior to the general, yet is the power ſo divided, that one has authority without ſtrength, the other ſtrength without authority.

PROVEND *, or PROVENDER, is properly a ſort of veſſel containing the meaſure of grains daily given to a horſe, or other beaſt of labour, for his daily ſubſiſtence.

* Some derive the word from the Latin *præbenda*, or prebend. See PREBEND.

Hence, *provender* is alſo become a general name for all food of cattle.---In monaſteries, when the religious go to meals, they are ſaid to go to *provend*.

PROVER, in law, *probator*, an approver, or perſon who, confeſſing felony, appeals, or accuſes another of the ſame. See PROBATOR and APPROVER.

He is thus called, becauſe he muſt prove what he alledges in his appeal; which proof is either by battle, or by the country, at his election who is appealed. See TRIAL, COMBAT, &c.

39 *Edw.* 3. *coram rege, rot.* 97. *Suff.* a man became an *approver*, and appealed five, who all joined battle with him, and he overcame them all: four of them were accordingly hanged, and the fifth pleaded he was a clerk. The *prover* was pardoned.

PROVERB, PROVERBIUM, is defined by Camden, a conciſe, witty and wiſe ſpeech, grounded upon long experience, and containing, for the moſt part, ſome uſeful caveat. See ADAGE.

Such are, A cloſe mouth catches no flies.--An high building, a low foundation.--A carrion kite will never be a good hawk.--A ſhort horſe is ſoon curried.--A man may love his houſe well, though he ride not on the ridge.--A falſe knave needs no broker.--Better to ſpare at brim than at bottom, &c.

PROVIDENCE, PROVIDENTIA, the conduct and direction of the ſeveral parts of the univerſe, by a ſuperior, intelligent being. See UNIVERSE.

The notion of a *providence* is very ancient, even in the heathen theology: we find Thales mentions it.---It is founded on this ſuppoſition, That the creator has not ſo fixed and aſcertained the laws of nature, nor ſo connected the chain of ſecond cauſes, as to leave the world to itſelf; but that he ſtill preſerves the reins in his own hands, and occaſionally intervenes, alters, reſtrains, inforces, ſuſpends, &c. thoſe laws by a *particular providence*. See MIRACLE.

Some uſe the word *providence* in a more general ſenſe, ſignifying by it, that power or action whereby the ſeveral parts of the creation are ordinarily directed.

Thus, Damaſcenus defines *providence* to be the divine will, whereby all things are ordered and directed to the proper end.---Which notion of *providence* ſuppoſes no laws at all fixed by the author of nature at the creation; but that he reſerved it at large to be governed by himſelf occaſionally. See NATURE and LAW.

The ancients called *providence* by the names of *fate*, *fortune*, *nature*, *deſtiny*, *neceſſity*, &c. See FATE, FORTUNE, &c.

The ancient Egyptians ſeem to have been the firſt who had the notion of a divine *providence*. Arnobius obſerves they reaſoned thus:--"*Providence* is ſo eſſential to a prince, that without it he cannot be, nor even be called, a prince; and the more auguſt a prince is, the more perfect ought his *providence* to be. Since then God is the greateſt and moſt auguſt of all princes, to him muſt belong the moſt perfect *providence*."

The Epicureans deny any divine *providence*, as thinking it inconſiſtent with the eaſe and repoſe of the divine nature to meddle with human affairs. See EPICUREAN.

Others deny the exiſtence of a *providence* from the ſeemingly unjuſt diſtribution of good and evil, which appear to fall indiſcriminately on the juſt and unjuſt.

Simplicius argues thus for a *providence*: If God do not look to the affairs of the world, it is either becauſe he cannot, or will not: but the firſt is abſurd; ſince to govern cannot be difficult, where to create was eaſy: the latter is both abſurd and blaſphemous. See GOD.

PROVIDENTIÆ *, in old law-books, were proviſions of meat and drink. See PURVEYANCE.

* *Providentia vini ante adventum ſuum in cellaria erat centum doliorum.* Knighton, *anno* 1354.

PROVINCE *, PROVINCIA, among the Romans, was a country conquered by them, without the bounds of Italy; governed by a deputy or lieutenant, and having peculiar laws and privileges. See PROCONSUL, &c.

* Nicod derives the word *à procul vivendo*, living afar off; but it is better deduced from *pro* and *vinco*, I overcome.

Of theſe countries that part of France next the Alps was one, and ſtill retains the name *Provence*.

PROVINCE is now chiefly uſed for a canton or diviſion of a kingdom or commonwealth, comprehending ſeveral cities, towns, &c. all under the ſame government, and uſually diſtinguiſhed by the extent either of the civil or eccleſiaſtical juriſdiction.

The *provinces* were anciently duchies, counties, &c. which have been ſince all re-united under the ſame chief. See DUKE, COUNT, &c.

The church diſtinguiſhes its *provinces* by archbiſhopricks, each containing a certain number of biſhopricks. See ARCHBISHOP.

In this ſenſe England is divided into two *provinces*, Canterbury and York.

The monks make particular diviſions of *provinces*, according to the antiquity and number of convents in each. See PROVINCIAL, ORDER, &c.

The United *Provinces* are the ſeven northern *provinces* of the Low-countries, who, revolting from the Spaniſh dominion, made a firm and perpetual alliance, offenſive and defenſive, at Utrecht, in the year 1579. See STATES *General*.

PROVINCIAL, PROVINCIALIS, ſomething relating to a *province*. See PROVINCE.

Thus we ſay, a *provincial council* or *ſynod*, &c. See SYNOD and COUNCIL.

PROVINCIAL, in the monaſtic ſenſe, denotes a perſon who has the direction and ſuperintendency of the ſeveral convents of a *province*, according to the diviſion eſtabliſhed in that order. See ORDER, &c.

The *general* of the order has ſeveral *provinces* under him; the *provincial* ſeveral priors, abbots, &c. See GENERAL, ABBOT, &c.

PROVINE, Provin, a branch of a vine laid in the ground to take root. See Vine, Propagation, &c.

PROVISION, Provisio, any thing got or procured, as neceſſary for the ſubſiſtence of life. See Providentiæ.

Provision, in traffick, is ſometimes uſed for the wages due to a factor. See Factorage.

Commiſſary of Provisions. See the article Commissary.

Park of Provisions. See the article Park.

Provision, in the canon law, the title or inſtrument by virtue whereof an incumbent holds, or is *provided* of a benefice, biſhoprick, or the like. See Title, Benefice, &c.

Ordinary collators give *proviſions* in caſe of vacancy by death, pure and ſimple demiſſion and permutation. See Collation.

The court of Rome grants *proviſions* by reſignation, devolution, and prevention.

Provisions *by prevention* are alſo called *gratiæ expectativæ*, and *mandata de providendo*; of the great abuſe whereof throughout England frequent complaint was made in our ancient ſtatutes, and a remedy provided for the ſame by the ſtatute of premunire. See Prevention, Premunire, &c.

Proviſions of ſmall benefices, in the court of Rome, are only ſimple ſignatures, which are, as it were, minutes of the bull; becauſe the bulls themſelves diſpatched on parchment would be too expenſive. The ſignature is no more than the petition of the impetrant anſwered by the pope in theſe words, *Conceſſum uti petitur in præſentia D. N. papæ*, wrote in the hand of the prelate who preſides over the ſignature. See Bull.

Extraordinary *proviſions* are ſigned by the pope himſelf, in theſe words, *fiat ut petitur*, with the firſt letter of his name. See Signature.

PROVISO, in law, a condition inſerted in a deed, upon the obſervance whereof the validity of the deed depends. See Condition, &c.

Proviso, in judicial matters, is where the plaintiff deſiſts from proſecuting an action, by bringing it to trial in due time; in which caſe, the defendant may take out a venire facias to the ſheriff, having it in theſe words, *Proviſo quod*, &c. to the end that, if the plaintiff take out any writ to that purpoſe, the ſheriff ſhall ſummon but one jury upon them both.---In which caſe it is called *going to trial by proviſo*.

Caſu Proviso. See the article Casu.

Proviso is alſo a ſea-term.---A ſhip is ſaid to moor a *proviſo*, when ſhe has an anchor out, and alſo a hawſer aſhore; and ſo is moored with her head to the ſhore with two cables at leaſt. See Mooring.

PROVISOR is generally taken for him who hath the care of providing things neceſſary; in which ſenſe it coincides with *purveyor*. See Purveyor.

Provisor *monaſterii* is uſed for the ſteward or treaſurer of a religious houſe.

Provisor*, in our ſtatutes, alſo denotes a perſon who ſued to the court of Rome for a *proviſion*, or expectative grace. See Provision and Premunire.

> * Proviſores *dicuntur, qui vel epiſcopatum, vel eccleſiaſticam aliam dignitatem in Romana curia ſibi ambiebant de futuro, quod ex gratia expectativa nuncuparunt, quia uſque dum vacaret expectandum eſſet.* Spelm.

PROVOCATIVE, in phyſic, a medicine which ſtrengthens nature, and ſtimulates or incites to venery. See Priapism. Such are cantharides, ſatyrion, &c. See the article Cantharides, &c.

PROVOST, Præpositus, an officer, whereof there are divers kinds; civil, military, &c.

Provost *of the city, or of the merchants*, is the chief municipal magiſtrate in ſeveral conſiderable trading cities, particularly Edinburgh, Paris, and Lyons; much the ſame with the *mayor* in other places. See Mayor.

The *provoſt* preſides at the city-courts, and, together with the ſheriffs, or bailiffs, decides all differences relating to trade and merchandize; takes cognizance of the affairs of officers of policy of the city with regard to their functions; of the delinquencies of merchants, commiſſioners, and factors; inſpects the ports, rivers, duties, impoſts, &c.

Authors attribute the inſtitution of *provoſt* of the *merchants* of Paris to Philip Auguſte. Du Haillan refers its epocha to the year 1190.

The *provoſt* of Edinburgh has the title of *lord:* the bailiffs are his deputies. He calls conventions of the boroughs by his own miſſives.

Provost, or Prevot *royal*, alſo denotes a ſort of inferior judge eſtabliſhed throughout France, for the taking cognizance of all civil, perſonal, real, and mixt cauſes, among the people; but without any juriſdiction in the cauſes of nobles.

Theſe in the Bourbonnois, Auvergne, &c. are called *chatelains*; in Normandy, *vicomptes*; in Languedoc and Provence, *viguiers*.

Grand Provost *of France*, or *of the houſhold*, has juriſdiction in the king's houſe, and over the officers therein; looks to the policy and regulation thereof, the rates of proviſions following the court, &c.---He was anciently called *roi des ribauds*.

Grand Provost *of the conſtable*, a judge of the ſword, who manages proceſſes againſt the ſoldiers in the army, who have committed any crime.

He has four lieutenants diſtributed throughout the armies, called *provoſts of the army*; and particularly *provoſts* in the ſeveral regiments.

Provost *marſhal of an army* is an officer appointed to ſeize and ſecure deſerters, and all other criminals. See Marshal.

The *provoſt marſhal* is to go often abroad round the army to hinder the ſoldiers from pillaging: it is his office to indict offenders, and to ſee the ſentence paſſed upon them executed.

He likewiſe regulates the weights and meaſures, and the price of all proviſions, &c. in the army.---For the diſcharge of his office, he has a lieutenant, a clerk, and a troop of *provoſts* or marſhals men on horſeback; as alſo an executioner.

There is alſo a *provoſt marſhal* in the navy, who hath charge of the priſoners taken at ſea.

The French have a *provoſt general of the marines*, who is to proſecute the marines when guilty of any crime, and make report thereof to the council of war; beſides a *marine provoſt* in every veſſel, who is a kind of gaoler, and takes the priſoners into his care, and keeps the veſſel clean.

Provosts *of the marſhals* are a kind of lieutenants of the marſhals of France, eſtabliſhed for the ſecurity of the country againſt rogues, vagabonds, and deſerters.

They take cognizance of royal cauſes; which, for this reaſon, are called *prevotal cauſes:* ſuch are all crimes committed by ſtrollers, or people without any fixed abode; robberies on the high-way, infraction of ſafeguard, burnings, &c. They pronounce *en dernier reſſort*.

There are 180 ſeats of theſe *provoſts* in France: their chief juriſdiction regards highwaymen, foot-pads, houſe-breakers, &c. They correſpond to the officers eſtabliſhed by Auguſtus and Tiberius, called, as Cujas tells us, *latrunculatores*, to ſhew that their office was to purſue thieves.

Provost *of the mint* is a particular judge inſtituted for the apprehending and proſecuting of falſe coiners. See Mint.

PROW*, Prora, in navigation, denotes the head or forepart of a ſhip, being that which is oppoſite to the *poop* or ſtern. See Poop and Stern.

> * The word is formed from the Latin *prora*, which ſignifies the ſame thing.

In the front hereof is the beak that cuts the water to make way for the veſſel. See Cut-water.

The *prow* is lower than the poop, and contains fewer ſtories or decks. On the beak is uſually ſome figure or hieroglyphic, which often gives name to the veſſel.

Prow, in ſtrictneſs, is only that part of the forecaſtle which is aloof, and not in the hold, particularly that between the chaſe and the loof. See Ship and Forecastle.

The ancients repreſented beaks of birds in the *prows* of their ſhips, whence they were called *roſtra*. See Rostra.

PROXENETA*, or Proxenetes, a kind of bröker or agent, who tranſacts between two perſons. See Broker and Agent.

> * The word is Greek, προξενητης, *q. d. conciliator*, or *pararius*, reconciler or mediator. The Latins give them a more honourable appellation, calling them *interpreters*. See Interpreter.

The term *proxeneta* is chiefly applied to thoſe who negotiate offices, marriages, &c. See Proxy.

The Roman law grants the *proxenetæ* an action for recovery of their hire or wages.

Theſe made a kind of office or college in Rome: to them the fathers addreſſed themſelves, to ſound and examine the inclinations of the young men they intended for their daughters.

A commentator on the Digeſt accounts it a great defect in the modern policy, that there are not now any of theſe *proxenetæ* or match-makers eſtabliſhed by public authority.

PROXIMITY, Proximitas, denotes the relation of nearneſs either in reſpect of place, or blood, or alliance. See Venue, Consanguinity, &c.

PROXY, Procurator, a deputy, or perſon who officiates in the room of another. See Procurator.

Princes are uſually married by *proxies* or repreſentatives.

Proxy, Procuracy, among civilians, alſo denotes a commiſſion given to a proctor by a client to manage a cauſe in his behalf. See Proctor.

PRUINA, in phyſiology, *hoar-froſt*, a concretion of the dew made by the violence of the external cold. See Dew and Freezing.

PRUNELLA, a name given by ſome phyſicians to a drineſs of the tongue and throat, happening in continued fevers, eſpecially acute ones, accompanied with a heat and redneſs of the throat, and a ſcurf covering the tongue; ſometimes whitiſh, and ſometimes blackiſh. See Fever.

Some alſo give the name *prunella* to the quinzy, and others to the aphthæ. See Quinzy and Aphthæ.

Prunellæ *ſal*, in pharmacy, is a preparation of purified ſalt-petre; called alſo *lapis prunellæ*, and *cryſtal mineral*. See Salt-Petre, Crystal, &c.

It is prepared by ſeparating and abſorbing ſome of the more volatile parts of the ſalt-petre, which is done by burning upon it, when melted in a crucible over the fire, about a thirtieth part of its weight of flower of brimſtone.

It is given to cool and provoke urine in fevers and quinzies; though ſome think, that ſalt-petre, purified three or four times, would be a better medicine. See Nitre and Salt-Petre.

The *ſal prunellæ* is frequently adulterated with alum; the deceit is known by its whiteneſs and glittering.

PRUNES*, Pruna, are plums dried and baked in an oven, or in the ſun.

* The word comes from the Latin, *prunum*, plum.

The *prunes* chiefly uſed among us are black and large, brought from Bourdeaux: great quantities are uſed by the Engliſh and Dutch.--The juice of *prunes* is eſteemed laxative.

PRUNIFEROUS *trees*, or *ſhrubs*, the *plum-bearing kind*, are thoſe whoſe fruit is pretty large and ſoft, with a ſtone in the middle. See TREE and FRUIT.

In this kind, the flower adheres to the bottom of the baſe of the fruit.

PRUNING, in gardening and agriculture, the operation of lopping or cutting off the ſuperfluous branches of trees; either to diſpoſe them to bear better, to grow higher, or appear more regular. See TREE, *&c.*

Pruning is one of the moſt important branches of the gardeners province, and that whereon the weal or woe of his fruit-trees, as well as the form and regularity of his garden, in great meaſure depends. See GARDEN.

It is ſometimes practiſed purely for the trimming or adjuſting of trees to the eye, by taking away irregular branches; as in box, holly, yew, *&c.*

Sometimes to make the ſtem grow fairer, and riſe higher, by taking off all the large branches ariſing out of it, and thus ſending the ſap, which would otherwiſe be expended by them, to the top of the tree, to nouriſh and prolong the ſame.

But its more ordinary uſe is to render the tree more fertile, and to mend its fruit, by retrenching ſuch uſeleſs branches as might impoveriſh the trunk, and conſume the juice neceſſary to nouriſh the branches that bear. See VEGETATION.

Pruning is an annual operation; the amputation is uſually made ſlopping, ſometimes ſtump-wiſe. Its beſt ſeaſon is about the end of February, though it may be begun as ſoon as the leaves are off, *viz.* in November, and continued to the time freſh leaves come on, *viz.* in April.

As the gardener has uſually three kinds of trees to manage, *viz.* ſome too weak, others too ſtrong, and others in a juſt plight, he will find *pruning work* through all that ſpace; it being proper to *prune* ſome ſooner, and ſome later. The weaker and more languiſhing a tree is, the ſooner it ought to be *pruned*, to eaſe it of its offenſive branches; and the more vigorous the tree is, the longer may the *pruning* be deferred. See PINCHING and BRANCH.

For PRUNING *a tree of the firſt year*, *i. e.* a tree planted the year before: if it have only ſhot one fine branch from the middle of the ſtem, it muſt be cut to that branch, and the branch ſhortened to four or five eyes or buds; the effect of which is, that the next year there will be at leaſt two fine branches oppoſite to each other.

If the tree produce two fine branches well-placed, with weak ones among them, all required is to ſhorten them equally, to the compaſs of five or ſix inches in length; care, however, being taken, that the two laſt eyes or buds of the extremes of the branches thus ſhortened, look on the right and left to the two bare ſides, that each may bring forth at leaſt two new ones, and the four be ſo well-placed, that they may be all preſerved. If one of the two branches be much lower than the other, or both on one ſide, or the like, only one is to be preſerved: and that the fitteſt to begin a fine figure; the other to be cut off ſo cloſe, as that it may never be able to produce thick ones in the ſame place.---If a tree have put forth three or four branches, all in the extremity, or a little beneath, they muſt be all *pruned* by the ſame laws as the two abovementioned: if they be equally thick, they are to be uſed alike; if ſome of them be ſmaller than the reſt, they muſt only be *pruned* with a proſpect of getting a ſingle branch each, taking care to have it on that ſide which ſhall be found empty; in order to which they ſhould be ſhortened to an eye or bud that looks on that ſide; and the ſame care to be taken in the larger, in order to begin to fill up the better: if theſe fine branches ſhoot a little below the extremity, it is but ſhortening the ſtem to them: on the contrary, if the branches be moſt of them ill ones, two at leaſt, if poſſible, are to be preſerved, and *pruned* in the ſame manner as the two fine ones above. Good weak branches are to be carefully preſerved for fruit; only cutting them a little at the extremity, when they appear too weak for their length, not failing to take away all the ſapleſs branches.--If the tree have produced five, ſix, or ſeven branches, it is ſufficient to preſerve three or four of the beſt; the reſt to be cut quite off, at leaſt if they be thick; for if they be weak, *i. e.* fit for fruit branches, they ſhould be kept till they have performed what they are capable of doing; and if among the great ones there happen to be many ſmall ones, two or three of the beſt only to be preſerved, pinching off the ends of the longeſt.

PRUNING *of a tree of the ſecond year.*---If, having put out two fine wood-branches, and one or two ſmall ones, for fruit the firſt year, the ſap have altered its courſe in the ſecond year, from the thick branches to the ſmall ones, ſo that the ſmall become wood, and the large fruit-branches, the productions of the former muſt be quite cut off to the mother-branch, and thoſe of the latter uſed as fruit-branches.--If a tree, from the firſt year's *pruning*, have produced four or five branches, or more, it muſt needs be very vigorous; for which reaſon it may be ſometimes adviſeable to preſerve thoſe branches; even though they be not neceſſary to the figure of the tree, but only to conſume part of the ſap, which might otherwiſe be prejudicial to the fruit-branches. Theſe ſuperfluous branches may be left long, without much ill conſequence; but thoſe eſſential to the beauty of the tree, muſt be all *pruned* a little longer than thoſe of the preceding year, *i. e.* about two, or at moſt three eyes, or a good foot. This is making an advantage of the figure of the tree, which, without this, would not yield fruit in a long time, the redundant ſap converting all the eyes into wood-branches, which, with a more ſpare diet, would have been fruit-branches. In theſe vigorous trees, ſome branches cut ſtump-wiſe are to be left on, and even ſome thick ones, though of falſe wood, eſpecially where there are any neceſſary to the form of the tree, to employ the exceſs of ſap, and prevent its doing miſchief. Still more to aſſuage its violence, it may be neceſſary to preſerve many long, good, weak branches, when placed ſo as to occaſion no confuſion; and even on the thick branches, a good number of outlets for the ſap to range in.---Be it a general rule rather to ſpare the lower branches, and cut off the higher, than the contrary: by this means the tree ſpreads more eaſily to the bottom of the wall.

PRUNING *of a tree of the third year.*---In a tree that has been planted three years, and *pruned* twice, if it be vigorous, as many old branches as poſſible are to be preſerved, eſpecially for fruit: if it be weak, it muſt be eaſed of the burden of old branches, as well thoſe for fruit as wood. It muſt likewiſe be cut ſhort, to enable it to ſhoot out new ones; which if it cannot do with vigour, let it be pulled up, and a new one, with freſh earth, planted in its place.

In all *pruning*, proviſion is to be made for branches to proceed from thoſe now under the *pruning-knife*, to prepare ſuch as may be proper for the form; with this aſſurance, that when the high branch is taken down from over the lower, this latter being reinforced with the ſap that would have gone to the former, will certainly produce more branches, than it would have done without ſuch reinforcement.

General rules of PRUNING *fruit-trees.*--1. The more the branches ſhoot horizontally, the apter and better diſpoſed the tree is to bear fruit; conſequently the more upright the branches, the more inclined is the tree to increaſe in wood, and the leſs in fruit.

Hence, ever take care to keep the middle of a tree from wood or thick branches; and as thoſe increaſe and grow upon you, cut them out intirely; for there is no danger but the place will be ſoon filled with better and more fruitful wood.

In dwarfs you are to *prune* all open, and clear of wood, leaving none but horizontal branches: and in wall-trees, if you do but furniſh your walls with horizontal branches, nature will provide for the middle. Chuſe therefore ſuch ſhoots as are not vigorous, to furniſh bearing branches.

2. Take care the tree be not left over-full of wood, not even of bearing branches; as is frequently ſeen in the management of peaches, nectarines, and cherries.

Nature cannot ſupply them all with juice enough; whence none will be ſupplied well: the conſequence of which is, that either the bloſſoms will fall off, or the fruit dwindle. It is certain, a multitude of branches crowding on one another, produces neither ſo good, nor ſo much fruit as where there is a convenient ſpace, beſide the diſagreeable effect of croſſing one another.

3. All ſtrong and vigorous branches are to be left longer on the ſame tree than weak and feeble ones; conſequently the branches of a ſickly tree muſt be *pruned* ſhorter, and fewer in number, than thoſe of a ſtrong healthful tree.

4. All branches ſhooting directly forward from trees that grow againſt a wall, are to be *pruned* cloſe to the branch whence they ſpring, *&c.*

5. When a branch well-placed either againſt a wall, or in a dwarf, has ſhot ſome falſe wood, neither fit for the figure nor the fruit, *prune* it off within the thickneſs of a crown piece, or ſlopingly; though this is beſt *pinched* off in the beginning of ſummer.

6. Cut off all branches ariſing from hard knobs, whereon pear-ſtalks grew; or from ſhort ſtrait branches like ſpurs.

7. If a tree, in its years, have produced branches of moderate vigour, and afterwards puts forth ſtrong ones, well-placed, though of falſe wood; the latter may be uſed as the foundation of the figure, and the other kept a time for bearing fruit.

8. When an old tree ſhoots ſtronger branches towards the bottom than the top, and the top is in ill caſe; cut it off, and form a new figure from the lower ones. If the top be vigorous, cut off the lower ones, unleſs well-placed.

9. The order of nature in the production of roots and branches, is, that a branch is always leſs than that out of which it ſhoots: if this order be inverted, uſe them as falſe wood.

10. Regard to be always had to the effects of former *pruning*, in order to correct its defects, or continue its beauties.

11. In vigorous trees, the weaker branches are the fruit-bearers. In weak trees, the ſtronger chiefly; therefore, in the latter, *prune* off the feeble and ſmall.

12. In vigorous trees, three good branches may put forth at one eye or bud: in which caſe the two ſide branches are ge-

nerally to be preſerved, and the middlemoſt cut off in May or June.

13. It is difficult to ſtrengthen a weak branch without cutting off others above it: ſometimes it can ſcarce be done without cutting off the end of the branch it ſhoots out of.

14. The *pruning* of vigorous peach-trees to be deferred till they are ready to bloſſom, the better to know which are likely to bear fruit.

15. Fruit-buds next the ends of branches are commonly thicker and better fed than others. In weak trees, therefore, it may be beſt to *prune* them early, that the ſap may not waſte itſelf in ſuch parts as are to be retrenched.

16. The farther a weak branch is from the trunk, the leſs nouriſhment it receives; and therefore the more it is to be ſhortened: but thick branches, the more diſtant they are from the heart, the more they receive; and are therefore to be removed, that the vigour may extend itſelf to the middle or lower part.

17. A branch for wood muſt never be *pruned* without eſpecial occaſion; as where it annoys others.

18. If an old well-liking tree be diſordered with falſe wood, through ill *pruning*, or want of *pruning*; take it lower, by cutting off a branch or two yearly, till it be ſufficiently reduced. Some trees put forth ſo vigorouſly, that they cannot be reduced to compaſs in one year; but muſt be allowed to extend themſelves, otherwiſe they will produce falſe wood.

19. All trees have a predominant branch or two, if not more; yet the more equably the vigour is divided, the better: where it runs much on one ſide, it is faulty.

20. The buds of all ſtone-fruit frequently form themſelves the ſame year in which the branch they grow on is formed: the ſame holds of pears and apples; though it is, generally, at leaſt two or three years ere the latter come to perfection.

21. All ſhoots put forth in autumn, are to be *pruned* off, as naught: the ſame may be ſaid of all ſapleſs branches.

22. When a tree puts forth much ſtronger ſhoots on one ſide than the other, a great part of the ſtrong ones muſt be cut off cloſe to the body, or ſome of them ſtump-wiſe.

23. In all trees, leſs length to be allowed the weak than ſtrong branches.

24. Upper branches to be cut off cloſe to others, that they may heal over: lower branches are to be cut ſloping, or at a little diſtance, that new ones may grow out of them.

25. If a young crooked tree produce a fine branch beneath the crook, cut the head off cloſe to the branch.

26. Though five, ſix, or ſeven inches, be the ordinary lengths wood-branches are left at; yet muſt this be varied on occaſion of the vigour or weakneſs of the tree, thickneſs or ſmallneſs of the branch, the fullneſs or vacuity of the place, *&c.*

27. Be careful not to prune many thick branches ſtanding over weak ones; leſt the ſap, which fed the larger, flow ſo plentifully into the leſs, as to occaſion them to put forth much ill wood and ſuckers.

28. Branches ſhot from the ends of others are uſually good wood; ſometimes it happens otherwiſe, and then they muſt be *pruned*.

As to the grand *yearly prunings*:---Fruit-branches being of ſhort continuance, and periſhing the firſt year wherein they produce fruit, are to be cut off, unleſs they put forth ſhoots for bloſſoms the ſucceeding year. In the ſecond *pruning*, about the middle of May, where the fruit is ſo cloſe as to be like to obſtruct each other, ſome of them and their branches to be taken off, as muſt alſo the multitude of young ſhoots that cauſe confuſion. Branches more luxurious than others to be cut clear off. To preſerve old trees, they muſt be diſburdened by leaving few branches for wood on them, and thoſe to be ſhortened to five or ſix inches; and very few weak ones, and none dry, and nigh waſted.

Pruning *of foreſt or timber trees*.---For large trees, it is beſt not to prune them at all; yet if there be an abſolute neceſſity for it, avoid taking off large boughs as much as poſſible; and obſerve the following rules.

1. If the bough be ſmall, cut it ſmooth and cloſe, that the bark may ſoon cover it; and ſloping, that the water may run off.

2. If the branch be large, and the tree old, cut it off at three or four foot from the ſtem; or where any young ſhoots are found iſſuing out of it.

3. Boughs growing upright, not to be cut croſs over, but ſloping upwards. In boughs leaning from the head, the ſlope to be on the lower ſide.

4. If the tree grow crooked, cut it off at the crook, ſloping upwards; and nurſe up one of the moſt promiſing ſhoots for a new ſtem. Indeed, in trees that have great piths, as the aſh, walnut, *&c.* we muſt be cautious of cutting off the heads.

5. If the tree grow top-heavy, its head muſt be lightened; and that rather by thinning the boughs that grow out of the main branches, than by cutting off the main branches themſelves. But if you would have them ſpring, it is beſt done by rubbing off the buds, as they put out in the ſpring, and ſhrouding up the ſide-ſhoots.

6. If the ſide-bough ſtill break out, and the top be able to ſuſtain itſelf, give the boughs that put forth in ſpring a *pruning* after Midſummer; cutting them cloſe. This will cauſe the bark to cover and kill them, ſo as never to ſhoot out again; and is the only method to make a tree grow with a fine, ſtrait, handſome body. See Shrowding.

Pruning *of vines*. See the article Vine.

PRURITUS, a painful, pleaſurable kind of ſenſation of the ſkin, popularly called *itching*; which is ſuppoſed to ariſe hence, that the extremities of the capillary veins, being obſtructed, cannot take up the redundant blood of the members, to carry it back again to the heart; whence, as there is a freſh ſtock of blood continually ſent into the part by the inceſſant pulſation of the heart, the fibres become preternaturally ſtretched or diſtended.---And hence the uſually titillating ſenſe of itching.

PRYTANEUM, Πρυτανεῖον, in antiquity, a conſiderable building in Athens, where the council of *prytanes* aſſembled, and where thoſe who had rendered any ſignal ſervices to the commonwealth, were maintained at the public expence. See Prytanis.

PRYTANIS, or Prytanes, in antiquity, the firſt magiſtrate in moſt of the cities of Greece.

At Athens there were fifty *prytanes*; at Corinth there was but one, who was the ſame with what the *archon* was at Athens. See Archon.

The *prytanes* of Athens were the ſenators who compoſed the grand council that governed the ſtate; and correſponded to what we now call, *the ſtates general of the United Provinces*.

Fifty of theſe were choſe each year out of each tribe; and to theſe were nominated fifty more, to ſupply the places of the former, in caſe of death or male-adminiſtration.

The tribes took the government by turns, each after other, for the ſpace of thirty-five days.---This was an eſtabliſhment of Solon. Scaliger is miſtaken, when he ſays the tribes took their turns every day. See Tribe.

All the fifty *prytanes* of the tribe did not govern together during thoſe five weeks; but in companies, ten at a time, choſen by lot; ſeven days each company: after which another tribe came into play, and had its five weeks after the ſame manner.

PSALM *, ψαλμος, a divine ſong, or hymn. See Song and Hymn.

* The word is formed from the Greek ψαλλω, *I ſing*.

The denomination *pſalm* is now appropriated to the cl. *pſalms* of David; and the name *canticle*, or *ſong*, given to other pieces of the ſame kind, compoſed by other prophets and patriarchs.

The ancients, as is obſerved by St. Auguſtin, made this difference between a *canticle* or ſong, and a *pſalm*, that the former was ſung ſolitarily, or by the voice alone, but the latter accompanied with a muſical inſtrument.

The *pſalms*, in the ancient editions, are divided into five books; nor is David's name found at the head of more than ſeventy-three of them; though ſome, and among the reſt, St. Auguſtin and St. Chryſoſtom, attribute all the hundred and fifty to him without exception.

The Jews, however, were always of another ſentiment; and it is certain there are ſome few, at leaſt, that are not his.---St. Jerom obſerves, among the number, ſeveral that were compoſed long time after David. Du Pin adds, that it is difficult to aſcertain the authors; all we know of the book is, that it is a collection of ſongs, made by Eſdras.

Gradual pſalms were thoſe anciently ſung on the ſteps of the temple.---The *penitential pſalms* were not formerly the ſame with thoſe now called by that name. See Gradual, *&c.*

PSALMODY, ψαλμωδια, the art of ſinging pſalms. See Psalm and Singing.

PSALTER, ψαλτηριον, the book or collection of pſalms, aſcribed to David. See Psalm.

There are a multitude of editions of the *pſalter*.---Auguſtin Juſtinian, a Dominican, and biſhop of Nebo, publiſhed a *polyglot pſalter* at Genoa, 1516. Contarinus publiſhed the *pſalter* in Hebrew, Greek, Chaldee, and Arabic, with Latin notes and gloſſes. See Polyglot.

Psalter is alſo uſed among religious for a large chaplet or roſary, conſiſting of 150 beads; the number of pſalms in the *pſalter*.

St. Dominic is ſaid to have been the inventor of the *pſalter*. See Chaplet and Rosary.

PSALTERY, Psalterion, alſo denotes a muſical inſtrument much in uſe among the ancient Hebrews, who called it *nebel*.

We know but little of the preciſe form of the ancient *pſaltery*: that now in uſe, is a flat inſtrument, in form of a pezium, or a triangle truncated at-top.

It is ſtrung with thirteen wire chords, ſet to uniſon or octave, and mounted on two bridges on the two ſides.---It is ſtruck with a *plectrum* or little iron rod, or ſometimes a crooked ſtick; whence it is uſually ranked among the inſtruments of percuſſion.

Its cheſt, or body, is like that of a ſpinet. It has its name *à pſallendo*; ſome call it *nablum*, or *nablium*.

Papias alſo gives the name *pſaltery* to a kind of flute, uſed in churches, to accompany the ſinging; in Latin, *ſambucus*.

PSAMMISMUS *, ψαμμισμος, in medicine, a term ſometimes uſed for a bath of dry and warm ſand, to dry the feet of dropſical perſons upon. See Bath, *&c.*

* The word is formed from the Greek ψαμμος, *ſand* or *gravel*.

PSATYRIANS, Psatyriani, a ſect of Arians, who in the council of Antioch, held in the year 360, maintained that the Son was not like the Father, as to will; that he was taken from nothing, or made of nothing; and that in God, generation was not to be diſtinguiſhed from creation. See Arian.

PSEUDO *, a term, or particle, uſed in the compoſition of divers Latin and Engliſh words; in the ſenſe of *falſe* or *ſpurious.*

* The word is formed from the Greek ψευδος, *lye, falſhood,* of ψευδω, *decipio, fallo,* I deceive.

We ſay a *pſeudo-martyr, q. d.* a falſe witneſs; *pſeudo-prophet, pſeudo-apoſtle, pſeudo-chriſt,* &c.

PSEUDO-DIPTERE, ψευδοδιπτερος, in the ancient architecture, a temple with eight columns in front, and a ſingle row of columns all around. See TEMPLE.

The word ſignifies *falſe* or *imperfect diptere*; and is uſed to diſtinguiſh this from the *diptere*; which had two rows of columns all around. See DIPTERE.

PSEUDONYMUS *, ψευδωνυμος, a name given by the critics to thoſe authors who publiſh books under falſe or feigned names.---Much as the name *cryptonymus* is given to thoſe who publiſh under ſecret and diſguiſed names; and *anonymus,* to thoſe who publiſh without any names at all. See ANONYMOUS.

* The word is formed from the Greek ψευδη, *lye*; and ονομα, *name.*

The apoſtolical conſtitutions, the greater epiſtles of St. Ignatius, *&c.* are uſually ſuppoſed to be *pſeudonymous.* See CONSTITUTIONS.

PSEUDO-STELLA, in aſtronomy, any kind of meteor or phænomenon, newly appearing in the heavens, and reſembling a ſtar. See PHÆNOMENON, METEOR, *&c.*

PSILOTHRON *, ψιλωθρον, in medicine, *depilatory*; an external form of medicine proper to make the hair fall. See DEPILATORY.

* The word is formed from the Greek ψιλοω, *deglabro,* I make bald, or bare; and θριξ, *hair.*

Such are ſtrong lixiviums, quick-lime, ants eggs, ſandarac, orpiment, and arſenic.

PSOAS *magnus,* or *lumbaris,* in anatomy, a round, hard, fleſhy, muſcle, which ariſes from the internal ſide of the tranſverſe proceſſes of the vertebræ of the loins, within the abdomen; and deſcending upon part of the internal ſide of the ilium, is inſerted into the lower part of the little trochanter.---It is the firſt of the flexors of the thigh. See FLEXOR and THIGH.

PSOAS *parvus,* ariſes fleſhy from the inſide of the upper vertebræ of the loins, and hath a thin and broad tendon, which embraces the *pſoas magnus*; and which is inſerted into the os innominatum, where the os pubis and ilium join together.---This, tho' ordinarily reckoned among the muſcles of the thigh, properly belongs to the lower venter.

PSORA, ψωρα, in medicine, a cutaneous diſeaſe, called by the Latins, *ſcabies*; by the Engliſh, *itch.* See ITCH.

The *pſora* is deſcribed by Celſus as a reddiſh hardneſs and roughneſs of the ſkin, from an eruption of puſtules thereon; ſome drier, other moiſter; and ouzing out a ſanious matter, which occaſions a continual *pruritus* or itching.

Theſe eruptions are moſt frequent about the junctures of the limbs, and between the fingers: in ſome they ſpread over the whole body; in others they ſoon ceaſe; and in ſome return at certain ſeaſons of the year.

In youth, this diſeaſe frequently prevents others, or cures them. ---It ſometimes degenerates into a leproſy. See LEPROSY.

The *dry* is much more difficulty cured than the *moiſt,* which ariſes from a diſorder in the humours or viſcera. Willis derives the diſeaſe from a ſharp, ſaline humour, occaſioning an itching.

Some of the later phyſicians will have it to conſiſt in a number of little animals preying on the ſkin: and hence it is that it becomes ſo very contagious.---Willis obſerves, that in this reſpect it is ſecond to no other diſeaſe but the plague, which many conjecture to ariſe in like manner from animalcules.

For the cure, Borelli recommends a lotion of black ſoap, to poor people, *&c.* But the ſoap to be ſoon waſhed off, leſt it excoriate the ſkin. Where the diſeaſe is inveterate, recourſe is had to ſalivation. See SALIVATION.

PSORICA, ψωρικα, medicines good againſt the itch, ſcabs, and other cutaneous eruptions, eſpecially of the eye-lids.

PSOROPHTHALMIA *, ψωροφθαλμια, a ſcurfy eruption of the eye-brows, attended with a pruritus, or itching of the part.

* The word is formed from ψωρα, *itch*; and οφθαλμος, *eye.*

PSYCHOLOGY *, ψυχολογια, the doctrine of the ſoul. See SOUL.

* The word is formed from the Greek ψυχη, *ſoul*; and λογος, *diſcourſe.*

Anthropology, or the ſcience which conſiders man, conſiſts of two parts: the firſt treating of the body, and the parts belonging thereto, called *anatomy*: and the ſecond of the ſoul, called *pſychology.* See ANTHROPOLOGY, *&c.*

PSYCHOMANCY *, a kind of magic, or divination, performed by raiſing the ſouls of perſons deceaſed. See DIVINATION.

* The word is formed of ψυχη, *ſoul*; and μαντεια, *divination.*

PSYCHROMETER *, an inſtrument for meaſuring the degree of coldneſs of the air; more uſually called *thermometer.* See THERMOMETER.

* The word is formed from the Greek ψυχρος, *cold*; and μετρον, *meaſure.*

PTARMICA * πταρμικα, medicines proper to promote ſneezing; more uſually called *errhines* and *ſternutatories.* See STERNUTATORY.

* The word is formed of the Greek, πταρμος, *ſternutamentum,* ſneezing.

PTERYGIUM *, πτερυγιον, in medicine, a diſeaſe of the eye, much of the ſame nature with what the Latins call *unguis,* nail; and ſometimes, though improperly, *pannus*; web. See UNGUIS and PANNUS.

* The word is formed by diminution from the Greek πτερυξ, *ala,* a wing; *q. d.* a little wing.

The cure is much the ſame as that of the *ophthalmia.* See OPHTHALMIA.

PTERYGIUM is alſo the name given to a *whitloe,* when ſeated at the root of the nail. See PANARIS.

PTERYGOIDES * πτερυγοειδης, in anatomy, two apophyſes of the os ſphenoides; ſo called from their reſembling the wings of a bat. See SPHENOIDES.

* From the Greek πτερυξ, πτερυγος, wing, and ειδος, form.

PTERYGOIDEUS *internus,* is a muſcle of the jaw, which ariſes from the internal part of the *pterigoides* proceſs, and deſcends to be inſerted into the inferior part of the internal ſide of the lower jaw, near its angle.---When it acts, it draws the jaw to one ſide.

PTERYGOIDEUS *externus,* is a muſcle which ariſes from the external part of the ſame proceſs, and goes backward to be inſerted between the condyloid proceſs, and the corone, on the inſide of the lower jaw. This pulls the lower jaw forwards, and makes it ſhoot beyond the upper.

PTEROPHORI, πτεροφοροι, in antiquity, a name given to ſuch of the Roman couriers as brought tidings of any declaration of war, a battle loſt, or any miſhap befallen the Roman armies.

They were ſo called, becauſe they bore wings on the points of their pikes: from the Greek πτερον, wing, and φερω, I bear.

PTERYGOPHARYNGÆUS, a pair of muſcles ariſing from the proceſſus *pterygoides,* where the tendon of the *pterygoſtaphylinus* is reflected.---Some fleſhy fibres of it do likewiſe ariſe from the upper jaw-bone, behind the fartheſt grinder, and ſome from the ſides of the tongue, and os hyoides.

From all theſe places its fleſhy fibres paſs ſemicircularly, and meet with thoſe of the oppoſite ſide in the middle line on the back ſide of the pharynx externally.

In the inner ſurface of the fauces is another order of fleſhy fibres, decuſſating each other at acute angles.---They ariſe both from the ſides of the uvula, and from the root of the cartilage; and deſcend obliquely to their inſertions in the glandulous membrane of the pharynx.

This muſcle ſerves both to conſtringe the pharynx, and to compreſs the tonſils, and force out the mucus; whence its uſe in hawking.

The various originations of the ſeveral parts of this muſcle have cauſed its being generally divided into ſeveral muſcles.---Thus Valſalva calls that part ſpringing from the tongue, the *gloſſopharyngæus*; that immediately below it, the *hyopharyngæus.*---Hence, in like manner, come the *cephalopharyngæus, ſphenopharyngæus,* &c.

PTERYGOSTAPHYLINUS *, in anatomy, the internal muſcle of the uvula; called by Valſalva, *novus tubæ muſculus*; as being unknown to the ancient anatomiſts.

* The word is formed from the Greek πτερον, wing, and σταφυλη, *uvula.*

It ariſes fleſhy, near the ſphenoſtaphylinus, from the os petroſum, where the tube from the palate enters that, near an acute proceſs of the ſphenoides; and aſcending to the proceſſus *pterygoides,* becomes a broad flat tendon, which expands itſelf on the fore-part of the uvula.

Some of the tendinous fibres aſcend to the lower edge of the os palati, others deſcend down the ſides of the fauces; the middle ſeries either unites with thoſe of the other ſide, or is loſt in two fleſhy bodies that compoſe the uvula. See UVULA.

This muſcle, with its partner, draws the uvula upwards and forwards, and alſo raiſes the amygdalæ.

PTISAN, PTISANA, πτισανη, in medicine, a cooling potion, uſually made of barley boiled in water, and ſweetened with liquorice, *&c.*

To theſe are ſometimes added the herb quich-graſs, and ſena, to render it laxative.---Moſt of the decoctions of phyſicians are in *ptiſans.* See DECOCTION.---Feveriſh patients are prohibited wine, *&c.* and reduced to *ptiſans.*

PTOLEMAIC *ſyſtem,* or *hypotheſis,* the order or diſpoſition of the heavens and heavenly bodies, wherein the earth is ſuppoſed to be at reſt, in the centre, and the heavens to revolve round it, from eaſt to weſt, carrying with them the ſun, planets, and fixed ſtars, each in their reſpective ſpheres. See SUN, EARTH, PLANET, *&c.*

This hypotheſis took its name from Ptolemy, the great Alexandrian aſtronomer, becauſe maintained and illuſtrated by him: not that it was his invention, for it was much older, as having been held by Ariſtotle, Hipparchus, *&c.* See it further illuſtrated under the article SYSTEM.

PTOLEMAIC *ſphere.* See the article SPHERE.

PTOLEMAITES, a branch of the ancient Gnoſtics, ſo called from their leader Ptolemy, a man of conſiderable learning, who improved greatly on the ſyſtem of the Gnoſtics his predeceſſors, and inlarged it with a number of notions and viſions of his own. See Gnostics.

St. Epiphanius is very ample on the ſubject of the *Ptolemaites*, and produces a letter of Ptolemy to Flora, wherein that heretic lays down his doctrine.---He maintained, that in the law of Moſes there were three things to be conſidered, inaſmuch as it did not all come from the ſame hand; but part of it, ſaid he, from God, part of it from Moſes, and part of it from neither of them, but from the pure traditions of the ancient doctors: on which laſt part it was that he founded his dreams.

PTYALISM*, Ptyalismus, in medicine, a *ſpitting*; or a diſcharge of ſaliva by the glands of the mouth; whether it amount to an abſolute ſalivation, or not. See Salivation.

* The word is Greek πτυαλισμος, formed from πτυω, *ſpuo, exſpuo*, I ſpit.

PUBERTY, Pubertas, in the civil law, a natural majority, or the age wherein a perſon is allowed to contract marriage. See Majority, &c.

Boys arrive at *puberty* at fourteen years of age, maids at twelve. ---*Full puberty* is accounted at eighteen. See Age.

PUBES, a term uſed for the external parts of the *pudenda*, or parts of generation, in both ſexes.

This, from the age of *puberty*, is ſuppoſed to be covered, more or leſs, with hair; whence the name. See Hair.

PUBIS *os*, or *os* Pectinis, in anatomy, a bone of the hip, ſituate in the fore and middle part of the trunk, and making the lower and inner part of the os innominatum. See *tab. anat.* (Splanch.) *fig.* 1. *lit. y.* (oſteol.) *fig.* 3. *n.* 18. *fig.* 7. *n.* 19. *fig.* 12. *lit. d.* See alſo Innominatum *os*.

It is joined to the other part by a cartilage, thicker, but looſer in women than men; in the former whereof, the *os pubis* recedes, or gives a little in time of travel, to make way for the fœtus. See Delivery.

It has a large foramen, which makes room for the paſſage of two muſcles of the thigh, beſides a ſinus, whereby the crural veins and arteries paſs to the thighs.---See *tab. anat.* (Oſteol.) *fig.* 3. *lit. S. S.*

PUBLIC *buildings*. See the article Building.

Public *road*. See the article Road.

Public *notary*. See Notary *public*.

PUBLICAN, Publicanus, among the Romans, a perſon who farmed the impoſts, taxes, and public revenues.

The appellation appears to have been odious to the Jews, &c. apparently, becauſe of the exactions of this ſort of people.

Publicans was alſo a name given to the *Arnoldiſts* and *Albigenſes*.

PUBLICANDIS---*Regula de* publicandis. See Rule.

PUBLICATION, Publicatio, the act of *promulgating*, or making a thing known to the world. See Promulgation.

By the canons, *publication* is to be made of the banns of marriage three times ere the ceremony can be ſolemnized; without eſpecial licence to the contrary. See Marriage, Banns, &c.

PUCELLAGE, Pucellagium, in an ancient manuſcript written puellagium, denotes the ſtate of virginity, or maidenhead. See Virginity.

PUDENDUM denotes a thing to be aſhamed of. Hence, *pudendum virile* ſignifies the penis, and *pudendum muliebre*, the cunnus. See Genital, &c.

PUDICA *planta*. See Sensitive *plant*.

PUERI *alimentarii*. See the article Alimentarii.

PUERILE *ſtyle*. See the article Style.

PUERILITY, in diſcourſe, is by Longinus defined to be a thought, which, by being too far fetched, becomes flat and inſipid.---*Puerility*, he adds, is the common fault of thoſe who affect to ſay nothing but what is brilliant and extraordinary. See Sublime.

PUERORUM *epiſcopus*. See the article Episcopus.

PUGIL*, among phyſicians, &c. a meaſure of flowers, ſeeds, or the like matters, containing ſo much as may be taken up between the thumb and two fore-fingers. See Measure.

* The word comes from the Latin, *pugillus*, little hand.

The *pugil* is eſteemed the eighth part of the manipule or handful; though ſome confound *pugil* with *manipulus*, and uſe it for a handful.---The French frequently call it *pincée*, pinch. See Manipulus.

UISNE*, Puny, in law, a younger-born; or a child born after another. See Mulier.

* The word is pure French, in which language it bears the ſame ſignification.

Puiſne is not only applied to the ſecond, third, fourth, &c. with regard to the firſt; but to the third with regard to the ſecond, &c.---The laſt of all is called abſolutely *cadet*. See Cadet.

In the like ſenſe we ſay a *puiſne judge*, a *puiſne counſellor*. See Judge and Justice.

UKING, a cant word for a nauſea, or diſpoſition to vomit. See Nausea and Vomiting.

UL, in commerce, a general name which the Perſians give to all the copper-moneys current in that empire; particularly the *kabeſqui* and *demi-kabeſqui*. See Money and Coin.

Olearius, who was at Iſpahan in 1637. in the retinue of the ambaſſador of Holſtein, aſſures us, That each city in Perſia has its ſeveral copper-money, marked with its particular badge, which is only current in that diſtrict, and changed every year.---At the beginning of each year, which is at the vernal equinox, all the old money is cried down, and the new appears in its place.

Both the emperor and the ſtate find their intereſt in this frequent change: the firſt, in that he only gives at the rate of 17*d.* ſterling *per* pound for copper; yet delivers it out coined in *kabeſqui* and *demi-kabeſqui* at above 2*s. per* pound: the ſecond, in that the copper-money is by this means leſs abundant, being reduced each year to nearly the ſame quantity.

The ſame author adds, that at the time when he was in Perſia, the *kabeſqui* at Iſpahan were ſtruck with the image of a lion, at Scamachia with a devil, at Kaſchan with a cock, and at Kilan with a fiſh.

PULLEY, in mechanics, one of the five mechanical powers; conſiſting of a little wheel, or rundle, having a chanel around it, and turning on an axis; ſerving, by means of a rope which ſlides in its chanel, for the raiſing of weights. See Mechanical *power*.

The Latins call it *trochlea*; and the ſeamen, when fitted with a rope, a *tackle*.---An aſſemblage of ſeveral *pulleys* is called a *polyſpaſton*.

The moveable wheel or rundle, is called the *ſheave* or *ſhiver*; the axis on which it turns, the *gudgeon*; and the fixed piece of wood or iron, into which it is put, the *block*.

Doctrine of the Pulley.---1°. If a power P, (*tab.* Mechanics, *fig.* 49.) ſuſtain a weight Q, by means of a ſingle *pulley* AB, in ſuch manner as that the line of direction of each is a tangent to the periphery of the rundle; the weight and the power are equal.

Hence, a ſingle *pulley*, if the lines of direction of the power and the weight be tangents to the periphery, neither aſſiſts nor impedes the power, but only changes its direction.

The uſe of the *pulley*, therefore, is, when the vertical direction of a power is to be changed into an horizontal one; or an aſcending direction into a deſcending one; and on the contrary.

This is found a good proviſion for the ſafety of the workmen employed in drawing with the *pulley*.---For ſuppoſe a large weight EF*g* required to be raiſed to a great height by workmen pulling a rope AB: if now the rope ſhould chance to break, the workmens heads underneath would be in immediate danger; but if by means of the *pulley* B, the vertical direction AB be changed into an horizontal one BC, there is no danger from a breaking of the rope.

This change of direction by means of a *pulley* has this further advantage; that if any power can exert more force in one direction than another, we are here able to employ it in its greateſt force.

Thus, *e. gr.* an horſe cannot draw in a vertical direction, but draws with all its advantage in an horizontal one. By changing the vertical draught, therefore, into an horizontal one, an horſe becomes qualified to raiſe a weight.

But the grand uſe of the *pulley* is, where ſeveral of them are combined; thus forming what Vitruvius, and others after him, call *polyſpaſta*; the advantages whereof are, that the machine takes up but little room, is eaſily removed, and raiſes a very great weight with a very moderate force.

2°. If a power applied in E, (*fig.* 50.) according to the line of direction BE, which is a tangent to the *pulley* in B, and parallel to the rope AD, ſuſtain the weight F ſuſpended from the centre of the *pulley* C; the power is ſubduple of the weight.

3°. The effect of *polyſpaſta* is founded on the following theorem:---If a power applied in B, (*fig.* 51.) ſuſtain (by means of a *polyſpaſton*) a weight F, ſo as all the ropes AB, HI, GF, EL, CD, are parallel to each other; the power will be to the weight as unity to the number of ropes, HI, GF, EL, CD, drawn by the weight F; and therefore as unity to the number of *pulleys*, higher and lower, taken together.

Hence the number of *pulleys* and the power being given, it is eaſy to find the weight that will be ſuſtained thereby: or, the number of *pulleys* and weight to be ſuſtained, being given, the power is found: or, the weight and power being given, the number of *pulleys* the *polyſpaſton* is to conſiſt of, is found. See Polyspaston.

4°. If a power move a weight by means of ſeveral *pulleys*; the ſpace paſſed over by the power will be to the ſpace paſſed over by the weight, as the weight to the power.

Hence, the ſmaller the force that ſuſtains a weight by means of *pulleys* is, the ſlower is the weight raiſed: ſo that what is ſaved in force, is ſpent in time.

PULMO, in anatomy. See Lungs.

Pulmo *marinus*, *ſea-lungs*, among naturaliſts, a light ſpongeous body, of a ſhining colour, like cryſtal, intermixed with blue, and uſually of a figure reſembling the human lungs: whence its name.---It is alſo called *urtica marina*, the ſea-nettle.

It ſwims at-top of the water, and is popularly reputed to preſage a ſtorm.---It is commonly ſuppoſed to be only a viſcous excrement of the ſea, hardened by the ſun: but Sir Robert Sibbald and Dr. Merret rank it among the zoophytes.

It ſhines in the night-time, and communicates its luminous property to a ſtick rubbed therewith. Being applied to the ſkin, it raiſes an itching, and takes off the hair.

PULMONARY *veſſels*, in anatomy, are thoſe which carry the blood from the heart to the lungs, and back again from the lungs to the heart.

Theſe are two in number, *viz.* the *pulmonary artery* and *vein*.

Pulmonary *artery*, which the ancients called *vena arterioſa*, the *arterial vein*, is, in reality, an artery, and compoſed, like the reſt, of ſeveral tunics.---It ariſes from the right ventricle of the heart, and divides into two large branches; which ſubdividing into ſeveral ſmaller, diffuſes itſelf throughout the whole ſubſtance of the lungs.---See *tab. anat.* (Angeiol.) *fig.* 8. *lit. dd.* &c. *bb. fig.* 12. *lit. I.* See alſo **Lungs**.

Pulmonary *vein*, which the ancients called *arteria venoſa*, the *venous artery*, conſiſts of four membranes like the other veins. It ariſes in the lungs from an infinity of little branches, which uniting in one trunk, opens into the left ventricle of the heart. ---See *tab. anat.* (Angeiol.) *fig.* 9. *lit. a. b. c. d. d. d.* See alſo **Heart**.

For the office of theſe veſſels, ſee **Circulation**. See alſo **Respiration, Heart, Blood,** *&c.*

Mr. Cowper gives us an inſtance of a polypus in the *pulmonary vein*. See **Polypus**.

Pulmonary *conſumption*, or conſumption of the lungs, is what we properly call a *phthiſis*. See **Phthisis** and **Consumption**.

PULMONUM *anima*. See the article **Anima**.

PULP, Pulpa, in fruits, the *fleſh*; or that ſoft and ſucculent part between the rind and the nucleus or ſeed. See **Fruit**.

The *pulp* of a tree or plant, is the parenchyma, which grows and ſwells by means of a juice, at firſt very coarſe and diſagreeable; at length ſweeter and more delicate. See **Parenchyma**; ſee alſo **Vegetable, Plant,** *&c.*

Pulp, in pharmacy, denotes the ſoft part of fruits, roots, or other bodies, extracted by infuſion or boiling, and paſſed through a ſieve.

Pulp, in medicine, denotes the fatteſt, fulleſt, and moſt ſolid part of the fleſh. See **Flesh**.

Phyſicians apply the word particularly to the upper part of the belly, becauſe fleſhy; and becauſe it is here that they feel animals *, to examine whether they be fat.

* This part the Latins call *pulpa*, from *palpare*, to feel, handle.

PULPIT *, Pulpitum, a term now reſtrained to an elevation, or apartment in a church, whence ſermons are delivered.

* Some authors derive the word from *publicum*, becauſe people are there expoſed to open view.

Pulpitum, among the Romans, was a part of the theatre, called alſo *proſcenium*, or what we now call the *ſtage*, whereon the actors trod.

Tho' ſome ſay it was properly an eminence on the ſtage for the muſic, or a ſuggeſtum whence declamations, *&c.* were ſpoken.

The French uſe the word *pulpit*, *pupitre*, for a reading-deſk in a church, library, or the like: thoſe large ones in churches they properly call *lutrins*.

PULSATION, Pulsatio, in medicine, the motion of the pulſe, or the beating of an artery. See **Pulse**.

PULSE, Pulsus, in the animal œconomy, denotes the beating or throbbing of the heart and arteries. See **Artery**.

The *pulſe* is that reciprocal motion of the heart and arteries, whereby the warm blood, thrown out of the left ventricle of the heart, is ſo impelled into the arteries, to be by them diſtributed throughout the body, as to be perceivable by the finger. See **Blood**.

The pulſation of the arteries ariſes from that of the heart; and has, like it, a ſyſtole and diaſtole; the ſyſtole of the one correſponding to the diaſtole of the other. See **Heart, Systole,** *&c.*

Galen tells us, that Hippocrates was the firſt who obſerved the motion of the *pulſe*.---M. Homberg mentions the caſe of a woman in Paris, who had a *pulſe* in the veins, perfectly like that we commonly obſerve in the arteries. He adds, that he is the firſt author that ever mentioned ſuch a thing. See **Vein**.

The *pulſe* is thus accounted for.---When the left ventricle of the heart contracts, and throws its blood into the great artery; the blood in that artery is not only thruſt forward towards the extremities, but the chanel of the artery is likewiſe dilated; becauſe fluids, when they are preſſed, preſs again towards all ſides, and their preſſure is always perpendicular to the ſides of the containing veſſels: but the coats of the artery, by any ſmall impetus, may be diſtended; therefore, upon the contraction of the heart, the blood from the left ventricle will not only preſs the blood in the artery forwards, but both together will diſtend the ſides of the artery: and thus is a motion of dilatation effected.

And when the impetus of the blood againſt the ſides of the artery ceaſes, that is, when the left ventricle ceaſes to contract, then the ſpiral fibres of the artery, by their natural elaſticity, return again to their former ſtate, and contract the chanel of the artery, till it is again dilated by the ſyſtole of the heart: ſo that here is a motion of contraction effected.

The diaſtole or dilatation of the artery is called its *pulſe*, and the time of the ſpiral fibres returning to their natural ſtate, is the diſtance between two *pulſes*.

This *pulſe* is in all the arteries of the body at the ſame time: for while the blood is thruſt out of the heart into the aorta, that artery being full, the blood muſt be propelled in all the arteries at the ſame time; and becauſe the arteries are conical, and the blood moves from the baſis of the cone to the apex, therefore the blood is continually preſſing againſt the ſides of the veſſels; and conſequently every point of the artery muſt be dilated, at the ſame time that the blood is thrown out of the left ventricle of the heart; and as ſoon as the elaſticity of the ſpiral fibres can overcome the impetus of the blood, the arteries are again contracted.

Thus, two cauſes opearating alternately, the heart and fibres of the arteries keep the blood in a continual motion. See **Circulation**.

The obſervation of the *pulſe* is of the laſt importance to a phyſician; both as it diſcovers the ſtate of the heart, the firſt mover in the animal frame; and as it ſhews the nature, quantity and motion of the blood, that univerſal humour whereon all the reſt depend; and as it indicates the condition of the artery, the primary veſſel of the whole body.

A ſtrong **Pulse**, then, denotes, 1. A great muſcular force of the contracting heart; and, conſequently, the ſtrength of the contracting cauſe; *i. e.* 2. A briſk and copious influx of the nervous juice into the villi of the heart. 3. Plenty of blood. 4. A laudable ſecretion and circulation of humours.

A ſtrong *pulſe*, therefore, is a good preſage, if it be alike throughout the whole body. Indeed it is frequently fallacious in apoplectic, and ſome other diſeaſes, where the paſſage between the heart and the brain is free; and in other parts, eſpecially the viſcera, obſtructed.

A weak **Pulse** denotes the contrary of the former; though this ſometimes deceives, particularly in fat people.

A hard **Pulse** ſignifies, 1. That the membrane of the artery is drier than ordinary: and therefore, 2. Obſtructions in the minute veſicles, whereof the membranes of the artery are woven. 3. That the arteries are full: but, 4. That their capillary extremities are obſtructed with an inflammatory viſcidity. 5. That the blood is very denſe and compact: hence, 6. That the circulations, ſecretions and excretions are depraved.

A ſoft **Pulse** denotes the contrary to all theſe; yet is very fallacious in an acute peripneumonia.

A ſlow **Pulse** denotes, 1. That the contractions of the heart are ſlow; and therefore, 2. A ſlowneſs of the influxes of the nervous juice from the brain into the villi of the heart. 3. That the blood has circulated a great number of times. 4. That all the humours circulate eaſily through their veſſels. Indeed, if the *pulſe* be thus from weakneſs, it is an ill ſign.

A quick **Pulse** denotes the contrary to all theſe; as acrimonies, ſpirits agitated, fevers, phrenſy.

An equable **Pulse** denotes a conſtant tenor of the vital functions; an uneven one the contrary.

An intermitting **Pulse** ſhews life in a ſlippery ſituation.

An intermitting *pulſe* is either owing to a fault in the nervous juice, which flows unequally into the heart; or in the veſſel which tranſmits the blood and humours; or to the humours themſelves.

The cauſe of this diſorder is various, as convulſions, polypus's, cacochymia's, inflammations, want of blood, bony or cartilaginous arteries, *&c.*

A ſtrong, equable, and, at the ſame time, ſlow *pulſe*, is of all others the beſt. A ſtrong and great, or ſtrong and ſlow *pulſe*, together, are good. A weak, ſmall, hard, unequal, intermitting, quick *pulſe*, is of all others the worſt.

Yet in all theſe things, regard muſt be had to the nature of the particular artery, the age, ſex, temperament, affections of the mind, the ſix non-naturals, habit of body, ſeaſon, country, *&c.* all which have an influence on the *pulſe*.

A diminution or total ſuſpenſion of the *pulſe*, is reducible either to a *lipothymia*, where it fails to ſuch degree, as that there is ſcarce ſtrength left to ſuſtain the body. See **Lipothymia**.

Or to a *lipopſychia*, when it is attended with a ſenſible diminution of the natural heat.

Or to a *ſyncope*, when the heart fails, ſo as the heat, motions, ſenſes and all, are almoſt deſtroyed.

Or, laſtly, to an *aſphyxia*, where thoſe are all abſolutely deſtroyed as to ſenſe, and death itſelf ſeems in poſſeſſion. See **Syncope**, *&c.*

Pulse is alſo uſed for the ſtroke with which any medium is affected by the motion of light, ſound, *&c.* through it. See **Light** and **Sound**.

Sir Iſaac Newton demonſtrates, *lib.* 2. *prop.* 48. *Princip.* That the velocities of the *pulſes* in an elaſtic fluid medium (whoſe elaſticity is proportionable to its denſity) are in a ratio compounded of half the ratio of the elaſtic force directly, and half the ratio of the denſity inverſely: ſo that in a medium whoſe elaſticity is equal to its denſity, all *pulſes* will be equally ſwift. See **Medium, Fluid,** *&c.*

Pulse, *legumen*, in botany, is a term applied to thoſe grains or ſeeds which are gathered with the hand; in contradiſtinction to corns, *&c.* which are reaped or mowed.

Pulſe is the ſeed of the leguminous ſpecies of plants. See **Leguminous**.

The word is primarily underſtood of grains that grow in pods; as beans, peas, vetches, *&c.* but is alſo uſed by extenſion for artichoaks, aſparagus, and other kitchen roots and herbs.

PULSION *, *truſion*, the act of driving or impelling a thing forwards. See **Trusion** and **Repulsion**.

* The word comes from *pello*, I drive. See **Attraction** and **Electricity**.

PULTURA *, in our old law-books, denotes a previous demand or examination:---on account of the monks, who, ere they were admitted into the monaſteries, *pulſabant ad fores*, knocked at the doors for ſeveral days.---*Et volo ut ſint quieti de* *de omnibus cauſis, & querelis, & placitis ballivorum & præpoſitorum hundredi, & a* pultura *ſerjanorum*, i. e. from the examination of ſerjeants; *& de rewardo foreſtarum*, i. e. the viſitation of the foreſts.

* The word is formed from the Latin *pulſare*, to knock, to ask.

PULVERIZATION, Pulverizatio, the art of *pulverizing*, or reducing a dry body into a fine powder. See Powder.

This is performed, in friable bodies, by pounding or beating in a mortar; but to *pulverize* malleable ones, other methods muſt be taken. See Friable and Malleable.

To *pulverize* lead, or tin, the method is thus: Rub a round wooden box all over the inſide with chalk; pour a little of the melted metal nimbly into the box, when, ſhutting the lid, and ſhaking the box briſkly, the metal will be reduced into powder. See Trituration.

PULVINATED, Pulvinatus, in the ancient architecture, a term applied to a freeze, which ſwells, or bulges out, in manner of a pillow, *pulvinus*: whence the name. See Freeze.

PULVIS *fulminans*, or the thundering powder. See Fulminans *pulvis*.

Pulvis *patrum*, the Jeſuits powder. See Cortex and Quinaquina.

PUMICE *ſtone*, Pumex, a kind of ſpongeous ſtone, very porous and friable. See Stone.

Naturaliſts are not agreed about the nature and origin of *pumice*.--Some look on it as pieces of rock half-burnt and calcined, caſt up in eruptions of volcanoes, particularly Ætna and Veſuvius, into the ſea; and which, by being there waſhed in the ſalt-water, lays aſide the black colour that the impreſſion of the ſubterranean fires had given it, and becomes whitiſh, or ſometimes only greyiſh, according as it has floated more or leſs in the ſea.

Dr. Woodward conſiders *pumice* as only a ſort of ſlag or cinder; and affirms, it is only found either where forges of metals have anciently been, or near ſome volcano, or burning mountain.

Other authors will have the *pumice* to riſe from the bottom of the ſea; whence they ſuppoſe it detached by ſubterranean fires: and hence account both for its lightneſs and poroſity, and its ſaline taſte; alledging, in confirmation hereof, that *pumice* is frequently found in parts of the ſea far remote from all volcanoes; and adding, that ſeveral parts of the Archipelago are frequently found covered with it, all at once, after a few inward ſhakes and heavings of the bottom of the ſea.

Pumice makes a very conſiderable article in commerce, and is much uſed in the arts and manufactures, to poliſh and ſmooth ſeveral works. See Polishing, *&c.*

Its pieces are of ſeveral ſizes: the parchment-makers and marblers uſe the largeſt and lighteſt;--the curriers the heavieſt and flatteſt;--pewterers the ſmalleſt.

Pliny obſerves, that the ancients made conſiderable uſe of *pumice* in medicine; but it is out of the preſent practice.

PUMMEL. See the article Pommel.

PUMP, Antlia, in hydraulics, a machine formed on the model of a ſyringe, for the raiſing of water. See Syringe.

Vitruvius aſcribes the firſt invention of pumps to Cteſebes the Athenian; whence the Latins call it *machina Cteſebiana*, or *organum Cteſebicum*.

Pumps are diſtinguiſhed into ſeveral kinds, with regard to the ſeveral manners of their acting.--As the

Common, ſometimes called the *ſucking* Pump, which acts by the preſſure of the air, and whereby water is raiſed out of a lower into a higher place, not exceeding thirty-two feet.--Its ſtructure and action may be conceived from what follows:

1. A hollow cylinder, or barrel, ABCD, (*tab. hydroſtat. fig.* 27.) is provided of any ſolid matter, uſually wood, and erected perpendicularly in a ſpring, or other ſource of water; the lower baſe of the cylinder being firſt fitted with a valve I, which opens upwards.

2. A piſton or embolus, called the ſucker, EK, furniſhed with a valve L, which likewiſe opens upwards, is let down the cylinder; and for the more eaſy working upwards and downwards, furniſhed with a lever or handle, as GH. See Embolus and Valve.

Now, the embolus EL, being drawn up from I to L, will leave the ſpace LI void of air, at leaſt in a great meaſure ſo: the preſſure, therefore, of the air on the ſurface of the ſtagnant water prevailing, will, by the laws of hydroſtatics, lift up the valve I, and raiſe it to fill the cavity LI. See Air and Siphon.

If, then, the embolus be again let down, the lower valve being now faſt cloſed with the weight of the incumbent water, upon preſſing the piſton, the water muſt open the upper valve, and get into the embolus, by which it is raiſed up and diſcharged out at the ſpout H.

Thus is the embolus alternately raiſed and depreſſed, *&c. See the theory of the* pump *more accurately laid down under the article* Syringe.

The forcing Pump, which acts by mere impulſe or protruſion, and raiſes water to any height at pleaſure.--Its ſtructure is as follows:--1. A cylinder AB, (*fig.* 28.) is divided by a diaphragm, or tranſverſe piece, CD, fitted with a valve E, opening upwards; and thus immerged in water.

2. An embolus F, furniſhed with a valve G, is ſo fitted to an iron rod IH, moveable on a hinge at each, as that it may be conveniently raiſed and depreſſed by the hand applied in K.

Now, upon depreſſing the embolus F, the water will open the valve G, and thus aſcend into the cavity of the cylinder BC: but upon raiſing it again, the valve G is ſhut, ſo that there is no paſſage for it that way: the valve E therefore becomes opened, and the water mounts through it; and, by repeating the agitation of the embolus, is at length driven out through the ſpout M.

The great difficulty of rectifying this *pump*, when it happens to be out of order, on account of the chief ſeat of action's being under water, makes people decline the uſe of it when they can do well without it, notwithſtanding its advantage of raiſing the water to any given height.

Cteſebes's Pump, the firſt and fineſt of all the kinds, acts both by ſuction and pulſion.--Its ſtructure and action are as follow:--1. A braſs cylinder ABCD, (*fig.* 29.) furniſhed with a valve in L, is placed in the water. 2. In this is fitted the embolus MK, made of green wood, which will not ſwell in the water, and adjuſted to the aperture of the cylinder with a covering of leather; but without any valve. In H is fitted on another tube NH, with a valve that opens upwards in I.

Now, the embolus EK being raiſed, the water opens the valve in L, and riſes into the cavity of the cylinder:--and when the ſame embolus is again depreſſed, the valve I is opened, and the water driven up through the tube HN.

This is the *pump* uſed among the ancients, and that from which both the others are deduced.--Sir S. Morland has endeavoured to increaſe its force by leſſening the friction; which he has done to good effect, inſomuch as to make it work without almoſt any friction at all.

Pumps uſed in ſhips are of ſeveral kinds: as the

Chain Pump, uſed by the Engliſh in large veſſels, is double; one of which riſes as the other falls: this yields a great quantity of water, works eaſily, and is eaſily mended; but takes up a great deal of room, and makes a diſagreeable noiſe.---See *tab. ſhip. fig.* 2. *n.* 59.

Bare Pumps are ſmall ones made of cane, or a piece of wood bored through, uſed in lieu of cocks, *&c.* to *pump* beer or water out of the caſks.

Bur Pumps, called alſo *bildge pumps*, are chiefly uſed by the Dutch, who have them by their ſhips-ſides. In theſe is a long ſtaff, with a bur at the end like a gunner's ſponge, to *pump* up the bildge water. See Bildge.

Air Pump, in pneumatics, is a machine, by means whereof the air is emptied out of veſſels, and a ſort of vacuum produced therein. See Air and Vacuum.--*For the invention, ſtructure and uſe of this pump,* ſee Air *pump*.

PUN, or Punn, a luſus verborum, the wit whereof depends on a reſemblance between the ſounds or ſyllables of two words, which have different, and, perhaps, contrary ſignifications. See Wit.

Such are,--*Cane de cane, cane.*--*Far mole mole molæ.*--*Lex Dei, lux diei.*--All houſes are ale-houſes.--The holy ſtate of matrimony, is become matter of money.---Some mens paradiſe is a pair of dice.---Was it ſo in the time of Noah? Ah no.---*L'ordre tiré du diſordre, ou diſordre ordonné*, is the title of a French book.

Puns, when they come eaſily, and are very ingenious, poignant, and appoſite, are allowed of in converſation, letters, epigrams, madrigals, and the like compoſitions; but are abſolutely baniſhed out of the grave, ſerious, and ſublime, by reaſon they weaken its force, and diminiſh its beauty, which conſiſts in ſomething great and elevated. The Greeks and Romans, it is true, ſometimes indulged themſelves the practice, and uſed *puns* as ornaments in the moſt ſerious diſcourſes: but the more ſevere and philoſophical genius of our age is by no means ſatisfied with ſuch an outſide of wit.--Deviſes, ſymbols, rebus's, motto's, *&c.* are their proper ſphere, where they ſhine to moſt advantage. See Devise, Rebus, *&c.*

PUNCH, an inſtrument of iron or ſteel, uſed in ſeveral arts, for the piercing or ſtamping holes in plates of metals, *&c.* being ſo contrived, as not only to perforate, but to cut out and take away the piece: whence the French call it, *emporte-piece, p. d.* take-off-piece.

The *punch* is a principal inſtrument of the metal-button-makers, wafer-makers, patch-makers, ſhoe-makers, *&c.*---The *punch* of the makers of plate-buttons ſerves to cut and parcel out the plates of gold and ſilver, wherewith they cover their moulds.---It is large, round, four or five inches high, the bottom hollow for about half an inch, well ſteeled, and the edge very ſharp.

To uſe it, they extend the plate of metal on a leaden table or block, and with a pretty heavy hammer ſtrike the head of the *punch*, &c. See Button *making*.

Punch *horſe*, in the manage, is a well-ſet, well-knit horſe, ſhort-backed, and thick-ſhouldered, with a broad neck, and well lined with fleſh.

Punch is alſo a ſort of compound drink frequent in England, and particularly about the maritime parts thereof; though little known elſewhere. See Drink.

Its baſis is ſpring-water, which being rendered cooler, briſker, and more acid, with lemon-juice, and ſweetened again to the palate with fine ſugar, makes what they call *ſherbet*; to which a pro-a proper quantity of a ſpirituous liquor, as brandy, rum, or arrac, being ſuperadded, the liquor commences *punch*.

Several authors condemn the uſe of *punch*, as prejudicial to the brain and nervous ſyſtem.---Dr. Cheyne inſiſts, that there is but one wholſome ingredient in it, which ſome now begin to leave out, *viz.* the mere element. See Water, Brandy, Rum, Arrac, Sugar, *&c.*

The proportions of the ingredients are various; uſually the brandy and water are in equal quantities.---Some, inſtead of lemon-juice, uſe lime-juice, which makes what they call *punch royal*, found leſs liable to affect the head, as well as more grateful to the ſtomach.

Some alſo make *milk punch*, by adding near as much milk to the ſherbet as there is water, which tempers the acrimony of the lemon.--Others prefer *tea punch*, made of green tea inſtead of water, and drank hot.

Laſtly, What they call *punch for chamber-maids* is made without any water, of lime-juice, ſharpened with a little orange and lemon-juice; twice as much white-wine as lime-juice, and four times as much brandy, with ſugar.

PUNCHEON. See the article Punchion.

PUNCHIN, or Punchion, in building. See the article Punchion.

PUNCHION, or Puncheon, a little block, or piece of ſteel, on one end whereof is ſome figure, letter, or mark, engraven either in creux, or in relievo; impreſſions whereof are taken on metal, or ſome other matter, by ſtriking it with a hammer on the end not engraved. See Engraving, *&c.*

There are various kinds of theſe *punchions* uſed in the mechanical arts.---Such, for inſtance, are thoſe of the gold-ſmiths, cutlers, pewterers, *&c.* See Mark.

Punchion, in coining, is a piece of iron ſteeled, whereon the engraver has cut, in relievo, the ſeveral figures, arms, effigy, inſcription, *&c.* that are to be in the matrices wherewith the ſpecies are to be marked. See Matrice, *&c.*

Minters diſtinguiſh three kinds of *punchions*, according to the three kinds of matrices to be made; that of the effigy, that of the croſs or arms, and that of the legend or inſcription.

The firſt includes the whole portrait in relievo.---The ſecond are ſmall, each only containing a piece of the croſs or arms, *v. gr.* a fleur-de-lys, a harp, a coronet, *&c.* by the aſſemblage of all which the intire matrice is formed.--The *punchions* of the legend only contain each a letter, and ſerve equally for the legend on the effigy-ſide, and the croſs-ſide. See Coining.

For the manner of engraving, tempering, and ſtamping theſe punchions, *to form the matrices, ſee* Engraving *on ſteel*, Matrice, *&c.*

Punchions, in printing, are thoſe uſed in ſtamping the matrices, wherein the types of printing characters are caſt. See *letter* Foundery.

Punchion is alſo uſed for ſeveral iron tools of various ſizes and figures, uſed by the engravers in creux on metals.---Seal-gravers particularly uſe a great number, for the ſeveral pieces of arms, *&c.* to be engraven;--and many ſtamp the whole ſeal from a ſingle *punchion*. See Engraving.

Punchion is alſo a common name for all the iron inſtruments uſed by ſtone-cutters, ſculptors, lock-ſmiths, *&c.* for the cutting, inciding, or piercing their ſeveral matters.

Thoſe of ſculptors and ſtatuaries ſerve for the repairing ſtatues, when taken out of the moulds. See Statue, Foundery, *&c.*

The lock-ſmiths uſe the greateſt variety of *punchions*; ſome for piercing hot, others for piercing cold; ſome flat, ſome ſquare, ſome round, others oval; each to pierce holes of its reſpective figure in the ſeveral parts of locks.

Punchion, or Punchin, in carpentry, is a piece of timber placed upright between two poſts, whoſe bearing is too great, ſerving, together with them, to ſuſtain ſome large weight. See Bearing, *&c.*

The *punchion* is uſually lower and ſlighter than either prick-poſts or principal poſts, and is joined by a brace, or the like, of iron. See Post.--Thoſe on each ſide of a door are called *door punchions*. See Door.

Punchion is alſo a piece of timber raiſed upright under the ridge of a building, wherein the little forces, *&c.* are jointed.---Vitruvius calls the *punchion*, *columen*.

Punchion is alſo uſed for the arbour or principal part of a machine, whereon it turns vertically: as that of a crane, *&c.* See Crane.

Punchion is alſo a meaſure for liquids, containing a hogſhead and $\frac{1}{3}$, or 84 gallons, or $\frac{2}{3}$ of a tun. See Measure.

The Paris *punchion* is the ſame with their demi-queue: at Rouen it is three buſhels, *&c.*

PUNCTA *lachrymalia*. See the article Lachrymalia.

PUNCTATED *hyperbola*, in the higher geometry, an hyperbola whoſe oval conjugate is infinitely ſmall, *i. e.* a point. See Curve and Hyperbola.

PUNCTION, or Puncture, in chirurgery, an aperture made in the lower belly, in dropſical perſons, to diſcharge the water; called alſo *paracenteſis*. See Paracentesis and Dropsy.

PUNCTUATION, in grammar, the art of *pointing*; or of dividing a diſcourſe into periods, and members of periods, by points expreſſing the pauſes to be made in the reading thereof. See Sentence, Period, *&c.*

The points uſed herein are four, *viz.* the *period*, *colon*, *ſemicolon*, and *comma*. *See the particular uſe of each under its proper article*, Comma, Colon, Period, and Semi-colon.

Punctuation is a modern art: the ancients were intirely unacquainted with the uſe of our comma's, colons, *&c.* and wrote not only without any diſtinction of members and periods, but alſo without diſtinction of words; which cuſtom, Lipſius obſerves, continued till the hundred and fourth olympiad; during which time the ſenſe alone divided the diſcourſe. See Point.

There is much more difficulty in *pointing*, than people are generally aware of.---In effect, there is ſcarce any thing in the province of the grammarians ſo little fixed and aſcertained as this. The rules uſually laid down are impertinent, dark, and deficient; and the practice, at preſent, perfectly capricious, authors varying not only from one another, but from themſelves too.

Indeed F. Buffier, and ſince him, Mr. Ward, have done ſomething towards a fixed and preciſe ſyſtem of *pointing*, from the reaſon and analogy of things. Their doctrine the reader will find under the articles Comma, Colon, *&c.*

In the general, we ſhall only here obſerve, that the comma is to diſtinguiſh nouns from nouns, verbs from verbs, and ſuch other parts of a period as are not neceſſarily joined together. --The ſemi-colon ſerves to ſuſpend and ſuſtain the period when too long:---the colon, to add ſome new, ſupernumerary reaſon, or conſequence, to what is already ſaid:--and the period, to cloſe the ſenſe and conſtruction, and releaſe the voice.

PUNCTUM, in geometry, *&c.* See the article Point.

In the ſchools they have their

Punctum *terminans*, which is the indiviſible extreme of a line, beyond which no part of the line extends. See Line.

Punctum *continuans*, an indiviſible magnitude between contiguous points of a line, whereby they are connected, and from whence ariſes a continuity. See Continuity.

Punctum *initians*, an indiviſible, from which the line begins.

Punctum *formatum*, or *generatum*, in conics, is a point determined by the interſection of a right line drawn through the vertex of a cone to a point in the plane of the baſe that conſtitutes the conic ſection. See Cone and Conic.

Punctum *ex comparatione* denotes either of the foci of an ellipſis and hyperbola; thus called by Apollonius, becauſe the rectangles under the ſegment of the tranſverſe diameter in the ellipſis, and under that and the diſtance between the vertex and the focus in the hyperbola, are equal to one fourth part of what he calls the *figure* thereof. See Ellipsis and Hyperbola.

Punctum *lineans*, in geometry, is a term uſed by ſome authors for that point of the generating circle of a cycloid, or epicycloid, which in the geneſis produces any part of the cycloidal line. See Cycloid, *&c.*

Punctum *ſaliens*, in anatomy, the firſt rudiments of the heart, in the formation of the fœtus, where a throbbing motion is perceived. See Conception, Heart, and Embryo.

This is eaſily obſerved with a microſcope in a brood-egg, wherein, after conception, we ſee a little ſpeck or cloud; in the middle whereof is a ſpot that appears to beat, or leap a conſiderable time, ere the fœtus be formed ready for hatching. See Egg, Generation, and Embryo.

Punctum *lachrymale*, in anatomy, a little hole in the edge of each eye-lid, opening into a bag called *glandula lachrymalis*. See Lachrymal.

PUNCTURE, Punctura, in chirurgery, *&c.* any wound made by a pointed inſtrument. See Wound.

In phlebotomy, people are ſometimes brought in danger of the loſs of a limb, and even of life, by the *puncture of a tendon*. ---The patient here does not immediately feel any pain; but twelve hours after the operation, complains thereof; not in the puncture itſelf, but in the parts tending towards the armpit.--The wounded part ſwells to the ſize of a filbert, and diſtils an aqueous humour, or ichor, which is the chief diagnoſtic of the *punctura tendinis*. See Tendon.

PUND-BRECH *, or Pound-breach, denotes the illegal taking of cattle out of the pound; either by breaking the pound, picking the lock, or otherwiſe. See Pound.

* The word is compounded of the Saxon, *pund*, pound, and *brech*, fracture, breaking.

--*Si* prund-brech *fiat in curia regis*, *plena* wyta *ſit: alibi quinque mancæ*. Leg. Hen. 1.

PUNISHMENT, a penalty impoſed upon the commiſſion of ſome crime or offence againſt the laws. See Crime.

It is eſſential to the nature of a law, that it import or decree a *puniſhment* to the tranſgreſſors thereof. See Law.

The forms and manners of *puniſhment* are various in various countries and ages, and for various crimes; as treaſon, felony, adultery, parricide, *&c.* See Adultery, *&c.*

Among the Romans, the *pecuniary puniſhments* were the *mulcta* and *confiſcatio*.--The *corporal puniſhments* were *capitis diminutio*, *aquæ & ignis interdictio*, *proſcriptio*, *deportatio*, *relegatio*, *furca*, *crux*, *carcer*, *culeus*, *equuleus*, *ſcalæ gemoniæ*, *damnatio ad gladium*, *ad metallum*, *flagellatio*, *talio*, &c. moſt of which ſee deſcribed under their reſpective articles.

Among us, the principal *civil puniſhments* are *fines*, *impriſonments*, *the ſtocks*, *pillory*, *burning in the hand*, *whipping*, *cucking-ſtool*, *hanging*, *beheading*, *quartering*, *burning*, *tranſportation*, &c. See Fine, Pillory, Cucking-Stool, Gallows, Gibbet, *&c.*

The *eccleſiaſtical puniſhments* are *cenſures*, *ſuſpenſions*, *deprivations*,

tions, degradations, excommunications, anathema's, penances, &c. See CENSURE, SUSPENSION, DEPRIVATION, DEGRADATION, EXCOMMUNICATION, ANATHEMA, PENANCE, *&c.*

The *military puniſhments* are, *being ſhot, running the gantelope, riding the wooden horſe, bilboes,* &c.---Among the Turks, *&c. impaling, baſtinado's* on the ſoles of the feet, *&c.* obtain. See EMPALEMENT, *&c.*

PUNITORY *intereſt*, in the civil law, ſuch intereſt of money as is due for delay of payment, breach of promiſe, *&c.* See INTEREST.

PUNN. See the article PUN.

PUPIL, PUPILLUS, in the civil law, a boy or girl not yet arrived at the age of puberty, *i. e.* under fourteen years of age the boy, and twelve the girl. See PUBERTY and AGE.

While a minor remained under the direction of a tutor, he was called *pupil*; after puberty, a curator being aſſigned him, he ceaſed to be called a *pupil.* See TUTOR and CURATOR.

A tutor is obliged to pay intereſt for what moneys of his *pupil* lie idle and unemployed.---A tutor is allowed to do any thing for his *pupil*, but nothing againſt him.

PUPIL is alſo uſed by way of extenſion in univerſities, *&c.* in the ſenſe of *alumnus*, for a youth under the education or diſcipline of any one.

PUPIL, PUPILLA, in anatomy, denotes a little aperture in the middle of the uvea and iris of the eye, through which the rays of light paſs to the cryſtalline, in order to be painted on the retina, and cauſe viſion. See EYE and VISION.

It is obſerved, that as we are forced to uſe various apertures to our optic glaſſes, ſo nature has made a like proviſion in the eyes of animals, whereby to ſhut out too much, and admit ſufficient light, by the changes in the aperture of the *pupil.* See APERTURE.

The ſtructure of the uvea and iris is ſuch, as that by their aperture the *pupil* is contractable and dilatable at pleaſure, ſo as to accommodate itſelf to objects, and to admit more or fewer rays, as the object, being either more vivid and near, or more obſcure and remote, requires more or leſs light:---it being a conſtant law, that the more luminous the object, the ſmaller the *pupil*; and again, the nearer the object, the ſmaller the *pupil*; and *vice verſa.* See UVEA and RAY.

This alteration of the *pupil* is effected by certain muſcular fibres on the outſide of the uvea, which ariſe from nerves detached hither from the ſclerotica.---Theſe fibres, proceeding ſtrait from their origin towards the centre, terminate in the orbicular limb or verge of the *pupil*, which conſiſts of orbicular fibres, whereby the figure and ſpace of the *pupil* are defined.---The firſt, or longitudinal fibres, dilate the aperture of the *pupilla*; the latter, or orbicular ones, conſtringe it.

Some authors, however, attribute the motions of the *pupilla* to the ligamentum ciliare; and others think, that both this, and the fibres of the uvea, concur herein.---Dr. Derham adds, that while the *pupil* opens and ſhuts, the ligamentum ciliare dilates or compreſſes the cryſtalline, and brings it nigher to, or farther from the retina, as the object is more or leſs remote. See CILIARE, *&c.*

The figure of the *pupil* in various animals is wonderfully adapted to their various circumſtances and occaſions: in ſome, *e. gr.* in man, it is round, that form being fitteſt for the poſition of our eyes, and the various uſe we make of them in all directions.

In others it is elliptical or oblong: in ſome of which, *e. gr.* the horſe, ſheep, ox, *&c.* the ellipſis is tranſverſe, and the fiſſure large, to enable them to ſee laterally, and even with a little light; and thereby both to gather their food the better in the night, and to avoid dangers on either ſide.---In others, *e. gr.* the cat, the ellipſis is erect, and alſo capable of opening very wide, and ſhutting very cloſe; by means of the latter of which, that animal can exclude all, but, as it were, a ſingle ray of light, and ſo avoid all the inconveniencies of the bright ſun; and by the former can take in all the fainteſt rays, and thus avoid the inconveniencies of the night. An incomparable proviſion for theſe animals, which are to watch and way-lay their prey both by day and night, to ſee upwards and downwards, to climb, *&c.* See EYE.

PUPILLARITY, or PUPILLAGE, the ſtate of a pupil; in oppoſition to *puberty.* See PUBERTY and PUPIL.

PURA *eleemoſyna*, PURE *alms*, denotes a tenure whereby the churchmen hold lands in Scotland, ſomewhat on the footing of the primitive clergy. See ALMS and TITHES.

PURA *haſta.* See the article HASTA.

PURBECK *ſtone.* See the article STONE.

PURCELAIN. See the article PORCELAIN.

PURCHASE, in law, the acquiſition of goods, lands, tenements, or the like, by means of money; in contradiſtinction to thoſe obtained by deſcent, or hereditary right. See GOODS.

PURCHASE, in the ſea-language, has the ſame ſignification with *draw in*, at land.--Thus, they ſay, *The capſtan purchaſes apace, i. e.* draws in the cable apace: and when they cannot draw or hale any thing in with the tackle, they ſay, *The tackle will not purchaſe.*

PURE, ſomething free from any admixture of foreign or heterogeneous matters. See PURIFICATION and NET.

PURE *fire.* See the article FIRE.

PURE *hyperbola*, in conics, is an hyperbola without any oval, node, ſpike, or conjugate point. See CURVE.

PURE *mathematics.* See the article MATHEMATICS.

PURE *propoſition*, } See the articles { PROPOSITION,
PURE *quadratics*, } See the articles { QUADRATIC,
PURE *reſignations*, } See the articles { RESIGNATION.

PURFLEW, a term in heraldry, expreſſing ermines, peans, or any of the furs, when they compoſe a bordure round a coat of arms. See PEAN, BORDURE, *&c.*

Thus they ſay, he beareth gules a bordure *purflew*, vairy: meaning, that the bordure is vairy.

PURGATION, PURGATIO, the act of *purging*, ſcowring, or purifying a thing, by ſeparating and carrying off any impurities found therein. See PURIFICATION.

PURGATION, in pharmacy, is the cleanſing of a medicine by retrenching its ſuperfluities; as the wood and ſeeds out of caſſia, ſtones out of dates, tamarinds, and other fruits. See ABLUTION.

PURGATION is alſo uſed in chymiſtry for ſeveral preparations of metals and minerals, to clear them of their impurities; more uſually called *purification* and *refining.* See PURIFICATION and REFINING.

The *purgation* of mercury is performed by paſſing it through a chamois ſkin. See MERCURY.---Gold is *purged* by the coppel, cementation, *&c.* See GOLD, COPPEL, *&c.*--*Purgation* in other metals is performed by repeated fuſion, *&c.* See METAL, FUSION, *&c.*

PURGATION, *catharſis*, in medicine, is an excretory motion, ariſing from a quick and orderly contraction of the fleſhy fibres of the ſtomach and inteſtines; whereby the chyle, corrupted humours and excrements lodged therein, are protruded farther and farther, and at length quite excluded the body by ſtool. See EXCRETION, STOMACH, INTESTINES, *&c.*

Purgation is one of the principal ſpecies of *evacuation.* See EVACUATION.--*For the means and manner wherein it is effected*, ſee PURGATIVE. See alſo SUPER-PURGATION.

PURGATION, in law, is the clearing one's ſelf of a crime, whereof he is publicly ſuſpected or accuſed before a judge, called alſo *judicium Dei.* See JUDICIUM *Dei.*

Of theſe *purgations* there was anciently much uſe in England, eſpecially touching matters of felony charged on clerks; and there is ſomething of them ſtill retained in the eccleſiaſtical court in ſuſpicion of incontinency, *&c.*

Purgation is either *canonical* or *vulgar.*

Canonical PURGATION is that preſcribed in the canon law, the form whereof obtaining in the ſpiritual court, is, that the party ſhall take his oath he is clear of the fact objected; and bring ſo many of his honeſt neighbours, not above twelve, as the court ſhall aſſign him, to ſwear, on their conſciences, they believe he ſwears truly.

Vulgar PURGATION, being the moſt ancient manner, was by fire, or water, or combat; uſed by infidels, and by chriſtians too, till aboliſhed by the canon law. See ORDEAL, WATER, DUEL, *&c.*

Combat, though now diſuſed, may yet be ſtill practiſed by the laws of the realm in caſes where evidence is wanting, and the defendant rather chuſes combat than any other trial. See SUTHDURE, DUEL, CHAMPION, *&c.*

Terris, bonis, &c. *redhabendis poſt* PURGATIONEM. See TERRIS.

PURGATION, in tragedy, is a term which Ariſtotle uſes for the effect of tragedy on the mind. See PASSION.

That philoſopher obſerves, that tragedy, by means of the terror and compaſſion which it excites, *purges* thoſe paſſions out of the ſoul.

Indeed, Corneille adds, that tragedy frequently creates thoſe paſſions, inſtead of *purging* them; ſo that he takes Ariſtotle's *purgation* to be no more than a chimera. See TRAGEDY.

Menſtrual PURGATIONS, the catamenia or menſes of women. See MENSES.

PURGATIVE, or PURGING *medicine*, a medicament which evacuates the impurities of the body by ſtool; called alſo *cathartic.* See STOOL, PURGATION, and CATHARTIC.

Purgatives are divided, with regard to their effect, into *gentle, moderate,* and *violent.*--*Gentle purgatives* are ſuch as operate very mildly, as tamarinds, caſſia, manna, rhubarb, ſena, and moſt of the mineral waters. See CASSIA, MANNA, RHUBARB, *&c.*---The moderate purge ſomewhat more briſkly, as jalap, ſcammony, *&c.* See JALAP and SCAMMONY.---The *violent* operate exceſſively, as coloquintida, hellebore, laureola, *&c.* See COLOQUINTIDA, HELLEBORE, *&c.*

Purgatives are, again, divided with regard to the humour they evacuate, into *phlegmagogues, cholagogues, melanagogues,* and *hydragogues*; each whereof ſee under its proper article, PHLEGMAGOGUE, CHOLAGOGUE, *&c.*

The modern phyſicians reject this diviſion; and ſhew the operations of all *purgatives* to be alike.

Purgatives make one of the moſt important articles in medicine.---Their effect is produced by vellicating and irritating the nervous fibres of the ſtomach and inteſtines, and thereby urging them to an expulſion. See STOMACH and INTESTINE.

An idea of the manner of their operation is thus given by Dr. Cheyne.---A *purgative* medicine being received into the ſtomach by the mouth, its particles do there vellicate or ſtimulate the fibres of the ſtomach, and thereby increaſe the digeſtive faculty, *i. e.* bring the muſcular fibres of the ſtomach, and the muſcles of the abdomen and diaphragma, into more frequent contractions than ordinary, till the medicine is admitted into the inteſtines; the fibres and glands whereof being more ſenſible than thoſe of the ſtomach, (whoſe parts, by the frequent rough contacts of one againſt another, and of the groſs bodies often thrown into it, are, as it were, deadened) it eaſily moves and brings them into frequent forcible contractions, whereby theſe glands are ſqueezed, and ſo emit a fluid matter, which lubricates the paſſages, and which mixing with the feculent matter of the inteſtines, (which is rendered fluid by the ſame active and ſtimulating quality of the *purgative* medicine) renders it more fluid; by which, and by the uncommon contractions of the inteſtines, it paſſes more eaſily and plentifully into the inteſtinum rectum, and is thence ejected by ſtool.

Thus do gentle *purges* act, and only cleanſe the inteſtines, few of their particles entering in by the lacteal veins ſo as to affect the blood.---But in violent *purgatives* the ſtimulating particles are mixed with the blood, and produce there, many times, very great effects, by occaſioning unnatural fermentations, by ſeparating the natural coheſions of the fluids of the body; and do alſo, by vellicating the ſpiral fibres of the veins and arteries, bring thoſe into more forcible contractions, and thereby accelerate the motion of the blood:--all which may have ſometimes a good, ſometimes a bad effect.

As to the effects of *purgatives* on animal bodies, Dr. Quincy adds, that every irritation of the inteſtines either quickens the periſtaltic motion in its natural direction, or occaſions ſome little inverſions of it.---Now, in both caſes, any matters that but ſlightly adhere to the coats, or inner membranes, will be looſened, and ſhook off, and carried forward with the other contents; and they will alſo be more agitated, and thus rendered more fluid.

Hence is manifeſt how a *purging* medicine haſtens and increaſes the diſcharges by ſtool; but the ſame manner of operation alſo carries its effects much farther, in proportion to the force of the ſtimulus: for where it is great, all the appendices of the bowels, and even all the viſcera in the abdomen, will, by a conſent of parts, be pulled or twitched ſo as to affect their reſpective juices in the ſame manner as the inteſtines themſelves do their contents.---The conſequence of which muſt be, that a great deal will be drained back into the inteſtines, and made a part of what they diſcharge.---And when we conſider the vaſt number of glands in the inteſtines, with the outlets of thoſe viſcera opening thereunto, and particularly of the liver and pancreas, it will be no wonder, that vaſt quantities, eſpecially in full conſtitutions, may be carried off by one *purge*.

As to thoſe *purgatives* diſtinguiſhed by the names of *cholagogues*, *hydragogues*, *phlegmagogues*, on a ſuppoſition of an elective quality therein, they may be accounted for upon more intelligible principles:--For when the diſcharges by ſtool diſcover an over-proportion of any particular humours, it is to be ſuppoſed there was a redundance of ſuch an humour, whoſe diſcharge any irritation would have occaſioned. Thus, in proportion to the proximity of ſome humours in the inteſtinal tube, and the diſpoſition of the paſſages to convey them that way, do they require greater or leſſer vibrations or ſhakes of the fibres to fetch them out.

For this reaſon, the briſker cathartics, which vellicate the membranes moſt of all, pump out, as it were, from all the meſenteric glands, and neighbouring parts, their contents, which, becauſe they abound ſo much with lymphatics, and viſcid watry humours, make the diſcharges thin and watry.

Thoſe which act in a ſomewhat lower degree, yet irritate enough to deterge and draw out a great deal of mucous and viſcid matter, which ſometimes by lodgment and want of due motion, changing into various colours, occaſions the different names of *phlegm* or *choler*: as the former therefore paſs for hydragogues, ſo do the latter for purgers of phlegm and choler. See Phlegm, Choler, &c.

But there is another principle beſides that of a ſtimulus, whereby a purging medicine is enabled to anſwer its intention, *viz.* by fuſing the humours, and rendering them more fluid than before, whereby they are better fitted to paſs off by their proper emunctories.---Thoſe which conſiſt of very ſubtile and active parts are not ſo ſenſible in the larger paſſages, becauſe of the great quantities of matter, which lay too great a load upon them, and make them unheeded; but when they are got into the blood in any conſiderable number, they divide and fuſe thoſe coheſions which obſtruct or move heavily along the capillaries, and ſcour the glands; inſomuch that every pulſation throws ſomething through the inteſtinal glands, which goes away by ſtool, that the refluent blood had waſhed away and brought back from all parts of the body.

Of this kind are all thoſe cathartics which are ſaid to *purge* the joints, and are preſcribed in rheumatiſms, and arthritic pains, as the radix turpethi, and all the aloetics.--And this is the reaſon why purging medicines of this ſort are ſo eaſily changed into the moſt efficacious alteratives; for an alterative is a cathartic in a lower degree, or of a more remiſs operation. Whatſoever brings ſuch particles to a ſecretory orifice, which are fitted for its paſſage, oftener, either by accelerating the blood's motion, or breaking it into more particles of that particular ſize and diſpoſition, will increaſe the ſecretion. According, therefore, to the difference of the parts where ſuch ſecretions are inlarged, as the glands of the inteſtines, kidneys, or ſkin, are the medicines, which are the inſtruments therein, called either *cathartics*, *diuretics*, or *diaphoretics*. See Alterative, Secretion, &c.

Dr. Quincy has made ſome improvements in the doctrine of *purging* medicines, their nature, manner of action, effects, and analogy with other medicines; with the circumſtances of their preparation, management, &c. in a diſcourſe inſerted in the *philoſoph. tranſact.* The ſubſtance of which we cannot do better than here ſubjoin.

In order hereto, it is to be premiſed, 1. That all thoſe parts of an animal body which are vaſcular, or through which any fluid paſſes from the inteſtines to the minuteſt fibre, are the ſeat of the operation of medicines. See Medicines.

2. That this whole courſe of circulation, or animal motion, is naturally diſtinguiſhed into three different ſtages, by the different capacities of the veſſels, and motions of their contents, each having its proper outlet; and that theſe are the ſeat of the three concoctions ſo often mentioned by phyſical writers: the firſt being the ſtomach and bowels, and having the anus for its emunctory; the ſecond all that ſpace within the blood's motion, ſo far as it retains its red colour, having the kidneys; and the third, all beyond that circuit, having the ſkin for an excretory organ. See Concoction, Emunctory, &c.

3. That every medicine which cauſes evacuation, is, in ſome ſenſe, a *purge*. See Evacuation.

4. That every *purge* operates either as a diſſolvent, by fuſing the juices, and increaſing the quantity fit for expulſion; or as a ſtimulus, by accelerating their motions ſo as to bring the matter fit for expulſion oftener to the ſecretory outlet; or both.

Theſe poſtulata are only premiſed, in order to prove this grand propoſition, that a change in the bulks, figures, and motions of the component particles of a purging medicine, will change the ſeat of its operation, and fit it for exertion in the larger or ſmaller veſſels, as thoſe mechanical affections are intended, or remitted.

For illuſtration hereof, it may be convenient to attend to the common way of making a *purge* operate, more or leſs, than it otherwiſe would do.

Subſtances, then, which are groſs and heavy, as thoſe conſiſting chiefly of ſaline and earthy particles; ſuch as tartar, manna, and the like, when reduced ſmaller by triture, or repeated ſolutions, operate more gently; but when acuated by acids, or any way made to expoſe their angles more plentifully to the membranes they become rougher, and ſooner take effect.

Reſinous medicines, as ſcammony, gamboge, jalap, and moſt vegetable productions, are more violent, and operate ſooner, when they are more tenacious and adheſive, as in their extracts; but gentler, when divided by hard brittle ſubſtances, ſuch as ſalt of tartar, ſugar, &c.

Medicines, which have in their compoſition ſulphur and ſalt, are more or leſs rough and ſpeedy in their operation, in proportion to their greater or leſſer participation of the ſaline ingredient, and the aſperity of its angles.--Of this kind are moſt minerals, and their preparations: it may be ſufficient to inſtance in the management of antimony and mercury; the firſt of theſe is by chymical analyſis known to be a compoſition of a ſubtile ſulphur and ſalt; and the more the ſaline part is ſet looſe by preparation, and *opening* the ſulphur, as it is commonly termed, the ſpeedier, and with the greater vehemence, will it operate; whereas, in its more imperfect preparations, when the ſalts are cloſely wrapped up in their native ſulphur, it will hardly work at all, till it reaches the fartheſt ſtages of circulation. See Antimony.

Mercury *per ſe* is little known as a medicine; and its firſt preparation, which makes it into a ſublimate, ſo loads it with ſaline ſpiculæ, that it amounts even to a poiſon; but the more thoſe ſpiculæ are broken by triture, ſublimation, &c. the milder doth it operate: and if to the comminution of its points be added a ſulphur ſubtle enough to join it, it may be reduced to ſo mild a medicine, as not to be felt but in the laſt ſtage of operation. See Mercury, Salivation, &c.

This ſhort view may be ſufficient to ſhew, 1. That it is the too great aſperity and motion in a medicine, that will not ſuffer it to paſs the ſtomach, without irritating it into ſuch convulſions, as will throw it up again by vomit. See Emetic and Vomiting.

2. That a farther comminution, and ſmoothing its figure, will gain it admittance into the bowels, and cauſe it to operate, as a proper *purgative*, by ſtool.

3. That a yet farther remiſſion of theſe properties will convey it into the blood, and allow it there to promote evacuation by urine. See Urine and Diuretic.

And, laſtly, that a ſtill farther comminution will paſs it into the minuteſt canals, where, by the ſame properties, only in a lower degree, it will cauſe ſweat, or increaſe perſpiration. See Perspiration, Sweat, Diaphoretic, &c.

Hence it appears, that the more ſubtile medicines operate in the capillaries, and ſmalleſt fibres, by the ſame mechaniſm that the more groſs ones do in the common ſtream of the blood, when they go off by urine; or as the groſſeſt of all do in the greater paſſages, when they promote evacuation by ſtool.

Hence it is evident, that the ſkill of preparing and adminiſtring of medicines conſiſts in proportioning their manifeſt and known properties to the capacity and circumſtances of the part they are to operate in; and to intend or remit their mechanical affections, as they are ſooner or later to take place in the greater or ſmaller veſſels.

Of the firſt claſs there are few can be reduced ſmall enough to go beyond the larger paſſages, and none of them are worth the pains they require, to fit them farther than for diuretics: beſides, their natural diſpoſition to attract, and join with the ſerous part of the blood, whenever they get into that ſtage of motion, runs them off by the kidneys, before they can undergo comminution enough to get farther: but if by frequent repetitions of ſuch medicines, and an uncommon laxity of the paſſages, any parts are paſſed into the habit, their groſſneſs fouls the delicate ſtrainers, which are deſtined for their expulſion; and they lodge upon the glands and capillaries in ſuch manner, as to induce intermittents; which are obſervable in many perſons, after a long uſe of cream of tartar, the common cathartic ſalts, and the purging waters, eſpecially at the latter end of the ſummer, when the heat of the preceding ſeaſon has debilitated the ſolids, and left them under too great a relaxation.

Among the reſinous purges, there are many very powerful ones; but where their operation is deſired in the viſcera, blood, and remoter parts, they muſt be extremely divided; and this we find ſpirituous menſtruums will do, by taking up the moſt ſubtile parts only, and carrying them into the very ſmall paſſages, where they operate chiefly by fuſion; becauſe the ſoftneſs of ſuch ſubſtances cannot enable them, hardly in any degree, to act as ſtimuli, farther, at leaſt, than ordinary detergents. And thus we find that aloe, the chief of this tribe, goes fartheſt into the habit, and continues longeſt ere it operates, when managed with a ſpirituous menſtruum, as in the tinctura ſacra. The rad. turpethi, and colocynth likewiſe, with all of the vegetable kind, that will yield to a ſpirituous liquor, may, by that means, be carried into the fartheſt ſcenes of animal action; where they will prove efficacious medicines in caſes, which, with other management, they would never be able to reach: and on this account it muſt undoubtedly have been, that we frequently meet, in practical writers, with many materials of this ſort mentioned as alterants; the colocynth particularly by Helmont: for all medicines which operate in the fartheſt paſſages, they commonly include under that general appellation.

But the moſt efficacious purges, and thoſe which require the moſt ſkill, are procured from the mineral kingdom; theſe abound in ſolidity beyond any other materials, and therefore where-ever they are brought into action, neceſſarily excel in the quantity of impulſe: many of theſe therefore want not only the utmoſt comminution to carry them into the farther ſcenes of operation, but alſo ſome reſtraint of their aſperities and motions, to fit them for many intentions.---Thus ſublimate is not only to be much ſweetened, that is, ſmoothed in its points, to make it a ſafe purge in the larger veſſels; but if it be intended to go farther than the blood, and thoſe glands, which in that circuit it is moſt apt to be lodged upon when it ſalivates, it muſt not only be rendered very fine, but alſo be covered with ſuch ſubſtances as weaken its points, and make it paſs into the laſt ſubdiviſions of the conſtitution. To this purpoſe, the common practice wiſely contrives in diſtempers, which, according to the courſe of circulation, lie moſt remote, to wrap up the baſis of this medicine in ſulphurs, and ſuch-like ſubſtances, as follow it into its laſt diviſion, without giving it any aſperities to make it act as a ſtimulus. Thus, for all cutaneous foulneſſes, and habitual taints, the cinnabar, the æthiops, and all of that ſortment, are in readineſs; and that ordinary ſulphurs will cover and deaden the efficacies of mercurial preparations, ſo that they ſhall not operate, but in ſuch parts only, and in certain circumſtances, is demonſtrable in ordinary ſalivations, which are to be lowered by ſulphureous medicines.

Medicines from ſuch minerals where a ſalt and ſulphur are united by nature, as they are in ſome mercurials by art, as antimony, the native cinnabar, ſteel, &c. are manageable only upon the ſame principles; and the more they are deſigned to be carried into the habit, the more are they to be reſtrained by their natural or adventitious ſulphurs: ſteel, when opened by, and joined with, the points of acid liquors, operates the ſooner, and will ſometimes prove even emetic; but when it is covered with an additional ſulphur, it will go farther, and anſwer intentions much more remote; as is manifeſt in the common preparations of ſteel with tartar or vinegar, and with ſulphur.

This way of reaſoning on theſe occaſions ſeems the more juſt, from conſidering the texture of thoſe ſubſtances, which by a natural preparation are fitted for operation in the minuteſt part of an animal body; ſuch as thoſe of the aromatic kind, all which, more or leſs, according to their greater or leſſer degree of ſubtility and ſmoothneſs, promote a diaphoreſis: for theſe conſiſt of exquiſitely fine ſalts, covered with a moſt ſubtile ſulphur, as is demonſtrable by chymical analyſis; and the common ſal volatile oleoſum is an admirable contrivance upon the ſame foundation, where a very volatile animal ſalt is covered with a moſt exalted vegetable oil; whereby it is fitted to paſs into the minuteſt fibres, and make, as it were, a part of the animal ſpirits themſelves.

And here it may not be amiſs to obſerve, that all animal ſalts are very volatile, or eaſily rendered ſo; but when bare and naked, juſt as the fire draws them out, with a mixture alſo of its own particles in their compoſition, they are too pungent to be felt without painful ſenſations; and when ſoftened with a fine portion of ſomewhat of an oppoſite texture, which is ſmooth and yielding, they become moſt efficacious and ſafe ſudorifics.

On theſe conſiderations it likewiſe ceaſes to be a wonder, why the ſubtile ſalts of cantharides are more ſenſibly injurious to the bladder, than any other parts, and why camphire prevents thoſe injuries; for the exquiſite ſmallneſs of thoſe ſpiculæ makes them imperceptible but in the moſt minute canals, into which the fibres compoſing the membranes of the bladder are known to be divided; and camphire blunts their irritations, becauſe its extreme ſubtility enables it to follow them into thoſe meanders, and ſheath their aſperities.

To this purpoſe is very remarkable what many now commonly practiſe in guarding even mercurials againſt their ſtimulating properties, and ſending them into the fineſt paſſages to operate by fuſion, and the bare force of impulſe: for not only calomel and the mercurius dulcis may be reſtrained from manifeſt operation in the wider paſſages, and the glands about the mouth; but even the mineral turbith, which of itſelf, in a ſmall doſe, will operate powerfully by vomit and ſtool, will not, when mixed with camphor, be ſo much felt in thoſe reſpects; but go into the fartheſt circuit of motion, and promote the cutaneous diſcharge in a more efficacious manner, than any medicine of leſs ſpecific gravity.---In this management, the camphor is to be mixed but a very little while before taking, otherwiſe it has not the effect; which appears to proceed from its great volatility, which makes it in a great meaſure exhale while it ſtands mixed in a medicine.

As to the doſes of *purgatives*, Dr. Cockburn attempts to determine them on the following ſuppoſitions.---1°. That no part of them operate but in the blood.---2°. That they operate there, by changing the blood, and other circulating fluids derived from it.

From which poſtulata he concludes, that in the ſame conſtitution of blood, the doſe required to produce the like effects, muſt be proportionable to the blood's quantity; ſo that where a certain doſe is required to alter one pound of blood, for inſtance, to a certain degree, there will be required a double doſe to alter two pounds to the ſame degree, and a triple doſe to three pounds, &c. And univerſally, if the quantity of blood b require the doſe d, the quantity $m\,b$ requires the doſe $m\,d$. For as $b : d :: m\,b : m\,d$. See Dose.

PURGATORY, Purgatorium, in the Romiſh church, a place where the juſt are ſuppoſed to ſuffer the pains due to their ſins, for which they have not ſatisfied in this world. See Merits, Absolution, &c.

It is by the mercy of God, the indulgences of the church, and the prayers of the faithful, that people are ſuppoſed to be delivered out of *purgatory*. See Indulgence, &c.

In Ireland is a place called St. Patric's *purgatory*, where, as the legend has it, at the prayers of St. Patric, biſhop of the place, there was made a viſible repreſentation of the pains which the wicked undergo after death, in order to deter ſinners, &c.

PURGE, in medicine, a term frequently uſed for a doſe of ſome purgative medicine. See Purgation and Purgative.

Butler's purging *ale*. See Ale.

PURIFICATION, in chymiſtry, &c. the act of *purifying* or refining natural bodies; or of ſeparating the feces and impurities therefrom. See Purgation, Refining, &c.

For the methods of *purifying* metals, gold, ſilver, iron, copper, tin, &c. See Metal, Gold, Silver, &c.

For the *purification* of ſemi-metals, minerals, and other matters, as antimony, ſulphur, camphor, ſaltpetre, &c. See Antimony, Sulphur, Camphor, &c.

Purification, in matters of religion, denotes an offering made the prieſt by women riſing out of childbed, ere they be re-admitted into the church.

By the law of Moſes, a woman, after bringing forth a male child, was unclean forty-days; after a female, eighty days: during which time ſhe was not to touch any thing holy, nor to go near the temple; but to continue within doors, ſeparate from all company and commerce of others.

This term expired, ſhe was to preſent herſelf at the temple, and at the door of the tabernacle to offer a lamb, as a holocauſt, and a pigeon or turtle, which the prieſt taking, offered to God, and prayed for her, that ſhe might be *purified*.

This ceremony, which conſiſted of two things, a holocauſt, and a ſacrifice of expiation, was called טהר טהרה, *purificatio*, *purgatio*.

The holy Virgin, though, according to the fathers, exempt from the terms of the law, yet complied therewith; and at the time preſcribed went to the temple, and accompliſhed the law: in commemoration whereof, the church yearly ſolemnizes the feaſt of the purification of the Virgin, on the ſecond of February; called alſo the *feaſt of candlemas*. See Candlemas.

The feaſt of the Purification ſeems to be very ancient. It is ordinarily ſaid to have been inſtituted in the time of Juſtinian, in the year 542. and this, on occaſion of a mortality which that year diſpeopled almoſt the whole city of Conſtantinople. Yet there are ſome who imagine it to have been obſerved before, though in another manner, and on a different day, from that fixed by Juſtinian, *viz.* between the circumciſion and epiphany.---The ſame day is the preſentation of our Saviour in the temple. See Presentation.

PURIM*, a ſolemn feaſt held among the Jews on the 14th of March, in memory of their deliverance from the conſpiracy of Haman by Eſther. See ESTHER.

* The word is Hebrew, פורים, *q. d.* lots.

PURITANS, a term anciently uſed for the Calviniſts of Great Britain, from their profeſſing to follow the pure word of God, in oppoſition to all traditions, human conſtitutions, and other authorities. See CALVINISM, PRESBYTERIAN, NON-CONFORMIST, SEPARATIST, TORY, WHIG, &c.

PURLIEU. See the article PURLUE.

PURLINS, in building, thoſe pieces of timber that lie acroſs the rafters on the inſide, to keep them from ſinking in the middle of their length. See RAFTER.

By the act of parliament for rebuilding London, it is provided, That all *purlins* from fifteen foot ſix inches to eighteen foot ſix inches long, be in their ſquare nine inches and eight inches.---And all in length from eighteen foot ſix inches to twenty-one foot ſix inches, be in their ſquare twelve inches and nine inches.

PURLUE*, PURLIEU, or POURALLEE, is all that ground near any foreſt, which being added to the ancient foreſt by our kings, was, by perambulation granted by ſome of their ſucceſſors, ſevered again from the ſame, and made *purlieu*, *i. e.* pure and free from the laws and obedience of the foreſt. See FOREST.

* The word is formed from the French *pur*, pure; and *lieu*, place.

A *purlieu*, or *pourallee*, is defined a circuit of ground adjoining to the foreſt, and circumſcribed with immoveable boundaries, known only by matter of record; which compaſs of ground was once foreſt, and afterwards diſafforeſted by the perambulations made for ſevering the new foreſt from the old. See PERAMBULATION.

Purlieus or *pourallees* commenced after the manner following:---King Henry II. at his acceſſion to the crown in 1154. took ſo much delight in the foreſts of this kingdom, that, not being contented with thoſe he found here, though many and large, he began to inlarge divers of them, and to afforeſt the lands of his ſubjects near adjoining to the ſame. See AFFORESTING.

His ſucceſſors Richard I. and Henry II. far from retrenching or reſtoring any thing, made ſtill further incroachments: and thus did the lands continue till the 17th year of king John; at which time the grievance being grown notorious, and generally felt by all degrees of people; divers noblemen and gentlemen beſought the king to grant, that they might have all thoſe new afforeſtations, made by his predeceſſors aforeſaid and himſelf, diſafforeſted again; and the king, after much ſolicitation, was at length prevailed on to ſubſcribe and ſeal ſuch articles concerning the liberties of the foreſt, as they then demanded; being for the moſt part ſuch as are now contained in the charter of the foreſt. See FOREST.

Hereupon, choice was made of divers noblemen, &c. to the number of twenty-five, who were ſworn, with others their aſſiſtants, to ſee the ſaid liberties, ſo granted and confirmed by the king, to be in every point obſerved.

But ere any thing was done to the purpoſe, king John died; and king Henry III. ſucceeding, freſh ſolicitations were made to him; who, for the better accompliſhing of the ſaid diſafforeſtation, ordered inquiſitions to be taken by ſubſtantial juries for ſevering all the new foreſts from the old: upon which two commiſſioners were ſent to take thoſe inquiſitions; in virtue whereof, many great woods and lands were not only diſafforeſted, but improved to arable land by the owners thereof. See DEAFFORESTED.

After this charter was made and confirmed, ſome of theſe new afforeſtations were perambulated, and proper inquiſitions taken, and the certainty determined by matter of record, which were the old, and which the new: though it appears, that the greateſt part of the new afforeſtations were ſtill remaining during the life of king Henry III.

Under Edward I. freſh petitions and ſolicitations being ſet on foot, three biſhops, three earls, and three barons, were at length appointed to ſee thoſe perambulations performed and continued; who cauſed them to be made accordingly, and inquiſitions to be taken thereupon, and returned into the court of chancery; and all thoſe that were ancient foreſt, to be meered, and bounded with irremovable boundaries, to be known by matter of record for ever.

Thoſe woods and lands that had been newly afforeſted, the king likewiſe cauſed to be ſeparated from the old, and to be returned into the chancery by marks, meres, and bounds to be known, in like manner, by matter of record for ever.

Thus it appears how the *purlieus*, or *pourallees*, had their firſt beginning; for all ſuch woods and lands as were afforeſted by Henry II. Richard I. or king John, and by perambulations ſevered from the ancient foreſts, were, and yet are called *pourallees*, *q. d.* woods and lands ſevered from the old foreſts, and diſafforeſted by perambulation; *pouralle* being the ſame as *perambulatio* in Latin. See PERAMBULATION.

But notwithſtanding ſuch new afforeſtations were diſafforeſted by perambulation, whereby the ſame became *pourallee*, or *purlieu*; yet they were not thereby ſo diſafforeſted as to every man, but that they do in ſome ſenſe continue foreſt ſtill, as to others.---For by the words of *charta de foreſta*, if the king has afforeſted any woods or lands of his ſubjects, to the damage of the proprietors, they ſhould forthwith be diſafforeſted again; that is, only as to thoſe perſons whoſe woods and lands they were; who, as the proper owners thereof, might fell and cut down their woods at their own pleaſure, without any licence from the king; as alſo convert their meadows and paſtures into tillage, or otherwiſe improve their ground to the beſt advantage. So alſo they might hunt and chaſe the wild beaſts of the foreſt towards the ſame, &c. But no other perſon might claim ſuch benefit of hunting in the *pourallee*, beſide the proper owner of the ſoil thereof; who is left at liberty to ſuffer the *pourallee* to remain foreſt ſtill; as ſome, in effect, have thought moſt expedient, becauſe hereby intitled to the benefit of the common within the foreſt, which otherwiſe they were excluded from. Hence, if the beaſts chance to wander out of the foreſt into the *pourallee*, the king hath a property to them ſtill, againſt every man, but the owner of the ground wherein they are, who hath a ſpecial property in them, *ratione ſoli*; yet ſo as he may only take them by hunting, or chaſing with his greyhounds or dogs, without any foreſtalling or foreſetting them in their courſe again towards the foreſt. See HUNTING, FORESTALLING, &c.

Beſide what has been hitherto ſaid of the difference between foreſt and *purlieu*, or *pourallee*, there is this farther diverſity, that all the woods and lands within the regard of the foreſt, are abſolutely within the bondage and charge of the foreſt, as well in reſpect of the owners thereof, as of any other perſon; for no one may cut down his own woods, or improve his own lands, within the regard of the foreſt, without licence from the king, or his chief juſtice in eyre of the foreſt.---Neither ſhall any perſon hunt, chaſe, or moleſt the wild beaſts of the foreſt in his own ground, within the regard of the foreſt, without licence or warrant from the king, or his chief juſtice of the foreſt, ſo to do. See REGARD.

But thoſe whoſe grounds are within the *pourallees*, are not ſubject to theſe reſtrictions.---Yet are not the woods and lands in the *pourallees* abſolutely freed from the bondage of the foreſt in reſpect of the wild beaſts having their haunts therein, when they happen to ſtray out of the foreſt; but as they were once abſolutely foreſt, ſo they are ſtill conditionally ſo.

PURLUE *man*, or PURLIEU *man*, or POURALLEE *man*, is one who has land within the *purlue*; and is allowed or qualified to hunt or courſe within the ſame, though under certain reſtrictions. See PURLUE.

By ſtat. 13 Ric. II. he who may lawfully hunt in any *pourallee*, ought to have woods or lands of freehold within the *pourallee*, to the yearly value of 40 *s*.---By ſtat. Jac. I. he ought to have lands of inheritance of the yearly value of 10 *l*. or lands of freehold of the yearly value of 30 *l*. or have goods worth 200 *l*. or be the ſon of a knight, or baron, or perſon of a higher degree, or ſon and heir apparent of an eſquire.---But by a later act, Car. II. no man may keep grey-hounds within the *pourallee*, or elſewhere within England or Wales, unleſs he have a free warrant, or be lord of a manor, or ſuch a freeholder as is ſeized in his own right, or in right of his wife, of lands, tenements, or hereditaments, of the clear yearly value of 40 *l*. over and above all charges and repriſes of ſuch eſtate of inheritance; or of lands, tenements, or hereditaments, in his own right, or in right of his wife, for term of life or lives, of the yearly value of 80 *l*. over and above all charges and repriſes, or that is worth in goods or chattels 400 *l*. See GAME.

The *pourallee*, or *purlieu*, then, is ſaid to be for him that is ſo qualified: others, not qualified, and therefore not *purlieu-men*, yet having land in the *pourallee*, may, if they find any wild beaſts of the foreſt in their own grounds within the *pourallee*, chaſe them thereout with little dogs, but not with grey-hounds or other dogs.

Nor is the *purlieu-man* left at large to hunt at his own diſcretion; but tied down to ſeveral rules: as,

1. That he always begin his chaſe in his own ground; and that though he find ſuch wild beaſts in his own *pourallee*, and in reſpect thereof, hath a property in them, *ratione ſoli*, againſt all perſons but the king; yet ſuch his property is only on this condition, that he can ſlay them with his dogs in chaſe, without foreſtalling, before they can recover the foreſt.---Though they be within the liſt of the foreſt, before the dogs faſten on them; they are the king's, or other owner of the foreſt.

But if the *pourallee-man* firſt make his chaſe in his own freehold, he may purſue the ſame through every man's ground within the *pourallee*, provided he enter not into the foreſt.

2. If a *purlieu-man* begin his courſe in another man's ground, within the *pourallee*, and his dogs faſten on a wild beaſt, before it can get within the bounds of the foreſt, and the beaſt draws the dogs into the foreſt, and is there ſlain by them; here the *pourallee-man* ſhall not enter into the foreſt, nor take the beaſt ſo killed, becauſe his courſe was irregular from the beginning, as he could claim no property in the beaſt, *ratione ſoli*.

3. A *pourallee-man* may hunt in his own *pourallee*, with no more company than his own ſervants; neither may he appoint, licenſe, or warrant any other perſon, except his ſervants, to hunt by his commandment in his *pourallee*.

4. Every *pourallee-man* is forbidden by the laws of the foreſt, to hunt in his own grounds within the *pourallee*, every day, or oftener than three days in any one week, Sunday excepted.

5. Nor is any man to diſturb, or make a courſe after any deer found in his *pourallee*, within forty days after the king hath made a general hunting in the foreſt adjoining thereunto; becauſe then the wild beaſts of the foreſt come not into the *pourallees* of their own accord; but as they are forced into the ſame by the hunters, with clamours and blowing of horns: ſo that they fly thither for refuge.

6. No man ſhall hunt within ſeven miles of the borders of the foreſt, or in his own *pourallee*, within forty days next before the king hath iſſued out his proclamation, declaring his royal will and pleaſure to make a general hunting in that foreſt.

Inaſmuch as the *pourallees* were once, and in ſome ſenſe ſtill are, foreſt, it was neceſſary to have officers to attend, and take on them the charge of the preſervation of the game that may happen to wander out of the foreſt, into the *pourallees*; ſince otherwiſe the laws of the *pourallees* could not be executed, but the foreſt would ſoon be deſtroyed by the *pourallee men*.

For this reaſon rangers were firſt appointed, who, though not officers in the foreſt, yet appertain thereto; for all officers in the foreſt have charge of the vert and veniſon of the foreſt; but a ranger hath no charge of vert, but only of veniſon coming out of the foreſt into the *pourallees*, his place of charge; from whence his office is to conduct the ſame back again into the foreſt. See RANGER.

This officer is appointed by the king, or his chief juſtice in eyre, and made by patent, with a fee commonly of 20, 30, or 40 *l.* or more, by the year, payable out of the exchequer, as alſo certain fee-deer, both red and fallow, to be taken annually, at proper ſeaſons, out of the foreſt.

The ſubſtance of his oath is, to rechaſe, and with his hounds drive back, the wild beaſts of the foreſt, as often as they range out of the ſame into his *pourallee*; to preſent all unlawful hunting and hunters of wild beaſts of venery and chaſe, as well within the *pourallees*, as within the foreſt; and to preſent thoſe and other offences, at the next court of attachments or ſwanimote, which ſhall firſt happen.

Rangers, it is to be obſerved, belong only to ſuch *pourallees* as were once the woods and lands of the ſubject, and were afterwards diſafforeſted again, and ſo became *pourallees*. Hence, as there are ſome foreſts in England, which never had any inlargement by new afforeſtations, and therefore have no *pourallees* at this day; there can be no rangers belonging to them.

PURPLE, **PURPURA**, πορφυρα, a red colour, bordering on violet; dyed chiefly with cochineal, or ſcarlet in grain. See COLOUR; ſee alſo RED, SCARLET, COCHINEAL, &c.

Purple was much eſteemed among the ancients; eſpecially the Tyrian *purple*, which underwent more dyes than the reſt, and which was almoſt peculiar to emperors and kings. Yet this *purple* did not exceed that now in uſe; the chief reaſons why the former has been diſuſed, are, that the latter is both cheaper and finer.

The ancient *purple* was tinged or given with the blood or juice of a precious turbinated teſtaceous ſea-fiſh, called by the Greeks πορφυρα, and by the Latins *purpura*; whereof we have deſcriptions in ſeveral authors, and ſhells in moſt of the cabinets of the curious. See DYING.

In the ſeas of the Spaniſh Weſt-Indies about Nicoya, is found a ſhell-fiſh, which perfectly reſembles the ancient *purpura*, and in all probability is the very ſame: this fiſh, Gage tells us, uſually lives ſeven years; it hides itſelf a little before the dog-days, and continues to diſappear for 300 days running.

They are gathered plentifully in the ſpring, and by rubbing one againſt another, yield a kind of ſaliva or thick glair, reſembling ſoft wax: but the *purple* dye is in the throat of the fiſh; and the fineſt part in a little white vein;---the reſt of the body is of no uſe.---He adds, that the chief riches of Nicoya conſiſt in this fiſh. Cloth of Segovia, dyed with it, is ſold for twenty crowns the ell; and none but the greateſt Spaniſh lords uſe it.

Beſides the Indian *purple* fiſhes, we have others much nearer home. In the *Philoſoph. Tranſact.* we have an account of a *purple* fiſh diſcovered in 1686. by Mr. W. Cole, on the coaſts of Somerſetſhire, South-Wales, &c. where it is found in great abundance.

The fiſh, M. Reaumur obſerves, is a kind of buccinum, a name given by the ancients to all fiſhes whoſe ſhell bears any reſemblance to a hunting-horn; and it appears from Pliny, that part of the ancient *purple* was taken from this kind of ſhell-fiſh: ſo that this may be eſteemed a recovery of what had been ſuppoſed intirely loſt.

The method of obtaining the colour, the author deſcribes thus: --The ſhell, which is very hard, being broken, (with the mouth of the fiſh downwards, ſo as not to cruſh the body) and the broken pieces being picked off, there appears a white vein lying tranſverſely in a little furrow or cleft next the head of the fiſh.

In this vein is the *purple* matter lodged; ſome of which being laid on linen, appears at firſt of a light green colour; and if expoſed to the ſun, ſoon changes into a deep green, and in a few minutes into a ſea-green, and in a few more into a blue; thence it ſoon becomes of a *purpliſh* red, and in an hour more of a deep *purple* red.

And here the ſun's action terminates; but by waſhing in ſcalding water and ſoap, and drying it, the colour ripens to a moſt bright beautiful crimſon, which will bear waſhing admirably without any ſtyptic. See CRIMSON.

The fiſh, he obſerves, is good food; and adds, that there are ſeveral kinds differing in ſize and ſhell, and alſo in the colour of the tinging liquor.---There are ſome found on the coaſts of Poictou.

M. Reaumur has diſcovered another very different kind of *purple*.---It is produced in oval grains about a quarter of an inch long, and about one thick, full of a white liquor bordering on yellow, which cover certain ſtones or ſands, about which the buccina of Poictou uſually aſſemble.

By the experiments M. Reaumur has made, it appears that theſe grains are neither the eggs of the buccinum, nor the ſeeds of any ſea-plants, nor any riſing plants, but the eggs of ſome other unknown fiſh.

Theſe grains being bruiſed on a white linen, at firſt only tinge it yellow, and that inſenſibly; but in three or four minutes give it a very beautiful *purple* red, provided the linen be expoſed to the open air; for the air of a room, even though the windows be open, will not do.---This colour fades a little by repeated waſhings.

M. Reaumur concludes from ſome experiments he made, that the effect of the air on the liquor does not conſiſt in its taking away any particles thereof, nor in giving it any new ones, but only in its agitating it, and changing the arrangement of the parts that compoſe it.---He adds, that the liquor of the buccinum, and that of the grains, ſeem to be nearly of the ſame nature; except that the latter is more watry, and only ſaline; whereas the other is hot and pungent.

The Caribbee iſlands have likewiſe their *purple* fiſh.---It is called *burgan*, being of the ſize of the end of the finger, and reſembling our periwinkles: its ſhell is of a browniſh azure, its fleſh white, its inteſtines of a very bright red, the colour whereof appears through the body; and it is this that dyes the froth, which it caſts when taken, and which is at firſt of a violet hue, bordering on blue.

To oblige them to yield the greater quantity of froth, they lay them on a plate, ſhake and beat them againſt one another; upon which the plate is immediately covered with the froth, which is received on a linen cloth, and becomes *purple* in proportion as it dries.

P. Labat obſerves, that if this be the real Tyrian *purple*, the ſecret of preparing and fixing it is loſt; this colour being found to dwindle and diſſipate, in proportion as the linen dyed with it is waſhed.

The ſame author gives us the deſcription of another *purple* dye produced by a plant growing in the Antilles.---The juice of this tree, when cut ſtanding, is of a blood-red, and communicates the ſame colour to cloths; though, like the former, it loſes much in waſhing.

PURPLE, in medicine.---The *purple fever*, *febris purpurea*, is a kind of plague, or a malignant fever diſcovering itſelf in eruptions on the ſkin like the bites of bugs or fleas, or like grains of millet, or the ſmall-pox; whence it is ſometimes alſo called the *ſpotted* and *miliary fever*. See FEVER and MILIARY.

The eruptions are red, orange, violet, azure, livid, or black; and when they riſe in great quantity, it is eſteemed a good ſign. ---Sometimes they ſpread to a great extent, like eryſipelas's, according to the quality of the poiſon. See PLAGUE.

PURPRESTURE, in our ancient law-book. See POURPRESTURE.

PURPRISUM *, of the French *pourpris*, denotes a cloſe, or incloſure:---alſo the whole compaſs or extent of a manor or place.

* —*Donavi eis meum* purpriſum *de Kirkeham, & domos meas, & molendinum, & prata*, &c. Charta Walteri Eſpec. Priorat. de Kirkeham.

PURPURE, **POURPRE**, or **PURPLE**, in heraldry, according to ſome, is one of the five colours of armories, mixed or compounded of gules and azure bordering on violet; according to others, of a little black and much red colour. See COLOUR.

It is ſuppoſed a ſymbol of temperance, liberality, dignity, authority, faith, and piety.---Moſt authors in heraldry, as Favyn, Geliot, Monet, and Meneſtrier, do not allow *purple* for a colour, in regard it is not ſimple, but compoſed of an equal mixture of four other colours.---They rather eſteem it a kind of intermediate tincture, ſometimes metal, and ſometimes colour: hence the Spaniards call it *una miſtion*: ſo that one cannot lay it on metal and colour without falſifying the arms.

Add, that many take the *purple*, as it is accounted, on many ancient bearings, by which ſome of the moderns would evince the regularity and legitimacy of this colour in armory, to be no other than ſilver tarniſhed.

Spelman, however, in his Aſpilogia, allows *purple* the preference before all other colours, as having been an enſign of royalty for many ages; yet he allows it to have been excluded by the ancient heralds as only an imperfect colour.

It is repreſented in engraving by diagonal lines drawn from the ſiniſter chief to the dexter baſe point.---*Vid. tab. herald. fig.* 81. In the coats of noblemen it is called *amethyſt*, and in thoſe of princes, *mercury*.

PURPURATI, in our ancient hiſtorians, denote the ſons of emperors and kings. Neubrig. *lib.* 3. *cap.* 4. Malmſb. *lib.* 3.

PURREL, *anno* 35. Eliz. cap. 10. a liſt ordained to be made at the ends of kerſeys, to prevent deceit in diminiſhing their length.

PURSE, a manner of accounting; or, as ſome call it, a ſpecies of money of account, much uſed in the Levant; particularly at Conſtantinople. See MONEY *of account.*

The *purſe* conſiſts of about 500 dollars, or 120 pounds ſterling. It is ſo called, becauſe all the grand ſignior's treaſure in the ſeraglio is kept in leather bags of this value.

This method of accounting the Turks derive from the Greeks, and they from the Romans; the emperors whereof brought it to Conſtantinople, as appears from a letter of Conſtantine to Cecilian biſhop of Carthage, quoted by Euſebius and Nicephorus, wherein is this paſſage:--- "Being reſolved to give "ſomething for the ſupport of the miniſters of the catholic "religion throughout the provinces of Africa, Numidia, and "Mauritania; I have written to Veſus, treaſurer-general of "Africa; and given him orders to pay you three thouſand "*folles*," i. e. *purſes:* for, as M. Fleury obſerves, we may call that *purſe* which the Latins called *follis*, which was a ſum of 250 ſilver denarii, amounting to about ſeven pounds ſixteen ſhillings, our money.

PURSER, an officer aboard a man of war, who receives her victuals from the victualler, and is to take care that it be in good condition, and well laid up, and ſtowed.

He is alſo to keep a liſt of the men and boys belonging to the ſhip, and to ſet down exactly the day of each man's admittance into pay; that the pay-maſter or treaſurer of the navy may iſſue out his diſburſements, and pay off the men according to the *purſer's* book.

PURSIVENESS, or PURSYNESS, among farriers, *thickneſs of wind*, a name common to all thoſe diſeaſes in horſes which ariſe from obſtructions in the paſſages of the lungs. See WIND.

Purſiveneſs, ſometimes alſo called *broken wind*, may proceed from an ulcer, or ſome inward waſting of the lungs, wherein the ſmall veſſels are worn or abraded by the ſharpneſs or acrimony of the common diſcharges. See PHTHISIS.

The like diſorder may alſo ariſe from a ſtagnation, hindering the air from penetrating ſo as to lift up the lungs in the act of reſpiration; or from tough and mucilaginous matter ſeparated in the branches of the wind-pipe.

The uſual occaſions are cold, ſurfeits, and other diſeaſes not thoroughly carried off.---*Purſive* diſorders may alſo ariſe from unwholſome food, bad air, and hard riding when a horſe is full. The ſigns are commonly a heaving and beating of the flanks; a wheezing and rattling. Sometimes the kernels about the throat will ſwell, and there will be a glandulous running at the noſe, which is the utmoſt ſtage of the diſeaſe, and uſually reputed deſperate. See GLANDERS.

PURSUIVANT. See the article POURSUIVANT.

PURVEYANCE. See the article POURVEYANCE.

PURVEYOR. See the article POURVEYOR.

PURVIEW *, a term frequently uſed by Sir Edward Coke for the body of an act of parliament, or that part which begins with *Be it enacted*, &c. as contradiſtinguiſhed from the *preamble*. See STATUTE.

> * The word comes from the French *pourveu*, a gift, grant, proviſion, *&c.*

The ſtatute of 3 Hen. 7. ſtands upon a *preamble* and a *purview*. 12 *Rep.*

PURULENT, PURULENTUS, in medicine, ſomething mixed with, or partaking of, pus. See PUS and SUPPURATION.

Phthiſical people frequently ſpit a *purulent* matter. See PHTHISIS.--In a dyſentery, the ſtools are *purulent*; when there is an ulcer in the reins or bladder, the urine is *purulent*.

PUS *, in medicine, a putrid matter, white and thick, formed of blood corrupted in a wound or ulcer, and iſſuing out of the lips thereof. See WOUND and ULCER.

> * The word is Latin, *pus*, literally denoting ſnot, *&c.* formed of the Greek *ϖυον*, which ſignifies the ſame.

Wounds are always to be kept open while they ſuppurate, *i. e.* while they generate *pus*; for fear of ſhutting up the wolf in the ſheep-fold. See SUPPURATION.

PUSTULE, PUSTULA, a little pimple, or eruption, on the ſkin, full of pus; eſpecially ariſing in the ſmall and great pox. See EXANTHEMA.

PUTAGE *, PUTAGIUM, in our old law-books, denotes whoredom or fornication on the part of the woman. See FORNICATION.

> * The word is formed from the French *putte*, whore; *putagium*, q. d. *putam agere.*——*Quod autem generaliter ſolet dici*, putagium *hæreditatem non adimit; illud intelligendum eſt de* putagio *matris; quia filius hæres legitimus eſt, quem nuptiæ demonſtrant.* Glanv. lib. 7. cap. 12.

PUTANISM, PUTANISMO, an Italian term, naturalized by ſome Engliſh writers, ſignifying *whoredom*, or the life or condition of a courteſan. See COURTESAN.

The word we borrow immediately from the French, *putaniſme*, and they from the Italian, *puttana*, whore; of *putta*, girl.

PUTATIVE, *ſuppoſitive*, ſomething reputed to be what it really is not.

The word is ſeldom uſed but in the phraſe *putative father*.---Thus we ſay Joſeph was the *putative father of* Jeſus Chriſt. See FATHER.

PUTLOGS, or PUTLOCKS, in building, ſhort pieces of timber, about ſeven feet long, uſed in building ſcaffolds.---They lie at right angles to the wall, with one of their ends bearing upon it, and the other upon the ledgers or poles which lie parallel to the ſide of the wall of the building.

PUTREFACTION, or PUTRIFACTION, in phyſics, a ſlow ſort of corruption produced in natural bodies, generally by the moiſture of the air, or ſome other ambient fluid, which penetrating the pores, and being agitated therein, diſſolves and ſets at liberty ſome of the more ſubtile parts, particularly the ſalts and oils; and thus looſens and diſlocates the compages, quite changes the texture, and ſometimes the figure of the mixt. See CORRUPTION.

How much the air contributes to *putrefaction*, is evident hence, that bodies buried deep under earth, or in water out of any reach of air, ſhall remain for ages intire; which yet being expoſed to the open air, ſhall ſoon rot and moulder away. See SUBTERRANEOUS.

The like appears from ſucculent fruits, and other vegetable matters, which, for all their aptneſs to *putrefy*, will remain a long time unchanged *in vacuo*. See VACUUM.

The perpetual oſcillations of ſo elaſtic a fluid contained or ſhut up in the pores of a body, may be conceived ſufficient to induce this alteration in their form and texture; yet ſhould it rather ſeem, that the water or vapoury matter wherewith the proper air is impregnated, is the more immediate agent. Hence Acoſta obſerves, that in Peru, and others have obſerved the ſame in Egypt, where it very rarely rains, every thing will continue a long time uncorrupted; unleſs we will rather aſcribe the effect to the abundance of nitrous ſalt in the air of thoſe places, which is known to reſiſt *putrefaction*. See AIR, WATER, SALT, *&c.*

In effect, all *putrefactions*, both of animal and vegetable bodies, are affirmed by the learned Boerhaave to be performed by means of water alone: Take (ſays he) a pound of freſh fleſh, and keep it in a heat like that of our body, and in few days the *putrefaction* will be completed; but if you firſt drain out or exhale all the watry part from the ſame in ſome chymical veſſel; though the ſalt and oil remain, the fleſh will harden like a ſtone, and may be kept for ages without *putrefaction*.---Though when thus hardened, water poured on it, or even the common dew, will ſoon ſet it a *putrefying*.

By ſuch means, bread, fleſh, or the like foods, may be preſerved for ages; provided regard be had to the place: hence it is, that in dry countries, as Egypt, dead carcaſes never *putrefy*, but dry and harden uncorrupted; as we ſee in the mummies found buried under the ſand. See MUMMY.

Even human blood, which naturally is ſo prone to *putrefaction*, if you deprive it of its watry part, may be kept for fifty years. Goat's blood we actually find kept ſo long in the ſhops, without corrupting; though, if you diſſolve it in water, and expoſe it to a gentle warmth, it *putrefies* immediately.

PUTREFACTION, in chymiſtry, denotes a ſpontaneous kind of operation, whereby vegetable or other ſubſtances, in virtue of their own heat and moiſture, are diſſolved, and turned into ſubſtances of a higher, *e. gr.* an animal nature. See ANIMAL and VEGETABLE.

Proceſs of vegetable PUTREFACTION.---Throw together any of the tender, green, and ſucculent parts of recent vegetables, whether acid or alkaline, in a large heap, in the warm open air, and preſs them down with an additional weight, if their own be inconſiderable; and the middle part of the heap will in a little time ſpontaneouſly conceive a ſmall degree of heat, and paſs ſucceſſively through the other degrees, till it arrive at a ſtate of ebullition, and be perfectly *putrefied*.

In the ſpace of three days, from the firſt putting them together, they will yield a heat, perceivable by the hand, equal to that of a human body in a healthy ſtate; by the fifth the heat will be too great for the hand to bear without pain; and, laſtly, by the ſixth, ſeventh, or eighth day, the juices will generally appear ready to boil, and ſometimes the matter will even flame and burn away.

By this ſpontaneous operation, the vegetable acquires an abominably putrid, ſtercoraceous, or cadaverous taſte and odour; and turns intirely into one ſoft, ſimilar, pappy maſs, or craſſamentum, greatly reſembling fetid human excrement in the ſcent, and *putrefied* fleſh in the taſte.

If now this fetid matter, thus obtained, be directly, whilſt it remains in its fetid ſtate, committed to a glaſs retort, and diſtilled with proper degrees of fire, there will come over, 1. A water impregnated with an urinous ſpirit, perfectly like that obtainable from animal ſubjects, and ſeparable by a freſh diſtillation ſlowly made in a tall glaſs, into elementary water, and a large quantity of pure, white, volatile, dry, alkaline ſalt, not to be diſtinguiſhed from animal ſalts. 2. A volatile, alkaline, oily ſalt, that ſhoots into glebes. 3. An exceedingly volatile and a thick fetid oil, both which are intirely like thoſe of animals. And, laſtly, the remainder being calcined in an open fire, affords not the leaſt particle of fixt ſalt: juſt as if the ſubject had really been of the animal, and not of the vegetable kingdom. See SALT.

This proceſs is truly univerſal, and holds equally in all kinds of vegetables, though ever ſo different in their nature and virtue. Experiments have been made in the coldeſt and moſt ſucculent or watry plants, ſuch as purſlain, ſorrel, *&c.* as well as with the hotteſt or moſt acrimonious, ſuch as the ſpurges, *&c.* and it was always found to ſucceed; but the ſooner, as the vegetable employed contained the greater quantity of oil: though with the ſame phænomena.

It will likewiſe ſucceed with dry vegetables, provided they be moiſtened with water before they are thrown into heaps: and thus we ſometimes ſee, that ſtacks of hay will ſpontaneouſly take fire, and blaze away; eſpecially if it was not well dried in the making.

It is ſurpriſing to conſider, that by this means the difference betwixt vegetables may be intirely taken away, and the whole kingdom thereof reduced to the ſame common nature; ſo that wormwood and tanſey, for inſtance, or ſorrel and ſcurvygraſs, ſhall appear as one and the ſame thing; and this thing appear no otherwiſe than *putrefied* fleſh.

Though ſorrel be famed for its power of preſerving the animal fluids uncorrupted whilſt they are circulating in the body, and ſcordium for its embalming virtue, as continuing it in a ſtate of incorruption after death; yet even theſe plants are themſelves thus eaſily corrupted and changed into ſuch a kind of *putrefied* fleſh, as it is their virtue to prevent.

This Boerhaave conſiders as a general law of nature, wiſely eſtabliſhed to produce wonderful changes in the world, and prevent the inaction and decreaſe of matter in our globe; this active principle or medium giving an eaſy and reciprocal tranſition of vegetable into animal ſubſtances, and animal into vegetable.

Hence we are given to underſtand the nature and uſes of *putrefaction*, with its difference from *fermentation*, both in regard of the ſubject, cauſe, and effect.---Vegetables alone are the ſubject of fermentation; but both vegetables and animals of *putrefaction*. Fermentation alſo requires, that its ſubject be firſt reduced to the form of a liquid, or at leaſt made capable of floating in one, before it can obtain; whereas *putrefaction* only ſucceeds when its ſubject is half dry, or barely moiſt: which is the reaſon why muſt, put up in a wooden veſſel, does not *putrefy*; whilſt the grapes from which it was expreſſed, being thrown in heaps, would preſently conceive heat, and run into a ſtate of *putrefaction*.

We ſee alſo, that vegetable *putrefaction* is begun and promoted with heat, and finiſhed with coction, which requires a degree of heat much greater than that excited by fermentation, as being capable of cauſing an ebullition in the plant, and even of turning it into flame: as, indeed, the immediate cauſe of fermentation is the motion of the air intercepted between the fluid and viſcous parts of the fermenting liquor; but the cauſe of *putrefaction* is fire itſelf, collected or included within the *putrefying* ſubject. See FIRE and HEAT.

Again, the effects of fermentation are the production of flowers or yeaſt, the converſion of the ſaline part of the fermenting body into tartar, or an acrimonious, acid, and fixed kind of ſalt, and of oils, into an inflammable ſpirit retaining ſomething of the nature of the vegetable; but *putrefaction* makes all the acid ſalts volatile and alkaline; renders the oils not ſpirituous, but abominably fetid; utterly deſtroys what makes the ſpecific difference between one ſubject and another; and converts them wholly into a ſoft pulpy maſs, of an animal nature, without the leaſt ſigns of any fixed ſalt, though the recent vegetable would, by calcination at the firſt, have afforded a large proportion. *Putrefaction*, in fine, makes nearly the ſame kind of alteration in the whole ſubject, as it would undergo by paſſing through a ſound animal body, ſuffering all the actions thereof, and being at length turned into the form of excrement. See FERMENTATION.

This operation may let us a little into the nature of animal digeſtion, or the change which the aliment ſuffers in the human body.---For the change our vegetable foods undergo in the body, being ſuch as brings them to be of the ſame nature, and afford the ſame principles with the change induced by *putrefaction*, is a preſumption, that digeſtion is nothing elſe; at leaſt, it apparently comes nearer thereto, than to fermentation. See DIGESTION.

PUTRID, PUTRIDUS, ſomething rotten or putrefied. See PUTREFACTION.

Thus we ſay, *putrid* fleſh:---a *putrid* humour:--*putrid* limbs, *i. e.* mortified ones, are to be cut off. See MORTIFICATION.

PUTRID *fever* is a kind of fever, wherein the humours, or part of them, have ſo little circulatory motion, that they fall into an inteſtine one, and putrefy. See FEVER.

This is frequently the caſe after great evacuation, or exceſſive heat; where there is ſuch a ſcarcity of ſpirits, that the ſolids do not vibrate ſufficiently to keep the fluids in their due velocity. ---In theſe caſes the pulſe is low, and the fleſh cooler than natural at firſt.

PUTRID *ulcer*. See the article ULCER.

PUTTY ſometimes denotes powder of calcined tin, uſed in poliſhing, and giving the laſt gloſs to works of iron and ſteel. See TIN and EMERY.

PUTTY is alſo uſed to denote *ſpodium*. See SPODIUM.

PUTTY, in its popular ſenſe, denotes a cinericious kind of paſte, compounded of whiting and linſeed-oil beaten together to the conſiſtence of a tough dough:--uſed by glaſiers for faſtening the ſquares of glaſs in ſaſh-windows, *&c.* and by painters, to ſtop up the crevices and clefts in timber and wainſcot, to prevent the wet from getting in, and ruining the work.

PUTURA *, a cuſtom claimed by the keepers of foreſts, and ſometimes bailiffs of hundreds, to take man's meat, horſe's meat, and dog's meat, of the tenants and inhabitants, gratis, within the perambulation of the foreſt, hundred, *&c.* See PURLIEU, PERAMBULATION, *&c.*

* *Johannes clamat unam* puturam *in prioratu de Penevoſtham, qui eſt quædam cella abbatiæ de Eveſham pro ſe & miniſtris, equis & garcionibus ſuis, per unum diem & duas noctes, de tribus ſeptimanis in tres ſeptimanas, viz. de victualibus, ut & eſculentis & potulentis, ad coſtas prioratus prædicti indebite.*—Placit. apud Preſton. 17. Edv. 3.

This cuſtom within the liberty of Knaresburg was long ſince turned into the payment of four pence, *pro putura*.

The land ſubject to this ſervice, is called *terra puturata*. The learned Somner erred in his expoſition of this word.

PYANEPSIA, πυανεψια, in antiquity, a feaſt celebrated by the Athenians in the month *pyanepſion*, which, according to the generality of the critics, was their fourth month, and correſponded to our September. See FEAST.

Plutarch refers the inſtitution of this feaſt to Theſeus, who, at his arrival from Crete, made a kind of ſacrifice to Apollo of all the proviſions remaining in his veſſel; putting them all into a kettle, boiling them together, and eating them with his ſix companions; which cuſtom was afterwards continued.--The ſcholiaſt of Ariſtophanes ſays, it was to acquit himſelf of a vow he made to Apollo in a tempeſt.

M. Baudelot writes the word *puanepſia*; and takes it to be a feaſt inſtituted in memory of Theſeus's return after killing the Minotaur. See MINOTAUR.

The Greeks vary as to the origin and ſignification of the word *pyanepſion*, whence the feaſt is denominated.---Harpocration calls it *pæanopſia*; he adds, that others call it *panopſia*, becauſe then the fruits all appear to the eye.--Heſychius writes *pyanepſia*; and derives it from πυανον, bean, and εψω, *coquo*: becauſe in this feaſt the Athenians gathered their beans, and made a kind of broth of them.

PYCNOSTYLE *, πυκνοϛυλος, in the ancient architecture, a building where the columns ſtand very cloſe to one another; one diameter and a half of the column being only allowed for the intercolumnation. See INTERCOLUMNATION.

* The word is formed from the Greek πυκνος, *cloſe, denſe*, and ϛυλος, *column*.

The *pycnoſtyle* is the ſmalleſt of all the intercolumnations mentioned by Vitruvius.---Some make it the ſame with *ſyſtyle*; others diſtinguiſh the latter, by its allowing half a module more in the Corinthian intercolumnation.

The *pycnoſtyle*, Mr. Evelyn obſerves, chiefly belonged to the compoſite order, and was uſed before the moſt magnificent buildings; as at preſent in the periſtyle of St. Peter's at Rome, conſiſting of near 300 columns, and ſuch as yet remain of the ancients among the late diſcovered ruins of Palmyra.

PYCNOSTICS *, *incraſſants*, or medicines of an aqueous nature, which have the faculty of cooling and condenſing, or thickening the humours. See CONDENSATION.

* The word in its original Greek, πυκνωτικον, ſignifies ſomething that has the power of thickening.

Purſlain, the nenuphar or water-lily, ſolanum, *&c.* are ranked among *pycnotics*.

PYGME, πυγμη, the length or extent between the elbow and extremity of the hand, the fiſt being ſhut; called alſo *cubit*. See CUBIT.

PYGMY *, PYGMÆUS, πυγμαιος, a dwarf, or perſon of exceeding ſmall ſtature, not exceeding a cubit in height. See DWARF and GIANT. See alſo PIGMY.

* The word is formed of the Greek πυγμη, *cubit*. See CUBIT.

The appellation is given among the ancients to a fabulous nation, ſaid to have inhabited Thrace, who generated and brought forth young at five years of age, and were old at eight; famous for the bloody war they waged with the cranes.

PYLING *the ground* for foundations. See FOUNDATION and PALLIFICATION.

PYLORUS*, in anatomy, the right and lower orifice of the ſtomach, whereby it diſcharges itſelf into the inteſtines.---See *tab. anat.* (Splanch.) *fig.* 2. *lit. c, e.* See alſo STOMACH and INTESTINES.

* The word is Greek, πυλωρος, where it primarily ſignifies *janitor*, or door-keeper.

The *pylorus* is ſiuate on the right-ſide of the ſtomach, and paſſes by an oblique aſcent to the duodenum, to prevent the too precipitate paſſage of the aliment out of the ſtomach. See DUODENUM.

For this end it is likewiſe furniſhed with an extraordinary ſeries of fibres, to conſtringe it more than any other part: theſe running round it, ſerve as a kind of ſphincter, which is opened by the contraction of the ſtomach, and the appulſe of the chyle. See DIGESTION, CHYLIFICATION, *&c.*

At the bottom of the *pylorus* is a large cavity, which Willis calls *antrum pylori*, and conceives its uſe to be, to keep the food firſt digeſted, till the latter taken into the ſtomach be digeſted; though, if what Wharton obſerves be true, *viz.* that there are lacteals in the bottom of the ſtomach, ſuch a proviſion ſhould ſeem unneceſſary. See LACTEAL.

PYONY *water*. See the article WATER.

PYRAMID, πυραμις, in geometry, a ſolid ſtanding on a ſquare, triangular, or polygonal baſis, and terminating, at-top, in a point; or a body whoſe baſe is a regular rectilinear figure, and whoſe ſides are plain triangles; their ſeveral vertices meeting together in one point. See SOLID.

Euclid defines it a ſolid figure, conſiſting of ſeveral triangles, whoſe baſes are all in the ſame plane, and have one common vertex. See TRIANGLE and VERTEX.

Wolfius defines it a ſolid, bounded by as many triangles, A D C, D C B, and A D B, terminating in one point D; as the baſe A B C has ſides. *Tab. geomet. fig.* 78.

The *pyramid* is ſaid to be *triangular*, *quadrangular*, *quinquangular*, &c. as the baſe is triangular, quadrangular, *&c.*---The *pyramid* may be called a ſquare, triangular, *&c.* cone; or the cone, a round *pyramid*. See CONE.

Properties of the PYRAMID.---1. All *pyramids* and cones ſtanding on the ſame baſe, and having the ſame altitude, are demonſtrated to be equal.

2. A triangular *pyramid* is the third part of a priſm, ſtanding on the ſame baſe, and of the ſame altitude. See PRISM.

3. Hence, ſince every multangular may be divided into triangulars; every *pyramid* is the third part of a priſm, ſtanding on the ſame baſis, and of the ſame altitude.

4. If a *pyramid* be cut by a plane, *a b c*, parallel to its baſe A B C; the former plane or baſe will be ſimilar to the latter.

5. All *pyramids*, priſms, cylinders, *&c.* are in a ratio compounded of their baſes and altitudes: the baſes, therefore, being equal, they are in proportion to their altitudes; and the altitudes being equal, in proportion to their baſes.

6. *Pyramids*, priſms, cylinders, cones, and other ſimilar bodies, are in a triplicate ratio of their homologous ſides.

7. Equal *pyramids*, &c. reciprocate their baſes and altitudes, *i. e.* the altitude of the one is to that of the other, as the baſe of the one to that of the other, *&c.*

8. A ſphere is equal to a *pyramid*, whoſe baſe is equal to the ſurface, and its height to the radius of the ſphere.

To meaſure the ſurface and ſolidity of a PYRAMID.---Find the ſolidity of a priſm, that has the ſame baſe with the given *pyramid*. See PRISM.--And divide this by three; the quotient will be the ſolidity of the *pyramid*.

Suppoſe, *v. gr.* the ſolidity of the priſm be found 67010328, the ſolidity of the *pyramid* will be thus found 22336770.

The ſurface of a *pyramid* is had, by finding the areas both of the baſe A B C, and of the lateral triangles A C D, C B D, B D A. See TRIANGLE. The ſum of theſe is the area of the *pyramid*.

The external ſurface of a right *pyramid*, ſtanding on a regular polygonal baſe, is equal to the altitude of one of the triangles which compoſe it, multiplied by the whole circumference of the baſe of the *pyramid*.

To deſcribe a PYRAMID *on a plane.*---1. Draw the baſe, *v. gr.* the triangle A B C (if the *pyramid* required be triangular); ſo as that the ſide A B, ſuppoſed to be turned behind, be not expreſſed. 2. On A C and C B, conſtruct the triangles A D C, and C D B, meeting in any aſſumed or determined point, *v. gr.* D; and draw A D, C D, B D: then will A D B C be a triangular *pyramid*.

To conſtruct a PYRAMID *of paſt-board*, &c.---Suppoſe, *v. gr.* a triangular *pyramid* required. 1. With the radius A B, deſcribe an arch B E, (*fig.* 79.) and thereto apply three equal chords, B C, C D, and D E. 2. On C D conſtruct an equilateral triangle D F C; and draw the right lines A D and A C. This paſt-board, *&c.* being cut off by the contour of the figure, what remains within will turn up into a *pyramid*.

Truncated PYRAMID. See the article TRUNCATED.

Fruſtum of a PYRAMID. See the article FRUSTUM.

PYRAMID*, in architecture, denotes a ſolid maſſive edifice, which, from a ſquare, triangular, or other baſe, riſes diminiſhing to a point or vortex.

> * Some derive the word from πυρος, *wheat*, and αμαω, *colligo*; pretending, that the firſt *pyramids* were built by the patriarch Joſeph for granaries.——But Villalpandus, with much better reaſon, derives the word from πυρ, *fire*; becauſe ending in a point like flame.

When they are very narrow at bottom, *i. e.* their baſe very ſmall, they are called *obeliſks*, and *needles*. See OBELISK.

Pyramids are ſometimes erected to preſerve the memory of ſingular events, and ſometimes to tranſmit to poſterity the glory and magnificence of princes; but as they are the ſymbol of immortality, they are more commonly uſed as funeral monuments. See MONUMENT.

Such is that of Ceſtius at Rome; and thoſe other celebrated ones of Egypt, as famous for the hugeneſs of their ſize, as their antiquity.

Theſe laſt are all ſquare in their baſes; and it is a thing has been frequently propoſed, to eſtabliſh a fixed meaſure from them, to be thereby tranſmitted to poſterity.---See their deſcriptions, meaſures, *&c.* in Thevenot, Pietro della Valle, Graves, *&c.*

Among the Egyptians, the *pyramid* is ſaid to have been a ſymbol of human life; the beginning whereof is repreſented by the baſe, and the end by the apex: on which account it was, they uſed to erect them on ſepulchres. Herodotus.

Scenography of a PYRAMID. See the article SCENOGRAPHY.

Optic PYRAMID. See the article OPTIC *pyramid*.

PYRAMIDAL *fountain*. See the article FOUNTAIN.

PYRAMIDAL *mirrors*. See the article MIRROUR.

PYRAMIDAL *numbers* are the ſums of polygonal numbers, collected after the ſame manner as the polygonal numbers themſelves are extracted from arithmetical progreſſions. See POLYGONAL *number*, &c. See alſo NUMBER.

Theſe are particularly called *firſt pyramidals*.--The ſums of firſt *pyramidals* are called *ſecond pyramidals*.---The ſums of thoſe *third pyramidals*, &c. ad infinitum.

Particularly, thoſe ariſing from triangular numbers are called *prime triangular pyramidals*; thoſe ariſing from pentagonal numbers are called *prime pentagonal pyramidals*, &c.

From the manner of ſumming up pentagonal numbers, it appears evidently, how the prime *pyramidal* numbers are found; *viz.* $\frac{(a-2)n^3+3n^2-(a-5)n,}{6}$ expreſſes all the prime *pyramidals*.

PYRAMIDALE *corpus*, in anatomy, a plexus of blood-veſſels on the back of the teſticles; thus called from its form: and from its ſtructure alſo called *corpus varicoſum* and *pampiniforme*. See CORPUS and VARICOSUM.

It conſiſts of innumerable little veins, communicating with each other, and forming a kind of net-work; which, at length uniting, terminate in one vein, by which the blood is conveyed into them all.

The origin of this plexus is from the ſpermatic veins, which, a little above the teſticles, ſplit into ſeveral branches; which again uniting ſeveral times, form the *corpus pyramidale*. See TESTICLE and SPERMATIC.

PYRAMIDALES *papillæ*. See the article PAPILLÆ *pyramidales*.

PYRAMIDALIS, in anatomy, denotes a ſmall muſcle of the abdomen, lying on the lower part of the rectus.---It has its name from its figure, and its origin from the margin of the os pubis, with a pretty broad fleſhy head, whence it grows gradually narrower, till it end in a ſmall round tendon in the linea alba; ſometimes almoſt at the navel.--See *tab. anat.* (Myol.) *fig.* 1. *n.* 46. *fig.* 2. *n.* 31.

This muſcle is ſometimes ſingle, ſometimes it has its fellow, and ſometimes they are both wanting.

PYRAMIDOID, called alſo *parabolic ſpindle*, a ſolid figure formed by the revolution of a ſemi-parabola round one of its ordinates.

According to the method of indiviſibles, this may be conceived to conſiſt of an infinite ſeries of circles, whoſe diameters are all parallel to the axis of the revolving parabola.

The *parabolic ſpindle* is equal to $\frac{8}{15}$, of its circumſcribing cylinder.

PYRATE. See the article PIRATE.

PYRENOIDES*, *proceſſus*, in anatomy, a proceſs of the ſecond vertebra of the neck; called alſo *odontoides* and *dentiformis*, or the tooth-like proceſs. See VERTEBRA and ODONTOIDES.

> * The word is Greek, πυρηνοειδης formed of πυρην, *nucleus*, kernel or berry, and ειδος, figure.

PYRETHRUM, *pellitory of Spain*, an acrid medicinal root, brought from Tunis and Italy; of an hot, diſcutient quality: uſed as an alexipharmic and phlegmagogue; as alſo to aſſuage the tooth-ach, and in the compoſition of vinegar.

It is of a moderate length, the thickneſs of the little finger, greyiſh without, whitiſh within, and of a ſharp burning taſte.

It is pretended it took its name from Pyrrhus king of Epirus; but there is no great occaſion for having recourſe to a myſtery, its burning quality being ſufficient to give it the name *pyrethrum*, from the Greek, πυρ, fire.--It muſt be choſen new, dry, hard to break, *&c.*

It is called a ſalivary root, becauſe, being held in the mouth, its pungency promotes the evacuation of ſaliva.

PYRETICS*, medicines good againſt fevers. See FEVER.

> * The word is formed from the Greek πυρετος, *fever*, of πυρ, *fire*.

PYRIFORMIS, in anatomy, a muſcle of the thigh, receiving its name from its figure, which reſembles that of a pear.---It is alſo called *iliacus externus*, from its ſituation.---See *tab. anat.* (Myol.) *fig.* 7. *n.* 21, 22. See alſo ILIACUS.

Its beginning is round and fleſhy, from the inferior and internal part of the os ſacrum, where it reſpects the pelvis of the abdomen; and deſcending obliquely along the great ſinus of the os ilium, above the acute proceſs of the iſchium, and joining with the glutæus medius, is inſerted by a round tendon into the ſuperior part of the root of the great trochanter.---This moves the os femoris ſomewhat upwards, and turns it outwards.

PYRITES*, in phyſiology, a ſulphurous inflammable kind of ſtone or mineral, compoſed of an acid ſalt, incorporated with an oily or bituminous matter. See MINERAL.

> * The word is Greek, πυριτης, *q. d.* fireſtone, formed of πυρ, fire; a denomination given it on account of its inflammability, which is ſuch, that by colliſion it will yield ſparks of fire.

Pyrites bears a near affinity to marcaſite, with which the generality of authors confound it.---Dr. Woodward makes this diſtinction between the two, that *pyrites* is reſtrained to the nodules, or thoſe pieces found lodged in ſtrata of another kind; and marcaſite to thoſe found in ſtrata of the ſame kind.--Add, that the marcaſite frequently contains arſenic, which the *pyrites* does rarely, if ever. See MARCASITE.

Pyrites has always a metalline part in it, and ſometimes a cretaceous or okerous part.---In proportion as any of theſe prevails, the body commences a ſulphur, alum, or vitriol. See VITRIOL, COPPERAS, SULPHUR, *&c.*

The metal in *pyrites* is chiefly iron; ſometimes there is copper in it, and always a little gold, rarely ſilver, and never lead or tin. See METAL.

Dr. Slare tells us of a heap of *pyrites* conſiſting of two or three hundred tons, which being covered up from the air five or ſix months, took fire, and burnt for a week. Some of it looked like melted metal, others like red-hot ſtones. He adds, it emitted a moſt noiſome ſmoke.

Dr. Liſter attributes thunder, earthquakes, *&c.* to the ſulphurous and inflammable breath of the *pyrites*. See THUNDER, EARTHQUAKE, EXHALATION, *&c.*

PYRITES is applied by ſome authors to the marcaſites of all metals; the names whereof are varied according to the metals they partake of. See MARCASITE.

Thus *chryſitis* is that of gold; *argyritis* that of ſilver; *ſideritis* that of iron; *chalcitis* that of copper; *molybditis* that of lead, *&c.* See CHALCITIS, *&c.*

PYROBOLOGY. See the article PYROTECHNIA.

PYROENUS * is a term ſometimes uſed for rectified ſpirit of wine; thus called becauſe made by fire, or rather becauſe rendered of a fiery nature. See SPIRIT and RECTIFICATION.

* The word is of Greek compoſition, formed of πυρ, *fire*, and οινος, *wine*.

PYROET, PYROUET, or rather PIROUETTE, in the manage. See PIROUETTE.

PYROMANCY, πυρομαντεια, a kind of divination, performed by means of fire. See DIVINATION.

The ancients imagined, they could foretel futurity by inſpecting fire and flame: to this end they conſidered its direction, or which way it turned.--Sometimes they added other matters to the fire, *e. gr.* a veſſel full of urine, with its neck bound about with wool, watching narrowly on which ſide it burſt, and thence taking their augury.

Sometimes they threw pitch on it, and if it took fire immediately, eſteemed it a good augury.

PYROTECHNY *, πυροτεχνια, the art of fire, or a ſcience which teaches the management and application of fire in ſeveral operations. See FIRE.

* The word is formed from the Greek, πυρ, *fire*, and τεχνη, *art*.

Pyrotechny is of two kinds, military and chymical.

Military PYROTECHNY is the doctrine of artificial fire-works and fire-arms, teaching the ſtructure and uſe both of thoſe uſed in war for the attacking of fortifications, *&c.* as gun-powder, cannons, bombs, granadoes, carcaſſes, mines, fuſees, *&c.* and thoſe made for amuſement-ſake, as rockets, ſtars, ſerpents, *&c.* See FIRE *arm*, ORDINANCE, *&c.*

Some call *pyrotechny* by the name *artillery*; though that word is uſually confined to the inſtruments uſed in war. See ARTILLERY.---Others chuſe to call it *pyrobology*, or rather *pyroballogy*, *q. d.* the art of miſſile fires; from the Greek πυρ, fire, and βαλλειν, to caſt, throw. See GUNNERY, PROJECTILE, *&c.*

Wolfius has reduced *pyrotechnia* into a kind of mixt mathematical art: indeed it will not allow of geometrical demonſtrations; but he brings it to tolerable rules and reaſons: whereas before it had uſed to be treated by authors at random, and without regard to any reaſons at all. See MATHEMATICS.

See the elements of *military pyrotechny* under the ſeveral inſtruments and operations; CANNON, BOMB, ROCKET, GUNPOWDER, *&c.*

Chymical PYROTECHNIA is the art of managing and applying fire in diſtillations, calcinations, and other operations of chymiſtry. See CHYMISTRY and OPERATION.

Some reckon a third kind of *pyrotechnia*, *viz.* the art of fuſing, refining, and preparing metals. See METAL, FUSION, REFINING, *&c.*

PYROTECHNICAL *ſpunge*. See the article SPUNGE.

PYROTICS *, πυρωτικα, in medicine, remedies either actually or potentially hot; and which, accordingly, will burn the fleſh, and raiſe an eſchar. See CAUSTIC and ESCHAROTIC.

* The word is formed from the Greek πυρ, *fire*.

PYROUET. See the article PIROUETTE.

PYRRHICHA, Πυρριχη, in antiquity, a kind of exerciſe on horſe-back; or a feigned combat, for the exerciſe of the cavalry. See EXERCISE.

It was thus called from its inventor Pyrrhichus, or Pyrrhus of Cydonia, who firſt taught the Cretans to march in meaſure and cadence to battle, and to obſerve the pace of the Pyrrhic foot.---Others derive the name from Pyrrhus ſon of Achilles, who inſtituted this exerciſe at the obſequies of his father. Ariſtotle ſays, that it was Achilles himſelf invented it.

The Romans alſo called it *ludus Trojanus*, the Trojan game; and Aulus Gellius, *decurſus*.---It is doubtleſs this exerciſe that we ſee repreſented on medals by two cavaliers in front running with lances, and the word *decurſio* in the exergum.

PYRRICHIUS, πυρριχιος, in the Greek and Latin poetry, a foot conſiſting of two ſyllables, both ſhort;--as *deus*. See FOOT. Among the ancients this foot is alſo called *periambus*; by others *hegemona*. Quintil. l. 9. c. 4.. Plot. de metr. p. 2665.

PYRRHONIANS, PYRRHONEANS, or PYRRHONISTS, a ſect of ancient philoſophers, ſo called from their founder Pyrrho. See PHILOSOPHER.

The diſtinguiſhing character of this philoſopher was, that he profeſſed to doubt of every thing, maintaining, that men only judge of truth and falſhood from appearances which deceive. See DOUBTING.

On this principle he kept himſelf in continual ſuſpenſion of mind, never determining on any thing; to avoid the inconveniencies of error, and falſe judgments. See ERROR, FALSEHOOD, *&c.*

Thoſe now diſtinguiſhed by the name of *Pyrrhonians*, or *Sceptics*, are perſons who, from the great number of things that are dark and obſcure, and from the averſion they bear to popular credulity, maintain, that there is nothing certain in the world. See SCEPTICS.

The truth is, *Pyrrhoniſm* has ſome foundation in nature: we do not judge of things from their real eſſences, but from their relations to ourſelves. Moſt of our ideas we receive by means of our ſenſes; but our ſenſes are not given us to judge of the eſſences, but of the relations of things to ourſelves; *i. e.* how they may affect us ſo as to do us good or harm. See SENSATION, RELATION, SENSE, *&c.*

Thus, *e. gr.* our eyes do not give us the real magnitudes of objects, but their relative ones only. See VISION and VISIBLE. See alſo BODY and MATTER.

The Academics differed from the *Pyrrhonians*, in that they owned there were ſome things more like or akin to truth than others, which the *Pyrrhonians* peremptorily denied. See ACADEMICS.

Le Clerc obſerves, that the *Pyrrhonians*, in affirming that there is nothing certain, were the moſt aſſuming and deciſive of all philoſophers; ſince they muſt have firſt examined all things, to be able to determine preciſely, that all things are uncertain.

It may be added, that the very principle of the *Pyrrhonians* deſtroys itſelf: for if there be nothing certain, then muſt that dogma itſelf be precarious; and if no one thing be more probable, or liker to truth than another, why ſhall the principle of the *Pyrrhonians* be believed preferably to the oppoſite one? ſince itſelf is come at in the ſame way as our other knowledge. See KNOWLEDGE, ACATALEPSIA, *&c.*

PYTHAGORAS's *table*. See the article TABLE.

PYTHAGOREAN, or PYTHAGORIC *ſyſtem*, among the ancients, was the ſame with the Copernican ſyſtem among the moderns. See SYSTEM.

It was thus called, as having been maintained and cultivated by Pythagoras and his followers; not that it was invented by him, for it was much older. See COPERNICAN *ſyſtem*.

PYTHAGOREANS, a ſect of ancient philoſophers, who adhered to the doctrines of Pythagoras. See PHILOSOPHER.

The founder of this ſect was of Samos, the ſon of a lapidary, and pupil of Pherecydes, who flouriſhed about the ſeventh olympiad, *i. e.* about 500 years before Chriſt.

This ſect was alſo called the *Italic ſect*, or *Italic ſchool*, becauſe Pythagoras, after travelling into Egypt, Chaldea, and even into the Indies, to inform his underſtanding, returning home to his own country, and there unable to bear the tyranny of Polycrates, or Syloſon, retired into the eaſtern part of Italy, then called the Greater Greece, and there taught and formed his ſect. See ITALIC.

He is held to have excelled in every part of ſcience: Laertius ſays, among the Chaldees and Hebrews he learnt divination, and the interpreting of dreams; in Egypt he learnt all the myſteries of the prieſts, and the whole ſyſtem of ſymbolical knowledge, with all their theology.--Porphyry adds, that he learnt the mathematical ſciences in his travels; geometry from the Egyptians, the doctrine of numbers and proportions from the Phœnicians, and aſtronomy from the Chaldeans; morality and theology he learnt chiefly from the magi.

He was the firſt who aſſumed the modeſt title *philoſopher*; the ſages till his time having borne the arrogant appellation σοφοι. See PHILOSOPHER and SOPHIST.

Jamblichus obſerves, that in Phœnicia he converſed with the prophets and philoſophers, the ſucceſſors of Mochus the phyſiologiſt; which Mochus Selden and ſome others will have to be Moſes.

His ſchool in Italy was at Crotona, where he is ſaid to have been attended by no leſs than 600 ſcholars.---His houſe was called the temple of Ceres, and the ſtreet where it ſtood the muſeum. See MUSEUM.

Out of this ſchool proceeded the greateſt philoſophers and legiſlators, Zaleucus, Charondas, Archytas.--Porphyry ſays, as ſoon as he arrived in Italy he had an auditory of two thouſand people, to whom he explained the laws of nature, reaſon, and juſtice.

He endeavoured to aſſuage the paſſions of the mind with verſes and numbers; and made a practice of compoſing his mind every morning by his harp, frequently ſinging the pæans of Thales. See MUSIC.---Exerciſes of the body alſo made a conſiderable part of his diſcipline. See GYMNASTICS, *&c.*

His ſchool became ſo popular, that cities and people committed their republics to the government of his ſcholars.---At length, Porphyry adds, envy ſtirring up ſedition againſt them, they were oppreſſed; and, in time, their learning, which they ever kept ſecret, was loſt; except ſome difficult things learnt by rote by the crowd of hearers: for Pythagoras never committed any thing to writing.

Beſide his public ſchool, Pythagoras had a college in his own houſe, which he called κοινοβιον, *cœnobium:* in this were two orders or claſſes of ſcholars, εξωτερικοι, *exoterici*, called alſo *auſcultantes*; and εσωτερικοι, *intrinſeci*.---The former were novices and probationers, who were kept under a long examen, and even impoſed a quinquennial ſilence, to teach them modeſty and attention, according to Apuleius; or, according to Clemens Alexandrinus, to teach them to abſtract their minds from ſenſible objects, and enure them to the pure contemplation of the deity.

The latter were called *genuini*, *perfecti*, *mathematici*, and *Pythagoreans* by way of eminence. Theſe alone were let into the arcana and depths of the real Pythagoric diſcipline.

Clemens obſerves, that theſe orders correſponded very exactly to thoſe among the Hebrews: for in the ſchools of the prophets were two claſſes, *viz.* the ſons of the prophets, who were the ſcholars; and the doctors or maſters, who were alſo called *perfecti:* and among the levites, the novices or tyro's, who had their quinquennial exerciſes, by way of preparation. Laſtly, even among the proſelytes there were two orders; *exoterici*, or proſelytes of the gate; and *intrinſeci* or *perfecti*, proſelytes of the covenant. He adds, it is highly probable, that Pythagoras himſelf had been a proſelyte of the gate, if not of the covenant.

Gale endeavours to prove, that Pythagoras borrowed his philoſophy from that of the Jews; to this end producing the authorities of many of the fathers and ancient authors, and even pointing out the tracks and footſteps of Moſes in ſeveral parts of Pythagoras's doctrine.

Pythagoras taught, that God is one; that he is a moſt ſimple, incorruptible, and inviſible being; and therefore only to be worſhipped with a pure mind, with the ſimpleſt rites, and thoſe preſcribed by himſelf.---Laertius obſerves, that he made unity the principle of all things; hence aroſe duality, *&c.* See Unity, *&c.*

In his converſation with the Egyptians, he learnt abundance of ſecrets about numbers; to which he attributed ſo much, that he even attempted to explain all things in nature by numbers.---In effect, it was a common opinion of the ancient philoſophers, that the ſpecies of things have to each other the nature and relation of numbers; and that the univerſe, and all things therein, were produced according to certain numbers, inherent in the Creator's mind. See Arithmetic.

Hence Porphyry obſerves, the *Pythagoreans* ſtudied the doctrine of numbers with great attention: ſince the incorporeal forms, and firſt principles of things, *i. e.* the divine ideas, could not be delivered in words, they had recourſe to demonſtration by numbers; and thus called the common reaſon and cauſe of unity, identity, and equality, by the name *one*.

Pythagoras further taught, that there is a relation or kinſhip between the gods and man, and therefore that the gods take care of man.---Which, Clemens Alexandrinus ſays, is apparently borrowed from the Chriſtian doctrine of providence. See Providence.

Pythagoras alſo aſſerted a metempſychoſis, or tranſmigration of ſouls; and therefore the immortality of the ſoul. See Metempsychosis.

He alſo taught, that virtue is harmony, health, and every good thing; and that God, and therefore all things, conſiſt of harmony. See Harmony.

PYTHAGORIC *theorem*, or *propoſition*, is the 47th of the firſt book of Euclid. See Triangle and Hypothenuse.

Pythagoric *tetractys*. See the article Tetractys.

Pythagoric *abacus*. See the article Abacus.

PYTHIA, or **Pythian**, in antiquity, the prieſteſs of Apollo, by whom he delivered oracles. See Oracle.

She was thus called from the god himſelf, who was intitled *Apollo Pythius*, from his ſlaying the ſerpent Python; or, as others will have it, απο τȣ πυθειν, becauſe Apollo, the ſun, is the cauſe of rottenneſs; or, according to others, from πυνθανομαι, *I hear*, becauſe people went to hear and conſult his oracles.

The prieſteſs was to be a pure virgin.---She ſat on the covercle, or lid, of a brazen veſſel, mounted on a tripod; and thence, after a violent enthuſiaſm, delivered her oracles, or rather explained thoſe of the god; *i. e.* rehearſed a few ambiguous and obſcure verſes, which were taken for oracles.

All the *Pythiæ* did not ſeem to have had the ſame talent at poetry, or memory enough to retain their leſſon.---Plutarch and Strabo make mention of poets, who were kept in pay, as interpreters of Jupiter, *&c.*

Pythia, or **Pythian** *games*, were ſolemn games inſtituted in honour of Apollo, and in memory of his killing the ſerpent Python with his arrows. See Games.

The *pythia* were celebrated in Macedonia, in a place called *Pythium*.---They were the next in fame after the Olympic games, but were more ancient than they; for it is pretended they were inſtituted immediately after the defeat of the ſerpent.---They were held every two years, about the month Elaphebolion, which anſwered to our February.

The *pythia* were alſo celebrated at Delphos; and it was theſe were the moſt renowned.---A part of Pindar's poems were compoſed in praiſe of the victors in the Pythian games. See Pindaric.

The critics are divided on the ſubject of the ſerpent Python.---The poets ſay, that Juno made uſe of it to perſecute Latona, and prevent her bringing into the world Apollo and Diana, whom ſhe had conceived of Jupiter; and that it was for this reaſon Apollo killed it.

Strabo ſays, it was no other than a famous villain, one Draco, that Apollo ridded the world of.---Dickinſon, in his Delphi Phœnicizantes, maintains the Python of the Greeks to be the Typhon of the Phœnicians; and the Typhon of the Phœnicians to be the Og of Scripture; and Apollo, who ſlew it, he will have to be Joſhua.

PYXIS[*] *nautica*, in navigation, the ſeaman's compaſs. See Compass.

[*] The word is Greek, πυξις, where it literally ſignifies a *box*.

Pyxis, among anatomiſts, is alſo uſed for the cavity of the hipbone. See Acetabulum.

Q.

Q, A conſonant, and the ſixteenth letter of the alphabet. See LETTER and ALPHABET.

The *Q* has this peculiar to it, that it is always followed by an *U*. See U.

The *Q* is formed from the Hebrew ק, *Koph*; which moſt other languages have borrowed; though ſome of them have rejected it again, particularly the Greeks, who now only retain it as a numeral character, called *κοϖπα επισημον*.

In effect, there is that reſemblance between the *Q* and *C*, in ſome Languages, and *K* in others; that many grammarians, in imitation of the Greeks, baniſh the *Q* as a ſuperfluous letter. Papias even affirms, that all the Latin words now wrote with a *Q*, were wrote among the ancient Romans with a *C*: but we want better authorities. For though that may hold in many caſes, inſomuch that we ſtill write indifferently *quur* or *cur*, *cum* or *quum*, *quotidie* or *cotidie*, &c. Yet does it not thence follow, that they wrote *cis*, *cæ*, *cid*, for *quis*, *quæ*, *quid.*—What inſcriptions authorize ſuch a reading? Far from this, the ancients ſometimes ſubſtituted *Q* for *C*; and wrote *quojus*, *quos*, for *cujus*, *cus*, &c. See C.

Varro, however, and ſome other grammarians, as we are told by Cenſorinus, *&c.* would never uſe the *Q*. The truth is, it's uſe or diſuſe ſeems to have been ſo little ſettled and agreed on, that the poets uſed the *Q* or *C* indifferently, as beſt ſuited their meaſures; it being a rule, that the *Q* joined the two following vowels into one ſyllable; and that the *C* imported them to be divided.

Hence it is, that Lucretius uſes *cuiret* for three ſyllables, in lieu of *quiret*; *acua* for *aqua*; and that Plautus uſes *relicuum* for *reliquum*; as in *quod dedi datum non vellem relicuum non*; where the *cuum* muſt be two ſyllables, otherwiſe the Trochaic verſe will be lame of a foot.

In the French the ſound of the *Q* and *K* are ſo near akin, that ſome of their niceſt authors think the former might be ſpared—Ramus adds, that till the eſtabliſhment of royal profeſſors in the univerſity of Paris under Francis I. they always uſed *Q* in the Latin the ſame as in the French; pronouncing *kis*, *kalis*, *kantus*, &c. for *quis*, *qualis*, *quantus*, See K.

Some very learned men make *Q* a double letter, as well as *K* and *X*—According to them, *Q* is evidently a *C* and *U* joined together—It is not enough that the ſound is the ſame; but they ſee the traces of the *CU* in the figure of the *Q*; the *V* being only laid obliquely, ſo as to come within the cavity of the *C*; as *C*<.

To confirm this, they ſay the ancients wrote *qi*, *qæ*, *qid*. Though Joſ. Scaliger, Littleton, *&c.* think this no proof of the point; for in Gruter's inſcriptions, we find not only the *Q*, but alſo the *C*, put for *QU*; as *Cintus*, *Quintus*, *ſicis* for *ſiquis*, &c. Yet no body ever imagined the *C* a double letter. See DOUBLE *Letter*.

Q among the antients, was a numeral letter, ſignifying 500; as in the verſe,

> Q *velut A cum D quingentos vult numerare.*

A daſh over it, as *Q̄*, denoted it to ſignify five hundred thouſand. See A.

Q is alſo uſed as an abbreviature in ſeveral arts—*Q. Pl.* in phyſicians bills, ſtands for *quantum placet*, or *quantum vis*, as much as you pleaſe of a thing.

Q. S. for *quantum ſufficis*, or as much as is neceſſary.

Q. E. D. among mathematicians, ſignifies *quod erat demonſtrandum*, which was to be demonſtrated.

Q. E. F. *quod erat faciendum*, which was to be done.

Q. D. is alſo frequently uſed among grammarians, *&c.* for *quaſi dictum*, as if it were ſaid, *&c.* or as who ſhould ſay.

QUACK, in medicine. See EMPIRIC.

QUADRA, in building, any ſquare border, or frame, incompaſſing a baſſo-relievo, pannel, painters or other work.

The word is alſo uſed abuſively for a frame or border of another form; as round, oval, or the like.

QUADRAGESIMA, a term ſometimes uſed for the time of lent; becauſe conſiſting of forty days. See LENT.

Hence, ſome monks are ſaid to lead a *Quadrageſimal* life; or to live on *Quadrageſimal* food all the year.

QUADRAGESIMA *ſunday*, is the firſt ſunday in lent; ſo called becauſe it is about the fortieth day before eaſter. See EASTER.

On the ſame account, the three preceding ſundays, are called *Quinquageſima*, *Sexageſima*, and *Septuageſima*. See QUINQUAGESIMA, *&c.*

QUADRAGESIMALS, QUADRAGESIMALIA, denote *Mid-lent* contributions, or offerings. See OBLATION, *&c.*

It was an ancient cuſtom for people to viſit their mother-church on *Mid-lent* ſunday, and to make their offerings at the high altar: and the like was alſo done in Whitſon-week—But as theſe latter oblations, *&c.* were ſometimes commuted for by a payment of *Pentecoſtals*, or *Whitſon-farthings*: ſo were the former alſo changed into a cuſtomary payment, called *Quadrageſimals*, *Denarii Quadrageſimales*, and ſometimes *Lætare Jeruſalem*, from a hymn ſo called, ſung on that day, beginning, *Jeruſalem Mater omnium*, *&c.* See PENTECOSTAL, *&c.*

QUADRANGLE, in geometry, a quadrangular, or quadrilateral figure; or a figure which has four ſides, or four angles. See FIGURE and QUADILATERAL.

To the claſs of *Quadrangles*, or *Quadrangular figures*, belong the *Square*, *Parallelogram*, *Trapezium*, *Rhombus*, and *Rhomboides*. See SQUARE, PARALLELOGRAM, RHOMBUS, *&c.*

A Square, *&c.* is a regular *Quadrangle*—a Trapezium an irregular one. See TRAPEZIUM.

Quadrangular figures are not proper for fortification; the flanks and flanked angles being too ſmall. See FORTIFICATION, BASTION, *&c.*

QUADRANS, in antiquity, the fourth part of the As or Pound. See AS and POUND.

QUADRANS, in our cuſtoms, is the fourth part of a penny: or, a farthing. See PENNY and FARTHING.

QUADRANT, QUADRANS, in geometry, an arch of a circle, containing 90 degrees, or one fourth of the entire periphery. See ARCH and CIRCLE. See alſo DEGREE.

Sometimes, alſo, the ſpace or area included between this arch and two radii, drawn from the centre to each extremity thereof, is called a *Quadrant*, or more properly *Quadrantal ſpace*; as being a quarter of the entire circle. See SECTOR.

QUADRANT, alſo denotes a mathematical inſtrument, of great uſe in navigation and aſtronomy; for the taking of altitudes, angles, *&c.* See ALTITUDE and ANGLE.

The *Quadrant* is variouſly contrived, and furniſhed with various aparatus, according to the various uſes it is intended for; but they all have this in common, that they conſiſt of a *Quadrant*, or quarter of a circle, whoſe limb is divided into 90 degrees; that they have a plummet ſuſpended from the centre, and are furniſhed with Pinnulæ, or ſights, through which to look. See SIGHTS, *&c.*

The principal, moſt uſual, and uſeful *Quadrants*, are the *Common* or *Surveying Quadrant*, *Aſtronomical Quadrant*, *Horodictical Quadrant*, *Gunter*'s *Quadrant*, *Sutton*'s or *Collin*'s *Quadrant*, and the *Sinical Quadrant*.

The Common or Surveying QUADRANT, (repreſented *Tab. Surveying*, *fig.* 30.) is made of braſs, wood, or other matter; uſually 12 or 15 inches radius—It's circular limb is divided into 90°, and each of thoſe ſubdivided into as many equal parts as the ſpace will allow; either diagonally, or otherwiſe—On one edge, or ſemidiameter, are fixed two immoveable ſights; and in the angle, or centre, is hung a thread with a plummet. To the centre is likewiſe, ſometimes, fixed a label or moveable index, bearing two other ſights like the index of a teleſcope—And in lieu of the immoveable ſights, is ſometimes fitted a teleſcope; though this more properly belongs to the aſtronomical *Quadrant*.

On the under ſide, or face of the inſtrument, is fitted a ball and ſocket; by means whereof, it may be put in any poſition for uſe. See BALL *and Socket*.

Beſides the eſſentials of the *Quadrant*, there is frequently added on the face near the centre, a kind of compartiment, called the *Quadrat*, or *Geometrical Square*; as in the figure — This, in ſome meaſure, making a diſtinct inſtrument of itſelf; ſee it's deſcription and uſe under the article QUADRAT.

The *Quadrant* is to be uſed in different ſituations, according to the dimenſions to be taken—To obſerve heights and depths, it's plane is diſpoſed at right angles to the horizon; to take horizontal diſtances, the plane is diſpoſed parallel thereto.

Heights and diſtances, again, may be taken two ways: *viz.* by means of the fixed ſights and plummet, and by the label.

Uſe of the ſurveying QUADRANT—*To take the height*, or *depth of an object*, with the fixed ſights and plummet—Place the *Quadrant* vertically, and the eye under the ſight next the arch of the *Quadrant*: thus direct the inſtrument to the object, *v. gr.* the top of a tower, till the viſual rays thereof ſtrike through the ſights upon the eye.

This done, the portion of the arch intercepted between the thread and the ſemidiameter, whereon the ſights are faſtened, ſhews the complement of the object's height above the horizon, or it's diſtance from the zenith; and the other portion of the arch intercepted between the thread and the other ſemidiameter, ſhews the height itſelf of the object above the horizon.

The ſame arch likewiſe gives the quantity of the angle made by the viſual ray, and a horizontal line parallel to the baſe of the tower.

Note, to obſerve depths, the eye muſt be placed over that ſight next the centre of the *Quadrant*.

From the height, or depth of the object, in degrees thus found, which ſuppoſe 35°, 35′, and the diſtance of the foot of the object from the place of obſervation carefully meaſured, which ſuppoſe 47 foot; it's height or depth in feet, yards, *&c.* is eaſily determined by the moſt common caſe in trigonometry. See TRIANGLE.

For we have here, in a triangle, one ſide given, *viz.* the line meaſured; and we have all the angles: for that of the tower is always ſuppoſed a right angle, the other two therefore are equal to another right angle; but the angle obſerved is 35°, 35′; therefore the other is 54°, 25′. See ANGLE.

The caſe then will be reduced to this; as the ſine of 54°, 25′, is to 47 feet; ſo is the ſine of 35°, 35′, to a 4th term, *viz.* 33½ feet: to which add the height of the obſerver's eye, ſuppoſed 5 foot, the ſum 38½ feet, is the height of the tower required.

The further Uſe of the QUADRANT *in taking of altitudes of objects, both acceſſible and inacceſſible*; ſee under the article ALTITUDE.

Uſe of the QUADRANT *in taking heights and diſtances by the index and ſights.*—To take *e. gr.* a height, as that of a tower, whoſe baſe is acceſſible—Place the plane of the inſtrument at right angles to the plane of the horizon, and one of it's edges parallel thereto, by means of the plummet, which in that caſe will hang down along the other—In this ſituation turn the index, till through the ſight you ſee the top of the tower; and the arch of the limb of the *Quadrant* between that ſide thereof parallel to the horizon, and the index, will be the height of the tower in degrees: whence, and from the diſtance meaſured as before, it's height in feet, *&c.* may be found by calculation, as in the former caſe; or without calculation, by drawing, from the data, on paper, a triangle ſimilar to the great one, whoſe baſe is the diſtance, and it's perpendicular meaſured on the ſcale, the height of the tower. See SCALE.

Uſe of the QUADRANT *in meaſuring horizontal diſtances*—Though the *Quadrant* be a leſs proper inſtrument for this purpoſe than a theodolite, ſemicircle, or the like, by reaſon angles greater than *Quadrants* cannot be taken hereby; yet neceſſity ſometimes obliges perſons to have recourſe to it.

The manner of it's application herein is the ſame with that of the ſemi-circle; all the difference between the two inſtruments conſiſting in this, that the one is an arch of 180°, and can therefore take an angle of any quantity; and the other only an arch of 90°, and therefore confined to angles of that quantity. See, therefore, SEMI-CIRCLE.

Aſtronomical QUADRANT, is a large *Quadrant*, uſually made of braſs, ſometimes of wooden bars, only faced with plates of iron, or the like; having it's limb curiouſly divided, diagonally or otherwiſe, into degrees and minutes, and even ſeconds, if poſſible; with plain ſights fixed to one ſide of it, or inſtead thereof a teleſcope; and an index moving about the centre, carrying either plain ſights, or a teleſcope.

Theſe *Quadrants* are of principal uſe in taking obſervations of the ſun, planets, or fixed ſtars. See OBSERVATION.

The ancients uſed only plain ſights; but the moderns have found it of great benefit to uſe teleſcopes inſtead of them. See SIGHT and TELESCOPE.

Add, that the contrivance of moving the index, by the help of a ſcrew on the edge of the limb, and of readily and eaſily directing it, and the *Quadrant* upon it's pedeſtal, to any deſired phænomenon, by means of the ſcrews and dented wheels, is a ſtill greater improvement of the inſtrument.

The particulars of the mechaniſm whereby this is effected, would afford a very dry and intricate, as well as uſeleſs detail; which we ſhall omit, as being ſufficiently known among the inſtrument-makers: and in lieu thereof, content ourſelves with giving a figure or repreſentation. See *Tab. Aſtronomy*, *fig.* 53.

The uſe of this inſtrument is obvious—Being adjuſted as above, and turned horizontally round on it's axis, till through the moveable teleſcope the object be ſeen to fall in with the point of interſection of the croſs bars; the degrees cut by the index give the altitude required. See TELESCOPE.

Horodictical QUADRANT, is a pretty, commodious inſtrument, thus called from it's uſe in telling the hour of the day. See HOUR and DIAL.

It's conſtruction is ſo ſimple and eaſy, and it's application ſo ready, that we ſhall deſcribe both; for the uſe of ſome who may want other conveniences.

Conſtruction and uſe of the Horodictical QUADRANT—From the centre of the *Quadrant* C, (*Tab. Aſtron. fig.* 54.) whoſe limb A B is divided into 90°; deſcribe ſeven concentric circles at intervals at pleaſure; and to theſe add the ſigns of the zodaic in the order they are repreſented in the ſcheme. 2. Applying a ruler to the centre C, and the limb A B, mark upon the ſeveral parallels the degrees correſponding to the altitude of the ſun when therein, for the given hours; connect the points belonging to the ſame hour with a curve line, to which add the number of the hour—To the radius C A, fit a couple of ſights, and to the centre of the *Quadrant* C, tie a thread with a plummet, and upon the thread a bead to ſlide.

If now the bead be brought to the parallel wherein the ſun is, and the *Quadrant* directed to the ſun till a viſual ray paſs through the ſights, the bead will ſhew the hour.

For the plummet in this ſituation cuts all the parallels in the degrees correſponding to the ſun's altitude: ſince, then, the bead is in the parallel which the ſun then deſcribes, and through the degrees of altitude to which the ſun is elevated every hour, there paſs hour-lines; the bead muſt ſhew the preſent hour—Some perſons who are not mighty nice, repreſent the hour-lines by arches of circles, or even by ſtraight lines; and that without any ſenſible error.

Gunter's QUADRANT, is a kind of *Quadrant* (repreſented *Tab. Aſtronomy, fig.* 55.) invented by our countryman Edm. Gunter.

This, beſide the graduated limb, fixed ſights, and a plummet, as the other *Quadrants*; has, likewiſe, a ſtereographical projection of the ſphere on the plane of the equinoctial, with the eye placed in one of the poles; by which, beſides the common uſes of other *Quadrants*, ſeveral uſeful queſtions in aſtronomy, *&c.* are eaſily ſolved.

Uſe of Gunter's QUADRANT. 1. *To find the ſun's meridian altitude for any given day; or the day of the month for any given meridian altitude.*—Lay the thread to the day of the month in the ſcale next the limb; the degree it cuts in the limb is the ſun's meridian altitude.

Thus, the thread being laid on the 15th of May, cuts 59°, 30′, the altitude ſought—And contrarily, the thread being ſet to the meridian altitude, will ſhew the day of the month.

2. *To find the hour of the day*—Having put the bead (which ſlides on the thread) to the ſun's place in the ecliptic, obſerve the ſun's altitude by the *Quadrant*; then, if the thread be laid over the ſame in the limb, the bead will fall upon the hour required.

Thus, ſuppoſe on the 10th of April, the ſun being then in the beginning of Taurus, I obſerve the ſun's altitude by the *Quadrant*, to be 36°; I place the bead to the beginning of Taurus in the ecliptic, and lay the thread over 36° of the limb; and find the bead to fall upon the hour-line mark'd 3 and 9; accordingly the hour is either 9 in the morning, or three in the afternoon—Again, laying the bead on the hour given (having firſt rectified or put it to the ſun's place) the degree cut by the thread on the limb, gives the altitude.

Note, the bead may be rectified otherwiſe, *viz.* by bringing the thread to the day of the month, and the bead to the hour-line of 12.

3. *To find the ſun's declination from his place given; and contrarywiſe*—Set the bead to the ſun's place in the ecliptic; move the thread to the line of declination E T, and the bead will cut the degree of declination required—Contrarily, the bead being adjuſted to a given declination, and the thread moved to the ecliptic, the bead will cut the ſun's place.

4. *The ſun's place being given, to find his right aſcenſion; or contrarily*—Lay the thread on the ſun's place in the ecliptic, and the degree it cuts on the limb is the right aſcenſion ſought—Contrarily, laying the thread on the right aſcenſion, it cuts the ſun's place in the ecliptic.

5. *The ſun's altitude being given, to find his azimuth; and contrarywiſe*—Rectify the bead for the time (as in the ſecond article) and obſerve the ſun's altitude: bring the thread to the complement of that altitude; thus the bead will give the azimuth ſought, among the azimuth lines.

6. *To find the hour of the night from ſome of the five ſtars laid down on the Quadrant*—1. Put the bead to the ſtar you intend to obſerve, and find how many hours it is off the meridian, (by article 2.) then from the right aſcenſion of the ſtar, ſubſtract the ſun's right aſcenſion converted into hours; and mark the difference: which difference added to the obſerved hour of the ſtar from the meridian, ſhews how many hours the ſun is gone from the meridian, which is the hour of the night.

Suppoſe, *e. gr.* on the 15th of May, the ſun being in the fourth degree of Gemini, I ſet the bead to Arcturus; and obſerving his altitude, find him to be in the weſt about 52° high, and the bead to fall on the hour-line of two after noon: then will the hour be 11 hours 50 minutes paſt noon, or 10 minutes ſhort of midnight.

For 62°, the ſun's right aſcenſion converted into time, makes 4 hours 8 minutes, which ſubſtracted from 13 hours 58 minutes, the right aſcenſion of Arcturus, the remainder will be 9 hours 50 minutes; which added to 2 hours, the obſerved diſtance of Arcturus from the meridian, ſhews the hour of the night to be 11 hours 50 minutes.

Sutton's QUADRANT, ſometimes, alſo, called *Collins's pocket*

QUADRANT—One of the beſt of Mr Sutton's *Quadrants*, (repreſented *Tab. Aſtronomy*, *fig.* 56) is a ſtereographic projection of one quarter of the ſphere between the tropics, upon the plane of the equinoctial, the eye being in the north pole.

It is fitted to the latitude of London—The lines running from the right hand to the left are parallels of altitude, and thoſe croſſing them are azimuths: the leſs of the two circles bounding the projection is ¼ of the tropic of Capricorn, the greater ¼ of that of Cancer—The two ecliptics are drawn from a point on the left edge of the *Quadrant*, with the characters of the ſigns upon them; and the two horizons are drawn from the ſame point—The limb is divided both into degrees, and time; and by having the ſun's altitude, the hour of the day may be here found to a minute.

The quadrantal arches next the centre contain the calendar of months; and under them, in another arch, is the ſun's declination.

On the projection are placed ſeveral of the moſt noted fixed ſtars between the tropics, and next below the projection is the *Quadrat*, and line of ſhadows. See QUADRAT.

Uſe of Sutton's or Collins's QUADRANT—*To find the time of ſun-riſing or ſetting, his amplitude, azimuth, hour of the day*, &c.—Lay the thread over the day and the month, and bring the bead to the proper ecliptic, either that of ſummer or winter, according to the ſeaſon; (which is called rectifying) then, moving the thread, bring the bead to the horizon; in which caſe the thread will cut the limb in the time of the ſun's riſing or ſetting, before, or after ſix; and at the ſame time the bead will cut the horizon in the degrees of the ſun's amplitude.

Again, obſerving the ſun's altitude with the *Quadrant*, and ſuppoſing it found 45° on the 24th of April; lay the thread over the 24th of April; bring the bead to the ſummer ecliptic, and carry it to the parallel of altitude 45°. In which caſe the thread will cut the limb at 55°, 15′, and the hour will be ſeen among the hour-lines to be either 41′ paſt nine in the morning, or 19′ paſt two in the afternoon.

Laſtly, the bead among the azimuths ſhews the ſun's diſtance from the ſouth, *viz.* 50°, 41′.

But note, that if the ſun's altitude be leſs than what it is at ſix o'clock, the operation muſt be performed among thoſe parallels above the upper horizon; the bead being rectified to the winter ecliptic.

Sinical QUADRANT, is an inſtrument of uſe in navigation —It is repreſented *Tab. Navigation*, *fig.* 18. and conſiſts of ſeveral concentric quadrantal arches, divided into eight equal parts by radii with parallel right lines croſſing each other at right angles.

Now, any of the arches, *e. gr.* BC may be accounted a *Quadrant* of any of the great circles of the ſphere, chiefly of the horizon, and meridian; if, then, BC be taken for a *Quadrant*, *e. gr.* of the horizon; either of the ſides, *e. gr.* AB, may repreſent the meridian; and the other, AC will repreſent a parallel, or line of eaſt and weſt; and all the other lines parallel to AB will alſo be meridians; and all thoſe parallel to AC, eaſt and weſt parallels, or eaſt and weſt lines.

Again, the eight ſpaces into which the arches are divided by the radii, repreſent the eight points of the compaſs in a quarter of the horizon; each containing 11°, 15′.

The arch BC is likewiſe divided into 90°, and each degree ſubdivided into 12′ diagonal-wiſe.

To the center is fixed a thread, as AL; which being laid over any degree of the *Quadrant*, ſerves to divide the horizon.

If the *Sinical Quadrant* be taken for a fourth part of the meridian; one ſide thereof, AB, may be taken for the common radius of the meridian and the equator; and then the other, AC, will be half the axis of the world—The degrees of the circumference BC will repreſent degrees of latitude, and the parallels to the ſide AB, aſſumed from every point of latitude to the axis AC, will be radii of the parallels of latitude, as likewiſe the ſine-complements of thoſe latitudes.

Suppoſe, then, it be required to find the degrees of longitude contained in 83 of the leſſer leagues, in the parallel of 48°—Lay the thread over 48° of latitude on the circumference, and count thence the 83 leagues, or AB, beginning at A: this will terminate in H, allowing every ſmall interval, four leagues. Then tracing out the parallel HG, from the point H to the thread; the part AG of the thread ſhews that 125 greater, or equinoctial leagues, make 6°, 15′; and therefore that the 83 leſſer leagues AH which make the difference of longitude of the courſe, and are equal to the radius of the parallel GI, make 6°, 15′ of the ſaid parallel.

If the ſhip ſail an oblique courſe, ſuch courſe, beſides the north and ſouth greater leagues, gives leſſer leagues eaſterly and weſterly; to be reduced to degrees of longitude of the equator—But theſe leagues being made neither on the parallel of departure, nor on that of arrival, but in all the intermediate ones; we muſt find a mean proportional parallel between them.

To find this, we have on the inſtrument *a ſcale of croſs Latitudes.* Suppoſe, then, it were required to find a mean parallel between the parallels of 40° and 60°. With your compaſſes take the middle between the 40th and 60th degree on the ſcale: this middle point will terminate againſt the 51ſt degree, which is the mean parallel required.

Uſe of the Sinical QUADRANT is to form triangles upon, ſimilar to thoſe made by a ſhip's way, with the meridians and parallels; the ſides of which triangles are meaſured by the equal intervals between the concentric *Quadrants*, and the lines N. and S. E. and W.

The lines and arches are diſtinguiſhed, every fifth, by a broader line; ſo that if each interval be taken for one league, there will be five between one broad line and another.

Now, ſuppoſe a ſhip to have ſailed 150 leagues north-eaſt, one fourth north; which is the third point, and makes an angle of 33°, 45′, with the north part of the meridian—Here are given two things; *viz.* the courſe, and diſtance ſailed, by which a triangle may be formed on the inſtrument, ſimilar to that made by the ſhip's courſe, and her longitude and latitude; and hence may the unknown parts of the triangle be found. See TRIANGLE.

Thus, ſuppoſing the centre A to repreſent the place of departure; count, by means of the concentric arches, along the point the ſhip ſailed in, as AD, 150 leagues from A to D: then is the point D the place the ſhip is arrived at; which note—This done, let DE be parallel to the ſide; and then there will be formed a right angled triangle AED, ſimilar to that of the ſhip's courſe, difference of longitude, and latitude: the ſide AE gives 125 leagues for the difference of latitude northwards, which makes 6°, 15′; and the ſide DE gives 83 leſſer leagues anſwering to the parallels; which being reduced, as ſhewn above, gives the difference of longitude—And thus is the whole triangle found.

QUADRANT, in Gunnery, called alſo the *Gunner's Square*, is an inſtrument ſerving to elevate or point cannons, mortars, *&c.* according to the places they are to be levelled or directed to. See MORTAR, LEVEL, *&c.*

It conſiſts of two branches, made of braſs or wood; one about a foot long, 8 lines broad, and one line in thickneſs; the other four inches long, and the ſame thickneſs and breadth as the former—Between theſe branches is a *Quadrant* divided into 90 degrees, beginning from the ſhorter branch, and furniſhed with thread and plummet. See it's figure repreſented *Tab. Fortification*, *fig.* 4.

The uſe of this inſtrument is eaſy; nothing more being required but to place the longeſt branch in the mouth of the cannon or mortar, and elevate or lower it, till the thread cuts the degree neceſſary to hit a propoſed object.

Sometimes, alſo, on one of the ſurfaces of the long branch is noted the diviſion of diameters, and weights of iron bullets; as alſo the bores of pieces. See ORDNANCE, CALIBER, *&c.*

QUADRANT *of Altitude*, is an appendage of the artificial globe; conſiſting of a lamina, or ſlip of braſs, the length of a *Quadrant* of one of the great circles of the globe; and divided into 90 degrees.

At the end where the diviſions terminate, is a nut rivetted on and furniſhed with a ſcrew, by means whereof the inſtrument is fitted on to the meridian; and moveable round upon the rivet, to all points of the horizon. See it's figure in *Tab. Aſtronomy*, *fig.* 61.

It's uſe is to ſerve as a ſcale in meaſuring of altitudes, amplitudes, azimuths, *&c.* See the manner of it's application under the uſe of the GLOBE.

QUADRANTAL, in antiquity, a veſſel in uſe among the Romans for the meaſuring of liquids. See MEASURE.

It was at firſt called *Amphora*; afterwards *Quadrantal*, from it's form, which was ſquare every way, like a die. See AMPHORA.

It's capacity was 80 libræ, or pounds of water, which made 48 ſextaries, 2 urnæ, or 8 congii. See CONGIUS.

QUADRANTAL *Space*, in geometry. See QUADRANT.

QUADRANTAL *Triangle*, is a ſpherical triangle, one of whoſe ſides at leaſt is a quadrant of a circle; and one of it's angles, a right angle. See SPHERICAL *Triangle*.

QUADRANTATA *Terræ*, in our antient law-books is uſed for a quarter of an acre; now called a *Rood*. See ACRE and ROOD. See alſo FARDINGDEAL.

QUADRAT, QUADRATUM, called alſo *Geometrical Square*, and *Line of ſhadows*, is an additional member on the face of the common Gunter's and Sutton's *Quadrants*; of ſome uſe in taking altitudes, *&c.* See QUADRANT.

The *Quadrat* KLH, (*Tab. Aſtronomy*, *fig.* 55.) has each of it's ſides divided into 100 equal parts, commencing from the extremes; ſo as the number 100 falls on the angle; and repreſenting tangents to the arch of the limb.

The diviſions are diſtinguiſhed by little lines from 5 to 5, and by numbers from 10 to 10; and the diviſions being occaſionally produced a-croſs, form a kind of lattice, conſiſting of 10000 little ſquares.

The proportion here, is, as radius is to the tangent of the angle of altitude at the place of obſervation (*i. e.* to the parts of the *Quadrat* cut by the thread) ſo is the diſtance between the ſtation and foot of the object, to it's height above the eye. See ALTITUDE.

Uſe of the QUADRAT, *geometricul ſquare*, or *line of ſhadows*—1. The *Quadrant* being vertically placed, and the ſights directed to the top of the tower, or other object whoſe height is required; if the thread cut the ſide of the *Quadrat* marked *right ſhadows*, the diſtance from the baſe of the tower to the point of ſtation is leſs than the tower's height—If the thread fall on the diagonal of the ſquare, the diſtance is juſt equal to the height—If it fall on that ſide marked *verſed ſhadows*, the diſtance exceeds the height.

Hence, meaſuring the diſtance, the height is found by the *Rule of three*; inaſmuch as there are three terms given—Indeed, their diſpoſition is not always the ſame; for when the thread cuts the ſide of *right ſhadows*, the firſt term in the *Rule of three* ought to be that part of the ſide cut by the thread; the ſecond the ſide of the ſquare; and the third the diſtance meaſured—If the thread cut the other ſide, the firſt term is the whole ſide of the ſquare, the ſecond the parts of the ſide cut by the thread, and the third the diſtance.

For an inſtance of each—Suppoſe, *e. gr.* in looking at the top of a ſteeple the thread cut the ſide of *right ſhadows* in the point 40, and that the diſtance meaſures 20 poles; the caſe then will ſtand thus: as 40 is to 100, ſo is 20 to a fourth term, which I find to be 50; the height of the ſteeple in poles. Again, ſuppoſing the thread to fall on the other ſide, in the point 50, and the diſtance to meaſure 35 poles; the terms are to be diſpoſed thus: as 100 is to 60; ſo is 35 to a fourth term, *viz.* 21, the height required.

Uſe of the QUADRAT *without calculation*—The preceding caſes may be performed without calculation where the diviſions of the ſquare are produced both ways, ſo as to form the area into little ſquares.

Thus, ſuppoſe, 1. The thread to fall on 40 in the ſide of *right ſhadows*, and the diſtance be meaſured 20 poles; ſeek among the little ſquares for that perpendicular to the ſide which is 20 parts from the thread; this perpendicular will cut the ſide of the ſquare next the centre, in the point 50, which is the height required in poles.

2. If the thread cut the ſide of *verſed ſhadows* in the point 60, and the diſtance be 35 poles; count 35 parts on the ſide of the *Quadrat* from the centre; count alſo the diviſions of the perpendicular from the point 35 to the thread, which will be 21, the height of the tower in poles.

Note, In all caſes, the height of the centre of the inſtrument is to be added. See farther under SHADOW.

QUADRAT, in aſtrology, called alſo QUARTILE, an aſpect of the heavenly bodies, wherein they are diſtant from each other, a quadrant, or ninety degrees. See ASPECT.

This is held a malignant aſpect. See QUARTILE.

QUADRAT, in printing, is a ſort of ſpace; that is, a piece of metal, caſt like the letters, to be uſed occaſionally in compoſing, in order to form the intervals between words, at the ends of lines, &c. See PRINTING.

There are *Quadrats* of divers ſizes, as *m Quadrats*, *n Quadrats*, &c. which are reſpectively of the dimenſions of ſuch letters.

QUADRATA *Legio*, among the Romans, was a legion conſiſting of 4000 men. See LEGION.

QUADRATIC *Equation*, is an equation wherein the unknown quantity is of two dimenſions *i. e.* is the ſquare of the root, or number ſought—As is, $x^2 = a + b^2$. See EQUATION.

Quadratic Equations are of two kinds; *ſimple*, or *pure*; and *adfected*.

Simple, or *pure* QUADRATICS, are thoſe where the ſquare of the unknown root is equal to the abſolute number given: as in $aa = 36$; $ee = 146$; $yy = 133225$.

The reſolution of theſe is eaſy; it being apparent that nothing more is required than to extract the ſquare-root out of the number or known quantity. See EXTRACTION.

Thus the value of a in the firſt equation is equal to 6; in the ſecond $e = 12$, and a little more, as being a ſurd root; and in the third example $y = 365$. See ROOT.

Adfected QUADRATICS, are thoſe which between the higheſt power of the unknown number, and the abſolute number given, have ſome intermediate power of the unknown number: as, $aa + 2\,ba = 100$. See ADFECTED.

All equations of this rank are in one or other of the following forms; *viz.* $aa + ad = R$. $aa - ad = R$. $ad - aa = R$.

There are ſeveral methods of extracting the roots of *adfected Quadratics*; the moſt convenient is that of Harriot.—Suppoſe $x^2 + ax = + b^2$; here x being aſſumed as a part of the root; a, the known quantity of the ſecond term, will be double the other part; and therefore half of a is the other part—The ſquare thereof, will be compleated by adding one fourth of aa; which done, the root of the ſquare may be extracted thus:

$$\begin{array}{l} \quad\; x^2 + ax = .b^2 \\ \qquad\qquad\quad \tfrac{1}{4}aa \quad \tfrac{1}{4}aa \text{ add.} \\ \hline x^2. \quad ax. \quad \tfrac{1}{4}a^2 = \tfrac{1}{4}a^2. \quad b^2 \\ \hline x^2. \quad \tfrac{1}{2}a = \surd\,(\tfrac{1}{4}a^2. \quad b^2) \\ \hline x = .\tfrac{1}{2}a. \surd\,(\tfrac{1}{4}a^2. \quad b^2) \end{array}$$

In lieu of the characters + and —, we here uſe points; to avoid the neceſſity of diſtinguiſhing ſeveral caſes. See RESOLUTION.

Conſtruction of QUADRATIC *Equations*; See CONSTRUCTION.

QUADRATING *of a piece*, among gunners, is the ſeeing that a piece of ordnance be duely placed, and poized in it's carriages; that it's wheels be of an equal height, &c. See CARRIAGE, ORDNANCE, CANNON, &c.

QUADRATO-CUBUS, QUADRATO-QUADRATO-CUBUS, and QUADRATO-CUBO-CUBUS, are names uſed by Diophantus, Vieta, Oughtred, and others, for the 5th, 7th, and 8th powers of numbers. See POWERS.

QUADRATO-QUADRATUM, or *Biquadratum*, the fourth power of numbers; or the product of the cube multiplied by the root. See POWER.

QUADRATRIX, in geometry, a mechanical line, by means whereof we can find right lines equal to the circumference of circles, or other curves, and of the ſeveral parts thereof. See CIRCLE, QUADRATURE, &c.

Or, more accurately, the *Quadratix of a curve*, is a tranſcendental curve deſcribed on the ſame axis, the ſemiordinates whereof being given, the quadrature of the correſpondent parts in the other curve, are likewiſe given. See CURVE.

Thus, *e. gr.* the curve AND, (*Tab. Analyſis, fig.* 21.) may be called the *Quadratix* of the *Parabola* AMC, ſince it is demonſtrated that APMA is $= PN^2$, or $APMA = AP.\,PN$, or $APMA = PN.\,a$, &c.

The moſt eminent of theſe *Quadratrices* are, that of Dinoſtrates, and that of Mr Tſchirnhauſen for the circle; and that of Mr Perks for the hyperbola.

QUADRATIX *of Dinoſtrates*, is a curve, AM*mm*, (*Tab. Analyſis, fig.* 22.) whereby the quadrature of the circle is effected, though not geometrically, but mechanically; thus called from its inventor Dinoſtrates.

It's geneſis is thus—Divide the *Quadrantal* arch ANB into any number of equal parts; in N*n*, &c. by a continual biſſection—divide the radius AC into the ſame number of parts in the points P*p*, &c. Draw radii CN, *cn*, &c.—Laſtly, on the points P*p*, &c. erect perpendiculars PM, *pm*, &c. the curve formed by connecting theſe lines is the *Quadratix of Dinoſtrates*.

Here, from the conſtruction, AB : AN : : AC : AP; and therefore, if $AB = a$, $AC = b$, $AN = x$, $AP = y$; $ax = by$. See QUADRATURE.

QUADRATRIX *Tſchirnhauſiana*, is a tranſcendental curve AM*mm*B, (*fig.* 23.) whereby the quadrature of the circle is likewiſe effected; invented by Mr Tſchirnhauſen, in imitation of that of Dinoſtrates.

It's geneſis is thus conceived—Divide the quadrant ANB, and it's radius AC into equal parts, as in the former; and from the points P, *p*, &c. draw the right lines PM, *pm*, &c. parallel to CB; and from the points N, *n*, &c. the right lines NM, *nm*, &c. parallel to AC—The points AM*m*, &c. being connected, the *Quadratix* is formed; wherein AB : AN : : AC : AP.

Here again, ſince AB : AN : : AC : AP; if $AB = a$, and $AC = b$, $AN = x$, and $AP = y$; $ax = by$. See QUADRATURE.

QUADRATUM *Cubi*, QUADRATO-QUADRATO-QUADRATUM, and QUADRATUM *Surdeſolidi*, &c. are names uſed by the Arabs for the 6th, 8th, and 10th powers of numbers. See POWERS.

QUADRATURE, QUADRATURA, in geometry, the act of ſquaring; or of reducing a figure to a ſquare; or finding a ſquare equal to a figure propoſed. See FIGURE and SQUARE.

Thus, the finding of a ſquare containing juſt as much ſurface, or area as a circle, an ellipſis, a triangle, or other figure, is called the *Quadrature* of a circle, an ellipſis, a triangle, or the like. See CIRCLE, &c.

The *Quadrature* of rectilinear figures comes under the common geometry; as amounting to no more than the finding their areas, or ſuperficies; which are in effect their ſquares. See AREA.

Squares of equal areas are here eaſily had, by only extracting the roots of the areas thus found; and on ſuch root as a ſide conſtructing a ſquare. See SQUARE. See alſo the particular methods of finding the areas or ſquares, under each particular figure, as TRIANGLE, PARALLELOGRAM, TRAPEZIUM, &c.

The *Quadrature of curves*, that is, the meaſuring of their area, or the finding of a rectilinear ſpace equal to a curvilinear

linear ſpace, is a matter of much deeper ſpeculation; and makes a part of the higher geometry. See GEOMETRY. Though the *Quadrature*, eſpecially of the circle, be a thing many of the firſt-rate mathematicians among the ancients were very ſollicitous about, (ſee QUADRATURE *of the circle*) yet nothing in this kind has been done ſo conſiderable, as in and ſince the middle of the laſt century; when, *viz.* in the year 1657, Mr Neil and my lord Brounker, and afterwards, in the ſame year, Sir Chriſtopher Wren, geometrically demonſtrated the equality of ſome curves to a ſtraight line.

Soon after this, others at home and abroad, did the like in other curves; and not long afterwards the thing was brought under an analytical calculus, the firſt ſpecimen whereof ever publiſhed was given by Mercator in 1688, in a demonſtration of my lord Brounker's *Quadrature* of the hyperbola by Dr Wallis's reduction of a fraction into an infinite ſeries by diviſion. See QUADRATURE *of the parabola.*

Though it appears by the way that Sir Iſaac Newton had before diſcovered a method of attaining the quantity of all quadrable curves analytically by his method of fluxions, before the year 1668. See FLUXIONS.

It is conteſted between Sir Chriſtopher Wren and Mr Huygens which of the two firſt found the *Quadrature* of any determinate cycloidal ſpace—Mr Leibnitz afterwards found that of another ſpace; and Mr Bernoulli in 1699, diſcovered the *Quadrature* of an infinity of cycloidal ſpaces, not only ſegments, but alſo ſectors, *&c.* See QUADRATURE *of the cycloid*, QUADRATURE *of the lune*, &c.

QUADRATURE *of the circle*, or *the finding a ſquare equal to a given circle*, is a problem that has employed the mathematicians of all ages; but ſtill in vain. See CIRCLE.

It depends on the ratio of the diameter to the periphery, which was never yet determined in preciſe numbers. See DIAMETER, *&c.*

Were this ratio known, (which would imply the circumference's being expreſſed by ſome affection of the diameter; and, of conſequence, that it were equal to a right line) the *Quadrature of the circle* were effected: it being demonſtrated, that the area of a circle is equal to a rectangular triangle, whoſe two ſides comprehending the right angle, are the radius, and a right line equal to the circumference—So that to ſquare the circle, all that is required is to rectify it. See CIRCUMFERENCE and RECTIFICATION.

Many have approached very near this ratio—Archimedes ſeems to have been one of the firſt who attempted it; which he did by means of regular polygons inſcribed and circumſcribed; and by uſing polygons of 96 ſides, fixed the ratio as 7 to 22. POLYGON.

Some of the moderns have come nearer, particularly Lud. à Ceulen, who with infinite induſtry found, at length, that ſuppoſing the diameter 1, the circumference is leſs than 3.14159265358979323846264338387950; but yet greater than the ſame number, if the laſt cypher be turned into an unit.

Strict geometry here failing, authors have had recourſe to other means; and particularly, to a ſort of curves, called *Quadratrices:* but theſe being mechanical curves, inſtead of geometrical ones, or rather tranſcendental inſtead of algebraical ones, the problem is not fairly ſolved thereby. See TRANSCENDENTAL, MECHANICAL, *&c.* QUADRATRIX.

Hence, recourſe has been had, by others, to analytics—and the problem attempted by three ſorts of algebraic calculations—The firſt gives a kind of tranſcendental *Quadratures*, by equations of indefinite degrees: as if x^x+x be equal to 30, and x be ſought, it will be found to be 3; becauſe 3^9+3, is $27+3$, or 30.—The ſecond by vulgar numbers, though irrationally ſuch; or by the roots of common equations, which for the general *Quadrature*, or it's ſectors, is impoſſible—The third by means of certain ſeries, exhibiting the quantity of a circle by a progreſſion of terms.

Arithmetic, in effect, affords us very accurate and intelligible expreſſions for all rational numbers; but it is defective as to irrationals, which are infinitely more numerous than the former: there being *e. gr.* an infinity of them between 1 and 2. The root of 2, which is a mean proportional between 1 and 2, is a very obſcure idea; and it's magnitude is ſuch, as that if you would expreſs it in rational numbers, which alone are clearly intelligible, you may ſtill approach nearer and nearer it's exact value, but never arrive preciſely at it.

Thus, if for the value of the root of 2, you firſt put 1, it is viſibly too little; if, then, you add $\frac{1}{2}$, it is too much; for the ſquare of $1+\frac{1}{2}$, or of $\frac{3}{2}$, exceeds 2. If, again, you take away $\frac{1}{3}$, you will find you have taken too much; and if you will return $\frac{1}{18}$, the ſum will be too great—Thus, may you proceed to infinity, without ever finding a number to ſtop at.

Now theſe numbers, thus found, being diſpoſed in their proper order, what may we call an *infinite ſeries.* See SERIES.

Farther, of infinite ſeries's there are ſome which only yield a finite ſum, as $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$, *&c.* and in general all ſuch as decreaſe in geometrical progreſſion—And there are others, on the contrary, which make an infinite ſum; as the harmonical progreſſion, $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$, *&c.* See PROGRESSION.

But, here, we have only to do with the former, as expreſſing a finite magnitude; yet cannot even the ſum of theſe be always found—Thus, we are certain, that it is impoſſible to find the ſum of the ſeries expreſſing the root of 2.

Geometry, however, is free from the impoſſibility arithmetic labours under, of expreſſing irrational numbers.—Thus, the diagonal of a ſquare, whoſe ſide is 1, expreſſes the root of 2. See DIAGONAL.

Yet in other magnitudes, geometry itſelf may fall under the ſame difficulty with arithmetic—For it is poſſible, there may be right lines which cannot be expreſſed but by an infinite ſeries of ſimilar lines, whoſe ſum it may be impoſſible to find. In effect, the right lines, which ſhould be equal to curves, are frequently of this kind—In ſearching, *e. gr.* for a right line equal to the circumference of a circle, we find that the diameter being put 1, the circumference will be $\frac{4}{1}-$, $\frac{4}{3}+$, $\frac{4}{5}-$, $\frac{4}{7}+$, $\frac{4}{9}$, *&c.* making an infinite ſeries of fractions, whoſe numerator is always 5, and the denominators in the natural ſeries of the uneven numbers; and all theſe terms, alternately, too great, and too little.

Could the ſum of this ſeries be found, it would give the *Quadrature of the circle*; but this is not yet done; nor is it at all probable it ever will be done—That, however, is not yet demonſtrated; nor of conſequence, is the *Quadrature of the circle* yet demonſtrated impoſſible.

To this it may be added, that as the ſame magnitude may be expreſſed by ſeveral different ſeries, it is poſſible the circumference of the circle may be expreſſed in ſome other ſeries, whoſe ſum may be found—We have two infinite ſeries, expreſſing the ratio of the circumference to the diameter, though indefinitely, as above—The firſt diſcovered by Sir Iſaac Newton; where the diameter being put 1, the circumference, is $4-\frac{1}{6}-\frac{1}{40}-\frac{1}{112}$, *&c.*—The ſecond, diſcovered by Mr Leibnitz; where the diameter being 1, the circumference, is $4-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}$, *&c.* The inveſtigation of each of which ſeries, by the *calculus integralis*, is as follows.

Sir Iſaac Newton's QUADRATURE *of the circle*; or the inveſtigation of his ſeries, for ſquaring the circle—If the radius of the circle, $AC=1$ (*Tab. Analyſis, fig.* 24.) $CP=x$, $y=\sqrt{(1-x^2)}$ and $\sqrt{(1-x^2)}=1-\frac{1}{2}x^2-\frac{1}{8}x^4-\frac{1}{16}x^6-\frac{5}{128}x^8-\frac{7}{256}-x^{10}$, *&c.* to infinity. Then will $ydx=dx-\frac{1}{2}x^2dx-\frac{1}{8}x^4dx-\frac{1}{16}x^6dx-\frac{5}{128}-x^8dx-\frac{7}{256}-x^{10}dx-$, *&c*, to infinity.

$\int ydx=x-\frac{1}{6}x^3-\frac{1}{40}x^5-\frac{1}{112}x^7-\frac{5}{1152}x^9-\frac{7}{2816}x^{11}$, to infinity.

When x becomes equal to the radius CA, the ſpace DCPM degenerates into a quadrant. Subſtituting, therefore, 1 for x, the quadrant will be $1-\frac{1}{6}-\frac{1}{40}-\frac{1}{112}-\frac{5}{1152}-\frac{7}{2816}$, *&c. in infinitum.*—Which ſame ſeries will meaſure the entire area of the circle, the diameter being 1.

Mr Leibnitz's QUADRATURE *of the circle*—Let the tangent KB (*Tab. Analyſis, fig.* 25,) $=x$, $BC=1$; and the ſecant AC, infinitely near another CK, and the little arch KL be drawn with the radius CK; then will $AK=dx$, $KC=\sqrt{(1+x^2.)}$ Now ſince the angles at B and L, are right angles; and by reaſon of the infinitely ſmall angle KCL, the angle $BKC=KAC$; we ſhall have

$$KC : BC :: KA : KL$$

$$\sqrt{(1+x^2)} : 1 :: dx : \frac{dx}{\sqrt{(1+x^2)}}$$

Farther, $CK : KL :: CM : mM$

$$\sqrt{(1+x^2)} : \frac{dx}{\sqrt{(1+x^2)}} :: 1 : \frac{dx}{1+x^2}.$$

Therefore the ſector $CMm=\frac{1}{2}dx:(1+x^2)=\frac{1}{2}(dx-x^2dx+x^4dx-x^6dx+x^8dx-x^{10}dx$, *&c.*) whence by the integral calculus, we find the ſector BCM, whoſe tangent $KB=x\frac{1}{2}x-\frac{1}{6}x^3+\frac{1}{10}x^5-\frac{1}{14}x^7+\frac{1}{18}x^9-\frac{1}{22}x^{11}$, *&c. in infinitum.* And therefore if BM be the octant of the circle, or an arch of 45°, the ſector will be $\frac{1}{2}-\frac{1}{6}+\frac{1}{10}-\frac{1}{14}$, *&c. in infinitum.* The double, therefore, of this ſeries, $1-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}$, *&c. in infinitum*, is the quadrant of the circle; or if the diameter be $=1$, the entire area of the circle.

QUADRATURE *of the lunes*—Though a definite *Quadrature* of the entire circle, was never yet given; yet there have been various portions of it ſquared—The firſt partial *Quadrature* was given by Hippocrates of Chio; who ſquared a portion called, from it's figure, the *lune*, or *lunuld.* See LUNE, where the *Quadrature* is ſhewn.

This *Quadrature* has no dependance on that of the circle; but then it only extends to the entire lune, or it's half; if you would ſquare any portion thereof, at pleaſure, the *Quadrature* of the circle comes in the way.

Yet ſome of the modern geometers have found the *Quadrature* of any portion of the lune at pleaſure, independantly of the *Quadrature* of the circle; though ſtill ſubject to a certain reſtriction which prevents the *Quadrature* from being perfect, and, as the geometricians call it, abſolute and indefinite.

In 1701, the marquis de l'Hôpital publiſhed a new manner of ſquaring the parts of the lune taken different ways, and under different conditions—though this, too, is imperfect in the ſame manner as the others.

QUADRATURE *of the ellipſis*—The *ellipſis*, too, is a curve whoſe preciſe *Quadrature* in definite terms is not yet effected. We have here therefore, as before, recourſe to a ſeries.

Let AC (*Tab. Analyſis, fig.* 26.) $=a$ GC$=c$ PC$=x$. Then will

$$y^2=c^2=(a^2-x^2):a^2$$

$$y=c\sqrt{(a^2-x^2:a}$$

But $\sqrt{[a^2-x^2]}=a-\dfrac{x^2-x^4-x^6-5x^8-7x^{10}}{2a\quad 8a^3\quad 16a^5\quad 128a^7\quad 256a^9}$ &c. *in infinitum.* Therefore, $ydx=cdx\dfrac{cx^2dx}{2a^2}-\dfrac{cx^4dx}{8a^4}-\dfrac{cx^6dx}{16a^6}-\dfrac{5cx^8dx}{128a^8}-\dfrac{7cx^{10}dx}{256a^{10}}$ &c. *in infinitum.*

if then for x be put a; the quadrant of the ellipſis will be $ac-\frac{1}{8}ac-\frac{1}{40}ac-\frac{1}{112}ac-\frac{5}{1152}ac-\frac{7}{2816}ac$, &c. *in infinitum.* Which ſame ſeries exhibits the entire area of the ellipſis, if a denote the entire axis.

Hence, 1. If $\sqrt{ac}=1$; the area of the ellipſis $=1-\frac{1}{8}-\frac{1}{40}-\frac{1}{112}-\frac{5}{1152}-\frac{7}{2816}$, &c. *in infinitum:* whence it is evident that an ellipſis is equal to a circle whoſe diameter is a mean proportional between the conjugate axis of the ellipſis. 2. Hence, alſo, an ellipſis is to a circle whoſe diameter is equal to the greater axis, as ac to a^2; that is, as c to a, or as the leſs axis to the greater. Hence, laſtly, having the *Quadrature* of the circle, we ſhall likewiſe have that of the ellipſis, and on the contrary.

QUADRATURE *of the parabola*—For the parabola we have a *Quadratrix* or tranſcendent curve, which gives it's ſquare. See QUADRATRIX.

But it may be likewiſe had thus:

$$ax=y^2 \text{ See PARABOLA.}$$

$$a^{1:2}x^{1:2}=y$$

$$ydx=a^{1:2}x^{1:2}dx$$

$$\int ydx=\tfrac{2}{3}a^{1:2}x^{3:2}=\tfrac{2}{3}\sqrt{ax^3}=\tfrac{2}{3}\sqrt{x^2y^2}=\tfrac{2}{3}xy.$$

Hence, the parabolic ſpace is to the rectangle of the ſemiordinate into the abſciſſe as $\frac{2}{3}xy$ to xy; that is, as 2 to 3.

Note, If a curve be not ſuppoſed deſcribed, but only an equation to it given, ſo as it does not appear *e. gr.* where the origin of x is to be fixed, we are to put $x=o$ in the integral, and expunging what are multiplied by x, add to it the remainder, if there be any, under the contrary ſign; to have the *Quadrature* ſought.

QUADRATURE *of the hyperbola*—For this, too, we have a *Quadratrix*, invented by Mr Perks. See QUADRATRIX.

The analytical *Quadrature* was firſt given by N. Mercator of Holſtein, the firſt inventor of infinite ſeries's. But Mercator finding his ſeries by diviſion; Sir Iſaac Newton and Mr Leibnitz improved upon his method; the one ſeeking them by the extraction of roots, the other by a ſeries preſuppoſed. See SERIES.

Mercator's QUADRATURE *of the hyperbola between it's aſymptotes*—Since in an hyperbola within the aſymptotes, $a^2=by+xy$; or if $a=b=1$, (which may be ſuppoſed, ſince the determination of b is arbitrary.)

Then will $$1=y+xy$$

$$1:(1+x)=y$$

That is (the Diviſion being actually performed)

$$y=1-x+x^2-x^3+x^4-x^5+x^6, \text{ \&c.}$$

$$ydx=dx-xdx+x^2dx-x^3dx+x^4dx-x^5-dx+x^6dx, \text{ \&c.}$$

$$\int ydx=x-\tfrac{1}{2}x^2+\tfrac{1}{3}x^3-\tfrac{1}{4}x^4+\tfrac{1}{5}x^5-\tfrac{1}{6}x^6+\tfrac{1}{7}x^7, \text{ \&c.}$$

in infinitum.

QUADRATURE *of the cycloid*—Since TP (*Tab. Analyſis, fig.* 27) $=$ PM; in the triangle PMT, the angles M and T will be equal; and conſequently, TPQ$=$2M. But the meaſure of the angle APQ is the half arch AP; which likewiſe meaſures the angle TPA. Therefore APQ$=$TMP$=$MmS, by reaſon MP and mq are parallel.

Wherefore, ſince the angles at S and Q are right angles, we have

$$AQ:QP::MS:mS$$

Let, then, AQ$=x$, AB$=1$; then will PQ$=\sqrt{(x-xx)}$ and mS$=dx\sqrt{(x-xx)}:x$. But it is ſhewn, that $\sqrt{(x-xx)}=x^{1:2}-\frac{1}{2}x^{3:2}-\frac{1}{8}x^{5:2}-\frac{1}{16}x^{7:9}$ &c. *in infinitum.* Therefore, $dx\sqrt{(x-xx)}:x=$(the numerators of the exponents being diminiſhed by two units in the diviſion by x) $x^{-1:2}dx-\frac{1}{2}:x^{1:2}dx-\frac{1}{8}x^{3:2}dx-\frac{1}{16}x^{5:2}dx$, &c. *in infinitum.* Whoſe ſum $2x^{1:2}-\frac{1}{3}x^{3:2}-\frac{1}{20}x^{5:2}-\frac{1}{56}x^{7:2}$, &c. *in infinitum*, is the ſemiordinate of the cycloid QM referred to the axis AP. Hence, QM dx, or the element QMSq of the cycloidical ſpace AMQ $=2x^{1:2}dx-\frac{1}{3}x^{3:2}dx-\frac{1}{20}x^{5:2}dx-\frac{1}{56}x^{7:2}dx$, &c. *in infinitum.* Whoſe ſum $=\frac{4}{3}x^{3:2}-\frac{2}{15}x^{5:2}-\frac{1}{70}x^{7:2}-\frac{1}{252}x^{9:2}$, &c. *in infinitum*, expreſſes the ſegment of the cycloid AMQ.

If then mS$=g$G$=dx\sqrt{(x-xx)}:x$ be multiplied into GM$=$AQ$=x$; we ſhall find the element GMHG of the area AMG$=dx\sqrt{(x-xx.)}$ Which being the ſame with the element of the ſegment of the circle APQ, the ſpace AMG will be equal to the ſegment of the circle APQ; and conſequently, the area ADC equal to the ſemicircle APB.

Hence, ſince CB is equal to the ſemiperiphery of the circle; if that$=p$ and AB$=a$; the rectangle BCDA$=ap$; and the ſemicircle APB, and conſequently, the external cycloidical ſpace ADC$=\frac{1}{4}ap$. Therefore the area of the ſemicycloid ACB$=\frac{3}{4}ap$, and AMCBPA$=\frac{1}{2}ap$. Conſequently, the area of the cycloid is triple of the generating circle.

QUADRATURE *of the logiſtic, or logarithmic curve*—Let the ſubtangent PT (*Tab. Analyſis, fig.* 28.) $=a$, PM$=x$ P$p=dx$; then will

$$ydx:dy=a$$

$$ydx=ady$$

$$\int ydx=ay$$

Wherefore the indeterminate ſpace HPMI, is equal to the rectangle of PM into PT.

Hence, 1. Let QS$=z$; then will the indeterminate ſpace ISQH$=az$; and, conſequently, SMPQ$=ay-az=a(y-z)$; that is, the ſpace intercepted between the two logiſtic ſemiordinates is equal to the rectangle of the ſubtangent into the difference of the ſemiordinates.

2. Therefore the ſpace BAPM, is to the ſpace PMSQ as the difference of the ſemiordinates AB and PM, to the difference of the ſemiordinates PM and SQ.

QUADRATURE *of des Cartes's curve*, which is defined by the equation, $b^2:x^2::b-x:y$.

Since, $$b^2y=bx^2-x^3$$

$$y=(bx^2-x^3):b^2$$

$$ydx=(bx^2dx-x^3dx):b^2$$

$$\int ydx=x^3:3b-x^4:4b^2$$

QUADRATURE *of all curves comprehended under the general equation*, $y=x\sqrt[m]{(x+a)}$

Since $$y=(x+a)^{1:m}$$

$$ydx=dx(x+a)^{1:m}$$

To render the element integrable; ſuppoſe,

$$(x+a)^{1:m}=v$$

The will $$x+a=v^m$$

$$dx=mv^{n}-{}^{1}dv$$

$$ydx=mv^m dv$$

$\int ydx=\dfrac{mv^m}{m+1}+1=\dfrac{m}{m+1}(x+a)\sqrt[m]{(x+a.)}$ Let $x=o$: The Remainder $\dfrac{m}{m+1}a\sqrt[m]{a}$. Whence, the area of the curve $\dfrac{m}{m+1}(x+a)\sqrt[m]{(x+a)}-ma\sqrt[m]{a}$.

QUADRATURE, in aſtronomy, that aſpect, or ſituation of the moon, when ſhe is 90° diſtant from the ſun. See MOON.

Or, the *Quadrature* is when ſhe is in a middle point of her orbit, between the points of conjunction and oppoſition; which happens twice in each revolution, *viz.* in the firſt and third quarter. See ORBIT, OPPOSITION, and CONJUNCTION.

When the moon is in her *Quadrature*, ſhe exhibits that phaſis which we call the half moon, *i. e.* ſhe ſhines with juſt half her face; and is ſaid to be biſſected, or dichotomized. See PHASIS and DICHOTOMY.

In the moon's progreſs from the ſyzygies to her *Quadrature*, her gravity towards the earth is continually increaſing by the action of the ſun; and her motion retarded for the ſame reaſon—Her motion, then, in her orbit is ſloweſt as her gravity to the earth is greateſt when in the *Quadratures*. See GRAVITY.

In her receſs from the *Quadratures* to the ſyzygies, the gravity continually decreaſes, and the velocity increaſes.

The ratio is thus: as radius is to the ſum, or difference of one and an half the co-ſine of double the diſtance of the moon from the ſyzygy, and half the radius; ſo is the addition of gravity in the *Quadratures* to the diminution or increaſe thereof in any other ſituation. See SYZYGY.

Hence the moon's orbit is more convex in the *Quadratures*, than in the ſyzygies; and hence the circular figure of the moon's orbit is changed into an oval, whoſe greater axis goes through the *Quadratures*; and hence, alſo, the moon is leſs diſtant from the earth at the ſyzygies, and more at the *Quadratures*. See ORBIT.

It is no wonder, therefore, that the moon approach nearer the earth when her gravity is diminiſhed; that acceſs not being the immediate effect of this diminution, but of the inflexion of the orbit towards the *Quadratures*.

In the *Quadratures*, and within 35 degrees thereof, the apſides of the moon go backwards, or move *in antecedentia*; but forwards in the ſyzygies. See APSIDES.

The moon's orbit undergoes various alterations in each revolution—It's excentricity is the greateſt when the line of the apſides is in the ſyzygies; leaſt, when in the *Quadratures*. See EXCENTRICITY.

Conſidering one entire revolution, the nodes move ſlower and ſlower as the moon approaches the *Quadratures*, and reſt when ſhe is therein: but conſidering ſeveral revolutions, the nodes go back faſteſt in the *Quadratures*. See NODE.

The inclination of the plane of the moon's orbit increaſes as the nodes go from the ſyzygies, and is greateſt when the nodes are in the *Quadratures*. See INCLINATION.

QUADRATURE-*lines*, or *lines of* QUADRATURE, are two lines frequently placed on Gunter's ſector.

They are maked with the letter Q, and the figures 5, 6, 7, 8, 9, 10; of which Q ſignifies the ſide of a ſquare, and the other figures the ſides of polygons of 5, 6, 7, *&c.* ſides—S there ſtands for the ſemi-diameter of a circle, and 90 for a line equal to 90° in circumference. See SECTOR.

QUADRATUS, in anatomy, a name applied to ſeveral muſcles, in reſpect of their ſquare figure, as the Palmaris and Pronators.

—There is alſo a QUADRATUS *femoris*, a member of the muſcle Quadrigeminus, ariſing from the apophyſis of the iſchium, and maintaining an equal breadth and bulk to it's inſertion juſt below the great trochanter.—See *Tab. Anat.* (*Myol.*) *fig.* 7. *n.* 25.

This aſſiſts with the other muſcles of the Quadrigeminus, to turn the thigh outwards. See QUADRIGEMINUS.

QUADRATUS *genæ*, or *maxillæ inferioris*, called alſo *montanus*, and (on account of its breadth) *platyſma ragoides*, is a ſquare muſcle lying immediately under the skin of the neck, thence called alſo *ſubcutaneus*.—It ariſes thin and membranous from the upper part of the ſpines of the vertebræ of the neck and the skin of the ſuperior parts of the cucullaris and pectoral muſcle; whence, ſpreading over the neck, it becomes fleſhy, and is inſerted partly into the os hyoides, and partly into the under edge of the lower jaw—It adheres firmly to the panniculus carnoſus; from which it is not ſeparated without difficulty; and was not anciently diſtinguiſhed from it—It ſerves to pull the lower jaw downward and awry.

QUADRELS, in building, a kind of artificial ſtones, perfectly ſquare, whence their name; made of a chalky, or whitiſh and pliable earth, *&c.* dried in the ſhade for two years. See BRICK and STONE.

They were formerly in great requeſt among the Italian architects.

QUADRIGA*, in antiquity, a carr, or chariot drawn by four horſes. See CARR.

* The word is formed from the Latin, *quatuor*, four, and *jugum*, yoak. See BIGA.

Various are the accounts we have of the author of the *Quadriga*—Cicero makes it the invention of Minerva.—Hyginus attributes it to Erichthonius IV. king of the Athenians; which ſentiment Virgil follows in his *Georgics*, lib. iii. v. 113. Æſchylus gives Prometheus the honour thereof—Tertullian, *de Spectac.* l. ix. ſays it was invented among the Argians, by Trochilus, in honour of Juno; and at Rome, by Romulus, in honour of Mars, or Quirinus. Ado of Vienne, *Chronic. Act* 3. will have it to have been invented by one Procidus, about the time of the eſtabliſhment of the kingdom of Athens. Laziardels, *Hiſt. Univerſ. Epitom.* l. xxiv. ſays the ſame of Triptolemus.—Laſtly, if there be not opinions enough already, Herodotus gives us another; and ſays the Greeks borrowed it from the Lybians—Pliny tells us, that his ſeal was a *Quadriga*, lib. xvi. See SEAL.

On the reverſes of medals we frequently ſee victory, or the emperor, in a *Quadriga*, holding the reins of the horſes; whence theſe coins are called among the curious, *nummi Quadrigati* and *victoriati*. See MEDAL.

QUADRIGEMINUS, in anatomy, a muſcle, or rather aſſemblage of four muſcles; ſerving to turn the thigh outward. See THIGH.

The firſt of the conſtituent muſcles of the *Quadrigeminus*, is the pyriformis; the ſecond and third the gemini; and the fourth quadratus femoris. See each deſcribed under it's proper article, PYRIFORMIS, GEMINI, *&c.*

QUADRILATERAL, in geometry, a figure whoſe perimeter conſiſts of four right lines, making four angles; whence it is alſo called a *Quadrangular* figure. See QUADRANGULAR.

If the ſeveral angles be right, the figure is a *rectangular Quadrilateral*—If oblique, an *oblique-angular Quadrilateral*. See RECTANGULAR, *&c.*

If the ſides of a *Quadrilateral* be equal, and the angles right, the figure is a *ſquare*. See SQUARE.

If the ſides be equal, but the angles unequal, the figure is a *rhombus*. See RHOMBUS.

If the angles be equal, and the ſides unequal, the figure is a *rectangle*. See RECTANGLE.

If only the oppoſite angles and ſides be equal, the *Quadrilateral* is a *rhomboides*. See RHOMBOIDES.

If the oppoſite angles and ſides be unequal, the *Quadrilateral* is a *trapezium*. See TRAPEZIUM.

The two oppoſite angles of any *Quadrilateral* figure inſcribed in a circle, always make two right angles. See INSCRIBED.

QUADRILL*, QUADRILLA, a little troop or company of cavaliers, pompouſly dreſſed and mounted; for the performance of carrouſals, juſts, turnaments, runnings at the ring, and other gallant divertiſements. See JUST, TURNAMENT, *&c.*

* The word is borrowed from the Italian, being a diminutive of *Squadra*, a company of ſoldiers ranged in a ſquare: for *Squadrare* is, properly, to diſpoſe any thing ſquare; whence their *Quadriglia*, the French *Squadrille* and *Quadrille*, and our *Quadrill*—It is not fifty years ſince the French wrote *Squadrille* and *Eſquadrille*.

A regular carrouſal is to have at leaſt four, and at moſt twelve, *Quadrills*. See CARROUSAL.

Of theſe *Quadrills*, each is to conſiſt of at leaſt three cavaliers, and at moſt of twelve.

The *Quadrills* are diſtinguiſhed by the form of their habits, or the diverſity of their colours. See COLOUR, LIVERY, FACTION, *&c.*

QUADRIPARTITION, the dividing by four; or a taking of the fourth part of any number, or quantity. See DIVISION, PARTITION, *&c.*

Hence *Quadripartite*, &c. ſomething divided into four. See DEED and INDENTURE.

QUADRIREME, QUADRIREMIS, a galley, or veſſel, with four oars on a ſide. See GALLEY.

QUADRUGATA *terræ*, in old law records, denotes a team-land; or ſo much as can be tilled by four horſes. See PLOUGH-LAND.

QUADRUPED, QUADRUPES, in natural hiſtory, a four-footed beaſt: or a perfect, hairy, viviparous animal, having but four feet. See ANIMAL.

There is a great analogy between the ſtructure of *Quadrupeds*, and that of man—The principal differences reſult from their different poſture; and are ſeen in the legs, heads, necks, ſtomachs, hearts, and the nerves. See FOOT, HEAD, NECK, STOMACH, *&c.*

Quadrupeds are divided by Mr Ray, into thoſe which are hoofed, *ungulata*, and clawed or digitate, *unguiculata*.

Hoofed-QUADRUPEDS, are either,

I. *Whole-hoofed*, *ſolidipeda*, Μονοχηλα, Μονυχα, *ſolidungula*: as the horſe, aſs, the onager or wild aſs; the mule, and the zebra of Africa, or the fine ſtriped Indian or African aſs, almoſt like a mule in form and ſtature. See HOOF.

Of the whole-hoofed kind, Ariſtotle has obſerved, that no one hath two horns—(he might have ſaid any horns) no one hath the talus, or aſtragalus, nor have the males any appearance of breaſts. See HORN.

II. *Cloven-footed*, and that either 1°. into two diviſions only; as the Δίχηλα, or biſulcate kind, which are again ſubdivided into ſuch as are, firſt,

Ruminant, Μηρυκάζοντα, that is, ſuch as chew the cud; and theſe either have hollow and perpetual horns, as the bull, ſheep, and goat-kind; or deciduous, horns, as the hart and deer-kind, which uſually ſhed their horns annually. See RUMINANT and HEAD.

Of the *bull-kind* are reckoned theſe: the common *bos* or bullock, of which the male is *taurus*, the female *vacca*: the German *urus*, *urochs*, or *aurochs*: the *biſon*: the *bonaſus*: the *bubalus*, or *bufalo*: the *bos Africanus* of *Bellonius*, *Obſ.* l. ii. c. 50. which he takes to be the *bubalus* of the ancients.

Of the *ſheep-kind*, beſides the common ſort, are reckoned the Arabian *ovis laticauda*, whoſe tail is ſometimes of 30 pound weight; the *ovis ſtrepſiceros cretica Bellonii*; the *ovis Africana*, with ſhort hair inſtead of wool; the *ovis Guineenſis*, or *Angolenſis* of Marcgrave, *Hiſt. Braſil.* l. vi. c. x.

Of the *goat-kind*, are, beſides the common *capra domeſtica*; the *ibex*, or German ſteinbock, found in the tops of the Alps; the *rupicapra*, French chamois, or German goms; the *gazella Africana*, or antelope; the *gazella Indica*; the *capra ſylveſtris Africana Grimmii*; *the capra mambrina*, or *Syriaca* of Geſner; the *buſelaphus*, or *moſchelaphus Caii* in Geſner; the *tragelaphus Caii* in Geſner; *&c.*

Of the *hart* or *deer-kind*, are reckoned, the *cervus*, Ἔλαφος, or red deer; the *cervus platyceros* or *palmatus*, the fallow deer; *alce* or the elk; *rangifer*, the rain-deer; the *axis Plinii*, according to Bellonius; the *caprea Plinii*, the *cuguacu-etc*, and *cuguacu-zapara* of Marcgrave; the *caprea Groenlandica*.

Secondly, of *cloven-footed* animals into two parts only, and which do not chew the cud, there is only the hog and ſwine-kind: under this head, beſides the common ſwine, are reckoned the wild boar, or ſwine; the *porcus Guineenſis Marcgravii*;

gravii; the *porcus Indicus*, called *babyrouſſa*; the *tajaca* or *aper mexicanus moſchiferus* of Dr. Tyſon, called by Marcgrave, *tajaca cunigoara*, by others *quauhtla coymalt*, and *quapizotl*, and by Acoſta and ſome others *zaino*.

2°. There are ſome *Quadrupeds*, whoſe hoof is cloven into four diviſions; and theſe ſeem to be not ruminant: as the rhinoceros, the hippopotamus, the tapijerete of Braſil, the capy-bara of Braſil, and the animal moſchiferum.

Clawed or *digitate* QUADRUPEDS—Of this kind, there are, firſt, a ſort whoſe claws are not divided or ſeparated, but adhering to one another, covered with one common skin, but with obtuſe nails, ſticking out round the margin of the foot; as the elephant, which is anomalous, and not clearly referable to this kind, or to that of cloven-footed *Quadrupeds*.

A ſecond ſpecies of this *digitate-kind* of *Quadrupeds*, which has only two claws, is that of camels; and though theſe have no horns, they both ruminate, and have alſo the four ſtomachs of horned ruminant animals.

Of the camel, or dromedary there are two ſorts; one having but one bunch on the back, the other two.

To this kind alſo belong the Peruvian *glama*, which ſome have reckoned among the ſheep-kind; as alſo the *pacos*, the *ovis Indica*, or *Peruviana vulgo*, much leſs than the *glama*.

A third ſpecies of this *unguiculate-kind*, includes ſuch animals, as the Greeks called Πλατυονυχα, and Ανθρωπομορφα, which have the foot divided into many claws, with broad nails on them; as the ape and monkey kind.

Of theſe, ſome have no tails, and are called *ſimiæ*, or apes: others have tails, and are called monkeys, *cercopitheci*; and ſuch as have either long or ſhort tails, if they are of a larger ſize, are called *papiones*, or baboons—There are great numbers and varieties of this ſpecies of *Quadrupeds*; of which naturaliſts have deſcribed theſe: *viz.* the *orang outang*, or *homo ſylveſtris* of Dr Tyſon, deſcribed by him in a particular diſcourſe: the *guarita* of Braſil, *Marcgravii*; the *cagui* of Braſil, greater and leſſer; the *cay* of the ſame region, deſcribed by Lerius; the *caitaia* of the ſame country; the *cercopithecus barbatus Guineenſis*, two or three ſorts of it; the *cercopithecus angolenſis major*; the *cercopithecus non barbatus Cluſii*; the *cercopithecus Cluſ.* called *ſagouin:* laſtly, if apes and monkeys have their ſnouts very prominent like dogs, they are called *cynocephali*.

A fourth ſpecies of this *unguiculate-kind*, is, when though the claws are many, yet they are not covered at the end with broad flat nails, like monkeys or apes; but are rather like the talons of hawks, *&c.* crooked, and ſharp-pointed.

Theſe, in reſpect of their teeth, may be divided into ſuch as have many dentes primores, or inciſores, (that is, cutting teeth) in each jaw, of which there are two ſorts; a greater, which either have a ſhort, round head, as the cat-kind; or a leſſer ſort, having a long ſlender body, with very ſhort legs, as the weaſel or vermin-kind.—There are alſo ſome of this ſpecies of *Quadrupeds*, which have only two large remarkable teeth in each jaw: theſe are the hare-kind, and live only upon herbs, graſs, *&c.*

Of the *cat-kind* of *Quadrupeds* are reckoned to be the lion, the tyger, the *pardalis*, whoſe male is *pardus*, and female *panthera*, the leopard; the *lupus cervarius*, or lynx; the *catus pardus*, or cat-a-mountain; the common cat; and the bear.

Of the *dog-kind* are reckoned the wolf; the *lupus aureus* or jackall; beſides the common dog, of which kind they enumerate, the maſtive; the *canis Venaticus graius*, *Græcus*, or *Scoticus*, the greyhound; *graius Hibernicus*, or the Iriſh greyhound; the *canis Venaticus ſagax*, *indagator*, *ſectator ferarum*, &c. the hound; *canis Venaticus Hiſpanicus* or *Aviarius*, the ſpaniel for land or water; *vertagus* or tumbler; *canis* Οικȣρος, or *domeſticus*, the houſe-dog; *canis melitæus*, or the lap-dog; *canis getulus* or *Iſlandicus*, the ſhock: and of all theſe ſorts there are many varieties of mongrels, and hybridous breeds.

Another ſort of the dog-kind is the fox; the animal *zibethicum*, or civet-cat, as it is corruptly called, but by it's teeth and ſnout, is plainly of the *dog-tribe*; the *American coati*, or *rackoon*, or *rattoon*; the *yzquiepate*; the *carigueya*, *maritucaca*, *carigoy*, *ropoza* or *poſſum*; the *taxus* or *meles*; the badger, grey, or pate; the *lutra* or otter; the *phoca*, ſea-calf, or ſeale; the *equus marinus*, morſe, or ſea-horſe, miſtaken by ſome for the *hippopotamus*; the Dutch call him *walras*, the Danes and Iſlanders *roſmarus*; laſtly, the *manati* or *vacca marina*, the ſea-cow.

Of the *vermin*, or *weaſel-kind* of *Quadrupeds*, is, firſt, the *muſtela vulgaris*, the common weaſel, in Yorkſhire called *foumart* or *fitcher*, γαλεη; the *viverra Indica*, called *quel* and *quirpele*; and another ſort called *mungo*, and *mungathia*, of a reddiſh grey: the *muſtela*, *ermine*, or *ſtoat*, if white; and *muſtela ſilveſtris*, the ferret; *putorius*, the pole-cat; *martes* or *foyna*, the marten or martlet; *muſtela zibellina* the ſable; laſtly, the *genetta*; and the *ichneumon Bellonii*.

Of the *hare-kind* of *Quadrupeds*, are firſt, *lepus*, or the common hare; *cuniculus*, the rabbet or coney; *tapeti*, or Braſil coney, and the *aperea* of Braſil; the *hyſtrix*, or porcupine, and the *hyſtrix Americanus*, or *cuanda* of Braſil; caſtor, fiber, or the beaver; *ſciurus vulg.* or ſquirrel; the Virginian, Zeylandic, Barbary, and American flying ſquirrel; *mus domeſticus*, major and minor, the common rat and mouſe: to theſe alſo may be referred *mus major aquaticus*, the water-rat; the musk-rat, *mus avellanarum*, major and minor; the dormouſe or ſleeper, *mus noricus*, *Cricetus*, *Alpinus ſeu Marmotta*; the *cavia cobaya*, or *cuniculus Americanus*, the Guinea-pig; the *agati*, and *paca* of Braſil; the *mus Norwegicus*, or *leming*; the *glis Geſneri*, or the *rell*; the *mus Indicus*, &c.

Anomalous QUADRUPEDS—To theſe ſeveral kinds, the following anomalous ones muſt alſo be added.

(1) Such four-footed viviparous animals, as have a longiſh ſnout, with their feet divided into many claws, and toes, and having teeth; as the *echinus terreſtris*, or common urchin, or hedge-hog; *erinaceus Indicus albus*; *tatu* or *armadillo prima* of Marcgrave; *tatuete* of Braſil, or the ſecond ſpecies of the *armadillo*, according to Marcgrave; *tatu apara*, his third ſpecies of *armadillo*; *Tatu Muſtelinus*, *Soc. Reg. Muſ.* the weaſel-headed *armadillo*; *talpa*, the mole, warp, or moldwarp; *mus araneus*, ſhrew, hardyſhrew, ſhrew-mouſe.

(2) *Quadrupedous* and viviparous animals with a longiſh ſnout, having their feet divided into many claws or toes, but without teeth; as the *tamandua-guacu* of Braſil, *Marcgravii*; *urſus formicarius Cardani*, the great ant-bear; the *tamanduais* of Braſil, or Marcgrave's leſſer ant-bear.

(3) *Anomalous flying Quadrupeds*, with a ſhorter ſnout, and their feet divided as above; being of the bat-kind, or flitter-mice; of which there are ſeveral ſizes and different forms.

(4) There is one very anomalous animal which has but three claws on each foot; and that is the aſs, or *ignavus* of Marcgrave, the ſloth or ſluggard.

(5) Viviparous and ſanguineous *Quadrupeds*, breathing with lungs, but having only one ventricle in the heart; as the *rana aquatica*, the frog or froſh; *rana arborea*, *ſeu ranunculus viridis*, the ſmall tree or green frog; *bufo*, *ſive rubeta*, the toad; *teſtudo*, the tortoiſe, in Greek χελωνη; of theſe there are land and water ones, and many different ſpecies in foreign parts. See TORTOISE.

(6) *Oviparous Quadrupeds*, with a long tail ſtretched out horizontally, are the lizard-kind; as *lacertus omnium maximus*, the crocodile; *cordylus*, *ſive caudiverbera*, *uromaſtix Græcis*, larger than the green lizard; *tapayaxin Novæ Hiſpaniæ*; *lacertus orbicularis* of Hernandez; *lacertus vulgaris*, the common eft, ſwift, or newt; *lacertus viridis*, the green lizard; *lacertus fucetanus Aldrovandi*, at Rome and Naples called the *tarantula*; *lacertus Indicus*, called *ſenembi* and *inguana*; *lacertus Braſilienſis*, called *tejuguacu*, and *temapara* by Marcgrave; the *taraguira*, *ameira*, *taraguico Aycuraba*, *Americima*, *Curapopepa*, *Teiunham*, &c. of Marcgrave; the *lacertus Indicus*; the *ſcincus*, or *crocodilus terreſtris*; the *ſeps*, or *lacerta chocidica*, a kind of footed ſerpent; *ſtellio*, the ſwift, or ſpotted lizard; *ſalamandra terreſtris*; *ſalamandra aquatica*, the water eft; *lacerta volans Indica*; and the *chamæleon*, or camelion.

QUADRUPLE, a ſum or number multiplied by four, or taken four times. See RATIO and MULTIPLE.

QUADRUPLE is particularly uſed for a gold coin, worth four times as much as that whereof it is the *Quadruple*.

The *Quadruple* of the Spaniſh piſtole is a piece of four piſtoles, worth about three pounds twelve ſhillings ſterling, called alſo *double doubloon*.

The *Quadruple* of the louis d'or is only equal to two louis d'ors or French piſtoles, or one pound thirteen ſhillings ſterling. See PISTOLE.

QUÆ *plura*, a writ that anciently lay where inquiſition had been made by an eſcheator, of ſuch lands or tenements as any man died ſeized of, and all was ſuppoſed not to be found by the office. See ESCHEATOR.

This writ was to enquire what more lands or tenements the party died ſeized of.—But it is now made uſeleſs by taking away the court of wards and offices.

QUÆ *ſervitia*. See PER *quæ ſervitia*.

QUÆSTA, in our ancient writers denotes an indulgence, or remiſſion of penance; expoſed to ſale by the popes. See INDULGENCE and QUÆSTIONARII.

QUÆSTIONARII*, in our ancient law-books, were people who went about with indulgences from door to door, deſiring charity either for themſelves or others. See INDULGENCE.

* Matt. Weſt, obſerves, 1240, that the king, *Terram ſuam per Papales* Quæſtionarios, *depauperari*, *&c. permiſit*.

QUÆSTUS*, in law, is that eſtate, or thoſe effects which a man hath by acquiſition, or purchaſe; in contradiſtinction to *hæreditas*, which is what he hath by deſcent. See ACQUEST and GOODS.

* Glanv. lib. vii. *aut habet hæreditatem tantum*, *vel* quæſtum *tantum, aut hæreditatem &* quæſtum.

QUAKERS, a religious ſect, who made their appearance in England, during the time of the inter-regnum. See Sect.

They took their origin from George Fox, an illiterate perſon, born at Draiton in Leiceſterſhire; and by profeſſion a ſhoemaker.

The accounts of thoſe times tell us, that as he wrought at his trade, he uſed to meditate much on the ſcriptures; which, with his ſolitary courſe of life, improving his natural melancholy, he began at length to have viſions; and, in conſequence thereof, ſet up for a preacher.

The new prophet propoſed but few articles of faith; dwelt moſtly on morality; preached mutual charity, the love of God, and a deep attention to the inner motions and ſecret workings of the ſpirit—He would have a ſimple worſhip, and religion without any ceremonies; making it a principal point to wait in profound ſilence, the motion and direction of the holy ſpirit.

The genius of the times, the novelty of the doctrine, and the great appearance of devotion in the man, ſoon gained him diſciples; and ſome unuſual ſhakings and convulſions which they were ſeized withal at their firſt meetings, procured them the appellation *Quakers*.

They profeſs a great auſterity of behaviour; a ſingular probity and uprightneſs in their dealings; a demureneſs and gravity of countenance; a coldneſs and ſparingneſs of diſcourſe, to have time to weigh what they ſay; a great deal of frugality in their tables, and of plainneſs in their dreſs.

They declaim much againſt the intereſted views of the Engliſh miniſters; blame all war, and ſet aſide all uſe of oaths, as prohibited under the goſpel. See Affirmation.

According to the genius of riſing ſects, an eager zeal at firſt led them to ſome extravagancies: they would run about the ſtreets naked; and were frequently in priſon for interrupting the miniſters in ſervice time.

One of their company, Naylor, is ſaid to have had the impiety to allow his followers to call him ſon of God, ſon of juſtice, and king of Iſrael; to ſtrew garments before him, and hail him at his entry into Briſtol, with Hoſanna ſon of David. He had his trial for the ſame, was whipped for blaſphemy, and excommunicated by the reſt.

Beſide other penalties inflicted on them, they were laughed at, and rallied in writing, and expoſed on the theatre: but they deſpiſed alike both the preſs and the priſon, and formed their ſect, maugre all oppoſition of both; and under the direction of Fox, Dewsbury, and others, grew from a looſe, undiſciplined multitude, into a regular body, with ſtated laws and polity; which they retain with great œconomy to this day.

The modern *Quakers* retain nothing of the extravagancies charged on their leaders; having approved themſelves a ſober, quiet people, of exemplary morals, and remarkably charitable and friendly to each other.

Their doctrines are not eaſily collected; at leaſt, not eaſily repreſented out of their own terms, which appear ſomewhat ambiguous.

They hold Chriſt to be a light which hath lighted every man; and that whoever will ſoberly and ſeriouſly turn into himſelf with a ſincere deſire to know and practiſe his duty, will not fail to find there a ſufficient director; a ray from the fountain of light illuminating the underſtanding, and aſſiſting to diſtinguiſh good from evil.

They add, that ſuch as follow the directions and convictions of this light, ſhall be holy and acceptable to God; and that this was the end of Chriſt's coming into the world—That ſo far as they follow this light, they ſhall be infallible; and that it is not opinions, or ſpeculations, or notions of what is true, or ſubſcription of articles or formula's of faith, how ſoundly ſoever worded, that make a man a true believer or chriſtian; but a conformity of mind and practice to the will of God, according to the manifeſtation and dictates of this divine principle of light within them.

Our Saviour's injunction about baptiſm they underſtand, in a figurative ſenſe, of a converſion and change of the heart; and wholly neglect the outward ſign—Water-baptiſm they hold was only John's; that it was no more than a type or figure, fitted for the infant-ſtate of the goſpel; and therefore now uſeleſs, in a diſpenſation, which is ſpiritual and inward.

The ſame they hold of the ſupper; alledging, that both allude to old Jewiſh practices, and were uſed as types or ſignifications of a near and accompliſhing work—They add, that the communion of ſaints conſiſts only in a participation of the ſame divine principle, ſhewing itſelf in an unity of ſpirit.

As to miniſtry and ordinances, they deny that any are to be uſed of man's wit, or will, or carnal invention, or imitation; or other than what the inward principle directs them to—Accordingly, they have no perſons ſet apart for the miniſtry; but without diſtinction of quality or ſex, every one who is of ſober life, and approved converſation, and believes him or herſelf called or moved thereto, is permitted to ſpeak and propheſy in their aſſemblies.

They own the ſcriptures to be given by divine inſpiration, and allow them the appellation of the form of ſound words; but refuſe to call them the *word of God*, as being a denomination properly attributed to Chriſt alone—They add, that what makes them more ſcrupulous in this reſpect, is, that people are apt to be hereby led to think that if they have the ſcriptures, they have all; and ſo look for no farther word or light.

They acknowledge the holy three that bear record in heaven, father, word, and ſpirit; but reject the ſchool-terms, trinity, diſtinct, perſons, hypoſtaſes, *&c.* as not ſcriptural, and as apt to convey too groſs ideas.

They have been even charged with denying the incarnation, our Saviour's humanity, divinity, plenary ſatisfaction, and the reſurrection of the dead: but this is injurious to them; and all that can be juſtly ſaid, is, that they do not allow of them in the ſame ſenſe, or ſpeak of them in the ſame terms, as is commonly done among others.—They allow the incarnation, and that the Godhead dwelt bodily in Jeſus; and yet many of them ſay, there is no Chriſt but what is within them: whence it ſhould ſeem their notion of the incarnation only implied this, that the light, which they call the Chriſt within, dwelt in the man Jeſus Chriſt fully—Their reaſoning, here, is, that Chriſt as God, not being diviſible, the meaſure or manifeſtation of the ſpirit of Chriſt in us, is a manifeſtation of the ſame Chriſt which dwelt bodily and fully in the man Jeſus Chriſt.

They are ſilent as to the hypoſtatical union; and ſome of them are charged with allegorizing away the whole hiſtory of the crucifixion, the reſurrection, and aſcenſion; though their beſt and moſt approved writers have been very explicit in their acknowledgment of the reality of the hiſtory.

They decline the uſe of modes or forms of civility; expreſſing their reſpect to their ſuperiors no other way but by obeying all juſt laws under their government.

The ſyſtem of *Quakeriſm* is laid down in fifteen theſes, by Robert Barclay, in a well writ apology addreſſed to king Charles II. Their hiſtory, writ in Low Dutch by William Sewel, and ſince tranſlated into Engliſh, traces them from the beginning to the year 1717—A hiſtory of this people was alſo publiſhed *An.* 1695, by Gerard Croeſe; but that author is by them accuſed as having miſrepreſented facts, and in many reſpects done them injuſtice.

As to diſcipline and polity; the affairs of the communion are all managed under a democratical government, by rules eſtabliſhed by common conſent; and this principally at their meetings, whereof they have many kinds; *viz. monthly, quarterly, yearly, ſecond day's meetings, meetings of ſufferings, &c.*

Their *monthly* and *quarterly meetings* are held in their reſpective counties—To theſe deputies are ſent from the ſeveral particular meetings—Here enquiry is made into the ſtate of each meeting; who ſtand faſt to the rules and orders, and who backſlide; who pay tithes, and church rates, and who ſuffer for non-payment of either; who are married by prieſts, *&c.* and accordingly they proceed to cenſure, or incourage—Here, too, they excommunicate, and here receive again into communion; of all which things exact regiſters are kept.

From theſe meetings appeals lie to their *yearly* ones, which are always held in London, and conſiſt of three orders or claſſes; *viz.* repreſentatives ſent from the quarterly meetings; correſpondents for the ſeveral counties, and foreign countries; and miniſters, or preachers.—Hither are tranſmitted accounts of what has been tranſacted in all the monthly and quarterly meetings over the world—Here are meaſures concerted, and directions given as to behaviour about tithes, and rates, providing for the poor, compoſing differences, *&c.*—Here public accounts are audited, and proper inſtructions given to the deputies to be obſerved at their return, and a yearly epiſtle of admonitions diſpatched to be read in all the monthly and quarterly meetings throughout the world.

The *ſecond day's meeting*, is a ſtanding committee conſiſting of the principal preachers in and about the city, who meet every monday, to concert particular caſes, and exigencies relating to the body happening between the yearly meetings; particularly to examine, approve, licenſe, *&c.* all books printed in their behalf.

The *meeting of ſufferings* is held every week, and conſiſts of the correſpondents for each county—It's buſineſs is to receive complaints from ſuch as have ſuffered for non-payment of tithes and rates, and to procure them relief, either by ſending them money, for which they have a ſettled fund, or by ſolliciting their cauſes above, or both.

QUALE *Jus*, was an ancient writ judicial, which lay where a religious perſon had judgment to recover land; before execution was made of the judgment.

This writ was iſſued forth to the eſcheator between judgment and execution, to enquire whether the religious perſon had right to recover, or whether the judgment were obtained by colluſion between the demandant and tenant; to the intent that the true lord were not defrauded.

QUALIFICATOR, in the canon-law, a divine appointed to qualify, or declare the quality of, a propoſition brought before an eccleſiaſtical tribunal; chiefly before the inquiſition.

The *qualificators* of the office are not judges; they only give their ſentiments on the propoſitions preſented to them—It is the inquiſitors that judge. See INQUISITION.

QUALITY, QUALITAS, that affection of a thing whence it is denominated ſuch; or that which occaſions a thing to affect our ſenſes in this or that manner, and gives it this or that denomination. See AFFECTION.

Thus, that power in fire, whatever it be, whereby it excites in us the ſenſation of heat, ſince it is that whence the fire is denominated hot, is the called *Quality* of fire. See HEAT.

The word *Quality*, *Qualitas*, is ſaid to have been firſt introduced into the Latin by Cicero: till his time the Romans ſtudiouſly avoided uſing a term which denoted an abſtract; and in lieu thereof, only conſidered the concrete, ſignified by *Quale*—The like is obſerved of the ancient Greeks, who did not uſe *ποιότης*, but *ποιον*. See ABSTRACT and ABSTRACTION.

Quality, it is to be obſerved, is an ambiguous term; and has been applied to ſome things which ought rather to have been looked upon as ſtates of matter, or aſſemblages of ſeveral *Qualities*; as life, health, beauty, *&c.*

There are, alſo, other attributes, as ſize, ſhape, motion, and the reſt, uſually reckoned among *Qualities*, which might more conveniently be ranked among the primary modes of the parts of matter; ſince from theſe ſimple attributes, all the *Qualities* are derived. See MODE.

The ancient ſchool philoſophers diſtinguiſh *Quality* in the general, which they call *metaphyſical* and *prædicamental Quality*; into *eſſential* and *accidental*—The moderns, more uſually, into *ſpiritual* and *corporeal.*

Spiritual QUALITIES, or QUALITIES *of the ſoul*, are affections of the mind, conſidered as is in this, or that habitude or diſpoſition—Of theſe, they make two kinds; the one belonging to the underſtanding, the other to the will: of the former kind are knowledge, opinion, certainty, doubting, *&c.* Of the latter, are all the moral virtues and vices. See UNDERSTANDING, WILL, KNOWLEDGE, IGNORANCE, OPINION, *&c.* See alſo VIRTUE, *&c.*

Corporeal or phyſical QUALITIES, are what we chiefly conſider under this denomination, and to which the definition above laid down is accommodated.

Philoſophers are divided as to the nature of theſe *Qualities*, or what they are in the body—The general language of the peripatetic ſchool, is, that they are things diſtinct from the bodies themſelves; are ſuperadded to them, or flow from their ſubſtantial forms: on which principle, they hold *Qualities* to be real, and denominate them *accidents*; ſuppoſing them to be inherent in ſubſtances, though not in the relation of parts, but to be ſuſtained thereby as in a ſubject, and incapable of ſubſiſting without them—In effect, the Thomiſts define *Qualities* to be accidents following or ariſing from the form; in the ſame manner as quantity is an accident following or ariſing from the ſubſtance. See FORM, ACCIDENT, QUANTITY, *&c.*

The moderns abſolutely explode the notion of *Qualities* diſtinct from the body; and inſiſt, that the powers whereby bodies excite in us the ideas of ſuch *Qualities* are no other than the mechanical affections of the bodies themſelves, *viz.* the figure, magnitude, motion, *&c.* of the parts whereof they conſiſt. See MECHANICAL.

The principal conſiderations inſiſted on by the retainers to real *Qualities* are, that theſe powers may be actually ſeparated from the ſubſtances they inhere in; as we ſee in light, heat, *&c.* That from theſe very *Qualities* conſidered as ſo many determinations ariſes a very great diverſity in bodies: and that bodies, according to the diverſity of their *Qualities*, affect our ſenſes differently.

The adherents to the experimental way, on the contrary, account for all the *Qualities* of bodies from mechanical cauſes.

Thus all the phænomena of a clock, the motion of it's wheels, it's hands, *&c.* whereby it ſtrikes the hour, points the minute, day, moon's age, *&c.* do all evidently ariſe from the ſingle ſpring; which we never imagine to have any particular powers whereby it ſhould be enabled to make ſuch diſcoveries; nor any other principle but that one of elaſticity—Again, when the ſmith who firſt invented locks and keys, had made his firſt lock, it was only a piece of iron, forged into a particular ſhape; and when, afterwards, he made a key to it, that alſo, conſidered in itſelf, was nothing but a piece of iron of a determinate figure; but as theſe two pieces of iron might now be applied to one another, after a certain manner, and, as there was a congruity betwixt the wards of the lock, and thoſe of the key, they now each obtain a new capacity; and it became a principal part of the notion and definition of a lock, that it was capable of being made to open or ſhut, by that other piece of iron called a key; and it was looked on as a peculiar faculty and power in the key to be fit to open and ſhut the lock—And yet by theſe new attributes there was not added any real or phyſical entity, either to the lock or the key; each of them remaining the ſame piece of iron, juſt ſo ſhaped, as it was before. And, again, when the ſmith made other keys of different ſizes, or with different wards; though the firſt lock could not be opened with any of thoſe keys, yet, that indiſpoſition was nothing new in the lock, or diſtinct from the figure it had before theſe keys were made.

Why, then, may we not conceive, that ſenſible *Qualities*, though, by virtue of a certain congruity or incongruity in point of figure, texture, or other mechanical properties, the portions of matter they modify are enabled to produce various effects, on account whereof the bodies are ſaid to be endowed with *Qualities*; yet, they are not in the bodies endowed with them, any real or diſtinct entities, or differing from the matter itſelf of ſuch a determinate bigneſs, ſhape, and other mechanical modifications?

Thus, though the modern goldſmiths and refiners reckon it among the moſt diſtinguiſhed *Qualities* of gold, that it is diſſoluble in aqua regia, whilſt aqua fortis will not work upon it; yet theſe attributes are not in the gold any thing diſtinct from it's peculiar texture; nor is the gold we have now of any other nature than it was in Pliny's time, when aqua fortis and aqua regia were unknown.

If another menſtruum, of which Mr Boyle ſuggeſts he was poſſeſſed, ſhould be invented to diſſolve pure gold in part, and change it into a different metalline body; there would then ariſe another new property, whereby to diſtinguiſh this from other metals: yet the nature of gold is not at all different now from what it was before the diſcovery of this laſt menſtruum.

There are bodies neither cathartic nor ſudorific, with ſome of which gold being joined acquires a purgative virtue, and with others a power to procure ſweat.—Nature herſelf ſometimes produces things, that have no relations to others: and art, eſpecially if aſſiſted by chemiſtry, may cauſe ſo many new productions, that no man can tell, but the moſt familiar bodies may have multitudes of *Qualities* he dreams not of, which will hardly be imagined real phyſical entities.

We all know that the ſun hath a power to harden clay, ſoften wax, melt butter, thaw ice, turn water into vapour, make air expand itſelf in weather-glaſſes, contribute to blanch linnen, render the white skin of the face ſwarthy, and mowed graſs yellow, ripen fruit, hatch the eggs of ſilk-worms, caterpillers, *&c.* and perform many other things, ſome of which ſeem contrary to others; yet theſe are not diſtinct powers, or faculties in the ſun, but only the production of it's heat, diverſified by the different textures of the body it chances to work on, and the condition of the other ſubſtances concerned in the operation—And, therefore, whether or no the ſun, in ſome caſes, has any influence at all diſtinct from it's light and heat, we ſee that all the phænomena mentioned, are producible by the heat of common fire, duly applied and regulated. *Boyle of Forms and Qualities.*

Some of the ancients, and particularly the Peripatetics, diſtinguiſhed *Qualities* into *ſenſible* and *occult.*

Senſible, or *manifeſt* QUALITIES, are thoſe ariſing from certain modifications of matter, and which become immediately objects of our ſenſes—Such are all thoſe above mentioned.

Though, in ſtrictneſs, thoſe only are ſaid to be *ſenſible Qualities* which affect ſome one ſenſe alone; as colour does the eye, ſound the ear, *&c.*

Theſe are ſometimes, alſo, called *tangible Qualities*, by reaſon they only produce their effect, *i. e.* excite their ideas in us when contiguous, or in contact with the organ.

Occult QUALITIES, are certain latent powers ariſing from the ſpecific forms of things, whereof no rational ſolution can be given on any principles of phyſics. See OCCULT.

Senſible Qualities are uſually ſubdivided into *primary* and *ſecondary.*

Primary, or *general* QUALITIES are ſuch as are found in all bodies; or which agree to all matter, conſidered as matter, and therefore to the elements themſelves—Such are extenſion, figure, motion, reſt, ſolidity, impenetrability, and number. See BODY, FIGURE, SOLIDITY, *&c.*

Secondary, or *particular* QUALITIES are ſuch as reſult from a compoſition or mixture of elements, and do not agree to body as body, but as a mixt—Such are light, heat, cold, colour, ſound, taſte, ſmell, hardneſs, ſoftneſs, fluidity, firmneſs, roughneſs, ſmoothneſs, opacity, tranſparency, *&c.*

According to Ariſtotle and the Peripatetics, the primary, or elementary *Qualities*, are thoſe of the four elements themſelves; *viz.* heat, cold, moiſture, and dryneſs. See ELEMENT.

The ſecondary *Qualities*, according to the ſame, are all the reſt; which are combinations or aſſemblages of the former elementary ones; as colour, odour, taſte, *&c.*

To give an idea of Ariſtotle's method of accounting for theſe ſecondary *Qualities* from his primary ones, we ſhall inſtance in his account of colour—All colours, then, ſays he, are generated of a mixture of the four elementary *Qualities*:

white, *e. gr.* is produced when the humidity ſurmounts the heat, as in old men, who grow grey: black is produced when the humidity dries off, as in walls, ciſterns, *&c.* red, *&c.*

Among the ſchool-philoſophers we meet with other diviſions of *Qualities*; as *active*, and *paſſive*; *real* and *intentional.*

Active QUALITES, are thoſe by virtue whereof effects and operations are actually produced on other bodies duly diſpoſed with reſpect thereto—Such are the heat of fire, the moiſture of water, *&c.*

Paſſive QUALITIES are thoſe whereby bodies are diſpoſed to receive the action of others—Such are inflammability in oil, *&c.*

Real QUALITIES are thoſe which remain in the ſubject; and only act on things adjacent thereto—As fire in a piece of iron not ignited, *&c.*

Intentional QUALITIES are thoſe which iſſue from the ſubject, and operate at a diſtance—Such is the light emitted from the ſun, *&c.*

But the moderns are agreed that either all *Qualities* are real, or all alike intentional—So that the diſtinction is impertinent.

However ignorant we may be of the nature of *Qualities*, or the manner of their operation; yet we know the laws of their intention, and remiſſion—Dr Keil demonſtrates that every *Quality* which is propagated *in orbem*, ſuch as light, heat, cold, odour, *&c.* has it's efficacy increaſed, or abated in a duplicate ratio of the diſtances from the centre of radiation, or exertion of the *Quality*, reciprocally.

Thus, let A (*Tab. Geometry. fig.* 80.) be a centre from whence any *Quality* exerts itſelf round about, according to the right lines A *e*, A *f*, *&c.* The efficacy of the *Quality*, be it heat, cold, odour, *&c.* will be (at equal diſtances from A) as the ſpiſſitude or denſity of the rays A *b*, A *c*, A *d*. But the rays within the inner circle, or rather ſpherical ſuperficies, *b c d* H, when they come to be extended to the other ſpherical ſurface, *e f g* K, will be much leſs cloſe than before, and that in the reciprocal proportion of the ſpaces they take up; that is, if the outer ſurface be double of the inner, the rays there will be but half as thick: But ſince ſpherical ſuperficies are as the ſquares of their radii, therefore the efficacy of the *Quality* in the inner ſurface will be to that of the outer, As A *e* ſquare, to A *b* ſquare. *Q. E. D.*

Sir Iſaac Newton lays it down as one of the rules of philoſophizing, that thoſe *Qualities* of bodies which are incapable of being intended and remitted, and which are found to obtain in all bodies wherein the experiment could ever be tried, are to be eſteemed univerſal *Qualities* of all bodies. See PHILOSOPHIZING.

Chymical QUALITIES—One may diſtinguiſh phyſical *Qualities*, with Mr Boyle, into *firſt*, *ſecond*, and *third*; to the two laſt of which may be referred ſeveral *Qualities* not treated of by the writers of phyſical ſyſtems; and theſe for diſtinction ſake, may, ſome of them, be ſtiled the *chymical Qualities* of things, becauſe Ariſtotle and the ſchoolmen, being unacquainted with them, they have been principally introduced by means of chymical operations and experiments: as fumigation, amalgamation, cupellation, volatilization, percipitation, *&c.* See CHEMISTRY.

By theſe operations, among other means, corporeal things come to appear volatile or fixed, ſoluble or inſoluble in ſome menſtrua, amalgamable or unamalgamable, *&c.* which as well deſerve the name of *Quality*, as ſeveral other attributes, to which it is allowed.

To theſe chymical *Qualities* ſome others might be added, which, becauſe of the uſe that phyſicians principally make of them, may be called *medical Qualities*, whereby ſome ſubſtances received into the human body, are reſolving, diſcuſſing, ſuppurating, abſterſive, *&c.* For though ſome faculties of medicines, as thoſe of heating, cooling, drying, attenuating, purging, *&c.* may be conveniently referred to the firſt, ſecond, or third *Qualities*, mentioned by naturaliſts; whilſt others are reckoned occult; yet as ſeveral of them ought not to be referred to the *Qualities* whereto they are often aſcribed; ſo the handling of them may be looked upon as a deſideratum, and deſerves a diſtinct place in natural philoſophy. See MEDICINE; ſee alſo PURGATIVE, *&c.*

Coſmical QUALITIES, ſee COSMICAL *Quality*.

QUALITY is alſo uſed for a kind of title given to certain perſons in regard of their territories, ſignories, or other pretenſions. See TITLE.

Thus the king of Great Britain takes the *Quality* of king of France: the king of Poland that of king of Sweden: the king of Sardinia that of king of Cypreſs and Jeruſalem: the czars of Ruſſia and kings of Spain have whole pages of *Qualities*—The emperor of China aſſumes the *Quality* of ſon of the ſun.

QUAM *diu ſe bene geſſerit*, a clauſe frequent in letters patents, or grants of offices, to ſecure them ſo long as the perſon they are granted to, ſhall not be guilty of abuſing the ſame. See OFFICE, *&c.*

Thus, *e. gr.* we find it in thoſe given to the barons of the exchequer; where it intimates that they ſhall hold the ſame as long as they ſhall behave themſelves well: which is to be reſtrained to matters of their offices; and ſignifies no more than the law would have implied, had the office been granted expreſly for life. See BARON.

A grant therefore with this clauſe, is equivalent to a grant for life. See JUDGE, JUSTICE, *&c.*

QUANTITY, QUANTITAS, any thing capable of eſtimation, or menſuration; or, which being compared with another thing of the ſame kind, may be ſaid to be greater, or leſs, than it; equal, or unequal to, it. See MEASURE.

Mathematics is the ſcience or doctrine of *Quantity*. See MATHEMATICS.

Quantity is a general attribute, applied in a very different manner to things of very different nature; whence it is impoſſible to give any univerſal definition thereof.

Quantity is applied both to things, and to modes; and this either ſingularly, to one; or plurally, to ſeveral—In the firſt caſe it is called *magnitude*, in the latter *multitude*. See MAGNITUDE, *&c.*

Quantity may be reduced to four claſſes, *viz.*

Moral QUANTITY, which depends on the manners of men, and the free determination of their wills—As the prices and values of things: degrees of dignity and power, good and evil, merit and demerit, rewards and puniſhments, *&c.*

Notional QUANTITY, ariſing from the operation of the underſtanding only—Such as the largeneſs or narrowneſs of the capacity of the mind, and it's conceptions—In logic, univerſals, prædicaments, *&c.*—In grammar, the *Quantity* and meaſure of ſyllables, accents, tones, *&c.*

Phyſical, or *natural* QUANTITY, which is of two kinds; 1. That which nature furniſhes us with in matter, and it's extenſion. See BODY and EXTENSION—And, 2. In the powers, and properties of natural bodies; as gravity, motion, light, heat, cold, rarity, denſity, *&c.* See MOTION, GRAVITY, *&c.*

Tranſcendental QUANTITY, as duration, the continuation of of any being, exiſtence, time, *&c.* See DURATION, TIME, *&c.*

Quantity is alſo popularly diſtinguiſhed into *continued* and *diſcrete*.

Continued QUANTITY, is when the parts are connected together—This, again, is of two kinds; either *ſucceſſive* and *improper*, as time. See TIME.

Or *permanent* and *proper*, as ſpace. See SPACE.

Diſcrete QUANTITY, is when the parts whereof it conſiſts, exiſt diſtinctly and unconnected together; which makes what we call *number**. See DISCRETE.

Permanent Quantity is farther diſtinguiſhable into length, breadth, and depth. See LINE, SURFACE, and SOLID.

Wolfius ſeems to give us a more preciſe notion of mathematical *Quantity*, and it's two ſpecies of diſcrete and continued—Whatever is referred to unity in the ſame manner as one right line to another, is what we call *Quantity*, or number in general. See NUMBER.

If, now, the thing be referred to a given unit, as 3, it is called a determinate number: if to unity in the general, or at large, it is called a *Quantity*; which, on this principle, is the ſame with indeterminate number.

Thus, *e. gr.* the breadth of a river is accounted a *Quantity*: If, then, it be enquired how great it is? to conceive it's *Quantity* we take ſome unit at pleaſure, and ſeek the relation of the breadth hereto; and according to the different unit aſſumed, expreſs the breadth of the river in a different determinate number.

The breadth of the river, therefore, is a *Quantity* conſidered as referred to a vague unit, or to unity at large; but the unit being determined, the thing is underſtood by a determinate number.

In this ſenſe, algebra is the arithmetic of *Quantities*. See ALGEBRA.

QUANTITY *of motion*, in mechanics, is of two kinds, *viz.* of momentary motion, and of entire motion.

QUANTITY *of entire motion*—The Carteſians define the entire motion as the momentary one, by the factum of the maſs,

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* The notion of continued quantity, and its difference from diſcrete, appears to ſome without foundation—Mr Machin conſiders all mathematical quantity, or that for which any ſymbol is put, as nothing elſe but number, with regard to ſome meaſure which is conſidered as one. For that we cannot know preciſely how much any thing is but by means of number. The notion of continued quantity without regard to any meaſure is indiſtinct and confuſed: And tho' ſome ſpecies of ſuch quantity conſider'd phyſically, may be deſcribed by motion, as lines by the motion of points, and ſurfaces by the motion of lines; yet the magnitudes or mathematical quantities are not made by the motion, but by numbering according to a meaſure. *Vid. Phil. Tranſ.* No. 447, p. 228.

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or quantity of matter, into the velocity; but ſince motion is a ſucceſſive being, and has no parts co exiſting together, it's *Quantity* ought to be eſtimated by the aggregate of the ſeveral parts exiſting ſucceſſively; and is therefore equal to the factum of the momenta into the time.

QUANTITY *of momentary motion*, is the factum of the velocity into the maſs; or a meaſure ariſing from the joint conſideration of the *Quantity* of matter, and the velocity of the motion of the body; the motion of any whole being the ſum or aggregate of the motion in all the ſeveral parts. See MOTION.

Hence, in a body twice as great as another, moved with an equal velocity, the *Quantity* of motion is double; if the velocity be double alſo, the *Quantity* of the motion will be quadruple. Hence the *Quantity* of momentary motion coincides with what we call momentum, or impetus of a moving body. See MOMENTUM.

In the colliſion of bodies, the *Quantity* of momentary motion, which is found by taking the ſum of motions tending the ſame way, or their difference if they tend towards contrary parts; is not at all changed by any actions of the bodies on one another. See PERCUSSION.

QUANTITY *of matter* in any body, is the product of the denſity into the bulk; or a *Quantity* ariſing from the joint conſideration of it's magnitude and denſity. See MATTER.

As, if a body be twice as denſe, and take up twice as much ſpace as another, it will be four times as great.

This *Quantity* of matter is the beſt diſcoverable by the abſolute weight of bodies. See MASS, WEIGHT, *&c.*

QUANTITY *infinite*—Though the idea of magnitude infinitely great, or ſuch as exceeds any aſſignable *Quantity*, does include a negation of limits; yet are not all ſuch magnitudes equal amongſt themſelves; but beſides infinite length, and infinite area, there are no leſs than three ſeveral ſorts of infinite ſolidity; all of which are quantities *ſui generis*; and thoſe of each ſpecies are in given proportions. See INFINITE.

Infinite length, or a line infinitely long, is to be conſidered, either as beginning at a point, and ſo infinitely extended one way; or elſe both ways from the ſame point: in which caſe the one, which is a beginning of infinity, is one half of the whole, which is the ſum of the beginning and ceaſing infinity, or infinity *à parte ante*, and *à parte poſt*, which is analogous to eternity in time or duration; in which there is always as much to follow, as is paſt any point or moment of time. See ETERNITY.

Nor does the addition or ſubſtraction of time, length or ſpace of time, alter the caſe, either as to infinity or eternity; ſince neither the one or the other can be any part of the whole.

As to infinite ſurface or area, any right line infinitely extended both ways on an infinite plane, divides that plane into equal parts, the one to the right, and the other to the left of the ſaid line; but if from any point in ſuch a plane, two right lines be infinitely extended, ſo as to make an angle; the infinite area, intercepted between theſe infinite right lines, is to the whole infinite plane, as the arch of a circle drawn on the point of concourſe of thoſe lines as a centre, intercepted between the ſaid lines, is to the circumference of the circle; or as the degrees of the angle to the 360 degrees of a circle.

For an example—Two infinite right lines meeting at a right angle on an infinite plane, do include a quarter part of the whole infinite area of ſuch a plane: if two parallel infinite lines be ſuppoſed drawn on ſuch an infinite plane, the area intercepted between them will be likewiſe infinite; but at the ſame time will be infinitely leſs than the ſpace intercepted between two infinite lines, that are inclined, though with never ſo ſmall an angle, for that in the one caſe the given finite diſtance of the parallel lines diminiſhes the infinity in one degree of dimenſion; whereas in a ſector, there is infinity in both dimenſions; and conſequently the *Quantities* are one infinitely greater than the other, and there is no proportion between them.

From the ſame conſideration ariſe three ſeveral ſpecies of infinite ſpace or ſolidity; for a parallelepiped, or a cylinder infinitely long, is greater than any finite magnitude, how great ſoever; all ſuch ſolids ſuppoſed to be formed on a given baſis, are in proportion to one another, as thoſe baſes. But if two of thoſe three dimenſions are wanting, as in the ſpace intercepted between two parallel planes infinitely extended, and at a finite diſtance; or with infinite length and breadth, have a finite thickneſs; all ſuch ſolids ſhall be as the given finite diſtances one to another.

But theſe *Quantities*, though infinitely greater than the other, are yet infinitely leſs than any of thoſe wherein all the three dimenſions are infinite—Such are the ſpaces intercepted between two inclined planes infinitely extended; the ſpace intercepted by the ſurface of a cone, or the ſides of a pyramid, likewiſe infinitely continued, *&c.* of all which, notwithſtanding the proportions one to another, and to the το ϖαν, or vaſt abyſs of infinite ſpace (wherein is the locus of all things that are, or can be; or to the ſolid of infinite length, breadth, and thickneſs taken all manner of ways) are eaſily aſſignable—For the ſpace between two planes is to the whole, as the angle of thoſe planes to the 360 degrees of the circle. As for cones and pyramids, they are as the ſpherical ſurface intercepted by them, is to the ſurface of the ſphere; aad therefore cones are as the verſed ſines of half their angles, to the diameter of the circle: theſe three ſorts of infinite *Quantity* are analogous to a line, ſurface, and ſolid; and, like them, cannot be compared, or have any proportion one to another. See the article INFINITE.

QUANTITIES, in algebra, are indeterminate numbers, or things referred to unity in general. See NUMBER.

Quantities are properly the ſubject of algebra; which is wholly converſant in the computation of ſuch *Quantities.* See ALGEBRA, and CALCUS.

Given Quantities are uſed to be noted by the firſt letters of the alphabet *a*, *b*, *c*, *d*, &c. the *Quantities* ſought by the laſt *z*, *y*, *x*, &c. See CHARACTERS.

Algebraical Quantities are chiefly of two kinds; *poſitive*, and *negative.*

Poſitive or *affirmative* QUANTITIES are thoſe which are greater than nothing; and which are affected with the ſign + prefixed; or ſuppoſed to be ſo. See POSITIVE.

Negative, or *privative* QUANTITIES are thoſe leſs than nothing; which are affected with the ſign — prefixed. See NEGATIVE and PRIVATIVE.

Hence, 1. Since + is the ſign of addition, and — the ſign of ſubſtraction; a poſitive *Quantity* is produced by adding any real *Quantity* to nothing; *e. gr.* $0 + 3 = + 3$; and $0 + a = + a$. And a privative *Quantity* is produced by ſubſtracting any real *Quantity* out of nothing; *e. gr.* $0 - 3 = - 3$; and $0 - a = - a$.

For an illuſtration—Suppoſe when you are quite deſtitute of money, ſomebody gives you an hundred pieces; you have then an hundred pieces more than nothing; which pieces conſtitute a poſitive *Quantity.*

On the contrary, ſuppoſe you have no money, yet owe an hundred pieces; you have then an hundred pieces leſs than nothing; for you muſt pay an hundred pieces to have juſt nothing. This debt is a negative *Quantity.*

Thus in local motion, progreſs may be called a poſitive *Quantity*, and regreſs a negative one; becauſe the firſt increaſes, and the ſecond diminiſhes the ſpace paſſed over.

And in geometry, if a line drawn towards any part be accounted an affirmative *Quantity*; another the contrary way will be a negative one.

Privative *Quantities*, therefore, are the defects of the poſitive *Quantities* whereby they are underſtood; and, conſequently are no real *Quantities:* for we meaſure the defect by the *Quantity* defective; and thus it becomes intelligible.

Since one defect may exceed another, (*e. gr.* if ſeven be wanting, the defect is greater than if only three be wanting) and ſince privative *Quantities* are the defect of real *Quantities*; one privative *Quantity* being taken a certain number of times, may exceed another. Wherefore privative *Quantities* are homogeneous to one another.

But ſince the defects of a poſitive *Quantity* taken any number of times can never exceed the poſitive *Quantity*, but grow ſtill the more deficient; privative *Quantities* are heterogeneous to poſitive ones.

Since, then, privative *Quantities* are heterogeneous to poſitive ones, homogeneous to privative ones; there can be no ratio between a privative and a poſitive *Quantity*, but there is a ratio between privative ones. *E. gr.* $-3^a : -5^a :: 3 : 5$. The ratio, here, is the ſame as if the *Quantities* were poſitive. But it may be noted, that between 1 and — 1, and between — 1 and 1, the ratio is very different.

Commenſurable QUANTITIES. See COMMENSURABLE.

Compound QUANTITIES. See the article COMPOUND.

Exponential QUANTITY. See the article EXPONENTIAL

Like QUANTITY. See the article LIKE.

Simple QUANTITIES. See the article SIMPLE.

Tranſcendental QUANTITIES. See TRANSCENDENTAL.

Variable QUANTITIES. See the article VARIABLE.

Addition of QUANTITIES.—1°. If the *Quantities* denoted by the ſame letter be affected with the ſame ſign, the numbers prefixed to them are added as in common arithmetic.

2°. If they be affected with different ſigns, the addition is changed into ſubſtraction; and to the remainder is prefixed the ſign of the greater.

3°. *Quantities* denoted by different letters, are added by means of the ſign +; as in the following example:

$$\begin{array}{l} 4a + 2b - 2c - 5d - g \\ \underline{5a - 2b + 6c + 2d - 3g} \\ 9a + 4c - 3d - 4g \end{array} \qquad \begin{array}{r} a - b \\ \underline{\qquad c} \\ a - b + c \end{array}$$

Subſtraction of QUANTITIES. See SUBSTRACTION.

Multiplication and diviſion of QUANTITIES. See MULTIPLICATION and DIVISION.

Combination of QUANTITIES. See COMBINATION.

In

If a poſitive *Quantity* be multiplied, or divided by another poſitive *Quantity*, the reſult is a poſitive *Quantity*.

2. If a negative *Quantity* be multiplied, or divided by a poſitive, the reſult is a negative.

3. If a negative *Quantity* be multiplied, or divided by another negative, the reſult is a poſitive.

4. If a poſitive *Quantity* be multiplied, or divided by a negative, the reſult is a negative *Quantity*.

Quantity, in grammar, denotes the meaſure, or magnitude of the ſyllables; or, that which determines them to be called long, or ſhort. See Measure, and Syllable.

This *Quantity* is the object of proſody; and it is the regard to this that diſtinguiſhes verſe from proſe. See Verse and Prosody.

The œconomy and arrangement of the *Quantities*, *i. e.* the diſtribution of long and ſhort ſyllables, make what we call the *number*. See Numbers, Rhythmus, Cadence, *&c.*

The *Quantities* are uſed to be diſtinguiſhed among grammarians by the characters ◡ *ſhort*, and — *long*. See Character and Accent.

The proportion betwixt the long and ſhort ſyllables may be generally fixed the ſame as between the crotchet and quaver in muſic; *viz.* as 2 to 1. See Time.

In moſt languages there are ſome ſyllables whoſe *Quantities* vary, as the meaſure requires; as in the Engliſh rĕcōrd and rēcŏrd.

Some authors confound the *Quantities* with the accent: but the difference is glaring; the former being the length or ſhortneſs of a ſyllable, the latter the raiſing or falling of the voice. See Accent.

From two *Quantities*, *viz.* long and ſhort ſyllables, ariſe all the varieties of poetic feet, which are very great. Horace alone uſes no leſs than twenty-eight. Yet the Greeks went vaſtly beyond the Romans in this reſpect—In effect, as many ways as two *Quantities* may be varied by compoſition, and tranſpoſition from two to ſix ſyllables, ſo many different feet have the Greek poets contrived, and that under diſtinct names, to the number of 124. Tho' it is the opinion of ſome of the learned, that poetical numbers may be ſufficiently explained from the feet of two or three ſyllables, into which the reſt may be reſolved. See Foot.

The feet formed by the antients of the long and ſhort ſyllables immediately, are the *ſpondee*, conſiſting of two long ſyllables; the *pyrrhic*, of two ſhort ones; the *trochee*, of a long and ſhort ſyllable; and the *iambic*, of a ſhort and long ſyllable. See Spondee, Trochee, Iambic, *&c.*

Thoſe of two ſyllables are the *moloſſus*, conſiſting of three long ſyllables; the *tribrach* of three ſhort ones; the *dactyl* of one long and two ſhort ſyllables; and the *anapeſt* of two ſhort and one long ſyllable. See Dactyl, Anapæst, Tribrach, *&c.*

The Engliſh tongue admits of no feet above two ſyllables, though both the Latin and Greek allow of ſix.

Our heroic verſes conſiſt of five long and five ſhort ſyllables intermixed alternately; though not ſo ſtrictly but that the order may be diſpenſed withal. Dryden varies them with admirable beauty; ſometimes his heroic verſe begins with a long ſyllable followed by two ſhort ones.

The truth is, the *Quantity* of the ſyllables is but little fixed in the modern tongues; and there is ſtill leſs regard had to it in the compoſition of modern verſes—The want of feet, or rather the ſhortneſs and uniformity of our feet, makes a world of difference between the numbers of the ancient and modern verſe. Our poets are fettered, and their fetters are ſo ſhort, but two poor links, that it is no wonder they can make no extraordinary motions.

The ancients ſubſiſted by their *Quantities* alone; ſo well were they diſtinguiſhed, and ſuch a variety and harmony did they afford! Our *Quantities* make ſuch poor muſic, that we are forced to call in the Gothic aids of rhime to diſtinguiſh our verſe from proſe. See Ode.

Yet have attempts been made to ſettle our verſe on the ancient and natural footing of *Quantities*, in excluſion of rhime, and with ſuch ſucceſs too, (witneſs the immortal *Paradiſe Loſt*) as ſeems to leave the practice of rhiming inexcuſeable—The French have likewiſe attempted the ſame in their tongue, particularly Jodelet, and after him Paſquier, Paſſerat, and Rapin; but they have all failed. See Rhime.

Quantity *of a Degree.* See the article Degree.

Quantity *of an eclipſe.* See Eclipse.

QUANTUM *meruit*, an action upon the caſe, grounded upon a promiſe to pay a man for doing ſo much as he ſhould deſerve or merit.

QUARANTAIN*, in old law-books wrote Quarentene, and Quarantena, denotes the ſpace of forty days.

> * *Quatuor Carucatas terræ arabilis, continentes in Longitudine* 8 Quarentenas, *&* 8 Quarentenas *in Latitudine.* Chart. Withlaſii Reg. Merc. apud Ingulf.
>
> Quarantena *in London ponetur pro reſpectu habend. per* 40 *Dies poſt ſummonitionem per breve Regis ut conſulant, &c. ſi ſibi viderint expedire.* MS. de temp. *Ed* 3.

The term is borrowed from the French *quarentain*; and is ſometimes uſed for the time of lent. See Lent.

Quarantain *of the king*, denotes a truce of forty days appointed by St Louis, during which it was expreſsly forbid to take any revenge of the relation or friends of people who had fought, wounded, or affronted each other in words.

Quarantain is more particularly uſed for the term of forty days, which veſſels, coming from places ſuſpected of contagion, are obliged to wait in certain places appointed, to air themſelves before they come into port. See Plague.

Quarantain, or **Quarantine**, **Quarentena**, in law, denotes a benefit allowed by the laws of England to the widow of a man dying ſeized of land; whereby ſhe may challenge to continue in his capital meſſuage, or chief manſion-houſe (ſo it be not a caſtle) for the ſpace of forty days after his deceaſe.

If the heir, or any other perſon attempt to eject her, ſhe may have the writ de *quarantena habenda*; which lies for a widow to enjoy her *Quarantain*.

Quarantain is alſo uſed for a meaſure or extent of land, containing forty perches.

QUARANTIA, in the Venetian polity, a court of judicature compoſed of forty judges.

The Venetians have an old civil *Quarantia*, new civil *Quarantia*, and criminal *Quarantia*.

The criminal *Quarantia* takes cognizance of all crimes except thoſe againſt the ſtate, which belong to the council of ten—The new civil *Quarantia* judges of appeals made from ſentences paſſed by judges out of the city—The old civil *Quarantia* takes cognizance of appeals from ſentences of ſubaltern judges in the city.

QUARE Ejecit *infra terminum*, a writ which lies for a leſſee in caſe he be caſt out of his farm before his term be expired; againſt the leſſor, or feoffee that ejects him. See Lease.

It differs from ejectione firmæ, in that the former lies where the leſſor, after the leaſe made, enfeoffes another who ejects the leſſee; whereas the ejectione firmæ lies againſt any other ſtranger that ejects him.

The effect is the ſame in both, *viz.* the recovery of the reſidue of the term. See Ejectione *Firmæ*.

Quare Impedit, a writ which lies for him who has purchaſed an advowſon, againſt him that diſturbs him in the right thereof, by preſenting a clerk thereto when the church is void. See Advowson.

It differs from the aſſiſe of darrein preſentment, *ultimæ præſentationis*, which lies where a man or his anceſtors formerly preſented; this other lying for him who is the purchaſer himſelf—Where a man may have the aſſiſe, he may have this writ; but not contrarywiſe. See Assisa.

Quare Incumbravit, a writ which lies againſt the biſhop, who, within ſix months after the vacancy of a benefice, confers it on his clerk, while two others are contending at law for the right of preſenting. See Presentation, *&c.*

Quare non admisit, a writ which lies againſt the biſhip for refuſing to admit his clerk who has recovered in a plea of advowſon; on pretence of lapſe, *&c.*

Quare non permittit, is a writ that lies for one who has a right to preſent for a turn againſt the proprietary.

Quare obstruxit, a writ that lies for him who having right to paſs through his neighbour's grounds, cannot enjoy the ſame by reaſon the owner has fenced it up.

QUARERA, or **Quaratia**. See Quarry.

QUARREL, **Querela**, in law. See Querela.

Quarrel ſeems properly to relate to perſonal actions, or at moſt to mixed, wherein the plaintiff is called *Querens*, and in all declarations of treſpaſs it is ſaid, *Queritur*. See Action, Plaintiff, *&c.*

Yet if a man releaſe all *Quarrels* or *Querels* (a man's own deed being taken moſt ſtrongly againſt himſelf) *Quarrel* includes all actions; and accordingly all actions, both real and perſonal are hereby releaſed. See Release and Double.

Quarrel* *of glaſs.* See the article Quarry.

> * The Word is formed by diminution from the Latin *quadratum*, or the French *quarre*, ſquare; or, perhaps, immediately from the Italian *quadrello*, little ſquare.

QUARRY, a place under ground, out of which are dug marble, free-ſtone, ſlate, lime-ſtone, or other matters proper for building. See Stone, Marble, Slate, *&c.*

For *quarries* of free-ſtone, they firſt open a hole in manner of a well, twelve or fourteen foot in diameter; and the rubbiſh drawn out with a windlaſs in large oſier baskets, they heap up all around; placing their wheel, which is to draw up the ſtones, thereupon.

As the hole advances, and their common ladder becomes too ſhort, they apply a particular ladder for the purpoſe—When they have got through the earth, and are arrived at the firſt bank, or ſtratum; they begin to apply their wheel and baskets to diſcharge the ſtones as faſt as they dig through them.

They uſually find ſeven of theſe different ſtrata, or beds of ſtones, of different heights, and ſerving for different purpoſes; though the number as well as order wherein they follow is various. See Strata.

As to the drawing of the ſtone, *i. e.* the freeing it from the bed; they find that common ſtones, at leaſt the ſofter kinds, as they lie, have two grains; a cleaving grain running parallel with the horizon, and a breaking grain perpendicular thereto—After uncoping, then, *i. e.* clearing the earth from off it, they obſerve by the grain where the ſtone will cleave, and there drive in a good number of wedges till they have thus cleft it from the reſt of the rock.

This done, they proceed to break it: in order to which, applying the ruler to it at both ends, (ten, *e. gr.* or twelve inches a-part, according to the uſes the ſtone is intended for) they ſtrike a line, and by this cut a little channel with their ſtone-ax; and in the channel ſet five or ſix wedges (ſuppoſing the ſtone three or four foot) driving them in very carefully, with gentle blows, and ſtill keeping them equally forward.

Having thus broke the ſtone in length, (which they are able to do to half an inch of any ſize) applying a ſquare to the ſtraight ſide, they ſtrike a line, and proceed as before to break it in breadth.

This method of drawing is found vaſtly preferable to that where the ſtones are broken at random—One load of the former is found to do the buſineſs of a load and an half of the latter.

But it may be obſerved, that this cleaving grain being generally wanting in the harder ſtones, to break up theſe in the *Quarries*, they have great heavy ſtone-axes wherewith they work down a deep channel into the ſtone, and into this channel, a top, lay two iron bars, driving their iron wedges between theſe bars.

Some in drawing of ſtone, eſpecially the very hard kind, make uſe of gun-powder, and with very good effect—In order to which, making a ſmall perforation pretty deep into the body of the rock, ſo as to have that thickneſs of rock over it judged proper to be blown up at once; at the farther end of the perforation they diſpoſe a convenient quantity of gun-powder, filling up all the reſt with ſtones and rubbiſh ſtrongly rammed in, except a little ſpace for the train—By this means is the rock blown into ſeveral pieces, moſt of them not too unwieldly for a workman to manage. See GUN-POWDER.

QUARRY, QUARREL*, in glaziery, a pane, or piece of glaſs cut in a diamond form. See GLASS.

* The word ſeems formed by corruption from *Quarrel*, (which ſee) unleſs we will ſuppoſe it to come immediately from the French *quarre*, ſquare.

Quarries or *Quarrels* of glaſs are of two kinds, *viz.* ſquare, and long; each whereof is of different ſizes, expreſſed by the number of pieces which make a foot of glaſs, *viz.* 8ths, 10ths, 12ths, 15ths, 18ths, and 20ths; but all the ſizes are cut to the ſame angle, the acute angle being 77°, 19′ in the ſquare *Quarries*, and 67°, 22′ in the long ones. See GLASS.

QUARRY, in falconry, is the game or fowl which the hawk is in purſuit of, or has killed. See HAWK and HAWKING.

QUARRY among hunters, is ſometimes uſed for part of the viſcera of the beaſt taken; given by way of reward to the hounds. See HUNTING.

QUART, q. d. *fourth*, in muſic, fencing, gaming, *&c.* See FOURTH, QUARTER, GUARD, PIQUET, *&c.*

QUART is particularly uſed for a diminutive meaſure, containing one fourth or quarter of ſome other meaſure. See MEASURE.

The Engliſh *Quart* is a fourth of a gallon, or two pints; the Roman *Quart*, or *Quartarius*, was the fourth part of a congius. See GALLON, PINT, CONGIUS, *&c.*

The French, from whom we borrow the word, beſides their *Quart*, or *pot* of two pints, have various other *Quarts*, diſtinguiſhed by the whole whereof they are quarters; as *Quart de Muid*, *Quart de Boiſſeau*. See MUID and BUSHEL. They have alſo their *Quart* of a yard, *&c.* See QUARTER.

QUARTAN, QUARTANA, in medicine, an intermitting fever, or ague, where the fit returns every third day. See FEVER, AGUE, *&c.*

It is called *Quartan*, that is, *fourth*, by reaſon the two ſick days are reckoned, which, with the two intermitting ones, make four. See TERTIAN.

QUARTATION, among refiners, a method of purifying gold, by melting three parts of ſilver with one of gold; and then caſting the mixture into aqua fortis; which diſſolving the ſilver, leaves the gold at bottom, in form of a black powder. See REFINING.

Quartation is what we more uſually call *parting*, or the *depart*. See DEPART; ſee alſo GOLD, *&c.*

QUARTELOIS, CARTELOIS, or *cotucæ*, ſurtouts, or upper garments with coats of arms quartered on them, wore by the ancient knights in their military expeditions. See COAT *of arms*, &c.

QUARTER, the fourth part of a whole, or integer divided into four equal portions. See FOURTH.

In working of fractions the *Quarter* is expreſſed by $\frac{1}{4}$, three *Quarters* by $\frac{3}{4}$. See FRACTION.

QUARTER, in weights, is a fourth part of the quintal, or hundred weight. See QUINTAL.

The *Quarter* is 28 pounds, avoirdupois. See HUNDRED *Weight*, POUND, AVOIRDUPOIS, *&c.*

QUARTER* is alſo a dry meaſure containing of corn 8 buſhels ſtriked; of coals the fourth part of a chaldron. See MEASURE, BUSHEL, and CHALDRON.

* *Quarterium frumenti conſtat ex octo Buſſellis.* Fleta. l. 2.

QUARTER in law, QUARTERIUM *anni*, is the fourth part of a year. See YEAR.

Hence the days whereon thoſe *Quarters* ſtatedly commence, are called *Quarter-days*. See DAY.

Quarter-days are the 25th of March called Lady-day; the 24th of June, called Midſummer-day; the 29th of September, called Michaelmaſs-day; and the 25th of December, or Chriſtmaſs-day.

QUARTER in aſtronomy—The moon's period, or lunation, is divided into four ſtages, or *Quarters*; containing each from ſeven to eight days. See MOON and LUNATION.

The firſt *Quarter* is from the new moon to the quadrature; the ſecond thence to the full moon, *&c.* See QUADRATURE, *&c.*

QUARTER in heraldry, is ſometimes uſed for a ſcutcheon, or coat of arms. See ESCUTCHEON.

In this ſenſe there are ſixteen *Quarters* required to prove nobility, in companies or orders where none but nobles are admitted. See NOBILITY.

The word *Quarters*, required as a proof of nobility, is derived hence, that they uſed anciently to put the coats of arms of the father, mother, grand-father, and grand-mother, on the four corners of the tomb of the deceaſed—In Flanders and Germany we frequently ſee tombs that have eight, ſixteen, and even thirty-two *Quarters*. See TOMB.

QUARTER is alſo applied to the parts, or members of the firſt diviſion of a coat that is quartered, or divided into four *Quarters*; as in *Tab. Herald. fig.* 45. See QUARTERING.

The king of Great Britain in the firſt *Quarter* bears gules three lions paſſant or, *&c.*—In the ſecond *Quarter* he bears azure three flowers de lys, *&c.*

Franc QUARTER, is a *Quarter* ſingle, or alone; which is to poſſeſs one fourth part of the field.

This makes one of the honourable ordinaries of a coat. See ORDINARY.

QUARTER in navigation—A *Quarter* of a point, wind, or rhumb, is the fourth part of a cardinal point, wind or rhumb; or of the diſtance between two cardinal points, winds, *&c.* See POINT, WIND, and RHUMB.

The *Quarter* contains an arch of 11°, 15′.—The *Quarter* is what Wolfius, with regard to the other diviſions, calls a ſecondary point of the ſecond order. See CARDINAL *point*, *&c.*

QUARTER *of a ſhip*, is that part of the ſhip's hull, which lieth from the ſteerage-room to the tranſom. See SHIP.

QUARTER is alſo uſed for a canton, or diviſion of a city; conſiſting of ſeveral ranges of buildings, *&c.* ſeparated from ſome other *Quarter* by a river, a great ſtreet, or other boundary.

Such are the twenty *Quarters* of the city of Paris—Antient Rome was divided ſeveral times, under it's ſeveral augmentations, into *Quarters* called *regions*; as may be obſerved in the topographies of Aurelius Nictor, Onuphrius Panvinius, Marillan, Pyrro Ligorio, Boiſſard, and other antiquaries.

In many cities there are commiſſaries of the *Quarter*, appointed to look to the policy thereof—The prior of the Caporions accounts himſelf the chief, and colonel of the fourteen regions, or *Quarters* of Rome. *Muſcarat*, *p.* 134.

Franchiſe of QUARTERS. See the article FRANCHISE.

QUARTER in war, the place allotted to certain forces to live, lodge, and incamp upon, during a ſiege, or the like. See CAMP.

The general's *Quarter* is that where the general lodges and incamps in perſon—They uſed to make lines of communication, to join the ſeveral *Quarters* together. See LINE.

QUARTERS at a ſiege are the incampments on the principal paſſages about a place, ſerving to ſtop the avenues and prevent relief and convoys. See SIEGE.

QUARTER is alſo uſed for any lodgment made in the field or campaign out of a ſiege—Thus they ſay, the general has extended his *Quarters* a good way—The enemy coming by made him contract his *Quarters*.

Winter QUARTERS, is the place allotted troops to paſs the winter ſeaſon in—Wherein theſe differ from garriſons, ſee GARRISON.

Winter QUARTERS is alſo uſed for the time the troops continue in this lodgment; and for the advantage the captains make thereof—Thus they ſay, ſuch a regiment was put to *Winter-quarters* in ſuch a village—The *Winter-quarters* only held three months—Each captain will make at leaſt a thouſand crowns of his *Winter-quarters*.

In Spain they have alſo *Summer-quarters.*

QUARTER *of aſſembly*, is the place of rendezvous, where the troops are to meet and draw up to march in a body. See RENDEZVOUS and PARADE.

QUARTERS *of refreſhment*, is ſome well-provided fertile ſpot, to which troops that have been much fatigued and haraſſed, are ſent to recover their ſtrength, or health; even during the ſeaſon of the campaign.

There are alſo *Quarters* aſſigned for the huckſters, and their equipage.

QUARTER alſo denotes the ſafety, and good treatment promiſed to perſons, or troops that ſurrender, and lay down their arms—Thus they ſay, the enemy begged *Quarter*.

The phraſe took it's riſe from an agreement anciently made between the Dutch and Spaniards, that the ranſom of an officer or ſoldier, ſhould be a quarter of his pay—Hence, to beg *Quarter* was to offer a quarter of their pay for their ſafety; and to refuſe *Quarter* was not to accept of that compoſition for their ranſom. See RANSOM.

QUARTERS in building, thoſe ſlight upright pieces of timber, placed between the punchions and poſts; uſed to lath upon.

They are of two kinds, *ſingle* and *double*—The *ſingle Quarters* are ſawn to two inches thick and four inches broad; the *double* four inches ſquare.

QUARTERS in a clock, are little bells which ſound the *Quarters* of an hour. See CLOCK, HOUR, &c.

QUARTER-BULLET, a bullet quartered into four or eight parts. See BULLET, SHOTT, &c.

QUARTER-DAY, ſee the article QUARTER.

QUARTER-DECK, of a ſhip, is that aloft the ſteerage, reaching to the round-houſe.—See *Tab. Ship. fig.* 2. *lit.* O. See alſo DECK.

QUATERED *Counter*. See the article COUNTERQUARTERED.

QUARTERIDGE, money paid quarterly, or by the quarter.

QUARTERING, in the ſea-language—When a ſhip under ſail goes at large, neither by a wind nor before a wind, but as it were betwixt both; ſhe is ſaid to go *Quartering*. See SAILING.

The term is alſo uſed when a ſhip ſails with quarter winds. See QUARTER-*Wind*.

QUARTERING, in gunnery, is when a piece of ordnance is ſo traverſed, that it will ſhoot on the ſame line, or on the ſame point of the compaſs as the ſhip's quarter bears.

QUARTERING in heraldry, the act of dividing a coat into four or more quarters, or *Quarterings*; by parting, couping, &c. *i. e.* by perpendicular and horizontal lines, &c. See QUARTER and QUARTERLY.

The king of Great Britain quarters with Great Britain, France, Ireland, Brunſwick, &c. See QUARTERLY.

Colombiere reckons twelve ſorts of *Quarterings*; but other authors give us more—*viz.* Party per pale, dividing the eſcutcheon from top to bottom. See PALE.—Party per croſs, dividing it from ſide to ſide. See CROSS.—Party of ſix pieces, when the eſcutcheon is divided into ſix parts or quarters—Party of ten; of twelve; of ſixteen; of twenty; and of thirty-two, when there are ſo many partitions reſpectively.

Others give the diviſions in another manner: as—Party per croſs—per pale—per chief—per pale inclave—per bend dexter—per bend ſiniſter—per chevron—barry bendy of eight pieces—paleways of ſix pieces—barry of ſix pieces—barry of eight pieces—bendy of ſix—checky—fuſilly, or lozengy—paly bendy, or bendy lozengy—barry bendy lozengy, or bend lozengy—gyronny—barry lozengy counterchanged—waved of ſix pieces—barry nebule of ſix pieces—party per ſaltier—party per pale in point. *See farther under their reſpective articles.*

Counter QUARTERING *a coat*, is when the quarters are quartered over again, or ſubdivided each into four.

There are *counter-quartered* coats which have twenty or twenty-five quarters.

QUARTERING is alſo applied to the partitions or compartments themſelves, that is, the ſeveral coats borne on an eſcutcheon, or the ſeveral diviſions made in it, when the arms of ſeveral families are to be placed on the ſame ſhield, on account of intermarriages, or the like. See QUARTER, ESCUTCHEON, SHIELD, &c.

Colombiere obſerves, that thirty two is the greateſt number uſed in France, but that the Engliſh and Germans ſome times extend to forty; as a teſtimony of the truth whereof, he ſays, he ſaw the eſcutcheon of the earl of Leiceſter, embaſſador extraordinary in France in the year 1639, divided into the number of forty; and ſome, he affirms, do go on to ſixty four ſeveral coats.

But a multitude of quarters makes a confuſion; and accordingly all the writers of armoury cry out againſt it as an abuſe—The firſt inſtance of *Quartering* whereof we have any account, is ſaid to be in the arms of Renatus, king of Sicily, &c. in the year 1435, who quartered the arms of Sicily, Arragon, Jeruſalem, &c. William Wickley obſerves, that ſuch *Quarterings* are much properer for a pedigree to be locked up in a cheſt, and occaſionally produced as an evidence for the clearing or aſcertaining of alliances of families, or titles to lands, &c. than to be borne as a cognizance.

In blazoning, when the *Quartering* is performed per croſs, the two quarters a-top are numbered the firſt and ſecond; and thoſe at bottom the third and fourth; beginning to tell on the right ſide—When the *Quartering* is by a ſaltier, &c. the chief and point are the firſt and ſecond quarters, the right ſide the third, the left the fourth.

QUARTERING is ſometimes alſo uſed for the diſtinguiſhing of younger brothers from elder. See DIFFERENCE.

QUARTERIZATION*, QUARTERING, part of the puniſhment of a traytor, by dividing his body into four quarters.

* *Walſingham* in *Ric.* 2. *Auditum* & *Confeſſum turpiſſima ſcelera tractationi, ſuſpendio, decollationi, exenterationi* & Quarterizationi *adjudicavit.*

QUARTERLY, in heraldry. A perſon is ſaid to bear *Quarterly*, when he bears arms quartered. See QUARTERING.

The king of Great Britain bears *Quarterly* of four; in the firſt quarter, gules, &c. Great Britain: in the ſecond, azure, &c. Ireland, &c.

QUARTER-MASTER, an Officer in the army, whoſe buſineſs is to look after the quarters of the ſoldiers, whereof there are ſeveral kinds; *viz.*—The

QUARTER-MASTER *general*, whoſe buſineſs is to provide good quarters for the whole army. See QUARTERS.

QUARTER-MASTER *of foot*, he who is to provide quarters for a regiment of foot. See REGIMENT.

QUARTER-MASTER, *of horſe*, he who is to provide quarters for a troop of horſe. See TROOP.

QUARTER-MASTER, is alſo an Officer aboard a ſhip of which there are more or fewer according to her burthens, Their buſineſs is to rummage in the hold on all occaſion, to overlook the ſteward in his delivery of victuals to the cook, and in his pumping and drawing out the beer; and in general to take care there be no waſte.

The *Quarter-maſter*, or *Quarteer*, is alſo to mind the ſhip's loading, which is the buſineſs he is chiefly employed about. See CARGO, &c.

QUARTERN, QUARTERON, a diminutive of *Quart*; ſignifying a quarter of a pint; as a quart does a quarter of a gallon. See QUART.

QUARTER-ROUND, in architecture, is a term uſed by the workmen for any projecting moulding in general, whoſe contour is a perfect quadrant, or quarter of a circle, or approaches near that figure—See *Tab. Archit. Fig.* 5. See alſo MOULDING.

The architects uſually call it *ovolo*; Vitruvius, the *echinus*. See OVOLO, ECHINUS, BOULTIN, &c.

QUARTER-SESSIONS, a court held quarterly, by the juſtices of peace of each county, alternately in the chief towns thereof as appointed by the cuſtos rotulorum. See SESSIONS, JUSTICE, &c.

Hither the grand inqueſt, or jury of the county is ſummoned to appear, who upon oath are to inquire of all traytors, heretics, thieves, murderers, coiners, rioters, &c. See INQUEST.

Thoſe who appear to be guilty are by the ſaid juſtices committed to priſon, to be tried at the next aſſizes, when the judges go their circuits. See JUDGE, ASSIZE, &c.

QUARTER-STAFF, a long ſtaff or pole, bore by foreſters, park-keepers, &c, as a badge of their office; and occaſionally uſed as a weapon.

QUARTER-WHEELING, or QUARTER *of converſion*, in the military art, is a motion whereby the front of a body of men is turned round to where the flank was; this making a *quarter* of a circle. See CONVERSION, WHEEL, &c.

If it be done to the right, the man in the right hand angle keeps his ground, and faces about, while the reſt wheel; if to the left, the left hand man keeps his place, &c. See EVOLUTION.

QUARTER-WIND, at ſea, is a lateral, or ſide wind; or a wind which does not blow in ſtern, but a little aſide of it. See WIND.

Properly the *Quarter-wind* is that which comes in abaft the main maſt ſhrouds, even with the quarter of the ſhip.

The *Quarter-wind* is the beſt of all winds, as bearing into all the ſails; whereas a wind blowing full in ſtern, is kept off by the ſails of the mizzen. See SAILING.

QUARTILE, an aſpect of the planets when they are three ſigns or 90 degrees diſtant from each other. See ASPECT and SEMI-QUARTILE.

The *Quartile* aſpect is marked thus □. See CHARACTER.

QUARTO, or 4*to*, a book whereof four leaves, or eight pages, make a ſheet. See VOLUME, BOOK-BINDING, &c,

QUARTO-DECIMANS, QUARTO-DECIMANI, an ancient ſect in the church, who maintained that Eaſter was always to be celebrated conformably to the cuſtom of the Jews, on the fourteenth day of the moon in the month of March, whenſoever that day fell out. See EASTER.

And hence their name *Quarto-decimani, q. d.* fourteenthers. See PASSOVER.

The Aſiatics were mightily attached to this opinion, pretending it was built on the authority of St John, who was their apoſtle; and pope Victor could never bring them to obedience in this point, though he was upon the point of excommunicating them—Some are of opinion he actually did excommunicate them, but it is more probable he contented himſelf with menaces.

Polycrates, biſhop of Epheſus, wrote a long and warm letter, in the name of all the biſhops of Aſia, to Victor and the church of Rome, wherein he explained at large the uſage of thoſe churches with regard to the celebration of Eaſter; and maintained, that herein they only followed a conſtant tradition that had obtained immutably among them from the time of the apoſtle St John, who died at Epheſus—But the pope not ſatisfied with this anſwer of Polycrates, had proceeded to excommunication, but that ſome of the moſt eminent biſhops, among the reſt Irenæus, interpoſed, and diſſuaded him from diſturbing the peace of the church by excommunicating a people for adhering to what they accounted a tradition.

QUASHING, in law, the overthrowing, and annulling a thing. See ANNULLING.

An array returned by one that has no franchiſe, ſhall be *Quaſhed*. *Coke on Littl.* fol. 156.

QUASI-CONTRACT, in the civil-law, and act which has not the ſtrict form of a contract, but yet has the force thereof. See CONTRACT.

In a contract there muſt be the mutual conſent of both parties; whereas in a *Quaſi-contract*, one party may be bound or obligated to the other without having given his conſent to the act whereby he is obliged.

For an example—I have done your buſineſs, in your abſence, without your procuration; and it has ſucceeded to your advantage: I have then an action againſt you for the recovery of what I have diſburſed, and you an action againſt me to make me give an account of my adminiſtration: which amounts to a *Quaſi-contract*.

QUASI-CRIME, or **QUASI-DELICT**, in the civil-law, the action of a perſon who does damage, or evil involuntarily.

The reparation of *Quaſi-crimes* conſiſts in making good the damages with intereſt.

QUASI-MODO *ſunday, low Eaſter-ſunday*, or the next ſunday after Eaſter; thus called from the initial words of the introit of the maſs for the day, *Quaſi modo geniti Infantes*. See SUNDAY.

In ancient deeds theſe words were ſignified by *q. m. g.*

QUATER-COUSINS, QUATRE-COUSINS; fourth couſins, or the laſt degree of kindred. See COUSIN, DEGREE, CONSANGUINITY, *&c.*

Hence, when perſons are at variance, it is ſaid they are not *Quater*, or *cater-couſins*.

QUATRE-NATIONS, q. d. *four nations*, the denomination of a college founded in 1661, by cardinal Mazarin; for the education and maintenance of ſixty children, natives of the four countries conquered by the king, *viz.* fifteen for Pignerol and Italy, fifteen for Alſatia, twenty for Flanders, and ten for Rouſſillon. See COLLEGE.

QUATUOR *homines præpoſiti*. See PRÆPOSITI.

QUATUOR-VIR, in antiquity, frequently wrote IIII. VIR, a Roman magiſtrate who had three colleagues joined with him in the ſame adminiſtration. See DECEMVIR.

To the *Quatuor-viri* was committed the charge of conducting and ſettling the colonies ſent into the provinces. See COLONY.

Upon unlucky accidents, and other dangerous affairs, it was uſual to create *Quatuor-viri* with commiſſion to take care *ne quid detrimenti Reſpublica caperet*, that the republic were not prejudiced.

There were alſo *Quatuor-viri* appointed to inſpect and take care of repairs, *&c.*

QUAVER, in muſic, a meaſure of time, equal to one half of the crochet, or one eighth of the ſemibreve. See TIME and SEMIQUAVER.

The *Quaver* is marked by the character ♪. See CHARACTER.

The Engliſh *Quaver* makes what the French call *crochue* crotchet; becauſe of the hook at bottom. See CROTCHET.

The *Quaver* is divided into two ſemiquavers noted 𝅘𝅥𝅯, and four demiſemiquavers marked 𝅘𝅥𝅰.

QUAVERING, in muſic, the act of trilling, or ſhaking; or the running a diviſion with the voice. See DIVISION.

QUAY, *Kay*, a ſpace of ground paved on the ſhore of a river, or port; deſtined for the loading and unloading of merchandize. See WHARF and KAY.

QUEEN* *Regina*, a woman who holds the crown of a realm, ſingly and by right of blood. See CROWN.

* The word *Queen* is derived from the Saxon, Cƿen, *cwen*, *uxor*, the wife of any one, but applied by way of excellency to the wife of the king only; whence ſhe was antiently called the *King*'s *Queen*; the Weſt-ſaxons having no other name for a *Queen*, but the *king's wife*. *Aſſer. de Ælfred. rebus, &c.*—She alſo was called *lady*, in Saxon, hlæꝼdiȝ; juſt as *madame*, or *mademoiſelle*, are ſtill uſed for the wife and daughter of the duke of Orleans——

The name *Queen* is alſo given by way of courteſy to her that is married to the king; called, by way of diſtinction, *Queen conſort*—In reſpect whereof the former is called *Queen regnant*.

The widow of a king is alſo called *Queen*, but with the addition of *Dowager*. See DOWAGER.

In the firſt ſenſe, *Queen* is in all conſtruction the ſame with *king*, and has the ſame power and prerogative in all reſpects that the king has. See KING and PREROGATIVE.

The *Queen conſort* is inferior, and a perſon diſtinct from and a ſubject of the king—In England, though ſhe be a feme covert, yet may ſhe ſue, and be ſued in her own name, may make leaſes, and grants, *&c.* as a feme ſole. See WIFE and FEME.

She has ſeveral other prerogatives—Though an alien, ſhe may purchaſe lands in fee-ſimple, without either naturalization, or denization; ſhe may preſent to a benefice; nor is plenarty a bar againſt her more than againſt the king—She ſhall not be amerced if ſhe be non-ſuited in any action; may not be impleaded till firſt petitioned.

To conſpire her death, or violate her chaſtity, is high-treaſon.

She has an ancient peculiar revenue, called *Queen-gold*. See QUEEN-GOLD.—Beſides a very large dower, with a royal court, and officers apart.

The *Queen dowager* has this particular, that ſhe loſes not her dignity though ſhe marry a private gentleman—Thus queen Katherine, widow of Henry V. being married to Owen ap Theodore, Eſq; maintained her action as *queen* of England—Much leſs does a *Queen* regnant, follow her huſband's condition, or is ſubject as other *Queens*, but is ſovereign to her own huſband, as queen Mary was to king Philip; unleſs it be otherwiſe appointed by parliament.

QUEEN-GOLD, *aurum reginæ*, a royal revenue, belonging to the queen of England, during her marriage to the king, and payable by divers perſons (upon ſeveral grants of the king) by way of oblation out of fines, amounting to ten marks, or upwards, *viz.* one full tenth part above the entire fine, or ten pounds for every hundred pounds fine, on pardons and contracts, or agreements. See FINE.

This becomes a real debt to the *Queen*, by the name of *aurum reginæ*, upon the party's bare agreement with the king for a fine, and recording it; without any farther promiſe or contract for this tenth part extraordinary,

QUEEN's *bench*. See KING's *bench*, &c.

QUE-ESTATE, in law, a plea whereby a man entitling himſelf to land, *&c*, ſaith, that the ſame eſtate which another had, he now has from him.

Thus, *e. gr.* the plaintiff alledges, that ſuch four perſons were ſeized of lands, whereunto the advowſon in queſtion belonged in fee; and who did preſent to it, and that afterwards the church was vacant, *que eſtate*—i. e. *which eſtate* he now has, and by virtue thereof preſents, *&c.*

QUE EST MEME, in law, a term uſed in actions of treſpaſs, *&c.* for a direct juſtification of the very act complained of by the plaintiff as a wrong. See TRESPASS.

Thus in an action upon the caſe, the plaintiff ſaying the lord threatened his tenants at will in ſuch ſort, as he forced them to give up their lands; the lord in his defence pleads, that he ſaid to them, if they would not depart, he would ſue them at law—*Que eſt meme, i. e.* this being the ſame threatning that he uſed, the defence is good.

QUERELA, *Quarrel*, in law, denotes an action or declaration preferred in any court of juſtice.

In an action where the plaintiff is called *Querens, i. e.* complainant, his brief, complaint, or declaration, is called *Querela*. See QUARREL.

QUERELA *audita*. See the article AUDITA.

QUERELA *coram rege & concilio*, a writ whereby one is called to juſtify a complaint of a treſpaſs made to the king himſelf; before the king and his council.

QUERPO. See the article CUERPO.

QUERRIES, or EQUERRIES. See EQUERRY.

Gentleman of the QUERRY, is an officer appointed to hold the king's ſtirrup, when he mounts on horſeback.

QUEST*, or INQUEST, an inquiſition, or inquiry made upon oath of an impannelled jury. See INQUEST and JURY.

* The word is formed of the French *quête*, ſearch, of the Latin *quæſitum*, a thing ſought.

QUEST, in hunting, the ſeeking out of hounds; or the venting and winding of ſpaniels. See HOUND, HUNTING, &c.

QUESTION, QUÆSTIO, in logic, &c. a propoſition, whoſe truth a perſon being inquiſitive about, propoſes it, by way of interrogation, to another. See PROPOSITION, TRUTH, INTERROGATION, &c.

Logical queſtions are variouſly diſtributed; the ordinary diviſion is into *firſt* or *primary Queſtions*; as, *quid eſt*, what is ſuch a thing?—And *ſecondary*, which ariſe out of the former; as, how is it?

Quodlibetical QUESTION. See QUODLIBETICAL.

QUESTION, in law—The *Queſtion de jure* is generally to be diſtinguiſhed from the *Queſtion de facto*. See DE FACTO, &c.

QUEST-MEN, perſons choſe yearly in each ward, to enquire into abuſes, and miſdemeanors, eſpecially ſuch as relate to weights, and meaſures.

QUESTOR*, QUÆSTOR, an officer in ancient Rome, who had the care of the public treaſure. See TREASURE.

* The word is formed *à quærend*, ſeeking, ſearching.

The *Queſtor-ſhip*, *Quæſtura*, is very antient, as having been eſtabliſhed under the kings—In the time of the republic, the ſenate appointed *Queſtors* in each province, to aſſiſt the proconſuls, as lieutenants or treaſurers, in the adminiſtration of the revenues: but under the emperors, there was properly but one *queſtor*, or treaſurer general of the empire: thoſe other inferior, or ſubordinate *queſtors* were then called aſſiſtants of the *queſtor*, *adjutores quæſtoris*.

The *quæſtors*'s office was originally confined to the army.—They paid the ſoldiery, took charge of moneys coming by ſpoil and plunder, &c.

At length there were new ones erected to reſide in the city, and receive the public money, taxes, tribute, &c.—Their number was increaſed as the empire encreaſed: Sylla augmented it to twenty.

There was alſo another kind of *queſtors* whoſe office was to enquire into, and take cognizance of capital crimes.

QUESTOR *ſacri palatii*, or of the *ſacred palace*, was one of the firſt dignities under the emperors of Conſtantinople.

It was this *queſtor* that ſubſcribed the reſcripts of the emperor, and the anſwers to the petitions and ſupplications preſented to him—He drew up and ſigned the laws and conſtitutions which the emperor thought fit to publiſh; and took care of the adminiſtration of juſtice.

Some compare his function to that of our lord high chancellor—It was uſually one of the juris conſulti that was charged with this office; it being required that he ſhould know the laws of the empire, be able to preſcribe and ſee them executed, and judge of cauſes brought by way of appeal before the emperor.

Conſtantine was the firſt who erected *queſtors* of the ſacred palace. See PALACE.

QUESTUS, or QUÆSTUS. See QUÆSTUS.

QUESTUS *eſt nobis*, a writ of nuſance, which by Stat. 15. Edw. I. lies againſt him to whom a houſe, or other thing that breeds a nuſance is deſcended, or alienated; whereas before that ſtatute, the action lay only againſt him who firſt levied, or cauſed the nuſance, to the damage of his neighbour. See NUSANCE.

QUEUE, in heraldry, the tail of a beaſt. See TAIL.

If a lion have a forked tail, he is blazoned by *double-queued*.

QUEUE D'ARONDE, q. d. *Swallow's-tail*, in fortification, a term applied to outworks, when narrower at the gorge than the face or front; *i. e.* where the ſides open towards the campaign, and contract towards the gorge. See HORNWORK and TENAILLE.

The name is occaſioned by it's reſemblance in figure to a ſwallow's tail, which the French call *queue d'aronde*.

Of this kind are ſome ſingle as well as double tenailles; and ſome horn-works whoſe ſides are not parallel. See TENAILLE.

On the contrary, when the ſides are leſs than the gorge, the work is called *contre queue d'aronde*.

QUEUE *d'aronde*, in carpentry, a method of jointing. See DOVE-*Tail*.

QUIA, in logic. See the article REASON.

QUIA *improvide*, a ſuperſedeas granted in many caſes where a writ is erroneouſly ſued out, or miſ-awarded. See WRIT.

Such is that granted in behalf of a clerk of the chancery ſued againſt the privilege of the court, in the common-pleas, and purſued to the exigent.

QUICKEST *deſcent*, *line*. See DESCENT.

QUICK-*lime*. See LIME.

QUICK *pulſe*. See the article PULSE.

QUICKSET *hedge*. See the article HEDGE.

QUICKSILVER, a very ponderous fluid mineral, by the chemiſts called *mercury*—For the method of gaining, preparing it, &c. with it's properties, uſes, &c. See MERCURY.

Virgin QUICKSILVER. See the article VIRGIN.

QUID, *what*, in the ſchools, is uſed to denote the definition of a thing. See DEFINITION.

It is thus called by reaſon the definition anſwers to the queſtion, *quid eſt*, what is it? See QUESTION.

Hence we have two kinds of *quids*; nominal, *quid nominis*; and real, *quid rei*.

QUID *pro quo*, in law, *q. d.* what for what, denotes the giving one thing of value for another: or the mutual conſideration and performance of both parties to a contract. *Kitchin.*

QUID *pro quo*, or QUI *pro quo*, is alſo uſed in phyſic to expreſs a miſtake of an apothecary, in adminiſtring one medicine for another; or in uſing an ingredient in a compoſition different from that preſcribed. See SUCCEDANEUM.

In propriety, *quid pro quo*, is a miſtake in the phyſician's bill, where *quid* is wrote for *quo*, one thing for another; or of the apothecary in reading *quid* for *quo*, and giving the patient the wrong medicine. See PRESCRIPTION.

Hence the term is in the general extended to all blunders or miſtakes committed in medicine, either in the preſcription, the preparation, or application of remedies.

A northern phyſician in a printed theſis on *quid pro quo's* owns ingenuouſly, that they are very frequent—He diſtinguiſhes very accurately a great variety of kinds of *quid pro quo's*; ſome with regard to the operation, others with regard to the ſubject, and others with regard to their form, or effects.

The firſt comprehends the *quid pro quo's* of the phyſician, the ſecond thoſe of the patient, the third thoſe of the apothecary.

He adds *quid pro quo's* of the chirurgion, *quid pro quo's* of the cook; *quid pro quo's* of the nurſe, &c. Nor does he omit that there are ſalutary *quid pro quo's*, dangerous *quid pro quo's*, indifferent *quid pro quo's*, &c.—God preſerve us from *quid pro quo's*!

QUIDDANY, QUIDDENY, (of the Latin *cydonium*, or *cydoniatum*) a conſerve of quinces. See MARMELADE.

QUIDDITY, QUIDDITAS, in the ſchools, a word of the ſame ſignification with *eſſence*. See ESSENCE.

The name is derived hence, that it is by the eſſence of a thing that it is *tale quid*, ſuch a *quid*, or very thing; and not another—When upon ſeeing, or hearing the name of a thing whoſe nature, &c. we are unacquainted withal, we aſk, *quid eſt*? what is it? we mean no more by the interrogation, but that we deſire to have it's nature and eſſence explained by a Definition—Whence *quiddity* is uſually defined the eſſence known or expreſſed in a Definition. See DEFINITION.

And hence what is eſſential to a thing is ſaid to be *quiddative*—As *quiddative*, knowledge, &c.

QUID PRO QUO. See the article QUID.

QUIESCENT, ſomething at reſt. See REST.

QUIETISM, the ſentiments of the *Quietiſts*, a religious ſect which made a great noiſe towards the cloſe of the laſt century. See MYSTICKS, QUAKERS, &c.

Molinos, a Spaniſh prieſt, who died at Rome in the priſon of the inquiſition, paſſes for the author of *quietiſm*; and yet the Illuminati in Spain had taught ſomething like it before. See ILLUMINED.

The name is taken from a ſort of abſolute reſt, and inaction, which the ſoul is ſuppoſed to be in, when arrived at the ſtate of perfection, which in their language is called *the unitive life*—To arrive at this, a man is firſt to paſs through the purgative way; that is, through a courſe of obedience, inſpired by the fear of hell: hence he is to proceed into the illuminative way, before he arrives at perfection; to go through cruel combats, and violent pains; *i. e.* not only the uſual dryneſſes of the ſoul, and the common privations of grace, but infernal pains: he believes himſelf damned; and the perſuaſion that he is ſo, continues upon him very ſtrongly ſeveral years: St Francis de Sales, ſay the *quietiſts*, was ſo fully convinced thereof, that he would not allow any body to contradict him therein—But the man is, at length, ſufficiently paid for all this; by the embraces of God, and his own deification.

Theſe ſentiments of the *quietiſts*, with regard to God, are wonderfully pure, and diſintereſted—They love him for himſelf, on account of his own perfections, independently of any rewards or puniſhments: the ſoul acquieſces in the will of God, even at the time when he precipitates it into hell; inſomuch that inſtead of ſtopping him on this occaſion, B. Angelo de Foligny cry'd out, *Haſte, Lord, to caſt me into hell: do not delay, if thou haſt abandoned me, but finiſh my deſtruction, and plunge me into the abyſs.*

At length, the ſoul, after long travail, enters into reſt, into a perfect *quietude*—Here it is wholly employed in contemplating it's God; it acts no more, thinks no more, deſires no more; but lies perfectly open, and at large, to receive the grace of God, who by means thereof drives it where it will, and as he will.

In this ſtate, it no longer needs prayers or hymns, or vows; prayers where the ſpirit labours, and the mouth opens, are the lot of the weak, and the imperfect: the ſoul of the ſaint is, as it were, laid in the boſom, and between the arms of it's God, where, without making any motion, or exerting any action, it waits, and receives the divine graces—It, then, becomes happy: quitting the exiſtence it before had, it is now changed, it is transformed, and, as it were, ſunk and ſwallowed up in the divine being, inſomuch as not to know or perceive it's being diſtinguiſhed from God himſelf. Fenel. *Max des ſaints.*

QUIETISTS, the diſciples of Mich. de Molinos; or the adherents to the opinions delivered in the article Quietism.

QUIETUS, *freed*, or *acquitted*; a term uſed by the clerk of the pipe, and the auditors in the exchequer, in their acquittances or diſcharges given to accomptants; which uſually conclude with the words *abinde receſſit quietus*: which is called a *quietus eſt*.

A *quietus eſt* granted to a ſheriff diſcharges him of all accounts due to the king. See Sheriff, Account, &c.

QUINAQUINA. See the article Quinquina.

QUINARIUS, Quinary, in antiquity, a little Roman coin, equal to half the dinarius. See Coin.

The *quinarius* was properly the Roman half-penny. See Denarius and Penny.

Medaliſts indeed uſe the term *quinarius* in the general for a medal of any matter, not exceeding the ſize of our ſix-pence; but F. Chamillart, in an expreſs diſſertation, ſhews this to be an abuſe—The ſilver coins, current under the republic, he ſhews, were two: the one weighing a drachm, and called *denarius*, as containing ten as's; the other weighing half a drachm, and called *quinarius*, as containing five as's: which coins continued on the ſame footing under the emperors. See As.

Hence the origin of the word *quinarius*; and hence, in propriety, it is only the ſilver medal of the weight of half a drachm that the name belongs to; the Romans having never given it to any other ſpecies of the ſame ſize therewith—It is only by way of analogy, therefore, that the moderns apply it to the medals of gold, or copper, of the ſame ſize with the ſilver *quinarius*; thoſe of gold being fixed at a value much above, and thoſe of braſs much below five as's.

The only relation between theſe *quinarii*, is, that the gold *quinary* is the half of a gold medal as to weight and value, and the braſs *quinary* half a braſs medal, as the ſilver *quinary* is half a ſilver one.

Hence a ſeries of *quinaries* ſhould ſeem at leaſt as neceſſary in the cabinets of the curious, as the ſeries of great medals; they being all equally different ſpecies of money, which teach us how many kinds of pieces there were of any metal current in commerce. See Series.

Add to this, ſays our author, that the *quinaries* were of a finer and more finiſhed coin than the other medals, being wrought by the hands of the maſters; which ſeems owing to the nicety required in engraving whole figures in ſo ſmall compaſs. He adds, that though *quinaries* are very ſcarce, yet M. the duke of Maine has almoſt a compleat ſet of them.

QUINCUNX, *quinque unciæ*, denotes a thing that conſiſts of five twelfth parts of another. See Uncia and As.

Quincunx is chiefly uſed in gardening, for a plantation of trees, diſpoſed originally in a ſquare; conſiſting of five trees, one at each corner, and a fifth in the middle; which diſpoſition repeated again and again, forms a regular grove, wood, or wilderneſs, and then viewed by an angle of the ſquare, or parallelogram, preſents equal and parallel alleys.

Or, the *quincunx* is the figure of a plantation of trees diſpoſed in ſeveral rows, both length and breadthwiſe; in ſuch manner as that the firſt tree of the ſecond row commences in the centre of the ſquare formed by the two firſt trees of the firſt row, and the two firſt of the third: reſembling the figure of a five at cards—The fineſt manner of planting trees to form a grove, is in the *quincunx*. See Grove. It is of this kind of *quincunx* that Cicero ſpeaks in his *Cato major*; and Quintilian, lib. 8. cap. 3.

The modern *quincunxs*, Daviler obſerves, are made like thoſe of the ancients, except for the fifth tree, which is now generally diſuſed; ſo that, being as it were, netted, and their allies viewed by the ſide of the rectangle, they form a perfect chequer.

Quincunx, in aſtronomy, &c. denotes a poſition, or aſpect of the planets when diſtant from each other 150 degrees, or five ſigns. See Aspect.

QUINDECAGON*, in geometry, a plain figure which has fifteen ſides and fifteen angles. See Figure.

* The word is formed ſomewhat irregularly, from the Latin, *quinque*, five; and the Greek, δεκα, ten; and γωνια, angle—*Pentedecagon* would be more regular.

If the ſides be all equal, it is a regular *quindecagon*. See Regular.

Euclid ſhews how to inſcribe it in a circle, Prop. 16. l. 4. And the ſide of a regular *quindecagon* ſo deſcribed, is equal in power to the half-difference between the ſide of the equilateral triangle, and the ſide of the pentagon; and alſo to the difference of the perpendiculars let fall on both ſides, taken together.

QUINDECIM-VIR, XV-VIR, a Roman magiſtrate, who had fourteen colleagues joined with him in the ſame function.

Under Tarquin the Proud, there were firſt two magiſtrates erected to take care of the ſacrifices to be performed; theſe were called *duumviri*. See Duumvir—Their number, at length, grew to ten, and then they were called *decemviri*. See Decemvir—In the time of Cicero it had reached to fifteen, when they aſſumed the name of *quindecimviri*: and though their number grew to forty afterwards, yet Servius obſerves, on the ſixth of the Æneid, that their name never changed, but they ſtill continued to be called *quindecimviri*.

It was they examined the Sibyls books, and were the interpreters thereof; yet they never did this but by expreſs order of the ſenate, declared by a ſenatus-conſultum—They alſo preſided at the ſacrifices, and other extraordinary ceremonies of religion. See Sibyl and Sacrifice.

On medals, a dolphin joined with a tripod marks the prieſthood of the *quindecimviri*; who, to publiſh their ſolemn ſacrifices, uſed, the eve thereof, to carry a dolphin at the end of a pole, throughout the city; that fiſh being eſteemed ſacred to Apollo, as the crow was among birds.

QUINI-SEXTA, in eccleſiaſtical hiſtory, denotes a council held at Conſtantinople in the year 692; called alſo the council in *Trullo*, and by the Greeks *Penthecte*, *q. d.* five ſixth; as intimating that it was only a ſupplement of the two preceding councils. Though, in propriety, Fleury obſerves, it was a council itſelf. See Council.

Marſhall obſerves, that the fifth and ſixth general councils having made no canons, the Orientals judged it neceſſary to ſupply that defect by this; ſo that the 102 canons falſly attributed to thoſe, were, in reality, made here. See Trullo.

QUINQUAGENARIUS, among the Romans, was an officer in the army who had the command of a company of fifty men.

Quinquagenarius was alſo an officer of policy, who had the inſpection of fifty houſes, or families.

In the ancient monaſteries, *quinquagenarius* was a ſuperior who had fifty monks under his guidance.

QUINQUAGESIMA-SUNDAY, *ſhrove-ſunday*; thus called as being about the fiftieth day before eaſter. See Shrove-tide.

Anciently they uſed *quinquageſima* for whitſunday, and for the fifty days between eaſter and whitſunday; but to diſtinguiſh this *quinquageſima* from that before eaſter, it was called the *paſcal quinquageſima*. See Whitsunday.

QUINQUANNION, Quinquennium, in the French cuſtoms, a reſpite of five years which inſolvent debtors formerly obtained by virtue of the king's letters, to have time for the payment of their debts. See Respite.

When the thing intended was only to prevent the ſale of their effects at an under value, the term of one year was ordinarily granted, called the benefit of *annion*.

But when the debtor would avoid the ſurrendring of his effects, upon proving that he was reduced by poverty, loſſes, &c. to make uſe of this expedient, the term of five years was granted, called the benefit of *quinquannion*.

QUINQUATRIA, in antiquity, a name given the feaſts of Minerva, otherwiſe called *Panathenæa*. See Panathenæa.

Some think they were termed *quinquatria* becauſe they laſted five days; but others with more reaſon, becauſe they fell out five days after the ides of the month.

QUINQUENNALIA, in antiquity, games, or feaſts celebrated every five years, in honour of the deified emperors. See Game, Feast, Apotheosis, &c.

The *quinquennalia* began to be expreſſed on medals about the middle of the third century—F. Pagi produces a medal wherein are engraven thoſe of the emperer Poſthumus; they are not found in any medals of his predeceſſors.

QUINQUENNALIS, in antiquity, a magiſtrate in the colonies, and municipal cities of the Roman commonwealth; much the ſame with ædile at Rome. See Ædile, and Colony. &c.

They were not thus called from their continuing in their office five years; but becauſe they were elected every fifth year, to preſide at the cenſus, and to receive the declaration each citizen made of his effects. See Census.

QUINQUE *Portus*, the five cinque ports; which are, Haſtings, Romney, Hythe, Dover, and Sandwich—To the firſt hereof alſo belong Winchelſea and Rye, which are eſteemed members of the cinque ports. See Cinque-Ports.

* *Servitium quod barones* quinque portuum *præſcriptorum recognoſcunt facere ad ſummonitionem regis per annum, ſi contigerit per* 15 *dies ad cuſtum eorum proprium; ita quod primus dies computatur a die quo vela navium erexerunt, uſque partes ad quas tendere debent, vel ulterius quam diu rex voluerit ad cuſtum ejus.* Thorn.

QUINQUE-VIR, frequently wrote V-VIR, a Roman magiſtrate, who had four colleagues joined with him in the ſame function.

There were various kinds of officers thus denominated—Pomponius the lawyer mentions *quinqueviri* on this, and on that ſide of the Tiber, eſtabliſhed for the adminiſtration of juſtice in the night-time, in lieu of the ordinary magiſtrates, who were not judged proper to run up and down the ſtreets in the dark.

Roſinus tells us, that it was ſometimes the *quinqueviri* who conducted the colonies, and divided the lands aſſigned them, among the ſeveral families. See COLONY.

Sometimes the Epulones were five in number; in which caſe they were called *quinqueviri*. See EPULO.

QUINQUEVIRI *monetarii* were officers firſt erected under the conſulate of Valerius Poplicola, to moderate the exceſſive uſury, or intereſt, which creditors or bankers uſed to exact upon the people. See USURY.

QUINQUINA, QUINAQUINA, called alſo *China Chinæ*, and *Kin Kina*, a medicinal bark brought from the Weſt-Indies; called alſo, by way of eminency, the *bark*; and *cortex Peruvianus*, the Peruvian bark, from the country whence it is brought; and popularly the *jeſuits bark*, becauſe at it's firſt introduction chiefly ſold and adminiſtred by the jeſuits. See CORTEX.

The tree which yields this bark grows in divers provinces of Peru, but chiefly Quenca, Ayavaca, and Loxa. The beſt and fineſt comes from the mountains 14 leagues round the city of Loxa.

The tree that produces the *quinaquina* is tall, and its trunk thicker than a man's thigh, tapering from the root upwards, but without any branches till near its top, where they grow regular as if lopped by art, and with the leaves form an exact hemiſphere—The bark is blackiſh on the outſide, but ſometimes mix'd with white ſpots, where grows a kind of moſs by the Spaniards called *Barbas*—Its leaves reſemble the leaves of our plumb-trees.

The Spaniards diſtinguiſh four ſorts of this precious bark, *viz.* the *Caſcarilla colorada*, or reddiſh bark: *Amarylla*, or yellowiſh: *Creſpilla* or curling: and *Blanca*, whitiſh.

The *Colorada*, and *Amarylla* are reckoned the beſt: The *Creſpilla* * is the produce of the ſame ſort of tree only growing in a cold, froſty climate, which impairs the quality of the bark, and renders it whitiſh on the outſide, the cinnamon colour'd within, and unfit for medicinal uſe.—For the *blanca*, it is procured from another ſpecies of the tree, of a much bigger trunk, the leaves of a lighter green colour, and the bark of a very thick ſpungeous ſubſtance, whitiſh on the outſide; being withal ſo tough as to require the force of an ax to ſlice it from the tree—When firſt cut down it is as bitter as the beſt ſort, and has then the ſame virtue in the cure of intermitting fevers; but when dry and kept any length of time it grows inſipid and good for nothing. In reality, both ſorts are found to have much ſurer and quicker effects when green, than when dry; ſo that the Europeans only come in for the ſecond virtues: what is worſe, the bad ſort is in great plenty, and the good very ſcarce, and hard to come at: for which reaſon, with a little of the fine bark ſent yearly to Panama for Europe, large quantities of the worſe ſort are mixed.

The ſeaſon for cutting the bark is in Auguſt, the only dry time in the country. The cutters are Indians, provided each with a large knife and a bag. When they have ſliced down the bark as high as they can reach, they faſten ſhort ſticks with withs to the tree at proper diſtances, like the ſteps of a ladder, and thus mount and ſlice to the very top; when the bag is full they carry it to the low country to a neighbouring hut to dry, which is done by ſpreading it in the open air, and frequently turning it—If it happen to have been cut wet, they carry it directly to the low country to dry; otherwiſe it loſes its colour, turns black and rots—After a tree has been barked it requires 18 or 20 years to grow again.

Mr Arrot, a ſcotch ſurgeon, who had gathered the bark in the place where it grows, and from whom we received this account by means of Mr Gray, now at Carthagena, is of opinion that the better ſort of bark will ſoon be at an end, or at leaſt inacceſſible, partly by reaſon of its diſtance from any inhabited place, and the impenetrability of the woods where it grows, and partly by the want of Indians to cut it, whoſe race thro' the cruelties of the Spaniards is like to be totally extinct. See *Philoſ. Tranſact.* N°. 446. p. 81. ſeq.

The *quinquina* was but little known in Europe till the year 1640—The jeſuits of Rome firſt brought it in vogue in Spain, and Italy in 1649; and in 1650, the cardinal de Lugo, of that order, brought it into France.

It was at firſt ſold for it's weight in gold: when reduced into powder, it is by foreigners call'd the *cardinals powder*; among us uſually, the *jeſuits powder, pulvis patrum.*

It met with a world of oppoſition at firſt—Chiflet and Plempius diſtinguiſhed themſelves againſt it. But it is now almoſt univerſally allowed one of the greateſt and beſt remedies within the whole province of medicine.

Some call the gentian-root the European *quinquina*, becauſe good againſt intermitting fevers. See GENTIAN.

QUINSEY, QUINZY, or QUINCY, in medicine. See ANGINA and QUINZY.

QUINSIEME, or QUINZIEME, in our old law-books. See FIFTEENTH.

QUINT, a ſequence of five cards of the ſame colour. See SEQUENCE, PICQUET, *&c.*

QUINTA ESSENTIA; ſee QUINTESSENCE.

QUINTAIN, QUINTENA, in antient cuſtoms, a poſt driven into the ground, with a buckler fixed to it, for the performance of military exerciſes on horſeback, throwing of darts, breaking of lances, *&c.*

Matth. Paris deſcribes the *quintain* as a kind of mark, form'd like a man from the navel upwards, holding a ſhield in his left hand, and in his right a ſword or ſtick; the whole ſo fitted as to turn round on it's foot, and ſo as that a cavalier running a-tilt againſt it with a lance, if he hit it in the breaſt, it whiſk'd round, and, unleſs he were very dextrous, ſtruck him with the ſword held in the other hand.

In other places, a-top of a poſt was erected a ſlender beam fitted to turn round a ſpindle; at one of whoſe ends was a ſloap or flat board, and at the other a bag of ſand, or dirt—The ſport was, with a long ſtaff, or wooden lance, to ride a-tilt at the board, and to be either ſo skilful or lucky to eſcape the blow of the ſand-bag.

This ſome take to be the ſame with the *arietum levatio*, frequently prohibited in our old ſynods and epiſcopal conſtitutions.

The cuſtom is ſtill retained in Shropſhire, and ſome other counties, among the nuptial ſolemnities—He that breaks the moſt poles againſt the *quintain* has the prize, which was antiently a peacock, now a garland.

Some derive the word from an antient game called *quintus*; others from a man of the name Quintus.

The Vallus and Paſſus mentioned in Cæſar, are taken, by Vigenere, for a kind of *quintain*, or wooden man fixed up as an adverſary, or man of ſtraw, to prove one's dexterity againſt.

Mention is made of this exerciſe in the Code, *de aleatoribus*, and in the Paratitles of Cujas on the ſame—Juvenal ſpeaks of women engaging therein:

Aut quis non vidit vulnera Pali?

QUINTAIN was alſo a right which the lord had to oblige all the millers, watermen, and other young people unmarrried, to come before his caſtle every three years, and break ſeveral lances, or poles, againſt a poſt, or wooden man for his diverſion.

QUINTAL, in commerce, the weight of an hundred pounds. See HUNDRED and WEIGHT.

The *quintal* admits of ſome difference in different places, according as the pound conſiſts of more or fewer ounces, and as the ounce is lighter or heavier. See POUND and OUNCE.

Thus, *e. gr.* the Paris *quintal*, or hundred, yields 123 pounds at Montpelier; and the Montpelier hundred only 81 pounds at Paris—The *quintal* of Conſtantinople is eſteemed the heavieſt of all thoſe uſed in the Levant. It contains 45 ocquas, the ocquas weighing two Dutch pounds $\frac{9}{10}$; ſo that the *quintal* is equal to 112 pounds $\frac{3}{4}$ of Amſterdam, 124 pounds of Venice, and 160 of Leghorn.

The Engliſh *quintal* uſually conſiſts of 112 pounds avoirdupois, and is divided into four quarters. See QUARTER.

QUINTAL was alſo formerly uſed for a weight of lead, iron, or other common metal, uſually equal to an hundred pounds, at ſixſcore to the hundred.

QUINTESSENCE, QUINTA-ESSENTIA, in chemiſtry, a preparation conſiſting of the eſſential oil of ſome vegetable ſubſtance, mixed and incorporated with ſpirit of wine. See OIL, *&c.*

Thus, on a proper quantiny, *e. gr.* of eſſential oil of fennel, pouring twelve times the quantity of pure alcohol prepared *per ſe*; they inſtantly unite into one ſimilar liquor, which is the *quinteſſence* thereof.

The antients were perfectly unacquainted with the method of diſſolving oil in ſpirit of wine; and even ſome of the moderns have queſtioned it's reality: but the certainty of the thing is eaſily proved from the inſtance above.

If ſuch *quinteſſence* be ſeveral times digeſted, cohobated, *&c.* the oil will at length be broke ſo fine, as, like the ſpirit itſelf, perfectly to mix with water; which is one of the moſt extraordinary effects in all chemiſtry. See SPIRIT, SULPHUR, *&c.*

After the like manner is made a *quinteſſence* of camphor, by only reducing it into a powder, and pouring on it ſpirit of wine. See CAMPHOR.

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* The ſmall bark which curls up like ſticks of cinnamon, and which in England is much eſteemed as being ſuppoſed to be ſent from the branches of the tree, and therefore more efficacious in the cure of Fevers, is only the bark of the younger trees; which being very thin curls in this manner—For the bark of the branches it is never gathered: It would not compenſate the charge of cutting.

Quinteſſences thus prepared are of great medicinal virtues; as may appear from the pure and potent ingredients uſed in the compoſition, which retain, in a great degree, all the virtues of the plants they are procured from: and hence their denomination. See Essence.

Boerhaave thinks they might properly be called vegetable ſulphurs made potable, and raiſed to their utmoſt degree of power and efficacy. See Sulphur.

Dry *quinteſſences* may be made from the liquid ones, by adding to them ſome eſſential oil of the ſame vegetable from whence the liquid *quinteſſence* was procured, with a little ſugar; all mixed together, and diſtilled by a gentle heat till all the moiſture is come over: the matter remaining is a dry *quinteſſence.*

This form is principally uſeful for travellers, ſailors, *&c.* inaſmuch as it renders the *quinteſſence* portable; ſo that the quantity, *e. gr.* of a pin's point, ſhall be an efficacious memedicine.

Quintessence, in alchymy, is a myſterious term ſignifying the fifth, or laſt and higheſt eſſence, or power of a natural body.

This is ſuppoſed to be, as it were, the ſoul drawn from the groſs body and it's four elements, by a moſt perfect diſtillation; and by means hereof, the thing is ſaid to be ſpiritualized, *i. e.* rendered exceedingly pure, ſpirituous, and, as it were, incorruptible. *Dict. Hermetique.*

The antients, who allowed nothing to be real but what has a body, would have the ſoul of man to be a fifth element, a kind of *quinteſſence* without a name, unknown here below, indiviſible, immoveable, all cœleſtial, and divine. *Fenelon.*

Quintessence *of the elements*, is the hermetical mercury. See Mercury.

QUINT-EXACT, in old law-books, the laſt call of the defendant ſued to an outlawry—If he appear not to it, he is by the judgment of the coroners returned outlawed; if a feme, waived. See Exigent, Outlawry, Waif, *&c.*

QUINTILE, Quintilis, in aſtronomy, an aſpect of the planets, when they are 72 degrees diſtant from one another, or a fifth part of the zodiac. See Aspect, Character, Biquintile, Semiquintile, and Sesquiquintile.

QUINTILIANS, Quintiliani, a ſect of antient heretics, the ſame with Pepuzians; thus called from their propheteſs *Quintilia.* See Pepusian.

In this ſect the women were admitted to perform the ſacerdotal and epiſcopal functions; grounding their practice on that paſſage of St Paul to the Galatians, where he ſays, *That in Chriſt there is no diſtinction of males and females.*

They attributed extraordinary gifts to Eve, for having firſt eaten of the tree of knowledge; told mighty things of Mary the ſiſter of Moſes, as having been a propheteſs, *&c.* they added, that Philip the deacon had four daughters, who were all propheteſſes, and doubtleſs of their ſect.

In their aſſemblies, it was uſual to ſee the virgins enter in white robes perſonating propheteſſes—The *Quintilians* bore a good deal of reſemblance to the modern quakers. See Quaker.

QUINZY *, a diſeaſe which ſtops the freedom of reſpiration and deglutition. See Respiration.

* The word is formed from the French *ſquinance*, or Italian *ſquinantia*, or *eſquinancia*; and theſe again from the Greek συναγχη, of αγχω, I ſuffocate.

The *quinzy*, by phyſicians alſo called *angina*, conſiſts in an inflammation of the throat, and particularly of the muſcles of the larynx or pharynx, which exactly cloſing the chinks thereof, prevent the air from paſſing in and out of the trachea, and the food from being ſwallowed and conveyed into the ſtomach. See Angina.

If any ſymptoms appear on the outſide of the throat, the *Quinzy* is ſaid to be *external*—If none appear, *internal.*

The *quinzy* is alſo divided into *true* and *ſpurious*—the true is always accompanied with a fever: the baſtard or ſpurious *quinzy* is free from it.

They are cauſed by a defluxion of blood, either pure or bilious, from the branches of the carotid arteries; and there cauſing a phlegmon, either a ſimple or an eryſipelatous one.

In the external *quinzy* before any ſuppuration appears, recourſe is had to repeated venæſection in the jugulars—Veſicatories and cupping are alſo uſed with emollient gargles, *&c.*

The *quinzy* is of all others the moſt dangerous, when the tumour is neither perceivable on the inſide nor the out. That appearing on the outſide is the moſt curable. In violent *quinzies*, recourſe ſhould be had to laryngotomy or bronchotomy, which though rarely practiſed, may yet be uſed with ſafety. See Bronchotomy, *&c.*

QUIRE of paper, of the French *Cahier*; the quantity of 24 or 25 ſheets. See Paper.

QUIRISTER, or Chorister, *Choriſta*, a perſon appointed to ſing in the quire, or choir of a cathedral. See Choir, Chantor, Cathedral, Anthem, *&c.*

QUIRINALIA, in antiquity, feaſts celebrated among the Romans in honour of Romulus, who was called Quirinus. See Quirites.

The *quirinalia*, called alſo *ſtultorum feriæ*, were held on the 13th of the kalends of March, *i. e.* on our 17th of February.

QUIRITES, in antiquity, an appellation given to the people of Rome, chiefly the common citizens, as diſtinguiſhed from the ſoldiery.

It took it's riſe from the *Curites*, the inhabitants of the Sabin town *Cures*; on this occaſion—Romulus, and Tatius king of the Sabins, having united their two people, and their two ſtates into one; upon Romulus's death and deification, the Sabins, outdoing the Romans in number, became maſters of the councils; and accordingly appointed that Romulus ſhould be denominated *Quirinus*, from Cures a city of the Sabins, or rather from *Quirinus*, the name of a god worſhipped in that city.

From the new *Quirinus*, all the people came afterwards to be called *quirites*; unleſs we will ſuppoſe that the ſame authority which denominated Romulus *Quirinus*, from Cures, did alſo denominate the people *quirites*; immediately from the Curites.

Some authors derive the word *quirinus* from *curis*, which in the Sabin tongue ſignified a pike or halberd—Struvius adds, that Romulus was always painted with pike in hand.

QUIRK, in building, a piece of ground taken out of any regular ground-plat, or floor.

Thus, if the ground-plat were ſquare, or oblong; and a piece be taken out of a corner, to make a court, or yard, *&c.* the piece is called a *quirk.* See Reduct.

QUIS, in natural hiſtory, a kind of marcaſite of copper, from which the Roman vitriol is drawn. See Marcasite and Vitriol.

It is more frequently called *Pyrites.* See Pyrites.

QUIT-CLAIM, a releaſe, or quitting ones claim or pretenſions to a thing. See Claim.

QUIT-RENT, q. d. *quiet-rent*, a certain ſmall rent, payable yearly, by the tenants of moſt manors in token of ſubjection; upon the payment whereof they are quiet and free. See Manor, *&c.*

In ſome ancient records it is written *white-rent*; becauſe paid in ſilver, to diſtinguiſh it from rent-corn, rent-pepper, *&c.* See Rent.

QUITTANCE. See the article Acquittance.

QUITTER-BONE, among farriers, a hard, round ſwelling, upon the coronet of a horſes foot; or between the heel and the quarter. See Hoof.

Or, it is an impoſthume breeding between the hoof and coffin-bone, on the upper part; and ſhewing itſelf by a ſwelling on the coronet.

Sometimes it is occaſioned by gravel under the ſhoe, or by a bruiſe, ſtab, prick of a nail; or from peccant humours deſcending to that place; or a blow, ſtrain, or over-reach, *&c.*

It occaſions the horſe to halt much, and the ſwelling grows viſible, and comes to a head in four or five days, and breaks out with matter at a little deep hole, like a fiſtula.

QUOD *clerici non eligantur in officio*, is a writ that lies for a clerk, who by reaſon of ſome land he hath, is made, or like to be made, a bailiff, beadle, reeve, or ſuch like officer. See Clerico *infra ſacros*, *&c.*

Quod *medium.* See the article Medium.

Quod *non permittat.* See Consuetudinibus *& Servitiis.*

Quod *perſona nec præbendarii*, *&c.* a writ that lies for ſpiritual perſons, when diſtrained in their ſpiritual poſſeſſions, for the payment of a fifteenth, with the reſt of the pariſh. See Fifteenth.

QUODLIBETICAL *queſtion*, *quæſtio* Quodlibetica, a college term for a theſis, or problem, antiently propoſed to be debated in the ſchools, out of curioſity and entertainment, rather than for the ſettling of any uſeful point. See Thesis, Question, *&c.*

The term is formed from the Latin *quodlibet*, any thing, what you pleaſe; and ſo well ſatisfied were the public with the impertinences of theſe queſtions, that the term *quodlibet* has been ſince retained to ſignify any little ridiculous quibble.

QUOIL, Quoyl, or Coile, in the ſea-language—A cable is ſaid to be *quoiled*, when it is laid round in a ring, one turn over another on the deck of a ſhip. See Cable.

In the middle of ſuch ring or *quoile*, is a good place to lay ſhot in, more ſafe there than in lockers along the ſide, where the enemy's ſhot may fall into it.

QUOIN *, or Coin, a-board a ſhip, is a wedge faſtened on the deck, cloſe to the breech of the carriage of a gun, to keep it firm up to the ſhip's ſide, and prevent it's rolling. See Coin.

* The word is formed from the French *coin*, of the Latin *cuneus*, wedge. See Wedge.

Cantic Quoins are ſhort, three-legged *quoins*, put between casks to keep them ſteady.

QUOINS, in architecture, denote the corners of brick or ſtone walls. See WALL.

The word is particularly uſed for the ſtones in the corners of brick-buildings—When theſe ſtand out beyond the brick-work (their edges being chamfered off) they are called *ruſtic quoins*. See RUSTIC.

QUOITS, a kind of exerciſe or game, known among the ancients under the name of *diſcus*. See DISC; ſee alſo EXERCISE and GAME.

QUO JURE, a writ that lies for him who has land, wherein another challengeth common of paſture time out of mind: it's deſign is to compel the party to ſhew by what right or title he challengeth it.

QUO MINUS is alſo a writ which lies for the king's farmer or debtor in the court of exchequer, againſt him to whom he ſelleth any thing by way of bargain, touching his farm; or againſt whom he hath any cauſe of perſonal action—For that by the vendee's detaining any due from him, the farmer is made leſs able to pay the king's rent.

Quo minus, is alſo a writ that lies for him who has a grant of houſe-bote in another man's wood, againſt the grantor making ſuch waſte, as that the grantee cannot enjoy his grant. See HOUSE-*bote*.

QUORUM, a term frequently mentioned in our ſtatutes, and often uſed in commiſſions, both of peace, and others. See COMMISSION, PEACE, &c.

It is thus called from the words in the commiſſion, *quorum* A. B. *unum eſſe volumus*.

For an example—Where a commiſſion is directed to ſeven perſons, or to any three of them, whereof A. B. and C. D. to be two; there A. B. and C. D. are ſaid to be of the *quorum*, becauſe the reſt cannot proceed without them.

So a juſtice of the peace and *quorum*, is one, without whom the reſt of the juſtices in ſome caſes cannot proceed. See JUSTICE.

QUOTATION, in literature, a *citation*; or a paſſage rehearſed expreſly in one author from another. See CITATION.

Quotations are uſed to be diſtinguiſhed by inverted comma's, thus; “ Half an age ago *quotations* were wonderfully common; and Ovid and Catullus came every day with the pandects to the aſſiſtance of the widow and the orphan.” —*La Bruyere*.

The manner of quoting by book, and chapter, or ſection, is chiefly affected by men of erudition: But it is abuſed: This method ought only to obtain where the whole chapter or ſection is expreſly on the ſubject. On other occaſions, quoting by page is more commodious; except in claſſicks and other ancient writings, whereof there are many editions in different forms, where this method is of little uſe, unleſs the edition be alſo ſpecified.

The *quotations from the old teſtament*, found in the new, have occaſioned infinite doubt, diſpute, and criticiſm—The apoſtles, are frequently referring to the old teſtament, and quoting paſſages and prophecies thence as fulfilled in our Saviour; yet theſe paſſages thus quoted, are frequently either not found in the old teſtament, or are not urged in the new according to the literal and obvious ſenſe they ſeemed to bear in the old.

A late ingenious author, in an eſſay upon the truth of the chriſtian religion, frankly owns, that the Evangeliſts ſometimes apply to the Meſſiah paſſages of the old teſtament, which, as they lie in our preſent copies, plainly relate to ſome other perſon, or thing—This is evident, *e. gr.* in the paſſage, Matth. ii. 15. *Out of Egypt have I called my ſon*; which is quoted from Hoſea xi. where it is plainly underſtood of the coming of the Iſraelites out of Egypt. See PROPHECY.

This proves a heavy obſtacle in the way of chriſtianity, which the divines, commentators, critics, &c. have long laboured to remove, though by very different means.

Some have recourſe to a double completion; and imagine, that though the prophecies were primarily accompliſhed in other events, yet they might have a ſecondary one in the Meſſiah: but others ſet aſide a double completion, except where the prophet himſelf declares as much, as making all prophecy uſeleſs. See ACCOMPLISHMENT.

The generality chuſe therefore to have recourſe to an allegorical, or typical, or ſpiritual meaning in the prophecies, &c. and ſuppoſe them to have been thus underſtood among the ancient Jews, thus fulfilled in our Saviour, and thus applied by the apoſtles. See TYPE.

In effect, the Jewiſh rabbins, it is allowed, took a world of liberty in quoting and interpreting ſcripture; and it is ſuppoſed the apoſtles might follow thoſe rules in their quotations. See RABBIN.

Accordingly, M. Surenhuſius, Hebrew profeſſor at Amſterdam, has endeavoured to retrieve thoſe rules, long ſince loſt, in an expreſs treatiſe on this ſubject, publiſhed in 1713. This author obſerves a great deal of difference implied in the different forms of *quoting* uſed by the ſacred writings: as, *It has been ſaid*; *it is written*; *that it might be fulfilled which was ſpoken by the prophets*; *the ſcripture ſays*; *ſee what is ſaid*; *the ſcripture foreſeeing*; *is it not written*, &c.—He adds, that the books of the old teſtament having been diſpoſed in a different order at different times, and having had different names, it is thence that a book or writer is ſometimes confounded with another.

For the rules of *quoting* and interpreting practiſed among the rabbins, he gives us ten; recovered with much ſtudy from the Thalmud, and the ancient Jewiſh doctors: inſtances whereof he gives us in the writings of the apoſtles; and by thoſe rules he endeavours to explain and juſtify all the *quotations* made from the old teſtament in the new.

The rules are, 1. reading the words not according to the points placed under them, but according to others ſubſtituted in their ſtead; as is done by St Peter, Acts iii. 3. by Stephen, Acts vii. 43. and by Paul, 1 Cor. xv. 54. 2 Cor. viii. 15, &c.

The ſecond is by changing the letters; as is done by Paul, Rom. ix. 33. 1 Cor. xi. 9. Heb. viii. 9. and x. 5. and by Stephen, Acts vii. 43.

The third is by changing both letters and points, as is done by Paul, Acts xiii. 41. and 2 Cor. viii. 15.—The fourth is adding ſome letters, and taking away others.

The fifth, tranſpoſing words and letters—The ſixth is dividing one word into two—The ſeventh, adding other words to make the ſenſe more clear—The eighth, changing the order of the words—The ninth, changing the order of the words, and adding other words. Both of which are done by the apoſtles—Laſtly, changing the order of words, adding words, and retrenching words; which is a method often uſed by St Paul.

Other authors, as biſhop Kidder, M. le Clerc, M. Sykes, &c. ſolve the difficulty another way—That uſual form of *quotation* among the evangeliſts, “ That it might be fulfilled which was ſpoken by the prophets,” according to theſe authors, means no more than an accommodation of the prophets words to the caſe in hand. See ACCOMMODATION.

The word ϖληρωθη, *fulfilled*, does not neceſſarily determine us to ſuch a ſenſe, as if the evangeliſts deſigned to ſpeak of a prediction of future events *accompliſhed*; but may barely expreſs an accommodation of borrowed words—In effect, ſays biſhop Kidder, a ſcripture may be ſaid to be *fulfilled* two ways; *properly*, as when that which was foretold comes to paſs; and *improperly*, by way of accommodation, as when an event happens to any place or people like to what fell out ſome time before—And thus it is that St Matthew ſays on occaſion of the murder of the innocents, that “ then was fulfilled what was ſpoke by the prophet Jeremy, *In Rama was a voice heard*, &c.

This interpretation is confirmed by M. le Clerc, who obſerves that the Jews, in their language uſed to ſay, that a paſſage of ſcripture was *fulfilled*, as often as any thing happened which it might be applied to: ſo that the evangeliſt Matthew, who was a Hebrew, and wrote, as it is commonly ſuppoſed, in that language, intended no more in the paſſage juſt cited, but that a thing happened to which one might apply what Jeremy had formerly ſaid on another occaſion.

Accordingly, ſays Mr Sykes, the evangeliſts in citing that paſſage of Iſaiah, *Behold a virgin ſhall be with child*, &c. only uſe it as words of that prophet remarkably agreeing to the miraculous birth of Jeſus, and not as a propheſy of his birth.

It may be added, that this way of ſpeaking was not unknown among the heathen writers—Thus in Ælian, Diogenes Sinopenſis uſed continually to ſay of himſelf, that he fulfilled and underwent all the curſes of tragedy.

QUOTIDIAN, QUOTIDIANA, in medicine, an intermitting fever, or ague, the acceſs whereof returns every day. See FEVER and AGUE.

QUOTIENT, QUOTIENS, in arithmetick, the number reſulting from the diviſion of a greater number by a ſmaller; and which ſhews how often the ſmaller is contained in the greater, or how oft the diviſor is contained in the dividend. See DIVISION.

* The word is formed from the Latin, *quoties*, *q. d.* How often is ſuch a number contained in ſuch another?

In diviſion, as the diviſor is to the dividend; ſo is unity to the *quotient*—Thus the *Quotient* of 12 divided by 3 is 4; which is thus diſpoſed, 3) 12 (4 *Quotient*.

QUOUSQUE—*Execution with a* QUOUSQUE. See EXECUTION.

QUO WARRANTO, a writ that lies againſt him who uſurps any franchiſe, or liberty againſt the king; as to have waife, ſtray, fair, market, court-baron, leet, or ſuch like, without good title.

It alſo lies for miſ-uſer or non-uſer of privileges granted—And even, according to Bracton, againſt him that intrudeth himſelf as heir into land. See INTRUSION.

QUOYL, ſee the article QUOIL.

R,

R, A liquid conſonant, and the ſeventeenth letter of the alphabet. See LETTER and ALPHABET.

The grammarians hold it a ſemi-vowel; eſpecially in the Greek, where, in common with the other vowels, it admits an aſpirate, &c. though whether the aſpirate ſhould be ſounded before or after it, is ſome doubt. We find Inſtances of each.

Thus ῥεδη the Latins wrote *rheda*; and ῥοδον the Æolians wrote βροδον—The antient Goths, and Teutones, Littleton obſerves, prefixed *h* to *r*. See H.

The Hebrews allow the *r* the privilege of a guttural, that is they never double it, which yet is done by the Arabs, Greeks, and Latins, &c. See GUTTURAL.

Perſius, calls the *r*, *litera canina*, becauſe the dogs ſeem to pronounce it in ſnarling: Yet it ſhould ſeem to have had a ſofter ſound among the Romans, than among us, by it's being frequently interpoſed to prevent the claſhing of vowels: as in *rarus* from ἀραιος, *nurus* from νυος, *murex* from μυαξ, *mus murus* from μυς μυος; and this ſoftneſs was ſuch as frequently occaſioned it's being dropt as uſeleſs in writing.

Thus for *Hetruſci* they frequently wrote *Thuſci*, and even *Tuſci*; and for *ſurſum*, *rurſus*, *prorſus*; *ſuſum*, *ruſus*, *proſus*. In effect there was that agreement between the ſound of the *s* and *r*, that as the Romans avoided the doubling of their conſonants, it was no wonder they here dropped the *r*; the *s* ſupplying the place of both. Hence too it came to paſs, that what they at firſt pronounced, *Aſa*, *Aſena*, *Caſmen*; was afterwards, *Ara*, *Arena*, *Carmen*; and thoſe firſt named *Fuſii* and *Valeſii* were afterwards called *Furii* and *Valerii*. Cicero tells us, the *Papirii* were firſt called *Papiſii*; and even fixes the time when the change was made, *viz.* in the year of Rome 415. Feſtus adds, that *olera*, *pignora*, *plurima*, were anciently written *oleſa*, *pignoſa*, *pluſima*. See S.

From the ſame ſoftneſs of the ſound of the *r*, it came to be uſed indifferently with the *l*, in many words, *e. gr. latiaris* and *latialis*, *palilia* and *parilia*, &c.

Though the *r* more frequently degenerated into *l*; thus *remures* became changed into *lemures*, *interlego*, *perlucco* into *intelligo* and *pelluceo*, *frater* into *fratellus*, &c. and the ſame is ſometimes done between *n* and *r*, as *æreus* and *æneus*, &c. See L.

R, was antiently a numeral letter, ſignifying 80; according to the verſe,

Octoginta dabit tibi R, *ſiquis numerabit.*

When a daſh was added a-top, as R̄, it ſignified 80 thouſand.

The Greek *r*, ρ, ſignified an hundred.

R, or ℞ in medicinal preſcription, ſtands for *recipe*, take. See RECIPE. See alſo CHARACTER.

RABATE in faulconry—A hawk is ſometimes ſaid to *rabate*, when by the motion of the hand of the bearer, the lure, call, &c. ſhe leaves purſuing her prey, or quarry; and recovers the fiſt. See RECLAIMING, HAWK, HAWKING, LURE, &c.

RABATE in commerce. See REBATE.

RABBETING, in carpentry, the planing or cutting of channels, or grooves, in boards. See PLANE.

In ſhip-carpentry, it ſignifies the letting in of the planks of the ſhip into the keel; which in the rake, and run of a ſhip, is hollowed away, that the planks may join the cloſer.

RABBET-*plane*. See the article *Rabbet*-PLANE.

RABBI*, or RABBIN, a doctor of the Jewiſh law. See DOCTOR, and RABBINIST.

* The word in it's original רבי ſignifies *maſter*. See MASTER.

The words *rabbi* and *rabbin*, have the ſame ſignification; yet is there ſome difference in their uſe.—When we ſpeak abſolutely, and without applying the term to any proper name, we ſay *rabbin*, not *rabbi*. Thus, we ſay, it would be unjuſt to attribute to the antient *rabbins* all the notions of the modern ones.

On the other hand, when we prefix the term to the proper name of ſome Jewiſh doctor, we ſay *rabbi*, not *rabbin*: as *rabbi* Saloman Jarchi is of this opinion.

Yet *rabbi* having no plural, we ſay, the *rabbins* Juda Chiug, and Juda ben Chabin, are the authors of two antient Hebrew grammars.

The modern *rabbins* are entitled to a good deal of reſpect among the Jews: they have the firſt places in the ſynagogues; they determine all matters and controverſies of religion, and very frequently pronounce upon civil affairs. They have even a power to excommunicate the diſobedient.

They retain a vaſt number of ſuperſtitious traditions, from the writings of their predeceſſors; which they obſerve as ſcrupulouſly as the law of Moſes. See TRADITION. See alſo TALMUD.

The antient *rabbins* were infinite dealers in allegories. Their writings are almoſt wholly allegorical, particularly their comments and interpretations of the ſcripture; See CABBALA. They had a great number of rules, and forms of interpreting and quoting, which ſome modern writers ſuppoſe to have been followed by the apoſtles, in their interpretation, and quotation of the propheſies of the old teſtament, in the new. See PROPHECY.

The loſs of theſe rules Dr Stanhope, Dr Jenkins, &c. lament, as what in all probability would reconcile the jarring paſſages in the old and new teſtament. Surenhuſius, Hebrew profeſſor at Amſterdam, imagines he has retrieved thoſe rules from the antient Jewiſh writers.

The *rabbins*, he obſerves, interpreted ſcripture in ſuch a manner as to change the literal ſenſe into a more noble and ſpiritual ſenſe. To this end, he ſays, they uſed ten ways of quoting and explaining the old teſtament; inſtances of each whereof he gives in the writings of the apoſtles.

They conſiſt in changing the points; the letters; both letters and points; adding and taking away letters; tranſpoſing words and letters; dividing one word into two; adding words; changing the order, &c. See QUOTATION.

RABBINICAL *character*. See the article CHARACTER.

RABBINICAL *Hebrew*. See the article HEBREW.

RABBINIST, a follower of the doctrine of the rabbins; in contradiſtinction to *caraite*. See CARAITE.

Father Simon contends for *rabbaniſt*, or *rabbanite*, inſtead of *rabbiniſt*; in effect, the former are apparently preferable to the latter; the word being derived from the Hebrew *rabbanim*, which is the name of the ſect, and which the Jews uſe to diſtinguiſh their doctors from thoſe of the *caraite* Jews. See RABBI.

Rabbiniſt, then, ſignifies a Jewiſh doctor who adheres to the traditions of his fathers; not ſimply a rabbin or doctor; for the *caraites* who oppoſe thoſe traditions, have their rabbins as well as the other Jews. See TRADITION, and TALMUD.

RABDOIDES,	} See {	RHABDOIDES.
RABDOLOGY,		RHABDOLOGY.
RABDOMANCY,		RHABDOMANCY.

RABINET, a ſmall piece of ordnance, between a falconet and a baſe. It's dimenſions, &c. See under CANNON.

RACA, or RACHA, a Syriac term, found in the goſpel of St Matthew, ch. v. 22. and preſerved in moſt tranſlations.

Father Simon obſerves that the Greek tranſlator of St. Matthew's goſpel retained the Syriac *raca* which he found in the original, by reaſon it was very common among the Jews. And St. Jerom, Luther, the Engliſh tranſlators, thoſe of Geneva, Louvain, Port-Royal, &c. ſtill preſerve it in their reſpective languages.

F. Bouhours chuſes rather to expreſs the ſenſe thereof in a ſort of paraphraſe, thus: he that ſays to his brother, *homme de peu de ſene*, *man of little underſtanding*, ſhall deſerve to be condemned by the tribunal of the council, &c.

Moſt tranſlators, except the Engliſh, and F. Simon, for *raca* write *racha*: but the former orthography ſeems the beſt founded; all the Latin copies having *raca*, and all the Greek ones ῥακα, or, with Heſychius, ῥακκα, which is the ſame: all we mean, but St Irenæus, and Beza's copy, now at Cambridge, which have ῥαχα—In effect, the origin of the word ſhews it ſhould be *raca*; as coming from the Syriac ריקא, *raca*, of the Hebrew רק *rek*, empty, ſhallow.

RACCOURCY, in heraldry, ſignifies the ſame as *coupy*, that is, cut off, or ſhortened; and denotes a croſs or other ordinary, when it does not extend to the edges of the eſcutcheon, as they do when abſolutely named, without ſuch diſtinction. See COUPED.

RACE*, in genealogy, lineage, or extraction continued from father to ſon. See LINE.

* The word is French, formed from the Latin, *radix*, *root*; as intimating the root of the genealogical tree.

In ſeveral orders of knighthood, as in that of Malta, &c. the candidates muſt prove a nobility of four *races* or deſcents. See DESCENT.

In ſome republics the magiſtrates are to prove themſelves of plebeian *race*, to be qualified.

The French reckon their kings by *races*; as, the firſt *race*, the ſecond *race*, the third *race*. We alſo ſay the *race* of the Ottomans, the Arſacides, the Ptolemys, &c. See DYNASTY.

D'Hervieux obſerves that it is uſual to put the female canary bird to the male goldfinch, linnet, or the like, to breed; but, for his part, he ſhould chuſe to put the male canary-bird to the female goldfinch, linnet, &c. becauſe the male uſually *races* more than the female, *i. e.* the young ones take more after the male than after the female.

RACHA. See the article RACA.

RACHITIS, or rather RHACHITIS, in medicine, a diſeaſe affecting the bones of children; more uſually called the *rickets*. See RICKETS.

RACK, an engine furniſhed with cords, &c. for extorting confeſſion from delinquents. See TORTURE.

The duke of Exeter, conſtable of the tower under Henry VI. with the duke of Suffolk, and others, having a deſign to introduce the civil law into England; for a beginning, the *rack*, or *brake* allowed in many caſes by the civil law, was firſt brought to the tower, where it is ſtill preſerved—In thoſe days, the *rack* was called the duke of Exeter's daughter.

RACK, in the manage, a pace wherein a horſe neither trots nor ambles, but ſhuffles, as it were between both. See PACE.

The *racking pace* is much the ſame as the amble; only that it is a ſwifter time and a ſhorter tread. See AMBLE.

To RACK *wines*, &c. is to draw them from off their lees, after having ſtood long enough to clear and ſettle. See WINE.

Hence RACK-*vintage* is frequently uſed for the ſecond voyage our wine merchants uſe to make into France for racked wines; whence they uſed to return about the end of December.

RACKET*, a kind of bat, to ſtrike the ball withal at tennis; conſiſting uſually of a lattice, or net-work of cat-gut, ſtrained very tight over a circle of wood, with a handle or ſhaft of a moderate length. See TENNIS.

* The word is formed from the French, *raquette*, which *Menage* derives from the Latin, *raketta*, a diminutive of *rete* net; whence alſo *reticum*, and *reticulum*.

Paſquier obſerves, that antiently they uſed no *rackets* at tennis, but plaid with the palm of the hand; and hence, he conjectures it is, that the French call tennis-play, *jeu de paume*—He adds, that *rackets* were not introduced till a little before his time.

RACKET, is alſo a machine, which the ſavages of Canada bind to their feet, to walk more commodiouſly over the ſnow; made much in the manner of a tennis-racket.

It's figure is a lozenge, whereof the two obtuſe angles are rounded off. It is bound about with very fine thongs of leather, the maſhes whereof are much ſmaller and cloſer than thoſe of our rackets.

In the middle is fitted a kind of ſhoe, lined with wool, or hair; to be tied on to the ankle: by which means the feet are prevented from ſinking in the ſnow.—*Rackets* oblige the perſon to take very long ſteps, and as we ſay, to walk a great pace, to keep them from knocking againſt each other.

RADIAL *curves*, is a denomination given by ſome authors to curves of the ſpiral kind, whoſe ordinates, if they may be ſo called, do all terminate in the center of the including circle, and appear like ſo many *radii* of that circle; whence the name. See CURVE. See alſo SPIRAL.

RADIALIS, or RADIÆUS *extenſor*, in anatomy. See EXTENSOR *carpi*.

RADIALIS, or RADIÆUS *flexor*. See FLEXOR *carpi*.

RADIANT *point*, or RADIATING *point*, is any point of a viſible object, whence rays proceed. See RAY, and POINT.

Every *radiant point* diffuſes innumerable rays all around: but only thoſe *radiants* are viſible, from which right lines may be drawn to the pupil; becauſe the rays are all right lines.

All the rays proceeding from the ſame *radiant* continually diverge; the cryſtallin collects or reunites them again. See DIVERGING. See alſo CRYSTALLIN, and VISION.

Every ray is ſuppoſed to carry with it the ſpecies, or image of the *radiant*. See SPECIES and IMAGE.

RADIATED, in botany, an epithet applied to round flat flowers, conſiſting of a diſk, and a ſingle row of longiſh pointed leaves, ranged all around it in manner of rays, or ſpokes. See FLOWER.

Radiated flowers, are properly ſuch as have ſeveral ſemi-florets ſet round a diſk, ſo as to reſemble a *radiant* ſtar: ſuch are daizy, camomile flowers, &c. Theſe are ſometimes alſo called *radiated diſcous-flowers*. See DISCOUS.

The word is alſo uſed in ſpeaking of medals, and in heraldry, where the antient crowns are called *radiated crowns*, *coronæ radiatæ*. See CROWN.

RADIATION, in phyſic, the action of a body diffuſing rays of light, as from a center. See RAY.

Every viſible body is a *radiating* body; it being purely by means of it's rays that it affects the eye. See VISION.

Yet no body can *radiate*, unleſs it be either luminous or illuminated; ſince the rays it diffuſes muſt either be it's own, or it muſt receive them from another body. Therefore nobody is viſible unleſs it be either luminous or illuminated. See VISIBLE, LIGHT, COLOUR, &c.

The ſurface of a *radiating* body may be conceived as conſiſting of radiant-points. See RADIANT-*point*.

Place of RADIATION is that ſpace in a tranſparent body, or medium, through which a viſible body *radiates*. See MEDIUM, &c. See alſo PLACE.

RADIATION, or IRRADIATION, is alſo uſed by ſome authors to expreſs the manner of the motion of the animal ſpirits; on a ſuppoſition that they are diffuſed from the brain towards all parts of the body, through the little canals of the nerves, as light is from a lucid body. See SPIRIT, and IRRADIATION.

But in lieu of a *radiation*, many of the moderns rather incline to the opinion of the circulation of the ſpirits. See CIRCULATION.

RADICAL, RADICALIS, in phyſics, &c. ſomething ſerving as a baſis or foundation; or which, like a *root*, is the ſource, or principle whence any thing ariſes. See ROOT.

The ſchools talk much of a *radical moiſture* inherent in the ſeeds of all animals, which nouriſhes and preſerves the vital heat or flame, as oil does a lamp; and which when exhauſted, life is extinguiſhed. See FLAME, &c.

Dr Quincy obſerves that this *radical moiſture* is a mere chimera; unleſs we thereby mean the maſs of blood which is the promptuary whence all the other juices and humours are derived; and which, while it circulates, ſuſtains life, &c. See HEAT. See alſo LIFE, BLOOD, &c.

In grammar, we uſe the term, *radical words*, for roots and primitives; in oppoſition to compounds and derivatives. See ROOT and PRIMITIVE.

RADICAL *ſign*, in algebra, the ſign or character of the root of a quantity. See ROOT.

$\surd$ is the character of radicality, and expreſſes the ſquare root; $\sqrt[3]{}$ the cube root, &c. See CHARACTER.

RADICATION, in phyſic, the action whereby plants take root, or ſhoot out roots. See ROOT.

The French royal academy of ſciences have made a good number of curious obſervations on the germination and *radication* of plants. See VEGETATION, SEED, PLANTING, PERPENDICULARITY, &c.

RADICLE, RADICULA, *little root*; in botany, is a little point diſcovered by the miſcroſcope in all ſeeds, which in the growth of the plant becomes the root. See ROOT. See alſo SEED.

When, in ſowing, the *radicle* happens to light loweſt, it is no wonder the root ſhould ſpread itſelf under ground, and the ſtem of the plant riſe up perpendicularly: but when the *radicle* falls uppermoſt, by what means it is, that it changes it's poſition to favour the aſcent of the ſtem, is one of the wonders of vegetation: A more particular account whereof ſee under the article PERPENDICULARITY.

RADII *brevis*. See the article BREVIS.

RADIOMETER, à name which ſome writers give to the *radius aſtronomicus*, or Jacob's *ſtaff*. See CROSS-STAFF.

RADIUS*, RAY, in geometry, the ſemidiameter of a circle; or a right line drawn from the centre to the circumference. See SEMIDIAMETER, &c.

* The word is derived from the Greek ῥαϐδος, *rod.*—Fleta uſes the word *radius*, for a *furrow*.

The *radius* is alſo called, eſpecially in trigonometry, *ſinus totus*, *whole ſine*. See SINE.

It is implied in the definition of a circle, and it is apparent from it's conſtruction, that all the *radii* of the ſame circle are equal. See CIRCLE.

RADIUS, in the higher geometry—RADIUS *of the evoluta*, RADIUS *curvedinis*, or RADIUS *oſculi*, is the right line CM, *Tab. Analyſis*, *fig.* 12. repreſenting a thread, by whoſe evolution from off the curve BC, whereon it was wound, the curve AM*m* is formed. See EVOLUTA and OSCULUM.

RADIUS *aſtronomicus*, an inſtrument properly called Jacob's *ſtaff*, or *croſs-ſtaff*. See CROSS *ſtaff*.

RADIUS, in optics. See the article RAY.

RADIUS, in mechanics, is applied to the ſpokes of a wheel; becauſe iſſuing like rays from the centre thereof. See WHEEL.

RADIUS, in anatomy, is a long ſlender bone of the arm, deſcending along with the ulna from the elbow to the wriſt; called alſo, *focile minus*, the *leſſer focile*—See *Tab. Anat.* (*Oſteol*) *fig.* 3. *n.* 7. 7. ** &c. *fig.* 7. *n.* 9. See alſo FOCILE.

The *radius* only touches the ulna at it's extremities; at the upper whereof it is both received by, and alſo receives it; making by both articulations, an imperfect kind of ginglymus. See ULNA.

The upper end, rolling upon the ulna, is covered with a cartilage; and has a-top, a ſmall round ſinus, which receives the outer proceſs of the humerus: the lower end is thicker than the upper, and has beſides the lateral ſinus, two other ſinus's at it's extremity, which receive the bones of the wriſt.

The *radius* and ulna are both a little crooked; by which means they are kept a-part, excepting at their extremities; and are tied together by a ſtrong membranous ligament. See ARM.

The *radius* has four proper muſcles, beſides the biceps common to it and the ulna: the proper are two pronators, and two ſupinators. See PRONATOR and SUPINATOR. See alſo BICEPS.

RADIX, Ῥιζα, root. See the article ROOT.

Radix is uſed among ſome anatomiſts, for the ſole of the foot. See Foot.

Radix, among grammarians. See Radical.

RAD-KNIGHTS. See the article Redmans.

RADMANS. See the article Redmans.

RAFFLING*, a ſort of game with three dice, wherein he who throws the greateſt pair, or pair royal, in three caſts, wins the prize or ſtake. See Game and Gaming.

* The word probably comes from the baſe Latin, *rieflare*, to *rifle*, plunder, take all away.

The *raffle* is properly the doublet or triple: a *raffle* of aces, or duces carries it againſt meer points.

Raffling is alſo uſed when a company of perſons club to the purchaſe of a commodity; and he that throws the higheſt on three dice takes it.

RAFTERS, in building, are pieces of timber, which ſtanding by pairs upon the reaſon, meet in an angle at the top, and form the roof of a building. See Roof.

It is a rule in architecture, that no *rafters* ſhould ſtand farther than twelve inches from one another.

For the ſizes or ſcantlings of *rafters*, it is provided by act of parliament, that *principal rafters* from 12 foot 6 inches, to 14 foot 6 inches long, be 5 inches broad a-top, and 8 at the bottom, and 6 inches thick—Thoſe from 14 6, to 18 6 long, to be 9 inches broad at the foot, 7 a-top, and 7 thick—And thoſe from 18 6, to 21 6, to be ten inches broad at the foot, 8 a-top, and 8 thick.

Single rafters, 6 foot 6 inches long, to be 4 and 3 inches in their ſquare—Thoſe 8 foot long muſt be $4\frac{1}{2}$ and $3\frac{3}{4}$ inches ſquare.

RAG, or **Rake**, among hunters, denotes a company, or herd of young colts.

RAGGED *hawk*, in falconry, is a hawk that hath it's feathers broken. See Hawk.

Ragged, in heraldry. See the article Raguled.

RAGGULED. See the article Raguled.

RAGMAN's-*roll*, or **Ragimund**'s-*roll*. See Roll.

RAGOûT, or **Ragoo**, a ſauce, or ſeaſoning, to rouſe or recover the appetite when languiſhing, or loſt.

The term is French, but naturalized—It is alſo uſed for any high-ſeaſoned diſh, prepared of fleſh, fiſh, greens, or the like, by ſtewing them with the addition of bacon, ſalt, pepper, cloves and the like.

We have *ragoos* of beef, of cray-fiſh, of gibblets, of aſparagus, of endive, of cocks-combs, of gammon, of celery, &c.

The ancients had a ragoût, called *garum*, made of the putrefied guts of a certain fiſh, which they kept till it diſſolved by meer force of corruption into a ſanies: this was held ſuch a valuable dainty among them, that Pliny obſerves, it's price equalled that of the richeſt perfumes.

RAGULED, or **Ragged**, in heraldry, is applied to an ordinary, *e. gr.* a croſs, whoſe out-lines are jagged or knotted. (*Tab. Herald. fig.* 48.)

He beareth ſable, a croſs *raguled*, or, by the name of *Sloway*.

Ragged differs from indented, in that the latter is regular, and the former not. See Indented.

The bearing is very ancient: Julius Cæſar gave for his badge, a boar's head, on a *ragged* ſtaff.

Raguled is ſometimes alſo uſed in the ſenſe of *truncated*, or *couped*, and applied to a branch that is ſawed from the tree; or a ſtock ſawed from it's root.

RAJA, an Indian appellation given to a kind of idolatrous princes, the remains of thoſe that ruled there before the conqueſt of the Moguls.

There are ſome *Rajas* who ſtill retain a kind of ſoveraignty in the mountains: the Indians call them *Rai*; the Perſians, plurally, *Raian*; our travellers *Rajas*, or *Ragias*.

The chief lords of the Moguls, *viz.* the vice-roys, governors of provinces, and chief miniſters of ſtate, F. Catrou obſerves, are called *Ombras*; and the idolatrous *Rajas*, or Indian lords who governed petty ſtates before the conqueſt of their country, hold the ſame rank at court with the Omhras.

All the difference is, that the children of the *Rajas* ſucceed their fathers in the ſhew of the ſoveraignty left them; whereas the children of the Mahometan lords loſe all in loſing their fathers.

The Indians account four ages from the beginning of the world; and in the ſecond, which laſted 1296000 years, they hold the *Rajas* or Kchatrys had their riſe; a noble caſt; though inferior to the Bramins. See Bramin.—Vice then began to creep into the world; men only lived to 300 years, and their ſtature was reduced, &c. *Lett. Edif. & Cur.* See Age.

RAIL, in architecture, is applied variouſly; particularly, to thoſe pieces of timber, which lie horizontally between the pannels of wainſcot, over and under them. See Pannel, Wainscot, &c.

The word is alſo applied to thoſe pieces of timber which lie over and under ballusters in balconies, ſtair-caſes, &c. See Balluster.

Alſo, to the pieces of timber that lie horizontally from poſt to poſt in fences with pales or without.

RAIN, a very frequent and uſeful meteor, deſcending from above in form of drops of water. See Meteor and Drop.

Rain is, apparently, a precipitated cloud; as clouds are nothing but vapours raiſed from moiſture, waters, &c. See Cloud.

And vapours are demonſtratively nothing elſe but little bubbles or veſiculæ detached from the waters, by the power of the ſolar, or ſubterraneous heat, or both. See Vapour.

Theſe veſiculæ being ſpecifically lighter than the atmoſphere, are buoyed up thereby, untill they arrive at a region where the air is a juſt balance with them; and here they float, till by ſome new agent they are converted into clouds, and thence either into rain, ſnow, hail, miſt, or the like. See Snow, Hail, &c.

But the agent in this formation of the clouds into *rain*, &c. is a little controverted: the generality will have it the cold, which conſtantly occupying the ſuperior regions of the air, chills and condenſes the veſiculæ, at their arrival from a warmer quarter; congregates them together, and occaſions ſeveral of them to coaleſce into little maſſes: by this means their quantity of matter increaſing in a greater proportion than their ſurface, they become an overload to the thin air, and accordingly deſcend in rain.

Mr Derham accounts for the precipitation, hence; that the veſiculæ being full of air, when they meet with a colder air than that they contain, their air is contracted into a leſs ſpace, and conſequently the watery ſhell or caſe rendered thicker, ſo as to become heavier than the air, &c. See Cold.

Others only allow the cold a part in the action, and bring in the winds as ſharers with it: indeed it is clear, that a wind blowing againſt a cloud will drive it's veſiculæ upon one another, by which means ſeveral of them coaleſcing as before, will be enabled to deſcend; and the effect will be ſtill more conſiderable if two oppoſite winds blow towards the ſame place. Add to this, that clouds already formed, happening to be aggravated by freſh acceſſions of vapour continually aſcending, may thence be enabled to deſcend. See Wind.

Yet, the grand cauſe, according to Rohault, is ſtill behind: that author conceives it to be the heat of the air, which after continuing for ſome time near the earth, is at length carried up on high by a wind, and there thawing the ſnowy villi, or flocks of the half frozen veſiculæ, reduces them into drops; which coaleſcing, deſcend, and have their diſſolution perfected in their progreſs through the lower and warmer ſtages of the atmoſphere.

Others, as Dr Clark, &c. aſcribe this deſcent of the clouds rather to an alteration of the atmoſphere, than of the veſiculæ; and ſuppoſe it to ariſe from a dimunition of the ſpring or elaſtic force of the air. See Elasticity.

This elaſticity which depends chiefly or wholly on the dry terrene exhalations, being weakened, the atmoſphere ſinks under it's burthen; and the clouds fall, on the common principle of precipitation. See Precipitation.

Now, the little veſiculæ by any, or all, theſe means, being once upon the deſcent, will perſiſt therein, notwithſtanding the increaſe of reſiſtence they every moment meet withal in their progreſs through ſtill denſer and denſer parts of the atmoſphere.

For, as they all tend toward the ſame point, *viz.* the centre of the earth, the farther they fall, the more coalitions will they make; and the more coalitions, the more matter will there be under the ſame ſurface; the ſurface only increaſing as the ſquares, but the ſolidity as the cubes; and the more matter under the ſame ſurface, the leſs friction or reſiſtence there will be to the ſame matter. See Barometer.

Thus, if the cold, the wind, &c. happen to act early enough to precipitate the aſcending veſiculæ, before they are arrived at any conſiderable height; the coalitions being few in ſo ſhort a deſcent, the drops will be proportionably ſmall: and thus is formed what we call *dew*. See Dew.

If the vapours prove more copious, and riſe a little higher, we have a *miſt* or *fog*. See Fog.

A little higher ſtill, and they produce a *ſmall rain*, &c.

If they neither meet with cold, nor wind enough to condenſe or diſſipate them; they form a heavy, thick, dark ſky; which laſts ſometimes ſeveral weeks. See Weather.

Hence we may account for many of the phænomena of the weather; *e. gr.* why a cold is always a wet ſummer; and a warm, a dry one? becauſe the principle of precipitation is had in the one caſe, and wanting in the other.

Why we have ordinarily moſt *rain* about the equinoxes? becauſe the vapours ariſe more plentifully than ordinarily in the ſpring, as the earth becomes looſened from the brumal conſtipations; and becauſe as the ſun recedes from us in autumn; the cold increaſing, the vapours that had lingered above during the ſummer heats, are now diſpatched down, &c.

Why a ſettled, thick, cloſe ſky ſcarce ever *rains* till it have been firſt clear? becauſe the equally diffuſed vapours muſt firſt be condenſed, and congregated into ſeparate clouds, to lay the foundations of *rain*; by which means the reſt of the face of heaven is left open, and pervious to the rays of the ſun, *&c.* See WEATHER.

For other phænomena of *rain*, as they relate to the weather-glaſs, ſee BAROMETER.

As to the *quantity of rain* that falls; it's proportion in ſeveral places at the ſame time, and in the ſame place at ſeveral times, we have ſtore of obſervations, journals, *&c.* in the Memoirs of the French academy, the Philoſ. Tranſ. &c. an idea whereof will not be unacceptable.

Upon meaſuring, then, the *rain* falling yearly; it's depth, at a medium, is found as in the following table:

Depth of RAIN *falling yearly, and it's proportion in ſeveral places.*

	Inches.
At Townley in Lancaſhire, obſerved by Mr. Townley	$42\frac{1}{2}$
Upminſter in Eſſex, by Mr Derham, - - -	$19\frac{1}{4}$
Zurich in Switzerland, by Dr. Scheuchzer, - -	$32\frac{1}{4}$
Piſa in Italy, by Dr. Mich. Ang. Tilli, - -	$43\frac{1}{4}$
Paris in France, by M. de la Hire, - - -	19
Liſle in Flanders, by M. de Vauban. - - -	24

Proportions of the RAIN *of ſeveral years to one another.*

	At Upminſter.		At Paris.	
1700	19 Inch.	03 Cent.	21 Inch.	38 Cent.
1701	18	69	27	78
1702	20	38	17	42
1703	23	99	18	51
1704	15	81	21	20
1705	16	93	14	82

Proportion of the RAIN *of the ſeveral ſeaſons to one another.*

1708	Depth at *Piſa.* Inch.	Depth at *Upminſt.* Inch.	Depth at *Zurich.* Inch.	1708	Depth at *Piſa.* Inch.	Depth at *Upminſt.* Inch.	Depth at *Zurich.* Inch.
Jan.	6 41	2 88	1 64	*Jul.*	0 00	1 11	3 50
Febr.	3 28	0 46	1 65	*Aug.*	2 27	2 94	3 15
Mar.	2 65	2 03	1 51	*Sept.*	7 21	1 46	3 02
Apr.	1 25	0 96	4 69	*Oct.*	5 33	0 23	2 24
May.	3 33	0 02	1 91	*Nov.*	0 13	0 86	0 62
Jun.	4 90	2 32	5 91	*Dec.*	0 00	11 97	2 62
Half-year.	28 82	10 67	17 31	Half-year.	14 94	8 57	15 35

Præternatural-RAINS, or *ſhowers*, as *of blood*, &c. are very frequent in our annals, and even natural hiſtories; yet if ſtrictly pried into, will be all found other things than *rain*.

Bloody rains, Dr Merret obſerves, are, certainly, nothing elſe but the excrements of inſects.—Accordingly, Gaſſendus gives an inſtance of a bloody *rain* in France, which terrified the people; but which Peireſc found to be only red drops coming from a ſort of butterfly that flew about in great numbers, as he concluded from ſeeing ſuch red drops come from them, from the drops not being laid on buildings or the outer ſurfaces of ſtones, *&c.* but in cavities and holes, and from thoſe walls only being tinged therewith that were next the fields, not thoſe in the ſtreets, and the former only to a little height, ſuch as butterflies are uſed to fly to.

The ſame Dr. Merret adds, that it is moſt evident the *rains of wheat* are nothing but ivy-berries, ſwallowed by the ſtarling, and again caſt forth by ſtool—An inſtance of ſuch a *rain* we have in the Philoſ. Tranſ. from the country about Briſtol, by Mr W. Cole; who, upon examining the drops, found them to be the ſeeds of ivy-berries, blown down by fierce winds from towers, churches, chimneys, walls, *&c.* where they had been left by birds, chiefly ſtarlings and choughs.

The French have a tradition of a *rain of ſtones*, in a plain ſix or ſeven leagues long between Arles and Marſeilles, called *la Crau*, which is now quite covered therewith—The fable has it, that Hercules in his engagement with Albion and Bregion, in favour of Neptune; wanting darts, was aſſiſted by Jupiter with a ſhower of theſe ſtones, ſeen to this day—Another account of their origin, ſee under the article STONE.

Freezing RAIN. See the article FREEZING.

RAINS, in the ſea language, denotes all that tract of ſea to the northward of the equator, between 4 and 10 degrees of latitude; and lying between the meridian of Cape Verde, and that of the eaſtermoſt iſlands of the ſame name.

It takes it's name from the almoſt continual calms, conſtant *rains*, and thunder and lightning to a great degree, found there. The winds, when they do blow, are only ſmall uncertain guſts, and ſhift about all round the compaſs; ſo that ſhips are ſometimes here detained a long while, and can make but little way. See WIND, *&c.*

RAIN-BOW, IRIS, or ſimply the *Bow*, a meteor in form of a party-coloured arch or ſemicircle, exhibited in a rainy skie, oppoſite to the ſun; by the refraction of his rays in the drops of falling rain. See METEOR, RAIN, and REFRACTION.

There is alſo a ſecondary or fainter *bow*, uſually ſeen inveſting the former, at ſome diſtance; and among naturaliſts we read of *lunar rainbows*, *marine rainbows*, &c.

The *rainbow*, Sir Iſaac Newton obſerves, never appears but where it rains in the ſun-ſhine; and may be repreſented artificially, by contriving water to fall in little drops like rain, through which the ſun ſhining, exhibits a *bow* to a ſpectator placed between the ſun and the drops; eſpecially if a dark body, *e. gr.* a black cloth be diſpoſed beyond the drops.

Anton. de Dominis firſt accounted for the *rainbow*, in 1611: he explained at large how it was formed, by refraction and reflection of the ſun-beams in ſpherical drops of water; and confirmed his explications by experiments made with glaſs globes, *&c.* full of water. Wherein he was followed by Des Cartes, who mended and improved on his account: but as they were both in the dark as to the true origin of colours, their explications are defective, and in ſome things erroneous; which it is one of the glories of the Newtonian doctrine of colours, to ſupply and correct.

Theory of the RAIN-BOW—To conceive the origin of the *rainbow*, let us conſider what will befall rays of light coming from a very remote body, *e. gr.* the ſun; and falling on a globe of water, ſuch as we know a drop of rain to be.

Suppoſe then A D K N (*Tab. Optics*, *fig.* 45.) to be a drop of rain, and the lines E F, B A, O N, to be rays of light coming from the centre of the Sun; which, by reaſon of the immenſe diſtance of the Sun, we conceive to be parallel. See *Parallel* RAY.

Now the ray B A being the only one that falls perpendicularly on the ſurface of the water; and all the reſt obliquely; it is eaſily inferred that all the other rays will be refracted towards the perpendicular. See REFRACTION.

Thus the ray E F, and others accompanying it, will not go on ſtrait to G; but as they arrive at H I, deflect from F to K, where ſome of them, probably, eſcaping into the air, the reſt are reflected upon the line K N, ſo as to make the angles of incidence and reflexion equal. See REFLECTION.

Farther, as the ray K N, and thoſe accompanying it, fall obliquely upon the ſurface of the globule; they cannot paſs out into the air, without being refracted, ſo as to recede from the perpendicular L M; and therefore will not proceed ſtrait to Y, but deflect to P.

It may be here obſerved, that ſome of the rays arriving at N, do not paſs out into the air, but are again reflected to Q: where being refracted like the reſt, they do not proceed right to Z, but declining from the perpendicular T V, are carried to R: but ſince we here only regard the rays as they may affect the eye placed a little below the drop, *e. gr.* at P, thoſe which deflect from N to Q, we ſet aſide as uſeleſs, becauſe they never come at the eye. On the contrary, it is to be obſerved, that there are other rays, as 2, 3, and the like; which being reflected from 3 to 4, thence to 5, and from 5 to 6 may at length arrive at the eye placed beneath the drop.

Thus much is obvious: but to determine preciſely the quantities of refraction of each ray, there muſt be a calculation; by ſuch calculation it appears that the rays which fall on the quadrant A D, are continued in lines, like thoſe here drawn in the drop A D K N; wherein there are three things very conſiderable: *Firſt*, That the two refractions of the rays in their ingreſs and egreſs are both the ſame way, ſo that the latter does not deſtroy the effect of the former. *Secondly*, That of all the rays paſſing out of A N; N P, and thoſe adjoining to it, are the only ones capable of affecting the ſenſe; as being ſufficiently cloſe or contiguous; and becauſe coming out parallel: whereas the reſt are divaricated, and diſperſed too far to have any ſenſible effect, at leaſt to produce any thing ſo vivid as the colours of the bow. *Thirdly*, That the ray N P has ſhade or darkneſs under it: for ſince there is no ray comes out of the ſurface N 4, it is the ſame thing as if the part were covered with an opake body. We might add, that the ſame ray N P has darkneſs above it; ſince the rays that are above it are ineffectual; and ſignify no more than if there were none at all.

Add to theſe, that all the effectual rays have the ſame point of reflection, *i. e.* the parallel and contiguous rays, which alone are effectual after refraction, will all meet in the ſame point of the circumference; and be reflected thence to the eye.

Farther it appears by calculation, that the angle O N P, included between the ray N P, and the line O N drawn from the centre of the ſun, which is the angle whereby the *rainbow* is diſtant from the oppoſite point of the ſun, and which makes the *ſemidiameter of the bow*; contains 41°, 30′. The method of determining it ſee hereafter.

But ſince beſide thoſe rays coming from the centre of the ſun to the drop of water, there are many more from the ſeveral points of it's ſurface; there are a great many other effectual rays to be conſidered; eſpecially that from the uppermoſt, and that from the loweſt part of the ſun's body.

Since then, the apparent diameter of the ſun is about 16 ſeconds, It follows that an effectual ray from the upper part of the ſun will fall higher than the ray E F, by 16 ſeconds: this does the ray G H, (*fig.* 46.) which being refracted as much as E F; deflects to I, thence to L, and at length emerging equally refracted with the ray N P, proceeds to M; and makes an angle O N M, of 41°, 14′, with the line O N.

In like manner the effectual ray Q R coming from the loweſt part of the ſun, falls on the point R, 16 minutes lower than the point F, on which the ray E F falls; and being refracted declines to S; whence it is reflected to T; where emerging into the air, it proceeds to V; ſo, as the line T V, and the ray O T contain an angle of 41° and 46′.

Again, upon computing the deflexions of the rays, which, like that 23 (*Fig.* 45.) coming from the centre of the ſun, and being received into the lower part of the drop, we have ſuppoſed to be twice reflected, and twice refracted, and to enter the eye by lines like that 67 (*Fig.* 47.); we find that which may be accounted effectual, as 67, with the line 86 drawn from the centre of the ſun, contains an angle 867, of about 52 degrees: whence it follows that the effectual ray from the higheſt part of the ſun, with the ſame line 86 includes an angle leſs by 16 minutes; and that from the loweſt part of the ſun, an angle greater by 16 minutes.

Thus, ſince A B C D E F is the path of the efficacious ray from the higheſt part of the ſun to the eye in F; the angle 86 F becomes of about fifty one degrees, and forty four minutes. In like manner, ſince G H I K L M is the way of an effectual ray from the loweſt part of the ſun to the eye, the angle 86 M becomes nearly of fifty two degrees, and ſixteen minutes.

Since then we admit ſeveral rays to be effectual, beſide thoſe from the centre of the ſun; what we have ſaid of the *ſhade* will need ſome alteration: for of the three rays deſcribed (*Fig.* 45 and 46.) only the two extreme ones will have a ſhadow joined to them, and that only on the outer ſide. Hence it is evident that theſe rays are perfectly diſpoſed to exhibit all the colours of the priſm.

For the great quantity of denſe or intenſe light, *i. e.* the bundle of rays collected together in a certain point, *v. gr.* in the point of reflection of the effectual rays, may be accounted as a lucid or radiant body, terminated all around by *ſhade*. But the ſeveral rays thus emitted to the eye are both of different colours, that is, fitted to excite in us the ideas of different colours, and are differently refracted out of the water into air, notwithſtanding their falling alike upon the refracting ſurface. See C O L O U R, *&c.*

Hence it follows that the different or heterogeneous rays will be ſeparated from one another, and will tend ſeparate ways; and the homogeneous rays will be collected, and tend the ſame way: And therefore this lucid point of the drop, wherein the refraction is effected, will appear fringed, or bordered with ſeveral colours; that is, *red*, *green* and *blue* colours will ariſe from the extremes of the red, green and blue rays of the ſun tranſmitted to the eye from ſeveral drops one higher than another; after the ſame manner as is done in viewing lucid, or other bodies through a priſm. See P R I S M.

Thus, adds Sir Iſaac Newton, the rays that differ in refrangibility, will emerge at different angles; and conſequently, according to their different degrees of refrangibility, emerging moſt copiouſly at different angles, will exhibit different colours in different places. See R E F R A N G I B I L I T Y.

A great number then of theſe little globules being diffuſed in the air, will fill the whole ſpace with theſe different colours; provided they be ſo diſpoſed as that effectual rays may come from them to the eye; and thus will the *rainbow* at length ariſe.

Now to determine what that *diſpoſition* muſt be; ſuppoſe a right line drawn, from the centre of the ſun through the eye of the ſpectator, as the line V X, (*Fig.* 46.) called the *line of aſpect*: being drawn from ſo remote a point, it may be eſteemed parallel to all other lines drawn from the ſame point: but a right line falling on two parallels makes the alternate angles. See A L T E R N A T E.

If, then, an indefinite number of lines be imagined drawn from the ſpectator's eye to a part oppoſite to the ſun where it rains; which lines make different angles with the line of aſpect, equal to the angles of refraction of the differently refrangible rays, *e. gr.* angles of 41°, 46′, and of 41°, 30′, and of 41°, and 40′. Theſe lines falling on drops of rain illumined by the ſun, will make angles of the ſame magnitude with rays drawn from the centre of the ſun to the ſame drops. And therefore the lines thus drawn from the eye will repreſent the effectual rays that occaſion the ſenſation of any colour.

That, *e. gr.* making an angle of 41°, 46′, repreſenting the leaſt refrangible or red rays of the ſeveral drops, and of 41°, 40′, the moſt refrangible or violet rays: the intermediate colours and refrangibilities will be found in the intermediate ſpace. See R E D, *&c.*

Now, it is known that the eye being placed in the vertex of a cone, ſees objects upon it's ſurface as if they were in a circle; and the eye of our ſpectator is here in the common vertex of ſeveral cones, formed by the ſeveral kinds of efficacious rays, with the line of aſpect. And in the ſurface of that whoſe angle at the vertex or eye is the greateſt, and wherein the others are included, are thoſe drops or parts of drops which appear red; and in the ſurface of that cone whoſe angle is leaſt, are the purple drops: and in the intermediate cones are the green, blue, *&c.* drops. Hence then ſeveral kinds of the drops muſt appear as if diſpoſed into ſo many circular coloured faſciæ or arches, as we ſee in the *rainbow*.

This part of the ſolution Sir Iſaac Newton expreſſes more artfully thus: ſuppoſe O (*Fig.* 48.) the eye, and O P a line parallel to the ſun's rays, and let P O E, P O F be angles of 40°, 17′, and 42°, 2′. And ſuppoſe the angles to turn about their common ſide O P, with their other ſides O E and O F, they will deſcribe the bounds or verges of the *rainbow*.

For, if E, F be drops placed any where in the conical ſurface deſcribed by O E, O F; and be illuminated by the ſun's rays S E, S F; the angle S E O being equal to the angle P O E or 40°, 17′, ſhall be the greateſt angle in which the moſt refrangible rays can, after reflection, be refracted to the eye; and therefore all the drops in the line O E ſhall ſend the moſt refrangible rays moſt copiouſly to the eye, and thereby ſtrike the ſenſes with the deepeſt violet colour in that region.

And in like manner the angle S F O being = to the angle P O F = 42°, 2′, ſhall be the greateſt, in which the leaſt refrangible rays after one reflection can emerge out of the drops; and theſe rays ſhall come moſt copiouſly to the eye, from the drops in the line O F, and ſtrike the ſenſes with the deepeſt red colour in that region.

And by the ſame argument the rays, which have intermediate degrees of refrangibility, ſhall come moſt copiouſly from drops between E and F, and ſo ſtrike the ſenſes with the intermediate colours, in the order which their degrees of refrangibility require; that is, in the progreſs from E to F, or from the inſide of the bow to the outſide, in this order, *violet*, *indico*, *blue*, *green*, *yellow*, *orange*, *red*: though the violet, by the mixture of the white light of the clouds, will appear faint, and incline to a purple.

And ſince the lines O E, O F may be ſituated any where in the abovementioned conical ſurface; what is ſaid of the drops and colours in theſe lines is to be underſtood of the drops and colours throughout the whole ſuperficies. Thus is the *primary* or *inner bow* formed.

Secundary, or *outer* R A I N-B O W—As to the ſecundary or fainter *bow* uſually ſurrounding the former; in aſſigning what drops would appear coloured, we excluded ſuch as lines drawn from the eye, making angles a little greater than 42°, 2′, ſhould fall upon; but not ſuch as ſhould contain angles much greater.

For, if an indefinite number or ſuch lines be drawn from the ſpectator's eye, ſome whereof make angles of 50°, 57′, with the line of aſpect; *e. gr.* O G; other angles of 54°, 7′, *e. gr.* O H; thoſe drops whereon theſe lines fall, muſt of neceſſity exhibit colours. Particularly thoſe of 50°, 57′.

E gr. the drop G will appear red; the line G O being the ſame with an effectual ray, which after two reflections and two refractions, exhibits a red colour. Again, thoſe drops which receive lines of 54°, 7′, *e. gr.* the drop H will appear purple, the line O H being the ſame with an effectual ray which after two reflections, and two refractions, exhibits purple.

Now there being a ſufficient number of theſe drops, it is evident there muſt be a *ſecond rainbow*, formed after the like manner as the firſt.

Thus Sir Iſaac Newton: in the leaſt refrangible rays, the leaſt angle at which a drop can ſend effectual rays after two reflections, is found by computation to be 50°, 57′, and in the moſt refrangible the leaſt angle is found 54°, 7′.

Suppoſe, then, O the place of the eye, as before, and P O G, P O H to be angles of 50°, 57′, and 54°, 7′. And theſe angles to be turned about their common ſide O P; with their other ſides O G, O H, they will deſcribe the verges or borders of the *rainbow*, C H D G.

For if G H be drops placed any where in the conical ſuperficies deſcribed by O G, O H, and be illuminated by the ſun's rays; the angle S G O being equal to the angle P O G or 50°, 57′, ſhall be the leaſt angle, in which the then leaſt refrangible rays, can, after two reflections, emerge out of the drops; and therefore the leaſt refrangible rays ſhall come moſt copiouſly to the eye from the drops in the line O G, and ſtrike the ſenſes with the deepeſt red in that region.

And the angle S H O being equal to P O H, 54°, 7′, ſhall be the leaſt angle in which the moſt refrangible rays, after two reflections, can emerge out of the drops; and therefore thoſe rays ſhall come moſt copiouſly to the eye from the drops in the line O H, and ſo ſtrike the ſenſes with the deepeſt violet in that region.

And by the ſame argument, the drops in the region between G and H, ſhall ſtrike the ſenſes with the intermediate colours, in the order which their degrees of refrangibility require; that is, in the progreſs from G to H, or from the inſide of the bow to the outer, in this order: *red, orange, yellow, green, blue, indico, violet.*

And ſince the lines O G, O H, may be ſituated any where in the conical ſurface; what is ſaid of the drops and colours in theſe lines, is to be underſtood of the drops and colours every where in theſe ſuperficies.

Thus are formed two bows, an *interior* and ſtronger, by one reflection; and an *exterior* and fainter by two; the light becoming weaker and weaker by every reflection.

Their colours will lie in a contrary order to one another; the firſt having the red without, and the purple within; and the ſecond the purple without and red within; and ſo of the reſt.

Artificial RAIN-BOW—This doctrine of the *rainbow* is confirmed by an eaſy experiment: for upon hanging up a glaſs globe full of water in the ſun-ſhine, and viewing it in ſuch a poſture as that the rays which come from the globe to the eye, may, with the ſun's rays include an angle either of 42°, or 50°; if *e. gr.* the angle be about 42°, the ſpectator, ſuppoſed at O, will ſee a full red colour in that ſide of the globe oppoſite to the ſun, as at F. And if that angle be made a little leſs, ſuppoſe by depreſſing the globule to E, the other colours, yellow, blue and green, will appear ſucceſſively, in the ſame ſide of the globe, alſo exceedingly bright.

But if the angle be made about 50°, ſuppoſe by raiſing the globule G, there will appear a red colour in that ſide of the globe towards the ſun; though that ſomewhat faint; and if the angle be made greater, ſuppoſe by raiſing the globe to H; the red will change ſucceſſively to the other colours, yellow, green, and blue.

The ſame thing is obſerved in letting the globe reſt, and raiſing, or depreſſing the eye to make the angle of a juſt magnitude.

Dimenſion of the RAIN-BOW—Des Cartes firſt determined it's diameter by a tentative, and indirect method; laying it down that the magnitude of the bow depends on the degree of refraction of the fluid; and aſſuming the ratio of the ſine of incidence to that of refraction, to be in water as 250 to 187. See REFRACTION.

But Dr. Halley has ſince, in the *Philoſoph. Tranſ.* given us a ſimple, direct method of determining the diameter of the *rainbow* from the ratio of refraction of the fluid being given; or *vice verſa*, the diameter of the *rainbow* being given, to determine the refractive power of the fluid. The praxis is as follows.

Firſt, *The ratio of refraction being given; to find the angles of incidence, and refraction of a ray which becomes effectual after any given number of reflections*—Suppoſe any given line as A C (*Tab. Optics, Fig.* 49.) which divide in D; ſo, as that A C be to A D in the ratio of refraction; and again divide it in E, ſo as A C be to A E as the given number of reflections increaſed by unity, is to unity; with the diameter C E deſcribe a ſemicircle C B E, and from the centre A with the radius A D deſcribe an arch D B interſecting the ſemicircle in B. Then drawing A B, C B; A B C or it's complement to two right angles, will be the angle of incidence; and A C B the angle of refraction required.

Secondly, *The ratio of refraction, and any angle of incidence being given to find the angle which a ray of light emerging out of a refracting ſphere, after a given number of reflections, makes with the line of aſpect, or an incident ray; and conſequently to find the diameter of the rainbow*—The angle of incidence, and the ratio of refraction being given, the angle of refraction is given; which angle being multiplied by double the number of reflections increaſed by 2, and double the angle of incidence ſubſtracted from the product, the angle remaining is the angle ſought.

Thus ſuppoſing, the ratio of refraction to be, as Sir Iſaac Newton has determined it, *viz.* as 108 to 81, in the red rays, as 109 to 81 for the blue rays, *&c.* the preceeding problem will give the diſtance of the colours in the

I. RAIN-BOW,	Red	42°	11′	The ſpectator's back being turned to the ſun.
	Violet	40	16	
II. RAIN-BOW,	Red	50	58	
	Violet	54	9	

If the angle made by a ray after three or four reflections, were required, and therefore the diameters of the third and fourth *rainbow*, (which are ſcarce ever ſeen, by reaſon of the great diminution of the rays, by ſo many repeated reflections) they will be found,

III. RAIN-BOW,	Red	41°	37′	The ſpectator being turned towards the ſun.
	Violet	37	9	
IV. RAIN-BOW,	Red	43	52	
	Violet	49	34	

Hence, the *breadth of the rainbows* is eaſily found: for the greateſt ſemidiameter of the firſt bow, *i. e.* from red to red being 42°, 1′, and the leaſt, *viz.* from violet to violet 40°, 16′; the breadth of the *faſcia* or *bow*, meaſured a-croſs from red to violet will be 1°, 45′, and the greateſt diameter of the ſecond bow being 54°, 9′, and the leaſt 50°, 58′ the breadth of the *faſcia* will be 3°, 10′. And hence the diſtance between the two will be found 8°, 15′.

In theſe meaſures the ſun is only eſteemed a point; wherefore as his diameter is really about 30′ ſo much muſt be added to the breadth of each *faſcia* or *bow*, from red to violet, and ſo much be ſubſtracted from the diſtance between them. This will leave the breadth of the *primary bow*, 2°, 15′, that of the *ſecondary bow* 3°, 40′, and the interval between the bows 8°, 25′; which dimenſions deduced by calculation, Sir Iſaac Newton aſſures us from his own obſervations, agree very exactly with thoſe found by actual menſuration in the heavens.

Particular phænomena of the RAIN-BOW—from this theory of the *rainbow*, all the particular phænomena are eaſily deduced: hence we ſee why the Iris is always of the ſame breadth; by reaſon the intermediate degrees of refrangibility of the rays between red and violet, which are it's extreme colours, are always the ſame.

Secondly, Why it is more diſtinctly terminated on the ſide of the red, than on that of the violet? there being no efficacious rays in the ſpace adjoining to the red drops, *i. e.* to the ſpace between the bows; whence it terminates abruptly; whereas in the ſpace on the ſide of the violet ones there are ſome rays emitted to the eye, which though too feeble to affect it ſtrongly, yet have this effect, that they ſoften the violet edge inſenſibly, ſo that it is difficult to determine preciſely where it terminates.

Thirdly, Why the *bow* ſhifts it's ſituation as the eye does; and, as the popular phraſe has it, *flies thoſe who follow it, and follows thoſe that fly it?* the coloured drops being diſpoſed under a certain angle about the line of aſpect, which is different in different places: whence, alſo, it follows that every different ſpectator ſees a different bow.

Fourthly, Why the bow is ſometimes a larger portion of a circle, ſometimes a leſs? it's magnitude depending on the greater, or leſs part of the ſurface of the cone, above the ſurface of the earth at the time of it's appearance; and that part being greater or leſs as the line of aſpect is more inclined or oblique to the ſurface of the earth; which inclination, or obliquity, is greater as the ſun is higher: whence, alſo, the higher the ſun, the leſs the *rainbow*.

Fifthly, Why the bow never appears when the ſun is above a certain altitude? the ſurface of the cone wherein it ſhould be ſeen, being loſt in the ground, at a little diſtance from the eye, when the ſun is above 42° high.

Sixthly, Why the bow never appears greater than a ſemicircle, on a plane? ſince be the ſun never ſo low, and even in the horizon; the centre of the bow is ſtill in the line of aſpect; which, in this caſe, runs along the earth, and is not at all raiſed above the ſurface.

Indeed, if the ſpectator be placed on a very conſiderable eminence, and the ſun in the horizon; the line of aſpect wherein the centre of the bow is, will be notably raiſed above the horizon, (conſidering the magnitude of the circle whereof the bow uſes to be a part.) Nay, if the eminence be very high, and the rain near, it is poſſible the bow may be an entire circle.

Seventhly, How the bow may chance to appear inverted, *i. e.* the concave ſide be turned upwards? to wit, a cloud happening to intercept the rays, and prevent their ſhining on the upper part of the arch: in which caſe only the lower part appearing, the bow will ſeem as if turned upſide down: which probably has been the caſe in ſeveral prodigies of this kind, related by authors.

Indeed the bow may appear inverted from another cauſe: for, if, when the ſun is 41°, 46′ high, his rays fall upon the ſmooth ſurface of ſome ſpacious lake, in the middle whereof a ſpectator is placed; and if at the ſame time there be rain falling to which the rays may be reflected from the lake: it will be the ſame as if the ſun ſhould ſhine below the horizon, and the line of view be extended upwards: thus the ſurface of the cone wherein the coloured drops are to be placed, will be wholly above the ſurface of the earth. But ſince the upper part will fall among the unbroken clouds, and only the lower part be found among the drops of rain, the arch will be inverted.

Eighthly, Why the bow ſometimes appears inclined? the accurate roundneſs of the bow depending on it's great diſtance, which prevents us from judging of it exactly: if the rain which exhibits it, chance to be much nearer, we ſhall ſee it's irregularities; and if the wind in that caſe drive the rain ſo as the higher part be farther from the eye than the lower, the bow will appear inclined.

Ninthly, Why the legs of the *rainbow* ſometimes appear unequally diſtant? If the rain terminate on the ſide of the ſpectator, in a plane ſo inclined to the line of aſpect as to make an acute angle on the left hand, and an obtuſe angle on the right; the ſurface of the cone which determines what drops will appear, will fall upon them in ſuch manner as that thoſe on the left hand, will appear farther from the eye than thoſe on the right. For the line of aſpect being perpendicular to the plane of the bow, if you ſuppoſe two rectangular triangles, a right and left, the cathetus of each to be the line of view, and the baſe of the ſemidiameter of the bow, inclined as above: it is evident, ſince thoſe angles of the triangles, next the eye, muſt always be the ſame, (*viz.* 43° in the inner bow) the baſis of the right-hand triangle will appear much longer than that of the left.

Lunar **Rain-Bow**—The moon, ſometimes, alſo, exhibits the phænomenon of an Iris, or bow; by the refraction of her rays in the drops of rain in the night-time. See Moon.

Ariſtotle ſays, he was the firſt that ever obſerved it; and adds that it never happens, *i. e.* is never viſible, but at the time of the full moon; her light at other times being too faint to affect the ſight after two refractions, and one reflection.

The lunar Iris has all the colours of the ſolar, very diſtinct and pleaſant; only faint, in compariſon of the other; both from the different intenſity of the rays, and the different diſpoſition of the medium.

In that mentioned *Philoſ. Tranſact.* N°. 331. Mr. Thoresby obſerves, the largeneſs of the arch was not ſo much leſs than that of the ſun, as the different dimenſions of their bodies, and their diſtances from the earth ſhould ſeem to require: but, as to it's intireneſs and the beauty of it's colour, it was admirable. It continued about 10 minutes before the interpoſition of a cloud hindered it's obſervation.

Marine **Rain-Bow**—The *marine* or *ſea-bow*, is a phænomenon ſometimes obſerved in a much agitated ſea; when the wind ſweeping part of the tops of the waves, carries them aloft; ſo that the ſun's ray falling upon them, are refracted, *&c.* as in a common ſhower; and paint the colours of the bow.

F. Bourzes, in the *Philoſ. Tranſact.* obſerves, that the colours of the marine *rainbow* are leſs lively, diſtinct, and of leſs duration than thoſe of the common bow; that there are ſcarce above two colours diſtinguiſhable, a dark yellow on the ſide next the ſun, and a pale green on the oppoſite ſide.

But theſe bows exceed as to number, there being ſometimes 20 or 30 ſeen together: they appear at noon-day, and in a poſition oppoſite to that of the common bow, *i. e.* the concave ſide is turned upwards, as, indeed, it is neceſſary it ſhould be, from what we have ſhewn in accounting for the phænomena of the ſolar bow.

To this claſs of bows may be referred a kind of *white colourleſs rainbows*, which Mentzelius, and others, affirm to have ſeen at noon-day. M. Mariotte in his fourth *Eſſai de Phyſique*, ſays, theſe bows are formed in miſts, as the others are in ſhowers; and adds, that he has ſeen ſeveral both after ſun-riſing, and in the night.

The want of colours he attributes to the ſmallneſs of the vapours which compoſe the miſt: we ſhould rather account for it from the exceeding tenuity of the little *viſiculæ* of the vapour; which being in effect only little watery pellicles bloated with air, the rays of light undergo but little refraction in paſſing out of air into them; too little to ſeparate the differently coloured rays, *&c.*

Hence the rays are reflected from them, compounded as they came, that is, white. See Refraction.

Rohault mentions coloured *rainbows* on the graſs; formed by the refractions of the ſun's rays in the morning dew. *Trait. de Phyſ.*

RAIN-*water.* See the article Water.

RAISED-*airs.* } See the articles { Air.
Raised-*plan.* } { Plan.

RAISER, in building, a board ſet on-edge under the fore-ſide of a ſtep, a ſtair, *&c.* See Stair, *&c.*

RAISING, in the manage, one of the three actions of a horſe's legs; the other two being the ſtay, and the tread. ſee Air, *&c.*

The *raiſing* or lifting up of his leg in caprioles, curvets, *&c.* is eſteemed good, if he perform it hardily and with eaſe; not croſſing his legs, nor carrying his feet too much out or in; yet bending his knees as much as is needful.

Raising-*pieces*, or **Reason**-*pieces*, in architecture, are pieces that lie under the beams, and over the poſts or puncheons.

RAISINS, grapes prepared by drying them in the ſun, or the air; to fit them for keeping, and for ſome medicinal purpoſes. See Currants.

Of theſe there are various kinds: as, *raiſins* of Damaſcus, thus called from the capital city of Syria, in the neighbourhood whereof they are cultivated. They are much uſed in the compoſition of ptiſans, together with jujubes and dates; are brought flat and ſeeded, of the ſize of the thumb; whence it is eaſy judging of the extraordinary bulk of the grape, when freſh. Travellers tell us of bunches weighing 25 pounds. Their taſte is faintiſh and diſagreeable.

Raiſins of the ſun, are a kind of *raiſins* brought from Spain, of a reddiſh or blueiſh colour, ſeeded, very agreeable to eat.

There are various other ſorts, denominated from the place where they grow, or the kind of grape, *&c.* as *raiſins* of Calabria, Muſcadine *raiſins*, &c.

RAITING, or **Rating**, the laying of hemp, flax, timber, *&c.* when green, in a pond or running water, to ſeaſon and diſpoſe it for future uſe.

RAKE, of a ſhip, is ſo much over her hull as over-hangs at both ends of her keel. See Over-Rake.

That part of it which is before, is called the *rake forward on*: and that part which is at the ſetting on of the ſtern poſt, is called her *rake-aft*, or *aft-ward on.*

When a ſhip hath but a ſmall *rake* forward on, but is built with her ſtern too ſtraight up, ſhe is called *bluffe-headed.*

Rake of the rudder, is the hindermoſt part of it. See Rudder.

Rake, among hunters. See the article Rag.

RAKING, of a horſe, is the drawing his ordure with the hand out of the fundament, when he is coſtive and cannot dung. In order to this the hand muſt be anointed with fallet-oyl or butter.

A horſe is alſo ſaid to *rake*, when being ſhoulder-ſplaid, or having ſtrained his fore-quarters, he goes ſo lame as to drag one of his fore-legs in a circle.

Raking-*table*, or **Raked** *table*, among architects, a member hollowed in the ſquare of a pedeſtal, or elſewhere. See Cavetto, Scotia, *&c.*

RALLYING, in war, the re-aſſembling, or calling together of troops broken, routed, and put to flight.

RAM, in aſtronomy. } See the article Aries.
Battering **Ram.** }

RAMADAN, a ſort of lent obſerved by the Mahometans; during which they faſt the whole day, with ſuch extreme ſuperſtition, that they dare not waſh their mouth, nor even ſwallow their ſpittle. See Lent and Fasting.

The men indeed are allowed to bathe themſelves; but it is on condition they do not plunge the head under water, leſt ſome drops enter by the mouth or ears, *&c.*—But for the women they are ſtrictly forbid bathing, for fear of taking in water at the pudendum—To make amends, they feaſt all night; and uſually ſpend more this month than in ſix others.

RAMAGE, a term uſed for the Boughs or branches of trees. See Branch, *&c.* Hence,

Ramage *hawk*, or *falcon*, one that is wild and coy, as having been long among the boughs, preying for itſelf.

All falcons retain this name till they have left the aery; being ſo called in May, June, July, and Auguſt—Theſe are very rarely reclaimed. See Hawk, and Falcon.

Ramage-*velvet.* See the article Velvet.

RAMIFICATION, the production of boughs or branches; or of figures reſembling branches. See Branch.

Ramifications, in anatomy, are the diviſions of the arteries, veins, and nerves, ariſing from ſome common trunk—See *Tab. Anat.* (*Angeiol.*) *fig.* 1. *n.* 18. 18. *fig.* 4. *fig.* 5. See alſo Artery, Vein, and Nerve.

RAMMER, or **Beetle**, an inſtrument for driving down ſtones or piles into the ground; or for beating the earth, and making it more ſolid for a foundation. See Foundation.

Rammer *of a gun*, the *gun-ſtick*; a rod or ſtaff uſed in charging a gun, to drive home the powder to the breech, as alſo the ſhot, and the wad, which keeps the ſhot from rolling out. See Charge.

The rammer of a great gun has a round piece of wood at one end; the other is uſually rolled in a piece of ſheep-skin, fitted to the bore of the piece, in order to clear her after ſhe has been diſcharged: which they call *ſpunging the piece.* See Spunge, and Spunging.

RAMPANT*, in heraldry, is applied to a lion, bear, leopard, or other beaſt, in a poſture of climbing, or ſtanding upright on his hind-legs, and rearing up his fore-feet; ſhewing only half his face, as one eye and one ear.

* The term is french, and ſignifies litterally, *creeping.*

It is different from *ſaliant*, which denotes a poſture leſs erect, or ſomewhat ſtooping forwards, as if making a ſally.

This poſture is to be ſpecified in blazoning in all animals, except in the lion and griffon; it being their natural ſituation.

RAMPART*, or **Rampier**, in fortification, a maſſy bank, or elevation of earth raiſed about the body of a place, to cover it from the great ſhot; and formed into baſtions, curtins, *&c.*—See *Tab. Fort. fig.* 21. *lit. rr.* See alſo Forteress, Wall, Bastion, *&c.*

* The word is formed from the Spaniſh *Amparo*, defence, covering.

Upon the *rampart* the ſoldiers continually keep guard, and pieces of artillery are planted for the defence of the place—Hence, to ſhelter the guard from the enemies ſhot, the outſide of the *rampart* is built higher than the inſide, *i. e.* a parapet is raiſed upon it with a platform. See Parapet, and Platform--Hence, alſo, earth not being capable to be raiſed perpendicularly, like ſtone; the *rampart* is built with a talus or ſlope, both on the inner and outer-ſide. See Talus. The *rampart* is ſometimes lined, *i. e.* fortified with a ſtone wall within ſide, otherwiſe it has a berme. See Berme—It is incompaſſed with a moat or ditch, out of which the earth that forms the *rampart* is dug. See Ditch.

The height of the *rampart* ſhould not exceed three fathom; this being ſufficient to cover the houſes from the battery of the cannon: neither ought it's thickneſs to be above 10 or 12, unleſs more earth be taken out of the ditch, than can be otherways beſtowed.

The *ramparts* of half-moons are the better for being low; that the ſmall fire of the defendants may the better reach the bottom of the ditch: but yet they muſt be ſo high, as not to be commanded by the covert-way.

RAMPART is alſo uſed in civil architecture, for the ſpace left void between the wall of a city and the next houſes.

This is what the Romans called *pomœrium*, wherein it was forbid to build; and where they planted rows of trees, for the people to walk and amuſe themſelves under.

RAMUS, in anatomy, *&c.* a branch of a greater veſſel. See VESSEL.

RAMUS *anterior* is particularly uſed for a branch of the ſubcutaneous vein, paſſing under the muſcles of the ulna.

Ramus poſterior, denotes a branch of the ſame vein running near the elbow.

RANA. See the article RANULA.

RANCID*, RANCIDUS, denotes a fatty ſubſtance that is become mouldy, or muſty; or that has contracted an ill ſmell, by being kept cloſe. See MOULDINESS.

* The word is particularly underſtood of old ruſty bacon. It comes from the Latin *rancidus*, of *ranceo*, to be rank.

RANDOM-*ſhot*, a ſhot made when the muzzle of a gun is raiſed above the horizontal line, and is not deſigned to ſhoot directly, or point-blank. See GUNNERY.

The utmoſt *random* of any piece is about ten times as far as the bullet will go point-blank; and the bullet will go fartheſt when the piece is mounted to about 45 degrees above the level-range. See RANGE.

The ſpace or diſtance of the *random*, is reckoned from the platform to the place where the ball firſt grazes.

RANFORCE *ring*. See RE-IN-FORCED *ring*.

RANGE, in gunnery, the path of a bullet, or the line it deſcribes, from the mouth of the piece, to the point where it lodges. See GUN, BULLET, RANDOM, *&c.*

If the piece be laid in a line parallel to the horizon, it is called the *right* or *level range*. See HORIZONTAL.

If it be mounted to 45 degrees, the ball is ſaid to have the *utmoſt range*; and ſo proportionably; all others between 00 degrees and 45°, being called the *intermediate ranges*. See GUNNERY, PROJECTILE, RANDOM, *&c.*

Amplitude of the RANGE *of a projectile*. See AMPLITUDE.

RANGER, a ſworn officer of a foreſt, whoſe buſineſs it is to walk daily through his charge, to drive back the deer out of the purlieus or diſaforeſted places, into the foreſt lands; and to preſent all treſpaſſes done in his bailiwick, at the next court held for the foreſt. See FOREST and PURLIEU.

The *ranger* is made by the king's letters, and has a fee paid yearly out of the exchequer, and certain fee-deer—In the charter de foreſta, mention is made of twelve kind of *rangers*.

RANGES, in a ſhip, are two pieces of timber, going a-croſs from ſide to ſide; one aloft, on the fore-caſtle, a little abaft the fore-maſt; and the other in the beak-head before the wouldings of the bow-ſprit.

RANGING, in war, the diſpoſing of troops in a condition proper for engagement, or for marching. See ARMY.

The army was *ranged* in form of battle to receive the enemy; *ranged* in three columns, for a march, *&c.* See LINE, COLUMN, *&c.*

In building, the ſide of a work that runs ſtraight, without breaking into angles, is ſaid to *range*, or *run range*.

RANK, a due order; or a place allotted a thing ſuitably to it's nature, quality, or merit. See ORDER.

Kings are perſons of the firſt *rank* on earth: In cavalcades, proceſſions, *&c.* every perſon is to obſerve his *rank*. See PRECEDENCE.

RANK, in military diſcipline, denotes a ſeries or row of ſoldiers, placed ſide by ſide; a number of which *ranks* form the depth of the ſquadron or battalion, as a number of files does the width. See FILE.

To *cloſe the rank*, is to bring the men nearer: to *open*, to ſet them further a-part.—To *double the ranks*, is to throw two into the ſpace of one, by which the files are thinned.

Rear RANK. See the article REAR.

RANK, in reſpect of ſhips. See RATE.

RANSOM, a ſum of money, paid for the redemption of a perſon out of ſlavery; or for the liberty of a priſoner of war. See REDEMPTION.

In our law-books, *ranſom* is alſo uſed for a ſum paid for the pardoning of ſome notorious crime.

Horn makes this difference between *ranſom* and *amerciament*, that *ranſom* is the redemption of a corporal puniſhment due to any crime. See AMERCEMENT.

When one is to make a fine and *ranſom*, the *ranſom* ſhall be treble the fine. *Crompt. Juſt.*

RANT, in the drama, an extravagant flight of paſſion; overſhooting nature and probability. See PROBABILITY.

Lee's tragedies abound with *rants:* yet the rankeſt, it is obſerved, frequently meet with applauſe on the ſtage.

We find inſtances of *rants*, even in our ſevereſt poets. Such, *e. gr.* is that in the beginning of Ben Johnſon's *Catiline*, where the parricide ſpeaking to Rome, ſays, *I'd plough up rocks, ſteep as the alps, in duſt; and lave the Tyrrhene waters into clouds; but I would reach thy head!*

RANULA, or RANA, in medicine, a tumour under the tongue, which like a ligament hinders a child from ſpeaking, or ſucking.

The Ranula ſub lingua, is ſometimes the ſame with what we popularly call being *tongue-tied:* a defect which is uſually cauſed by a ſhort frænum not permitting the tongue to perform it's proper motions.—Though at other times, there is a ſtrong concretion, or rather impoſthume under the tongue, which is the proper *ranula*, by the Greeks called Βατραχιον.

This impoſthume contains in a bag a matter that is ſometimes œdematous, at other times melicerous, ſcirrhous, black, or livid; in which caſes the operation of cutting is dangerous; and grows to the magnitude of a bean or cheſnut. *Shaw.*

RANULARES, or RANINÆ *venæ*, in anatomy, two veins under the tongue, ariſing from the external jugular, and running on either ſide the linea mediana. See TONGUE.

Theſe veins are opened with good ſucceſs in quinzies.—They take their denomination from a reſemblance of their ſtate to that of little frogs, called in Latin, *ramulæ*, becauſe never out of water.

RAPACIOUS *animals*, in the general, are ſuch as live upon prey. See ANIMAL.

Naturaliſts divide birds into *rapacious*, *carnivorous*, and *frugivorous*. See BIRD.

The characteriſtic notes of *rapacious* birds are, that they have a great head, and a ſhort neck; hooked, ſtrong, and ſharp pointed beak and talons, fitted for tearing of fleſh; ſtrong and brawney thighs, for ſtriking down their prey; a broad thick fleſhy tongue like that of human creatures: 12 feathers in their train; and 24 flag feathers in each wing. The two appendices, or blind guts, are always very ſhort. See EAGLE, FALCON, HAWK, *&c.*

Rapacious birds have a membranous ſtomach; and not a muſculous one, or a gizzard, ſuch as birds have that live on grain. See STOMACH and DIGESTION.

They are very ſharp ſighted; and gather not in flocks, but generally ſpeaking, are ſolitary; though vultures will fly 50 or 60 in a company.

RAPE, RAPTUS, in law, a *raviſhing*; or the having carnal knowledge of a woman by force, and againſt her will.

If the woman conceive, the law eſteems it no *rape*; from an opinion that ſhe cannot conceive unleſs ſhe conſent. Coke *on Litt.* lib. 2. cap. 11.

This offence is felony in the principal and his aiders, by ſeveral ſtatutes; and the criminal is excluded from the benefit of his clergy. See FELONY.

By the civil law, *C. de raptu virginum*, raviſhing is decreed capital, even though the woman, being a maid, or widow, conſent to marry the raviſher. In France, the civil law conſtitution obtains, though it had been ſuſpended ſome time by the ordonances which allowed the man to marry the woman with her conſent. By an ordonance in 1639, the *rape* of a girl or a boy are put on the ſame footing. Fleta obſerves that by our laws the complaint muſt be made within forty days, elſe the woman may not be heard. *lib.* 3. *cap.* 5. All carnal knowledge of a maid before ten years of age, is deemed by the law a *rape*. *Stat. An.* 8. *Eliz. cap.* 6.

In Bracton's time, the *raptor*, or *raviſher*, was puniſhed with the loſs of his eyes and teſticles, *quia colorem ſtupri induxerunt.* 3 Inſt. fol. 60.

The civilians make another kind of *rape*, called *ſubornatio*, *rape of ſubordination*, or *ſeduction*; which is when a perſon ſeduces, or entices a maid to uncleanneſs, or even marriage, and that by gentle means; provided there be a conſiderable diſparity in age or condition between the parties. In this caſe, the father and mother intent their action reciprocally for the *crimen raptus*, or *ſubornationis*.

The French laws make no difference between the *rape* of violence, and that of ſollicitation, or ſubornation; they make both capital.—This kind of *rape* our laws call *raviſhment*. See RAVISHMENT.

RAPE, of the foreſt, is a treſpaſs committed in the foreſt by violence. See FOREST.

This is mentioned in the laws of Henry I. as one of the crimes cognizable alone by the king.

RAPE, is alſo a name given the wood or ſtalks of the cluſters of grapes, when dried and freed from the fruit.

The *rape* is uſed in making vinegar; ſerving to heat, and ſour the wine: but it is firſt put into a place to ſour itſelf, before it be caſt into the vinegar veſſel; to which end, preſently after the vintage, it is carefully put up in barrels, leſt it take air, otherwiſe it would heat itſelf, and be ſpoiled: There is no other way of keeping *rape*, hitherto diſcovered, but to fill the veſſel, wherein it is contained, with wine or vinegar. See VINEGAR, and WINE.

RAPE, RAPA, is alſo uſed for a part, or diviſion of a county; ſignifying as much as a *hundred*. See HUNDRED.

Though, ſometimes *rape* is taken for a diviſion containing ſeveral hundreds—Thus Suſſex is divided into ſix *rapes*, *viz.* thoſe of Chicheſter, Arundel, Bramber, Lewes, Pevency, and Haſtings; every one of which, beſides it's hundreds, has a caſtle, river, and foreſt belonging to it.

The like parts in other counties are called *tithings*, *lathes*, or *wapentakes*. See TITHING, LATHE, WAPENTAKE.

RAPIER, properly denotes a long, ordinary, old faſhioned cutting ſword, ſuch as thoſe wore by the common ſoldiers. See SWORD.

* The word is formed from the French *rapiere*, of the Greek ῥαπιζειν, *cedere*, to ſmite, ſtrike.

In this ſenſe do the French ſtill uſe the term: ſo that among them to *take the rapier*, is to enter in the Army.

RAPIER, in a modern ſenſe among us, uſually denotes a ſmall ſword—as contradiſtinguiſhed from a back-ſword, or ſheering ſword. See SWORD.

RAPINE, RAPINA in law—To take a thing in private againſt the owner's will, is properly *theft*; but to take it openly, or by violence, is *rapine*, or *robbery*. See ABACTOR, ROBBERY, &c.

RAPSODIST, } See { RHAPSODIST.
RAPSODY, } See { RHAPSODY.

RAPTU *hæredis*, an antient writ which lies for the taking away an heir, holding in ſocage; of which there are two ſorts; one when the heir is married, the other when not. See RAVISHMENT.

RAPTURE, RAPTURA, an extaſy, or tranſport of mind. See EXTASY, ENTHUSIASM, RHAPSODY, &c.

RARE, in phyſics, denotes a body that is very porous, whoſe parts are at a great diſtance from one another, and which contains but little matter under a great deal of bulk. See RAREFACTION, BODY, PORE, &c.

In this ſenſe *rare* ſtands oppoſed to *denſe*. See DENSITY.

The corpuſcular philoſophers, *viz.* Epicureans, Gaſſendiſts, Newtonians, &c. aſſert that bodies are *rarer* ſome than others, in virtue of a greater quantity of vacuity included between their pores.—The Carteſians hold, that a greater *rarity* only conſiſts in a greater quantity of materia ſubtilis, included in the pores—Laſtly, the Peripateticks contend, that *rarity* is a new quality ſuperinduced upon a body, without any dependance, either on vacuity, or ſubtile matter. See PLENUM, VACUUM, CARTESIAN, &c.

RAREFACTION, RAREFACTIO, in phyſics, the act whereby a body is rendered *rare*; that is, is brought to poſſeſs more room, or appear under a larger bulk, without any acceſſion of new matter. See RARE.

Rarefaction is oppoſed to *condenſation*. See CONDENSATION.

Our more accurate writers reſtrain *rarefaction* to that expanſion of a maſs into a larger bulk, which is effected by means of heat—All expanſion from other cauſes they call dilatation. See HEAT and DILATATION.

The Carteſians deny any ſuch thing as abſolute *rarefaction*: extenſion, with them, conſtituting the eſſence of matter, they are obliged to hold all extenſion equally full. See EXTENSION and PLENUM.

Hence, they make *rarefaction* to be no other than an acceſſion of freſh, ſubtile, and inſenſible matter, which entring the parts of a body, ſenſibly diſtends them. See this diſproved under VACUUM.

It is by *rarefaction* that gunpowder has it's effect; and to the ſame principle we owe our æolipiles, thermometers, &c. See GUNPOWDER, THERMOMETER, ÆOLIPILE, &c.

The degree to which the air is *rarefiable* exceeds all imagination: Merſennus, long ago, by means of an intenſe heat, found that air might be rarified, ſo as to poſſeſs more than 70 times it's former ſpace. See AIR.

Mr Boyle afterwards found, that air, by it's own elaſticity, and without the help of any heat, would dilate itſelf ſo as to take up 9 times it's former ſpace; then 31 times; then 60; then 150: at length, by many degrees he found it would reach to 8000 times, then 10000, then 13679. See ELASTICITY.

Such is the rarefaction of common air, from it's own principle of elaſticity, and without any pervious condenſation; but if it be compreſſed, the ſame author found it's greateſt ſpace when moſt rarified, is to it's leaſt when moſt condenſed, as 550000 to 1. See COMPRESSION.

Such as immenſe *rarefaction*, Sir Iſaac Newton ſhews, is inconceivable on any other principle than that of a repelling force inherent in the air, whereby its particles mutually fly from one another. See ATTRACTION, &c.

This repelling force, he obſerves, is much more conſiderable in air than in other bodies, as being generated from the moſt fixt bodies, and that with much difficulty, and ſcarce without fermentation; thoſe particles being always found to fly each other with the moſt force, which when in contact, cohere the moſt firmly. See REPELLING-*power*.

The members of the French royal academy have beſtowed a world of attention on the different *rarefactions*, or rather the different *rarities* of the air at different heights. M. Mariotte eſtabliſhed this as a principle, from experiments, that the different *rarefactions* or condenſations of the air follow the proportion of the weights wherewith it is preſſed.

Hence, ſuppoſing the mercury in the level of the ſea ſuſpended to 28 inches, which is the weight of the whole atmoſphere; and that 60 foot height of air are equivalent to a Line, or $\frac{1}{12}$ of an inch of mercury; ſo that the barometer at the height of 60 foot from the ſea, would fall a line; it is eaſy finding what height of air would be equal to a ſecond, or any other line of mercury: for as 28 inches of mercury, $\frac{1}{12}$ are to 28 inches, ſo is the height of 60 foot of air, to a fourth term; which is the height of air correſponding to a ſecond line of mercury.

And after the ſame manner may the heights of air correſponding to each line be found; which will make a geometrical progreſſion, the ſum whereof will be the whole height of the atmoſphere. Of conſequence a certain part of that ſum will be the height of a mountain at whoſe top the barometer ſhall have ſunk a certain quantity. See MOUNTAIN.

Meſſ. Caſſini and Maraldi, upon meaſuring the heights of ſeveral mountains, found that this progreſſion of M. Mariotte, was defective; that it always gave the height of the mountains, and conſequently the *rarefactions*, leſs than they really were; and from ſome new experiments M. Amontons found that the principle will only hold in the mean *rarefactions*, not in the extremes. See AIR.

RAREFACTIVES, RAREFACIENTIA, in medicine, remedies which open and enlarge the pores of the skin, to give an eaſy vent to the matter of perſpiration. See ARÆOTIC, DIAPHORETIC, PERSPIRATION, &c.

Such are aniſe, mallows, pellitory, camomile-flowers, linſeed, &c.

RASANT, or **RAZANT**, in fortification—RASANT *flank*, or *line*, is that part of the curtin, or flank, whence the ſhot exploded raze or glance along the face of the oppoſite baſtion. See LINE and FLANK.

The defence of the baſtion is *raſant*. See DEFENCE.

RASH in clockwork. See the article RATCH.

RASH, in medicine, an eruption or efflореſcence upon the skin, thrown out in fevers, or ſurfeits. See ERUPTION, EXANTHEMA, SURFEIT, &c.

RASP, a rank ſort of file. See FILE.

RASPATORY, a chirurgeon's inſtruments wherewith they ſcrape foul, carious, or fractured bones.

RASPHUYS, or **RASP-*houſe***, a celebrated work-houſe, or houſe of correction, at Amſterdam. See WORK-*houſe*.

RATA *pro* **RATA**. See the article PRO *rata*.

Onerando pro RATA *portionis*. See ONERANDO.

RATAFIA, a fine ſpirituous liquor, prepared from the kernels, &c. of ſeveral kinds of fruits, particularly cherries, and apricocks.

Ratafia of cherries is prepared by bruiſing the cherries, and putting them into a veſſel wherein brandy has been kept; then adding to them the kernels of cherries, with ſtrawberries, ſugar, cinnamon, white pepper, nutmegs, cloves; and to 20 pound of cherries, 10 quarts of brandy.—The veſſel is left open 10 or 12 days, then ſtopped cloſe, for two months before it be tapped.

Ratafia of apricocks is prepared two ways; *viz.* either by boiling the apricocks in white wine, adding to the liquor an equal quantity of brandy, with ſugar, cinnamon, mace, and the kernels of apricocks; infuſing the whole for 8 or 10 days; then ſtraining the liquor, and putting it up for uſe: or by infuſing the apricocks, cut in pieces, in brandy, for a day or two; paſſing it through a ſtraining bag, and putting in the uſual ingredients.

RATCH, or **RASH**, in clock-work, a ſort of wheel having twelve fangs, which ſerve to lift up the detents every hour, and to make the clock ſtrike. See CLOCK.

RATCHETS, in a watch, are the ſmall teeth at the bottom of the fuſy, or barrel; which ſtop it in winding up. See WATCH.

RATE, a ſtandard or proportion by which either the quantity or value of a thing is adjuſted. See STANDARD.

The *rates* of bread, &c. in London, are fixed by authority. See ASSISE.

The *rate* of intereſt, as now eſtabliſhed by law in England, is 5 per cent. The *rate* of intereſt in Italy is 3 per cent. In Sweden 6. In France 5. In Spain 10. In Barbadoes 10. In Ireland 12. In Turky 20.—Low *rates* of intereſt advance the prices of land. See INTEREST.

The *rates* or *fares* of hackney-coachmen, chairmen, and watermen, are fixed by act of parliament, 14 Car. II. See *Hackney*-COACH, &c.

The *rates* of exchange, factorſhip, &c. are different. See EXCHANGE, FACTORAGE, &c.

RATE-*tithe.* When ſheep, or other cattle, are kept in a pariſh for leſs time than a year, the owner muſt pay tithe for them, *pro rata*, according to the cuſtom of the place. See TITHE.

RATE, of a ſhip of war, is it's order, degree, or diſtinction, as to magnitude, burthen, &c. See SHIP, &c.

The *rate* is uſually accounted by the length and breadth of the gun-deck, the number of tuns, and the number of men and guns the veſſel carries—There are ſix *rates:*

A firſt RATE man of war has it's gun-deck from 159 to 174 feet in length, and from 44 to 50 foot broad; contains from 1313, to 1882 tuns; has from 706 to 800 men; and carries from 96 to 110 guns. See NAVY.

Second RATE *ſhips* have their gun-decks from 153 to 165 foot long; and from 41 to 46 broad; they contain from 1086 to 1482 tuns; and carry from 524 to 640 men, and from 84 to 90 guns.

Third RATES have their gun-decks from 142 to 158 foot in length; from 37 to 42 foot broad; they contain from 871 to 1262 tuns; carry from 389 to 476 men; and from 64 to 80 guns.

Fourth RATES are in length on the gun-deck, from 118 to 146 foot; and from 29 to 38 broad; they contain from 448 to 915 tuns; carry from 226 to 346 men; and from 48 to 60 guns.

Fifth RATES have their gun-decks from 100 to 120 foot long; and from 24 to 31 broad; they contain from 259 to 542 tuns; carry from 145 to 190 men; and from 26 to 44 guns.

Sixth RATES have their gun-decks from 87 to 95 foot long: and from 22 to 25 foot broad; they contain from 152 to 256 tuns; carry from 50 to 110 men; and from 16 to 24 guns.

Note, The new-built ſhips are much larger, as well as better than the old ones of the ſame *rate*; whence the double numbers all along; the larger of which expreſs the proportions of the new-built ſhips, as the leſs thoſe of the old ones.—For the number of each *rate* in the Engliſh fleet. See NAVY.

RATEEN, or RATTEN, in commerce, a thick woollen ſtuff, quilled, wove on a loom with four treddles, like ſerges and other ſtuffs that have the whale or quilling.

There are ſome *rateens* dreſſed and prepared like cloths; others left ſimply in the hair; and others where the hair or nap is frized.

Rateens are chiefly manufactured in France, Holland, and Italy; and are moſtly uſed in linings.

The frize is a ſort of coarſe *rateen*; the drugget, a *rateen* half linen, half woolen.

RATIFICATION, RATIFICATIO, an act, approving of, and confirming ſomething done by another, in our name.

A treaty of peace is never ſecure till the princes have *ratified* it. See TREATY.

All procuration imports a promiſe of *ratifying* and approving what is done by the proxy or procurator. After treating with a procurator, agent, factor, &c. A *ratification* is frequently neceſſary on the part of his principal.

RATIFICATION, is particularly uſed in our laws, for the confirmation of a clerk in a benefice, prebend, &c. formerly given him by the biſhop, &c. where the right of patronage is doubted to be in the king.

RATIFICATION is alſo uſed for an act confirming ſomething we ourſelves have done in our own name.

An execution, by a major, of an act paſſed in his minority, is equivalent to a *ratification*.

RATING. See the article RAITING.

RATIO, REASON, in arithmetic and geometry, that relation of homogeneous things which determines the quantity of one from the quantity of another, without the intervention of any third. See RELATION.

The homogeneous things thus compared, we call *the terms of the ratio*; particularly, that referred to the other, we call the *antecedent*; and that to which the other is referred, the *conſequent*. See TERM, &c.

Thus, when we conſider one quantity, by comparing it with another, to ſee what magnitude it has in compariſon of that other; the magnitude this quantity is found to have in compariſon thereof is called the *ratio*, *reaſon*, of this quantity to that: which ſome think would be better expreſſed by the word *compariſon*. See COMPARISON.

Euclid defines *ratio* by *the habitude or relation of magnitudes of the ſame kind in reſpect of quantity.*—But this definition is found defective; there being other relations of magnitudes which are conſtant, yet are not included in the number of *ratio*'s: ſuch as that of the right ſine, to the ſine of the complement in trigonometry.

Hobbs endeavoured to mend Euclid's definition of *ratio*, but unhappily; for in defining it, as he does, by *the relation of magnitude to magnitude*; his definition has not only the ſame defect with Euclid's, in not determining the particular kind of relation; but has this farther, that it does not expreſs the kind of magnitudes, which may have a *ratio* to one another.

Ratio is frequently confounded with *proportion*; yet ought they by all means to be diſtinguiſhed, as very different things. Proportion, in effect, is an identity, or ſimilitude of two *ratio*'s. See PROPORTION.

Thus, if the quantity A be triple the quantity B; the relation of A to B, *i. e.* of 3 to 1, is called the *ratio* of A to B. If two other quantities, C, D, have the ſame *ratio* to one another that A and B have, *i. e.* be triple one another; this ſameneſs of *ratio* conſtitutes *proportion:* and the four quantities A : B :: C : D, are in proportion, or proportional to one another.

So that *ratio* exiſts between two terms, proportion requires more.

There is a twofold compariſon of numbers: by the firſt, we find how much they differ, *i. e.* by how many units the antecedent exceeds, or comes ſhort of, the conſequent.

This difference is called, the *arithmetical ratio*, or exponent of the arithmetical relation or habitude of the two numbers.

Thus if 5 and 7 be compared, their arithmetical *ratio* is 2.

By the ſecond compariſon, we find how oft the antecedent contains, or is contained in the conſequent; *i. e.* as before, what part of the greater is equal to the leſs.

This *ratio*, being common to all quantity, may be called *ratio* in the general, or by way of eminence. But it is uſually called *geometrical ratio*; becauſe expreſſed, in geometry, by a line, though it cannot be expreſſed by any number.

Wolfius better diſtinguiſhes *ratio*, with regard to quantity in the general, into *rational* and *irrational*.

Rational RATIO, is that which is as one rational number to another, *e. gr.* as 3 to 4. See NUMBER.

Irrational RATIO, is that which cannot be expreſſed by rational numbers.

Suppoſe, for an illuſtration, two quantities A and B; and let A be leſs than B. If A be ſubſtracted as often as it can be, from B, *e. gr.* five times, there will either be left nothing or ſomething. In the former caſe A will be to B, as 1 to 5; that is, A is contained in B five times; or $A = \frac{1}{5} B$. The *ratio*, here, therefore, is *rational*.

In the latter caſe, either there is ſome part, which being ſubſtracted certain times from A, *e. gr.* three times, and likewiſe from B, *e. gr.* 7 times leaves nothing; or there is no ſuch part: if the former, A will be to B, as 3 to 7, or $A = \frac{3}{7} B$, and therefore the *ratio*, *rational*. If the latter, the *ratio* of A to B, *i. e.* what part A is of B, cannot be expreſſed by rational numbers; nor any other way than either by lines, or by infinite approaching ſeries. See SERIES.

The *exponent of a geometrical ratio* is the quotient ariſing from the diviſion of the antecedent by the conſequent—Thus the exponent of the *ratio* of 3 to 2, is $1\frac{1}{2}$; that of the *ratio* of 2 to 3, is $\frac{2}{3}$; for when the leſs term is the antecedent, the *ratio*, or rather the *exponent*, is an improper fraction. Hence the fraction $\frac{3}{4} = 3:4$. If the conſequent be unity, the antecedent itſelf is the exponent of the *ratio:* thus the exponent of 4 to 1 is 4. See EXPONENT.

If two quantities be compared without the invention of a third; either the one is equal to the other, or unequal: Hence, the *ratio* is either of *equality* or *inequality*.

If the terms of the *ratio* be unequal, either the leſs is referred to the greater, or the greater to the leſs: That is, either the leſs to the greater, as a part to the whole; or the greater to the leſs as the whole to a part: The *ratio* therefore determines how often the leſs is contained in the greater, or how often the greater contains the leſs, *i. e.* to what part of the greater the leſs is equal.

The *ratio* which the greater term has to the leſs, *e. gr.* 6 to 3, is called the *ratio of the greater inequality*. The *ratio* which the leſs term has to the greater, *e. gr.* 3 to 6, is called the *ratio of the leſs inequality*.

This *ratio* correſponds to quantity in the general, or is admitted of by all kinds of quantities, diſcrete or continued, commenſurable, or incommenſurable. But diſcrete quantity, or number does likewiſe admit of another *ratio*.

If the leſs term of a *ratio* be an aliquot part of the greater, the *ratio* of the greater inequality is ſaid to be *multiplex*, multiple: and the *ratio* of the leſs inequality, *ſubmultiple*. See MULTIPLE, and SUBMULTIPLE.

Particularly, in the firſt caſe, if the exponent be 2, the *ratio* is called *duple*; if 3, *triple*, &c. In the ſecond caſe, if the exponent be $\frac{1}{2}$, the *ratio* is called *ſubduple*; if $\frac{1}{3}$, *ſubtriple*, &c. *E. gr.* 6 to 2 is in a triple *ratio*; becauſe 6 contains two thrice. On the contrary, 2 to 6 is in a ſubtriple *ratio*, becauſe 2 is the third part of 6. See DUPLE, SUBDUPLE, &c.

If the greater term contain the leſs once; and over and above, an aliquot part of the ſame; the *ratio* of the greater inequality is called *ſuperparticularis*; and the *ratio* of the leſs *ſubſuperparticularis*.

Particularly, in the firſt caſe, if the exponent be $1\frac{1}{2}$, it is called *ſeſquialterate*; if $3\frac{1}{3}$, *ſeſquitertia*, &c. In the other, if the exponent be $\frac{2}{3}$, the *ratio* is called *ſubſeſquialtera*; if $\frac{3}{4}$ *ſubſeſquitertia*, &c.

E. gr. 3 to 2 is in a *ſeſquialterate ratio*; 2 to 3 in a *ſubſeſquialterate*.

If the greater term contain the leſs once, and over and above ſeveral aliquot parts; the *ratio* of the greater inequality is called *ſuperpartiens*; that of the leſs inequality is *ſubſuperpartiens*.

Particularly, in the former caſe, if the exponent be $1\frac{2}{3}$, the *ratio* is called *ſuperbipartiens tertias*; if the exponent be $1\frac{3}{4}$, *ſuper-*

ſupertripartiens quartas; if $1\frac{4}{7}$, *ſuperquadripartiens ſeptimas*, &c. in the latter caſe, if the exponent be $\frac{3}{5}$, the *ratio* is called *ſubſuperbipartiens tertias*; if $\frac{4}{7}$, *ſubſupertripartiens quartas*; if $\frac{7}{11}$, *ſubſuperquadripartiens ſeptimas.*

E. gr. the *ratio* of 5 to 3 is *ſuperbipartiens tertias*; that of 3 to 5, *ſubſuperbipartiens tertias.*

If the greater term contain the leſs ſeveral times, and, beſides, ſome quota part of the ſame; the *ratio* of the greater inequality is called *multiplex ſuperparticularis*; and the *ratio* of the leſs inequality, *ſubmultiplex ſubſuperparticularis.*

Particularly, in the former caſe, if the exponent be $2\frac{1}{2}$, the *ratio* is called, *dupla ſeſquialtera*; if $3\frac{1}{4}$, *tripla ſeſquiquarta*, &c. In the latter caſe, if the exponent be $\frac{2}{5}$, the *ratio* is called *ſubdupla ſubſeſquialtera*; if $\frac{4}{13}$, *ſubtripla ſubſeſquiquarta*, &c.

E. gr. the *ratio* of 16 to 5 is *tripla ſeſquiquinta*; that of 4 to 9 *ſubdupla ſubſeſquiquarta.*

Laſtly, if the greater term contain the leſs ſeveral times, and ſeveral aliquot parts thereof beſides; the *ratio* of the greater inequality is called *multiplex ſuperpartiens*; that of the leſs inequality, *ſubmultiplex ſubſuperpartiens.*

Particularly, in the former caſe, if the exponent be $2\frac{2}{3}$, the *ratio* is called *dupla ſuperbipartiens tertias*; if $3\frac{4}{7}$, *tripla ſuperbiquadripartiens ſeptimas*, &c. In the latter caſe, if the exponent be $\frac{3}{8}$, the *ratio* is called, *ſubdupla ſubſuperbipartiens tertias*; if $\frac{7}{25}$ *ſubtripla ſubſuperquadripartiens ſeptimas*, &c.

E. gr. the *ratio* of 25 to 7 is *tripla ſuperquadripartiens ſeptimas*; that of 3 to 8, *ſubdupla ſubſuperbipartiens tertias.*

Theſe are the various kinds of *rational ratio*'s; the names whereof, though they occur but rarely among the modern writers, (for in lieu thereof they uſe the ſmalleſt terms of the *ratio*'s, *e. gr.* for *duple* 2 : 1, for *ſeſquialterate*, 3 : 2) yet are they abſolutely neceſſary to ſuch as converſe with the antient authors.

Clavius obſerves, that the exponents denominate the *ratio*'s of the greater inequality, both in deed and name; but the *ratio*'s of the leſs inequality, only in deed, not in name. But it is eaſy finding the name in theſe; if you divide the denominator of the exponent, by the numerator.

E. gr. if the exponent be $\frac{5}{8}$, then $5:8 = 1\frac{3}{5}$; whence it appears the *ratio* is called *ſubſupertripartiens quintas.*

As to the names of *irrational ratio*'s, nobody ever attempted them.

Same, or *Identic ratio*'s are thoſe whoſe antecedents have an equal reſpect to their conſequents, *i. e.* whoſe antecedents divided by their conſequents, give equal exponents—And hence may the identity of irrational *ratio*'s be conceived.

Hence, *firſt*, as oft as the antecedent of one *ratio* contains it's conſequent, or whatever part it contains of it's conſequent, ſo oft, or ſuch part of the other conſequent does the antecedent of the other *ratio* contain: or, as oft as the antecedent of the one is contained in it's conſequent, ſo oft is the antecedent of the other contained in it's conſequent.

Secondly, If A be to B as C to D, then will A : B : : C : D; or A : B = C : D. The former of which is the uſual manner of repreſenting the identity of *ratio*'s; the latter is that of the excellent Wolfius; which has the advantage of the former, in that the middle character =, which denotes the ſameneſs, is ſcientifical, *i. e.* expreſſes the relation of the thing repreſented, which the other : : does not. See Character.

Two *equal ratio*'s, *e. gr.* B : C = D : E, we have already obſerved, do conſtitute a proportion: of two *unequal ratio*'s, *e. gr.* A : B and C : D we call A : B the *greater*, if A : B ⌝ C : D; on the contrary we call C : D the *leſſer*, if C : D ∠ A : B.

Hence, we expreſs a greater and leſs *ratio* thus. *E. gr.* 6 to 3 has a greater *ratio*, than 5 to 4; for, 6 : 3 (= 2) ⌝ 5 : 4 (= $1\frac{1}{4}$). But 3 to 6 has a leſs *ratio* than 4 to 5, for $\frac{3}{6} = \frac{1}{2} \angle \frac{4}{5}$.

Compound *ratio* is that made up of two or more other *ratio*'s, which the factum of the antecedents of two or more *ratio*'s has to the factum of their conſequents. Thus 6 to 72 is in a *ratio* compounded of 2 to 6, and 3 to 12.

Particularly, if it be compounded of two, it is called a *duplicate ratio*; if of three, a *triplicate*, if of four, *quadruplicate*; and in the general *multiplicate*, if it be compoſed of ſeveral ſimilar *ratio*'s. Thus 48 : 3 is a *duplicate ratio* of 4 : 1 and 12 : 3. See Duplicate and Triplicate.

Alternate Ratio, is where the antecedent of one *ratio* is to its conſequent, as the antecedent of another to its conſequent; the very ſame *ratio*, in this caſe, holding alternately in reſpect of the antecedents to each other, and the conſequents to each other.—Thus if A : B : : C : D; then, alternately, A : C : : B : D.

Ordinate Ratio, is that, wherein the antecedent of the firſt *ratio* is to its conſequent, as the antecedent of the ſecond is to its conſequent.

Denominator of a Ratio. See Denominator.

Properties of Ratio's—*Firſt*, *ratio*'s ſimilar to the ſame third are alſo ſimilar to one another; and thoſe ſimilar to ſimilar, are alſo ſimilar to one another.

Secondly, If A : B = C : D; then, inverſely, B : A = D : C.

Thirdly, Similar parts P and p have the ſame *ratio* to wholes T and t; and if the wholes have the ſame *ratio*, the parts are ſimilar.

Fourthly, If A : B = C : D; then alternately, A : C = B : D. And hence, if B = D : A = C; hence, alſo, if A : B = C : D; and A : F = C : G; we ſhall have B : F = D : G. Hence, again, if A : B = C : D; and F : A = G : C; we ſhall have F : B = G : D.

Fifthly, Thoſe things which have the ſame *ratio* to the ſame, or equal things, are equal: and *vice verſa.*

Sixthly, If you multiply any quantities, as A and B, by the ſame or equal quantities: their products D and E will be to each other as A and B.

Seventhly, If you divide any quantities as A and B, by the ſame or equal quantities, the quotients F and G will be to each other as A and B.

Eighthly, The exponent of a compound *ratio* is equal to the factum of the exponents of the ſimple *ratios.* See Exponent.

Ninthly, If you divide either the antecedents, or the conſequents of ſimilar *ratio*'s, A : B and C : D by the ſame E; in the former caſe, the quotients F and G will have the ſame *ratio* to the conſequents B and D; in the latter, the antecedents A and B will have the ſame *ratio* to the quotients H and K.

Tenthly, If there be ſeveral quantities in the ſame continued *ratio* A, B, C, D, E, *&c.* the firſt, A is to the third, C, in a *duplicate ratio*, to the fourth, D, in a *triplicate*, to the fifth, E, in a *quadruplicate*, &c. *ratio* of the *ratio* of the firſt, A, to the ſecond B.

Eleventhly, If there be any ſeries of quantities in the ſame *ratio*, A, B, C, D, E, F, *&c.* the *ratio* of the firſt, A, to the laſt, F, is compounded of the intermediate *ratio*'s, A : B, B : C, C : D, D : E, E : F, *&c.*

Twelfthly, *ratio*'s compounded of *ratio*'s, whereof each is equal to each other, are equal among themſelves. Thus the *ratio*'s 90 : 3 = 960 : 32 are compounded of 6 : 3 = 4 : 2, and 3 : 1 = 12 : 4; and 5 : 1 = 20 : 4.

For other properties of ſimilar or equal *ratio*'s, ſee Proportion.

Ratio, in our law writers, is uſed for a judgment given in a cauſe. See Judgment.

Hence, *ponere ad rationem*, is to cite one to appear in judgment. Walſingh. 88.

Ratio-*ſtatus*, Ragione *di ſtato*. See Reason *of ſtate.*

Ratio *victus*. See the article Victus.

RATIOCINATION, the act of *reaſoning*. See Reasoning.

RATION*, or Ratian, in the army, a pittance, or proportion of ammunition, bread, drink, or forrage, diſtributed to each ſoldier for his daily ſubſiſtence. See Ammunition, *&c.*

* Some write the word *racion*, and borrow it from the Spaniſh *racion*. But they both come from the Latin, *ratio*: in ſome parts of the ſea they call it *reaſon*.

The horſe have *rations* of hay and oats, when they cannot go out to forrage.

The *rations* of bread are regulated by weight—The ordinary *ration* of a foot ſoldier is a pound and half of bread per day.

The officers have ſeveral *rations* according to their quality, and the number of attendants they are obliged to keep.

When the *ration* is augmented on occaſions of rejoycing, it is called *double ration.*

The ſhip's crews have alſo their *rations* or allowances of biſket, pulſe, and water, proportioned according to their ſtock. The uſual *ration* at ſea, particularly among the Portugueſe, *&c.* is a pound and half of bisket, a pint of wine, and a quart of freſh water per day, and each month an arrobe or 31 pound of ſalt meat, with ſome dried fiſh and onions.

RATIONABILES *expenſæ*, *reaſonable expences.* The commons in parliament, as well as the proctors of the clergy in convocation, were anciently allowed *rationabiles expenſas*; that is, ſuch allowance as the king, conſidering the prices of all things, ſhall judge meet to impoſe on the people to pay for the ſubſiſtence of their repreſentatives. See Representative, De Expensis, *&c.*

This, in the 17th of Edward II, was ſettled at 10 groats per day for knights, and 5 for burgeſſes. Afterwards 4 ſhillings a day for knights, and 2 ſhillings for burgeſſes; which was then deemed an ample retribution both for expences, for labour, attendance, neglect of their own affairs, *&c.* See Parliament.

RATIONABILI *parte bonorum*, a writ which lies for the wife, againſt the executors of her husband denying her the third part of her husband's goods, after debts and funeral expences paid. See Goods.

Fitzherbert quotes Magna Charta and Glanville, to prove that by the common law of England, the goods of the deceaſed, his debts firſt paid, ſhould be divided into three parts; whereof his wife to have one, his children a ſecond, and the executors a third. Adding, that this writ lies as well for the children, &c. as the wife — But it ſeems only to obtain where the cuſtom of the country makes for it.

Recto de Rationabili *parte*. See Recto.

RATIONABILIBUS *diviſis*, is a writ that lies where two lords have ſeigneuries joining together, for him that finds his waſte incroached upon, within the memory of man, againſt the encroacher; thereby to rectify the bounds of the ſeigneuries: in which reſpect Fitzherbert ſays it is of the nature of a writ of right.

RATIONAL, *reaſonable*, See Reason.

Ralional *fable*. See the article Fable.

Rational *fraction*, or *broken number*, is that equal to ſome aliquot part or parts of unity. See Fraction.

Rational, or *true horizon*, is that whoſe plane is conceived to paſs through the centre of the earth; and which therefore divides the globe into two equal portions, or hemiſpheres. See Horizon.

It is called the *rational horizon*, becauſe only conceived by the underſtanding; in oppoſition to the *ſenſible* or apparent horizon, which is viſible to the eye. See Sensible.

Rational *integer*, or *whole number*, is that whereof unity is an aliquot part. See Number and Aliquot *part*.

Rational *mixt number*, is that conſiſting of an integer and a fraction; or of unity, and a broken number. See Number and Mixt.

Commenſurable quantities are defined by being to one another, as one *rational* number to another. See Commensurable.

For unity is an aliquot part of a rational number; and a fraction has ſome aliquot part common with unity: in things, therefore, that are as a *rational* to a *rational* number, either the one is an aliquot part of the other, or there is ſome common aliquot part of both: therefore they are commenſurable.

Hence, if a *rational* number be divided by a *rational*, the quotent is a *rational*.

Rational *phyſicians*. See Physician.

Rational *quantity* or *number*, a quantity or number commenſurable to unity. See Number and Unity.

Suppoſing any quantity to be 1, there are infinite other quantities, ſome whereof are commenſurable to it, either ſimply, or in power: theſe Euclid calls *rational quantities*. See Quantity.

The reſt, that are incommenſurable to 1, he calls, *irrational quantities*, or *ſurds*. See Surd.

Rational *ratio*, is a ratio whoſe terms are *rational* quantities; or a ratio which is as one *rational* number to another, *e. gr.* as 3 to 6. See Ratio.

The exponent of a *rational* ratio is a *rational* quantity. See Exponent.

Rational *ſoul*. See the article Soul.

RATIONALE, a ſolution, or account of the principles of ſome opinion, action, hypotheſis, phænomenon, or the like. See Principle, Phænomenon, &c.—Hence,

Rationale is alſo the title or ſeveral books—The moſt conſiderable is the *Rationale of divine offices*, by Guil. Durandus, a celebrated ſchool divine, biſhop of Mende; finiſhed in 1286, as he himſelf tells us.

Rationale alſo denotes an antient ſacerdotal veſtment, wore by the high-prieſt under the old law; and called by the Hebrews השן *hhoſchen*; by the Greeks λογιον; by the Latins *rationale* and *pectorale*; and by the Engliſh tranſlators, *breaſtplate*. See Pectorale.

The *rationale* was a piece of embroidered ſtuff wore on the breaſt, about a ſpan-ſquare—Du Cange deſcribes it as a double ſquare, of four colours, interwove with gold, and ſet with twelve precious ſtones in four rows, whereon were engraven the names of the twelve tribes; and faſtened to the ſhoulder by two chains and two hooks of gold—The form of the *rationale* was preſcribed by god himſelf, Exod. 28.

A Rationale appears alſo to have been antiently wore by the biſhops under the new law—But authors are in doubt about it's form; ſome will have it reſemble that of the Jews; others take it to be only the pallium. See Pallium.

RATIONALIS, an officer mentioned in ſeveral antient inſcriptions. See Accountant.

Lampridius, in the life of Alex. Severus, uſes *rationalis* as ſynonymous with *procurator*. See Procurator.

The *rationales* were intendants, or ſurveyors under the emperors; and though Lampridius pretends they were firſt eſtabliſhed by Severus, it is evident there were ſome under Auguſtus.

Ens **RATIONIS**. See the article Ens.

Diſtinctio Rationis. See the article Distinctio.

Rationis *os*, in anatomy, the bone of the forehead, otherwiſe called *os frontis*. See Frontis.

RATLINES, or as the ſeamen call them Ratlings; thoſe lines which make the ladder ſteps, to get up the ſhrouds and puttocks: hence called the *ratlings of the ſhrouds*.

RATTEN. See the article Rateen.

RATTLE, among the antients, a muſical inſtrument, of the pulſatile kind: called by the Romans, *crepitaculum*. See Musick.

Mr. Malcolm takes the tintinnabulum, crotalum, and ſiſtrum, to have been only ſo many different kinds of *rattles*. See Bell, Crotalum, Sistrum, &c.

The Invention of the *rattle* is aſcribed to the famous mathematician Archytas; whence Ariſtotle calls it, Αρχυτȣ πλαταγη, Archytas's *rattle*—Diogenianus adds the occaſion of the invention; *viz.* that Archytas having children, he contrived this inſtrument to prevent their tumbling other things about the houſe. So that how much ſoever ſome inſtruments have changed their uſes, the *rattle* we are ſure has preſerved it's.

RAVELIN, in fortification, was antiently a flat baſtion, placed in the middle of a curtin. See Bastion and Curtin.

Ravelin is now a detached work, compoſed only of two faces, which make a ſalient angle, without any flanks; and raiſed before the curtin on the counterſcarp of the place.

A *ravelin* is a triangular work reſembling the point of a baſtion, with the flanks cut off—See *Tab. Fortif. fig.* 21. *lit.* iii.

It's uſe before a curtin, is to cover the oppoſite flanks of the two next baſtions. It is uſed alſo to cover a bridge or a gate; and is always placed without the moat.

What the Engineers call a *ravelin*, the ſoldiers generally call a *demi-lune*, or half-moon. See Demi-Lune, &c.

There are alſo *double ravelins*, which ſerve to defend each other—They are ſaid to be *double* when they are joined by a curtin.

RAVISHMENT, in law, denotes an unlawful taking either a woman, or an heir in ward.

Sometimes it is alſo uſed in the ſame ſenſe as *rape*. See Rape.

Ravishment *de gard*, is a writ which antiently laid for the guardian againſt him who took from him the body of his ward. See Guardian, Ward, &c.

RAW *hide*. See the article Hide.

RAW *ſilk*. See the article Silk.

RAY, Radius, in optics, a beam or line of light, propagated from a radiant point, through an unreſiſting medium. See Light, Radiant, &c.

Sir Iſaac Newton defines *rays* to be the leaſt parts of light, whether ſucceſſive in the ſame line, or contemporary in ſeveral lines.

For, that light conſiſts of parts of both kinds, appears hence, that one may ſtop what comes this moment in any point, and let paſs that which comes the next; and again may ſtop what comes in this point, and let paſs that in the next—Now, the leaſt light, or part of light which may be thus ſtopped alone, he calls a *ray of light*.

If the parts of a *ray* of light do all lie ſtraight between the radiant and the eye, the *ray* is ſaid to be *direct*: the laws and properties whereof make the ſubject of optics. See Optics, and Direct.

If any of them be turned out of that direction, or bent in their paſſage, the *ray* is ſaid to be *refracted*. See Refraction.

If it ſtrike on the ſurface of any body, and be driven back, it is ſaid to be *reflected*. See Reflection.

In each caſe, the *ray*, as it falls either directly on the eye, or on the point of reflection, or of refraction, is ſaid to be *incident*. See Incidence.

Again, if ſeveral *rays* be propagated from the radiant equidiſtantly from one another, they are called *parallel rays*. See Parallel.

If they come inclining towards each other, they are called *converging rays*. See Converging.

And if the go continually receding from each other, they are called *diverging rays*. See Diverging.

It is from the circumſtances of *rays*, that the ſeveral kinds of bodies are diſtinguiſhed in optics. A body, *e. gr.* that diffuſes it's own light, or emits *rays* of it's own, is called a *lucid*, or *luminous* body.

If it only reflect *rays* which it receives from another, it is called an *illuminated body*.

If it only tranſmit *rays*, it is called a *tranſparent body*. See Transparency.

If it intercept the *rays*, or refuſe them paſſage, it is called an *opake body*. See Opacity.

Hence no body radiates, *i. e.* emits *rays*, unleſs it be either luminous, or illumined. See Radiation.

It is by means of *rays* reflected from the ſeveral points of illumined objects to the eye, that they become viſible, and that viſion is performed; whence ſuch *rays* are called *viſual rays*. See Visual.

In effect we find that any point of an object is ſeen in all places to which a right line may be drawn from that point: but it is allowed, nothing can be ſeen without light, therefore every point of an object diffuſes innumerable *rays* every way. Again, from other experiments it appears that the images of all objects, whence right lines may be drawn to the eye, are painted in the eye, behind the cryſtallin, very ſmall, but very diſtinct.

And laſtly, from other experiments, that each *ray* carries with it the ſpecies, or image of the radiating point: and that the ſeveral rays emitted from the ſame point are again united in one point, by the cryſtallin, and thus thrown on the retina. See VISION.

It is the ſpiſſitude, or cloſeneſs of the *rays* emitted from a luminous body, that conſtitutes the intenſeneſs of the light. Yet the direction wherein the *rays* ſtrike the eye, has a good ſway. In effect, a perpendicular *ray*, ſtriking with more force than an oblique one, in the ratio of the whole ſine to the ſine of the angle of obliquity, (as follows from the laws of percuſſion) a perpendicular *ray* will affect the eye more vividly than an oblique one in that ratio.

If then the ſpiſſitude of the *rays* be equal, the intenſity will be as the direction; if the direction be the ſame, the intenſeneſs will be as the ſpiſſitude. If both differ, the intenſeneſs will be in a ratio compounded of the direction and the ſpiſſitude.

Hence, *firſt*, If light be propagated in *parallel rays* through an unreſiſting medium, it's intenſity will not be varied by diſtance.

Secondly, If light be propagated in *diverging rays*, through an unreſiſting medium, it's intenſity will decreaſe in a duplicate ratio of the diſtances from the radiant point, reciprocally. See QUALITY.

Thirdly, If light be propagated in *converging rays*, through an unreſiſting medium; it's intenſity will increaſe in a duplicate ratio of the diſtances from the point of concourſe, reciprocally.

Fourthly, If the breadth of an illuminated plane be to the diſtance of the radiant point, as 1 to 2000000, it is the ſame thing as if the *rays* ſtruck upon it parallel: and hence, ſince the diameter of the pupil of the eye, when largeſt, ſcarce exceeds ' of an inch; the *rays* will fall upon it parallel, as to ſenſe, at the diſtance of 3860 Engliſh feet, which is nearly 6 furlongs. See LIGHT.

The effect of concave lenſes, and convex mirrours, is to make parallel *rays* diverge; converging *rays*, become parallel; and diverging *rays* to become more divergent. See MIRROUR.

The effect of convex lenſes, and concave mirrours, is to make diverging *rays* become parallel; parallel *rays* become convergent, and converging *rays* to converge the more. See LENS.

The *rays* of light are not homogeneous, or ſimilar, but differ in all the properties we know of, *viz.* refrangibility, reflexibility, and colour. See REFRANGIBILITY, *&c.*

It is probably from the different refrangibility, that the other differences have their riſe; at leaſt it appears, that thoſe *rays* which agree or differ in this, do ſo in all the reſt.

Thus from the different ſenſations the differently diſpoſed *rays* excite in us, we call them, *red rays*, *yellow rays*, &c. See COLOUR.

The effect of the priſm is to ſeparate and ſort the different kinds of *rays*, which come blended promiſcuouſly from the ſun; and to throw each kind by itſelf, according to it's degree of refrangibility and colour, red to red, blue to blue, *&c.* See PRISM.

Beſides, refrangibility, and the other properties of the *rays* of light already aſcertained by obſervation and experiment, Sir Iſaac Newton ſuſpects they may have many more; particularly, a power of being inflected, or bent, by the action of diſtant bodies; and thoſe *rays* which differ in refrangibility, he conceives likewiſe to differ in this flexibility.

In paſſing by the edges and ſides of bodies, he conceives that the *rays* may be bent ſeveral times backwards and forwards, with a motion like that of an eel; and that thoſe *rays* which appear to fall on bodies, are reflected or refracted before they arrive at the bodies. And adds, that they may be refracted, reflected, and inflected, all by the ſame principle acting in different circumſtances. See INFLECTION, *&c.*

Again, do not the *rays* falling on the bottom of the eye excite vibrations in the retina; which being propagated along the fibres of the optic nerve into the brain cauſe viſion? and do not ſeveral ſorts of *rays* make vibrations of ſeveral bigneſſes, which excite ſenſations of ſeveral colours, much after the manner as the vibrations of the air, according to their ſeveral bigneſſes, excite ſenſations of ſeveral ſounds? See SOUND.

Particularly, do not the moſt refrangible *rays* excite the ſhorteſt vibrations, to make a ſenſation of a deep violet; and the leaſt refrangible, the largeſt, to make a ſenſation of a deep red? and the ſeveral intermediate kinds of *rays*, vibrations of intermediate bigneſſes, to make ſenſations of the intermediate colours? See COLOUR.

And may not the harmony and diſcord of colours ariſe from the proportion of theſe vibrations; as thoſe of ſound depend on the vibrations of the air? for ſome colours, if viewed together, are agreeable, as gold and indico; others diſagreeable. See CONCORD and HARMONY.

Again, have not the *rays* of light ſeveral ſides endued with ſeveral original properties? — It is certain we find that every *ray* of light has two oppoſite ſides, originally endued with a property whereon the unuſual refraction of iſland cryſtal depends, and other two oppoſite ſides not endued with that property. See CRYSTAL.

Laſtly, Are not the *rays* of light very ſmall bodies emitted from ſhining ſubſtances?

Such bodies may have all the conditions of light: and there is that action and re-action between tranſparent bodies and light, which very much reſembles the attractive force between other bodies. Nothing more is required for the production of all the various colours, and all the degrees of refrangibility, but that the *rays* of light be bodies of different ſizes; the leaſt of which may make violet, the weakeſt and darkeſt of the colours, and be the moſt eaſily diverted by refracting ſurfaces from it's rectilinear courſe; and the reſt as they are bigger and bigger, may make the ſtronger and more lucid colours, blue, green, yellow, and red. See RAINBOW. RED, *&c.*

Nor is any thing more requiſite for the putting of the *rays* into fits of eaſy reflection, and eaſy tranſmiſſion, than that they be ſmall bodies, which by attraction, or ſome other force, excite vibrations in the bodies they act upon; which vibrations being ſwifter than the *rays*, overtake them ſucceſſively, and agitate them ſo as by degrees to increaſe and diminiſh their velocity, and thereby put them into thoſe fits. See TRANSMISSION.

Laſtly, the unuſual refraction of iſland cryſtal looks very much as if it were performed by ſome attractive virtue lodged in certain ſides both of the *rays* and the cryſtal.

Common RAY, in optics, is ſometimes uſed for a right line drawn from the point of concourſe of the two optical axes, through the middle of the right line which paſſes through the middle of the centres of the pupils of the two eyes. See AXIS.

Cone of RAYS.	See	CONE.
Deflection of RAYS.		DEFLECTION.
Inclination of incident RAYS.		INCLINATION.
Optic RAYS.		OPTIC.

Reflexibility of the RAYS. See REFLEXIBILITY.

Principal RAY, in perſpective, is the perpendicular diſtance between the eye, and the vertical plane or table, as ſome call it. See PERSPECTIVE.

Pyramid of RAYS.	See	PYRAMID *of rays.*
Pencil of RAYS.		PENCIL *of rays.*

RAZANT.	See	RASANT.
RAZANT *flank.*		FLANK.
Line of defence RAZANT.		LINE.

RE, in grammar, *&c.* an inſeparable particle, or prepoſition, added at the beginning of words, to vary, double, or otherwiſe modify their meaning.

The modificative *re* was firſt introduced by the *Latins*, from whom it is borrowed into moſt of the modern tongues: Priſcian derives it from *retro*, backwards; others rather derive *retro* from *re*; others derive *re* from the Greek ῥεα, eaſy, or from ῥεω, I flow.

The effect of the *re* is various: uſually it ſignifies *again*, *rurſum*, *ανα*; as in *re*-joyn, *re*-ſign, *re*-ſume, *re*-courſe, *re*-bound, *re*-cite, *re*-hear, *re*-cognize, *re*-compare, *re*-double, *re*-linquiſh, *&c.*

Sometimes it ſtands for *contra*, *αντι*, *againſt*; as in *re*-luctance, *re*-cumbent, *re*-cline, *&c.*

Sometimes for ὑπερ, *ſuper*, over, as in *re*-dundant; ſometimes for *ποῤῥω*, *longe*, *far*, as in *re*-moving, *&c.*

RE, in muſic. See the article NOTE.

RE, in matters of monies. See the article REE.

REACH, in the ſea-language, the diſtance between any two points of land that lie in a right line one from another.

RE-ACTION, in phyſics, the action whereby a body acted upon, returns the action, by a reciprocal one, upon the agent. See ACTION.

The Peripatetics define *re-action* to be that which a paſſive body returns upon the agent, by means of ſome quality contrary to that received therefrom; in the ſame part wherewith the agent acted; and at the ſame time — as if water, while it is heating by the fire, does, at the ſame time, cool the fire.

It was known even in the ſchools, that there is no action in nature, without *re-action*; and it was a maxim among them, *omne agens, agendo repatitur.*

But the equality of the actions was not known; Sir Iſaac Newton eſtabliſhed it as one of the laws of nature, that *action and re-action are equal and contrary*; or that the mutual actions of two bodies ſtriking one againſt another, are exactly equal, but in contrary directions; or in other words, that by the action and *re-action* of bodies one on another, there are produced equal changes in each; and thoſe changes are impreſſed towards directly contrary parts or ways. See *Law of* NATURE.

Thus, whatever body preſſes or draws another, is equally preſſed or drawn by it again: if any one preſs a ſtone with his finger, his finger is as much preſſed by the ſtone.

If a horſe by a rope, *&c.* draw a ſtone, the horſe will be equally drawn by the ſtone; for the rope being ſtretched both ways alike, endeavours to relax itſelf again, and by that means draws the horſe towards the ſtone, and hinders the progreſſion of the horſe, as much as it forwards that of the ſtone.

If any body ſtriking againſt another, doth by it's force any way change it's motion, itſelf will undergo the ſame change in it's own proper motion, but towards a contrary part; from the *re-action* of that body, and the equality of it's mutual preſſion.

By theſe actions are produced equal changes, not indeed of the velocities, but of the motions of bodies; (that is of ſuch bodies as have no impediment any other way) for the changes of their velocities being made towards contrary parts, (becauſe the motions are equally changed) are reciprocally proportional to the bodies themſelves. See Motion.

Some of the ſchool philoſophers deny any ſuch thing as *re-action*, properly ſo called, at all; urging that action ariſes only from the ratio of the greater inequality; that is, we are only to account for action the exceſs of action, or what the agent does more than is returned by the patient. But the equality between action and *re-action*, ſets aſide the exception.

READINGS, in criticiſm—*Various* Readings, *variæ lectiones*, are the different manners of reading the text of authors in antient manuſcripts; where a diverſity has ariſen from the corruption of time, or the ignorance of copiſts. See Text.

A great part of the buſineſs of the critics lies in ſettling the *readings*, by confronting the various *readings* of the ſeveral manuſcripts, and conſidering the agreement of the words, and ſenſe—The various *readings* in the bible and claſſic authors, are almoſt innumerable. See Bible.

Readings are alſo uſed for a ſort of commentary or gloſs on a law, text, paſſage, or the like; to ſhew the ſenſe an author takes it in, and the application he conceives to be made of it. See Commentary, Annotation, Gloss, *&c.*

RE-AFFORESTED, is where a foreſt having been diſafforeſted, is again made a foreſt—As the foreſt of Dean was, by an act of parliament in the 20th of King Charles II. See Forest, Afforest. Disafforest, *&c.*

RE-AGGRAVATION, in the romiſh eccleſiaſtical law, the laſt monitory, publiſhed after three admonitions, and before the laſt excommunication. See Monitory.

Before they proceed to fulminate the laſt excommunication, they publiſh an aggravation, and a *re-aggravation*—Fevret obſerves, that in France the miniſter is not allowed to come to *re-aggravation*, without the permiſſion of the biſhop or official, as well as that of the lay judge. See Excommunication.

REAL, Reale, is applied to a being that actually exiſts; in which ſenſe it coincides with *actual.* See Actual. See alſo Reality.

Real, in law, is oppoſed to *perſonal.* See Personal.

Real *action*, that whereby the plaintiff lays title to land, *&c.* See Action.

Cuſtoms are ſaid to be *real*; that is, they determine all inheritances within their extent; and none may diſpoſe of them, but according to the conditions allowed by the cuſtoms where they are ſituate. See Custom.

Real *altitude.* See the article Altitude.

Real *character.*	See the articles	Character.
Real *chattels.*		Chattels.
Real *covenant.*		Covenant.
Real *diſtinction.*		Distinction.
Real *diſtreſs.*		Distress.

Real *eſtate*, is that conſiſting in lands, tenements, *&c.* See Estate, Goods, *&c.*

Real *horizon.* See Horizon.

Real *optic place.*	See the articles	Place.
Real *patronage.*		Patronage.
Real *privilege.*		Priviledge.
Real *qualities.*		Quality.
Real *root.*		Root.
Real *ſervices.*		Service.
Real *ſuit.*		Suit.
Real *writs.*		Writ.

Real, Rial, or Ryal in commerce. See Rial.

REALGAR, Risigallum, a red friable mineral ſubſtance, popularly called *red arſenic.* See Arsenic.

Realgar is prepared from orpiment, by fuſing it over the fire in a cloſe veſſel. See Orpiment.

It is of an acrimonious nature, and reputed poiſonous, though not in any great degree. See Poison.

Boerhaave takes it for the ſame with the *ſandaracha* of the antients. See Sandaracha.

In the hiſtory of the French academy, we have an account of a cup brought to Paris by the embaſſadors of Siam, and preſented there, as a remedy uſed by that people againſt all diſeaſes. Upon an examination, which had like to have coſt M. Homberg dear, he found it to be a kind of *realgar*, or red arſenic, more cauſtic than ours.

It's uſe among the Siameſe, he takes to have been the ſame with that of *regulus* of antimony; *viz.* to give an emetic quality to the wine drank out of it.

As the doſe of medicines is much ſtronger in the torrid zone than among us, (the quantity of ipecacuanha, *e. gr.* ordinarily taken by the Indians, being twenty times as great as that among us) it is very poſſible a cup of *realgar*, though enough to poiſon an European, may prove a gentle medicine to a Siameſe.

REALISE, in commerce, a term little known in trade before the year 1719, when thoſe immenſe fortunes began to be made in France and England, by the buſineſs of actions or ſtock. See Action, Bubble, Company, *&c.*

By *realiſing* is meant the precaution many of thoſe who had gained moſt, took, to convert their paper into real effects; as lands, houſes, rich moveables, jewels, plate; but above all into current ſpecies. A precaution, capable of ruining the ſtate; but which the French regency had the wiſdom to fruſtrate, by taking proper meaſures to have the money, thus ready to be hoarded up, returned to the public.

REALISTS, Realistæ, a ſect of ſchool philoſophers, formed in oppoſition to the Nominaliſts. See Nominalists.

Under the *Realiſts* are included the Scotiſts, Thomiſts, and all excepting the followers of Ocham. See Scotist, Thomist, *&c.*

Their diſtinguiſhing tenet is, that univerſals are realities, and have an actual exiſtence, out of an idea and imagination; or, as they expreſs it in the ſchool language, *a parte rei*: whereas the Nominaliſts contend that they exiſt only in the mind; and are only ideas, or manners of conceiving things. See Universal.

Doctor Odo, or Oudart, a native of Orleans, afterwards abbot of St Martin de Tournay, was the chief of the ſect of the *Realiſts*; he wrote three books of dialectics; where, on the principles of Boethius and the antients, he maintained that the object of that art is things, not words: whence the ſect took it's riſe, and name.

REALITY, Realitas, in the ſchools, a diminitive of *res*, thing, firſt uſed by the Scotiſts to denote a thing which may exiſt of itſelf, or which has a full and abſolute being of itſelf, and is not conſidered as a part of any other. See Esse, Existence, *&c.*

Yet a *reality* is conceived as ſomething leſs than *res*; and accordingly every *res* is ſuppoſed to contain a number of *realities*, which they otherwiſe call *formalities.*

Thus, *e. gr.* in a man, according to the doctrine of the Scotiſts, are a number of *realities*, *viz.* a ſubſtance, life, animal, and reaſon.

Some diſtinguiſh *reality* into ſubjective and objective. See Subject, and Object.

REALM*, Regnum, *kingdom*, a country which gives it's head or governour the denomination of king. See King, Monarchy, Government, *&c.*

* The word is formed of the French, *Royaume*, which denotes the ſame.

REAR*, a term frequently uſed in compoſition, to denote ſomething behind or backwards in reſpect of another; in oppoſition to *van*, or *vaunt*, before. See Van.

* It is formed by corruption of the French, *Arriere*, ſignifying the ſame.

Rear, in a military ſenſe, is uſed for the hind-part of an army, *&c.* in oppoſition to the *front*, or face thereof. See Front.

Rear-Guard, is that part of an army which marches laſt; following the main body, to hinder or ſtop deſerters. See Guard.

Rear-half-files, are the three hindmoſt ranks of a battalion, when it is drawn up ſix deep. See File.

Rear-line, of an army encamped, is the ſecond line; it lies about four or five hundred yards diſtant from the firſt line, or front. See Line.

Rear-rank, is the laſt rank of a battalion, or ſquadron, when drawn up. See Rank.

Rear-admiral, is the admiral of the third and laſt ſquadron of the royal fleet. See Admiral, Squadron, and Fleet.

REASON, Ratio, a faculty, or power of the ſoul, whereby it diſtinguiſhes good from evil, truth from falſhood. See Soul and Faculty.

Or, *reaſon* is that principle, whereby, comparing ſeveral ideas together, we draw conſequences from the relations they are found to have. See Idea and Relation.

Some of the later ſchool philoſophers define *reaſon* the comprehenſion of many principles which the mind ſucceſſively can conceive, and from which concluſions may be drawn. See Conclusion.

Others conceive *reaſon* as no other than the underſtanding itſelf, conſidered as it diſcourſes. See Understanding and **Discourse**—Chauvin thinks it better defined, an innate notion or idea, farther diffuſed, and ariſing from a continued attention.

Reaſon, Mr Lock obſerves, comprehends two diſtinct faculties of the mind, *viz. ſagacity*, whereby it finds intermediate ideas; and *illation*, whereby it ſo orders and diſpoſes of them as to diſcover what connection there is in each link of the chain, whereby the extremes are held together, and thereby, as it were, draws into view the truth ſought for. Illation, or inference, conſiſts in nothing but the perception of the connection there is between the ideas in each ſtep of the deduction, whereby the mind comes to ſee either the certain agreement or diſagreement of any two ideas; as in demonſtration, in which it arrives at knowledge: or their probable connection, on which it gives or withholds it's aſſent; as in opinion. See **Knowledge** and **Opinion**.

Senſe and intuition reach but a little way: the greateſt part of our knowledge depends upon deductions and intermediate ideas. In thoſe caſes, where we muſt take propoſitions for true, without being certain of their being ſo, we have need to find out, examine, and compare the grounds of their probability: In both caſes, the faculty which finds out the means, and rightly applies them to diſcover certainty in the one, and probability in the other, is that which we call *reaſon*.

In *reaſon*, therefore, we may conſider four degrees: *firſt*, the diſcovering and finding out of proofs. See **Invention**.

Secondly, the regular and methodical diſpoſition of them, and laying them in ſuch order, as their connection may be plainly perceived. See **Method**.

Thirdly, The perceiving of their connection; and,

Fourthly, The making a right concluſion. See **Concluſion**.

Reaſon fails us in ſeveral inſtances: as, *firſt*, Where our ideas fail. See **Idea** and **Ignorance**.

Secondly, It is often at a loſs becauſe of the obſcurity, confuſion, or imperfection of the ideas it is employed about—Thus, having no perfect idea of the leaſt extenſion of matter, nor of infinity, we are at a loſs about the diviſibility of matter. See **Obſcurity**.

Thirdly, Our *reaſon* is often at a ſtand becauſe it perceives not thoſe ideas which would ſerve to ſhew the certain or probable agreement or diſagreement of any two other ideas.

Fourthly, our *reaſon* is often engaged in abſurdities and difficulties, by proceeding upon falſe principles, which being followed, lead men into contradictions to themſelves, and inconſiſtency in their own thoughts. See **Axiom**, **Maxim**, **Principle**, *&c.*

Fifthly, Dubious words, and uncertain ſigns, often puzzle men's *reaſon*, and bring them to a non-plus.

Though the deducing one propoſition from another, be a great part of the office of *reaſon*, and that about which it is uſually employed; yet the principal act of ratiocination is the finding the agreement or diſagreement of two ideas one with another, by the intervention of a third. As a man, by a yard, finds two houſes to be of the ſame length, which could not be brought together to meaſure their equality by juxta-poſition. Words have their conſequences as the ſigns of ſuch ideas and things agree, or diſagree, with what they really are; but we obſerve it only by our ideas. See **Reaſoning**.

Hence we may be able to form an idea of that ordinary diſtinction of things, into ſuch as are *according* to, thoſe that are *above*, and thoſe *contrary* to *reaſon*.

According to reaſon, are ſuch propoſitions, whoſe truth we can diſcover by examining and tracing thoſe ideas we have from ſenſation and reflection, and by natural deduction find to be true or probable.

Above *reaſon* are ſuch propoſitions, whoſe truth or probability we cannot by *reaſon* derive from thoſe principles.

Contrary to reaſon, are ſuch propoſitions as are inconſiſtent with, or irreconcileable to, our clear and diſtinct ideas.

Thus the exiſtence of one God, is according to *reaſon*: the exiſtence of more than one God, contrary to reaſon: the reſurrection of the body after death, above *reaſon*.

Above *reaſon* may be alſo taken in a double ſenſe; *viz.* above probability, or above certainty. See **Probability** and **Certitude**.

They who diſpute moſt againſt the power and privileges of human *reaſon*, do it becauſe their own *reaſon* perſuades them to that belief; and ſo, whether the victory be on their or our ſide, are equally defeated.

They ſeek to terrify us with the example of many great wits, who by following this *ignis fatuus*, (ſo they call the only pole ſtar God has given us to direct our courſe by) have fallen into wild and ridiculous opinions, and increaſed the catalogue of hereſies to ſo great a number: but theſe men either followed not their *reaſon*, but made it follow their will; or firſt hoodwinked it by intereſt and prejudice, and then bad it ſhew them the way; or were wanting in thoſe neceſſary diligences required for ſo doubtful a paſſage: or, if, without any of theſe, the weakneſs of their underſtanding had deceived them; the error is neither hurtful to themſelves, nor would be to others, if this doctrine of governing ourſelves by our own *reaſon*, and not by authority and example, were eſtabliſhed. *Diſc. concern. Hum. Reaſ.*

It is not the uſe of ſuch liberty, but the appropriating it to ourſelves, that is the cauſe of all the diſorders charged thereon: for thoſe who lay a reſtraint on other men's *reaſon*, have firſt made uſe of their own to ſettle them, and do make uſe of it in this very reſtraining of others. *ibid.*

Reason, in matters of religion, is uſed in oppoſition to *faith*. See **Faith**.

This uſe of the word, Mr Lock takes to be in itſelf very improper: for faith is nothing but a firm aſſent of the mind; which if it be regulated, as it is our duty, cannot be afforded to any thing but upon good *reaſon*, and ſo cannot be oppoſite to it. See **Faith**.

He that believes without having any *reaſon* for believing, may be in love with his own fancies, but neither ſeeks truth, as he ought, nor pays the obedience due to his maker, who would have him uſe thoſe diſcerning faculties he has given him, to keep him out of miſtake and error—But ſince *reaſon* and faith are by ſome men oppoſed, it may be neceſſary to conſider them together.

Reaſon, as contradiſtinguiſhed to faith, is the diſcovery of the certainty or probability of ſuch propoſitions, or truths, which it has got by the uſe of it's natural faculties, *viz.* by ſenſation or reflection.

Faith, on the other hand, is the aſſent to any propoſition upon the credit of the propoſer, as coming immediately from god; which we call revelation. See **Revelation**, and **Aſſent**.

Reason, in logick and rhetoric, denotes a neceſſary or probable argument; or an anſwer to the queſtion, *cur eſt?* Why is it? See **Argument**.

As if it be enquired, why do the ſubject and predicate agree? And it is anſwered, becauſe they are ſpoke of the ſame thing: This laſt enunciation is a *reaſon*.

Hence, ſay the ſchoolmen, becauſe, *quia*, is the ſign or character of a reaſon, as *non*, no, of a negation, and *eſt*, is, of an affirmation.

They make three kinds of *reaſons*, *rationes*; *viz. ratio ut*, that; *ne*, leaſt; and *quia*, becauſe. For, anſwering to a queſtion, *cur*, why; we begin with becauſe, *quia*; as, why do you ſtudy? that I may become learned; which is the *ratio ut*. Again, why do you ſtudy? Leaſt I ſhould be ignorant; which is the *ratio ne*. Laſtly, why is a body tangible? Becauſe matter is impenetrable; which is the *ratio quia*.

The *reaſon ut*, properly denotes the end, or final cauſe; and *reaſon ne*, the beginning: accordingly the one is called the beginning, the other the end; ſo that the *reaſon quia*, is left the only *reaſon*, properly ſo called.

Among metaphyſicians, **Reason** is uſed in the ſame ſenſe with eſſence; or that whereby any thing is what it is. See **Eſſence**.

This is ſometimes alſo called formal *reaſon*, as repreſenting the thing under that form or nature under which it is conceived. See **Form** and **Formal**.

Reason, in mathematicks. See the article **Ratio**.

Reason *of ſtate**, *Ratio ſtatus*, in matters of policy, denotes a rule or maxim, whether it be good or evil, which may be of ſervice to the ſtate. See **Government**.

Reaſon of ſtate, is properly underſtood of ſomething that is neceſſary and expedient for the intereſt of the government, but contrary to moral honeſty, or juſtice.

Politicians have a long time diſputed about the *ratio ſtatus*: whether ſtates and governments are tied down to the ſame laws of morality with individual perſons; or whether things, otherwiſe immoral and unlawful, may not be practiced on urgent occaſions, by way of *reaſon* of ſtate?

The queſtion is, whether any thing be unlawful, or prohibited a ſtate, that is neceſſary to the preſervation of that ſtate, or whether it be allowed to preſerve itſelf on any terms?

Challenge upon **Reason**. See **Challenge**.

REASONABLE *aid*, a duty which the lord of the fee antiently claimed of his tenants holding in knight's ſervice, or on ſocage; towards the marrying his daughter, or the making his eldeſt ſon knight. See **Service**, **Socage**, *&c.*

This is taken away by *Stat.* 2. *Car.* II. See **Aid**.

REASONING, **Ratiocination**, the exerciſe of that faculty of the mind called *reaſon*; or reaſon deduced into diſcourſe. See **Reason** and **Discourse**.

The agreement or diſagreement of two ideas, does not appear from the bare conſideration of the ideas themſelves, unleſs ſome third be called in, and compared, either ſeparately or conjointly therewith: the act, then, whereby from ideas thus diſpoſed and compared, we judge this or that to be ſo or not ſo, is called *reaſoning*.

Rohault defines *reaſoning* to be a judgment depending on ſome antecedent judgment: thus; having judged that no even number can be compoſed of five uneven numbers; and that ten is an even number; to conclude that ten cannot be divided into five uneven parts, is a *ratiocination*, or *reaſoning*.

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* The phraſe is borrowed from the Italians, who firſt uſed *ragione di ſtato* in this ſenſe.

This agrees with father Malebranche's doctrine, one of the great points whereof is, that *reaſoning*, on the part of the underſtanding, is only a meer *perceiving*. See PERCEPTION.

That ingenious author endeavours to ſhew, that as to the underſtanding, there is no difference between a ſimple *perception*, a *judgment*, and a *reaſoning*, except in this, that the underſtanding perceives a ſimple thing without any relation to any thing elſe, by a ſimple *perception*—That it perceives the relations between two or more things in a *judgment*—And laſtly, that it perceives the relations that are between the relations of things in a *reaſoning*. So that all the operations of the underſtanding are no more than meer perceptions. See JUDGMENT.

Thus, *e. gr.* when we conclude, that 4 being leſs than 6; twice 2 being equal to 4, are of conſequence leſs than 6; we do no more than perceive the relation of the inequality between the relation of twice two and four, and the relation of 4 and 6. See UNDERSTANDING.

The manner of proceeding juſtly in *reaſoning*, ſo as to arrive with the greater ſafety at the knowledge of truth, makes what we call *method*. See METHOD.

For the real benefit of logic to *reaſoning*. See LOGIC and SYLLOGISM.

RE-ATTACHMENT, in law, a ſecond attachment of him who was formerly attached, and diſmiſſed the court without day, by the not coming of the juſtices, or the like caſualty. See ATTACHMENT.

Brook makes *re-attachment* either *general* or *ſpecial*—*General* is where a man is *re-attached* for his appearance on all writs of aſſize lying againſt him—*Special*, for one or more certain writs.

RE-BAPTISANTS, a religious ſect who maintain that perſons irregularly baptized, are to be baptized a-freſh. See BAPTISM.

The anabaptiſts are *re-baptiſants*, inaſmuch as they baptize thoſe at maturity who had been before baptized in childhood. See ANABAPTIST.

St Cyprian, and pope Stephen, had mighty differences about the rebaptiſation of converted heretics. See HERETIC.

Donatus was condemned at Rome in a council, for having re-baptized ſome perſons who had fallen into idolatry after their firſt baptiſm. See DONATIST.

REBATE, REBATEMENT, in commerce, a term much uſed at Amſterdam, for a diſcount or abatement in the price of certain commodities, when the buyer advances the ſum in hand for which he might have taken time. See DISCOUNT.

Rebate (among us is uſually called *prompt payment*) is eſtimated by months; and is only allowed for certain kinds of merchandizes, which, according to the cuſtom of Amſterdam, are,

German Wools,	which are ſold at	15	Months *rebate.*
Aſhes, and-pot-aſhes,		18	
Italian ſilks,		33	
Sugars of Braſil,		18	
Spaniſh wools,		21	

That is, theſe commodities are ſold for ready money; only deducting or *rebating* the intereſt of the money, which ought not to be paid till the end of 15, 18, &c. months.

This intereſt, called *rebate*, is uſually regulated on the footing of 8 *per cent. per annum*.

The reaſon of this expedient is, that the merchants having not always wherewithal to pay for their goods in hand, by means of the *rebatement*, ſuch as have, will find their account in it; and ſuch as have not, will be engaged to diſcharge themſelves as ſoon as poſſible, in hopes of the diſcount.

REBATEMENT, in heraldry, a diminution or abatement of the dignity of the figures or bearings in a coat of arms. See ABATEMENT.

REBELLION, originally ſignified a ſecond reſiſtance, or riſing of ſuch as had been formerly overcome in battle by the Romans, and had yielded themſelves to their ſubjection.

It is now generally uſed for a traiterous taking up of arms againſt the king, either by his own natural ſubjects, or by thoſe formerly ſubdued.

Rebel is ſometimes alſo uſed in our antient ſtatutes, for a perſon who wilfully breaks a law; and ſometimes for a villain diſobeying his lord.

Commiſſion of REBELLION. See COMMISSION.

REBELLIOUS *aſſembly*, a gathering of twelve perſons, or more, intending, going about, or practiſing, unlawfully, and of their own authority, to change any laws of the realm; or to deſtroy the encloſure of any park, or ground encloſed, banks of fiſh-ponds, pools, conduits, &c. to the intent the ſame ſhall remain void, or that they ſhall have way in any of the ſaid grounds; or to deſtroy the deer in any park, fiſh in ponds, coneys in any warren, dove-houſes, &c. or to burn ſtacks of corn, or to abate rents, or prices of victuals. See RIOT, &c.

REBOUND. See the article RECOIL.

REBUS, a name-device, as Cambden Engliſhes it; or an enigmatical repreſentation of ſome name, &c. by uſing a figure, or picture, inſtead of a word, or part of a word. See NAME and DEVICE.

Such is that of the gallant, mentioned by Cambden, who expreſſed his love to Roſe Hill, by painting in the border of his gown, a roſe, a hill, an eye, a loaf, and a well; which in the *rebus*-ſtile, reads, *roſe hill I love well.*

The Picards have the honour of the Invention of this notable kind of wit; whence the French, to this day; call it, *rebus de Picardie*. Cambden adds, that the Engliſh firſt learned it of them in the reign of our Henry III. by means of the garriſons we then had in Calais, Guienne, and other places bordering on Picardy.

It's origin is by Menage, &c. aſcribed to the prieſts of Picardy, who, it ſeems, antiently, in carnaval-time, uſed every year to make certain libels entitled, *de rebus quæ geruntur*, being railleries on what intrigues and tranſactions had paſſed about the city; wherein they made great uſe of ſuch ſort of equivoques and alluſions, breaking and joining words, and ſupplying them with paintings.

Thus in the *rebus* of Picardy, ſays Marot, a curry-comb, *etrille*; a ſcythe, *faux*; and a calf, *veau*, make *etrille fauveau*. But the practice has been ſince prohibited, by reaſon of the ſcandal.

Cambden tells us, the *rebus* was in wonderful eſteem among our forefathers; and that he was nobody who could not hammer out of his name an invention by this wit-craft, and picture it accordingly.

The ſieur Des Accords, has made an ample collection of the moſt famous *rebus*'s de Picardy. And Mr Cambden has done ſomething of the ſame kind in his Remains—The abbot of Ramſey, he tells us, engraved in his ſeal a ram in the ſea, with this verſe, to ſhew he was a right ram, *cujus ſigna gero, dux gregis eſt ut ego*—Sir Thomas Caval, (Caval ſignifying a horſe) engraved a galloping horſe in his ſeal, with this limping verſe, *Thomæ Creditis, cum cernitis ejus equum*—So John Eagleſhead bore in his ſeal an eagle's head with this motto around it, *Hoc aquilæ caput eſt, ſignumq; figura Johannis.*

Bolton, prior of St Bartholomew's, ſignified his name by a bolt thruſt through a tun—Iſlip, abbot of Weſtminſter, a man highly in favour with Henry VII. had a quadruple *rebus* for his ſingle name; ſometimes he ſet up in his windows the figure of an eye with a ſlip of a tree; ſometimes the letter I with the ſaid ſlip; in other places one ſlipping boughs in a tree; and in others, one ſlipping from a tree; with the word, *I-ſlip*.

Thomas, earl of Arundel, ſignified his name by a capital A in a rundle. Morton, the great archbiſhop of Canterbury, was contented to uſe mor upon a tun; and ſometimes a mulberry called *morus*, out of a tun. So Luton, Thornton, Aſhton, &c. ſignified their names by a lute, a thorn, an aſh, upon a tun. So a hare on a bottle was the device of Harebottle; a mag-pye on a goat, of Pigot; a hare by a ſheaf of rye in the ſun, of Harriſon: Lionel Ducket uſed a lion with an L on it's head, whereas ſays Cambden, it ſhould have been on it's tail: had the lion been eating a duck, adds the ſame author, it had been a rare device, worth a ducat or a duck-egg. Garret Dews ſignified his name on his ſign by two men in a garret caſting dews at dice.

Abel Drugger's device in Ben. Johnſon's Alchymiſt, and Jack of Newberry in the Spectator, are known to every body—But the *rebus* being once raiſed to ſign poſts, grew out of faſhion at court, and has been left to hang there ever ſince; indeed attempts have been lately made for it's reſcue by a reverend divine, in his *Tunbridge-Love-Letters*, &c.

Yet has the *rebus* antiquity on it's ſide, as having been in uſe in the pure auguſtan age: Cicero, in a dedication to the gods, inſcribed Marcus Tullius, with a little pea, called by the Latins *cicer*, by us a *chich-pea*. And Julius Cæſar in ſome of his coins, uſed an elephant, called *Cæſar* in the Mauritanian tongue. Add to theſe, that the two mint maſters in that age, L. Aquilius Florus, and Voconius Vitulus, uſed, the firſt a flower, the ſecond a calf, on the reverſe of their coins.

REBUTTER*, in law, the anſwer of the defendant in a cauſe to the plaintiff's ſurrejoinder. See SURREJOINDER.

* This is called a *rebutter*, from *re*, and the French, *bouter*, to repel, or bar.

The plaintiff's anſwer to the defendant's *rebutter*, is called a *ſur-rebutter*. See SURREBUTTER.

REBUTTER is alſo when a man warrants any land or hereditament to another; and the perſon making the warranty or his heir, ſues him to whom the warranty is made, or his heir or aſſignee, for the ſame thing: if he who is ſo ſued, plead the deed or fine with warranty, and pray judgment if the plaintiff ſhall be received to demand the thing which he ought to warrant to the party, againſt the warranty in the deed, &c. this is called a *rebutter Term de Ley*, 511.

Again, If I grant to the tenant to hold *ſine impetitione vaſti*, and afterwards implead him for waſte; he may debar me of the action, by ſhewing my grant: which is likewiſe a *rebutter*.

RECANTATION. See PALINODY, and RETRACTATION.

RECAPITULATION, in oratory, &c. a part of the peroration; called alſo, *anacephalæoſis*. See PERORATION, &c.

Recapitulation is a ſummary of the preceding diſcourſe; or a conciſe, tranſient enumeration of the principal things inſiſted on at large therein; whereby the force of the whole is collected into one view.

An inſtance of this may be given in the peroration of Cicero's *Manilian: Quare cum bellum ita neceſſarium ſit ut negligi non poſſit: ita magnum ut accuratiſſimè ſit adminiſtrandum; & cum ei imperatorem præficere poſſitis, in quo ſit eximia belli ſcientia, ſingularis virtus, clariſſima auctoritas, egregia fortuna: dubitabitis, quirites, quin, &c.*

RECAPTION, RECAPTIO in law, the taking a ſecond diſtreſs of one formerly diſtrained for the ſame cauſe, and alſo during the plea grounded on the former diſtreſs. See DISTRESS.

Recaption is alſo the name of a writ lying for the party thus diſtrained, to recover damages.

RECEIPT, or RECEIT, in commerce, an acquittance or diſcharge; or an act whereby it appears a thing has been paid off, or acquitted. See ACQUITTANCE.

Where the *receipt* is on the back of a bill, &c. it is uſually called an *indorſement*. See ENDORSEMENT.

Among tradeſmen, RECEIPT uſually makes the ſecond of the three articles of an account: the *receipt* contains the moneys received; the two others the expence, and the return or ballance. See ACCOUNT, and BOOK-KEEPING.

RECEIPT, or RESCEIT, in law, denotes alſo an admiſſion, or receiving of any perſon to plead his right, in a cauſe formerly commenced between two other perſons. See RESCEIT.

RECEIPT *of homage*		RESCEIT.
RECEIPT *of the exchequer*,	See	EXCHEQUER.
RECEIPT, in medicine		RECIPE.

Auditor of RECEIPTS. See the article AUDITOR.

RECEIVER, a veſſel uſed in chemiſtry, pneumatics, &c. See RECIPIENT and EXHAUSTED.

RECEIVER, RECEPTOR, or RECEPTATOR, in law, is uſed commonly in the evil part, for ſuch as knowingly receive ſtollen goods from thieves, and conceal them—The crime is felony, and the puniſhment tranſportation.

RECEIVER, alſo denotes an officer; whereof there are various kinds, denominated from the particular matters they receive, the places where, or the perſons for whom, &c.

As, *receiver* of rents: *receiver* general of the cuſtoms. See CUSTOMS—*Receiver* of the fines, upon original writs in chancery, &c.

RECEIVER *general* of the dutchy of Lancaſter, is he who gathers all the revenues and fines of the lands of the ſaid dutchy, all forfeitures, aſſeſſments, &c. See DUTCHY, &c.

RECENT *fruits*. See the article FRUIT.

RECEPTACULUM *chyli*, RECEPTACULUM *commune*, or *ciſterna chyli*, in anatomy, a reſervoir or cavity near the left kidney, into which the lacteal veſſels do all diſcharge their contents. See LACTEAL.

This receiver, called alſo from it's inventor *ductus pecqueticus*, lies under the emulgent and great arteries, between the two origins of the diaphragma. Hither do the lacteal veſſels of the ſecond order bring the chyle after it's being diluted, and rendered thinner by the lympha in the glands of the meſentery. See CHYLE and MESENTERY.

In a preparation of this part, by filling it with mercury, Mr Cowper found it to conſiſt of three ſeveral large trunks; two of them more than a quarter of an inch in diameter.

This diviſion is only obſerved in human bodies, in whom Dr Drake thinks it's erect poſition makes it neceſſary, in order to take off the reſiſtance which would ariſe from the preſſure of the chyle and lympha, were it contained in a ſingle receiver. In quadrupeds, it's horizontal poſition may make one trunk ſufficient.

It's oſculum, or exit is upwards in the thorax, and thence called the *thoracic duct*. See THORACIC *duct*.

RECEPTION, RECEPTIO, in philoſophy, denotes the ſame with *paſſion*, conſidered as oppoſed to *action*. See PASSION and ACTION.

The ſchoolmen, however, make ſome difference: The *receptive* paſſion, ſay they, does not tend to the deſtruction of the being, as paſſion does; but to the perfection thereof. It is conceived as the acquiſition of ſome new reality or modification, by means of the action of another.

RECEPTION is alſo properly uſed for the manner of treating or entertaining a perſon; and the ſolemnities and ceremonies practiſed on that occaſion. See ENTRY.

The queen of Sweden's *reception* into Paris was one of the moſt magnificent theſe ages have ſeen. The *reception* of embaſſadors is uſually performed with a great deal of pomp.

RECEPTION, is ſometimes alſo uſed for the act of approving, accepting, and admitting a thing. See ACCEPTANCE.

The canon law only binds where it is *received*: The civil law is received in ſome countries, not in others. See CIVIL *law*. The French would never *receive* the council of Trent, the Spaniſh inquiſition, nor the dogmata of the ultramontane canoniſts.

RECEPTION, in aſtrology, is a dignity befalling two planets when they exchange houſes: *e. gr.* when the ſun arrives in cancer, the houſe of the moon; and the moon, in her turn, arrives in the ſun's houſe.

The ſame term is alſo uſed, when two planets exchange exaltation.

RECEPTITIOUS *goods*. See the article GOODS.

RECESSION *of the equinoxes*. See PRECESSION.

RECESSUS *imperii*, RECESS *of the empire*, a phraſe uſed in ſpeaking of the affairs of Germany; ſignifying a collection of the votes or determinations of a diet. See DIET, and IMPERIAL.

At the end of each diet, before it breaks up, they gather together all their reſolutions, and reduce them into writing; the act which contains them they call *receſſus imperii*, becauſe made when on the point of retiring. See EMPIRE.

There being, now, no articles of ſuccours for the war againſt the Turks, which uſed to make the greateſt part of the *receſſus imperii*; they are at a loſs for matter to fill them withall, as well as for the manner of drawing them up. *Mozambano.*

The diſorders in the imperial chamber of Spires were ſo great, that in 1654, they made ſeveral regulations therein; inſerted in the *receſſus imperii. Id.* See CHAMBER.

RECHABITES, a kind of religious order among the antient Jews, inſtituted by Jonadab the Son of Rechab; comprehending his family and poſterity.

Their founder preſcribed them three things; *firſt*, not to drink any wine. *Secondly*, not to build any houſes, but to dwell under tents. *Thirdly*, not to ſow any corn, or plant any vines.

The *Rechabites* obſerved theſe rules with a great deal of ſtrictneſs, as appears from Jeremy xxxv. 6, &c.—Whence, St Jerom in his xiiith epiſtle to Paulinus, calls them *Monachi*, *Monks*. Jonadab, their founder, lived under Jehoaſh, king of Judah, cotemporary with Jehu king of Iſrael; his father Rechab, from whom his poſterity were denominated, deſcended from Raguel or Jethro, father-in-law to Moſes, who was a Kenite, or of the race of Ken; whence *Kenite* and *Rechabite*, are uſed as ſynonymous in ſcripture.

RECHACING, in hunting, the driving back of the deer, or other beaſts, into the foreſts, chaces, &c. which had ſtragled out into the copſes, or thickets, &c. See FOREST, &c.

Antiently there were offices of *rechacers* of the deer, beſtowed by the king on gentlemen, or old hunters, with ſalaries for the keeping of running dogs, to *rechace* the deer into the foreſts, and then to beat the dogs off, without purſuing any farther. See PURLIEU.

RECHANGE in Commerce. See RE-EXCHANGE.

RECHANGE is alſo uſed at ſea for ſuch tackle as is kept in reſerve aboard the ſhip, to ſerve in caſe of failure of that already in uſe. See TACKLE.

The Levantines uſe the word *reſpect* or *reſpit* in the ſame ſenſe.

RECHARGE, of a fire-arm, is a ſecond loading or charge. See CHARGE,

The *recharge* ſhould never be ſo deep as the firſt charge, leaſt the piece being over-heated ſhould burſt. See CANNON, &c.

RECHEAT, in hunting, a leſſon which the huntſman winds on the horn, when the hounds have loſt their game; to call them back from purſuing a counter-ſcent. See HORN, HUNTING, &c.

RECIPE, in medicine, a preſcription, or formula of a remedy, appointed to be adminiſtred to a patient. See PRESCRIPTION.

It is thus called, becauſe always beginning with the word *recipe*, take; ordinarily expreſſed by the abbreviator ℞.

RECIPIANGLE, or RECIPIENT-ANGLE, a mathematical inſtrument, ſerving to take the quantity of angles; uſed eſpecially in the drawing plans of fortifications.

The *recipiangle* is a popular inſtrument among the French, but little known among us: it is uſually very ſimple, in form of a ſquare, or rather a bevel; conſiſting of two arms or branches, riveted together, and yet moveable, like a ſector on the centre or rivet. See BEVEL.

To take an angle with it, they lay the centre of a protractor to the joint, and the degrees cut by the edge ſhew the quantity of the angle: otherwiſe the angle made by the two rulers is drawn on paper, and then meaſured with a protractor. See ANGLE.

Sometimes there is a circle divided into degrees added over the centre or rivet, with an index to ſhew the degrees without a protractor—At other times the under branch is divided. To meaſure a ſaliant angle with any of the *recipiangles*, apply the inſides to the lines that form the angle; for a reentring angle, apply the outſides, &c.

RECIPIENDO *excommunicato*. See EXCOMMUNICATO.

RECIPIENDO *& faciendo atturnato*. See ATTURNATO.

RECIPIENT, RECEIVER, in chemiſtry, an appendage of an alembic, retort, &c. being a veſſel luted to the beak thereof, to receive the liquor raiſed in diſtillation, &c. See Alembic, Retort, Distillation, &c.

Recipient is alſo part of the apparatus of an air-pump; being a glaſs veſſel placed a-top of the plate, for the air to be exhauſted from. See Air-pump.

To an air-pomp belong various *recipients*, of various forms and ſizes, and ſerving for various purpoſes. See Vacuum.

RECIPROCAL, **Reciprocus**, ſomething that is mutual, or which is returned equally on both ſides, or affects both parties alike. See Mutual.

The end of human ſociety is to afford each other *reciprocal* aid: there are *reciprocal* duties between the prince and his ſubjects, the husband and wife, &c. There is a *reciprocal* action between the agent and patient. See Reaction. The *lex talionis* eſtabliſhes a kind of *reciprocation* of juſtice. See Talio.

If two ſimilar triangles be cut by parallel lines, the ſections of the ſides will be proportional; and *reciprocally*, if the ſides be cut proportionably, the triangles are ſimilar. See Triangle.

Reciprocal, in logic, is applied to terms which have the ſame ſignification, or are convertible—as, *reaſonable animal*, and *man*. See Term, and Synonymous.

Schoolmen define *reciprocation*, a converſion of the ſeveral terms in an enunciation—And terms are ſaid to be converted in an enunciation, when the predicate is put in the place of the ſubject, and *reciprocally*, the ſubject in that of the predicate. See Converse and Conversion.

Thus rationality and riſibility are ſaid to *reciprocate*; for we ſay equally, *a rational is riſible*; and a *riſible is rational.*

Reciprocal, in grammar, is applied to certain verbs and pronouns in ſome of the modern languages; in regard of their turning or reflecting the noun, or perſon upon himſelf.

Thus the pronoun-relative *himſelf*, refers Cato to Cato's ſelf. See Pronoun.

The abbe de Dangeau defines *reciprocal verbs* to be thoſe whoſe nominative is plural, and denotes perſons acting mutually on one another: as, *Ces quatre hommes s' entrebattoient*; theſe four men fought together. *Pierre & toi vous vous louez*; Peter and you praiſe one another, &c.

Reciprocal verbs are a ſpecies of thoſe which that author calls *pronominals*, and which he diſtinguiſhes into *reciprocal* and *identical*. See Verb.

Reciprocal, in poetry, is applied to verſes which run the ſame both backwards and forwards; called alſo *recurrents*. See Recurrent.

Reciprocal *figures*, in geometry, are ſuch as have the antecedents and conſequents of the ſame ratio in both figures. See *Tab. Geom. fig.* 22. n^{o}. 2. Here,

$$A : B :: C : D, \text{ or, }$$

$$12 : 4 :: 9 : 3$$

That is, as much longer as the ſide A, in the firſt rectangle, is than B; ſo much deeper is the ſide C in the ſecond rectangle, than the ſide D in the firſt: and conſequently, the length of one is compenſated by the depth of the other.

Alſo, as the ſide A is $\frac{1}{4}$ longer than the ſide C, ſo the ſide B is $\frac{1}{4}$ longer than D: wherefore the rectangles muſt needs be equal. See Rectangle.

This is the foundation of that catholic theorem; that the rectangle of the extremes muſt always be equal to that of the means: and conſequently, the reaſon of the rule of three, or golden rule. See Rule.

For, ſuppoſe there was given any three numbers, or quantities, geometrically proportional, as A, B, and C; and that it were required to find a fourth, D, proportional to them: ſince $A : B :: C : D$, therefore $AB = BC$, and conſequently, $D = \frac{BC}{A}$ that is, the fourth term is equal to the quotient of the ſecond, multiplied by the third term, divided by the firſt.

Or thus in numbers: ſuppoſe given 12, 4, and 9; required a fourth proportional. Now as $12 : 4 :: 9 : Q$. But $12\,Q = 4 \times 9 = 36$. Therefore $Q = \frac{4 \times 9}{12}$ (: 3. by dividing both ſides by 12.

And hence it follows, that if any two triangles, parallelograms, priſms, parallelepipeds, pyramids, cones, or cylinders, have their baſes and altitudes *reciprocally* proportional, thoſe two figures or ſolids are equal to one another; and *vice verſa*, if they are equal, their baſes and altitudes are *reciprocally* proportionable. See Triangle, Parallelepiped, Prism, Cone, Cylinder, &c.

Reciprocal *proportion*, is when in four numbers, the fourth is leſſer than the ſecond, by ſo much as the third is greater than the firſt; and *vice verſa*. See Proportion. This is the foundation of the inverſe, or indirect rule of three. Thus; 4 : 10 : 8 : 6. See Rule.

Great uſe is made of this *reciprocal proportion*, by Sir Iſaac Newton, and others, in demonſtrating the laws of motion. See Motion.

Reciprocal *theorem*. See the article Theorem.

RECITATION, the act of *reciting*, or delivering a diſcourſe, either in the way of narration, rehearſal, declamation, or reading. See Declamation, &c.

RECITATIVO, or **Recitative** *muſick*, a kind of ſinging, which differs but little from ordinary pronunciation: ſuch as that wherein ſeveral parts of the liturgy are rehearſed in cathedrals, or that wherein the actors ordinarily deliver themſelves on the theatre, at the opera, &c. See Singing and Opera.

The Italians value themſelves on their performance in the *recitative* way. The *recitative's*, or *recitativo's*, in our operas, uſually tire the audience, by reaſon they do not underſtand the language; the ſongs make them amends. See Song.

Recitative *ſtyle*, is the way of writing accommodated to this ſort of muſic. See Style.

RECKONING, in navigation, the act of eſtimating the quantity of a ſhip's way; or of the diſtance run between one place and another. See Sailing and Distance.

This is uſually performed by means of the log line; the manner of applying which ſee under it's proper article, Log-line.

Yet is this liable to great irregularities—Vitruvius adviſes an axis to be paſſed through the ſides of the ſhip, with two large heads propending out of the ſhip, wherein are to be included wheels touching the water, by whoſe revolution the ſpace paſſed over in any giving time, may be meaſured. The ſame has been lately recommended by Snellius: but there are few who have wrote of navigation, but have ſhewn the inſufficiency of this method.

Dead **Reckoning**. See Dead *reckoning*.

RECLAIMING, or **Reclaming**, in our antient cuſtoms, the action of a lord purſuing, proſecuting, and recalling his vaſſal, who had gone to live in another place, without his permiſſion. See Lord and Vassal.

Reclaiming is alſo uſed in a ſimilar ſenſe, for the demanding of a perſon or thing to be delivered up, or ſurrendered, to the prince or ſtate it properly belongs to; when, by any irregular means it has come into the poſſeſſion of another. See Claim.

An officer was ſent to reclaim the veſſel ſeized by the Algerines, contrary to the terms of the treaty of peace. The government *reclaimed* the late caſhier of the South-ſea company, who had refuged himſelf in Flanders, but in vain.

Reclaiming, in falconry, is the calling of a hawk, or bird of prey back to the fiſt. See Hawk, and Falcon.

The ſpar-hawk, gos-hawk, &c. are *reclaimed* with the voice: the falcon only by ſhaking the lure--So that luring with regard to the falcon, is more proper than *reclaiming*. See Lure.

The partridge is alſo ſaid to reclaim her young ones, when ſhe calls them together upon their ſcattering too much.

RECLINATION, of a plane, in dialling, the number of degrees which a dial-plane, leans backwards, from an exactly upright or vertical plane, *i. e.* from the zenith. See Plane.

The *reclination* is eaſily found, by means of a ruler and a quadrant; for having drawn an horizontal line on the plane by a level or quadrant, and to it another line at right angles; apply a ruler, ſo that one end of it may hang over, or reach beyond the plane: then will a quadrant, applied to the under edge of the ruler, ſhew the degrees and minutes of the plane's *reclination*; accounting from that ſide of the quadrant that is contiguous to the edge of the ruler. See Dial, Quadrant, &c.

RECLINER, or **Reclining** *dial*, is a dial whoſe plane *reclines* from the perpendicular; *i. e.* leans from you when you ſtand before it. See Reclination.

When this reclination is equal to the height of the pole, the dial is ſaid to be equinoctial. See Dial.

Declining **Recliner**, or *declining* **Reclining** *dial*, is a dial which neither ſtands perpendicularly, nor oppoſite to one of the cardinal points. See Decliner.

RECLUSE, among religious, a perſon cloſe ſhut up in a very narrow cell of a hermitage, or other religious houſe; and cut off, not only from all converſation with the world, but even with the houſe. See Hermit, &c.

The word is chiefly uſed for ſuch as thus impriſon themſelves out of devotion, to do penance—It is ſometimes alſo applied to incontinent wives, whom their husbands procure to be thus kept in a perpetual priſon in ſome convent. See Adultery, &c.

Recluſes were antiently very numerous: they were then a kind of ſolitaries who ſhut themſelves up in ſome little cell, with a vow never to ſtir out of it. See Monk, Anachoret, &c.

None were admitted to this oath until they had given ſufficient proofs of their abſtinence, and had leave from the biſhop, or the abbot of the monaſtery where they were ſhut up: for the cells of the *recluſes* were always to join to ſome monaſtery.

The prelate's permiſſion being obtained, they were tried for a year in the monaſtry; out of which, during that time, they never ſtirred. See Probation.

They were then admitted to their vow of ſtability in the church before the biſhop; which being done, and the *recluſe* entered his little cell, the biſhop ſet his ſeal on the door.

The cell was to be very ſmall, and very exactly cloſed. See CELL—The *recluſe* was to have every thing within it neceſſary to life; and, even, if he were a prieſt, an oratory conſecrated by the biſhop, with a window which looked into the church, through which he might make his offerings at the maſs, hear the ſinging, ſing himſelf with the community, and anſwer thoſe who talked to him. But this window was to have curtains before it, both within-ſide and without; ſo that the *recluſe* might neither ſee nor be ſeen.

Indeed he was allowed a little garden in his *recluſion*, to plant a few herbs and take freſh air: adjoining to his cell was that of his diſciples, which, he was very rarely without; with a window, through which they ſerved him with neceſſaries, and received his inſtructions.

When it was judged proper to have two or three *recluſes* together, their cells were made contiguous to each other, with windows of communication: if any woman would conſult them, or confeſs to them, it was to be in the church, and in the face of all the world.

Where there were two or three *recluſes* together, they were never to hold any conference, but on ſpiritual matters; and to confeſs to each other: where there was but one, he was to confeſs and examine himſelf.

If the *recluſe* fell ſick, his door was opened for people to come in and aſſiſt him; but he was not allowed to ſtir out on any pretence whatever.

Theſe articles are extracted from the rule, compiled for the *recluſes*, by Grimlaic, a prieſt in the IXth century.

There were alſo women *recluſes*, who led the ſame life, in proportion. St Viborade lived a *recluſe* at St Gall, and was there martyred by the Hungarians in 825. See RECLUSION.

RECLUSION, the ſtate of a recluſe; or the cell and other appurtenances thereof. See RECLUSE.

F. Helyot gives a particular account of the ceremonies practiſed in the *recluſion* of a woman, in that of mother de Cambray, inſtitutrix of the order of the preſentation of Notre Dame. A cell being built for her in 1625, adjoining to the church of St Andrew in Tournay: the biſhop waited for her early in the morning at the church door. Upon her arrival, proſtrating herſelf at the feet of that prelate, he gave her his benediction, conducted her to the grand altar; and there bleſſing a mantle, veil, and ſcapular, put them on her, and gave her a new name.

Having here made her vow, and the biſhop having harangued the people in praiſe of the new *recluſe*; he conducted her proceſſionally to her *recluſion*; the clergy all the way ſinging *Veni ſponſa Chriſti*, &c.

Here the biſhop bleſſing her a-freſh, conſecrated the *recluſion*, and ſhut her up in perpetual confinement.

RECOGNISANCE. See the article RECOGNIZANCE.

RECOGNITION, RECOGNITIO, denotes an acknowledgment—The word is particularly uſed in our law-books, for the title of the firſt chapter of the Stat. 1 Jac. I, whereby the parliament acknowledged the crown of England, after the death of queen Elizabeth, to have rightfully deſcended to king James.

RECOGNITION, in the drama. See DISCOVERY.

RECOGNITIONE *adnullanda per vim & duritiem facta*, is a writ to the juſtices of the common-bench, for ſending a record touching a recognizance, which the recognizor ſuggeſts to have been acknowledged by force and hard dealing: that if it ſo appear it may be diſannulled. See RECOGNIZANCE.

Tranſcriptio RECOGNITIONIS *factæ coram juſticiariis itinerantibus*. See TRANSCRIPTIO.

RECOGNIZANCE, or RECOGNISANCE, in law, a bond, or obligation of record acknowledged to the king; teſtifying the *recognizor* to owe to the *recognizee*, a certain ſum of money.

It is thus called, becauſe *recognized*, or acknowledged in ſome court of record, or before ſome judge, maſter in chancery, or juſtice of the peace.

Meer *recognizances* are not ſealed, but enrolled; and execution, by force thereof, is of all the recognizor's goods or chattels, (except draught beaſts, or implements of huſbandry) and the moyety of his land.

There are alſo *recognizances* for bail, others for appearing at the ſeſſions to proſecute a felon, others for good behaviour, &c.

RECOGNIZANCE is alſo uſed in our antient ſtatutes, for the verdict of the twelve jurors impanelled upon an aſſize; hence called *recognitors*. See JURY and VERDICT.

RECOGNIZEE, is he to whom one is bound in a recognizance—He that is ſo bound is called RECOGNIZOR.

RECOIL, or REBOUND, the reſilition of a body, chiefly a fire-arm; or the motion whereby, upon exploſion, it ſtarts or flies backwards. See GUN, MORTAR, &c.

The greater the charge, *cæteris paribus*, the greater the rebound—By an experiment made before the royal ſociety, and related in the *Philoſ. Tranſact.* it was found that cannons charged to a certain degree, throw the ball from right to left of their own direction; but that the cannons themſelves *recoil* from left to right.

Some of the gentlemen of the French academy, doubting the juſtneſs of the obſervation, Mr Caſſini, the younger, undertook to repeat the experiment; which he did by means of a machine, as like that uſed in England as he could; and that tried over, and over again.

The reſult was, that the ball, when the gun had liberty to *recoil*, was always thrown to the right of the point to which it was thrown when the gun was fixed without a poſſibility of rebounding; but then the *recoil* was always made the ſame way, *viz.* to the right; and he never found that contrariety of directions between the ball and the rebound, obſerved in the Engliſh experiment. See *Hiſt. Acad. R. Scienc. A.* 1703. *p.* 120, &c.

The cauſe of the Phænomena ſeems very difficult to aſſign: for ſuppoſing the guns of a common make, with the touch-hole on the top, we cannot ſo much as gueſs what cauſe ſhould conſtantly determine the ball from right to left—Unleſs ſome very material circumſtances be omitted in the recital they have given us of the experiment.

RECOLLECTION, a mode of thinking, whereby thoſe ideas ſought after by the mind, are with pain and endeavour found, and brought again to view. See MEMORY, REMINISCENCE, MODE, THINKING, &c.

RECOLLECTS, a congregation of reformed Franciſcans, called alſo *Friars minor of St Francis, of the ſtrict obſervance.* See FRANCISCAN.

They were eſtabliſhed about the year 1530; when ſome religious of the order of St Francis, willing to keep his rule to the letter; Clement VII. gave them houſes, particularly Tulles in the Limoſin, and Murat in Auvergne, whither they might retire, and receive ſuch as were diſpoſed to follow them—The ſame year he approved the reform; and in 1584 it was carried into Italy.

RECOMMENDATI. See AFFIDATUS.

RECONCILIARI, in our law-books, &c.—A church is ſaid *reconciliari*, to be *reconciled*, when it is conſecrated afreſh, after having been polluted or profaned; as by the poſſeſſion of pagans, heretics, &c. See CHURCH, CONSECRATION, PROFANATION.

RECONNOITRE*, in war, to go view and examine the ſtate of things, in order to make a report thereof.

* The word is pure French, ſignifying litterally, to *know*, *recollect*.

We ſay, to *reconnoitre* the coaſts, to *reconnoitre* a port, &c.—A body of horſe was ſent to *reconnoitre* their camp, the ground, the condition of the roads, rivers, &c.

A general is to go *reconnoitre* in perſon, the place to be beſieged, in order to learn it's ſituation, avenues, it's ſtrengths and weakneſſes.

RECONNOITRE is alſo uſed at ſea—To *reconnoitre* a veſſel, a fleet, &c. is to approach near enough to examine the rate and burthen of a veſſel, &c. the force it may have a-board, what nation it is of, &c.

To *reconnoitre* a land, or ſhore, is to obſerve it's ſituation, in order to find what land it is.

RECORD, RECORDUM, in law, an authentic teſtimony of any thing in writing, contained in rolls of parchment, and preſerved in a court of *record*. See COURT, ROLL, &c.

Records are ſaid to be *vetuſtatis, & veritatis, veſtigia*—An act committed to writing in any of the king's courts, during the term wherein it is written, is alterable; being no *record*: but that term once ended, and the act enrolled, it is a *record*, and of ſuch credit, as admits no alteration, or proof to the contrary.

Lawyers reckon three ſorts of *records*: *viz.* a *judicial record*, as attainder, &c.—a *miniſterial record* upon oath, as an office of inquiſition found—and a *record* made by *conveyance* and conſent, as a fine, or deed enrolled, and the like.

Matter of RECORD.	See	MATTER.
Muſter of RECORD.		MUSTER.
Oyer de RECORD.		OYER.
Priſoner upon matter of RECORD.		PRISONER.

RECORD, among fowlers: a bird is ſaid to *record*, when it begins to tune or ſing within itſelf; to form it's notes, and diſpoſe it's organs for ſinging.

The cock thruſh is diſtinguiſhed from the hen in *recording*; the firſt being more loud and frequent than the ſecond.

RECORDARE *facias*, a writ directed to the ſheriff to remove a cauſe depending in an inferiour court, as hundred-court, county-court, court of antient demeſne, &c. to the king's-bench, or common-pleas.

It is thus called, becauſe it commands the ſheriff to *make a record* of the proceedings either by himſelf, or others; and then to ſend up the cauſe.

RECORDER, RECORDATOR, a perſon whom the mayor, or other chief magiſtrate of any city or town corporate having juriſdiction and a court of *record* within their precincts, does aſſociate with him, for his better direction in matters of juſtice, and proceedings according to law. See Mayor, &c.

He is uſually a man verſed and experienced in the common law—In ſome towns which have their particular aſſizes within themſelves, and no mayor, the *recorder* is the judge.

RECORDO & *proceſſo mittendis*, is a writ to call a *record*, together with the whole proceedings in the cauſe, out of an inferior court into the king's court.

RECOVERY, in a legal ſenſe, an obtaining of any thing by judgment, or trial at law: anſwering to *evictio* among the civilians. See Judgment and Trial.

There is a *true*, and a *feigned recovery*.

True Recovery is an actual or real *recovery* of any thing, or the value thereof, by judgment—as if a man ſue for any land, or other thing, and have a verdict, and judgment for him.

Feigned, or *common* Recovery, is a ſort of *fictio juris*; being a certain form or courſe preſcribed by law to be obſerved for the better aſſuring of lands and tenements to us; the end and effect whereof is to diſcontinue and deſtroy eſtates tail, remainders, and reverſions, and to bar the intails thereof. See Tail, Remainder, Reversion, &c.

This *recovery* is either with a *ſingle*, or a *double voucher*.

In Recovery *with a ſingle voucher*, there are three parties required, the *demandant*, the *tenant*, and the *vouchee*.

The demandant is he who brings the writ of entry, and may be termed the *recoverer*—The tenant is he againſt whom the writ is brought, and may be called the *recoveree*—The vouchee is he whom the tenant voucheth, or calls to warrant for the land in demand. See Vouchee.

Recovery *with double voucher*, is where the tenant voucheth one, who voucheth another, or the common vouchee.

The point is a little quaint, and perplexed: to explain it, ſuppoſe a man deſirous to cut of an eſtate tail in lands or tenements, to the end that he may ſell, give, or bequeath them; the firſt thing he does, is to cauſe a feigned writ of entry, *ſur deſſeiſin in le poſt*, to be brought, of the lands of which he intends to dock the entail; and in a feigned declaration thereupon made, pretends he was diſſeiſſed by him, who by a feigned fine, or deed of bargain and ſale, is named and ſuppoſed to be tenant of the lands.

This feigned tenant, if it be a ſingle *recovery*, is made to appear, and vouch a poor fellow, the bag-bearer of writs of the cuſtos brevium of the common-pleas; (where alone theſe common *recoveries* are allowed) who makes default: upon which a judgment is by this fiction entered, that the demandant ſhall recover, and have a writ of ſeiſin for the poſſeſſion of the lands in queſtion; and that the tenant ſhall recover the value of the lands againſt the lands of the vouchee bag-bearer, (who has not a foot of land) which is an imaginary ſatisfaction for the heir in tail, though he is to be never the better for it. See Entail.

By this means one Edward Howes, a bag-bearer, and common vouchee, in the ſpace of 20 years, paſſed, or ſuffered to be *recovered* againſt him, a great part of the lands of England; obliging his own lands to anſwer the value of thoſe recovered againſt the tenants or remainders in tail.

Clerk of enrollments of Recoveries *and fines*. See Clerk.

RECOUPE*, in law, to rebate or diſcount. See Rebate and Discount.

* The word is pure French, formed of *re* and *couper*, to cut again.

Thus, if a man have ten pounds iſſuing out of certain lands, and he diſſeiſes the tenant of the land; in an aſſize brought by the diſſeiſee the diſſeiſor ſhall *recoupe* the rent in the damages.

Recoupe, alſo denotes a quick ſharp reply to a peremptory demand. See Repartee.

RECREANT, in our old law-books, implies cowardly, faint-hearted. See Champion, Combat and Duel.

Hence, *recreantiſe*. See the article Craven.

Recreant was ſo reproachful a word, that Glanville would not deſcribe it--*Recreantes equi* is uſed by Fleta, lib. 2. cap. 2. for dull, jaded horſes.

RECREMENT, Recrementum, in medicine, ſome ſuperfluous matter mixed with other that is uſeful. See Fæces.

In which ſenſe it amounts to much the ſame with *fæces*, or *excrement*. See Fæces and Excrement.

Recrement is ſometimes alſo uſed to denote ſuch ſecreted juices in the body, as are afterwards of uſe to the œconomy: as the lympha, gall, &c.—which are thus called in contradiſtinction to *excrements*, which are expelled out of the body, as of no farther uſe. See Excrement.

RECRIMINATION, a poſterior accuſation brought by the accuſed againſt his accuſer, upon the ſame fact. See Accusation.

When two parties have made their mutual complaint at the ſame time; the buſineſs is firſt, to determine who ſhall be the accuſer, and who the accuſed; *i. e.* on whom ſhall fall the *recrimination*.

By the French laws, *recrimination* is of no force till the criminal have been purged legally.

RECRUDESCENCE, Recrudescentia, in medicine, is, when a diſeaſe that was gone off returns again. See Relapse.

RECTANGLE, in geometry, called alſo *oblong*, and *long ſquare*, a quadrilateral rectangular figure, (MLIK, *Tab. Geometry*, *fig*. 60) whoſe oppoſite ſides (OP and NQ, as alſo ON and PQ) are equal. See Quadrilateral.

Or, a *rectangle* is a parallelogram, whoſe ſides are unequal, but angles right. See Parallelogram.

To find the area of a rectangle; meaſure the length of the ſides ML and MI; and multiply them by one another: the product is the area of the *rectangle*.

Thus ML being = 345 foot, and MI = 123 foot; the area will be found 42435 ſquare feet.

Hence, 1°, *rectangles* are in a ratio compounded of that of their ſides ML and IK; and therefore *rectangles* which have the ſame height, are to each other as their baſes; and thoſe which have the ſame baſe are to each other as their heights.

2°, If therefore there be three lines in continual proportion; the ſquare of the middle one is equal to the *rectangle* of the two extremes. See Proportion.

3°, If there be four right lines in continual proportion; the *rectangle* under the extremes is equal to the *rectangle* under the middle terms.

4°, If from the ſame point A *fig*. 61. be drawn two lines; one whereof, AD. is a tangent to a circle, the other a ſecant AB: the ſquare of the tangent AD, will be equal to the *rectangle* under the ſecant AB; and that part of it without the circle, AC.

5°, If two or more ſecants A*a*, AB; &c. be drawn from the ſame point A; the *rectangles* under their wholes and their parts without the circle, will be equal. See Secant.

6°, If two chords interſect each other, the *rectangles* under their ſegments will be equal. See Chord.

Similar Rectangles. See the article Similar.

Rectangle, in arithmetic, is the ſame with *product* or *factum*. See Product and Multiplication.

RECTANGLED, Right-angled, *triangle*, is a triangle, one of whoſe angles is right, or equal to 90°.

There can be but one right angle in a plain triangle; therefore a *rectangled* triangle, cannot be equilateral. See Triangle.

RECTANGULAR, in geometry, is applied to figures, and ſolids which have one or more angles right. See Angle, &c.

Such are ſquares, rectangles, and rectangled triangles among plain figures; cubes, parallelepipeds, &c. among ſolids. See Figures, Solid, &c.

Solids are alſo ſaid to be *rectangular* with reſpect to their ſituation: thus, if a cone, cylinder, &c. be perpendicular to the plane of the horizon, it is called a *rectangular* or *right* cone, cylinder, &c. See Cone and Cylinder.

The antients uſed the phraſe *rectangular ſection of a cone*, to denote a parabola; that conic ſection, before Apollonius, being only conſidered in a cone whoſe ſection by the axis would be a triangle, right-angled at the vertex.

Hence it was that Archimedes entitled his book of the quadrature of the parabola, by the name of *rectanguli coni ſectio*.

Rectangular *barometer*. } See { Barometer.
Rectangular *windmills*. } See { Windmills.

RECTIFICATION*, the act of *rectifying*, i. e. of correcting, remedying, or redreſſing ſome defect or error, in reſpect either of nature, art, or morality. See Right, Rectitude, &c.

* The word is compounded of *rectus*, right, direct, and *fio*, I become.

Rectification, in chemiſtry, is the repeating of a diſtillation or ſublimation ſeveral times; in order to render the ſubſtance purer, finer, and freer from aqueous, or earthy parts. See Distillation.

Rectification is a reiterated depuration of a diſtilled matter, *e. gr.* brandy, ſpirits, or oils; by paſſing them again over their fæces, or marc, to render them more ſubtile, and exalt their virtues. See Spirit, &c.

Fixed ſalts are *rectified* by calcination, diſſolution, or filtration. See Salt, Dissolution, &c.

Metals are *rectified*, i. e. *refined*, by the *coppel*; regulus's, by repeated fuſions, &c. See Mettal, Refining, &c.

Rectification, in geometry, is the finding of a right line equal to a curve. See Curve.

All we need to find the quadrature of the circle, is the *rectification* of it's circumference; it being demonſtrated, that the area of a circle is equal to a rectangled triangle, whoſe two ſides comprehending the right angle, are the radius, and a right line equal to the circumference. See Circle and Circumference.

To *rectify* the circle, therefore, is to *ſquare* it: or rather, both the one and the other are impoſſible—For the various attempts to rectify the circle in order to the quadrature, &c. See QUADRATURE *of the circle.*

The *rectification of curves* is a branch of the higher geometry; wherein the uſe of the new-invented integral calculus, or inverſe method of fluxions, is very conſpicuous—For, ſince a curve line may be conceived to conſiſt of innumerable right lines, infinitely ſmall; if the quantity of one of them be found, by the differential calculus; their ſum, found by the integral calculus, gives the length of the curve.

Thus, if M R (*Tab. Analyſ. fig.* 18.) $= dx$, and m R $= dy$; Mm, or the element of the curve will be $\sqrt{dx^2 + dy^2}$. See ELEMENT.

If then, from the differential equation, to the particular curve, we ſubſtitute the value either of dx^2, or of dy^2, we ſhall have the particular element, which being integrated, gives the length of the curve. See CALCULUS *Integralis* and FLUXIONS.

Indeed the element of the curve is ſometimes more commodiouſly determined from ſome particular circumſtances; inſtances whereof we ſhall give in the *rectification of the parabola* and *cycloid.*

To RECTIFY *the parabola*—For this we have

$$adx = 2ydy$$

$$a^2\,dx^2 = 4y^2\,dy^2$$

$$dx^2 = 4y^2\,dy^2 : a^2$$

$$\sqrt{(dx^2 + dy^2)} = \sqrt{(dy^2 + 4y^2\,dy^2 : a^2)} = dy\sqrt{(aa + 4yy} : a.$$

To render this element of the curve integrable; let it be reſolved into an infinite ſeries; (ſee SERIES.) Then in the general theorem.

$$n = 2 \quad m = 1 \quad P = a^2 \quad Q = 4y^2 : a^2 \quad P^{m:n} = a = A$$

$$\frac{m}{n}AQ = \tfrac{1}{2}a.\,4y^2 : a^2 = -2y^2 : a = B$$

$$\frac{m-n}{2n}BQ = -\tfrac{1}{4}.\frac{2y^2}{a}.\frac{4y^2}{a^2} = -\frac{2y^4}{a^3} = C$$

$$\frac{m-2n}{3n}CQ = -\tfrac{3}{6}.-\frac{2y^4}{a^3}.\frac{4y^2}{a^2} = \frac{4y^6}{a^5} = D$$

$$\frac{m-3n}{4n}DQ = -\tfrac{5}{8}\,\frac{4y^6}{a^5}.\frac{4y^2}{a^2} = -\frac{10y^8}{a^7},\ \&c.\ \text{in infinitum.}$$

Wherefore, $dy\sqrt{(aa + 4yy)} : a = dy + \frac{2y^2\,dy}{a^2} - \frac{2y^4\,dy}{a^4} + \frac{4y^6\,dy}{a^6} - \frac{10y^8 dy}{a^8}$, &c. Whoſe integral $y + \frac{2y^3}{3a^2} - \frac{2y^5}{5a^4} + \frac{4y^7}{7a^6} - \frac{10y^9}{9a^8}$, &c. In infinitum expreſſes the parabolic arch AM.

Hence, *firſt*, let AC, and DC (*Tab. Analyſis, fig.* 19.) be the conjugate ſemi-axes of an equilateral hyperbola; then will AC $=$ DC $= a$. Suppoſe MP $= 2y$, QM $= x$; then will AP $= x - a$; conſequently, by reaſon of PB. AP $=$ PM^2 $xx - aa = 4yy$, and hence $xx = 4yy + aa$; conſequently, $x = \sqrt{(4yy + aa.)}$ If then qm be ſuppoſed infinitely near QM, we ſhall have Q$q = dy$; and therefore the element of the area CQMA $= dy\sqrt{(aa + 4yy.)}$ The *rectification* of the parabola therefore depends on the quadrature of the hyperbolic ſpace CQMA.

It is to be here noted that all integrations or ſummations are reduced to the quadratures of curves; in what caſes ſoever they be uſed: ſo that to have them perfect, the rule laid down under *quadrature of the logiſtic curve*, muſt be obſerved throughout.

To RECTIFY *the cycloid* — Let AQ $= x$, AB $= 1$, (*fig.* 27). then will Qq $=$ MS $= dx$, PQ $= \sqrt{(x - xx.)}$ And hence: AP $= \sqrt{x} = x^{1:2}$; conſequently by reaſon of the ſimilitude of the triangles APQ and MmS,

$$\mathrm{AQ} : \mathrm{AP} :: \mathrm{MS} : \mathrm{M}m$$

$$x : x^{1:2} :: dx : x^{-1:2}dx.$$

Therefore Mm is the differential of the cycloidal arch AM $= x^{-1:2}dx$. Wherefore $\int x^{-1:2}dx = 2x^{1:2} = 2$AP is the arch AM.

The *rectification* of curves Mr de Moivre ſhews may be obtained by conſidering the fluxion of the curve as an hypotenuſe of a rectangular triangle, whoſe ſides are the fluxions of the ordinate and abſciſſa: care being taken in the expreſſion of this hypotenuſe, that only one of the fluxions be remaining, as alſo only one of the intermediate quantities, *viz.* that whoſe fluxion is retained: an example will render this clear.

The right ſine CB (*fig.* 20.) *being given, to find the arch* AC. — Let AB $= x$, CB $= y$, OA $= r$. CE the fluxion of the abſciſſe, ED the fluxion of the ordinate, CD the fluxion of the arch CA. From the property of the circle $2rx - xx = yy$, whence $2r\dot x - 2x\dot x = 2y\dot y$, and therefore $\dot x = \dot y y$. But

$$\mathrm{CD}\,q = \dot y\dot y + \dot x\dot x = \dot y\dot y + \overline{r-x}\;\frac{y^2\,\dot y\dot y}{rr-2rx+xx} = \dot y\dot y + \frac{y^2\,\dot y\dot y}{rr-yy} = \frac{rr\,\dot y\dot y}{rr-yy};$$

therefore

$$\mathrm{CD} = \frac{r\dot y}{\sqrt{rr-yy}} = \frac{1}{\sqrt{rr-yy}} + r\dot y = r\dot y\;\overline{+rr-yy}^{\,-\frac{1}{2}}.$$

And conſequently, if $rr - yy$ be thrown into an infinite ſeries, and the ſeveral members of it be multiplied into $r\dot y$ and then the flowing quantity of each be taken, we ſhall have the length of the arch AC.

RECTIFIED *ſpirits*, &c. are ſuch as have undergone the operation of *rectification*, or have been diſtill'd over and over, to ſeparate from them any heterogeneous matter, which might have ariſen with them in the former diſtillations. See RECTIFICATION.

Hence we ſay, ſpirit of wine twice *rectified*, thrice *rectified*, &c. See SPIRIT.

It is the rectification that makes the difference between brandy and *rectified* ſpirits of wine. See BRANDY.

RECTIFIER, in navigation, is an inſtrument uſed for determining the variation of the compaſs, in order to *rectify* the ſhip's courſe, &c. See VARIATION and COURSE.

It conſiſts of two circles, either laid upon, or let into one another, and ſo faſtened together in their centres that they repreſent two compaſſes, the one fixed, the other moveable; each divided into 32 points of the compaſs, and 360 degrees, and numbered both ways, from the north and the ſouth, ending at the eaſt and weſt in 90 degrees.

The fixed compaſs repreſents the horizon, in which the north, and all the other points are liable to variation.

In the centre of the moveable compaſs is faſtened a ſilk thread, long enough to reach the outſide of the fixed compaſs. But if the inſtrument be made of wood, an index is uſed inſtead of the thread. See COMPASS.

RECTIFYING *of curves.* See RECTIFICATION.

RECTIFYING *of the globe*, or *ſphere*, is a previous adjuſting of the globe or ſphere, to prepare it for the ſolution of problems. See GLOBE and SPHERE.

It is done by bringing the ſun's place in the ecliptic on the globe, to the graduated ſide of the braſs meridian; elevating the pole above the horizon, as much as is the latitude of the place: fitting the hour index exactly to twelve at noon; and ſcrewing the quadrant of altitude, (if there be occaſion) to the zenith.

All this is comprehended under the term, *rectify the globe.* When this is done, the celeſtial globe repreſents the true poſture of the heavens, for the noon of that day it is rectified for.

RECTILINEAR, RIGHT-LINED, in geometry, is applied to figures whoſe perimeter conſiſts of right lines. See FIGURE, PERIMETER, LINE, &c.

RECTILINEAR *angle* ⎫ ⎧ ANGLE.
RECTILINEAR *maps.* ⎬ See ⎨ MAPS.
RECTILINEAR *ſuperficies.* ⎭ ⎩ SUPERFICIES.

RECTITUDE, RECTITUDO, RECTUM, in matters of philoſophy, refers either to the act of judging, or of willing; and therefore whatever comes under the denomination of *rectitude*, is either what is true, or what is good: theſe being the only objects about which the mind exerciſes it's two faculties of judging and willing. See TRUTH and GOOD.

Rectitude of the mind, conſidered as it *judges*, *i. e.* of the faculty of judgment, conſiſts in it's agreement and conformity to the nature and reaſon of things; in it's determining and deciding about them according to what their conſtitutions, properties, uſes, &c. really are. See JUDGMENT. See alſo LOGIC, &c.

Rectitude of the mind, conſidered as it *wills*, called alſo *moral rectitude*, or *uprightneſs*, conſiſts in the chooſing and purſuing of thoſe things which the mind, upon due inquiry and attention, clearly perceives to be good; and avoiding thoſe that are evil. See WILL.

RECTITUDINES, in law, rights, or legal dues, belonging either to god or man. See RIGHT.

RECTO, in law, a writ uſually called a *writ of right*; of ſo high a nature, that whereas other writs in real action are only to recover the poſſeſſion of the lands, &c. in queſtion, loſt by the plaintiff or his anceſtor; this aims to recover both the ſeiſin thus loſt, and the property of the thing: ſo that both rights are here pleaded together; that of *property*, and that of *poſſeſſion*. See PROPERTY and POSSESSION.

If a man loſe his cauſe upon this writ, he is without all remedy. See RIGHT.

There are two kinds of this writ: *breve magnum de recto*, or *breve de recto patens*, a writ of right patent; and *recto clauſum*, a writ of right cloſe.

The firſt is ſo called, becauſe ſent open—It lies only for him that hath fee-ſimple in the lands ſued for, againſt the tenant of the freehold at leaſt.

Indeed, the writ of right patent is extended in practice beyond it's original intention: for a writ of right of dower, which lies for the tenant in dower, is patent; and ſo in ſeveral other caſes. *Fitzherb.*

The writ of right cloſe, called alſo *breve parvum de recto*, is directed to the lord of antient demeſn, or the bailiff of the king's manors, and lies for thoſe who hold lands and tenements by charter, in fee-ſimple, or in fee-tail, or for term of life, or in dower, if they be ejected out of ſuch lands or diſſeiſed.

In ſuch caſe a man or his heirs may ſue out the writ of right cloſe, directed to the lord of antient demeſn, commanding him to do him right in his court.

Recto *de advocatione eccleſiæ*, a writ of right, lying where a man has right of advowſon in fee to him and his heirs, and the incumbent dying, a ſtranger preſents his clerk to the church; and he not having brought his action of *quare impedit* nor *darrein preſentment* within ſix months, has ſuffered the ſtranger to uſurp upon him.

Recto *de cuſtodia terræ & heredis*, a writ which lies for him whoſe tenant dying in his nonage, a ſtranger enters and takes the body of the heir.

This writ as to lands holden in *capite*, or by knights ſervice, is become uſeleſs by the Stat. 12. *Car.* II. But not where there is a guardian in ſocage, or appointed by the laſt will of the anceſtor.

Recto *de dote*, a writ of right of dower, which lies for a woman that has received part of her dower, and proceeds to demand the remnant in the ſame town againſt the heir or his guardian. See DOWER.

Recto *de dote unde nihil habet*, is a writ of right which lies in caſe where the husband having divers lands and tenements, has aſſured no dower to his wife; and ſhe is thereby driven to ſue for her thirds againſt the heir, or his guardian.

Recto *de rationabili parte*, a writ that lies between privies of blood, as brothers in gavel-kind, or ſiſters, or other coparteners, as nephews and nieces; and for land in fee-ſimple.

If a man leaſe his land for life, and afterwards die, leaving iſſue two daughters, and after, the tenant for life likewiſe dies; the one ſiſter entering on all the land, and ſo deforcing the other, the ſiſter ſo deforced ſhall have this writ to recover her part.

Recto *quando dominus remiſit*, a writ of right, which lies in caſe where lands or tenements in the ſeigniory of any lord, are in demand by a writ of right.

If the lord hold no court; or at the prayer of the demandant or tenant, ſend his writ to the king's court, to put the cauſe thither for that time; this writ iſſues for the other party, and has it's name from the words compriſed, which is the true occaſion thereof.

Recto *ſur diſclaimer*, a writ which lies where the lord, in the court of common pleas, does avow upon his tenant, and the tenant diſclaims to hold of him; upon which diſclaimer the lord ſhall have this writ.

Recto *folio*. See the article FOLIO.

RECTOR, of a pariſh, the *parſon*; or he who has the charge or cure of a pariſh church. See PARSON.

If the predial tythes of the pariſh be impropriated, or appropriated, *i. e.* either in lay hands, or in thoſe of ſome eccleſiaſtical community, inſtead of *rector*, the parſon is called *vicar*. See VICAR and IMPROPRIATION—In England are reckoned 3845 rectories. See PARISH.

The name *rector* denotes him governor, or ruler, *quia tantum jus in eccleſia parochiali habet, quantum prælatus in eccleſia collegiata*. See PARSONAGE.

Rector, alſo denotes the chief elective officer in ſeveral foreign univerſities; particularly that of Paris. See UNIVERSITY.

The *rector* is choſen a-freſh every three months: antiently he was choſen every ſix weeks. The alteration was made by the legate of pope Nicholas III. in 1278.

The *rector* is choſen out of the faculty of arts—While that faculty, and the faculty of theology were united, one officer had the inſpection of both, under the title of *chancellor*: upon their diviſion, a *rector* was created.

The *rector* makes a ſolemn proceſſion four times a year, attended by the doctors, batchelors, &c. in their formalities.

Rector is alſo uſed in ſeveral convents for the ſuperior, or officer who governs the houſe. See SUPERIOR.

The Jeſuits uſe it for the ſuperiors in ſuch of their houſes, as are either ſeminaries, or colleges. See JESUIT, COLLEGE, SEMINARY, &c.

RECTORY, or RECTORATE, RECTORIA, a pariſh-church, parſonage, or ſpiritual living, with all it's rights, glebes, and tithes. See CHURCH, PARISH, PARSON, RECTOR, &c.

RECTUM, in law. See RECTO, RIGHT and RECTITUDE.

Rectum, in our old law-writers, is alſo uſed for a trial or accuſation. See TRIAL, &c.

Commune **Rectum**, denotes a trial at law, or in the common courſe of law—*Stare ad rectum*, denotes to ſtand a trial—*Rectum rogare*, to petition the judge to do right.

Rectum, in anatomy, denotes the third and laſt of the large inteſtines.—See *Tab Anat.* (*Splanch*) *fig.* 9. *lit. f.* See alſo INTESTINE.

It is thus called, becauſe it paſſes ſtraight from the os ſacrum to the anus; without making any turns or circumvolutions, as all the other guts do.

It's length is uſually about a hands-breadth; and it's capacity, the thickneſs of three fingers—It's upper part is tied faſt to the oſſa ſacrum and coccygis, by means of the peritonæum; and in men to the neck of the bladder, in women to the vagina uteri: it's lower end, the anus, is furniſhed with three muſcles. See ANUS.

The firſt, is the ſphincter ani ſerving to ſhut it, and prevent the excrements from paſſing out involuntarily. See SPHINCTER, &c.

The other two, are the levatores ani, which ſerve to raiſe or pull back the *rectum* after the expulſion of the excrements; which eſpecially after hard ſtools, is apt to be too far protruded. See LEVATOR ANI.

RECTUS, in anatomy, a name common to ſeveral muſcles; on account of the ſtraightneſs of the courſe of their fibres, from their origin to their inſertion; having particular denominations from the parts to which they miniſter, as the *Rectus abdominis*, *rectus femoris*, *rectus capitis lateralis*, *major externus*, *minor externus*, *major internus minor*, *internus*, and *rectus palpebræ*.

Rectus *abdominis*, is a muſcle of the lower belly, which ariſes from the ſternum, and the extremity of the laſt two ribs; and goes ſtraight down to the fore-part of the abdomen, to be inſerted in the os pubis.—See *Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 47. *fig.* 2. *n.* 28. See alſo ABDOMEN.

It hath three or four innervations, or rather tendinous coarctations of it's fleſhy fibres, which divide the belly of it, as it were, into ſo many diſtinct muſcles.

It has veins and arteries, which creep on it's inſide from the mammillary and epigaſtric veſſels, which communicate together, that the blood may return by the mammillary veins, when the paſſage is ſtopped by the epigaſtric which are compreſſed in women with child.

Rectus *femoris*, is a muſcle of the leg, which ariſing from the lower part of the ſpine of the ilium, and deſcending between the two vaſti, is inſerted into the patella—See *Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 52. See alſo FEMUR.

Rectus *palpebræ*, is a muſcle which lifts up the eye-lid: It ariſes from the bottom of the orbit of the eye, where the optic nerves pierce the cranium, and paſſing above the ſuperbus, is inſerted by a large tendon into the border of the eyelid. See PALPEBRÆ.

Rectus *capitis lateralis*, a pair of ſhort thick fleſhy muſcles, riſing from the ſuperior part of the tranſverſe proceſſes of the firſt vertebra of the neck, whence it aſcends, and is inſerted into the os occipitis. See HEAD.

It's uſe is to move the head laterally towards either ſhoulder: when they act together, being antagoniſts, they keep it ſteady.

Rectus *externus capitis major*, the third pair of muſcles of the head, ariſing fleſhy and tendinous from the upper part of the double ſpine of the ſecond vertebra of the neck, and ſpreading in it's aſcent, is inſerted into the poſterior part of the os occipitis.—It ſerves to draw the head directly back upon the firſt vertebra.

Rectus *externus minor*, a pair of muſcles ariſing from the hind-part of the firſt vertebra of the neck; and inſerted into the middle of the os occipitis.

It ſerves likewiſe to draw the head directly backwards.

Theſe two muſcles are otherwiſe called *renuentes*.

Rectus *internus capitis major*, a pair of muſcles ariſing from the fore-part of the five interior tranſverſe proceſſes of the firſt vertebra of the back, near it's great hole.

Rectus *internus minor*, ariſes from the fore-part of the firſt vertebra of the neck; and is inſerted into the anterior appendix of the os occipitis, immediately under the former.

Theſe ſerve to nod the head forwards, being antagoniſts to the *rectus externus*, or renuens, on the back of the head; and are hence alſo called *annuentes*.

Rectus *in curia*, in law, one who ſtands at the bar, and no man objects any thing againſt him.

When a man hath reverſed the outlawry, and can participate of the benefit of the law, he is ſaid to be *rectus in curia*. See OUTLAWRY.

RECURRENT, RECURRENS in anatomy, a nerve ariſing from the par vagum, and diſtributing ſeveral branches to the larynx, to aſſiſt in the formation and modulation of the voice; whence it is alſo called the *vocal nerve*. See NERVE, VOICE, &c.

It has it's name *recurrent*, from it's reaſcending or running back again from the thorax to the larynx.

There are really two *recurrents*, right and left: the left ariſes from the trunk of the vagum; the right from a plexus thereof, immediately under the clavicle—They both run up along the trachea, to which they impart ſome twigs, and end at laſt in the muſcles of the larynx.

Their office appears partly hence, that a dog is not able to bark after they are cut. See LARYNX.

RECUSANTS, perſons who refuſe to acknowledge the king's ſupremacy. See SUPREMACY, and CONVICT. Such are the Roman catholics, who hold the pope to be over him; hence called popiſh *recuſants*. See POPE and KING.

The romaniſts are not charged with double taxes, &c. meerly as romaniſts, but as *recuſants*.

RECUSATION, RECUSATO, an act whereby a judge is deſired to refrain from judging ſome certain cauſe, on account of his relation to one of the parties; or ſome capital enmity, or the like.

By the French laws kinſhip within the fourth degree, is deemed a legal cauſe of *recuſation*; as alſo the judge's being god-father, &c. of one of the parties.

RED, in phyſics, one of the ſimple or primary colours of natural bodies, or rather of the rays of light. See BODY, RAY, and COLOUR.

The *red* rays are thoſe of all others the leaſt refrangible: hence, as Sir Iſaac Newton ſuppoſes the different degrees of refrangibility to ariſe from the different magnitudes of the luminous particles whereof the rays conſiſt; the *red* rays, or *red* light, is concluded to be that which conſiſts of the largeſt particles. See REFRANGIBILITY.

Authors diſtinguiſh three general kinds of *red*; one bordering on the blue, as colombine, or dove colour, purple, and crimſon. See PURPLE, &c. Another bordering on yellow, as flame-colour and orange. See ORANGE, &c. Between theſe extremes is a medium partaking neither of the one nor the other; which is what we properly call *red*.

Acids turn black, blue, and violet into *red*; and *red* into yellow; and yellow into a very pale yellow—Alcali's change *red* into violet, or purple, and yellow into feuillemort, or dead leaf colour. See ACID and ALCALI.

Terreſtrial and ſulphurous matters become *red* by extreme heat; and ſome, at length, black; as we ſee in brick, red bole, red chalk, ſlate, punice, &c. which when vitrified by a burning glaſs, become black.

Lobſters become *red* by a moderate fire; and by a violent one, black. Mercury and ſulpher mixed and heated over a moderate fire, make a beautiful *red*, called *artificial cinnabar*. See CINNABAR.

An acid ſpirit, as lemon juice, being poured on a blue ſolution of turnſole, turns it into a beautiful *red*—Alcali reſtores it to it's original blue. Filtrating of the reddiſh wine takes from it all it's *red* colour.

M. de la Hire obſerves, that a very luminous body viewed through a black one, always appears *red*: as when the ſun is ſeen ſhining through a black cloud. He adds, that many people who ſee all the other colours perfectly well, yet have no idea of *red*, and only ſee it as black. See BLUE.

RED, in dying, is one of the five ſimple, or mother colours of the dyers. See COLOUR, and DYING.

Some reckon ſeven kinds, or caſts of *red: viz.* ſcarlet *red*, crimſon *red*, madder *red*, half-grain *red*, lively orange *red*, and ſcarlet of cochineel. But they may be all reduced to three; according to the three principal drugs which give the colours; which are vermillion, cochineel, and madder.

The fine ſcarlet, called *ſcarlet of the gobelins*, is given with agaric, bran-water, woad and ſcarlet grain, or kermes. Some dyers add cochineel, and others fennigreek; brightening it with bran-water, agaric, tartar, and tumeric. See SCARLET.

Crimſon red is dyed with bran water, tartar, and cochineel meſtique. See CRIMSOL.

Madder red is dyed with madder; to which ſome add realgal, or arſenic; others common ſalt, or other ſalts, with wheat flower; or agaric with ſpirit of wine, with galls or turmeric. See MADDER.

The *half-grain* is made with agaric and bran-water, half ſcarlet-grain, half madder, and ſometimes turmeric.

The *half crimſon* is made of half madder, half cochineel.

As to the *lively orange red*, the ſtuff muſt be firſt put in yellow, then in a liquor made of goat's hair, (which has been boiled ſeveral times with madder, and now) diſſolved over the fire with certain acids, as urine, tartar, &c.

The *ſcarlet of cochineel*, or dutch *ſcarlet*, as the French call it, is made with ſtarch, tartar, and cochineel; after firſt boiling it with alum, tartar, ſal-gemma, and aqua-fortis wherein pewter has been diſſolved. See COCHINEEL.

Beſides theſe ſeven *reds*, which are good and allowed colours, there is alſo a braſil *red*; which is diſcouraged, as fading eaſily. See BRAZIL.

Of the ſeven good *reds*, only four have particular caſts or ſhades: the madder *red*, crimſon *red*, lively orange *red*, and *ſcarlet* of cochineel.

The caſts or ſhades of crimſon, are fleſh-colour, peach-colour, carnation-roſe-colour, and apple-tree-flower-colour—Thoſe of madder, are fleſh-colour, onion-peel-colour, and flame-colour—Thoſe of orange are the ſame with thoſe of crimſon. Scarlet, beſides the ſhades of all the reſt, has ſome peculiar to itſelf, as cherry-colour, fire-colour, &c.

RED, in painting—For painting in oil colours they uſe a *red* called *cinnabar* or vermillion; and another called *lacca*. See each in it's place, CINNABAR, VERMILLION, and LACCA.

In limning, and freſco, for a violet *red*, inſtead of lacca they uſe a natural earth found in England; for a brown *red* they *oker*. See REDDLE, OKER, &c.

RED, in heraldry. See the article GULES.

RED, in coſmetics, a fucus or paint wherewith the ladies enliven their cheeks and lips.

There are two kinds of *reds*; the one in leaves, called Spaniſh *red*; the other a liquor, which is an extract of ſcarlet dye.

RED *arſenic*. See the article ARSENIC.

RED *chalk*	See the articles	CHALK.
RED *deer*		HUNTING.
RED *fiſh*		FISH.
RED *lead*		LEAD.
RED *ſtar*		STAR.
RED *ſtorax*		STORAX.
RED *tartar*		TARTAR.

REDANS or REDANT. See REDENS.

REDDAT—*Precipe quod* REDDAT. See PRECIPE.

REDDANDIS *chartis*. See the article CHARTIS.

REDDENDUM, in law, a clauſe in a leaſe, &c. whereby a rent is reſerved to the leſſor. See RENT and LEASE.

REDDITARIUM, an ancient law term, for a terrier, roll, or rental, in which the rents and ſervices of a manor are ſet down. See ROLL, RENT, TERRIER, &c.

REDDITION, REDDITIO, a ſurrendering or reſtoring.

In law it alſo denotes a judicial acknowledgment that a thing in queſtion belongs to the demandant.

REDDLE, RUDDLE, or *Red chalk*, a red foſſile ſtone, which has it's particular mine or quarry; and is uſed by painters, &c. to make red pencils, or craions for deſigning.

The beſt is the produce of England, is moderately hard, eaſy to cut or ſaw into long ſlips. The goldſmiths and gilders alſo uſe it to burn the gold leaf they uſe—Some call *reddle*, *lapis hæmatites*, ſuppoſing it to have a particular faculty of ſtopping blood: but others will have the real hæmatites to be another ſtone. See HÆMATITES.

REDEEMABLES, are lands, funds, &c. ſold with a reſervation of the equity of redemption. See REDEMPTION.

Crown lands are *redeemable* for ever; others only for a certain time.

REDEMPTION, REDEMPTIO in law, a faculty or right of re-entering upon lands, &c. that have been ſold, and aſſigned; upon re-imburſing the purchaſe-money, with legal coſts.

Bargains wherein the *faculty*, or as ſome call it, the *equity of redemption* is reſerved; are only a kind of pignorative contracts.

A certain time is limited, within which the faculty of *redemption*, ſhall be exerciſed; and beyond which it ſhall not extend.

REDEMPTIONS, REDEMPTIONES, in our old law-writers, denote grievous mulcts impoſed by way of commutation for the head or life of the delinquent. See RANSOM and MISERICORDIA.

REDENS, REDANS or REDANT, in fortification, a kind of work indented in form of the teeth of a ſaw, with ſaliant and re-entring angles; to the end that one part may flank or defend another. See WORK, DEFENCE. &c.

It is alſo called *ſaw work*, and *indented work*. The faces flank one another.

Redens are frequently uſed in the fortifying of walls, where it is not neceſſary to be at the expence of building baſtions; as when they ſtand on the ſide of a river, a marſh, the ſea, &c.

The parapet of the corridor is frequently *redented*, or carried on in the way of *redans*. See PARAPET and COUNTERSCARP.

REDHIBITION, REDHIBITIO, in the civil law, an action allowed a buyer, whereby to annul the ſale of ſome moveable, and oblige the ſeller to take it back again, upon the buyer's finding it damaged, or that there was ſome perſonal cheat, &c.

The *redhibition*, or *redhibitory action*, has place in ſeveral caſes, in the body of the civil law—If a horſe was ſold that had the glanders, were broken-winded, or foundered, it was a *redhibitory caſe*; and the buyer might be obliged to take him again within nine days.

REDINTEGRATED *medals*. See the article MEDAL.

REDINTEGRATION, REDINTEGRATIO, in the civil law, the act of reſtoring a perſon to the enjoyment of a thing whereof he had been illegally diſpoſſeſſed.

In France, where a perſon is diſpoiled of his property, he claims it again by a *redintegrand*, or action of reſtitution—The *redintegrand* muſt be demanded within a year and a day, otherwiſe it is precluded.

REDINTEGRATION, in chemiſtry, the reſtoring of any mixt body, or matter, whoſe form has been deſtroyed by calcination, corroſion, ſublimation, or the like; to it's former nature and conſtitution.

The *redintegration* of mercury is properly called *revivification*. See REVIVIFICATION—Mr. Boyle has an expreſs treatiſe on the *redintegration* of ſalt petre; where he ſhews that after reducing it by fluxion into fixed nitre, which is next of kin to ſalt of tartar in all it's properties; he could preſently *redintegrate* it by pouring a ſufficient quantity of ſpirit of nitre to it; *i. e.* he could re-produce true chryſtals of the uſual form and virtue of ſalt-petre. See SALT-PETRE.

It is a ſtrong objection againſt the chemical principles, that we cannot *redintegrate* the body they were procured from, by re-mixing them. See PRINCIPLE and ELEMENT.

This ſeems to argue that the body did not properly conſiſt of ſuch elements; or that they were not originally contained in it, but were rather produced by the fire. See FIRE, *&c.*

REDIRE *ad pacem.* See the article AD *pacem.*

REDISSEISIN, in law, a diſſeiſin made by him who once before was found and adjudged to have diſſeiſſed the ſame man of his lands or tenements; for which there lies a ſpecial writ, called a *writ of rediſſeiſin.*

RED-MANS, or RADMANS, in domeſday and other antient books, are probably the ſame with rod, or rad-nights; *viz.* men who by the tenure or cuſtom of their lands were to ride with or for the lord of the manor about his buſineſs.

REDOUBT*, or REDOUTE, REDUCTUS, in fortification, a ſmall ſquare fort, without any defence but in front; uſed in trenches, lines of circumvallation, contravallation, and approach; as alſo for the lodging of corps de garde, and to defend paſſages. See FORT.

* The word is French, formed from the Latin, *reductus.*

In marſhy grounds, *redoubts* are often made of ſtone work, for the ſecurity of the neighbourhood: their face conſiſts of from ten to fifteen fathom; the ditch round them from eight to nine foot broad and deep; and their parapets have the ſame thickneſs. See SCONCE.

REDRESSING, the rectifying, or ſetting, any thing ſtraight again. See RECTIFICATION.

Trees and other plants have a natural faculty of *redreſſing* themſelves, when by any external cauſe they are forced out of the perpendicular. See PERPENDICULARITY.

In the moral ſenſe, to *redreſs* grievances, is to reform or remove them.

To *redreſs* a ſtag, among hunters, is to put him off his changes.

REDSEAR. See the article IRON.

REDUBBORS, thoſe who buy ſtollen cloaths, *&c.* and to the end they may not be known, turn them into ſome other colour, or faſhion, *&c.* See FRIPPERY, and REGRATOR.

REDUCE in chemiſtry. See the article REDUCT.

REDUCTED *chart.* See the article CHART.

REDUCING *ſcale*, is a thin broad piece of box, with ſeveral lines and ſcales of equal parts, thereon; for turning chains and links into acres and rods, by inſpection. See REDUCTION, *&c.*

It is uſed by ſurveyors to reduce maps or draughts from one dimenſion into another: it is ſometimes alſo called the *ſurveying ſcale.* See SCALE.

REDUCT, or REDUIT, a military term, ſignifying an advantageous piece of ground, entrenched and ſeparated from the reſt of the place, camp, *&c.* for an army, garriſon, *&c.* to retire to in caſe of ſurprize. See CASTLE, and DONJON.

REDUCT, in building, a quirk, or little place, taken out of a larger, to make it more uniform and regular; or for ſome other convenience, as for a little cabinet aſide of a chimney, alcoves, *&c.* See QUIRK.

REDUCT, or REDUX, among chemiſts, is a powder by which calcined metals and minerals are reduced again to their regulus, or pure ſubſtance. See REGULUS, CALX, *&c.*

REDUCTION, REDUCTIO, in the ſchools, a manner of bringing a term or propoſition, which before was oppoſite to ſome other, to be equivalent to it. See PROPOSITION, *&c.*

Reduction is effected by the addition or retrenchment of a negative particle—Thus, to reduce this propoſition: *no man is an animal*, to be equivalent to it's oppoſite, *every man is an animal*; I drop the negative, and ſay, *man is an animal*—After the like manner might the term, *every man*, be reduced, by adding the negative, and ſaying, *there is no man.*

REDUCTION *of propoſitions*, is uſed in a more general ſenſe, for any expreſſion of one propoſition, by another propoſition equivalent thereto. See PROPOSITION.

To a *reduction*, therefore, there are two propoſitions required; the *reduced* and *reducing*; which are conſidered as the extremes thereof; and to be connected in the *reduction*, by means of the particle *that is*, which here has the effect of a copula.

As here, *only animals think*; *that is*, *animals think*, *and nothing beſide animals think*—Where the propoſition preceeding the particle, is *reduced*, and the ſubject of the *reduction*; that following the particle *reduces*, and has the effect of the predicate of the *reduction:* and the particle *that is*, acts as a copula, importing, not barely that the propoſition is expreſſed by another, but by another equivalent one, or as it were the ſame.

REDUCTION *of ſyllogiſms*, is a regular changing or transforming of an imperfect ſyllogiſm into a perfect one—Or, it is a change of a ſyllogiſm in reſpect of form, whereby the neceſſity of the illation or inference is made more evident. See SYLLOGISM.

Reduction obtains in ſyllogiſms of the ſecond and third figure; as alſo in the indirect modes of the firſt—By it, theſe are all brought to the firſt. See MOOD and FIGURE.

There are two kinds of this *reduction*, the one *direct* or *oſtenſive*, performed merely by a converſion of one or both the premiſes, or by a tranſpoſition thereof; as when CAMESTRES is reduced to CELARENT.

The other *indirect*, called *per impoſſible*, or *ad abſurdum*, whereby the perſon who denies the goodneſs and legitimacy of an imperfect ſyllogiſm, is reduced to aſſert or grant ſomething abſurd and impoſſible; or contradictory to ſome other thing maintained by him.

Suppoſe *e. gr.* a perſon granting the premiſes of the following ſyllogiſm denies the concluſion—*All fraud is prohibited, but ſome trading is not prohibited, therefore ſome trading is not fraud*—We thus proceed againſt him: if the ſyllogiſm be not good, the antecedent is juſt, but the conſequent falſe; and therefore the contrary of the concluſion muſt be true: now, I take the contrary of the concluſion which you thus give, *viz.* all trading is fraud; and of that with the other premiſe of the former ſyllogiſm, *viz.* the major, which you likewiſe grant, make a new ſyllogiſm; thus, *all fraud is prohibited*; *all trading is fraud*; *therefore all trading is prohibited.* But this propoſition, *all trading is prohibited*, and the other, *ſome trading is prohibited*, which you granted me in the firſt ſyllogiſm, are contradictories.

REDUCTION, in arithmetick, is the converting of monies, weights, or meaſures into the ſame value in other denominations; *e. gr.* pounds into ſhillings and pence; or ſhillings and pence into pounds.

The *reductions* of the principal monies, coins, weights, and meaſures, antient and modern, foreign and domeſtic, are found under the reſpective articles, MONEY, COIN, WEIGHT, MEASURE, POUND, FOOT, *&c.*

Reduction is of two kinds: 1° *deſcending:* when a quantity is to be brought from a higher denomination to a lower.

This is done by conſidering how many of the next leſs denomination are contained in the next greater before, and by that number multiplying the greater. See MULTIPLICATION.

Thus pounds are reduced into ſhillings by multiplying by 20; ſhillings into pence by multiplying by 12; and pence into farthings, by multiplying by 4. See POUND, *&c.*

Troy pounds are reduced into grains, by multiplying by 12, 20, and 24. And *averdupois* hundreds into ounces, by 4, 28, and 16. See OUNCE, *&c.*

The 2° *aſcending*; when a lower denomination is to be reduced to an higher.

In order to this, divide the leaſt by ſo many of it's denomination as are contained in the next greater: thus 24720 pence, divided by 12, and the quotient by 20, give 103 pounds. See DIVISION.

If there remain any thing in each diviſion, it is reſpectively either odd pence or ſhillings: thus 6713 pence reduced, give 27*l.* 19*s.* 5*d.* cut off the laſt, the reſt is the pounds required.

To expedite the practice, ſeveral compendious ways of *reduction* have been invented. See PRACTICE.

Thus yards are turned into ells, by ſubſtracting a fifth; and into ells Flemiſh by adding a fifth—Ells Flemiſh are reduced into yards, by ſubſtracting a quarter—Ells Flemiſh reduced to ells Engliſh by multiplying by 6, and cutting off the right hand figure. See ELL, *&c.*

Great pounds of ſilk of 24 ounces, are reduced to pounds of 16 ounces, by adding one half. Pounds of 16 ounces into pounds of 24, by ſubſtracting one third.

REDUCTION *of fractions.* See the article FRACTION.

REDUCTION *of equations*, in algebra, is the clearing them from all ſuperfluous quantities, bringing down the quantities to their loweſt terms, and ſeparating the known quantities from the unknown; 'till, at length, only the unknown quantity is found on one ſide, and known ones on the other. See EQUATION.

The *reduction* of an equation is the laſt part of the reſolution of the problem. See RESOLUTION, and PROBLEM.

The end of all algebraical operations, is to have the unknown letter alone in one member of the equation; and in the other, all the known letters, without any mixture of unknown; for, in this caſe, it is evident the value of the unknown quantity is found.

This *reduction* is effected by adding the quantities ſubſtracted, ſubſtracting thoſe added; multiplying thoſe divided, and dividing thoſe multiplied; extracting the roots out of powers, and raiſing roots to powers; ſo as ſtill to preſerve an equality. See EQUALITY—This ſuffices for the *reduction* of ſimple equations; but for higher equations, the proceſs is leſs obvious.

From the manner wherein powers are formed, it is evident, that as the unknown letter is raiſed to a higher power, it will be found, in it's lower powers, mixed and combined ſo many more times with known quantities, and of conſequence will be ſo much the more difficult to be diſengaged therefrom. And the difficulty is the ſame, where there are ſeveral unknown letters multiplied ſingly one into another, and again multiplied by known letters. See PROBLEM.

The *reduction* of the equation being made; from the laſt quantity thus gained, the geometrical conſtruction is to be deduced. See CONSTRUCTION.

REDUCTION *of curves*. See the article CURVE.

REDUCTION *of a figure, deſign*, or *draught*, is the making a copy thereof either larger or ſmaller than the original; ſtill preſerving the form and proportion. See FIGURE.

The great uſe of the proportional compaſſes is in the *reduction* of figures, &c. whence they are alſo called *compaſſes of reduction*. See COMPASS.

There are various methods of reducing figures, &c. the moſt eaſy is by means of the pentagraph or parallelogram; but this has it's defects. See PENTAGRAPH—The beſt and moſt uſual methods of *reduction*, are as follow:

To REDUCE *a figure*: As ABCDE, (*Tab. Geometry, fig.* 64.) into a leſs compaſs: about the middle of the figure, as *z*, pitch on a point; and from this point draw lines to it's ſeveral angles, A, B, C, &c. then drawing the line *a b*, parallel to AB, *bc* parallel to BC, &c. you will have the figure *abcde* ſimilar to ABCDE.

If the figure *abcde* had been required to be enlarged, there needed nothing but to produce the lines from the point beyond the angles, as *z* D, *z* C, &c. and to draw lines, *viz.* DC, DB, &c. parallel to the ſides *dc*, *db*, &c.

To REDUCE *a figure by the angle of proportion*—Suppoſe the figure ABCDE (*Fig.* 65.) required to be diminiſhed in the proportion of the line AB, to *ab*. (*Fig.* 66.) Draw the indefinite line GH, (*Fig.* 67.) and from G to H ſet off the Line AB: on G deſcribe the arch HI. Set off the Line *ab* as a chord on HI, and draw GI. Then with the angle IGH you have all the meaſures of the figure to be drawn. Thus to lay down the point *c*, take the interval BC, and upon the point G deſcribe the arch KL; alſo, on the point G deſcribe MN; and upon A with the diſtance MN deſcribe an arch cutting the preceeding one in *c*, which will determine the ſide *bc*. And after the ſame manner are all the other ſides and angles to be deſcribed—The ſame proceſs will alſo ſerve to enlarge the figure.

To REDUCE *a figure by a ſcale*—Meaſure all the ſides of the figure, *e. gr.* ABCDE, by a ſcale, and lay down the ſame meaſures, reſpectively, from a ſmaller ſcale in the proportion required. See SCALE.

To REDUCE *a map, deſign, or figure, by ſquares*—Divide the original into little ſquares, and divide a freſh paper of the dimenſions required, into the ſame number of ſquares; which will be larger or leſs than the former, as the map is to be inlarged or diminiſhed.

This done, in every ſquare of the ſecond figure, draw what you find in it's correſpondent one in the firſt. See MAP, &c.

REDUCTION *to the ecliptic*, in aſtronomy, is the difference between the argument of latitude, as NP, (*Tab. Aſtron. fig.* 26.) and an arch of the ecliptic NR, intercepted between the plane of a planet, and the node N. See ECLIPTIC.

To find the reduction: the angle of inclination PNR, and the argument of latitude NP being given; find, by the doctrine of ſpherics, the arch NR: ſubſtract NR and NP from each other, the remainder is the *reduction*.

REDUCTION *into firſt matter*, is a term which alchymiſts uſe when they find their ſubſtances putrify, and grow black.

REDUCTION is more particularly uſed for the converting of a dry matter into a liquid, particularly water; which by the alchymiſts is held the principal of all things. See WATER, PRINCIPLE, &c.

The *reduction* of mettals into their firſt matter or principles, according to theſe philoſophers, can only be effected by mercury; nothing elſe being able to looſen the fixt ſulphur of metallic bodies, which binds them together. See METAL and MERCURY.

REDUCTION, in chirurgery, denotes an operation whereby a diſlocated, luxated, or fractured bone, is reſtored to it's former place. See BONE, LUXATION, DISLOCATION, FRACTURE—*Reduction* or *repoſition*, is always performed before any remedy be applied.

REDUIT, in military affairs. See the article REDUCT.

REDUNDANCE, or REDUNDANCY, a fault in diſcourſe, conſiſting in the uſe of a ſuperfluity of words. See PLEONASM.

Words perfectly ſynonymous, are *redundant*, and ought to be retrenched—*Redundancy* makes the ſtyle weak and languid.

REDUNDANT *hyperbola*, is a curve of the higher kind, thus called, becauſe it exceeds the conic ſection of that name in the number of it's hyperbolical legs; being a triple hyperbola, with ſix hyperbolical legs. See CURVE and HYPERBOLA.

REDUPLICATION, in rhetoric, a figure whereby a verſe begins with the ſame word as the preceeding one ends. See ANADIPLOSIS.

REDUPLICATION, in logic, is a kind of condition expreſſed in a propoſition, indicating or aſſigning the manner wherein the predicate is attributed to the ſubject. See REPLICATION.

The uſual *reduplicating* words are *quatenus, as, ſo far as, conſidered as, inaſmuch as*, &c. Hence,

REDUPLICATIVE *propoſitions*, are ſuch wherein the ſubject is repeated, with ſome circumſtance or condition—Thus, *men, as men, are rational: kings, as kings, are ſubject to none but God.*

REDUX, in chymiſtry. See the article REDUCT.

REE, RE, REIS, or RES, a little Portugueze copper coin, nearly equal to the late French denier tournois, or to a third part of the Engliſh farthing. See COIN.

The *ree* is both a current and imaginary money; the Portugueze uſually reckoning by *rees*, as the Spaniards by maravedis. See MARAVEDIS.

Strangers in treating with them, are frequently ſurprized with demands of ſeveral thouſand *rees*, when the matter betwixt them is only of a few pieces of eight; the *millree* or thouſand *rees*, only making 6*s.* 3*d. ſterl.*—750 of them are equal to the piece of eight. See MILLREE.

REED, an antient Jewiſh meaſure. See MEASURE.

Anſwerable to this is the *canna* or *cane* of ſome modern nations. See CANE.

Ezechiel's REED. See EZECHIEL'S REED.

REEF, a term in navigation—When there is a great gale of wind, they commonly roll up part of the ſail below, that by this means it may become the narrower, and not draw ſo much wind; which contracting or taking up of the ſail, they call a *reef*, or *reefing the ſail*.

So alſo when a top-maſt is ſprung, as they call it, that is, cracked, or almoſt broken in the cap; they cut off the lower piece that was near broken off, and ſetting the other part, now much ſhorter, in the ſtep again, call it a *reefed top-maſt*.

REEL, in the manufactures, a machine ſerving for the office of *reeling*. See REELING.

There are various kinds of *reels*; ſome very ſimple, others very complex; of the former kind, thoſe moſt in uſe are,

1°. A little *reel*, held in the hand, conſiſting of three pieces of wood; the biggeſt and longeſt whereof (which does not exceed a foot and a half in length, and ¾ of an inch in diameter) is traverſed by two other pieces diſpoſed different ways.

2°. The *common reel*, or *windlaſs*, which turns upon a pivot and has four flights, traverſed by long pins or ſticks whereon the ſkain to be *reeled* is put, and which are drawn, cloſer, or opened wider, according to the ſkain.

Other *reels* uſed in particular arts, are explained under their particular articles; as the *reel* uſed in the milling of ſilk, under the article MILLING: and that in the *reeling* or winding of ſilks, under the article of SILK, &c.

REELING, in the manufacturies, the winding of thread, ſilk, cotton, or the like, into a ſkain, or upon a bottom; to prevent it's intangling. See SILK, &c.

It is alſo uſed for the charging or diſcharging of bobins or quills, to uſe them in the manufacture of different ſtuffs, as thread, ſilk, cotton, &c.—*Reeling* is performed different ways, and by different engines. See REEL.

RE-ENTRING *angle*, in fortification. See ANGLE.

RE-ENTRY, in law, the reſuming or retaking that poſſeſſion which we had lately fore-gone. See ENTRY.

As, if I make a leaſe of land, or tenement, I do thereby forego the poſſeſſion: and if I condition with the leſſee, That for non-payment of the rent at the day, it ſhall be lawful for me to *re-enter*; this is as much as if I conditioned to take again the lands, &c. into my own hands, and to recover the poſſeſſion by my own act, without the aſſiſtance of judge, or other proceſs.

REER *county*. See the article RIER.

REEVE *of a church*, is the guardian of it; or the church-warden. See CHURCH-WARDEN.

So, *ſhire-reeve* is the ſheriff, or guardian of a county. See SHERIFF—And *port-reeve*, the warden of a port or haven. See PORTGREVE.

REEVING, in the ſea language, is the putting a rope through a block—Hence to pull a rope out of a block, is called *unreeving*.

RE-EXCHANGE, in commerce, a ſecond payment of the price of exchange; or rather the price of a new exchange, due upon a bill of exchange that comes to be proteſted; and to be refunded the bearer, by the drawer or endorſer. See EXCHANGE.

The occaſion of *re-exchange* is, when the bearer of a bill of exchange, after proteſting it for want either of acceptance, or of payment, borrows money on his own promiſe, bond, or the like; or draws a bill of exchange in the place where the payment was to be made, on the perſon who furniſhed the firſt; for which he pays a ſecond exchange, which being added to the firſt already paid, the drawer of the firſt bill is anſwerable for two exchanges, properly called *exchange* and *re-exchange*. See BILL and PROTEST.

The bearer of a proteſted bill has a right to recover both the one and the other on the drawer. Yet the ſimple proteſtation which the bearer makes in the act of proteſt, that he will take up a like ſum at *re-exchange*, for want of his bill being accepted or paid, is not ſufficient to entitle him to demand the re-imburſement of his *re-exchange*; unleſs he make it appear he has actually taken up money in the place whereon the bill was drawn.

Otherwiſe, the *re-exchange* will only amount to the reſtitution of the firſt exchange, with intereſt, the expences of proteſting, and of the journey, if there have been any.

If a bill of exchange, payable to the bearer or order, come to be proteſted, the *re-exchange* is only due upon the drawer for the place where the remittance was made; not for thoſe places where it may have been negotiated: at leaſt, the drawer has a right to be refunded his *re-exchange* for thoſe places, by the endorſer.

Indeed the *re-exchange* is due from the drawer upon all places where a power of negotiation is given by the bill, and upon all others, if the power of negotiating be indefinite.

Laſtly, the intereſt of the *re-exchange*, of the expences of the proteſt, and the journey, are only due from the day of the demand.

It is ſuppoſed to be the Gibelins driven out of Italy by the faction of the Guelphs, and ſhelter'd at Amſterdam, who firſt eſtabliſhed the cuſtom of *re-exchange*; on pretence of the intereſts, damages, and expences they underwent, when the bills given them for the effects they had been obliged to abandon, were not accepted, but came to be proteſted. See BILL *of exchange*.

RE-EXTENT, in law, a ſecond extent made upon lands or tenements, on complaint, that the former extent was partially made. See EXTENT.

REFECTION, REFECTIO, among monks and eccleſiaſtics, a ſpare meal or repaſt, juſt ſufficing for the ſupport of life. See REPAST, PITTANCE, &c.

REFECTION is alſo uſed in antient authors for a duty, or ſervice incumbent on any perſon to provide meals, for eccleſiaſtics, or even princes. See PROCURATION.

REFECTORY, or REFECTUARY, REFECTORIUM, a ſpacious hall in convents, and other communities, where the monks, nuns, &c. take their refections or meals in common.

The *refectory* of the Benedictines of St. George at Venice, deſigned by Palladio, is one of the fineſt in the world. *Daviler.*

REFERENCE, in writing, &c. a mark relative to another ſimilar one in the margin, or at the bottom of the page; where ſomething omitted in the text, is added; and which is to be inſerted either in reading or copying. See CHARACTER.

A copiſt muſt be very expert at taking *references.*

References are alſo uſed in books, where things being but imperfectly handled, the reader is directed to ſome other part or place where they are more amply explained.

Dictionaries are full of *references* denoted by *ſee*, or *vide*—By means of theſe *references*, the dictionary writer ſettles a correſpondence between the ſeveral parts of his work; and may give his dictionary moſt of the advantages of a continued treatiſe. See DICTIONARY.

Indices or tables are only *references* to the ſeveral parts of the work, where the ſeveral matters are handled.

REFERENDARY, REFERENDARIUS, in antient cuſtoms, an officer who exhibited the petitions of the people to the king; and acquainted the judges with his commands.

An officer of this kind, Spelman obſerves, we had in England, in the time of the Saxons—The like office was afterwards diſcharged by others, called maſters of requeſts. See REQUEST.

REFINING, the art or act of purifying a thing; or of rendering it finer, cleaner, and purer. See PURIFICATION, and CLARIFYING.

Refining is chiefly uſed in ſpeaking of metals, ſugar and ſalt. See METAL, &c.

The REFINING of gold is performed three ways: either with antimony, with ſublimate, or with aqua-fortis; which laſt method, much the moſt uſual and leaſt dangerous of the three, is called *departing* or *parting*; the proceſs whereof ſee under the articles GOLD and DEPARTING.

REFINING *of gold with antimony*—They here uſe a wind-furnace; (a deſcription whereof may be ſeen under the article FURNACE,) with an ordinary crucible, of a ſize anſwerable to the quantity of gold to be refined; obſerving that the gold and antimony together do not above half fill it.

The gold being melted in the crucible, the antimony is thrown in, in powder—The proportion of the mineral to the metals, is about a pound to eight ounces, if the gold be between 22 and 16 carats fine: if it be beneath 16 carats, they uſe about five quarters of a pound to eight ounces: the coarſer the gold, ſtill the more antimony is required.

As ſoon as the antimony is in the crucible, it is covered up; and after charging the furnace with charcoal, they put on it's head or cover; which ſtands till ſuch time as the crucible be left quite bare; then the head being taken off, and the crucible left to cool in the furnace itſelf, till ſuch time as it may be taken out by the hand, they break it, to get out the bottom or culot, which is a maſs of fine gold remaining at the bottom, with the fæces of the antimony, the ſilver and copper alloy, and ſometimes little particles of gold itſelf, over it.

Though the gold thus prepared be very pure, yet the antimony gives it ſuch a harſh brittle quality, that it ceaſes to be ductile; and muſt be ſoftened by fuſion with ſalt-petre and borax, to bring it to itſelf.

For this operation they prepare what they call a *dry-coppel*; that is, a coppel made of crucible earth, which does not imbibe like the coppels made of aſhes. See COPPEL.

The coppel being ſufficiently heated in the *refining* furnace, they put the gold in it, and cover it up with charcoal.

As ſoon as the gold is diſſolved, which is very ſoon, by reaſon of the remains of the antimony, they blow it with the bellows to drive the mineral entirely away, which now goes off in ſmoak; adding to it, as ſoon as the fumes ceaſe, a little ſalt-petre and borax, in powder; which collect the impurities remaining upon the diſſolution, and fix the gold in the coppel, in form of a plate.

The gold being taken out of the coppel, and melted a-freſh in a crucible, with an addition of two ounces of ſalt-petre and as much borax in powder, to each eight ounces of gold, as ſoon as it ceaſes to fume, they caſt it into an ingot; which upon trial is found 23 carats, 26 thirty-ſeconds fine.

As to the particles of gold which may have been left behind with the alloy in the fæces of the antimony, they get them out by a dry coppel, with the ſame meltings and ingredients as are uſed in ſoftening the former—And when they are aſſured, by the eſſay, of the ſhare of gold that matter contains, they refine it, to ſeparate the copper; and afterwards make the depart.

As to the gold which may be left ſticking to the dry coppels, they get it out by breaking, and pulverizing the crucibles, and by repeated lotions of the powder thereof in ſeveral waters; after the manner deſcribed under the article *waſhing*. See WASHING.

REFINING *of gold by means of ſublimate*—The proceſs is begun like that with antimony; *i. e.* in the ſame furnace, with the ſame coal, the ſame fire, and the ſame crucibles.

The gold being melted in the crucible, they caſt in the ſublimate, not pulverized, but only broke in pieces—As to the proportion; to 8 ounces of gold to be refined, they put an ounce, or ounce and a half, or even two ounces, if the gold be of 22 carats; three ounces, if 20 carats; and 4 or 6 ounces, if it only be from 18 to 20 carats. In which laſt caſe they part the ſublimate into two; putting half at a time, with the gold, into a new crucible; which when the operation is over, leaves the gold from 18 to 23 carats, according to it's fineneſs before—After this, they raiſe it farther by the fire, as follows:

The broken ſublimate being put into the crucible with the melted gold, the crucible is immediately covered up, to ſmother the mineral: which done, the furnace is filled with charcoal, and the head put on—A quarter of an hour afterwards they take off the head, lay the crucible bare, and give the gold air, *i. e.* blow off all the aſhes, and other impurities that may be floating on the liquid gold, with a pair of bellows, the nozzle whereof is crooked.

This they repeat again and again, till all the impurities of the gold being carried off, by virtue of the ſublimate, it be found of a bright glittering colour: after which it is taken out of the crucible, and the gold caſt into an ingot.

The method of *refining* by ſublimate is both more complete and cheaper than that by antimony; but they are both exceedingly dangerous, by reaſon of their ſulphurous and arſenical exhalations: the only difference in their malignity conſiſting in this, that the poiſon of the antimony is ſlower than that of the ſublimate. See SUBLIMATE, &c.

Gold may alſo be *refined* with lead and aſhes; but this is a method ſeldom uſed, excepting in eſſays. See ESSAY.

REFINING *of ſilver*—There are two ways of *refining* ſilver: the one with lead; the other with ſalt-petre. The beſt and cheapeſt is that with lead; though that with ſalt-petre ſtill obtains in many places, for want of workmen who underſtand the proceſs of the latter.

We ſhall here only give that with ſalt-petre; referring for the other to the article SILVER.

REFINING *with ſalt-petre* is performed in a wind-furnace—The ſilver to be *refined* having been reduced into grains, of the ſize of little peas, by pouring it, when melted, into a tub of common water; it is heated over again in a boiler. After this they put it in a crucible, and along with it, to every eight ounces of metal, two of ſalt-petre.

The crucible is now covered up with an earthen lid, in form of a dome, exactly luted; which lid, however, is to have a little aperture in the middle.

The crucible being put in the furnace, and covered with charcoal, which is only to be lighted by degrees, at length they give it the full force of the fire to put the metal into a perfect fuſion. This they repeat three times ſucceſſively, at an interval of a quarter of an hour.

After the third fire they uncover the furnace, and let the crucible cool; and at length break it, to get out the ſilver, which is found in a button or culot; the bottom whereof is very fine ſilver; and the top mixed with the fæces of the ſalt-petre, and the alloy of the ſilver, and even ſome particles of the fine ſilver.

The culot being ſeparated from the impurities, is melted in a new crucible, and into the diſſolution is thrown charcoal duſt, and the whole briſkly worked together. Then the crucible being covered up again, and the furnace charged with coal, a ſecond fire is given it.

This done, the aſhes and other impurities are blown from the top of the metal, till it appear as clear as a looking-glaſs; and then an ounce of borax broke in pieces is thrown in.

Laſtly, the crucible being covered up again, they give it the laſt fire; after which it is caſt into ingots; which are found eleven penny-weights, and ſixteen grains fine.

To recover the ſilver that may be left in the fæces, or ſcoria, they pound them, and give them repeated lotions in freſh waters. See Washing.

Refining *of copper*, is only performed by giving the mineral matter ſeveral lotions before the melting it; and then giving it ſeveral repeated fuſions. See Copper.

Refining *of tin* is performed much after the ſame manner as that of copper. See Tin.

Though we may diſtinguiſh two kinds of fineneſs of this metal: the one ariſing from it's fuſion; that tin taken firſt out of the furnace wherein it is melted, being always purer than that towards the bottom.

The other kind of fineneſs is that given the tin by adding ſome other metal or mineral to it, to render it more ſonorous. as well as more brighter: ſuch is tin of antimony, pewter, *&c.* See Pewter, *&c.*

Refining *of iron*, begins likewiſe by the melting it. See Iron.

The greater degree of fuſion the mineral has, the more the metal is purified: but this firſt fuſion is not ſufficient—To render the iron malleable, and fit it to endure the file, it muſt be melted a ſecond time; then forged or beaten a long time with huge heavy hammers, wrought by water; then heated in the fire, and at laſt reduced on the anvil, into bars of ſeveral thickneſſes. See Forging.

The more the iron is heated in the fire; and the more it is beaten, whether hot or cold, the finer it becomes. See Iron.

Steel is only iron *refined* to a great degree by heating it, with ſome other ingredients which cloſe up the pores, and ſoften the grain thereof. See Steel.

Refining *of lead*, is performed like that of moſt other imperfect metals, by frequent meltings, ſtill ſcumming it before it be cold, and caſting in tallow, and other kinds of fat.

They alſo make eſſays of lead; not to refine it, but to ſee if it be pure, and without mixture of any other metal. See Lead.

Refining *of ſugar*—The operation is begun by ſeveral ſtrong lixiviums or lyes of lime-water and eggs, ſhells and all, mixed and beaten together.

This firſt *refining* is performed in the Caribees and other places where the ſugar-canes are cultivated; and only ſerves for the brown or coarſe ſugar.

When theſe are imported into Europe, the ſugar-bakers take them up, and refine them farther, by a ſecond operation, or rather a repetition of the firſt.

To render the ſugar very fine, fit for confections, they uſually give it a third *refining*; wherein they only uſe the whites of eggs, and their ſhells beaten together, and thrown into the melted ſugar; which is called *clarifying the ſugar*. See Sugar.

Refining *of ſalt-petre*—The ſalt being put in an earthen or iron veſſel, as much ſpring-water is poured on it as ſuffices to diſſolve it. The veſſel is then put over a gentle fire; and as ſoon as the water begins to boil, alum-powder is thrown into it: the proportion is, one pound of alum to 128 pound of ſalt-petre; and a little vinegar is added. As it boils, the ſcum is to be taken off; and thus is it *refined*. See Salt-petre.

For the **Refining** *of other matters*, as *camphor*, *cinnabar*, *ſulphur*, *lapis*, *ſalt*, *borax*, &c. See Camphor, Cinnabar, Sulphur, Salt, *&c.*

REFLECTED *viſion*. See the article Vision.

REFLECTING, or **Reflexive** *dial*, is a ſort of dial, which ſhews the hour by means of a thin piece of looking-glaſs plate, duly placed to caſt the ſun-rays to the top of a cieling, on which the hour-lines are drawn. See Dial.

Reflecting *microſcope.*	See	Microscope.
Reflecting *level.*		Level.
Reflecting *teleſcope.*		Telescope.

REFLECTION, or **Reflexion**, in mechanics, the return, or regreſſive motion of a moveable, occaſioned by the reſiſtance of a body, which hindered it's purſuing it's former direction. See Motion, Resistance, *&c.*

It is controverted, whether there be any moment's reſt or interval between the incidence and the *reflection?* for the affirmative, ſtand the Peripatetics, and all who conceive the *reflected* motion to be different from the incident one of the ſame body—The motion of incidence, according to theſe authors, is wholly loſt, and deſtroyed by the reſiſtance of the obſtacle ſtruck againſt; and the moveable is thus rendered abſolutely quieſcent in the point of contact; till a new motion of *reflection* is produced therein, from a contrary cauſe.

The Carteſians aſſert the negative; abſolutely denying any reſt at all between the incidence and *reflection*: urging that if the motion were once deſtroyed, though but for a moment, there would be nothing to excite it again; but the body would perſevere in that new ſtate, as much as if it had been at reſt a thouſand years. See Rest and *law of* Nature.

Accordingly Rohault, and others, define *reflection* to be no other than a change of determination; or a continuation of the former motion in a new direction. See Determination, *&c.*

As, ſay they, a pendulum, when arrived at it's greateſt ſweep, does not ſtop; ſo a hard body, ſtriking on another hard one, does not reſt, but purſues it's motion the contrary way, according to the eſtabliſhed law of nature; and this from the immediate influence or impulſe of the cauſe that firſt moved it—But this doctrine is now generally ſet aſide.

Reflection is conceived by the lateſt and beſt authors, as a motion peculiar to elaſtic bodies, whereby after ſtriking, on others which they cannot remove, they recede, or turn back, by their elaſtic power. Sue Elastic *body*.

On this principle it is aſſerted, that there may be, and is a period of reſt between the incidence and *reflection*; ſince the *reflected* motion is not a continuation of the other, but a new motion, ariſing from a new cauſe or principle, *viz.* the power of elaſticity. See Elasticity.

It is one of the great laws of *reflection*, that the angle a *reflected* body makes with the plane of a *reflecting* obſtacle, is equal to that wherein it ſtruck on that obſtacle. See Angle and Incidence—*For the ſeveral laws of motion obſerved in the* Reflections *of bodies*, ſee the article Percussion.

Reflection *of the rays of light*, in optics, is a motion of the rays, whereby, after impinging on the ſolid parts of bodies, or rather, after a very near approach thereto, they recede or are driven therefrom. See Reflexibility.

The *reflection* of the rays of light from the ſurfaces of bodies, is the means whereby bodies become viſible. See Vision.

And the diſpoſition of bodies to reflect this or that kind of rays moſt copiouſly, is the cauſe of their being of this or that colour. See Colour.

The *reflection* of light from the ſurfaces of mirrors, makes the ſubject of catoptrics. See Catoptrics.

The *reflection* of light, Sr Iſaac Newton has ſhewn, is not effected by the ray's ſtriking on the very parts of the bodies; but by ſome power of the body equally diffuſed throughout it's whole ſurface, whereby it acts upon the ray, attracting or repelling it without any immediate contact. See Ray.

This power he ſhews to be the ſame whereby, in other circumſtances, the rays are refracted; and whereby they are at firſt emitted from the lucid body. See Light.

The arguments he produces to prove this are as follow—

1°. Becauſe the ſurfaces of poliſhed glaſſes, which to the eye appear ſmooth, are yet in reality very rugged and uneven; (poliſhing being nothing but the grating, ſcratching and breaking off the coarſer protuberances, by means of ſand, glaſs putty or tripoly.) If the rays of light, therefore, were reflected by ſtriking on the ſolid parts of the glaſs, the *reflections* would never be ſo accurate as we find they are; but the rays would even be as much ſcattered by the moſt poliſhed glaſs, as by the rougheſt—It remains, therefore, a problem how glaſs poliſhed by fretting ſubſtances can reflect light ſo regularly as it does, which problem is ſcarce otherwiſe to be ſolved than by ſaying, that the *reflection* of a ray is effected, not by a ſingle point of the *reflecting* body, but by ſome power of the whole body, evenly diffuſed all over it's ſurface, and by which it acts on a ray without immediate contact: for that the parts of bodies do act upon light at a diſtance, is already ſhewn under the article Inflection.

2°. If the colours ſeparated by a priſm placed at the entrance of a beam of light into a darkened room, be ſucceſſively caſt on a ſecond priſm placed at a greater diſtance from the former, in ſuch manner as that they all fall alike, or with an equal obliquity upon it; the ſecond priſm may be ſo inclined to the incident rays, that thoſe which are of a blue colour ſhall be all *reflected* by it; and yet thoſe of a red colour pretty copiouſly tranſmitted—Now, if the *reflection* were cauſed by the parts of the air or glaſs, we would aſk, why, at the ſame obliquity of incidence, the blue ſhould wholly impinge on thoſe parts ſo as to be all *reflected*, and yet the red find pores enough to be in a great meaſure tranſmitted?

3°. Where two glaſſes touch one another, there is no ſenſible *reflection*, and yet we ſee no reaſon why the rays ſhould not impinge on the parts of the glaſs, as much when contiguous to other glaſs, as when contiguous to air.

4°. When the top of a water-bubble, by the continual ſubſiding and exhaling of the water, grows very thin, there is ſuch a little, and almoſt inſenſible quantity of light *reflected* from it, that it appears intenſely black; whereas round about that black ſpot, where the water is thicker, the *reflection* is ſo ſtrong as to make the water ſeem very white—Nor is it only at the leaſt thickneſs of thin plates or bubbles, that there is no manifeſt *reflection*, but at many other thickneſſes, gradually greater and greater. For in one of our author's obſervations the rays of the ſame colour were by turns tranſmitted at one thickneſs, and *reflected* at another thickneſs for an indeterminate number of ſucceſſions: and yet in the ſuperficies of the thinned body, where it is of one thickneſs, there as are many other parts for rays to impinge on, as where it is of any other thickneſs.

5°. If red and blue rays, ſeparated by a priſm, fall ſucceſſively on a thin plate of any pellucid matter, whoſe thickneſs increaſes in continual proportion, (ſuch as a plate of air between two glaſſes, the one plane and the other a little convex) the ſame plate will, in the ſame part *reflect* all the rays of one colour, and tranſmit all thoſe of the other; but in different parts, will *reflect* the rays of one and the ſame colour, at one thickneſs, and tranſmit them at another; and thus alternately, and *in infinitum*—Now it can never be imagined that at one place the rays which for inſtance, exhibit a blue colour, ſhould have the fortune to ſtrike on the ſolid parts, and thoſe which exhibit a red to hit on the void parts of the body; and at another place, where the body is either a little thicker, or a little thinner, that on the contrary the blue ſhould hit on the pores, and the red upon the ſolid parts.

6°. In the paſſage of light out of glaſs into air, there is a *reflection* as ſtrong as in it's paſſage out of air into glaſs, or rather a little ſtronger, and by many degrees ſtronger than in it's paſſage out of glaſs into water.

Now it ſeems improbable that air ſhould have more *reflecting* parts than water or glaſs: but if that ſhould be ſuppoſed, yet it will avail nothing; for the *reflection* is as ſtrong or ſtronger when the air is drawn from the glaſs by the air-pump, as when it is adjacent to it—If any ſhould here object, on Des Cartes's hypotheſis, that though the air be drawn, there is a ſubtle matter remaining to ſupply it's place, which being of a denſer kind, is better fitted for the *reflection* of light than any other body: beſide that we have elſewhere ſhewn ſuch ſubtle matter to be fictitious; and that ſuppoſing it's exiſtence, and it's *reflecting* power, no light could ever have been propagated, but muſt have been all *reflected* back to the lucid body, immediatly after it was firſt emitted; the following experiment does evidently convict it of falſity.

7°. If light in it's paſſage out of glaſs into air ſtrike more obliquely than at an angle of 40 or 41 degrees, it is wholly *reflected*, if leſs obliquely it is in great meaſure tranſmitted—Now it is not to be imagined, that light at one degree of obliquity ſhould meet with pores enough in the air to tranſmit the greater part of it, and at another degree ſhould meet with nothing but parts to *reflect* it wholly; eſpecially conſidering that in it's paſſage out of air into glaſs, how oblique ſoever be it's incidence, it finds pores enough in the glaſs to tranſmit a great part of it—If any ſuppoſe that it is not *reflected* by the air, but by the outmoſt ſuperficial parts of the glaſs, there is ſtill the ſame difficulty: beſides, that ſuch a ſuppoſition is unintelligible, and will alſo appear to be falſe by applying water behind ſome part of the glaſs inſtead of air: for ſo, in a convenient obliquity of the rays, ſuppoſe of 45 or 46 degrees, at which they are all *reflected* where the air is adjacent to the glaſs, they ſhall be in great meaſure tranſmitted where the water is adjacent to it: which argues, that their *reflection* or tranſmiſſion depends on the conſtitution of the air and water behind the glaſs, and not on the ſtriking of the rays upon the parts of the glaſs; the rays not being *reflected* untill they have reached the laſt part of the ſurface, and are begun to go out. For if in going out they fall upon a ſurface of oil and water, they proceed; the attraction of the glaſs being ballanced by an equal force the contrary way, and prevented from having it's effect by the attraction of the liquor adhering to it: but if the rays in paſſing out of this laſt ſurface fall into a vacuum which has no attraction, or into air which has but little, not enough to counter-balance the effect of the glaſs; in this caſe the attraction of the glaſs draws them back, and *reflects* them.

This will appear ſtill more evident, by laying two glaſs priſms, or the object glaſſes of two teleſcopes, the one plane and the other a little convex, upon each other, ſo as they may neither touch nor yet be too far a-part. For that light which falls on the hind ſurface of the firſt glaſs, where the glaſſes are not above $\frac{1}{1000000}$ part of an inch a-part, will be tranſmitted through the ſurface, and through the air or vacuum between the glaſſes, and paſs into the ſecond glaſs: but if the ſecond glaſs be taken away, then the light paſſing out of the ſecond ſurface of the firſt glaſs into the air or vacuum, will not proceed but return into the firſt glaſs, and be *reflected*.

Whence it follows, that the rays are drawn back again by ſome force in the firſt glaſs; there being nothing elſe to occaſion their return—And hence too, it follows, that the *reflection* is not effected by means of any ſubtle matter, contiguous to the hind ſurface, according to the principles of Des Cartes; ſince that matter ought to *reflect* them when the glaſſes were nearly contiguous, as well as when the ſecond glaſs is quite removed.

Laſtly, If it be asked how ſome of the rays come to be *reflected*, and others tranſmitted: and why they are not all alike *reflected*; ſuppoſing the *reflection* owing to the action of the whole ſurface? the ſame great author ſhews, that there are both in the rays of light, and in the bodies themſelves, certain vibrations, (or ſome ſuch property) impreſſed on the rays, by the action either of the luminary that emits them, or of the bodies that *reflect* them; by means whereof it happens, that thoſe rays in that part of their vibration which conſpires with the motion of the parts of the body, enter the body, are refracted and tranſmitted; but thoſe in a contrary part of their vibration reflected. See VIBRATION and MEDIUM. See alſo REFRACTION and TRANSMISSION.

Add, that every ray of light, in it's paſſage through any refracting ſurface, is put into a certain tranſient conſtitution or ſtate, which in the progreſs of the ray returns at equal intervals, and diſpoſes the ray at each return to be eaſily tranſmitted through the next *refracting* ſurface; and between each return to be eaſily *reflected* by it.

Theſe alternate diſpoſitions, which Sir Iſaac Newton calls *fits of eaſy reflection*, and of eaſy *tranſmiſſion*, he accounts for by ſuppoſing that the rays of light, in impinging on bodies, excite vibrations therein, which happening to move faſter than the rays, when a ray is in that part of the vibration which conſpires with it's motion, it paſſes through; but when in the contrary part of the vibration, is beat back again: whence every ray is ſucceſſively diſpoſed to be eaſily *reflected*, or eaſily tranſmitted, by every vibration which overtakes it. See TRANSMISSION.

REFLECTION, in catoptrics, is the return of a ray of light from the poliſhed ſurface of a ſpeculum or mirrour, driven thence by ſome power reſiding therein. See MIRROUR and CATOPRICS.

The ray thus returned is called a *reflex*, or *reflected ray*, or *ray of reflection*; and the point of the ſpeculum whence the return commences, the *point of reflection*.

Thus the ray AB (*Tab. Optics*, *fig*. 26.) preceeding from the radiant A, and ſtriking on the point of the ſpeculum B; being returned thence to C; BC repreſents the *reflected ray*, and B the *point of reflection*: in reſpect whereof AB repreſents the *incident ray*, or *ray of incidence*, and B the *point of incidence*. See POINT and RAY.

Again, a line CG drawn from any point as C of the *reflected* ray BC, perpendicular to the ſpeculum, is called the *cathetus of reflection*, or *cathetus of the eye*: as a line AF, drawn from the radiant perpendicular to the ſpeculum, is called the *cathetus of incidence*. See CATHETUS.

Of the two angles which the *reflected ray* BC makes with the mirrour, the ſmalleſt, CBE, is called the *angle of reflection*: as, of the two angles the incident ray makes with the ſpeculum, the ſmalleſt ABD is called the *angle of incidence*. See ANGLE.

If the mirrour be either concave, or convex, the ſmalleſt angles the ray makes with a tangent to the point of *reflection* and incidence, are the *angles of reflection* and incidence.

The angle CBH which the *reflected* ray makes with a perpendicular to the point of *reflection*, is called the *inclination of the reflected rays*; as the angle ABH is called the *inclination of the incident ray*. See INCLINATION.

General laws of REFLECTION—I. *If a ray of light be reflected from a ſpeculum of any form*; *the angle of incidence is ever equal to the angle of reflection*—This law obtains in percuſſions of all kinds of bodies, and conſequently muſt do ſo in thoſe of light. See *laws of* PERCUSSION, ſee alſo ANGLE.

It might therefore be here aſſumed as an axiom: but it is of that importance, and it's demonſtration ſo beautiful, that we cannot omit it—Suppoſe, then, DC (*fig*. 54.) an incident ray, propagated from the radiant D: here, though the motion of the ray be ſimple, yet it's determination in the line DC being oblique with reſpect to the obſtacle, is really compounded of two determinations; the one along DE, the other along DG. See COMPOUND *motion*.

The force along DC, therefore is equal to the two forces along DG and DH. But the obſtacle GF only oppoſes one of the determinations, *viz*. that along DG, (for it cannot oppoſe a determination parallel to itſelf, as DE;) therefore only the force along DG will be loſt by the ſtroke; that along DH or GC remaining entire—But a body perfectly elaſtic, (ſuch as we ſuppoſe the ray of light) will recover by it's elaſticity, the force it loſt by the ſhock. See ELASTICITY.

The ray, therefore, will recover the force DG or CH. Thus, retaining both it's forces, and both it's former determination HC and CF, after percuſſion, it will be impelled along CF and CH, by the ſame forces as before along DH and DG. By it's compound motion, therefore, it will deſcribe the right line CE, and that in the ſame time as

DC; and HE and DH will be equal, as being deſcribed by the ſame force. Now, the two triangles DCH and CHE are equal, and conſequently their ſimilar angles equal. Since then, HCA=HCF; DCA the angle of incidence, is equal to ECF the angle of *reflection*. *Q. E. D.*

This law is confirmed in light by an eaſy experiment. For a ray of the ſun falling on a mirrour, in a dark room, through a little hole; you will have the pleaſure to ſee it rebound, ſo as to make the angle of *reflection* equal to that of incidence. See Camera *obſcura*.

The ſame may be ſhewn various other ways: thus, *e. gr.* placing a ſemicircle F *i* G (*Tab. Optics*, *fig.* 26.) on a mirrour DE, it's centre on B, and it's limb perpendicular to the ſpeculum; and aſſuming equal arches, F*a* and G*e*; place an object in A, and the eye in C: then will the object be ſeen by a ray *reflected* from the point B. And if B be covered, the object will ceaſe to be ſeen.

Hence, 1°. If a ray of light, as HB, fall perpendicularly on the ſurface of a ſpeculum DE, it will be *reflected* back upon itſelf.

2°. From the ſame point of a ſpeculum, ſeveral rays cannot be *reflected* to the ſame point; for in that caſe all the ſeveral angles of *reflection* would be equal to the ſame angle of incidence; which is abſurd.

3°. One ray as AB cannot be *reflected* to two or more points; for in that caſe all it's angles of *reflection* would be equal to the ſame angle of incidence; which is as abſurd as before. See Radiant.

II. *Each point of a ſpeculum reflects rays falling on it, from each part of an object*—Hence, ſince ſeveral rays coming from ſeveral parts of a radiant object, cannot be *reflected* from the ſame point of a ſpeculum to the ſame point; the rays that flow from different points of the object, are ſeparated after *reflection:* and hence each ray ſhews the point whence it proceeded. See Vision.

On this principle it is that the rays *reflected* from mirrours or looking-glaſſes, exhibit the appearances of objects placed before them. See Looking-glass.

And hence we eaſily conceive why rough bodies exhibit no images; in regard they reflect the light in ſuch manner as to confound rays which proceed from different points, by means of their eminences and cavities, their alternate riſings and fallings—But for this, all hard bodies would be mirrours.

III. *If the eye* C, *and the radiant point* A *change places*; *the point will continue to radiate upon the eye*, *in the ſame courſe or path as before.*

For if the object be removed from A to C, it will ſtill radiate on it's former point of *reflection* B; but there can be but one right line drawn between the two points G and D; and the rays are right lines. Therefore that which was before the ray of *reflection*, will now be the ray of incidence; and ſince it will be *reflected* under the ſame angle as that under which it fell, that which was before the ray of incidence, will now be the ray of *reflection*. So that the object removed to C, will radiate on the eye placed in A, by the right lines CB and BA. *Q. E. D.*

Hence, an object is ſeen by the *reflected* ray AB, with the eye placed in A, the ſame, as if the eye were in AC, and the object in A.

The truth of this theorem is ſo eaſily confirmed by experiment, that ſome, with Euclid, aſſume it as a principle; and demonſtrate the great law of *reflection* therefrom—Thus; ſuppoſe the angle of incidence a little greater than the angle of *reflection*; then will the angle ABF be greater than that CBE. Wherefore, changing the places of the eye and the object, the angle CBE will become the angle of incidence; and therefore CBE greater than ABF, by the ſuppoſition. So that the ſame angle ABF will be both greater and ſmaller than the other CBE; which being abſurd, ABE cannot be greater than CBE—The ſame abſurdity will follow, if you ſuppoſe the angle of incidence leſs than the angle of *reflection*—Since then the angle of incidence can neither be greater nor leſs than that of *reflection*, it muſt be equal to it.

IV. *The plane of reflection*, that is, the plane wherein the incident and reflected rays are found, *is perpendicular to the ſurface of the ſpeculum*; *and in ſpherical ſpecula paſſes through the centre.* See Plane.

Hence the cathetus both of incidence and *reflection* is in the plane of *reflection*. See Cathetus.

That the *plane of reflection is perpendicular to the ſpeculum*, is aſſumed by Euclid, Alhazen, and others, as a principle, without any demonſtration; as being evident from all obſervation and experiment.

V. *The image of an object ſeen in a mirrour, is in the cathetus of incidence*—This the antients aſſumed as a principle: and, hence, ſince the image is certainly in the *reflected* ray, they inferred it muſt appear in the point of concourſe of the *reflected* ray with the cathetus of incidence; which indeed holds univerſally in plane and ſpherical mirrours, and uſually in concave ones; a few caſes only excepted, as is ſhewn by Kepler.

For the particular laws of Reflection, *ariſing from the circumſtances of the ſeveral kinds of ſpecula, or mirrours, plane, concave, convex,* &c. *ſee them laid down under the article* Mirrour.

Point of Reflection. See the article Point.

Reflection *of the moon*, is a term uſed by ſome authors, for what we otherwiſe call her *variation*; being the third inequality in her motion, whereby her true place out of the quadratures, differs from her place twice equated. See Moon.

Reflection is alſo uſed in the Copernican ſyſtem, for the diſtance of the pole from the horizon of the diſk; which is the ſame thing as the ſun's declination in the Ptolemaic ſyſtem. See Declination.

Reflection is alſo uſed figuratively for an operation of the mind, whereby, turning as it were back upon itſelf it makes itſelf and it's own operations it's object; and conſiders or contemplates the manner, order, and laws which it obſerves in perceiving, reaſoning, willing, judging, doubting, believing, *&c.* and frames itſelf new ideas of the relations diſcovered therein. See Soul, Faculty, Perception, Idea, *&c.*

REFLEX, Reflect, in painting, is underſtood of thoſe places in a picture which are ſuppoſed to be illuminated by a light *reflected* from ſome other body repreſented in the ſame piece. See Light.

Or, *reflexes* may be defined thoſe places which beſide the general light that illumines the whole piece, receive ſome particular light, from their ſituation with reſpect to ſome more illumined poliſhed body that reflects part of the rays it receives upon them. See Colour.

Reflexes are ſcarce ſenſible except in the ſhadowed parts—The management of the *reflexes* requires a world of accuracy and skill—All reflected light is ſuppoſed to carry with it part of the colour of the body which reflects it; ſo that thoſe places which receive this light, muſt have their colour mixed or tinged with that colour. But the ſame place may receive *reflexes* from different objects, differently coloured, and thoſe again receive *reflexes*, from others—The painter therefore muſt have a view to every circumſtance of the colour, light and poſition of each figure; muſt conſider what effect each has on others, and purſue nature through all the variety of mixtures. See Clair-*obſcure*.

Reflex *viſion*, or Reflected *viſion*, is that performed by means of rays reflected from the poliſhed ſurfaces of objects to the eye. See Vision and Reflection.

Reflex viſion is the ſubject of catoptrics. See Catoptrics—Under *reflex viſion* come all the phænomena of ſpecula or mirrours of all kinds. See Mirrour.

REFLEXIBILITY *of the rays of light*, is that property whereby they are diſpoſed to be *reflected.* See Reflection.

Or, it is their diſpoſition to be turned back into the ſame medium, from any other medium on whoſe ſurface they fall—Hence thoſe rays are ſaid to be *more* or *leſs reflexible*, which are returned back more or leſs eaſily under the ſame incidence. See Ray.

Thus if light paſs out of glaſs into air, and by being inclined more and more to the common ſurface of the glaſs and air, begins at length to be totally reflected by that ſurface; thoſe ſorts of rays which at like incidences are reflected moſt copiouſly; or the rays which by being inclined begin ſooneſt to be totally reflected, are moſt *reflexible.*

That rays of light are of different colours endued with different degrees of *reflexibility*, was firſt diſcovered by Sir Iſaac Newton; and is ſhewn by the following experiment—Applying a priſm DFE, (*Tab. Optics*, *fig.* 55.) whoſe angles are each 45°, to the aperture C of a darkened room, in ſuch manner as that the light is reflected from the baſe in G: the violet rays are ſeen firſt reflected in HG; the other rays continuing ſtill refracted in IK—After the violet, the blue are all refracted, then the green, *&c.* See Prism.

Hence it appears, that the differently coloured rays, differ in degree of *reflexibility*. See Colour.

From other experiments it appears, that thoſe rays which are more *reflexible*, are alſo moſt *refrangible*. See Refrangibility.

REFLEXION. See the article Reflection.

REFLUX *of the ſea*, the ebbing of the water; or it's return from the ſhore. It is thus called, as being the oppoſite motion to the flood, or flux. See Flux and Tide.

REFORM, a re-eſtabliſhment, or revival of former neglected diſcipline; or a correction of the reigning abuſes therein. See Reformation.

The term is much uſed in a monaſtic ſenſe, for the reducing an order or congregration of religious to the antient ſeverity of the rule, from which it had gradually ſwerved; or even for the improving on the antient rule and inſtitution itſelf, and voluntarily making it more ſevere. See Order and Religious.

In this ſenſe the order of St Barnard is ſaid to be only a *reform* of that of St Benedict. See Bernardin and Benedictin.

To Reform, in a military ſenſe, is to reduce a company, regiment, or other body of men, either by diſbanding the whole, or only breaking a part, and retaining the reſt; or ſometimes by incorporating them in other regiments—Hence,

REFORMADO, or REFORMED *officer*, one whoſe troop, or company is ſuppreſſed in a *reform*, and he continued either in whole or half pay, doing duty in the regiment.

A *reformed* captain on foot follows the company, and aſſiſts the ſtanding officer as a ſecond; but ſtill maintains his degree and precedence. See CAPTAIN.

REFORMATION, REFORMATIO, the act of *reforming*, or correcting an error, or abuſe in religion, diſcipline, or the like. See REFORM.

The *reformation* of the Roman calendar by Pope Gregory, was effected in the year 1582, chiefly by the advice of Aloyſius Lilius, and Clavius. See CALENDAR.

The *reformation of religion*, called by way of eminence, *the reformation*, was begun by the elector of Saxony, at the ſollicitation of Luther, about the middle of the ſixteenth century. See LUTHERANISM.

King Henry VIII. of England, happening to have then a pique againſt pope Clement VII. by reaſon of his perſiſting in not allowing of his divorce from queen Catherine of Auſtria, fell in with the torrent, aboliſhed the pope's ſupremacy, ſeized the monaſteries, and other religious houſes, and divided their lands among the nobility and gentry.

In every thing elſe he perſevered a papiſt—So that the *Reformation* went on but lamely in his time—Under his ſon Edward VI. it went much farther; but was all undone again by his ſucceſſor queen Mary, who re-eſtabliſhed the antient ſuperſtitions.

But the executions of above 500 people, who were burnt for the proteſtant faith in the five years of her reign, ſo alienated the people from popery, that queen Elizabeth, her ſiſter, found it no hard matter to carry the *reformation* to it's full length, and to ſettle it on the foot whereon it now ſtands among us.

Right of REFORMATION, *jus* REFORMATIONIS, is a right which the princes of Germany claim to *reform* the church in their reſpective territories; as being inveſted with the ſpiritual as well as the temporal power.

The *jus reformationis* is annexed to the ſoveraignty; by this they have the power of conſcience, the diſpoſition of eccleſiaſtical revenues, &c. as they enjoyed the ſame at the treaty of Munſter in 1624.

REFORMED *calendar*	See the articles	CALENDAR.
REFORMED *church*		CHURCH.
REFORMED *officer*		REFORMADO.

REFRACTED *dials*, are ſuch as ſhew the hour by means of ſome *refracting* tranſparent fluid. See DIAL.

If a pin or ſtick be ſet up, or any point be aſſigned in a concave bowl or diſh, for the centre of the dial; and a horizontal dial be applied over the ſame; aſſigning the meridian line on the edges of the bowl; and marking out the reſt of the hour lines alſo on the edges of the bowl: then, taking away the horizontal dial, and elevating a ſtring or thread from the end of the ſaid pin over the meridian line, as much as is the latitude or elevation of the pole of the place—Then, by bringing the thread to caſt a ſhadow on any hour-point formerly marked out on the edges of the bowl, by a candle or the like; that ſhade in the bowl is the true hour-line: and if the bowl be full of water, &c. when this is done; it will never ſhew the true hour by the ſhadow of the top of the pin, but when filled again with the ſame liquor.

REFRACTED *ray*, or *ray of* REFRACTION. See RAY and REFRACTION.

REFRACTED *viſion*. See the article VISION.

REFRACTION, REFRACTIO, in mechanics, the deviation of a moving body from it's direct courſe, by reaſon of the different denſity of the medium it moves in; or a flexion and change of determination, occaſioned by a body's falling obliquely out of one medium into another of a different denſity. See MEDIUM.

Thus a ball A, (*Tab. Mechanics*, *fig.* 52.) moving in the air in the line A B, and falling obliquely on the ſurface of the water C D, does not proceed ſtraight to E, but deviates or is inflected to F—Again, if the ball moving in water in the ſame line A B ſhould fall obliquely on a ſurface of air C D; it will not proceed ſtraight to E, nor yet deflect to F, but to G. Now the deflection in each caſe is called the *refraction*; and the two caſes are diſtinguiſhed by means of the perpendicular M I; that, B G being called *refraction towards the perpendicular*, or to the *axis of refraction*; and the other B F, *refraction from the perpendicular*, or *from the axis of refraction*.

Theſe *refractions* are ſuppoſed to ariſe hence, that the ball arriving at B, in the firſt caſe, finds more reſiſtance or oppoſition on the ſide O, *i. e.* from the ſide of the water, than from the ſide P, or that of the air; and in the latter more reſiſtance from the ſide P, which is now the ſide of the water, than the ſide O which is that of the air.

The *great law of refraction*, then, which holds in all bodies, and all mediums, is, that a body paſſing obliquely out of a medium which reſiſts it more into another, which reſiſts it leſs, is refracted towards the perpendicular; and in paſſing out of a medium which oppoſes it leſs into another which oppoſes it more, is refracted from the perpendicular.

Hence the rays of light falling out of air into water are refracted towards the perpendicular; whereas a ball thrown into the water is refracted from it; by reaſon water, which reſiſts the motion of light leſs than air, reſiſts that of the ball more: or, to ſpeak more juſtly, by reaſon water, by it's greater attraction, accelerates the motion of the rays of light more than air does: for that this is the true cauſe of *refraction*, at leaſt in light, ſhall be ſhewn under REFRACTION of light.

To have a body *refracted*, it is neceſſary it fall obliquely on the ſecond medium—In perpendicular incidences there is no *refraction*.

Voſſius, indeed, and Snellius imagined they had obſerved a perpendicular ray of light undergo a *refraction*; a perpendicular object appearing in the water nearer than in reality it was: but this was to attribute that to a *refraction* of the perpendicular rays, which was owing to the divergency of the oblique rays after *refraction*, from a nearer point.

Yet is there a manifeſt *refraction* even of perpendicular rays found in *iſland cryſtal*. See *Iſland* CRYSTAL.

Rohault adds, that though an oblique incidence be neceſſary in all other mediums we know of; yet the obliquity muſt not exceed a certain degree—If it do, the body will not penetrate the medium, but be *reflected*, inſtead of *refracted*—Thus cannon balls in ſea engagements, falling very obliquely on the ſurface of the water, are obſerved to mount a-loft again, and frequently to ſweep the men from off the oppoſite decks: and the like happens to the little ſtones wherewith children make their ducks and drakes.

The antients confounded *refraction* with *reflection*; and it was Sir Iſaac Newton, who firſt taught us the juſt difference between them—He ſhews withall, that there is a good deal of analogy between them; and particularly in the caſe of light. See REFLECTION and REFRACTION *of light*.

The laws of *refraction* of the rays of light in mediums differently terminated, *i. e.* whoſe ſurfaces are plain, concave, convex, &c. make the ſubject of dioptrics. See DIOPTRICS.

By *refraction* it is, that convex glaſſes, or lenſes collect the rays, magnify objects, burn, &c. See LENS, CONVEX, and CONCAVE.

Hence the foundation of microſcopes, teleſcopes, &c. See MICROSCOPE and TELESCOPE, &c.

By *refraction* it is, that all remote objects are ſeen out of their real places; particularly, that the heavenly bodies are apparently higher than they are in reality, &c. See APPARENT and PLACE. See alſo REFRACTION *aſtronomical*.

REFRACTION *of light*, in optics, is an inflexion or deviation of the rays from their rectilinear courſe upon falling obliquely out of one medium into another, of a different denſity. See RAY.

The *refraction* of light Sir Iſaac Newton ſhews is not performed by the rays falling on the very ſurface of bodies; but without any contact, by the action of ſome power in bodies equally diffuſed throughout their ſurfaces; by which ſame power acting in other circumſtances, they are alſo emitted and reflected. See LIGHT.

The ſame arguments whereby we have proved that *reflection* is performed without immediate contact, go a great way towards demonſtrating the ſame of *refraction*: to which may be added the following ones.

1°. Becauſe if when light falls out of glaſs into air, with the utmoſt obliquity it will be tranſmitted at, it be then made to fall a little more obliquely, it becomes wholly reflected—For, the power of the glaſs after it have refracted light emerging as obliquely as poſſible, ſuppoſing the rays to fall ſtill more obliquely, will be too ſtrong to let any of the rays paſs; conſequently, inſtead of being *refracted* they will be all reflected.

2°. Becauſe in thin-lamellæ, or plates of glaſs, light is reflected and *refracted* ſeveral times alternately, as the thickneſs of the lamellæ increaſes in arithmetical progreſſion—For here it depends on the thickneſs of the lamina which of the two it ſhall do; whether reflect it, or let it be tranſmitted.

3°. Becauſe whereas the power of other bodies both to reflect and refract light are very nearly proportional to their denſities; yet unctuous and ſulphurous bodies are found to reflect more ſtrongly than according to their denſities—For as the rays act more ſtrongly on thoſe bodies to kindle them, than on others; ſo do they, again, by their mutual attraction, act more ſtrongly on the rays to *refract* them.

Laſtly, Becauſe not only thoſe rays tranſmitted through glaſs are found to be *refracted*, but alſo thoſe paſſing in the air, or in a vacuum near it's extremities, or even near the extremes of many opake bodies, *e. gr.* the edge of a knife, undergo a ſimilar inflection, from the attraction of the body. See INFLECTION.

The manner wherein *refraction* is performed by meer attraction,

traction, without contact, may be thus accounted for—Suppoſe HI (*Tab. Optics*, *fig.* 56.) the boundary of two mediums, N and O; the firſt the rarer, *e. gr.* air; the ſecond the denſer, *e. gr.* glaſs; the attraction of the medium here will be as their denſities—Suppoſe PS to be the diſtance to which the attracting force of the denſer medium exerts itſelf within the rarer.

Let now a ray of light A*a* fall obliquely on the ſurface which ſeparates the mediums; or rather, on the ſurface PS, where the action of the ſecond and more reſiſting medium commences. All attraction being performed in lines perpendicular to the attractive body, as the ray arrives at *a*, it will begin to be turned out of it's rectilinear courſe, by a ſuperior force wherewith it is attracted by the medium O, more than by the medium N, *i. e.* by a force wherewith it is driven towards it in a direction perpendicular to it's ſurface—Hence the ray is bent out of it's right line, in every point of it's paſſage between PS and RT, within which the attraction acts. Between thoſe lines, therefore it deſcribes a curve *a*B*b*. But beyond RT, being out of the ſphere of attraction of the medium N, it will proceed uniformly in a right line, according to the direction of the curve in the point *b*.

Again, ſuppoſe N the denſer and more reſiſting medium, O the rarer; and HI the boundary, as before; and let RT be the diſtance to which the denſer medium exerts it's attractive force within the rarer: even when the ray has paſſed the point B, it will be within the ſphere of ſuperior attraction of the denſer medium; but that attraction acting in lines perpendicular to it's ſurface, the ray will be continually drawn from it's ſtraight courſe BM perpendicularly towards HI: thus having two forces or directions, it will have a compound motion, whereby inſtead of BM it will deſcribe B*m*; which B*m*, will in ſtrictneſs be a curve.

Laſtly, After it has arrived in *m*, being out of the influence of the medium N, it will perſiſt uniformly in a right line, in the direction wherein the extreme of the curve leaves it.

Thus we ſee how *refraction* is performed, both *towards the perpendicular*, and *from it*.

But note, the attraction of the denſer medium, *e. gr.* N, is continually diminiſhing as the ray proceeds from B, towards the limit of attraction RT; in regard fewer and fewer parts ſtill come to act: at IH, *e. gr.* all the parts between that and PS attract, but at RT, none but thoſe in the line HI—Note, alſo, that the diſtance between PS and RT being ſmall, when we conſider *refractions*, no notice is taken of the curve part of the ray; but we conſider it as conſiſting of two ſtraight lines, CB, AB, or *m*B, AB.

Refraction, in dioptrics, is the inflection or bending of the rays of light, in paſſing the ſurfaces of glaſſes, lenſes, and other tranſparent bodies of different denſities.

Thus a ray, as AB, (*Tab. Optics*, *fig.* 56.) falling obliquely from the radiant A, upon a point B, in a diaphanous ſurface, HI rarer or denſer than the medium along which it was propagated from the radiant; it has it's direction there altered by the action of the new medium, and inſtead of proceeding to M deviates, *e. gr.* to C.

This deviation is called the *refraction of the ray*: BC the *refracted ray*, or *line of refraction*; and B the *point of refraction*. See Ray, Line, and Point.

The line AB is called the *line of incidence*, or *ray of incidence*; and in reſpect hereof B is alſo called the *point of incidence*. See Incidence.

The plane wherein both the incident and *refracted* rays are found, is called the *plane of refraction*; a right line BE drawn in the *refracting* medium perpendicular to the *refracting* ſurface in the point of *refraction* B, is called the *axis of refraction*—And a right line DB drawn perpendicular to the *refracting* ſurface, in the point of incidence B, along the medium through which the ray fell, is called the *axis of incidence*. See Plane, Axis, &c.

The Angle ABI included between the incident ray, and the *refracting* ſurface, is called the *angle of incidence*; and the angle ABD included between the incident ray, and the axis of incidence, is called the *angle of inclination*—The angle MBC which the *refracted* ray makes with the incident, is called the *angle of refraction*; and the angle CBE which the *refracted* ray makes with the axis of *refraction*, is called the *refracted angle*. See Angle.

General laws of Refraction—1°. *A ray of light in it's paſſage out of a rarer, into a denſer medium*, e. gr. *out of air into glaſs, is refracted towards the perpendicular*, i. e. *towards the axis of refraction.*

Hence, the *refracted* angle is leſs than the angle of inclination: and the angle of *refraction* leſs than that of incidence; as they would be equal, were the ray to proceed ſtraight from A to M.

Hence, alſo a ray perpendicular to the *refracting* ſurface, will paſs through without being *refracted*; as it cannot be *refracted* to the perpendicular. The phyſical cauſe thereof is, that the attraction of the denſer medium, which in incidences oblique to it's ſurface acting perpendicular to that ſurface, draws the ray out of it's courſe: this attraction, we ſay, in a perpendicular incidence, acts in the direction of the ray.

2°. *The ratio of the ſine of the angle of inclination, to the ſine of the refracted angle, is fixed and conſtant*; viz, if the *refraction* be out of air into glaſs, it is found greater than as 114 to 76; but leſs than 115 to 76; that is, nearly as 3 to 2. This ratio, aſſigned by Huygens, agrees with another of Sir Iſaac Newton, who makes the ſine of the angle of inclination to the ſine of the *refracted* angle, as 31 to 20; which is, likewiſe, nearly as 3 to 2—Indeed there is ſome difference in the quantity of *refraction*, in different kinds of glaſs; but in phyſical matters, preciſeneſs is not neceſſary—In rain water, Des Cartes found, the ratio of the ſine of the angle of inclination, to the ſine of the *refracted* angle, as 250 to 187, that is, nearly as 4 to 3; which agrees with Sir Iſaac Newton's obſervation, who makes it as 529 to 396—In ſpirit of wine, the ſame great author makes the ratio as 100 to 73; which is not far from the ſeſquitertian ratio —In air he makes it as 3851 to 3850.

Whence the different *refractive* power in different fluids ariſes, is not determined—Clear water, of all others, *refracts* the leaſt; and if impregnated with ſalts, it's *refraction* is increaſed in proportion to the quantity of ſalt. Sir Iſaac Newton ſhews, that in many bodies, *e. gr.* glaſs, chryſtal, a ſelenites, pſeudo-topaz, &c. the *refractive* power is proportionable to their denſities; only in ſulphurous bodies, as camphire, oil, olive, amber, ſpirit of turpentine, &c. the power is two or three times greater than in other bodies of equal denſity; yet they have the *refractive* power with reſpect to each other, nearly as their denſities—As to air, he ſhews that a ray of light in traverſing quite through the atmoſphere, is *refracted* the ſame it would be were it to paſs with the ſame obliquity out of a vacuum into air of equal denſity with that in the loweſt part of the atmoſphere. See Air.

From the law juſt laid down, it follows that one angle of inclination, and it's correſponding *refracted* angle being found by obſervation; the *refracted* angles correſponding to the ſeveral other angles of inclination, are eaſily computed—Now, Zahnius and Kircher have found, that if the angle of inclination be 70°, the *refracted* angle will be 38°, 50′; on which principle Zahnius has conſtructed a table of *refractions* out of air into glaſs, for the ſeveral degrees of the angle of inclination; a ſpecimen whereof follows:

Ang. of Inclin.	Refracted Angle.	Angle of Refraction.	Ang. of Inclin.	Refracted Angle.	Angle of Refraction.
1°	0° 40′ 5″	0° 19 55″	10°	6° 39′ 16″	3° 20′ 44″
2	1 20 6	0 39 54	20	13 11 35	6 48 25
3	2 0 3	0 59 56	30	19 29 29	10 30 31
4	2 40 5	1 19 55	45	28 9 19	16 50 41
5	3 20 3	1 39 57	90	41 51 40	48 8 20

Hence it appears that if the angle of inclination be leſs than 20°, the angle of *refraction* out of air into glaſs, is almoſt $\frac{1}{3}$ of the angle of inclination: and therefore a ray is *refracted* to the axis of *refraction*, by almoſt a third part of the quantity of it's angle of inclination—And on this principle it is that Kepler and moſt other dioptrical writers, demonſtrate the *refractions* in glaſſes.

The conſtant *ratio* of the ſines of the angles of inclination, and the *refracted* angles was firſt diſcovered by Willeb. Snellius—It is vulgarly attributed to Des Cartes; who having ſeen it in Snellius's MS, firſt publiſhed it in his dioptrics, without naming Snellius; as we are informed by Huygens.

Indeed, as the rays of light are not all of the ſame degree of *refrangibility*; this conſtant ratio muſt be different in different kinds—The ratio therefore obſerved by authors is to be underſtood of rays of the mean *refrangibility*, *i. e.* of green rays. The difference of *refraction* between the leaſt and moſt *refrangible* rays, that is between violet and red rays, Sir Iſaac Newton ſhews it about $\frac{1}{27}$ part of the whole *refraction* of the mean *refrangible*; which difference he owns is ſo ſmall that there ſeldom needs to be any regard had to it. See Refrangibility.

3°. *When a ray paſſes out of a denſer into a rarer medium*, e. gr. *out of glaſs into air, it is refracted from the perpendicular, or from the axis of refraction*—And hence the angle of *refraction* is greater than the angle of inclination.

Hence, alſo, if the angle of inclination be leſs than 30°; MBC is nearly equal to $\frac{1}{3}$ of MBE—Therefore MBC is one half of CBE: conſequently, if the *refraction* be out of glaſs into air; and the angle of inclination leſs than 30°; the ray is *refracted* from the axis of *refraction* by almoſt one half part of the angle of inclination—And this is the other dioptrical principle uſed by moſt authors after Kepler, to demonſtrate the *refractions* of glaſſes.

If the *refraction* be out of air into glaſs, the ratio of the ſine of inclination to the ſine of the *refracted* angle is as 2 to 3; if out of air into water, as 4 to 3: therefore, if the *refraction* be the contrary way, *viz.* out of glaſs or water into air; the ratio of the ſines in the former caſe, will be as 2 to 3, in the latter as 4 to 3.

4°. *A ray falling on a curve ſurface, whether concave or convex, is refracted after the ſame manner as if it fell on a plane which is a tangent to the curve in the point of incidence.*

For the curve and plane ſurface touching it, have an infinitely ſmall part common to them both, (each being originally generated by the flux of a point.) But a ray is *refracted* in ſuch a little part; therefore it is the ſame as if it were *refracted* in ſuch a plane.

5°. *If a right line* EF (*fig.* 57.) *cut a refracting ſurface* GH *at right angles; and if from any point in the denſer medium as* D *be drawn* DC *parallel to the incident ray* AB: *this will meet the refracted ray in* C; *and will be to it as the ſine of the refracted angle to the ſine of the angle of inclination.*

Hence, if BC paſs out of glaſs into air, it is in a ſubſequialterate ratio to CD; if out of air into glaſs, in a ſeſquialterate ratio to CD.

Hence, alſo, if light paſs out of water into air; CB is in a ſubſeſquitertian ratio to CD; if out of air into water in a ſeſquitertian. See *fig.* 57. and 58.

Laws of REFRACTION *in plane ſurfaces*—1°. If parallel rays be *refracted* out of one tranſparent medium into another of different denſity, they will continue parallel after *refraction.*

The phyſical reaſon is, that being parallel, their obliquity, or angle of incidence is the ſame: but at equal obliquities we have ſhewn the *refraction* is equal; conſequently the paralleliſm which they had before the *refraction*, will be retained after it.

But this may be alſo demonſtrated geometrically, thus: if the rays be perpendicular to the *refracting* ſurface, they will paſs without any *refraction*; conſequently being parallel before their paſſage, they will be ſo after it. If they fall obliquely, as AB and DC, the angles of incidence *o* an *u*, and conſequently alſo the angle of inclination *x* and *y*, will be equal. But the ſines of the angles of inclination *x* and *y*, have the ſame ratio to the ſines of the *refracted* angles *m* and *n*; therefore the *refracted* angles *m* and *n* are alſo equal; conſequently the *refracted* rays are parallel.

Hence a glaſs, plain on both ſides, being turned directly to the ſun; the light paſſing through it will be propagated after the ſame manner as if the glaſs were away: for the rays being perpendicular will paſs without *refraction*—If the glaſs be turned obliquely to the ſun, the light after *refraction* will be of the ſame intenſity as before; the intenſity depending on the ſpiſſitude or cloſeneſs of the rays, and on the angle wherein they ſtrike the object, or the eye, both which are here unvaried. See RAY.

2. If two rays CD and CP, (*fig.* 59.) proceeding from the ſame radiant C, and falling on a plane ſurface of a different denſity, ſo as the points of *refraction* D and P are equally diſtant from the cathetus of incidence GK; the *refracted* rays DF and PQ have the ſame virtual focus, or point of diſperſion G. See VIRTUAL.

Hence, 1°. Since in rays very near each other, the diſtance from the cathetus is the ſame as to ſenſe; very near rays will diverge from the ſame point G, *i. e.* have the ſame virtual focus G—And hence, 2°. When *refracted* rays falling on the eye placed out of the cathetus of incidence, are either equally diſtant from the cathetus, or very near each other; they will flow upon the eye, as if they came to it from the point G; conſequently the point C will be ſeen by the *refracted* rays as in G.

3. If a ray CD fall obliquely out of a thinner into a denſer medium, having a plane ſurface; the diſtance of the radiant point CK will have a leſs ratio to the point of diſperſion, or virtual focus KG, than the ſine of the *refracted* angle to the ſine of the angle of inclination—But if the diſtance of the point of *refraction* from the cathetus of incidence KD be leſs than the eleventh or nineteenth part of the diſtance of the radiant point CK; and if in the former caſe the tenth, in the latter the hundredth part thereof be ſo ſmall that it cannot be aſſigned or need not be minded, then will CK be to KG, as to ſenſe, in the ratio of the ſine of the *refracted* angle, to the ſine of the angle of inclination.

Hence, 1°. If the *refraction* be out of air into glaſs, the diſtance of the point of diſperſion of rays near the cathetus, is ſeſquialterate, of the radiant point; of more remote rays, greater than ſeſquialterate.

Hence, 2°. If the eye be placed in a denſe medium, objects in a rarer will appear more remote than they are; and the place of the image in any given caſe, may be determined from the ratio of the *refraction*—*Thus to fiſhes ſwimming under water, objects out of the water muſt appear farther diſtant than in reality they are.*

4. If a ray DG fall obliquely out of a denſer, into a rarer medium AB, the diſtance of a radiant point GK, has a greater ratio to the diſtance of the point of diſperſion KC, than the ſine of the *refracted* angle has to the ſine of the angle of inclination—In the other caſe of the preceding theorem, KG will be to KC, as to ſenſe, in the ratio of the ſine of *refracted* angle, to the ſine of the angle of inclination.

Hence, 1°. If the *refraction* be out glaſs into air, the diſtance of the point of diſperſion of rays near the cathetus of incidence, is ſubſeſquialterate of the diſtance of the radiant point. That of the more remote rays is leſs than ſubſeſquialterate.

But, 2°. If the *refraction* be out of water into air, the diſtance of the point of diſperſion of rays near the cathetus, is ſubſeſquitertian; of thoſe more remote, leſs than ſubſeſquitertian.

And, 3°. The eye therefore being in a rarer medium, objects placed in a denſer appear nearer than they are; and the place of the image may be determined in any given caſe by the ratio of *refraction*—Hence the bottom of a veſſel full of water, is raiſed by *refraction*, to a third part of it's height, with reſpect to an eye perpendicularly over the *refracting* ſurface; and hence *fiſhes and other bodies under water, appear nearer than they really are.*

5. If the eye be placed in a rarer medium, an object ſeen in a denſer medium, by a ray *refracted* in a plane ſurface, will appear larger than it really is—If the object be in a rarer, and the eye in a denſer medium, the object will appear leſs than it is—And in each caſe the apparent magnitude is to the real one in a ratio compounded of the diſtance of the point to which the rays tend before *refraction*, from the *refracting* ſurface FL (*fig.* 60.) to the diſtance of the eye GL, from the ſame, and of the diſtance of the object from the eye GM, to it's diſtance from a point to which the rays FM tend before *refraction.*

Hence, 1°. If the object AB be very remote; FM will be phyſically equal to GM; and therefore the real magnitude MB to it's apparent one MH, as GL to FL, or the diſtance of the eye G from the *refracting* plane to the diſtance of the point of convergence F from the ſame plane.

Hence, 2°. *Objects under water, to an eye in the air, appear larger than they are; and to fiſhes under water, objects in the air appear leſs than they are.*

Laws of REFRACTION *in ſpherical ſurfaces, both concave and convex*—1. A ray of light DE (*fig.* 61.) parallel to the axis of a denſer ſphere, after a ſingle *refraction* in E, falls in with the axis in the point F, beyond the centre C.

For the ſemidiameter CE drawn to the point of *refraction* E, is perpendicular to the ſurface KL, and is therefore the axis of *refraction*; but a ray out of a rarer into a denſer medium, we have ſhewn, is *refracted* towards the perpendicular, or the axis of *refraction*; therefore the ray DE will converge to the axis of the ſphere AF; and will, therefore at length concur with it; and that beyond the centre C, in F, becauſe the angle of *refraction* FEH is leſs than the angle of inclination CEH.

2. If a ray DE fall on a ſpherically convex ſurface of a denſer medium, parallel to it's axis AF; the ſemidiameter CE will be to the *refracted* ray EF in the ratio of the ſine of the *refracted* angle, to the ſine of the angle of inclination: but the diſtance of the focus or point of concurrence from the centre CF, is to the *refracted* ray FE in the ratio of the ſine of the *refracted* angle to the ſine of the angle of inclination.

3. If a ray DE fall on a denſer ſpherical convex ſurface KL, parallel to the axis AF; the diſtance of the focus from the *refracting* ſurface FB, is to it's diſtance from the centre FC; in a ratio greater than that of the ſine of the angle of inclination to the ſine of the *refracted* angle—But if the rays be very near the axis, and the angle of inclination BCE only of a few degrees; the diſtances of the focus from the ſurface, and the centre FB and FC, will be, nearly, in the ratio of the ſine of the angle of inclination, to the ſine of the *refracted* angle.

Hence, 1°. If the *refraction* be out of air into glaſs; in the caſe of rays near the axis, BF : FC : : 3 : 2. And in the caſe of the rays remote from the axis, BF : FC ⅂ 3 : 2. Conſequently in the former caſe, BC : BF : : 1 : 3; and in the latter BC : CF ∠ 1 : 3.

And 2°. If the *refraction* be out of air into water; in the former caſe, BF : FC : : 4 : 3; and in the latter, BF : FC ⅂ 4 : 3. Conſequently in the former BC : BF : : 1 : 4, and in the latter BC : BF ∠ 1 : 4.

Hence, 3°. Since the ſun's rays are parallel as to ſenſe; if they fall on the ſurface of a ſolid glaſs ſphere, or of a ſphere full of water, they will not concur with the axis within the ſphere. So that Vitellio was miſtaken when he imagined that the ſun's rays falling on the ſurface of a chryſtallin ſphere, *refracted* to the centre. See FOCUS.

4. If a ray DE (*fig.* 62.) parallel to the axis FA, fall out of a denſer into a rarer ſpherical medium; after *refraction* it will diverge from the axis; and the diſtance of the point of diſperſion, or the virtual focus from the centre of the ſphere, FC, will be to it's ſemidiameter CE in the ratio of the ſine of the *refracted* angle to the angle of *refraction*; but to the portion of the *refracted* ray drawn back, FE, in the ratio of the ſine of the *refracted* angle to the ſine of the angle of inclination.

5. If a ray ED fall parallel to the axis AF on the ſpherically convex ſurface KL, of a rarer medium, out of a denſer; the diſtance of the point of diſperſion from the centre, FC, is to it's diſtance from the ſurface FB, in a ratio greater than that of the ſine of the *refracted* angle to the ſine of the

angle of inclination—But if the rays DE be very near the axis FA, the ratio will be very nearly the ſame with that of the *refracted* angle to the ſine of the angle of inclination.

Hence, 1°. If the *refraction* be out of glaſs into air; in the caſe of rays near the axis, FC : FB : : 3 : 2. Conſequently BC : FB : : 1 : 2. Therefore in the caſe of rays more remote from the axis, BC : FB ∠ 1 : 2.

2°. If the *refraction* be out of water into air; in the former caſe FC : FB : : 4 : 3. Conſequently BC : FB : : 1 : 3; in the latter caſe, therefore, BC : FB 1 ∠ 1 : 3.

3°. Since then the point of diſperſion F is more remote from the *refracting* ſurface KL, if the rays proceed out of water, than out of glaſs into air; parallel rays are leſs diſperſed in the former caſe than in the latter.

6. If a ray HE (*fig.* 61.) fall parallel to the axis FA, out of a rarer, on the ſurface of a ſpherically concave denſer medium; the *refracted* ray EN will be driven from the point of the axis F; ſo as FE will be to FC, in the ratio of the ſine of the angle of inclination, to the ſine of the *refracted* angle.

7. If a ray EH fall parallel to the axis FB on the concave ſurface KL of a ſpherical denſer medium, from a rarer; the diſtance of the point of diſperſion from the *refracting* ſurface FB; is to it's diſtance from the centre, FC, in a ratio greater than that of the ſine of the angle of inclination, to the ſine of the *refracted* angle. But if the rays be very near the axis, and the angle BCE very ſmall; BF will be to CF very nearly in the ratio of the ſine of the angle of inclination, to the ſine of the *refracted* angle.

Hence, 1°. If the *refraction* be out of air into glaſs; in the caſe of rays near the axis, FB : FC : : 3 : 2; in the caſe of rays more remote from the axis FB : FC ⌝ 3 : 2 conſequently in the former, BC : FC : : 1 : 2: And hence, in the latter. BC : FC ∠ 1 : 2.

Hence alſo 2°. If the *refraction* be out of air into water; in caſe of the rays near the axis; FB : FC : : 4 : 3. In the caſe of rays more remote from the axis FB : FC ⌝ 4 : 3. Conſequently in the firſt caſe, BC : FC : : 1 : 3. And hence, in the latter, BC : FC ⌝ 1 : 3.

And hence, 3°. Since the point of diſperſion F, is farther from the centre C, if the *refraction* be in water than in air; the rays will be leſs diſperſed in the latter caſe than in the former.

8. If the ray HE (*fig.* 62.) fall parallel to the axis AF, from a denſer, upon the ſurface of a ſpherically concave rarer medium; the *refracted* ray will concur with the axis AF, in the point F; ſo as the diſtance of the point of concourſe from the centre CF, may be to the *refracted* ray FE in the ratio of the ſine of the *refracted* angle, to the ſine of the angle of inclination.

REFRACTION *in a glaſs priſm*—If a ray of light DE (*fig.* 62. n°. 2.) fall obliquely out of air on a priſm ABC; being *refracted* towards the perpendicular, inſtead of proceeding to F it will decline to G, *i. e.* towards a line HI, drawn perpendicular to the ſurface AB in the point of *refraction* E—Again, ſince the ray EG paſſing out of the glaſs into air falls obliquely on CB; it will be *refracted* to M: ſo as to recede from the perpendicular NGO. *And hence the various phænomena of the priſm.* See PRISM.

REFRACTION *in a convex lens*—If parallel rays AB, CD, and EF, (*fig.* 63.) fall on the ſurface of a lens 2B3K; the perpendicular ray AB will paſs unrefracted to K, where emerging into air perpendicular, as before, it will proceed ſtraight to G. But the rays CD and EF falling obliquely out of air into glaſs, in D and F, will be *refracted* towards the axis of *refraction*, (*i. e.* towards lines HI and LM drawn perpendicular to the *refracting* ſurface in the points of *refraction* F and D;) and decline to P and Q—Again, emerging obliquely out of the glaſs into the ſurface of the air, they will be refracted from the perpendicular; and therefore DQ will not proceed to X but to G; and FP, not to V but to G: thus likewiſe might all the other rays falling on the ſurface of the glaſs, be ſhewn to be *refracted* ſo as to meet the reſt about the point G. See FOCUS.

Hence the great property of convex glaſſes; *viz. that they collect parallel rays, or make them converge into a point.* See CONVEXITY.

REFRACTION *in a concave lens*—Parallel rays AB, CD, and EF, (*fig.* 64.) falling on a concave lens GBHIMK; the ray AB falling perpendicular on the glaſs at B, will paſs *unrefracted* to M; where being ſtill perpendicular, it will paſs into the air, without *refraction*, to L. But the ray CD falling obliquely on the ſurface of the glaſs, will be *refracted* towards the perpendicular NDO, and proceed to Q; and the ray DQ, again, falling obliquely out of the glaſs upon the ſurface of air, will be *refracted* from the perpendicular RQS, and proceed to V. After the ſame manner might the ray EF be ſhewn to be *refracted* to Y, and thence to Z.

Hence the great property of concave glaſſes, *viz. That they diſperſe parallel rays, or make them diverge.* See CONCAVITY.

REFRACTION *in a plane glaſs*—If parallel rays EF, GH, IL, (*fig.* 65.) fall obliquely on a plain glaſs ABCD; the obliquity being the ſame in all, by reaſon of their paralleliſm, they will be all equally *refracted* towards the perpendicular; and accordingly being ſtill parallel at M, O, and Q, will paſs out into the air equally *refracted*, again, from the perpendicular, and ſtill parallel. See PARALLEL, and LOOKING-*glaſs*.

Thus will the rays EF, GH, and IL, at their entering the glaſs, be inflected towards the right; and in their going out as much inflected to the left; ſo that the firſt *refraction* is here undone by the ſecond; though not ſo as that the object is ſeen in it's true place—For the ray BQ being produced back again, will not coincide with the ray LI; but will fall to the right thereof; and this the more as the glaſs is thicker: however, as to matter of colour, the ſecond *refraction* does really undo the firſt. See COLOUR.

REFRACTION *in iſland cryſtal*—The laws of *refraction* in iſland cryſtal differ very much from thoſe laid down in other ſubſtances; for here is a double *refraction*, contrary ways, whereby not only oblique rays are ſplit or divided into two, and *refracted* to oppoſite parts, but even perpendicular rays are alſo ſplit, and one half of them refracted—For the theory hereof. See *iſland* CRYSTAL.

The particular laws of REFRACTION *in the ſeveral kinds of lenſes*, ſee under LENS.

REFRACTION, in aſtronomy, or REFRACTION *of the ſtars*, is an inflection of the rays of thoſe luminaries, in paſſing through our atmoſphere; whereby the apparent altitudes of the heavenly bodies are increaſed. See STAR and ALTITUDE, *&c.*

This *refraction* ariſes hence, that the atmoſphere is unequally denſe in different ſtages or regions; rareſt of all a-top, and denſeſt at bottom; which inequality in the ſame medium, makes it equivalent to ſeveral unequal mediums. See AIR and ATMOSPHERE.

Sir Iſaac Newton has ſhewn that a ray of light in paſſing from the higheſt and rareſt part of the atmoſphere, down to the loweſt and denſeſt, undergoes the ſame *refraction* it would do in paſſing immediately, at the ſame obliquity, out of a vacuum into air of equal denſity with that in the loweſt part of the atmoſphere.

The effect of this *refraction* may be thus conceived. Suppoſe ZV (*Tab. Aſtronomy, fig.* 57. n°. 2.) a quadrant of a vertical circle, deſcribed from the centre of the earth T, under which is AB a quadrant of a circle on the ſurface of the earth, and GH a quadrant of the ſurface of the atmoſphere: and ſuppoſe SE a ray of light emitted by a ſtar at S, and falling on the atmoſphere at E—This ray coming out of the ætherial medium, which is much rarer than our air, or perhaps out of a perfect vacuum, and falling on the ſurface of the atmoſphere, will be *refracted* towards the perpendicular: and ſince the upper air, again, is rarer than that near the earth, and grows ſtill denſer as it approaches us: the ray, in it's progreſs will be continually *refracted*, ſo as to arrive at the eye in the curve line EA.

Suppoſing, then the right line AF to be a tangent to the arch in A, the ray will enter the eye A, according to the direction of AF—And ſince objects are always ſeen in that line, according to the direction whereof the rays enter the eye, the ſtar will appear in AF; that is, in the heavens at Q, which is nearer the zenith than the ſtar really is.

Hence ariſe the phænomena of the crepuſculum, or twylight, See CREPUSCULUM.

And hence alſo it is that the moon is ſometimes ſeen eclipſed, when ſhe is below the horizon, and the ſun above it. See ECLIPSE.

That there is a real *refraction* of the ſtars, *&c.* is deduced not only from phyſical conſiderations, and from arguments a priori, and a ſimilitudine; but alſo from preciſe aſtronomical obſervations; thus,

The diſtance of the two ſtars, Spica Virginis, and the Lion's Tail, when near the meridian, or even near the weſt, is conſtantly found 35°, 2′. But when the Lion's Tail is riſen in the eaſt 34°, 0′, high, Spica Virginis is obſerved to be in almoſt the ſame vertical circle—Add to this, an obſervation of the Dutch, who wintered at Nova Zembla in 1597, from whom the ſun totally diſappeared on the 14th of November; and again began to appear on the 24th of January, which was ſix days ſooner than he ſhould have returned, according to aſtronomical calculations; as is obſerved in the Acta Eruditorum, A. 1697—Nor muſt it be omitted that Charles XI, king of Sweden, being in 1694, at Tornou, in Weſt-Bothnia, in the latitude of 65°, 33′, obſerved, that the ſun never ſet between the 14th and 15th day of June, but was viſible in the middle of the night: the following year he appointed two mathematicians, Bilembergius and Spolius, to obſerve the ſame more accurately; who accordingly found that at Tornou in the middle of the night, between the 10th and 11th of June the ſun was ¾ of his diameter above the horizon: and on the 14th of June at Kangis, in the latitude of 66°, 15′, they found the ſun at midnight, two diameters above the horizon.

Hence it is argued, that as light is propagated in right lines, no rays could reach the eye from a luminary below the horizon, unleſs they were deflected out of their courſe at their enterance into the atmoſphere; it is evident, therefore, the rays are *refracted* in paſſing through the atmoſphere. Hence the ſtars appear higher by *refraction* than they really are; ſo that to bring the obſerved or apparent altitudes to the true ones, the quantity of *refraction* muſt be ſubſtracted. See ALTITUDE.

And hence, as the antients were unacquainted with the *refraction*; reckoning upon too great altitudes, it is no wonder they ſometimes committed conſiderable errors.

From the doctrine of *refractions* it appears that we never ſee the real ſun riſing or ſetting, but only a phantom, or image thereof; the ſun himſelf being at that time hid below the horizon.

And from the obſervations juſt mentioned, it follows, that the *refractions* are greater near the pole, than at leſſer latitudes; doubtleſs from the greater denſity of the atmoſphere, and the greater obliquity of the incidence.

M. de la Hire aſſures us, he could never find any difference in the meridian altitudes of the ſtars; ſo that the *refractions* remain always the ſame—Though he owns, near the horizon the different conſtitution of the air, *&c.* may occaſion ſome variations in the *refractions*.

Stars in the zenith are not ſubject to any *refraction*—Thoſe in the horizon have the greateſt—From the horizon the *refraction* continually decreaſes to the zenith: all which follows hence, that in the firſt caſe the rays are perpendicular; in the ſecond their obliquity is the greateſt; in the third, it is continually increaſing.

At the ſame altitudes, the ſun and ſtars all undergo the ſame *refraction*; for at equal altitudes the incident rays have the ſame inclinations: but the ſines of the *refracted* angles as are the ſines of the angles of inclination, *&c.*

Indeed Tycho Brahe, who firſt deduced the *refractions* of the ſun, moon, and fixt ſtars from obſervation, makes the ſolar *refractions* greater than thoſe of the fixt ſtars; and the lunar *refractions* ſometimes greater than thoſe of the ſtars, ſometimes leſs—But the theory of *refractions* (which we have obſerved is owing to Snellius) was not fully underſtood in his age—De la Hire and Caſſini, find the *refraction* the ſame in all.

M. de la Hire gives us a table of the *refractions* of the ſtars, in their ſeveral degrees of altitude; deduced from the ſureſt and moſt accurate obſervations; as follows:

Table of the REFRACTIONS *of the heavenly bodies, at the ſeveral degrees of altitude.*

Alt.	Refract.	Alt.	Refract.	Alt.	Refract.	Alt.	Refract.	Alt.	Refract.	Alt.	Refract.
0	32′ 0″	16	3′ 26″	30	1′ 51″	46	1′ 9″	61	0′ 40″	77	0′ 17″
1	26 35	17	3 23	31	1 47	47	1 7	62	39	78	15
2	20 43	18	3 12	32	1 43	48	1 6	63	37	79	14
3	15 44	19	3 1	33	1 40	49	1 4	64	35	80	12
4	12 26	20	2 51	34	1 36	50	1 2	65	33	81	11
5	10 26	21	2 44	35	1 33	51	1 0	66	32	82	10
6	9 8	22	2 38	36	1 30	52	0 58	67	31	83	8
7	8 2	23	2 31	37	1 27	53	56	68	30	84	7
8	7 1	24	2 24	38	1 24	54	54	69	28	85	6
9	6 17	25	2 18	39	1 22	55	52	70	26	86	4
10	5 41	26	2 12	40	1 19	56	50	71	25	87	3
11	5 11	27	2 7	41	1 17	57	48	72	24	88	2
12	4 46	28	2 3	42	1 15	58	46	73	23	89	1
13	4 25	29	1 59	43	1 13	59	44	74	21	90	0
14	4 7	30	1 55	44	1 11	60	42	75	20		
15	3 51			45				76	18		

Tycho Brahe will have the *refractions* of the ſun to vaniſh at the altitude of 46°; thoſe of the moon at 45°, and thoſe of the fixt ſtars at 20°: but Caſſini has found that they reach even to the zenith—Indeed Tycho repreſented all the *refractions* leſs than they are; except the horizontal one, which he made too big: for he makes the horizontal *refraction* in the ſun 34′; in the moon 33′; in the fixt ſtars 30′. De la Hire and Caſſini make it 32′ in all the heavenly bodies. Tycho, again, makes the *refraction* of the ſun at 33° altitude, to be 55″; but Caſſini 1′, 43″.

Fa. Laval in 1710, 22° Jan. obſerved the meridian altitude of the ſun to be 70°, 25′, 50″; and on the 23d of June, obſerved the ſame to be 70°, 26′, 0″, whhich is 10″ more, that ſhould be leſs—Having met with ſome like obſervations before, he takes occaſion to ſuſpect the *refraction* to be varied according to the different winds which blow from the different quarters—When the north-weſt wind blows, he thinks the *refraction* is the greateſt; and adds, from obſervations made at St Baume, and St Pilon, that the *refraction* at 24 fathoms above the ſurface of the ſea, is double that at 600 fathoms. See HORIZON—Huygens long ago obſerved the *refraction* to be changed every hour; though his experiments were made at very little altitudes, and in terreſtrial objects.

The *refraction* diminiſhes the right and oblique aſcenſions of a ſtar, and increaſes the deſcenſions: it increaſes the northern declination, diminiſhes the ſouthern. See ASCENSION, DESCENSION, *&c.*

Refraction, in the eaſtern part of the heavens, diminiſhes the longitude of a ſtar, but increaſes the ſame in the weſtern part of the heavens: it diminiſhes the ſouthern latitude, and increaſes the northern. See LONGITUDE and LATITUDE.

The *refraction* therefore, is by no means to be overlooked in aſtronomy—It is abſolutely neceſſary to the determining of the phænomena of the heavenly motions, to a degree of accuracy; ſo that the antient aſtronomy, where no regard was had to it, muſt of neceſſity have been exceedingly defective on this very account. See ASTRONOMY.

To obſerve the REFRACTION *of a ſtar*, &c.—1°. Obſerve the meridian altitude of a ſtar near the zenith; whence the latitude of the place being known, the true declination of the ſtar is eaſily had, the ſtar being now void of any ſenſible *refraction*. See DECLINATION.

2°. Obſerve the altitude of the ſame ſtar in any other degree, and note the time by a pendulum. 3°. For the given time of obſervation, from the declination of the ſtar, compute it's true altitude. See ALTITUDE.

This being thus found leſs than the altitude obſerved; ſubſtract the one from the other; the remainder is the *refraction* for that moment, in that degree.

REFRACTION *of altitude*, is an arch of a vertical circle, as S *ſ*, (*Tab. Aſtronomy*, *fig.* 28.) whereby the altitude of a ſtar S E, is increaſed by the *refraction*. See ALTITUDE.

REFRACTION *of declination*, is an arch of a circle of declination, as *ſ* I, whereby the declination of a ſtar DS is increaſed or diminiſhed by the *refraction*. See DECLINATION.

REFRACTION *of aſcenſion and deſcenſion*, is an arch of the equator, D *d*, whereby the aſcenſion and deſcenſion of a ſtar, whether right or oblique, is encreaſed or diminiſhed, by means of the *refraction*. See ASCENSION, *&c.*

REFRACTION *of longitude*, is an arch of the ecliptic, T *t*, *fig.* 29. whereby the longitude of a ſtar is encreaſed or diminiſhed by means of the *refraction*. See LONGITUDE, *&c.*

REFRACTION *of latitude*, is an arch of a circle of latitude *ſ* I, whereby the latitude of a ſtar, T S, is increaſed or diminiſhed by means of *refraction*. See LATITUDE.

REFRACTION, in commerce, is a term ſometimes uſed by merchants, where there has been an overſight in an account, to the prejudice of a perſon, who thereupon demands reſtitution of ſo much, added or omitted by miſtake.

You muſt make me a *refraction* of five pound forgot in your account—I will deduct or make you a *refraction* of 30 *s.* charged inadvertently in my bill.

REFRANGIBILITY *of light*, the diſpoſition of the rays to be refracted. See REFRACTION.

A *greater* or *leſs refrangibility* is a diſpoſition to be *more* or *leſs* refracted, in paſſing at equal angles of incidence, into the ſame medium. See LIGHT, MEDIUM, *&c.*

That the rays of light are differently *refrangible*, is the foundation of Sir Iſaac Newton's whole theory of light and colours—The truth of the principle will appear from the following experiments.

1°. A ray of light being received through a little round hole into a dark room, upon a glaſs priſm, A B C, (*Tab. Optics*, *fig.* 65. n°. 2.) in ſuch manner as to paſs through it near the angle C; the various colours of the rainbow will be ſeen painted in all their ſplendor on a white paper, E F; *viz.* the red in E, then the yellow, then green, blue, and at laſt purple, or violet; and on whatever body you receive the light, ſtill the colours will be the ſame.

Yet this coloured light is ſtill propagated, like other light, in right lines; it is reflected, too, like other light, from a mirror, and refracted through a lens; yet retains it's colours both after refraction and reflection—When collected into a focus, the rays degenerate into a very bright white; but upon diverging again from the focus, reſume their former colours.

Hence, 1°. Since nothing here happens to the rays in paſſing the priſm, but that they are refracted, both in entering, and in quitting it: (See PRISM.) Light is converted into thoſe colours by mere refraction.

2°. Since the coloured rays are ſtill propagated in right lines, both when reflected from mirrors, and refracted in lenſes; they ſtill retain all the properties of light, and therefore are ſtill light.

3°. Since the ſeveral coloured rays decuſſated and mixed together in the focus, appear white; but after ſeparation, beyond the focus, recover their former colours; therefore red, yellow, green, blue, and purple rays mixed together in a convenient proportion, conſtitute a reſplendent white. See WHITE.

Note, The experiment will ſucceed if the room be not dark, only the colours will be leſs vivid.

2. A priſm DEF (*fig.* 66.) being ſo diſpoſed as that the refractions of the rays both at their entrance and exit, are equal; (which is obtained, by turning it ſlowly round it's axis till the coloured light, which now riſes, and now falls, appear ſtationary between the two.) In the middle ſpace between the priſm and the coloured light painted on the wall, place another priſm GH to receive the coloured light LM. After a ſecond refraction in this ſecond priſm the coloured light painted on the wall, IK, will be inclined to a like light NO, ſeen there, even when the priſm GH is removed; ſo as the blue extremities N and I will be further a-part than the red ones K and O.

Hence, 1°. The blue rays muſt of neceſſity be more refracted than the red ones; and there is, likewiſe, an unequal refraction in the intermediate rays.

Hence, therefore, the ſun's rays are not all of the ſame *refrangibility*; conſequently, not of the ſame nature. See RAY.

3. Thoſe rays are moſt *refrangible*, which are moſt reflexible. See this proved under REFLEXIBILITY.

The difference between *refrangibility* and reflexibility was firſt diſcovered and publiſhed by Sir Iſaac Newton in 1675, in the *Phil. Tranſact.* and from that time vindicated by him, from the objections of ſeveral authors; particularly F. Pardies, M. Mariotte, Fr. Linus, or Lin, and other gentlemen of the Engliſh college at Liege: at length it was more fully laid down, illuſtrated, and confirmed by great variety of experiments in his immortal optics.

But, further, as not only thoſe colours of light produced by refraction in a priſm, but alſo thoſe reflected from opake bodies, have their different degrees of refrangibility and reflexibility; and as a white light ariſes from a mixture of the ſeveral coloured rays; the ſame great author concluded all homogeneous light to have it's proper colour, correſponding to it's degree of refrangibility, and not capable of being changed by any reflexions, or any refractions; that the ſun's light is compoſed of all the primary colours; that all compound colours ariſe from a mixture of the primary ones, &c. See COLOUR.

The different degrees of *refrangibility*, he conjectures to ariſe from the different magnitude of the particles whereof the different rays conſiſt—Thus the moſt refrangible rays, *i. e.* the red ones, he ſuppoſes to conſiſt of the largeſt particles; the leaſt refrangible, *i. e.* the violet rays, of the ſmalleſt particles; and the intermediate rays, yellow, green, and blue, of particles, of intermediate ſizes. See RED, GREEN, RAY, &c.

REFRESHMENT, *quarters of.* See QUARTERS.

REFRET, in muſic. See the article RITORNELLO.

REFRIGERATIVE, in medicine, a remedy, or diet which refreſhes the inner parts by cooling them—Such, uſually, are ptiſans, clyſters, potions, &c. See PTISAN, &c.

REFRIGERATORY, REFRIGERATORIUM, in chymiſtry, a veſſel, filled with cold water, placed about the head of an alembic, to cool and condenſe the vapours raiſed thither by the fire, and to convert them into a liquor, to be diſcharged thence through the beak. See DISTILLATION, ALEMBIC, SPIRIT, WATER, &c.

The water in the *refrigeratory* is to be changed from time to time, as it begins to grow warm.

Sometimes they content themſelves with wrapping a wet cloth about the head of the alembic, inſtead of a *refrigeratory*: but the more uſual method now uſed to ſupply the place of the *refrigeratory*, is by a worm or ſpiral pipe running through a tub of cold water. See SERPENTINE.

Diſtillation chiefly conſiſts in evaporation and *refrigeration.* See EVAPORATION, &c.

REFUGE, REFUGIUM, in our old cuſtoms, a ſanctuary or aſylum. See SANCTUARY and ASYLUM.

At Paris is an hoſpital called the *refuge*, wherein diſſolute women are ſhut up. See PENITENT and MAGDALEN.

REFUGEES, French-proteſtants, who by the revocation of the edict of Nants, in 1685, have been conſtrained to quit their country, and retire for *refuge* into Holland, Germany, England, &c. to ſave themſelves from the neceſſity of abandoning their religion. See EDICT, HUGUENOT, &c.

REGAL, REGIUS or REGALIS, ſomething belonging to a king. See KING.

Regal is of the ſame import with *royal*; the former being formed of the Latin *rex*; the other of the French, *roy*, king. See ROYAL.

REGAL *fiſhes.* See the article ROYAL *fiſhes.*

REGAL *ſuit.* See the article SUIT.

REGALE, in the French juriſprudence, is a right belonging to the king over all benefices in that kingdom. See BENEFICE.

The *regale* conſiſts in enjoying the revenues of biſhoprics during the vacancy of their ſees, and of preſenting to the benefices dependant thereon, which become vacant during that time, and till a ſucceſſor have taken the oath of fidelity, and have procured letters patents, to ſecure him from the *regale*.

The enjoyment of the fruits of the ſee is called the *temporal regale*; that of preſenting the benefices, the *ſpiritual regale.* Some refer the origin of the *regale* to the time of Clovis, and ſay the clergy granted this privilege to the king, upon his defeating the Viſigoths; others alledge, that pope Adrian I. gratified Charlemaign with it, in a council held at Rome—It is obſerved by others, that the *regale* was originally no more than a ward, or adminiſtration; and that the kings were only depoſitaries of the fruits of the vacant biſhoprics, and appointed œconomi to look to them during the vacancy. See OECONOMUS.

It is added, that the kings of the firſt and ſecond race never enjoyed any ſuch privilege, and that it was only introduced in the twelfth century, in favour of inveſtitures. See INVESTITURE.

REGALE, REGALIO, a magnificent treat or entertainment, given embaſſadors, or other perſons of diſtinction, to divert or do them honour.

In Italy, it is uſual at the arrival of any traveller of eminence, to ſend him a *regale*; that is, a preſent of fruits, ſweet-meats, &c. by way of refreſhment.

REGALIA, in law, the royal rights, or prerogatives of a king. See KING, PREROGATIVE, &c.

Theſe are reckoned by civilians to be ſix; 1°. power of judicature. 2°. power of life and death. 3°. power of war and peace. 4°. maſterleſs goods. 5. aſſeſſments. 6°. minting of money. See ROYALTIES.

REGALIA is alſo uſed for the ſeveral parts of the apparatus of a coronation; as the ſceptre with the croſs; ſceptre with the dove; St Edward's ſtaff; four ſeveral ſwords; the globe; the orb with the croſs, &c. uſed at the coronation of our kings.

REGALIA, *of the church*, are thoſe rights and priviledges which cathedrals, &c. enjoy by grants, and other conceſſions of kings. See CHURCH, CATHEDRAL, &c.

Regalia is ſometimes alſo uſed, for the patrimony of a church: as, *regalia ſancti petri*—And more particularly, for ſuch lands and hereditaments as have been given by king's to the church. *Cepimus in manum noſtram baroniam & regalia quæ archiepiſcopus Eborum de nobis tenet.* Pryn. lib. Ang.

Theſe *regalia*, while in poſſeſſion of the church, were ſubject to the ſame ſervices as all other temporal inheritances; and after the death of the biſhop reverted to the king, 'till he inveſted another with them; which in the reigns of William the conqueror, and ſome of his immediate ſucceſſors, was frequently delayed, and as oft did the biſhops make complaint thereof as appears from Malmesbury, Neubrigenſis, &c. See BISHOP.

This laſt author ſays, that great complaint was made againſt Henry II. *Quod epiſcopatus vacantes, & provenientia perciperet commoda, diu vacare voluit, & eccleſiaſticis potius uſibus applicanda in fiſcum redegit.* See TEMPORALITY, BENEFICE, &c.

REGALIA *facere*, is uſed for a biſhop's doing homage or fealty to the king, when he is inveſted with the *regalia.* See HOMAGE and BISHOP.

Thus Malmesbury, in Anſelm. Regalia *pro more iſtius temporis faciens principi 7 kalend. octobris, Cantuariæ aſſedit.*

REGALITIES. See the article ROYALTIES.

REGARD, of the foreſt, the over-ſight, or inſpection thereof; or the office, and province of the *regarder*; which is to go through the whole foreſt, and every bailiwick thereof, before the holding of the ſeſſions of the foreſt, or juſtice ſeat; to ſee and enquire of the treſpaſſes therein. *See FOREST.

* *Ad videndum, ad inquirendum, ad certificandum,* &c. See REGARDER.

REGARD is alſo uſed for the extent of the *regarder*'s charge, *i. e.* for the whole foreſt, or all the ground that is parcel thereof. See PURLIEU.

REGARDANT, in heraldry, is underſtood of a lion, or other beaſt of prey, born in a poſture of looking behind him, with his face towards his tail.

Others apply it to a beaſt which only ſhews the head, and ſome part of the neck, as moving from out of ſome diviſion of the coat into another—He bears azure, three bends or, in a chief argent, charged with a lion *regardant* gules.

Villain **Regardant**, or **Regargant** *to the manour*, denotes an antient ſervant, or retainer to the lord; thus called becauſe charged to do all baſe ſervices within the manour, to ſee the ſame freed of all filthy and loathſome things that might annoy it. *Coke on Littleton, fol.* 120.

REGARDER *of a foreſt*, **Regardator** *foreſtæ*, an ancient officer of the king's foreſt, whoſe buſineſs was every year upon oath, to make a *regard*, *i. e.* take a view of the foreſt limits; alſo to enquire of all offences and defaults committed by the foreſters within the foreſt, and of all the concealments of them, and whether all the other officers did execute their reſpective duties or not. See Forest.

Manwood refers this inſtitution to king Henry II. but Spelman thinks the name, at leaſt, was given ſince; and that they were the ſame with thoſe officers called *cuſtodes venationis*. See Regard.

REGE, *querela coram*. See Querela.

REGEL, or **Rigel**, a fixed ſtar of the firſt magnitude, in orions left foot—It's longitude, latitude, &c. ſee among the reſt of the conſtellation Orion.

REGENERATION, in theology, the act of being born again by a ſpiritual birth, or becoming a child of god. See Conversion.

Regeneration is performed by the waſhing of the holy ſpirit, whereof baptiſm is the ſign. When an infidel is converted, baptiſm is adminiſtred as a ſign of *regeneration*. See Baptism.

REGENT, **Regens**, a perſon who governs a kingdom during the minority, or the abſence of a king. See Vice-Roy.

In France, the queen mother has the regency of the kingdom, under the title of *queen regent*, while the king is a minor—Some have urged that women being incapable of ſucceeding to that crown, were incapable of the *regency*; but cuſtom has declared in their favour. See Salic.

Regent is alſo uſed for a profeſſor of arts or ſciences, who holds a claſs, or ſet of pupils, in a college. See University, College, &c.

The foreign univerſities are generally compoſed of doctors, profeſſors and *regents*.—*Regent* and ſcholar are relative terms. See Tutor.

Regent is generally reſtrained to the lower claſſes, as *regent* of rhetoric, *regent* of logic, &c. thoſe of philoſophy are rather called *profeſſors*. See Professor.

REGIA *aqua*. } See the articles { Aqua.
Via **Regia**. } See the articles { Via.
Villa **Regia**. } See the articles { Villa.

REGICIDE, **Regicida**, a *king-killer*—The term is alſo uſed for the act itſelf of murdering a king: of *rex*, king, and *cædo*, I ſlay.

Regicide is chiefly uſed in ſpeaking of the perſons concerned in the trial, condemnation, and execution of king Charles the firſt.

REGIFUGE, **Regifugium**, a feaſt held in ancient Rome on the ſixth of the calends of March, *i. e.* on our 24th of February, in memory of the expulſion of their kings, particularly of Tarquin's flying out of Rome on that day. See Feast.

Some will have the feaſt to bear this name from the *rex ſacrorum*, king of the ſacrifices, flying out of the comitia, or place of aſſembly, as ſoon as the ſacrifice was over, in imitation of the flight of Tarquin the proud.

Some critics and antiquaries will have *regifugium*, the ſame with *fugalia*; others hold them to be different. See Fugalia.

REGIMEN*, in medicine, a rule or courſe of living, with regard to eating, drinking, cloathing, and the like; accommodated to ſome diſeaſe, and to the particular courſe of medicine the patient is under. See Diet.

* The word is pure latin, and ſignifies government or rule.

It is doubted whether the hot or cold *regimen* be moſt convenient in fevers?—The hot *regimen*; which antiently obtained in the ſmall-pox, begins to be diſuſed—The *regimen* is very different in different countries: Bartholin ſays, a ſlice of bacon, in Denmark, is an uſual diſh for a perſon in a high fever.

Regimen, in chymiſtry and alchymy, is the method of ordering and conducting any thing, that it may anſwer it's intention.

Thus, *regimen of fire*, is the manner of making and ordering fire, and the degrees thereof. See Fire and Degree.

Regimen *of the work*, that is, of the philoſopher's ſtone, called *the work of patience*, is the rule and conduct to be obſerved to attain projection. See Philosophers *ſtone*, and Projection.

There are three things to be chiefly regarded in the *regimen of the work*—The firſt to adminiſter a gentle, eaſy heat, at the beginning of the coction.

The ſecond to continue this external heat according to the ſeaſon of the work; always obſerving four ſeaſons, as in the common and aſtronomical year: the beginning being the winter, the progreſs the ſpring, then ſummer, and laſtly autumn, which is the time of maturity and perfection of the ſtone: in all which the heat is to be augmented in proportion to the augmentation obſerved in nature.

It is to be added, that the work may not be begun in any ſeaſon, but regard is to be had to the ſeaſons of nature; leſt the winter of the work be found in the ſummer of the year, &c. Which, however, is to be underſtood of the day wherein the mercury is put in the ovum philoſophicum; not of that when it is begun to be ſet at liberty from the priſons nature had incloſed it in.

The third is that in augmenting the fire, the augmentation be not of a whole degree at once; the ſpirits being unable to bear ſuch violence; but a degree is to be divided into four parts, and one part to be taken at a time. See Degree.

All the operations of the firſt *regimen*, are occult and inviſible: in the ſecond *regimen* comes putrefaction, which is the firſt ſenſible change; ſhewing itſelf by it's black colour. See Putrefaction, &c.

Regimen, or *government*, in grammar, is that part of ſyntax or conſtruction which regulates the dependency of words; and the alterations which one occaſions in another. See Syntax and Construction.

Thus we ſay, the *regimen* of a verb active, is an accuſative, *i. e.* a verb active governs an accuſative; or requires that the noun which receives it's action be in the accuſative caſe. See Verb, Accusative, &c.

Prepoſitions have a *regimen*, *i. e.* they require certain caſes in the nouns they are prefixed to; by which they are diſtinguiſhed from *adverbs* which have none. See Preposition and Adverb.

The *regimen*, or conſtruction of government, is entirely arbitrary; and differs in all languages; one language forming it's *regimen* by caſes, as the Latins and Greeks; others by particles in lieu thereof; as the Engliſh, by *of*, *to*, &c. the French, Spaniards, and Italians, by *de*, *a*, *da*, &c. See Case.

There are, however, ſome general maxims which hold in all languages—as 1°. That there is no nominative caſe in any ſentence but has a reference to ſome verb either expreſſed or underſtood. See Nominative.

2°. That there is no verb but has it's nominative caſe, either expreſſed or underſtood—Indeed in languages which have proper accuſatives, as the Latin, before infinitives there is an accuſative, not a nominative caſe: as *ſcio Petrum eſſe doctum*.

3°. There is no adjective but has a relation to ſome ſubſtantive. See Adjective, &c.

4°. That there is no genitive caſe but is governed by ſome other noun; inaſmuch as that caſe always expreſſes the poſſeſſor, which muſt be governed by the poſſeſſed—This rule does not hold ſo apparently in the modern as the antient languages; in regard the particles *of*, *de*, &c. which are the proper ſigns of the genitive caſe, are frequently uſed as prepoſitions. See Genitive.

5°. That the *regimen* of verbs is frequently laid on different kinds of relations, according to cuſtom or uſage; which yet does not change the ſpecific relation of each caſe, but only ſhews that cuſtom has made choice of this or that, according to fancy—Thus the Latins ſay, *juvare aliquem*, & *opitulari alicui*, to help one—So the French ſay, *ſervir quelqu' un* & *ſervir a quelqu'un*, to ſerve one—Thus the Engliſh ſay, *fight one*, or *fight with one*—And thus in Spaniſh moſt of the verbs active govern indifferently either a dative or an accuſative. Sometimes, alſo, the verb admits of ſeveral *regimens*; as *præſtare aliquem*, or *alicui*, *eripere morti aliquem*, or *aliquem a morte*.

Indeed the different *regimen* ſometimes makes an alteration in the ſenſe; in which, particular regard is to be had to the uſage of the language—Thus the Latin *cavere alicui*, ſignifies to watch, or be careful of the preſervation of any one: *cavere aliquem*, to beware of him.

There is one very common fault in *regimen*, which our accurate writers ſhould be careful to avoid; *viz.* the uſing of two verbs that require different caſes, together, as only governing one caſe: as in this example; after *embracing and giving his bleſſing to his ſon*; where *embracing* requiring an accuſative, and *giving* a dative caſe, the *regimen*, or conſtruction of the firſt verb with the noun is irregular: *embrace to a ſon*.

The ſame may be obſerved in nouns; as *I conjured him by the memory and the friendſhip he bore my father*; where *memory* does not agree with the verb *he bore*.

REGIMENT, in war, a body conſiſting of ſeveral troops of horſe, or companies of foot, commanded by a colonel. See Colonel and Major.

The number of men in a *regiment*, is as undetermined as that of the men in a troop, or company. See Troop and Company.

There are *regiments* of horſe, that are not above 300 men; and there are ſome in Germany of 2000; and the *regiment* of Picardy in France conſiſts of 120 companies, or 6000 men.

The French *regiments* of horſe are not commanded by a colonel, as the foot are, but by a meſtre de camp. See Colonel.

Some obſerve, that there were no *regiments* of horſe before the year 1637. Till then the troops were looſe, and independent of each other, not incorporated into a body or *regiment*. See Guard.

REGIO *aſſenſu*, is a writ whereby the king gives his royal aſſent to the election of a biſhop. See Bishop.

REGION, Regio, in geography, a *country*, or particular diviſion of the earth; or a tract of land inhabited by people of the ſame nation. See Earth, Nation, &c.

The modern aſtronomers divide the moon into ſeveral *regions* or provinces, to each whereof they give it's proper name. See Moon.

Region in phyſiology—Authors divide the atmoſphere into three ſtages, called the *upper*, *middle*, and *lower regions*. See Atmosphere.

The *loweſt* Region is that wherein we breathe; and is bounded by the reflection of the ſun's rays; that is, by the height to which they rebound from the earth. See Ray.

The *middle* Region, is that wherein the clouds reſide, meteors are formed, &c. extending from the extremity of the *loweſt*, to the tops of the higheſt mountains. See Meteor, Cloud, Mountain, &c.

The *upper* Region, commences from the tops of the mountains, and reaches to the utmoſt limits of the atmoſphere—In this reigns a perpetual, equable calmneſs, clearneſs, and ſerenity. See Air.

Some authors uſe the term *elementary* Regions for the ſpace of the whole atmoſphere, from the earth to the ſphere or heaven of the moon; becauſe within this are contained the four elements, and all elementary bodies. See Element, and Elementary.

Ætherial Region is uſed for the whole extent of the univerſe, including the orb of the fixed ſtars, &c. See Universe.

Region, in anatomy, denotes alſo a diviſion of the human body. See Body—Anatomiſts divide the body into three *regions*, or *venters*. See Venter.

The *upper region* is that of the head; reaching as low as the firſt vertebra; and comprehending the animal organs, the brain, &c. See Head, &c.

The *middle region* is that of the thorax or breaſt, which Hippocrates calls the upper venter, and which reaches from the clavicles to the diaphragm; wherein are contained the vital parts, as the heart, lungs, &c. See Heart, Lungs, &c.

The third or *lower region* is the abdomen or belly, &c. containing the natural parts, deſtined for digeſtion, purgation, and generation. See Abdomen.

Epicolic Region. } See the articles { Epicolic.
Epigaſtric Region } See the articles { Epigastric.
Umbilical Region } See the articles { Umbilical.

REGIONARY, Regionarius, in eccleſiaſtical hiſtory, a title given from the fifth century, to perſons who had the charge and adminiſtration of the church affairs within a certain diſtrict or *region*.

At Rome there were antiently ſeven *regionary deacons*, who preſided over a kind of hoſpitals, and looked to the diſtribution of alms. See Deacon.

There were alſo *regionary ſubdeacons*, and *regionary notaries*, *regionary biſhops*, &c. See Notary.

A regionary Bishop was properly a miſſionary inveſted with an epiſcopal character, but without being attached to any particular ſee; that he might be at liberty to go preach, and perform other functions of his miniſtry, whither ſoever the Spirit of God, and the wants of the people ſhould call him. See Bishop, Missionary.

REGIS *pondus*. } See { Pondus.
Regis *villa*. } See { Villa.

REGISTER*, Registrum, a public book ſerving to enter and record memoirs, acts, and minutes, to be had recourſe to, occaſionally, for the juſtifying of matters of fact, &c. See Record, Archives, &c.

> * Menage derives the word by corruption, from *regeſtum*, a book containing extracts of ſeveral books, &c. collected together: *Dicitur regeſtum quaſi iterum geſtum*—Others derive it from the old French, *giſter*, to lie down in a bed, &c.

The law of Scotland is rendered very eaſy and regular, by means of the great number of *regiſters*, for recording the conveyances of lands, &c. of private perſons—Of theſe there are two kinds: the one general, fixed at Edinburgh, under the direction of the *lord regiſter*, who before the union was the fifth officer of ſtate, and beſides the *regiſtry*, was clerk of the parliament, treaſury, exchequer, and ſeſſion.

The other is particularly kept in the ſeveral ſhires, ſtewarties, and regalities—The clerks hereof are obliged to tranſmit the *regiſters* of their reſpective courts to the general *regiſter*; and the notaries their protocols: and here they are ſo diſpoſed, that on demand the lieges can have a view of any writs which the law requires to be *regiſtered*, or which parties for their ſecurity have thought fit to record.

The *regiſters* were firſt ſet on foot by act of parliament under king James VI. to the unſpeakable advantage of the ſubject. No man can have a right to any eſtate, but it muſt be *regiſtered* within forty days of his becoming ſeized of it, otherwiſe it is null: by this means all ſecret conveyances are cut off.

Register, Registrarius, is alſo uſed for the clerk or keeper of a *regiſter*, or *regiſtry*. See Clerk.

Of theſe we have ſeveral, denominated from the *regiſters* they keep—as *regiſter of the high court of delegates*; *regiſter of the arches court of Canterbury*; *regiſter of the court of admiralty*; *regiſter of the prerogative court*; *regiſter of the garter*, who is always dean of Windſor. See Delegate, Arches, Admiralty, Prerogative, Garter, &c.

Register *of a pariſh church*, is a book wherein the yearly baptiſms, marriages, and burials of each pariſh, are orderly regiſtered. See Parish, &c.

This practice was laudably inſtituted by that great but unfortunate perſon, Thomas Cromwell, earl of Eſſex, anno 1538. while he was vicar-general to king Henry VIII. See Bill *of mortality*.

Register is alſo the title of a book, containing the forms of moſt of the writs uſed in common law; called the *regiſter of writs*. See Writ.

This *regiſter*, Coke on Littleton obſerves, is one of the moſt antient books of the common law.

Register *ſhips*, or *ſhips of* Register, in commerce, are veſſels to which the king of Spain, or the council of the Indies, grant permiſſions to go and traffick in the ports of the Spaniſh Weſt-Indies. See Commerce.

They are thus called becauſe the ſhips are to be *regiſtered* before they ſet ſail from Cadix, which is the place where they uſually load for Buenos Ayres.

Theſe veſſels, by the tenor of the cedula or permit, are not to exceed three hundred tuns: but there is that good underſtanding between the merchants and the council of the Indies, that ſhips of five or ſix hundred tun frequently paſs un-noted.

The permiſſions coſt thirty thouſand pieces of eight each: but were they to coſt an hundred thouſand the merchants would be gainers, and the king of Spain a loſer—For though the quantity and quality of the merchandizes on board be always expreſſed; yet, by force of preſents, the officers here and in the Indies, allow them to load and unload vaſtly more than the permiſſion expreſſes—Veſſels whoſe certificate only mentions twelve thouſand skins, and an hundered thouſand pieces of eight, have been known to have on-board above four millions in gold and ſilver; twenty ſix thouſand skins, &c. So that the king of Spain's fifth, and his other dues, were almoſt nothing to what they ſhould be.

Add to this, that in the years 1702, 1703, &c. theſe *regiſter* veſſels, countenancing and backing each other, ſold their commodities for above three hundred per cent. profit—A hat was ſold for 18 pieces of eight; an ell of ordinary cloth for 12 pieces of eight, &c.

Among the *regiſter* veſſels may be reckoned a ſhip of five hundred tuns, which the king of Spain allows the Engliſh South Sea Company to ſend each year to the fairs held at Porto Bello, Carthagena, and Vera Cruz, &c. See Assiento.

Register, among letter-founders, is one of the inner parts of the mould wherein the printing-types are caſt. See Letter.

It's uſe is to direct the joining them juſtly together again, after opening them to take out the new-caſt letter. See *Letter*-Foundery.

Registers, in chymiſtry, are holes, or chinks, with ſtopples to them, contrived in the ſides of furnaces, to regulate the fire, *i. e.* to make the heat immediately more intenſe, or remiſs, by opening them to let in the air, or keeping them cloſe, to exclude it. See Furnace, Fire, Heat, Degree, &c.

Register, in printing, the diſpoſing the forms of the preſs ſo as that the lines and pages printed on one ſide of the ſheet, meet exactly againſt thoſe on the other; which is done by means of two points in the greater or outward tympan. See Printing.

REGISTRY, Registrum, comprehends the office, books, and rolls, wherein the proceedings of chancery, or any ſpiritual court, are *regiſtered*, or recorded. See Register, Record, Roll, &c.

REGIUS-*profeſſors*—King Henry VIII. founded five lectures in each of our univerſities; *viz.* of Divinity, Hebrew, Greek, Law, and Phyſic; the readers of which lectures are in the univerſity ſtatutes, called *regii profeſſores*. See Professor.

Regius *morbus*. See the article Jaundice.

REGLET*, or **RIGLET**, in architecture, a little flat narrow moulding, uſed chiefly in compartiments, and pannels, to ſeparate the parts or members from one another, and to form knots, frets, and other ornaments—See *Tab. Archit. fig.* 1. *fig.* 26. *lit. y. fig.* 28. *lit. l. m. fig.* 32. *lit. m. fig.* 24. *lit. N. z.* See alſo MOULDING, FRET, &c.

* The word is a diminutive of the French, *regle*, rule.

The *reglet*, according to Daviler, differs from the *fillet* and *liſtel*, in that it projects equally, like a ruler. See FILLET and LIST.

REGLETS, or **RIGLETS**, in printing, are thin rulers, or ſlips of wood of different dimenſions, placed in the chaſe, between the pages, and at the extremes thereof, to keep them aſunder and hold them tight. See PRINTING.

The *reglets* make the chief part of what they call *the furniture of the chaſe*. See CHASE.

They are particularly denominated from the place they hold in reſpect of the pages, *head-ſticks*, *foot-ſticks*, *gutter-ſticks*, &c.

The term REGLET is alſo uſed abroad for a ruler of metal, ¾ of an inch long, but which may be lengthened out by joyning ſeveral together; uſed to ſeparate the columns, in books that have ſeveral in the ſame page; as alſo for lines to place the notes on in printing of muſic.

REGLET, is alſo uſed for a little thin ſlip of wood uſed by ſome compoſitors to take off the lines from the compoſing-ſtick, and and place them on the galley, as faſt as compoſed. See COMPOSITOR, GALLEY, &c.

REGNANT *queen*. See the article QUEEN.

REGRATER, REGRATARIUS, a law word, formerly uſed for one that bought wholeſale, or by the great, and ſold again by retail. See ENGROSSER, &c.

The term is now chiefly uſed to denote one that buys any wares or victuals, and ſells them again in the ſame market or fair, or within five miles of it. See FORESTALLING.

REGRATER is alſo uſed for a perſon who furbiſhes up old moveables, to make them paſs for new. See FRIPPERY, and REDUBBOR.

Among maſons, &c. to REGRATE, is to take off the outer ſurface of an old hewn ſtone, with the hammer and ripe, in order to whiten, and make it look freſh again. See STONE and MASONRY.

REGRESSION, or *retrogradation* of curves, &c. See RETROGRADATION, &c.

REGULA. See the article RULE.

REGULA, in architecture. See the articles REGLET, LIST, ORLE, &c.

REGULAR, REGULARIS, denotes the relation of any thing that is agreeable or conformable to the rules of art. See RULE and IRREGULAR.

In which ſenſe the word ſtands oppoſed to *irregular*, or anomalous. See IRREGULAR, ANOMALOUS, &c.

Thus we ſay, a *regular* proceeding, a *regular* building, *regular* poem, *regular* verb, &c. See VERB, POEM, &c

REGULAR *figure*, in geometry, is a figure which is both equilateral, and equiangular; *i. e.* whoſe ſides, and conſequently angles, are all equal. See FIGURE.

The equilateral triangle and ſquare are *regular figures*. See SQUARE and TRIANGLE—All other *regular* figures conſiſting of more than four ſides, are called *regular polygons*. See POLYGON.

Every *regular* figure may be inſcribed in a circle. See CIRCLE—*For the dimenſions, properties, &c. of* REGULAR *figures*, ſee POLYGON.

REGULAR *body*, called alſo *platonic body*, is a ſolid terminated on all ſides by regular and equal planes, and whoſe ſolid angles are all equal. See BODY, PLANE, and SOLID.

The *regular* bodies are five in number; *viz.*—The *cube*, which conſiſts of ſix equal ſquares; the *tetrahedron* of four equal triangles; the *octahedron* of eight; the *dodecahedron* of twelve; and the *icoſihedron* of twenty; ſee each under it's proper article. CUBE, TETRAEDRON, OCTAEDRON, &c.—Beſide theſe five there can be no other *regular* bodies in nature.

To meaſure the ſurface and ſolidity of the five REGULAR *bodies*—The ſolidity, &c. of the cube is ſhewn under the article CUBE—The tetrahedron being a pyramid, and the octahedron a double pyramid; and the icoſihedron conſiſting of twenty triangular pyramids; and the dodecahedron of twelve quinquangular ones, whoſe baſes are in the ſurface of the icoſihedron and dodecahedron, and their vertices meeting in a centre: the ſolidities of theſe bodies are all found from what we have ſhewn under the article PYRAMID.

Their ſurface is had by finding the area of one of the planes, from the lines that bound it (ſee TRIANGLE); and multiplying the area thus found by the number from which the body is denominated; *e. gr.* for the tetrahedron, by 4; for the hexahedron or cube, by 6; for the octahedron, by 8; for the dodecahedron, by 12; and for the icoſihedron, by 20—The product is the ſuperficial area. See AREA and SUPERFICIES.

Proportions of the ſphere, and of the five REGULAR *bodies inſcribed therein: the diameter of the ſphere being* 2.

The circumference of a great circle is	6.	28318
Surface of a great circle,	3.	14159
Surface of the ſphere,	12.	56637
Solidity of the ſphere,	4.	18859
Side of the retrahedron,	1.	62299
Surface of a tetrahedron,	4.	6188
Solidity of a tetrahedron,	0.	15132
Side of a cube or hexahedron,	1.	1547
Surface of the hexahedron,	8.	
Solidity of the hexahedron,	1.	5396
Side of an octahedron,	1.	41421
Surface of the octahedron,	6.	9282
Solidity of the octahedron,	1.	33333
Side of the dodecahedron,	0.	71364
Surface of the dodecahedron,	10.	51462
Solidity of the dodecahedron,	2.	78516
Side of the icoſihedron,	1.	05146
Surface of the icoſihedron,	9.	57454
Solidity of the icoſihedron,	2.	53615

If one of theſe bodies be required to be cut out of the ſphere of any other diameter; ſay, as the diameter of the ſphere 2, is to the ſide of any one ſolid inſcribed in the ſame, (ſuppoſe the cube 1. 1547.) ſo is the diameter of any other ſphere (ſuppoſe 8.) to 9. 2376, the ſide of the cube inſcribed in this latter ſphere.

Let *dr*, then, (*Tab. Geometry, fig.* 81.) by the diameter of any ſphere, and *da* ⅓ of it, = *ab* = *br*. Erect the perpendiculars *ae*, *cf*, and *bg*; and draw *de*, *df*, *er*, *fr*, and *gr*; then will (1) *re* be the ſide of the tetrahedron: (2) *df*, the ſide of the hexahedron: (3) *de* the ſide of the octahedron. (4) And cutting *de* in extreme and mean proportion in *h*, *dh* will be the ſide of the dodecahedron. (5) Setting the diameter *dr* up perpendicularly at *r*; from the centre *c*, to it's top, draw the line *cg*, cutting the circle in *g*—Let fall the perpendicular *gb*; ſo is *br* the ſide of the icoſihedron.

REGULAR *curves*, are ſuch whoſe curvity proceeds continually in the ſame uniform geometrical manner—Such are the perimeters of the conic ſections. See CURVE, CONIC *ſection*, &c.

Such as have a point of inflection, or regreſſion, and which being continued to a certain point, turn themſelves a contrary way are called *irregular curves*—Such are the conchoid, and the ſolid parabola, which has a ſquare for it's parameter. See FLEXION and RETROGRESSION.

REGULAR *architecture*, *fortification*, &c. See ARCHITECTURE and FORTIFICATION.

REGULAR *Baſtion*. See the article BASTION.

REGULAR *Place*. See the article PLACE.

REGULAR, in the monaſtic ſenſe, denotes a perſon who has made the vows in ſome religious houſe. See RELIGIOUS and VOW.

Under *regulars* are comprehended the whole body of monks, fryars, and mendicants, &c. See MONK, MENDICANT, &c.

The denomination of *regulars*, in this caſe, ariſes hence, that they are bound to obſerve the rule of the order they are entered into. See RULE and ORDER—Hence,

REGULAR *prieſt* is uſed for a prieſt who is in ſome religious order; in oppoſition to a *ſecular* prieſt, who lives in the world, or at large. See SECULAR.

A cardinal is reputed both *regular* and ſecular and is entitled to the privileges of both ſtates. See CARDINAL.

Regulars may be promoted to biſhoprics and archbiſhoprics, as well as ſeculars; but their promotion ſecularizes them; the epiſcopal dignity diſpenſing them from the obſervation of the rule whereof they have made profeſſion. See SECULARISATION.

REGULAR *abbots*. See the article ABBOT.

REGULAR *benefices*, are ſuch as can only be held by monks or religious; or at leaſt, *per cupientem profiteri*, by a perſon deſirous to embrace the monaſtic life. See BENEFICE.

It is a maxim in the Romiſh canon law—*Regularia regularibus*, i. e. *regular* benefices are to be conferred on *regular* prieſts—The abbies that are chiefs of their reſpective orders are all *regular*, and can only be ſerved by monks and cardinals. See ABBY—All benefices are preſumed ſecular, unleſs they be proved *regular*.

Antiently, the *regular* benefices were almoſt all conferred by way of adminiſtration or curacy; the religious incumbents being always *ad manum* of their ſuperiors, who diſplaced them at pleaſure—Hence the common maxim among the canoniſts, *omne beneficium regulare manuale*.

The benefices appropriated to *regulars* are abbies, conventual priories, ſimple priories, and clauſtral offices—They may be conferred on ſeculars in commendam. See COMMENDAM.

REGULAR *canons*. See the article CANON.

REGULAR *places*, are thoſe within the boundary or incloſure of the convent; as the cloiſter, dormitory, chapter, and refectory—In oppoſition to thoſe deſtined for gueſts, and for the neceſſaries of the houſe, which are reputed without the incloſure. See Abby, Monastery, Cloister, &c.

Regular *corporation*. See the article Corporation.

Regular *ſmall pox*. See the article Pox.

REGULATION, a rule or order preſcribed by a ſuperior, for the uniform and orderly management of ſome branch of policy, juſtice, or the like. See Law, Statute, Ordinance, &c.

REGULATOR *of a watch*, is a ſmall ſpring belonging to the balance; ſerving to adjuſt the going, and make it either proceed faſter or ſlower. See Watch, &c.

REGULO, a title given to the ſons of the emperors of China—The Emperor's eldeſt ſon, whom we call the *firſt regulo*, was the only one of all his children in favour; till, of a ſudden, matters took a new face. From ſome new intelligences, the emperor learnt the innocence of the hereditary prince whom he had depoſed, and the artifices that had been uſed to ruin him: particularly, that the *regulo*, to ſucceed therein, had had recourſe to magic, and at the inſtigation of certain lamæ, or Tartar prieſts, had procured a ſtatue to be buried in Tartary; accompanying the ceremony with ſeveral magical operations. Upon this, orders were inſtantly ſent to ſeize the lamæ, and to dig up the ſtatue: the *regulo* had his palace aſſigned him for a priſon. *Let. Edif. & Cur.*

REGULUS, *petty king*, in our antient cuſtoms, is a term frequently uſed in the Saxon councils, for *comes* or count. See Count and Earl.

Hence *ſub-regulus*, was alſo uſed for a vice-comes or vicount—Though in many places the two ſeem uſed indifferently for the ſame dignitary—Thus in the archives of the cathedral of Worceſter, Uthredus ſometimes ſtyles himſelf *regulus*, and ſometimes *ſub-regulus* of the city of Worceſter.

But in other places we find a diſtinction—Offa *rex merciorum*; Uthredus, *regulus*; Aldredus, *ſubregulus*, &c.

Regulus, in chymiſtry, denotes the fineſt and pureſt part of a metal or mineral, which ſinks or precipitates to the bottom of the crucible or furnace, in melting the mineral or ore. See Metal, Mineral, Fusion, &c.

To procure the *regulus*, that is, the mercurial parts of metals, &c. flux powders are commonly uſed; as nitre, tartar, &c. which purge the ſulphurous part adhering to the metal, by attracting and abſorbing it to themſelves. See Flux *powder*.

Regulus is principally uſed for that of antimony, which is a ponderous metallic powder, that upon fuſing ſome of the mineral in it's crude ſtate, ſinks to the bottom, leaving the ſcoria or impurities a-top. See Antimony.

The alchymiſts will have this matter called *regulus*, *i. e.* little king, as being the firſt born of the royal metallic blood; which is really a ſon, but not a perfect man, *i. e.* not yet a perfect metal for want of time and proper nouriſhment.

Antimony purify'd by ſimple fuſion, is called *regulus of antimony*; or *regulus antimonii philoſophorum*—But the more common way of reducing it into a *regulus*, is with the addition of flux powders, as tartar and nitre. See Flux *powder*.

The ſcoria found at the top of this *regulus* is violently emetic, as well as the *regulus* itſelf, whereof if cups or drinking veſſels be caſt, the wine put into them will become vomitive.

Of this *regulus* caſt in moulds are made thoſe commonly called the *antimonial pills*, weighing about eight or ten grains each, one of which being ſwallowed, will operate conſiderably both by vomit and ſtool.

Theſe pills having thus performed their office, and been diſcharged the body, will ſerve the ſame purpoſe again and again; whence they have obtained the name of *perpetual pills*—The virtue of this *regulus* is not however inexhauſtible, as has been imagined; for by repeated infuſions in wine, though the liquor be made violently emetic at firſt, yet by degrees it loſes it's force, and at length ceaſes to be vomitive.

Martial **Regulus** *of antimony*, is a mixture of little bitts of iron, as the nails of horſe's ſhoes, melted with the *regulus*.

In this operation the iron diſſolving and abſorbing the ſulphurous parts of the antimony, more ſtrongly than the fluxes in the former caſe; and turning it into a crocus; the antimony is hereby brought to a greater degree of purity, and rendered more efficacious than in the common *regulus*. See Iron, Sulphur, &c.

This *regulus* is ſometimes farther purify'd by repeated fuſions and detonations, with the addition of freſh antimony, and more nitre, alternately: in which caſe it becomes *regulus antimonii ſtellatus*, or *ſtarry regulus of antimony*.

Regulus *of arſenic*. See the article Arsenic.

Regulus, in aſtronomy, is a ſtar of the firſt magnitude, in the conſtellation *leo*; called alſo from it's ſituation, *cor leonis*: or the lion's heart; by the Arabs, *alhabor*: and by the Chaldeans, *kalbeleced*, or *kalbeleceid*, from an opinion of it's influencing the affairs of the heavens; as is obſerved by Theon. See Star.

The longitude of *regulus*, as fixed by Mr Flamſteed, is 25°, 31′, 20″; and it's latitude 0°, 26′, 38″ North. See Leo.

REHABILITATION, **Rehabilitatio**, in the civil and canon law, an action whereby a prince or pope, by diſpenſations or letters patents, reſtore a delinquent to the condition he was in before his delinquency. See Degradation, &c.

The king alone can *rehabilitate* an officer noted, condemned and degraded; or a gentleman who has derogated from his rank. See Nobility.

The pope alone pretends to *rehabilitate*, *i. e.* to render capable of benefices and orders, ſuch as had fallen into hereſy, or other irregularities.

In Romiſh countries, an eccleſiaſtic who aſſiſts at the execution of a ſentence of death, is to be *rehabilitated*, by an abſolution, called a *ſævis*. See Absolution.

REHEARSAL, in muſic and the drama, an eſſay or experiment of ſome compoſition, made in private, previous to the repreſentation or performance thereof in public; to habituate the actors or performers, and make them more ready and perfect in their parts—There is a new tragedy in *rehearſal*—the *rehearſal* of the anthem, &c.

REI *domeſticæ domeſticus*. See Domesticus.

REIMBURSEMENT, in commerce, the act of repaying, or returning what monies a perſon had received, by way of advance, &c. or what another has diſburſed or paid for us.

A perſon who gives a bill of exchange in payment, is to *reimburſe* it, if it come to be proteſted, for want of being accepted or paid. See Bill, Protest, &c.

Reimburſing is alſo uſed for paying the price a commodity coſts it's owner—Thus, he has ſurrendered to me the lot of merchandize adjudged to him at the ſale at London, by the directors of the Eaſt-India company, on condition of *reimburſing* the price of the purchaſe, with the expences of carriage, and a profit of 5 per cent.

REINFORCED, or **Renforced**, *ring*, of a cannon, is that next after the trunnions, betwixt them and the touchhole. See Ordnance, Cannon, &c.

REINFORCEMENT, in war, a ſupply, or new proviſion of men, arms, ammunition, &c.

REINTEGRATION. See the article Redintegration.

REINS*, in anatomy, the kidneys; or that part of an animal whereby the urine is ſeparated from the blood. See Kidneys. See alſo Urine.

> * The word, according to Varro, is formed from the Greek, ῥειν, *quaſi rivi obſceni humoris ab iis oriantur*—The Greeks call the *rein*, νεφρος, from the verb, νεφειν, to rain, ſnow, &c. See Nephritic.

In the manage they ſay, a horſe ſhould have *double reins*; which is when he has them a little more elevated on each ſide of the back-bone, than upon it; ſo that paſſing your hand along it, you find it large, well furniſhed and double, by the hollow that goes all along the back-bone—The back ſhould be firm, and not hollow, or bending from the withers to the croup, but ſtraight. See Horse.

Reins, of a bridle, alſo denote two ſtraps of leather meeting in the bridle-hand of the horſeman, in order to make the bit bear, and keep the horſe under ſubjection. See Bridle.

Falſe **Reins** is a lath of leather, paſſed ſometimes through the arch of the banquet, to bend the horſe's neck.

Reins *of a vault*. See the article Vault.

REINSTATING, the reſtoring of a perſon or thing to it's former ſtate or condition, from whence it had been diſturbed or diſplaced. See Rehabilitation, &c.

REJOINTING, or **Rejoynting**, in architecture, the filling up the joints of the ſtones in old buildings, &c. when worn hollow by courſe of time, or weather.

Rejoynting is performed with the beſt mortar; as that of lime, and cæment; ſometimes, alſo with plaiſter, as in the joints of vaults, &c. See Mortar, &c.

REJOYNDER, in law, the defendant's anſwer to the plaintiff's replication. See Replication, and Surrejoynder.

The order in the court of chancery is thus—Firſt, the defendant puts in an anſwer to the plaintiff's bill, which is ſometimes alſo called an *exception*: the plaintiff's anſwer to this is called a *replication*; and the defendant's anſwer to that, a *rejoynder*; anſwering to what the civilians call *duplicatio*. See Chancery, &c.

REIS, **Re**, or **Res**. See the article Ree.

REITERATED *grafting*. See Engrafting.

REITERATING, in printing. See Printing.

REITERATION, the act of repeating a thing, or doing it a ſecond time. See Repetition.

The church does not allow of the *reiteration* of baptiſm. See Baptism—St Gregory obſerves, that it is no *reiteration* when there are wanting proofs of the thing's being regularly done before. See Rebaptisants.

In pleuriſies, the phyſicians order the bleeding to be *reiterated* ſix or ſeven times. See PLEURISY.

REITTERS, an antient title given the German cavalry—The word is originally high Dutch, and ſignifies a horſeman, cavalier, or even knight.

RELAPSE, a return or back-ſliding into a danger, or evil; out of which a perſon had eſcaped.

Fevers, dropſies, &c. are diſeaſes into which *relapſes* are very frequent and dangerous—Such a perſon is *relapſed* into a hereſy he had abjured.

RELATION*, RELATIO, in philoſophy, the mutual reſpect of two things; or what each is, with regard to the other.

* The word is formed *a referendo*; *relation* conſiſting in this, that one thing is *referred* to another: whence it is alſo called *reſpect, habitude, compariſon,* &c. See COMPARISON and HABITUDE.

The idea of *relation* we acquire, when the mind ſo conſiders any thing, that it doth, as it were, bring it to, and ſet it by, another; and carry it's view from the one to the other—Hence the denominations given to things intimating this reſpect, are called *relatives*; and the things ſo brought together, are ſaid to be *related*. See IDEA.

Thus when I call Caius, *husband*; or this wall *whiter*; I intimate ſome other perſon or thing in both caſes, with which I compare *him* or *it*—Hence the wall is called by the ſchoolmen, the *ſubject*; the thing it exceeds in whiteneſs, the *term*; and the whiteneſs the *foundation* of the *relation*.

Relation may be conſidered two ways; either on the part of the mind referring one thing to another; in which ſenſe *relation* is only a mode or affection of the mind, whereby we make ſuch compariſon: or on the part of the things referred, which being no other than ideas, *relation*, in this ſenſe, is only a new idea reſulting or ariſing in the mind, upon conſidering of two other ideas—So that *relation*, take it as you will, is only the mind; and has nothing to do with the things themſelves.

Any of our ideas, Mr Lock obſerves, may be the foundation of *relation*—Though where languages have failed to give correlative names, the *relation* is not eaſily taken notice of: as in concubine, which is a *relative* name, as well as wife.

There is, in effect, no idea but is capable of an infinite number of *relations*: thus one ſingle man may at once ſuſtain the *relations* of father, brother, ſon, husband, friend, ſubject, general, European, Engliſhman, iſlander, maſter, ſervant, bigger, leſs, &c. to an almoſt infinite number; he being capable of as many *relations*, as there can be occaſions of comparing him to other things, in any manner of agreement or diſagreement, or any reſpect whatſoever.

The ideas of *relations* are much clearer and more diſtinct, than of the things *related*; becauſe the knowledge of one ſimple idea is oftentimes ſufficient to give the notion of a *relation*: but to the knowing of any ſubſtantial being, an accurate collection of ſundry ideas is neceſſary. See SUBSTANCE.

The perception we have of the *relations* between various ideas wherein the mind acquieſces, makes what we call *judgment*—Thus, when I judge 2 times 2 make 4, or does not make 5; I only perceive the equality between 2 times 2 and 4; and the inequality between 2 times 2 and 5. See JUDGMENT.

The perception we have of the *relations* between the *relations* of various things, conſtitutes what we call *reaſoning*—Thus when from this, that 4 is a ſmaller number than 6; and that twice 2 is equal to 4; I gather that twice 2 is a leſs number than 6; I only perceive the *relation* of the numbers twice 2 and 4, and the *relation* of 4 and 6. See REASONING.

The ideas of cauſe and effect, we get from our obſervation of the viciſſitude of things, while we perceive ſome qualities or ſubſtances begin to exiſt, and that they receive their exiſtence from the due application and operation of other beings—That which produceth, is the cauſe; that which is produced, the effect. See CAUSE and EFFECT.

Thus fluidity in wax is the effect of a certain degree of heat, which we obſerve to be conſtantly produced by the application of ſuch heat.

The denominations of things taken from time, are for the moſt part only *relations*—Thus when it is ſaid, that queen Elizabeth lived ſixty-nine, and reigned forty-five years, no more is meant, than that the duration of her exiſtence was equal to ſixty-nine, and of her government to forty-five annual revolutions of the ſun: and ſo are all words anſwering to how long.

Young and old, and other words of time, that are thought to ſtand for poſitive ideas, are indeed *relative*; and intimate a *relation* to a certain length of duration, whereof we have the idea in our minds—Thus we call a man young or old, that hath lived little or much of that time, which men uſually attain to: and thus a man is called young at twenty, but an horſe old, &c.

There are other ideas, that are truly *relative*, which we ſignify by names that are thought poſitive and abſolute; ſuch as great and little, ſtrong and weak—The things thus denominated, are referred to ſome ſtandards with which we compare them: thus we call an apple *great*, which is bigger than the ordinary ſort of thoſe we have been uſed to; and a man *weak*, that has not ſo much ſtrength or power to move, as men uſually have, or thoſe of his own ſize.

Authors give various diviſions of *relations*—The ſchool philoſophers commonly divide them into thoſe of *origination*, under which are comprehended the *relations* of cauſe and effect: thoſe of *negation*, which are between oppoſite things: and thoſe of *affirmation*, which are *relations* of agreement between whole and part, the ſign and thing ſignified, the adjunct and ſubject—This diviſion is founded upon this, that the mind can only compare things three ways, *viz.* by inferring, denying, and affirming.

Others divide *relations* into thoſe of *origination*; thoſe of *agreement*, e. gr. ſimilitude, parity, &c. thoſe of *diverſity*; and thoſe of *order*, as priority, poſteriority, &c.

Others divide them into *predicamental*, and *tranſcendental*.—Under the firſt come thoſe *relations* between things that belong to the ſame predicament; *e. gr.* between father and ſon. To the latter belong thoſe which are more general than the predicaments, or are of different predicaments; as the *relations* of ſubſtance and accident; of cauſe and effect; of creator, and creature. See TRANSCENDENTAL, &c.

Mr. Lock gives us a diſtribution of *relations* on a different bottom—All ſimple ideas, he obſerves, wherein are parts or degrees, afford an occaſion of comparing the ſubjects wherein they are, to one another, in reſpect of thoſe ſimple ideas: as, whiter, ſweeter, more, leſs, &c.—Theſe, depending on the equality and exceſs of the ſame ſimple idea, in ſeveral ſubjects, may be called *proportional relations*.

Another occaſion of comparing things being taken from the circumſtances of their origin, as father, ſon, brother, &c. Theſe may be called *natural relations*.

Sometimes the foundation of conſidering things, is ſome act whereby any one comes by a moral right, power, or obligation to do ſomething: ſuch are general, captain, burgher; theſe are *inſtituted* and *voluntary relations*, and may be diſtinguiſhed from the natural, in that they are alterable and ſeparable from the perſons to whom they ſometimes belonged, though neither of the ſubſtances ſo related be deſtroyed. But natural *relations* are not alterable, but are as laſting as their ſubjects.

Another *relation* is the conformity or diſagreement of men's voluntary actions to a rule, to which they are referred, and by which they are judged of: theſe may be called *moral relations*.

It is this conformity or diſagreement of our actions to ſome law (whereby good or evil is drawn on us from the will and power of the law-maker, and is what we call *reward* or *puniſhment*) that renders our actions morally good or evil. See GOOD and EVIL.

Of theſe moral rules or laws, there ſeem to be three ſorts, with their different enforcements. Firſt, the divine law: ſecondly, civil law; thirdly, the law of opinion or reputation. By their *relation* to the firſt, our actions are either ſins or duties. To the ſecond, criminal or innocent; to the third, virtues or vices. See SIN, VIRTUE, VICE, &c.

RELATION, in logic, is an accident of ſubſtance; accounted one of the ten categories or predicaments. See PREDICAMENT and CATEGORY.

Each ſubſtance admits of an infinity of *relations*—Thus the ſame Peter, conſidered with regard to Henry, is in the *relation* of a maſter; with regard to John, in that of a tenant; with regard to Mary, in that of a husband, &c. Again, with regard to one perſon, he is rich, with regard to another poor; with regard to another, he is far, near, tall, ſhort, a neighbour, ſtranger, learned, unlearned, good, bad, equal, &c.

It is diſputed among the ſchool philoſophers, whether or no the *relation* be a thing formally and really diſtinct from the foundation of the ſubſtance? See SUBSTANCE.

RELATION, is alſo uſed in the ſchool theology, to denote certain of the divine perfections, called *perſonal* ones; in regard by theſe one divine perſon is referred to another, and diſtinguiſhed from it. See PERSON.

Hence they teach that in God there is one nature, two proceſſions, three perſons, and four *relations*. See TRINITY.

Theſe *relations* are paternity, filiation, active ſpiration, and paſſive ſpiration. See PATERNITY, &c. See alſo FATHER, SON, SPIRIT, &c.

RELATION, in geometry, arithmetic, &c. is the habitude, or reſpect of two quantities to one another, with regard to their magnitude—This we more uſually call *ratio*, *reaſon*. See RATIO.

The equality or ſameneſs of two ſuch *relations*, we call *proportion*. See PROPORTION.

RELATION, in grammar, is the correſpondence which words have to one another in conſtruction. See CONSTRUCTION.

Faulty and irregular *relations* are the things chiefly to be guarded againſt, in writing correctly; they make the ſenſe obſcure, frequently equivocal—Thus: the orator was attended to with a coldneſs, which was the more remarkable, as the audience were under ſome emotion before he began. —Here *coldneſs* being put indeterminately, the relative *which* can have no juſt and regular *relation* thereto. See RELATIVE.

RELATION is alſo frequently uſed for analogy, or what ſeveral things have in common. See ANALOGY.

In painting, architecture, &c. a certain *relation* of the ſeveral parts and members of the building or picture, conſtitutes what we call *ſymmetry*. See SYMMETRY.

RELATION *inharmonical*, in muſical compoſition, is that whoſe extremes form a falſe, or unnatural interval, incapable of being ſung.

This is otherwiſe called a *falſe relation*, and ſtands oppoſed to a *juſt* or *true relation*.

RELATION, in law, is where two things, as times, &c. are conſidered, as if they were one; the thing ſubſequent being conſidered as taking effect, by *relation*, at the time preceeding.

As if *A* deliver a writing to *B*, to be delivered to *C*, as the deed of *A*; the writing ſhall be deemed to be delivered to *C*, at the time when it was given to *B*, by *relation*.

So bills in parliament to which the king aſſents on the laſt day of parliament, ſhall *relate*, and be of force from the firſt day thereof. Coke calls it *fictio juris*. See DAY, TIME, &c.

RELATIVE *propoſitions*, are ſuch as include ſome relation and compariſon. See PROPOSITION.

Thus, where the treaſure is, there will the heart be—As much as thou haſt, ſo much thou art worth, &c. are *relative propoſitions*.

RELATIVE *gravity*. See GRAVITY.

RELATIVE *levity*. See LEVITY.

RELATIVE *motion*. See MOTION.

RELATIVE *neceſſity*. See NECESSITY.

RELATIVE *place*. See PLACE.

RELATIVE *ſpace*. See SPACE.

RELATIVE *time*. See TIME.

RELATIVE *velocity*. See VELOCITY.

RELATIVE *terms*, in logic, are words which imply a relation, or a thing conſidered as compared to another. See RELATION, and CORRELATIVE.

Relative terms include a kind of oppoſition between them; yet ſo, as that the one cannot be without the other.

Such are *father* and *ſon*, *husband* and *wife*, *king* and *ſubjects*, &c.

RELATIVE in grammar, is a word or term which in the conſtruction anſwers to ſome word fore-going, called the *antecedent*. See ANTECEDENT.

Pronoun RELATIVE, which Buffier chuſes rather to call *modificative* or *determinative*, is a particle added after a noun, or perſonal pronoun, with which it has an affinity, ſo that without them it ſignifies nothing; it's only uſe being to expreſs in what view they are conſidered. See PRONOUN.

Of this kind, in the Latin, are *qui*, *quæ*, *quod*, &c. in the Engliſh, *who*, *which*, *whom*, &c. As in the book *which* you are reading; the man *whom* you ſeek; he *who* told it, &c. —Where *which*, *whom*, and *who* only follow the noun or pronoun, to refer or determine them to ſome particular thing; as to ſeeking, reading, &c.

Frequently, the noun or pronoun wherewith the *relative* is joined, is underſtood: as *I know who* did that. Where it is evident I mean, I know the perſon who did, &c.

RELAXATION, RELAXATIO, in medicine, &c. the act of looſening or ſlackening the tone or tenſion of the fibres, nerves, muſcles, &c. See TENSION, TONE, &c. See alſo FIBRE.

The *relaxation* of a muſcle is ſuppoſed to be effected, either by the perſpiration of the nervous ſpirits, or the regreſs of the ſpirits, blood, &c. which inflated it's fibres; or by the contraction of the air, in the globules of blood before expanded by the ſudden influx and admixture of the ſpirits, &c. See MUSCLE, and MUSCULAR *motion*.

RELAXATION, in chirurgery, is a preternatural extenſion, or ſtraining of a nerve, tendon, muſcle, or the like; either through violence, or weakneſs.

Hernias are deſcents or *relaxations* of the inteſtines, &c. See HERNIA—From the ſame cauſe ariſe deſcents or prolapſions of the anus, &c. See PROCIDENTIA.

RELAXATION, in law, is uſed for a *releaſing*. See RELEASE.

In this ſenſe we ſay the *relaxation* of an attachment in the court of admiralty.

The tenor of indulgences is a *relaxation*, or diminution of the pains of purgatory. See INDULGENCE.

RELAY, a freſh equipage, horſe, &c. ſent before, or appointed to be ready, for a traveller to change; to make the greater expedition: as in riding poſt.

The term is borrowed from the French, *relais*, which ſignifies the ſame thing—In France, the general of the poſts entitles himſelf, ſuperintendant of the *relays*.

RELAYS, in hunting, are freſh ſets of dogs, or horſes, or both, diſpoſed here and there, for readineſs, in caſe the game come that way; to be caſt off, or to mount the hunters; in lieu of the former, which are ſuppoſed to want reſpite. See HUNTING.

RELAY, in tapiſtry, is an opening left in a piece of tapiſtry, where the colours or figures are to be changed; becauſe on thoſe occaſions the workmen are changed; or elſe, the places are left to be filled up till the reſt of the work is done. See TAPESTRY.

RELEASE, RELAXATIO, in law, denotes an inſtrument, whereby eſtates, rights, titles, entries, actions, and other things are ſometimes extinguiſhed and annulled, ſometimes transferred, ſometimes abridged, and even ſometimes enlarged. A *Releaſe* is either in fact or in law—A *releaſe in fact* is that which the very words do expreſly declare.

A *releaſe in law*, is that which acquits by way of conſequence, or intendment of law. See INTENDMENT.

RELEGATION, RELEGATIO, a kind of exile or baniſhment, wherein the obnoxious perſon is commanded to retire to a certain place preſcribed, and to continue there till he be recalled. See EXILE.

Lord Coke calls *relegation* a baniſhment for a time only: Courtin more adequately defines *relegation* a baniſhment to a certain place for a certain term.

In Rome, *relegation* was a leſs ſevere puniſhment than deportation, in that the *relegated* perſon did not thereby loſe the rights of a Roman citizen, nor thoſe of his family, as the authority of a father over his children, &c. See BANISHMENT.

RELICKS, RELIQUIÆ, in the Romiſh church, certain remains of the bodies or clothes of ſome ſaint or martyr, devoutly preſerved in honour to his memory, carried at proceſſions, kiſſed, revered, &c. See SAINT, MARTYR, PROCESSION, &c.

The abuſes in point of *relicks* are moſt flagrant: F. Mabillon, a Benedictin, complains of the great number of ſuſpected *relicks* expoſed on altars: he owns that were there to be a ſtrict inquiſition into the *relicks*, vaſt numbers of ſpurious ones would be found offered every where to the piety and devotion of the faithful; and adds, that bones are frequently conſecrated, ſo far from belonging to ſaints, that in all probability they do not belong to chriſtians.

The catacombs are an inexhauſtible fund of *relicks*; yet it is ſtill diſputed, who were the perſons interred therein? See CATACOMB.

In the eleventh century a method was introduced of trying ſuppoſed *relicks* by fire—Thoſe which did not conſume in the fire were reputed genuine; the reſt not. See PURGATION, ORDEAL, JUDICIUM *Dei*.

It is an ancient cuſtom, which ſtill obtains, to preſerve the *relicks* in the altars whereon maſs is celebrated—To this purpoſe, a ſquare hole is made in the middle of the altar, big enough to receive the hand; and herein is the *relick* depoſited, wrapped in red ſilk, and incloſed in a leaden box. See ALTAR.

The Romaniſts alledge a good deal of antiquity in behalf of their *relicks*—The Manichees, it ſeems out of hatred to the fleſh, which they held an evil principle, are recorded as refuſing to honour the *relicks* of ſaints; which is eſteemed a kind of proof that the Catholicks did it in the firſt ages. See MANICHEE.

Indeed folly and ſuperſtition got into religion but too early. —Even the touching of linnen cloaths on *relicks*, from an opinion of ſome extraordinary virtue derived therefrom, appears to be as ancient as the firſt ages; there being a hole made in the coffins of the forty martyrs at Conſtantinople, expreſly for this purpoſe.

RELICT, RELICTA, in law. See the article WIDOW.

RELICTA *verificatione*, in law, is when a defendant relinquiſhes his proof or plea; and thereupon judgment is entered for the plaintiff.

RELIEF, RELEVIUM, *levamen*, in law, a fine paid to the chief lord, by a perſon at his coming to the inheritance of land held in capite, or by military ſervice. See FINE, LORD, TENURE, &c.

This was ſaid *relevare hæreditatem caducam*, and the money thus paid was called *relevamen*, *relevium*, or *relief*—*Relief* is uſually to the value of a years rent or revenue.

The origin of the cuſtom is thus—A feudatary or beneficiary eſtate in lands, being at firſt only granted for life; after the death of the vaſſal it returned to the chief lord, and was hence called *feudum caducum*, q. d. fallen to the lord by the death of the tenant. See FEE.

In courſe of time theſe feudatary eſtates being converted into inheritances by the connivance and conſent of the lord; when the poſſeſſor of ſuch eſtate died it was called *hæreditas caduca*, q. d. an inheritance fallen to the lord; from whom it was to be recovered, by the heirs paying a certain ſum of money.

This *relief* was eſtabliſhed after the conqueſt—For till that time *hariots* were paid the lord, at the death of his tenant; conſiſting of horſes, arms, &c. See Hariot.

But upon the conqueſt, the poor people being deprived of all ſuch things by the Normans, a ſum of money was ſubſtituted in lieu thereof, which was called a *relief*; and continues in ſome places to this day—However, it is true, *relief* and *hariot* are frequently confounded in antient writers.

Relief *reaſonable*, called alſo *lawful*, and *antient relief*, is that enjoined by ſome law, or fixed by antient cuſtom; and which does not depend on the will of the lord.

Thus in a charter of king John, mentioned by Matt. Paris —*Si quis comitum vel baronum noſtrorum ſive aliorum tenentium de nobis in capite per ſervitum militare, mortuus fuerit & cum deceſſerit, hæres ſuus plenæ ætatis fuerit, &* relevium *debeat, habeat hæreditatem ſuam per* antiquum relevium.

What this was may be ſeen in the laws of William the Conqueror, &c.—Bracton ſays, this fine was called a *relief quia hæriditas quæ jacens fuit per anteceſſoris deceſſum* relevatur *in manus hæredum*, &c.

A *relief* is alſo paid in ſoccage tenure, or petit ſerjeanty; where a rent or other thing is paid by rendering as much as the rent or payment reſerved.

By the cuſtom of Normandy, *relief* is due for lands held in villenage, as well as in fee—By the cuſtom of Paris, *relief* is not due upon inheritances in the direct line.

The quantity of the *relief* is very different: there are *ſingle reliefs, double reliefs*, &c. The quality, too, is diverſe: there are *reliefs of property*, paid by the heir: *reliefs of bail*, or *tutorage*, paid by a guardian for his minor, or by the huſband for the fiefs of his wife, &c. *Relief of horſe and arms*, &c.

By the laws of king Canutus, the *relief* of an earl, paid to the king, was eight war-horſes with their bridles and ſaddles, four cuiraſſes, four helmets, four ſwords, four hunting-horſes and a palfrey—The *relief* of a baron or thane was four horſes, &c.

Relief, in chancery, denotes an order ſued out for the diſſolving of contracts and other acts, on account of their being unreaſonable, prejudicial, grievous, or from ſome other nullity either *de jure*, or *de facto*. See Chancery and Equity.

Minors obtain *relief* againſt acts paſſed in their minority —Majors have *relief* in caſes of enormous damage, deceit, violence, over-reaching, extravagant bargains, &c.

Among the Romaniſts, it is a rule, that the church obtains *relief* any time, and againſt all acts paſſed in it's prejudice; no preſcription prevailing againſt it. See Prescription.

Aid de **Relief**. See the article Aid.

Relief of a hare, among hunters, is the place where ſhe goes to feed in the evening. See Hunting.

Relief, in ſculpture. See the article Relievo.

RELIEVE, in the military ſenſe—To *relieve* is to take the poſt of another body—Hence, to *relieve* the guard, to *relieve* the trenches, &c. is to bring freſh men upon the guard, or the trenches, and to ſend thoſe to reſt who have been upon duty before. See Guard, Trench, &c.—They alſo ſay, *relieve* a ſentinel, *relieve* the ſteers-man, &c.

RELIEVO, or **Relief**, *imboſſment*, is applied to a figure which projects, or ſtands out, prominent, from the ground, or plain whereon it is formed; whether that figure be cut with the chiſſel, moulded, or caſt. See Sculpture, &c.

There are three kinds of *relievo*; viz. *alto*, *baſſo*, and *demi-relievo*.

Alto-**Relievo**, *haut relief*, or *high relievo*, is when the figure is formed after nature, and projects as much as the life.

Baſſo-**Relievo**, *bas-relief*, or *low relievo*, is when the work is but raiſed a little from it's ground: as we ſee in medals, and in the frontiſpieces of buildings, particularly the hiſtories, feſtoons, foliages, and other ornaments in friezes.

Demy-**Relievo** is when one half of the figure riſes from the plain, *i. e.* when the body of a figure ſeems cut in two, and one half is clapped on a ground—When in a *baſſo relievo* there are ſome parts that ſtand clear out, detached from the reſt, the work is called a *demi-boſſe*.

Relievo, in architecture, denotes the ſally or projecture of any ornament. See Projecture.

This, Daviler obſerves, is always to be proportioned to the magnitude of the building it adorns; and the diſtance at which it is to be viewed.

If the work be inſulate and terminated on all ſides, it is call'd a *figure in relievo*, or a *round imboſſment*. Such are ſtatues, acroters, &c.

Relievo in painting, denotes the degree of force or boldneſs whereby a figure ſeems, at a due diſtance, to ſtand out from the ground of the painting, as if really imboſſed.

The *relievo* depends much on the depth of the ſhadow, and the ſtrength of the light; or on the heighth of the different colours bordering on one another; particularly on the difference of the colour of the figure from that of the ground. See Shadow, Colouring, &c.

When the light is well choſen, to make the neareſt parts or figures advance; and well diffuſed on the maſſes, ſtill diminiſhing inſenſibly, and terminating in a large ſpecious ſhadow, brought off inſenſibly; the *relievo* is ſaid to be *bold*, and the *clair-obſcure*, *well underſtood*. See Clair-Obscure.

RELIGION, **Religio**, that worſhip or homage due to God, conſidered as creator, preſerver, and redeemer of the world. See God, Theology, &c.

The foundation of all *religion* is, that there is a God, and that he requires ſome ſervice at the hands of his creatures —From the different manners wherein we arrive at the knowledge of this ſervice; *religion* is divided into *natural* and *revealed*.

Natural **Religion** is whatever we deſcry to be due and meet by the meer dictates of natural reaſon; as, to love, and honour God, not to abuſe his creatures, &c. See Natural, Reason, Deist, &c.

Revealed **Religion** is what we learn to be due by ſome ſupernatural means; as by an expreſs declaration of God himſelf, by the mouths of prophets, &c. See Revelation, Prophecy.

The firſt flows immediately from the relation between the creature and the creator: the latter does not follow from ſuch a relation, but is ſuper-added from the mere will and pleaſure of the creator.

The firſt we ordinarily call *morality*, or *ethics*; becauſe immediately converſant about the manners and duties of men towards one another; and towards themſelves, conſidered as creatures of that being. See Morality, Ethics, &c.

The latter we call by way of eminence *religion*, as being the rule of our duty immediately to God himſelf. See Revelation.

The firſt ſuppoſes a God, a providence, a future ſtate, rewards and puniſhments: the latter likewiſe ſuppoſes an immediate miſſion from God himſelf, atteſted by miracles, &c. See Miracle.

Religion is more particularly uſed for that ſpecial ſyſtem of faith, and worſhip, which obtains in this, or that country; in this, or that ſect; this, or that age, &c.

In this ſenſe we ſay the Romiſh *religion*, the Reformed *religion*, the *religion* of the Greeks, the Mahometan *religion*, Jewiſh *religion*, &c. See Judaism, Mahometanism, &c. under their proper heads.

The Siameſe hold the diverſity of *religions*, i. e. the different manners of honouring God, to be pleaſing to him; inaſmuch as they have all the ſame object, all tend to the ſame end, though by different means. *Claude.*

The ſentiment of theſe idolaters is doubtleſs more juſt than that of our zealots, who hold all but thoſe of their own religion odious to God—Theſe ſeveral ſects in *religion* ſee under their proper articles: ſee alſo Sect.

The *religion* of the ruling part of the world—You may find a lively deſcription of it in a chorus in Seneca's Troas, at the end of the 2d act; beginning thus: *Verum eſt, an timidos fabula decipit? Umbras corporibus viver conditis*, &c. This according to Patin is the religion of princes, and great men, of magiſtrates, monaſtic ſuperiors, and even ſome phyſicians and philoſophers. M. du Maine, head of the leaguers in France uſed to ſay the princes have no religion till after they are turned of 40—*Cum numine nobis mors inſtans majore facit*. Patin. Lett. Chois. 106.

Religion, again, is applied to a military order, conſiſting of knights who live under ſome certain rule, &c. See Knight, Military, Order, &c.

In this ſenſe we ſay the *religion of Malta*, &c. See Malta.

Religion, is ſometimes alſo uſed for a convent—Thus we ſay, there are *religions* of men, *i. e.* monks; *religions* of women, *i. e.* nuns—There are new *religions* eſtabliſhed every day, *i. e.* new monaſteries built. See Monk, Monastery, &c.

The **Religion** uſed abſolutely denotes the reformed in France. —Thus they ſay, d'Ablancourt and Dacier, were of the *religion*. See Huguenot.

RELIGIOUS, in a general ſenſe, ſomething that relates to *religion*. See Religion.

We ſay, a *religious* life, *religious* ſociety, &c. See Society—Churches, and church-yards are *religious* places—A *religious* war is alſo called a *croiſade*. See War, and Croisade.

Religious, is more particularly uſed for a perſon engaged by ſolemn vows to the monaſtic life; or a perſon ſhut up in a monaſtery, to lead a life of devotion and auſterity, under ſome rule or inſtitution. See Vow and Order.

The male *religious* we popularly call *monks* and *friars*; the females, *nuns* and *canoneſſes*. See Nun, Monk, Canon, &c.

M. Nicole obſerves, that ſome domeſtic chagrins, and a certain pride, which leads people to abſcond when they cannot make a figure to their mind, makes as many *religious* as real piety—He adds, that a girl muſt be made a *religious* for no other reaſon, but becauſe ſhe cannot be married anſwerable to her condition.

A *religious* cannot make any will—By the council of Trent, a *religious* may reclaim his vows within five years. See RECLAIM.

Antiently the *religious* were all laymen, and it was even prohibited them to take up orders—In 1557 the parliament of Paris made a difficulty of receiving a biſhop of Laon to the oath of a duke and peer, by reaſon of his being a *religious*: yet a *religious* being promoted to a biſhopric, is thenceforth ſecularized or diſpenſed from the obſervation of his rule. See REGULAR.

In ancient deeds and conveyances of lands, we often find the ſeller reſtrained from giving or alienating it, *viris religioſis vel Judæis*, to *religious* or to Jews; to the end the land might not fall into mortmain. See JUDAISM and MORTMAIN.

In a memorial directed by king John to his viſcounts, they are ordered to proclaim through their reſpective counties, that no body, as they love their bodies and cattle, injure the *religious* or clerks, either in word or deed; on penalty of being hanged up on the next oak—*Nulli ſicut diligunt corpora & catalla ſua malum faciant vel dicant* viris religioſis vel clericis—*Si quem inde attingere poſſimus ad proximam quercum eum ſuſpendi faciemus.*

RELIGIOUS *order*. See the article ORDER.

Moſt military orders pretend, likewiſe to be *religious*; as thoſe of Malta, who make vows, &c. See MALTA.

RELIQUA, the remainder or debet, which a perſon finds himſelf debtor in, upon the balancing and liquidating an account.

Hence, *reliquitary*, the debtor of a *reliqua*; as alſo a perſon who only pays piece-meal—The term *reliqua* is pure Latin.

RELIQUARY, a ſhrine or casket, in which the relicks of a dead ſaint are kept. See SHRINE, RELICKS, &c.

RELIQUIÆ, RELICKS, in antiquity, the aſhes and bones of the dead, which remained after burning their bodies; and which they very religiouſly gathered and put in urns, and afterwards depoſited in tombs. See ASHES, FUNERAL, &c.

REMAINDER, REMANENTIA, in law, an eſtate limited in lands, tenements, or rents, given to a perſon at ſecond hand, to be enjoyed after the deceaſe of another, to whom the ſame is given immediately, or at firſt hand.

A man grants lands to one for term of life, the *remainder* to another for the term of his life; which *remainder* may be either for a certain time, or in fee ſimple, or fee tail.

Spelman makes the difference between a *remainder* and *reverſion* to conſiſt in this; that by a reverſion, after the appointed term, the eſtate returns to the donor, or his heirs, as the proper fountain; whereas by *remainder* it goes to ſome third perſon, or ſtranger. See REVERSION.

Glanville obſerves, that biſhops and abbots, in regard their baronies are the king's alms, cannot give any part thereof by way of *remainder*. See BISHOP.

REMAINDER, in mathematics, is the difference; or that which is left after the taking a leſſer number, or quantity, from a greater. See SUBSTRACTION.

RE-MARRYING, the repeating of a marriage; or the going through the ſolemnities of a ſecond marriage. See MARRIAGE.

Clandeſtine and uncanonical marriages are deemed null; and the parties are to be *re-married* in form; at leaſt to avoid diſputes.

It was anciently expreſly forbid to *re-marry* in the firſt year of viduity—M. Bayle obſerves, that a perſon who does not *re-marry*, is anſwerable to the public for all the time loſt in his viduity, or widowerhood. See WIDOW.

REMEDY, REMEDIUM, in phyſic, a medicine, or preparation applied either internally or externally, for the cure of a diſeaſe. See MEDICINE.

Emplaſters, unguents, cataplaſms, &c. are *topical remedies*. See TOPICAL—Mercury and the bark are *ſpecific remedies*. See SPECIFIC—Mineral waters, and aſſe's milk, and country-air, are uſually the *laſt remedies*—Salivation is ſometimes called by way of eminence, *the remedy*. See SALIVATION.

When *remedies* are ſtuffed with too many ingredients, they load the ſtomach with a ſlimy mucilage, which ſwells, obſtructs, and does more hurt than good. See PHARMACY.

REMEDIES *appended*. See the article APPENDED.

REMEMBRANCE, is when the idea of ſomething formerly known, recurs again to the mind, without the operation of a like object, on the external ſenſory. See MEMORY and REMINISCENCE, RECOLLECTION, &c.

REMEMBRANCERS, *of the exchequer*, are three officers, or clerks therein, formerly called *clerks of the remembrance*. See EXCHEQUER.

They are now diſtinguiſhed by the appellations of the *king's remembrancer*; the *lord treaſurer's remembrancer*; and the *remembrancer of the firſt fruits*—Their buſineſs is to put the lord treaſurer and juſtices of the court in *remembrance* of ſuch things as are to be called upon, and dealt in for the king's benefit.

The king's REMEMBRANCER enters into his office all recognizances taken before the barons, for any of the king's debts, for appearance, or for obſerving orders; and makes out proceſs againſt the collectors of cuſtoms, ſubſidies, and fifteenths, for their accounts—All informations upon penal ſtatutes are entered in this office, and there all matters upon Engliſh bills in the exchequer-chamber remain—He makes the bills of compoſition upon penal laws, takes the ſtatement of debts; has delivered into his office all manner of indentures, fines, and other evidences whatſoever that concern the aſſuring of any lands to the crown: he every year *in craſtino animarum*, reads, in open court, the ſtatute for election of ſheriffs, and gives them their oath, and reads the oath of all the officers of the exchequer, when they are admitted.

The *lord treaſurer's* REMEMBRANCER, is charged to make proceſs againſt all ſheriffs, eſcheators, receivers, and bailiffs, for their account: proceſs of fieri facias, &c. extent for any debts due to the king, either in the pipe, or with the auditors, and proceſs for all ſuch revenues as are due to the king, by reaſon of his tenures—He alſo makes record, whereby it appears whether ſheriffs, or other accomptants, pay their proffers due at Eaſter and Michaelmas—He makes another record, whether ſheriffs or other accomptants keep their days of prefixion: all eſtreats or fines, iſſues, and amerciaments, ſet in any of the courts of Weſtminſter, or at the aſſizes or ſeſſions, are certified into his office, and are by him delivered to the clerk of the eſtreats to write proceſs upon them, &c.

The REMEMBRANCER *of the firſt fruits*, takes all compoſitions and bonds for firſt-fruits and tenths; and makes proceſs againſt ſuch as do not pay the ſame. See FIRST-FRUITS.

REMINISCENCE, REMINISCENTIA, is that power of the human mind, whereby it recollects itſelf, or calls again to it's remembrance ſuch ideas or notions as it had really forgot: in which it differs from *memory*, which is a treaſuring up of things in the mind, and keeping them there, without forgetting them. See REMEMBRANCE.

Hence memory may be conſidered as a continual *remembrance*; and *remembrance*, as an interrupted memory. See MEMORY.

How near a-kin ſoever the two faculties may ſeem, yet they are generally found ſeparated; ſo that they who excell in the one, are defective in the other. See RECOLLECTION, RETENTION, &c.

The antient Platoniſts were of opinion, that all learning and knowledge conſiſted in the *reminiſcence* or recollection of notices which had been in the ſoul before it's union with the body. See PLATONISM.

REMINISCERE, the ſecond ſunday in Lent; antiently thus called from the firſt word of the introit of the maſs ſaid for that day, *reminiſcere miſerationum tuarum*.

REMISIT—*Recto quando dominus* REMISIT. See RECTO.

REMISSION, REMISSIO, in phyſics, the abatement of the power or efficacy of any quality—In oppoſition to the increaſe of the ſame, which is called it's *intenſion*.

In all qualities capable of intenſion and *remiſſion*, the intenſion decreaſes reciprocally as the ſquares of the diſtance from the centre of the radiating quality increaſe. See QUALITY.

REMISSION, in medicine, is when a diſtemper abates, but does not go quite off, before it returns again; as is common in fevers which do not quite intermit. See FEVER.

REMISSION, in law, &c. denotes the pardon of a crime, or the giving up the puniſhment due thereto. See PARDON.

REMIT, in commerce—To *remit* a ſum of money, bill, or the like, is to ſend a ſum of money, &c. See REMITTANCE.

To *remit* is alſo uſed among bankers for what is accuſtomed to be given a banker, or as it were, diſcounted with him, for his giving a bill of exchange. See EXCHANGE.

To *remit* is alſo to give up part of one's due to a debtor; as, I would *remit* you a fourth of what you owe on condition of paying me the reſt in hand.

REMITTANCE, in commerce, the traffic or return of money from one place to another, by bills of exchange, orders, or the like. See COMMERCE, EXCHANGE, &c.

A *remittance* is properly a bill of exchange, or the like, ſent to a correſpondent, and the content thereof to be received by him, of ſome other perſon on whom it is drawn.

Such a merchant has *remitted*, or made a *remittance* of five thouſand pounds in bank notes, to his correſpondent at London—I will *remit* you, or make you a *remittance* of five hundred crowns in three bills of exchange, drawn on *N.* banker in your city, and payable at ſight.

By means of theſe *remittances*, large ſums of money are returned from one city to another, without danger, without carriage, &c.

In London it is eaſy getting *remittances* upon any city in the world: in the country it is more difficult. *Remittances* are not eaſily had upon Copenhagen. See BILL *of exchange*.

Book of REMITTANCES. See the article BOOK.

REMITTANCE is alſo uſed in ſpeaking of the payment of a bill of exchange—Thus, I have received an hundred piſtoles on your *remittance*—Mr *N.* banker in your city, ſhould have paid you two hundred crowns on my *remittance*.

Remittance, alſo denotes the due or fee allowed the banker, both of his wages, and the different value of the ſpecies, in the place where you pay the money, and where he *remits* it.

The *remittance* at London is very high—This *remittance* is more uſually called *change* and *rechange*. See Rechange.

REMITTER, in law—Where a man has two titles to land, and is ſeized by the latter; and that proving defective, he is *remitted* or reſtored to the former more ancient title: this is called a *remitter*, from the Latin, *remittere*, to ſend back.

If land deſcend to him that had right to it before, he ſhall be *remitted* to his better title if he pleaſe. *Doctor* and *ſtudent*.

REMITTING *fever*. See the article Fever.

REMONSTRANCE, an expoſtulation or humble ſupplication addreſſed to a king, or other ſuperior; to beſeech him to reflect on the inconveniencies, or ill conſequences of ſome order, edict, or the like.

The parliament of Paris went in a body to make humble *remonſtrances* to the king, on the ſubject of ſuch a declaration.

Remonstrance, is alſo uſed for an expoſtulatory council or advice; or a gentle, handſome reproof, made either in general or particular, to apprize or to correct ſome fault—A mother makes *remonſtrances* to her daughter, *&c.*

REMONSTRANTS, Remonstrantes, a title given to the Arminians, by reaſon of the *remonſtrance* they made in 1610, againſt the ſynod of Dort, wherein they were condemned. See Arminian.

Epiſcopius and Grotius were at the head of the *remonſtrants*. See Contra-remonstrants.

REMORA, in natural hiſtory, the *ſucking fiſh*; a little fiſh, reſembling a herring, with creſt and fins; called by the Greeks, *echeneis*: famous for ſticking to the ſides of Ships.

It is much talked of by the antients; who, as we find from *Pliny*, *lib.* 32. *c.* 1. unanimouſly believed it had the force to ſtop a veſſel in full ſail, or a whale in ſwimming: and hence called *remora*, a *remorando*—But Mr. Catesby obſerves that even ſeveral of thoſe fiſhes together can do no more than ſhells or corals and other foulneſſes of the ſame bulk, which make a ſhip ſail ſomewhat the ſlower—And in the ſame manner they may be ſome ſmall hindrance to a whale. The author laſt mentioned aſſures us he has taken five of them off the body of a ſhark. Vid. Phil. Tranſ. N°. 438. p. 113.

Remora, among ſurgeons, is alſo an inſtrument to ſet broken bones withal. See Fracture.

REMOUNT, in war—To Remount *the cavalry*, is to furniſh troopers, or dragoons with freſh horſes, in lieu of ſuch as have been killed or diſabled in the ſervice.

REMPLY, in heraldry, ſomething *filled up*—The term is chiefly uſed to denote that the chief is quite filled up with a ſquare piece of another colour, leaving only a bordure of the proper colour of the chief about the ſaid piece.

RENAL, Renalis, ſomething belonging to the reins, or kidneys. See Kidney.

Renal *glands*, *glandulæ* Renales, in anatomy, are glands thus called, becauſe ſituate near the reins or kidneys; firſt diſcovered by Bar. Euſtachio, native of San Severino, in Italy. See Gland.

They are alſo called *capſulæ atrabilares*, in regard their cavity is always found full of a blackiſh liquor; and by others *renes ſuccenturiati*, becauſe reſembling kidneys in form. See Renes *ſuccenturiati*.

RENCOUNTER*, in the military art, the encounter of two little bodies or parties of forces.

* The word is formed from the French, *rencontre*, meeting.

In which ſenſe *rencounter* is uſed in oppoſition to a pitched battle—It was no battle; it was only a *rencounter*.

Rencounter, in ſingle combats, is uſed by way of contradiſtinction to duel.

When two perſons fall out, and fight on the ſpot, without having premeditated the combat, it is called a *rencounter*—It is no duel, it is a *rencounter*. See Duel.

Rencountré, or Rencontré, in heraldry, is applied to animals when they ſhew the head in front, with both eyes, *&c.* or when the face ſtands right forward, as if they came to meet the perſon before them.

Indeed in deer, this is called *maſſacré*, and in the leopard it is the natural ſituation—He bears ſable, in *rencounter*, a golden fleece.

RENDER, in law, a term uſed in levying a fine—A fine with *render*, is that whereby ſomething is *rendered back* again, by the cogniſee to the cogniſor. See Fine.

The lawyers alſo ſay, there are certain things in a manor which lie in *prender*, i. e, may be taken by the lord or his officers when they pleaſe, without the tenant's leave: and others which lie in *render*, that is, muſt be *rendered* or anſwered by the tenant, as rents, reliefs, heriots, and other ſervices. See Prender—Some ſervice conſiſts in ſeiſance; ſome in *render*. *Perkins.*

RENDERING, in building. See Pargetting.

RENDEZ-VOUS, or Rendevous, a place appointed to meet in at a certain day and hour.

The word is French; and is found ſo commodious, that moſt nations uſe it in it's purity, for want of a word of equal import in their reſpective languages—The virtue of a woman is already ſhaken when ſhe grants a *rendezvous*. St Evremont.

A general *rendezvous* of the army—The regiments have their particular *rendezvous*, called *quarters of aſſembly*. See Quarter.

RENEGATE, Renegado, a perſon who has apoſtatized or renounced the chriſtian faith, to embrace ſome other religion; particularly Mahometaniſm. See Apostate.

It is the *renegado's* who prove the moſt barbarous to the chriſtians when they fall into their hands—The *renegate* is thus called, *quaſi-re-negat-Chriſtum*—Hoveden mentions it in the year 1192, under the name of *reneer*, from the French, *re-nier*, to deny again.

RENES *ſuccenturiati*, in anatomy, are glands thus called as reſembling the figure of kidneys; and hence accounted a kind of *ſecondary reins*; *ſuccenturiatus* ſignifying ſomething in the place of another.

They are alſo called *capſulæ renales*, and *glandulæ renales*. See Renal *glands*.

RENEWING of leaſes and lives. See Reversion, Annuity, Political *arithmetic*, *&c.*

RENITENCY, Renitentia, or Renisus, among philoſophers, that force in ſolid bodies, whereby they reſiſt the impulſe of other bodies; or react as much as they are acted on. See Reaction. Sea alſo Resistance.

RENNET. See the article Runnet.

RENT*, Redditius, in law, a ſum of money, or other conſideration iſſuing yearly out of lands or tenements, alienated on that condition. See Revenue.

* It is thus called from the corrupt Latin, *rendita*, for *reddita* of *redditus*; becauſe, as Fleta tells us, *retroit & quotannis redit*.

The *rents*, of all the lands of England and Wales appear by the computations of Dr. Davenant, and Mr King, from the late land-tax, to be nearly ten millions per annum; thoſe of the houſes not let with the lands, two millions more; and thoſe of all other hereditaments, two millions more: in all fourteen millions.

The lawyers ordinarily reckon three ſorts of *rent*; viz. *rent-ſervice*, *rent-charge*, and *rent-ſeck*.

Rent-*ſervice*, is where a man holds lands of his lord by fealty, and certain rent; or by fealty-ſervice, and certain rent; or that which a man making a leaſe of lands to another for term of years, reſerveth to be yearly paid for them. See Service, Fealty, Reserve, *&c.*

Rent-*charge*, is where a man makes over his eſtate to another by deed indented, either in fee, or fee-tail, or for term of life; yet reſerves to himſelf, by the ſame indenture, a ſum of money yearly to be paid to him, with a cauſe of diſtreſs for non-payment.

Rent-*ſeck*, or *Dry*-Rent, is that which a man making over his eſtate by a deed indented, reſerveth yearly to be paid to him, without any cauſe of diſtreſs mentioned in the indenture.

Rents *of aſſize*, are the certain rents of freeholders, and antient copyholders; thus called becauſe aſſized and certain: in oppoſition to *redditus mobiles*.

Rents *reſolute*, are reckoned among the fee farm *rents* to be ſold by the *Stat.* 22. *Car.* II. being ſuch *rents* or tenths as were antiently payable to the crown from the lands of abbies and other religious houſes: which lands, upon the diſſolution of abbies, being demiſed to others, the ſaid *rents* were ſtill reſerved and made payable to the crown.

Aſſart Rents	See the articles	Assart.
Chauntry Rents		Chauntry.
Gild Rents		Gild.
Paſchal Rents		Paschal.
Quit Rents		Quit.
White Rents		White.

RENTER-*warden*, an officer in moſt of the companies of London; whoſe buſineſs is to receive the rents or profits belonging to the company. See Treasurer, Receiver, Cashier, *&c.*

RENTERING*, and Fine-drawing, in the manufactories, the ſewing of two pieces of cloth, edge to edge, without doubling them; ſo as that the ſeam ſcarce appears at all: hence alſo called *fine-drawing*. See Finf-drawing.

* The word is formed from the French, *rentraire*, which ſignifies the ſame thing; and which Menage after Salmaſius derives from the Latin *retrahere* of *re*, in, and *trahere*, by reaſon the ſeam is drawn out of ſight and covered.

Serges, *&c.* are to be ſewed; cloths *fine-drawn*.—The author of one of the *Lett. Edif. & Cur.* ſpeaking of the great dexterity of the *fine-drawers* in the Eaſt-Indies, aſſures us, that if you tear a piece of fine muſlin, and give it one of them to mend, it ſhall be impoſſible for you to diſcover the place where it is rejoined, even though you had made a mark to know it by.

The dexterity of our own *fine-drawers* though inferior to that above mentioned is nevertheleſs ſuch, as puts them in a condition to defraud the king, by ſowing a head or ſlip of Engliſh cloth on a piece of Dutch, Spaniſh or other foreign cloth; or a ſlip of foreign cloth on a piece of Engliſh, ſo as to paſs the whole, as of a piece; and by that means avoid the duties, penalties, *&c.*—The trick was firſt diſcovered in France, by M. Savary, author of the *Diction. de Commerce.*

To *renter* in tapiſtry, is to work new warp into a piece of tapiſtry damaged, eaten by the rats, *&c.* and on this warp to reſtore the antient pattern, or deſign—The warp is to be of woollen, not linnen—Among the titles of the French tapiſtry-makers, is included that of *renterers.*

FINE-DRAWING is particularly uſed for a rent, or hole happening in the dreſſing or preparing of a piece of cloth, artfully ſewed up or mended with ſilk.

All *fine-drawings* are reputed defects or blemiſhes; and ought to be allowed for in the price of the piece—Hence, M. Savary eſtabliſhes it as a rule, which is certainly founded on natural equity, that every manufacturer mark the *fine-drawings* of his cloths with a piece of packthread tied to the liſt; to direct the draper to the ſpot: and that the draper apprize the taylor or other perſon, to whom he ſells it, of the ſame; that he may not come to damage in the cutting; there being inſtances of drapers condemned to take back their cloth, when cut to pieces, for omitting to mention the *fine-drawings*, and other flaws.

On this occaſion M. Savary extolls the procedure of an Engliſh merchant, who ſending a piece of cloth damaged in one ſpot, to his correſpondent at Paris, put a piece of gold in the damaged place, to make up the damage—But as this example is perhaps the only one of it's kind, that author recommends it to the merchant or draper to unfold all the pieces entirely, as they come to him; to diſcover the *fine-drawings* and other flaws, in order to make the clothier accountable for them.

RENVERSÉ, *inverted*, in heraldry, is when any thing is ſet with the head downwards, or contrary to its natural way of being.—Thus a chevron *renverſé* is a chevron with the point downwards.

The ſame term they alſo uſe when a beaſt is laid on it's back.

RENVERSED *volt* } See the articles { VOLT.
RENVERSING } { REVERSING.

RENUENTES, in anatomy, a pair of muſcles of the head, thus called as being antagoniſts to the annuentes; and ſerving to throw the head backward, with an air of refuſal. See HEAD.

From their ſituation they are alſo called *rectus capitis, major & minor.* See RECTUS *capitis.*

RENUNCIATION, RENUNCIATIO, the act of renouncing, abdicating, or relinquiſhing any right, real or pretended. See ABDICATION, *&c.*

Renunciations are ſometimes *expreſs*; as by contracts, *&c.* ſometimes *tacit*, as by contrary acts.

Diocleſian *renounced* the empire, to live as a philoſopher—The preſent king Philip of Spain, by the treaty of Utrecht, was obliged to *renounce* the ſucceſſion of the crown of France; to which he was heir preſumptive: and has ſince by a voluntary act *renounced* his own crown, in favour of his ſon—*Renunciations* of kings are always ſuſpected of ſome view or motive not to be avowed.

To *renounce* an inheritance, a community, *&c.* is to paſs a ſolemn act before a notary, or public officer, whereby a perſon declares he will not intermeddle in an inheritance, or profit in a company; but ſurrenders his part, and quits all pretenſions.

REORDINATION, REORDINATIO, the act of conferring orders on one already ordained. See ORDINATION.

The ceremony of ordination impreſſes what the divines call an indelible character; and cannot, therefore, be repeated: yet is *reordination* practiced in England, with regard to the diſſenting miniſters, who conform to the church; the biſhops pretending that they alone have right to confer holy orders, and that every prieſt or miniſter who does not receive them at their hands, has no lawful, regular vocation.

This proves a great obſtacle to the re-union of thoſe miniſters to the church of England; many of whom, otherwiſe diſpoſed to conform, have ſcrupled to be *re-ordained*; inaſmuch as *re-ordination* implies their former vocation to be null; that they had adminiſtered the ſacraments without any right thereto; and that all their miniſterial acts were invalid. See PRESBITERIAN.

In the eleventh century, the crime of ſimony having been very flagrant; many people fell into the error to believe that the ſimoniacal biſhops could not ordain validly; and that thoſe who had received orders at their hands ſhould be *re-ordained*—The people of this ſentiment made a party of themſelves; and were diſtinguiſhed by the title of *re-ordinantes.*

REPAIRING, in building, *&c.* See REPARATION, and RESTAURATION.

The *repairing* of large walls, doors, cielings, coverings, *&c.* belongs to the proprietor or landlord—The tenant is only charged with *ſmall repairs*, as glaſs windows, locks, *&c.* by the French called *locative repairs.*

To **REPAIR** a *ſtatue*, or other piece of ſculpture, is to touch up a ſtatue, *&c.* (caſt in a mould) with a chiſſel, graver, or other inſtrument; to finiſh the places which have not come well off.

To **REPAIR** *a caſt*, figure or the like, they clear off the barb, and what is redundant in the joints and projectures. See STATUE. See alſo FOUNDERY.

To **REPAIR** *a medal*, is to retouch it; ſo as ruſty and defaced as it was, to render it clean, neat and perfect—In order to this, they take off the ruſt with a graver, touch up the letters, poliſh the ground, and raiſe and reſtore the figures which before were ſcarce ſeen.

When the figures are gnawed or broke, they fit a piece of cement on the ſpot; and on this cut with a graver ſo dexterouſly that the figures appear entire and well kept—Yet nothing ſpoils medals ſo much as *repairing* them. See MEDAL.

REPAIRERS, artificers who chaſe figures, and beautify ſword-hilts, *&c.* See ENCHASING.

REPAIRS, in hunting, are the haunts and places which the hare runs to. See HUNTING.

REPARANDIS *pontibus.* See the article PONTIBUS.

REPARATION, REPARATIO, the act of repairing, re-eſtabliſhing, retrieving, or mending a building, or other work, damaged or gone to decay. See REPAIRING.

The Enemy *repaired* the breach as ſoon as it was made. —The eſtabliſhment of turn-pikes is for *repairing* of the roads.—An eccleſiaſtical patron is by ancient cuſtom obliged to repair the choir or chancel of a church, and the pariſhoners the nave. See RESTAURATION.

REPARATIONE *facienda*, is a writ which lies in divers caſes; *e. gr.* where there are tenants in common, or joint tenants of an houſe, *&c.* which is fallen to decay, and the one being willing to *repair* it, the other two will not: in this caſe the party willing ſhall have this writ againſt the other two.

REPARTEE. See the article REPARTY.

REPARTITION, REPARTITIO, a dividing or ſharing a thing a ſecond time. See PARTITION.

There are ſo many deficiencies found this year in the taxes of this pariſh, that there muſt be a *repartition* on the inhabitants; or a new impoſition.

REPARTY*, or REPARTEE, a ready, ſmart reply; eſpecially in matters of wit, humour, or raillery—It is dangerous attacking this lady, her *reparties* are ſo keen.

* The word, in the original French, *repartie*, has the ſame ſignification.

Wicquefort obſerves a world of difference between a free, ſprightly *reparty*, and an offenſive ſarcaſm. See SARCASM.

REPAST, REPASTUM, a meal, or refection, taken at a ſtated hour. See REFECTION.

In old law-books REPAST is particularly uſed for a meal's-meat given to ſervile tenants, while at work for their lord.

The French call their meal, *repaſt*; the Latins, *paſtus*; the Italians and Spaniards, *paſto*—The *repaſts* whereof the ſcripture has preſerved the memory, ſhew that the ancient Hebrews were not very delicate in their eating—Abraham, a man of wealth and eminence, entertaining the angels, ſerves them with cakes baked under the aſhes, a fatted calf haſtily dreſſed, and milk and butter—But the quantity makes amends for the quality: three meaſures of flower, and a whole calf, for three perſons!

Joſeph to ſhew his reſpect to his brother Benjamin, ordered him a portion of meat five times as big as that of his other brothers.

In antiquity the *repaſts* were frequently ſacrifices; for which reaſon we find them often prepared by kings themſelves. See SACRIFICE, and FEAST.

REPEALING, in law, the revoking or annulling of a ſtatute, deed or the like. See ABROGATION, REVOCATION, *&c.*

No act of parliament ſhall be *repealed* in the ſame ſeſſion it was made in. See PARLIAMENT—A deed or will may not be *repealed* for a part and ſtand good for the reſt.

Brook uſes the word *repellance* in the ſame ſenſe.

REPEAT, in muſic, a character ſhewing that what was laſt played or ſung, muſt be *repeated*, or gone over again. See REPETITION.

The *repeat* ſerves inſtead of writing the ſame thing twice over—There are two kinds of *repeats*; the *great* and the *ſmall*.

The great REPEAT, is only a double bar, dotted on each ſide; or two parallel lines drawn perpendicular acroſs the ſtaff; with dotts on either hand. See it's form under CHARACTERS *of muſic.*

This mark ſhews that the preceeding ſtrain is to be *repeated*; that is, if it be near the beginning of the piece, all hitherto ſung or played is to be *repeated*; or if towards the end of a piece all from ſuch another mark.

In gavots, we uſually find the *repeat*, at about the third part of a piece—In minuets, borees, courants, *&c.* towards the end.

Some make this a rule, that if there be dotts on each ſide the bar, they direct to a *repetition* both of the preceeding and the following ſtrain; if there be only dotts on one ſide, then only the ſtrain on that ſide to be *repeated.*

The ſmall REPEAT is where only ſome of the laſt meaſures of a ſtrain are to be repeated—This is denoted by a character ſet over the place where the *repetition* begins, (ſee CHARACTERS *in muſic*) and continues to the end of the ſtrain.

When the ſong ends with a *repetition* of the firſt ſtrain, or part of it, inſtead of a *repeat*, they uſe the word *da capo, i. e.* from the beginning.

REPEATING *watches.* See the article WATCH.

REPELLENT, REPELLENS, in medicine, a remedy which *repels* or drives back a morbid humour into the maſs of blood, from which it was unduly ſecreted. See HUMOUR and MEDICINE.

Repellents are medicines which prevent ſuch an afflux of the fluids to any particular part, as might raiſe it into a tumour; or drive them back when they are collected. See TUMOUR.

* The greek name, given by ſome writers, to what (from the latin) are called re-pellents; is *apocruſtics*, αϖοκρȣϛικα, compounded of αϖο, from; and κρȣω, to beat.

To form an idea of the manner of their operation, it may be obſerved, that all tumours ariſe either from an increaſe in the velocity or quantity of the fluids, or a weakneſs in ſome particular part: though ſometimes both concur—Now an increaſe in the velocity of the fluids makes them more forcibly puſh againſt, and diſtend all the parts in their circuit; if therefore any part be unequally preſſed or relaxed by external injuries, that will be more elevated than any other; and for want of equal reſiſtance with the reſt of the body, will at length receive ſuch a quantity of fluid, as will raiſe in into a tumor, eſpecially if any of it's veſſels be obſtructed: becauſe the protruſion of freſh matter, à tergo, will continue to add thereunto, till the part is on the utmoſt ſtretch, and can hold no more. See BLOOD.

In this caſe all thoſe means are ſaid to be *repellent*, which check the growth of the tumor, and aſſiſt the refluent blood in taking up the obſtructed matter, and waſhing it again into the common ſtream.

This intention is chiefly favoured by evacuation and revulſion; for whatſoever leſſens the quantity of the fluid, will diminiſh the force upon the tumefied part—But it concerns us moſt to know how external application to the part itſelf, helps this affair.

Herein a medicine comes to be *repellent*, by conſiſting of ſuch ſubtile parts, as may tranſmit ſome of them through the pores, and help to render the obſtructed matter more fluid, ſo that it comes the more eaſy to be looſened, and fall again into the circulating current—But in this caſe there is a hazard of ſuch things likewiſe putting the obſtructed humour into a ferment, whereby it turns ſooner into pus, and then they come under the denomination of *ſuppuratives* or *ripeners.* See SUPPURATIVE.

What, therefore, in the moſt ſtrict ſenſe, is to be reputed a *repeller*, is that which aſtringes and ſtrengthens the part, ſo as to make it reſiſt any ſuch lodgment. See ASTRINGENT and STRENGTHENER.

Theſe are ſuch whoſe qualities are moſt manifeſt in their coldneſs, and drying properties: but there are ſo few inſtances wherein bandage is not better than ſuch application, that very little comes to be uſed for that purpoſe. In hæmorrhages, and ouzings out of ſerum, ſo as to deform the ſkin; ſimples of this nature moſtly take place; which anſwer their ends in aſtringing the fibres, whereby their apertures are ſo cloſed, as not to admit through them afterwards any ſuch fluid.

Some things alſo anſwer this end only by ſtimulating the fibres of the tumefied part, ſo as to give them ſudden and forcible twitches, whereby the obſtruction is ſometimes looſened and ſhook away, as it were, into the refluent current—Such a ſort of motion will be occaſioned by the ſudden application of any thing extreamly cold, as common water; but the practice is ſeldom ſafe, becauſe if the firſt efforts which the fibres are put upon by thoſe means, do not ſucceed in breaking away the incloſed matter, they will be ſtrained, and not able afterwards to repeat their natural vibrations: the conſequence of which is weakening the part, which will render the tumor more obſtinate.

REPELLING *power*, *Vis* REPELLENS, in phyſics, is a certain power or faculty reſiding in the minute particles of natural bodies, whereby under certain circumſtances they mutually fly from each other. See POWER and PARTICLE.

This power is the reverſe of the *attractive* power. See ATTRACTIVE.

Sir Iſaac Newton having eſtabliſhed the attractive power of matter from obſervation and experiment, argues, that as in algebra, where poſitive quantities ceaſe, there negative ones commence; ſo in phyſics, where the attractive force ceaſes, there a *repelling* force muſt begin—But that there is ſuch a force does likewiſe appear from obſervation. See REPULSION.

As the *repelling* power ſeems to ariſe from the ſame principle as the attractive, only exerciſed in different circumſtances; it is governed by the ſame laws: now the attractive we find is ſtronger in ſmall bodies than in great ones, in proportion to the maſſes—Therefore the *repelling* is ſo too. But the rays of light are of all others the moſt minute bodies we know of; therefore of all others their *repelling* force muſt be the greateſt See RAY.

Sir Iſaac Newton computes that the attractive force of the rays of light is above 1000000000000000 times as ſtrong as the force of gravity on the ſurface of the earth: hence ariſes that inconceivable velocity wherewith light muſt move, to reach from the ſun to our earth in ſeven minutes. For the rays emitted from the body of the ſun by the vibrating motion of it's parts, are no ſooner got without the ſphere of attraction of the ſun, than they come within the action of the *repelling* power. See LIGHT.

The elaſticity, or ſpringineſs of bodies, or that property whereby, after having their figure altered by any external force, they return to their former figure, follows from the *repelling* power. See ELASTICITY, AIR, *&c.*

REPERCUSSION, in mechanics. See REFLECTION.

REPERCUSSION, in muſic, a frequent repetition of the ſame ſounds. See REPETITION.

This often happens in the modulation; where the eſſential chords of each mode, or of the harmonical triad, are to be ſtruck oftener than the reſt; and of theſe three chords the two extremes, *i. e.* the final and the predominant one, (which are properly the *repercuſſions* of each mode) oftener than the middle one.

REPERTORY, REPERTORIUM, a place wherein things are orderly diſpoſed, ſo as to be eaſily found when wanted.

The indices of books are *repertories*, ſhewing where the matters ſought for are handled—Common places are a kind of *repertories*, very uſeful to the learned. See COMMON *place.*

REPERTORIUM *anatomicum*, denotes a large hall near an amphitheatre of diſſections, where ſkeletons both human and brutal, are orderly preſerved—Such is the *repertory* in the French king's garden at Paris.

REPETITION, REPETITIO, the re-iterating of an action. See REITERATION.

Habits are acquired by the frequent *repetition* of actions. See HABIT—Muſicians and comedians make ſeveral *repetitions* of their concerts and comedies, before they perform for good. See REHEARSAL.

School philoſophers call the *repetition* of the ſame numerical effect in another place, the *replication* of that effect. See REPLICATION.

REPETITION, in muſic, denotes a re-iterating or playing over again of the ſame part of a compoſition; whether it be a whole ſtrain, a part of a ſtrain, or a double ſtrain.

The *repetition* is denoted by a character, called a *repeat*, which is varied ſo as to expreſs the various circumſtances of the *repetition.* See REPEAT.

When the ſong ends with a *repetition* of the laſt ſtrain, or a part of it; the *repetition* is denoted by *da capo*; that is, from the beginning.

REPETITION, REPLY, is alſo uſed in muſic, when after a little ſilence, one part *repeats* or runs over the ſame notes, the ſame intervals, the ſame motions, in a word, the ſame ſong, which a firſt part had already gone over during the ſilence of this.

REPETITION, REPLY, is alſo a doubling, or trebling *&c.* of an interval; or a re-iteration of ſome concord or diſcord.

Thus a fifteenth is a *repetition* of the octave, *i. e.* a double octave or ſecond octave. See OCTAVE.

REPETITION, in rhetoric, is a figure whereby the orator rehearſes the ſame word, or phraſe over again.

Of this there are two kinds—In the firſt, the word is repeated preciſely in the ſame ſenſe: As, *Oh, Jeruſalem, Jeruſalem, who killeſt the prophets,* &c. *my God, my God, why haſt thou forſaken me.*

Such *repetitions* have the ſame effect in diſcourſe, with ſecond ſtroaks of the pencil in painting; they render the colours more ſtrong and lively.

Sometimes the orator begins again and again with the ſame word; of which we have an inſtance in the beginning of

Cicero's firſt oration againſt Cataline: *nihilne te nocturnum præſidium palatii, nihil urbis vigiliæ, nihil timor populi, nihil conſenſus bonorum omnium, nihil hic munitiſſimus habendi ſenatus locus, nihil horum ora vultuſque moverunt!* Where the word *nihil* ſo often re-iterated gives an admirable force and vehemence to the diſcourſe—Again, the ſame author: *quem ſenatus damnarit, quem populus R. damnarit, quem omnium exiſtimatio damnarit, eum vos ſententiis veſtrit abſolvetis?* again, *non feram, non patiar, non ſinam.*

The ſecond kind of *repetition*, called πλοκη, *ploce*, is a *repetition* of the ſame word, in the ſame phraſe; but in ſuch a manner as that ſome new idea or character is added to the word, in the ſecond, which it had not in the firſt.

As Corydon is always Corydon: *ex illo Corydon, Corydon eſt tempore nobis*; by which we ſignify that Corydon is no ordinary perſon; and that nothing can diſtinguiſh him but the *repetition* of his own name: as if we ſhould ſay, *he is Corydon, that is enough*—By the ſame figure our Saviour ſpeaks, when he ſays: *let your language be yea, yea, and nay, nay.*

REPLANTING, in gardening, the act of planting a ſecond time. See Planting.

The gardeners uſe to diſplant their tulips every year, and *replant* them—Lettices muſt be diſplanted and *replanted* yearly, to make them head and knit—If ſtrawberries, &c. be not diſplanted and *replanted* once in a few years, they degenerate. It is a proverb among gardeners, that if the devil were to *replant* his wife, he would cut off her head.

REPLEADER, Replacitare, in law, is to plead over again what was once pleaded before. See Plea and Pleading.

REPLEGIARE *de averiis*, a writ brought by one whoſe cattel are diſtrained, and put in a pound by another; upon ſecurity given the ſheriff to purſue, or anſwer the action at law againſt the diſtrainer. See Replevy.

REPLETION, in medicine, a plenitude, or plethora. See Plenitude and Plethora.

Repletion is more dangerous than inanition—Bleeding and diet are the great reſources when a perſon is incommoded with a *repletion*. See Diet, &c.

Repletion is ſometimes alſo uſed where the ſtomach is overloaden, with too much eating or drinking—The phyſicians hold all *repletion* prejudicial; but that of bread the worſt. See Surfeit.

Repletion, in the cannon law, is where the revenue of a benefice or benefices is ſufficient to fill or occupy the whole right or title of the graduate who holds them. See Benefice, Graduate, &c.

When there is a *repletion*, the party can demand no more by virtue of his degrees—In England, where benefices are not appropriated to degrees, *repletion*, ſtrictly ſpeaking, has no place. See Plurality.

In France, 600 livres, or 45 *l.* ſterling per annum, make a *repletion*, when the benefice is obtained otherwiſe than by a degree; and 30 *l.* per annum, when it is obtained by virtue of a degree.

REPLEVIN, Plevina, a remedy granted on a diſtreſs; being a re-deliverance of the goods diſtrained to the firſt poſſeſſor, on ſecurity or pledges given by him to try the right with the diſtrainer, and anſwer him in the courſe of law. See Replevy.

If a perſon diſtrain another's goods or cattle for rent, or damage feſant, &c. the owner, upon giving ſecurity to the ſheriff that he will proſecute his action againſt the party diſtraining, and return the goods or cattle again, if the ſeizure ſhall be adjudged good; may have a writ of *replevin* or *replegiari facias*. See Distress.

REPLEVISH, in law, is to let one to mainpriſe, upon ſurety. See Mainprise.

REPLEVY, Replevie, in law, (from the Latin *replegiare*, to re-deliver to the owner upon pledges of ſurety) is the bringing of a writ of *replevin*, or *replegiari facias*, by him whoſe cattle or goods are diſtrained by another upon any cauſe; having firſt given ſecurity to the ſheriff, that on the delivery of the thing diſtrained, he will proſecute the action againſt the perſon who made the diſtreſs. See Replevin and Distress.

In the Stat. 24 of Henry VIII. we read of *canes replegiari*, hounds *replevied*, in a caſe between the abbot of St Albans, and Geoffery Childwic.

Goods may be *replevied* two ways; *viz. by writ*, which is that uſed by the common law—And *by plaint*; which is that by ſtatute law, for the more ſpeedy having again the cattle and goods, and is brought in the ſheriff's court.

REPLICATION, Replicatio, in logic, the aſſuming or uſing the ſame term twice in the ſame propoſition: otherwiſe called *reduplication*. See Reduplication.

Some philoſophers uſe the phraſe *replicatio mundi*, *replication* of the world, for it's converſion, or turning round—The human ſoul is ſaid to be in a place *replicatively*, *replicativè*, when conceived to be all in the whole, and all in every part thereof. See Soul.

Replication, in law, is an exception of the ſecond degree, made by the plaintiff to the plea or firſt anſwer of the defendant. See Rejoinder.

The *replication* is particularly that which the plaintiff replies to the defendant's anſwer in chancery; and which is either *general* or *ſpecial*—The *ſpecial* is grounded upon matter ariſing out of the defendant's anſwer, &c. The *general* is ſo called from the general words therein uſed.

REPORT, the relation made upon oath, by officers or perſons appointed to viſit, examine, ſtate or eſtimate any thing. Damages, repairs, &c. are judged from the *reports* of experienced perſons—Proviſions for perſons wounded are only granted on the *reports* of chirurgeons, &c.—In caſes of rapes a *report* of matrons is to be had.

Report in law, is a publick relation, or bringing to memory of caſes judicially argued, debated, reſolved, or adjudged in any of the king's courts of juſtice, with the cauſe and reaſon of the ſame delivered by the judges.

When the chancery, or any other court, refers the ſtating of ſome caſe, or comparing an account, &c. to a maſter in chancery, or other referee, his certificate therein is alſo called a *report*.

Pinion of Report. See the article Pinion.

REPOSE, in poetry, &c. See the articles Rest, Pause, &c.

Repose in painting, is applied to certain maſſes, or large ſyſtems or aſſemblages of light and ſhade: which being well conducted, prevent the confuſion of objects and figures; by engaging and taking up the eye ſo as it cannot attend to the other parts of the painting, for ſome time: and thus leading it to conſider the ſeveral groups gradually, and as it were to proceed from ſtage to ſtage—See Light, Shadow, Clair-*obſcure*, &c.

REPOSITION* *of the foreſt*, and act whereby certain grounds before made purlieu, are upon a ſecond view laid to the foreſt again. See Reafforesting, Forest, and Purlieu.

* The word is formed from the Latin *re* and *ponere*, to lay again.

Reposition in ſurgery, the reduction of a bone. See Reduction.

REPOSITORY, Repositorium, a ſtore-houſe or place where things are laid up, and kept—In which ſenſe we ſay the *repoſitory* of the royal ſociety, &c. See Musæum.

REPRESENTATION, Repræsentatio, in the drama, the exhibition of a theatrical piece; including the ſcenes, machines, recitation, &c. See Scene, Machine, Recitation, &c.

Sir Richard Steel's principle is, that the deſign of a play is not to be read but *repreſented*; ſo that it is on the ſtage, not in the preſs it is to be judged of: and the pit not the public, are the judges. See Theatre, Tragedy, Comedy, &c.

REPRESENTATIVE, one that perſonates, or ſupplies the place of another; and is inveſted with his right, and authority. See Deputy, Lieutenant, &c.

The word *repreſentative* is equivalent to procurator or proxy. See Procurator and Proxy.

Thus we ſay the king is the *repreſentative* of God on earth; magiſtrates are *repreſentatives* of the king. See King, &c. —The commons are the people's *repreſentatives* in parliament. See Commons, Parliament, &c.

There is this defect in the conſtitution of our parliament; that whereas all Engliſhmen who have conſiderable eſtates, ought not to be taxed without their own conſent in parliament, by themſelves or their *repreſentatives*; copy-holders, whereof ſome have a thouſand pounds a year, have no voice in the election of knights of the ſhire. *Chamberl.*

REPRIEVE, or Reprive, in law, a ſuſpending or deferring the execution of the law upon a priſoner, for the preſent time.

A *reprieve* is properly a warrant from the king, for ſuſpending the execution of a perſon condemned—The king cannot pardon a condemned perſon without the concurrence of parliament, but he frequently *reprieves* him for 99 years.

REPRIMAND, a ſharp authoritative reproof—Such a perſon was *reprimanded* in court by the bench, &c.

REPRISALS*, or Reprizals, Represalia, in the civil law, a right which princes have to retake from their enemies, ſuch things as they unjuſtly detain from them; or other things equivalent thereto.

* The word is formed from the Italian, *repreſaglia*, which ſignifies the ſame thing.

When a place is taken or held from a prince, he ſeizes another by way of *repriſal*—Sometimes he takes men of the oppoſite party, by right of *repriſals*.

The Romans called this *clarigatio*: and the Greeks had ſomething like it under the name of *androlepſia*. See Clarigatio and Androlepsia.

Reprisals is alſo uſed for a letter or permiſſion which a prince ſometimes gives a ſubject, upon a full cognizance of the cauſe; authorizing him to retake from the firſt perſons he meets withal of the oppoſite party, as many effects as make an equivalent to what have been violently forced from him; and for which the oppoſite prince has refuſed to do him juſtice.

Theſe permiſſions are alſo called *letters of mark*, or *mart*, and in the Stat. 27 Edw. III. *law of marque*; in regard, a perſon denied juſtice in another man's territory, redreſſes himſelf by goods belonging to men in that territory. See Mark.

This merchant has ſeized the effects of the Spaniard don —— by way of *repriſal*, becauſe the Spaniards had ſeized his; and no redreſs could be had at the court of Madrid.

REPRISE*, or Reprize, in the commerce by ſea, a merchant ſhip which having been taken by a corſair, privateer, or other enemy; is retook or recovered by a veſſel of the contrary party. See Prize.

* The word is French, and ſignifies a *re-ſumption* or *re-taking*.

When a veſſel thus retaken has been 24 hours in the hands of the enemy, it is deemed a lawful prize—If the *repriſe* have been made within 24 hours; the veſſel is to be reſtored to the proprietor, with every thing therein, upon his allowing one third to the veſſel who made the *reprize*.

If the *repriſe* have been abandoned by the enemy, either in a tempeſt, or from any other cauſe, before it have been led into any port, it is to be reſtored to the proprietor.

Reprizes, in law, are deductions, draw-backs, or duties paid yearly out of a manor, or lands—Such are rent-charges, penſions, fees of ſtewards or bailiffs, &c.—The manor of Doll yields 40 *l.* per annum, *ultra reprizas*, beſides all *repriſes*.

REPRIVE. See the article Reprieve.

REPROBATION, Reprobatio, in theology, a decree or reſolve which God has taken from all eternity, to puniſh ſinners who ſhall die in impenitence. See Impenitence, &c.

Reprobation ſtands in direct oppoſition to *predeſtination*. See Predestination.

Divines hold it a ſymptom of *reprobation*, when a ſinner is hardened ſo as not to feel any farther remorſe or miſgivings of conſcience. See Conscience, &c.

The caſuiſts diſtinguiſh two kinds of predeſtination, *poſitive* and *negative*.

Poſitive Reprobation is that whereby God is ſuppoſed to create men with a poſitive and abſolute reſolution to damn them eternally.

This opinion of *reprobation*, is countenanced by St Auguſtin, and others of the fathers, and ſtrongly maintained by Calvin, and moſt of his followers—Something like it is alſo found in the XXXIX articles of the church of England, but it is now generally exploded as injurious to God. See Calvinist, &c.

Negative or *conditional* Reprobation, is that whereby God, though he create all men with a ſincere deſire to ſave them, and furniſhes them with the neceſſary means thereto, ſo as all may be ſaved if they will; yet, ſees there are ſeveral who will not do it, with the aids he ſhall afford them, how powerful ſoever: and ſees, at the ſame time, they would do it with certain other aids, which he ſees, but will not give them—*O altitudo!* &c. See Grace.

REPRODUCTION, Reproductio, the act whereby a thing is produced a-new, or grows a ſecond time. See Regeneration.

When the ſtock of an oak, a fruit-tree, or the like, is cut off ſhort, it *reproduces* an infinity of young ſhoots. See Stock.

By *reproduction* is uſually underſtood the reſtauration of a thing before exiſting, and ſince deſtroyed. See Restauration.

The *reproduction* of ſeveral parts of lobſters, crabs, &c. makes one of the greateſt curioſities of natural hiſtory—That in lieu of an organical part of an animal cut off, another ſhall ariſe perfectly like it, may ſeem inconſiſtent with the modern ſyſtem of generation; where the animal is ſuppoſed to be wholly formed in the egg. See Generation and Egg.

Yet has the matter of fact been well atteſted by the fiſhermen, and even by ſeveral virtuoſo's who have taken the point into examination, particularly M. de Reaumur, and M. Perrault, whoſe ſkill and exactneſs in things of this nature will hardly be queſtioned.—The legs of lobſters, &c. conſiſt each of five articulations; now when any of the legs happen to break by any accident, as in walking, &c. which frequently happens, the fracture is always found to be at a ſuture near the fourth articulation; and what they thus loſe is preciſely *reproduced* in ſome time afterwards: that is, a part of a leg ſhoots out, conſiſting of four articulations; the firſt whereof has two claws as before: ſo that the loſs is entirely repaired.

If a lobſter's leg be broke off by deſign at the fourth or fifth articulation, what is thus broke off always comes again—But it is not ſo if the fracture be made in the firſt, ſecond, or third articulation. In thoſe caſes the *reproduction* is very rare, if things continue as they are—But what is exceedingly ſurprizing, is, that they do not: for upon viſiting the lobſter maimed in theſe barren and unhappy articulations, at the end of two or three days, all the other articulations are found broke off, to the fourth; and it is ſuſpected they have performed the operation on themſelves, to make the *reproduction* of a leg certain.

The part *reproduced* is not only perfectly like that retrenched, but alſo in a certain ſpace of time grows equal to it—Hence it is, that we frequently ſee lobſters, which have their two big legs unequal; and that in all proportions—This ſhews the youth of the leſs.

A part thus *reproduced* being broke, there is a ſecond *reproduction*—The ſummer, which is the only ſeaſon of the year when the lobſters eat, is the moſt favourable time for the *reproduction*. It is then performed in four or five weeks: whereas it takes up eight or nine months in any other ſeaſon.

The ſmall legs are *reproduced*, but more rarely, as well as more ſlowly than the great ones: the horns do the ſame. Vid. Mem. Acad. R. Scienc. an. 1712. p. 295. Hiſt. p. 45. ſeq. item an. 1718. p. 31. See alſo Crab's-eyes.

REP-SILVER, money antiently paid by ſervile tenants to their lord, to be quitted of the duty of reaping his corn. See Silver.

REPTILES*, in natural hiſtory, a kind of animals denominated from their creeping or advancing on the belly—Or, *reptiles* are a genus of animals and inſects which inſtead of feet, reſt on one part of the body, while they advance forward with the reſt. See Animal, Insect, &c.

* The word is formed from the Latin, *repo*, I creep.

Such are earth-worms, ſnakes, catterpillars, &c.—Indeed, moſt of the claſs of *reptiles* have feet; only thoſe very ſmall, and the legs ſhort in proportion to the bulk of the body. See Foot and Legs.

Naturaliſts obſerve a world of artful contrivance for the motion of *reptiles*—Thus, particularly, in the earth-worm, Dr. Willis tells us, the whole body is only a chain of annular muſcles; or, as Mr Derham ſays, it is only one continued ſpiral muſcle, the orbicular fibres whereof by being contracted, render each ring narrower and longer than before: by which means it is enabled, like the worm of an augre, to bore it's paſſage into the earth—It's *reptile* motion may alſo be explained by a wire wound on a cylinder, which when ſlipped off, and one end extended and held faſt, will bring the other nearer it. So the earth-worm having ſhot out or extended it's body, (which is with a wreathing) it takes hold by thoſe ſmall feet it hath, and ſo contracts the hinder part of it's body—Dr Tyſon adds, that when the forepart of the body is ſtretched out, and applied to a plane at a diſtance, the hind part relaxing and ſhortening, is eaſily drawn towards it as a centre.

It's feet are diſpoſed in a quadruple row, the whole length of the worm; with which, as with ſo many hooks, it faſtens down ſometimes this, and ſometimes that part of the body to the plane, and at the ſame time ſtretches out, or drags after it another.

The creeping of ſerpents is effected after a ſomewhat different manner; there being a difference in their ſtructure; in that theſe laſt have a compages of bones articulated together. The body here is not drawn together, but as it were complicated; part of it being applied on the rough ground, and the reſt ejaculated and ſhot from it; which being ſet on the ground in it's turn, brings the other after it—The ſpine of the back, variouſly wreathed, has the ſame effect in leaping, as the joints of the feet in other animals; they making their leaps by means of muſcles that extend the plicæ or folds.

Reptile is likewiſe uſed, abuſively, for plants and fruits which creep on the earth, or on other plants, as wanting ſtrength of ſtalk to ſuſtain themſelves. See Clasper, &c.

Such are cucumbers, melons, &c. ſuch alſo are ivy, the vine, &c. See Capreolatæ.

REPUBLIC, Respublica, *commonwealth*, a popular ſtate, or government; or a nation where the people have the government in their own hands. See State, Government, &c.

This amounts to the ſame with what we otherwiſe call a *democracy*. See Democracy.

The celebrated *republics* of antiquity, are thoſe of Athens, Sparta, Rome, and Carthage—At preſent there is ſcarce any ſuch thing as a real *republic*. *i. e.* a ſtrictly popular ſtate—Indeed the Venetians and Genoeſe call their ſtates *republics*, but their government is apparently *oligarchic*. See Oligarchy, and Aristocracy.

The Dutch come the neareſt to the character of a *republic*; yet they are very defective, at leaſt in the ſenſe and ſeverity wherewith Rome, Carthage, &c. were *republics*. See States-*general*, Pensionary, Statholder, &c.

It is a remark of M. St Evremont, that if the Dutch love the *republican* form, it is more for the ſake of their trade, than of their liberty.

Republic *of letters*, is a phraſe uſed in ſpeaking collectively of the whole body of the people of ſtudy and learning.

There is a journal begun in Holland by M. Bayle, and continued by M. Bernard, conſiſting of extracts of books printed in the courſe of the year; called, *nouvelles de la republique des lettres*, news from the *republic* of letters. See Journal.

REPUDIATION, Repudium, in the civil law, the act of divorcing. See Divorce.

REPULSION, Repulsio, in phyſics, the act of a repelling power, whereby natural bodies, under certain circumſtances, mutually fly each other. See Repelling-*power*. *Repulſion* is the counter-part to *attraction*—Attraction only reaches to a little diſtance; where that terminates there *repulſion* commences. See Attraction.

Indeed we meet with many obvious inſtances of *repulſion* among bodies; as, between water and oil; and in general, between water and all unctuous bodies: between mercury and iron; as alſo between the particles of duſt, &c.

Thus, if a fat body lighter than water, be laid on the ſurface thereof, or if a piece of iron be laid on mercury, the ſurface of the fluid will be depreſſed about the bodies laid on it: a plain indication of *repulſion*; as the riſing up of the fluid about the ſurfaces of other incumbent bodies is of attraction.

In the latter caſe the fluid is ſuſpended by an attractive power, above the level, and kept from falling by it's gravity: in the former a depreſſion is made by the repelling power, which the liquor, notwithſtanding it's gravity, cannot run down into and fill up.

Upon this depend all the phænomena of very light glaſs bubbles floating on water; about which, when clean, the waters riſes: but when greaſed, the water ſinks into a channel all around them—Hence alſo it is that in a glaſs veſſel of water the fluid ſtands higher all about the edges near the glaſs, than towards the middle: but when the glaſs is filled till the water run down on all ſides, then, it ſtands higher at the middle than at the ſides—Hence, alſo, in a glaſs not full of water, a clean glaſs bubble always runs to the ſide, by reaſon the preſſure which is upon it towards the middle, is partly taken off by the attractive force wherewith the water is raiſed near the edge. If the glaſs be ſo full as to be ready to run over, the bubble returns from the ſide towards the middle; the force wherewith the water is raiſed in the middle, taking off part of the preſſure.

Juſt the reverſe happens, if the bubble be greaſy; in regard, there, the force whereby the water and the bubble repel each other, is greateſt where the water is higheſt. Two clean bubbles, and two greaſy ones always run towards each other; as being attracted: a greaſy and a clean one always fly each other, as being repelled.

REQUEST, in law, a ſupplication, or petition preferred to a prince, or a court of juſtice; begging relief in ſome conſcionable caſes where the common law grants no immediate redreſs. See Petition, Supplication, Law, Equity, &c.

The term *requeſt* is now, ſince the inſtitution of chancery, much diſuſed; together with the court of *requeſts*, where *requeſts* were cognizable.

The *Court of* Requests, was an antient court of equity, inſtituted about the 9th year of Henry VII. of like nature, though inferiour authority, with the court of chancery; being appointed chiefly for the relief of petitioners who in conſcionable caſes ſhould addreſs themſelves by way of *requeſt* to his majeſty.

The chief judge of this court was the lord privy ſeal, aſſiſted by the *maſters of requeſts*, who correſponded to our maſters of chancery. See Master.

In the 40th and 41ſt year of queen Elizabeth, it was adjudged, upon ſolemn argument in the court of common pleas, that the court of *requeſts* was then no court of equity. See Court, Chancery, &c.

In France, *requetes civiles*, civil requeſts, ſtill obtain for the annulling of contracts, &c. made by ſurprize. See Plaint.

They have eighty *maſters of requeſts*, to take cognizance of cauſes between the officers of the crown, the ſervants of the houſhold, &c.

Request, in hunting, is when the dogs have loſt the queſt or track of the beaſt, and muſt *requeſt*, or *queſt* it again. See Quest—They ſay, to *call to the requeſt*, *come to the requeſt*, &c. See Hunting.

To *requeſt* the game, is chiefly uſed when after having run it down the night before, they ſeek it again the next morning with the blood-hound, or the like. See *Blood*-Hound.

REQUIEM, a maſs ſung in the Romiſh church for the reſt of the ſoul of a perſon deceaſed. See Mass.

It is thus called, becauſe the introit begins with, *Requiem æternam dona eis domine*, &c.

RERE-WARD, *arrieregarde*. See Rear and Guard.

RES, *thing*. See Reality, Ens, Esse, Substance, &c.

Res *Mancipi*. See Abalienation.

Res *Naturales*, } See { Naturals.
Res *Non Naturales*, &c. } See { Non *Naturals*, &c.

RESCEIT, Receptio, in law, an admiſſion or receiving of a third perſon to plead his right, in a cauſe formerly commenced between other two.

As, where an action is brought againſt a tenant for life or years, and he makes default; in ſuch caſe he in the reverſion may come in and pray to be *received*, to defend the land, and to plead with the demandant.

Resceit is ſometimes alſo applied to an admittance of plea, though the controverſy be only between two—He in reverſion may come into court and pray to be *received* in a ſuit againſt his particular tenant.

Resceit *of homage*, Receptio *homagii*, denotes the lord's receiving homage of his tenant, at his admiſſion to the lands. See Homage.

RESCISSION*, Rescissio, in the civil law, an action intended for the annulling or ſetting aſide of any deed, contract, or the like.

* The word is formed from the Latin, *re* and *ſcindo*, q. d. I cut or divide again.

A thing's being found damaged or ſold at above double the juſt value, is a good cauſe of *reſciſſion*. See Redhibition.

The deed or contract thus annulled, or *reſcinded*, is ſometimes called a *reſciſſory*: though that denomination be more properly given to the action brought for *reſcinding* or ſetting it aſide: *actio reſciſſoria*.

RESCOUS, or Rescue, Rescussus, in law, an illegal taking away and ſetting at liberty a diſtreſs taken, or a perſon arreſted, by proceſs, or courſe of law.

This is properly a *reſcous in fact*—If one diſtrain beaſts for damage feaſant in his ground, and as he drives them along the highway towards the pound, they enter into the owner's houſe, and he witholds them there, and will not deliver them upon demand: this detainer is a *reſcous in law*.

Reſcous, in matters relating to treaſon, is deemed treaſon; and in matters concerning felony, is felony. See Treason, &c. —He that commits ſuch a *reſcue* or *reſcous*, is called *reſcuſſor*.

Rescous is alſo uſed for a writ which lies for this fact; called *breve de reſcuſſu*.

RESCRIPT, Rescriptum, an anſwer delivered by an emperor, or a pope, when conſulted by particular perſons, on ſome difficult queſtion or point of law; to ſerve as a deciſion thereof.

The civil and canon laws are full of ſuch *reſcripts*. See Civil and Canon *Law*.

When the *reſcript* was made in anſwer to the inquiry of a community, it was called a *pragmatic ſanction*. See Pragmatic.

The papal *reſcripts* are a kind of bulls or monitories, beginning with theſe words, *ſignificavit nobis dilectus filius*, &c. They never obtained either in England or France, when contrary to the liberties of the Engliſh and Gallican churches; but were declared abuſive. See Bull.

Among the Romans the contending parties, and even the magiſtrates themſelves, frequently conſulted the emperor on the meaſures they were to take in certain nice and difficult caſes; and the anſwers returned by the emperors on ſuch conſultations, were called *reſcripts*—Theſe had not, indeed, the full force of laws, but were deemed a ſtrong prejudice or preſumption.

Juſtinian has inſerted a great number of them in the Code; and by that means given them the authority they before wanted. See Code.

The author of the life of the emperor Macrinus obſerves of that prince, that he would have his officers judge by laws, not by *reſcripts*; as eſteeming it abſurd to admit the wills of ignorant men, ſuch as Commodus, and Caracalla, for rules of judging; and becauſe Trajan never gave any *reſcripts* at all, as being loath to countenance a cuſtom, where what is frequently granted as a favour, in particular caſes, might be afterwards pleaded as a precedent—'Tis added, that Macrinus had a deſign to ſtrip the *reſcripts* of all their authority.

M. Schulting, in his diſſertations, does not at all approve of this deſign; and to the emperor's reaſons anſwers, that indeed all *reſcripts* are not to be admitted; that thoſe which appear dictated out of favour, are to be thrown aſide; but thoſe which appear founded in reaſon, and natural equity are, with Juſtinian, to be allowed—He adds, that it cannot be denied but the worſt emperors have frequently made good laws, and uſeful *reſcripts*.

As to what is urged of the emperor Trajan's never giving any *reſcripts*; it appears but ill ſupported—For what is it but a *reſcript* that he delivers to Pliny on the ſubject of the Chriſtians, *lib.* 10. *epiſt.* 28? Or that on the Iſelaſtici, *lib.* 10. *epiſt.* 120? The Digeſt, and Pliny's epiſtles, need only to be opened and compared, to find *reſcripts* of Trajan.

RESCUE. See the article Rescous.

RESEANTISSA, or Reseantisa, in law. See Essoin.

RESEARCH*, a diligent ſearch or inquiry into any thing.

* The word is formed of the French, *recherche*, and literally denotes a *ſecond ſearch*.

RESEARCH, in muſic, is a kind of prelude or voluntary, played on the organ, harpſicord, theorbo, *&c.* Wherein the compoſer ſeems to *ſearch*, or look out for the ſtrains, and touches of harmony, which he is to uſe in the regular piece to be played afterwards. See PRELUDE.

This is uſually done off-hand, and conſequently requires a maſter's ſkill—When in a motetto the compoſer takes the liberty to uſe any thing that comes in his head, without applying any words to it, or ſubjecting himſelf to the ſenſe or paſſion thereof; the Italians call it *fantaſia ricercata*; the French, *recherche*; and the Engliſh *reſearch*.

RESEARCHING, in ſculpture, the repairing of a caſt, figure, *&c.* with proper tools; or the finiſhing it with art and exactneſs, ſo as the minuteſt parts may be well defined. See FIGURE, STATUE, FOUNDERY, *&c.*

RESEISER, RESEISIRE, in law, a taking again of lands into the king's hands, where a general livery, or ouſter le main, was formerly miſuſed; contrary to order of law. See RESUMPTION.

RESEMBLANCE. See the article SIMILITUDE.

RESERVATION, RESERVATIO, in law, an action or clauſe whereby ſomething is *reſerved*, *i. e.* retained, kept, or ſecured to one's ſelf. See RESERVE.

Thus, when a man let's his land, he *reſerves* a rent to be paid to himſelf for his maintenance, *&c.* See LEASE, TENANT, RENT, *&c.*

William the conqueror getting all the lands of England, except thoſe belonging to the church and religious houſes, into his hands by right of conqueſt: beſtowed a great part thereof among his followers, *reſerving* ſome retribution of rents and ſervices to him and his heirs; which *reſervation* is now, as it was before the conqueſt, called the tenure of the lands. See TENURE, SERVICE, *&c.*

Sometimes, *reſervation* ſignifies as much as an exception: as, when a man lets an houſe, and *reſerves* to himſelf one room, that room is excepted out of the demiſe. See EXCEPTION.

Mental RESERVATION is a propoſition, which ſtrictly taken, and according to the natural import of the terms, is falſe; but if qualified with ſomething *reſerved* or concealed in the mind, becomes true.

Mental *reſervations* are the great refuge of religious hypocrites; who uſe them to accommodate their conſciences with their intereſts: the Jeſuites are zealous advocates for mental *reſervations*; yet are they real lyes, as including an intention to deceive.

RESERVE, in law, the ſame with *reſervation*. See RESERVATION.

He has ſettled the whole eſtate on his ſon, and has not made any *reſerve*—Benefices are ſometimes reſigned with *reſerve* of a penſion—By the cannon law, no perſon may *reſerve* to himſelf a penſion out of a benefice, unleſs he have ſerved it ten years. See RESIGNATION.

In the Romiſh church, the ordinary prieſts have only a power to abſolve, *in reſerve* of certain caſes; hence called *reſerved caſes*, as being *reſerved* to the biſhop. See ABSOLUTION and CASE.

The court *reſerves* the cognizance of ſuch an affair to itſelf—The lawyers ſay, that no prince ever grants ſuch a power by his letters or patents, but he *reſerves* to himſelf a greater.

Body of RESERVE, *corps de* RESERVE, in war, the forces diſpoſed in the third or laſt line of an army drawn up for battle. See LINE, GUARD, and REAR.

They are thus called, becauſe *reſerved*, or deſtined to ſuſtain the reſt as occaſion requires; and not to engage but in caſe of neceſſity.

RESERVED *caſes*. See the article CASE.

RESERVOIR, RECEPTACLE, a place where water is collected and reſerved, to be conveyed occaſionally, through pipes, *&c.* or to be ſpouted up, *&c.* See WATER, FLUID, *&c.*

The *reſervoir* in a building is a large baſon, uſually of wood, lined with lead, where water is kept to ſupply the occaſions of the houſe—At Cannons, the noble ſeat of the duke of Chandos, is a very large *reſervoir* a-top of the houſe; to which the water is raiſed by a very curious engine contrived for the purpoſe—This *reſervoir* is of ſuch capacity, as that beſides ſupplying all parts of the houſe by means of pipes and cocks, it likewiſe turns a mill.

The *reſervoir* is ſometimes alſo a large baſon of ſtrong maſonry, clayed or paved at the bottom: where the water is reſerved to feed jets d'eau, or ſpouting fountains. See FOUNTAIN, *&c.*

Such is that huge one on the top of Marly, called *trou d'enfer*, hell-mouth, whoſe ſurface, Daviler tells us, contains fifty acres, and it's depth ſuch, as under that ſuperficies to contain a hundred thouſand cubic fathom of water.

RESERVOIR, in anatomy. See the article RECEPTACLE.

RESET, in law, the receiving or harbouring an outlawed perſon. See OUTLAW—Hence a receiver of an outlawed perſon, is called a *reſetter*.

RESIANCE, RESIANTIA, in law, a man's abode or continuance in a place.

The word has the ſame ſignification with regard to lay-men, as *reſidence* with regard to eccleſiaſtics. See RESIDENCE.

Glanvile obſerves, that in the antient law, *reſiance* properly ſignified a diſeaſe, whereby the perſon was diſabled from ſtirring out of doors—Whence their *eſſoin de reſiantiſa*, was the ſame as our *eſſoin de malo lecto*. See ESSOIN.

RESIDENCE, RESIDENTIA, in canon and common law, the abode of a parſon or incumbent upon his benefice; and his aſſiduity in attending on the ſame. See PARSON, BENEFICE, *&c.*

The default of *reſidence*, called *non-reſidence*, unleſs where the party has a diſpenſation for the ſame, with us, is the forfeiture of ten pounds for each month. See NON-*reſidence*.

By the canon law, beneficiaries are obliged to *reſidence*, under pain of deprivation of their benefices—The original reaſon is, that in the primitive church none were promoted to holy orders, but ſuch as had a benefice in promptu; which they were obliged to ſerve: ſo that this ſervice was neceſſarily attached to the orders; and whoever was honoured therewith, at the ſame time was obliged to perſonal ſervice. See ORDERS and ORDINATION.

But this ſtrict diſcipline was not obſerved long—The beneficiaries by degrees got diſpenſantions from ſerving their benefices themſelves; and thus pluralities got footing. See PLURALITY.

France, of all other countries, ſeems to be that where *reſidence* is the moſt ſtrictly regarded—All their curez, or miniſters who have cures of ſouls, are obliged to actual *reſidence*; and the parliaments have declared all the diſpenſations granted by popes, *&c.* abuſive; as eſteeming the obligation of *reſidence* to be jure divino.

Under Charles IX. there was even a deſign to re-eſtabliſh the primitive diſcipline in all it's ſeverity; and in 1561, a declaration was regiſtered, appointing all biſhops to *reſide*, conformably to the ancient canons, in their biſhoprics—The ſame parliament alſo forbad the biſhops to aſſume the quality of councellors of the king; in regard ſuch a quality was deemed inconſiſtent with the indiſpenſible obligation they were under to *reſide* in their biſhoprics.

Du Pin adds, that the procureur general, or attorney general Buordin, even ſeized the temporalities of ſuch biſhops as continued in Paris fifteen days after this declaration; having firſt certified them, that if they had any buſineſs there, he would undertake the management thereof.

RESIDENCE, in chymiſtry, *&c.* the *ſetling*, or what remains of a liquor, or other ſubſtance in the veſſel, after the chief part of it has been poured or taken out; to change the manner of the operation on what is left. See SEDIMENT.

RESIDENT, a public miniſter, who manages the affairs of a king in the court of a prince, or petty ſtate; or the affairs of a prince, or petty ſtate, in the court of a king or prince. See MINISTER.

Thus the king of England has *reſidents* in the courts of the electors, and other princes of Germany, and Italy; at the republics of Genoa and Lucca: and they, reciprocally, have *reſidents* in the court of Great-Britain.

Reſidents are a claſs of public miniſters inferiour to embaſſadors and envoys; but like them are under the protection of the law of nations. See EMBASSADOR and ENVOY.

RESIDENT, RESIDENS, in our ancient cuſtoms, was a tenant who was obliged to *reſide* on his lord's land, and not to depart from the ſame; called alſo, *homme levant* and *couchant*; and in Normandy, *reſſeant du fief*.*

* *Quantumque de aliis teneat ei magis obnoxius eſt, & ejus* reſidens *eſſe debet cujus legius eſt. Leg. H.* 1.

RESIDENTIARY, RESIDENTIARIUS, a canon inſtalled to the privileges and profits of reſidence. See CANON and PREBENDARY.

RESIDUAL *figure*, in geometry, the figure remaining after ſubſtraction of a leſſer from a greater. See FIGURE.

RESIDUAL *root*, is a root compoſed of two parts or members, only connected together with the ſign —.

Thus, $a - b$, or $5 - 3$, is a *reſidual* root; and is ſo called, becauſe it's true value is no more than it's *reſidue*, or difference between the parts a and b, or 5 and 3. See ROOT.

RESIDUE, RESIDUUM, the remainder or reliqua of an account, debt, or obligation. See REMAINDER and RELIQUA.

St Paul in his epiſtle to the Romans, ſpeaks of a *reſidue* according to the election of grace; meaning a remnant or ſmall number of people preſerved from idolatry by an effect of the grace of God.

RESIGNATION, RESIGNATIO, in the canon law, the ſurrender, or giving up of a benefice into the hands of the collator or biſhop. See BENEFICE and COLLATION.

Reſignation is of equal import with *ſurrender*; only the former is reſtrained to ſpiritual benefices, and the latter to temporal offices or employments. See SURRENDER.

Reſignations are either *ſimple*, or *conditional*.

Simple or *pure* RESIGNATIONS, are thoſe whereby the incumbent ſtrips himſelf of all his right, abſolutely, and without any conditions or reſerve of penſion—Theſe are made to the biſhop, or collator.

RESIGNATIONS *in favour*, or *conditional* RESIGNATIONS, are ſuch as are only made on condition that ſuch other perſons ſhall be inveſted therewith; ſo that the *reſignations* are null, unleſs the conditions be punctually executed.

Theſe *reſignations* in favorem are not above 200 years ſtanding—Strong oppoſition was at firſt made to them, they being eſteemed a kind of ſucceſſion or tranſmiſſion of benefices, as of patrimonies belonging to a family. Accordingly, theſe *reſignations* are not made into the hands of the ordinary, or collator, as pure *reſignations* are; but to the collator paramount, who in the Romiſh church is the pope: there being a ſuſpicion of ſimony, or other unlawful paction therein, where admitted of in prejudice to the lay-patron.

RESIGNEE, in law, the party to whom a thing is reſigned. See RESIGNATION.

RESIN, RESINA, a fat, viſcid, ſulphurous juice, oozing either ſpontaneouſly, or by inciſion, from ſeveral kinds of trees, particularly the pine, fir, &c. See JUICE, PLANT, &c. Camphor is a kind of *reſin*. See CAMPHOR—Maſtic is the *reſin* of the lentiſk. See MASTIC—The beſt of all the claſs of *reſins* is turpentine. See TURPENTINE—The coarſeſt is what we commonly call *roſin*. See ROSIN.

Reſin is properly a juice of the bark only. See BARK—Boerhaave will have it to be the oil of the bark farther inſpiſſated by the heat of the ſun, &c. ſo as to become friable. He adds, that it may be produced from any vegetable oil, by boiling it much and long. See OIL.

If turpentine be ſet over a gentle fire, it firſt diſſolves and becomes an oil, then a balſam, then pitch, and then *roſin*; in which ſtate it is friable in the cold, fuſible by fire, and withall inflammable and combuſtible, and diſſoluble in ſpirit of wine, but not in water, which are the characters of a *reſin*. See DISSOLVENT, &c.

There are two kinds of *reſins*, the one *liquid*, the other *dry* and hard—The firſt is the natural *reſin* as it flows from the tree—The ſecond only differs from the firſt in that it is condenſed by the heat of the ſun, or by that of a culinary fire.

Reſins will incorporate with oil, or rectified ſpirits, but not with an aqueous menſtruum. See PRECIPITATION.

The difference between *reſins* and *gums*, conſiſts in this, that *reſins* are more ſulphurous, and gums more aqueous; ſo that the firſt diſſolve in oil or ſpirit of wine, and the laſt in water. See GUM.

M. Tournefort makes a kind of intermediate claſs of vegetable juices which he calls *gum-reſins*; which diſſolve partly in ſpirit of wine, partly in water—Such are *galbanum*, *bdellium*, *opopanax*, *ſagapenum*, &c. See GUM-*reſin*.

The *reſins* of ſeveral vegetables which abound with *reſinous* particles, but not ſo as to yield any by inciſion, as jalap, benzoin, ſcammony, turbith, &c. are thus obtained—The vegetable being groſly powdered, is put into a matraſs, and rectified ſpirits of wine poured on it, to the height of four fingers above the matter. Then the neck of another matraſs being luted into the former, to make a double veſſel, the matter is digeſted three or four days in a ſand heat, till it have given a good tincture to the ſpirit of wine. Then the diſſolution is filtrated, and two thirds of the clear liquor evaporated off, and the remainder poured into a large veſſel of water, where it turns into a kind of milk; whence the *reſin*, in time, precipitates to the bottom in a white powder—This when waſhed and dried in the ſun, grows into the ordinary conſiſtence of a *reſin*.

RESISTENCE, or RESISTING-*force*, in phyſics, any power which acts contrarily to another, ſo as to deſtroy or diminiſh it's effect. See POWER.

Of *reſiſtence*, there are various kinds, ariſing from the various natures and properties of the *reſiſting* bodies, and governed by various laws: As, the *reſiſtence* of ſolids, the *reſiſtence* of fluids, the *reſiſtence* of the air, &c. The doctrine of each whereof will be ſeen under the following articles.

RESISTENCE *of ſolids*, in mechanics, is the force wherewith the quieſcent parts of ſolid bodies oppoſe the motion of others contiguous therewith. See SOLIDITY, &c.

Of this there are two kinds—The firſt, where the *reſiſting* and the *reſiſted* parts, *i. e.* the moving and quieſcent bodies, are only contiguous, and do not cohere; *i. e.* where they conſtitute ſeparate bodies or maſſes.

This *reſiſtence* is what M. Leibnitz calls *reſiſtence of the ſurface*; and we, properly, *friction*; the conſideration whereof, being of the laſt importance in the doctrine of machines, ſee it's laws under the article FRICTION.

The ſecond caſe of *reſiſtence* is where the *reſiſting* and *reſiſted* parts are not only contiguous but cohere, *i. e.* are parts of the ſame continued body or maſs—This *reſiſtence* is what we may properly call *renitency*; and was firſt conſidered by Galileo.

Theory of the RESISTENCE *of the fibres of ſolid bodies*—To conceive an idea of this *reſiſtence* or renitency of the parts, ſuppoſe a cylindrical body ſuſpended vertically by one end—Here, all it's parts being heavy, draw downwards; and tend to ſeparate the two contiguous planes, where the body is the weakeſt: but all the planes *reſiſt* this ſeparation by the force wherewith they cohere, or are bound together: here then are two oppoſite powers; *viz.* the weight of the cylinder which tends to break it, and the force of cohæſion of the parts which *reſiſts* the fracture. See COHESION.

If the baſe of the cylinder be increaſed, without increaſing it's length; it is evident the *reſiſtence* will be increaſed in the ſame ratio as the baſe: but the weight alſo increaſes in the ſame ratio; whence it is evident that all cylinders of the ſame matter and length, whatever their baſes be, have an equal *reſiſtence*, when vertically ſuſpended.

If the length of the cylinder be increaſed without increaſing the baſe, it's weight is increaſed without increaſing it's *reſiſtence*; conſequently the lengthening it weakens it—To find the greateſt length a cylinder of any matter may have without breaking, there needs nothing but to take any cylinder of the ſame matter, and faſten to it the greateſt weight it will ſuſtain before it break; and then ſee how much it muſt be lengthened by the addition of it's weight, till it equals it's former weight with the addition of a foreign weight—By this means Galileo found a copper-wiar, and of conſequence any other cylinder of copper, might be extended to 4801 braccio's, or fathoms of ſix foot each.

If one end of the cylinder were fixed horizontally into a wall, and the reſt ſuſpended thence, it's weight and *reſiſtence* would then act in a different manner; and if it broke by the action of it's weight, the rupture would be at the end fixed into the wall. A circle or plane contiguous to the wall, and parallel to the baſe, and conſequently vertical, would be detached from the contiguous circle within the plane of the wall, and would deſcend. All the motion is performed on the loweſt extremity of the diameter, which remains immoveable, while the upper extremity deſcribes a quadrant of a circle, and till the circle which before was vertical become horizontal; *i. e.* till the cylinder be entirely broken.

In this fracture of the cylinder it is viſible two forces have acted, and the one has overcome the other: the weight of the cylinder, which aroſe from it's whole maſs, has overcome the *reſiſtence* which aroſe from the largeneſs of the baſe; and as the centres of gravity are points wherein all the forces ariſing from the weights of the ſeveral parts of the ſame bodies, are conceived to be united, one may conceive the weight of the whole cylinder applied in the centre of gravity of it's maſs, *i. e.* in a point in the middle of it's axis; and the *reſiſtence* of the cylinder applied in the centre of gravity of it's baſe, *i. e.* in the centre of the baſe: it being the baſe which *reſiſts* the fracture.

When the cylinder breaks by it's own weight, all the motion is on an immoveable extremity of a diameter of the baſe—This extremity, therefore is the fixed point of a lever, whoſe two arms are the radius of the baſe, and half the axis; and of conſequence the two oppoſite forces do not only act of themſelves, and by their abſolute force, but alſo by the relative force they derive from their diſtance with regard to the fixed point of the lever.

Hence it evidently follows, that a cylinder, *e. gr.* of copper, which, vertically ſuſpended, will not break by it's own weight if leſs than 480 fathom long, will break with a leſs length in a horizontal ſituation; in regard the length in this latter caſe contributes two ways to the fracture; both as it makes it of ſuch a weight, and as it is an arm of a lever to which the weight is applied—Hence, alſo, the ſmaller the baſe is, the leſs length or weight will ſuffice to break it; both becauſe the *reſiſtence* is really leſs, and becauſe it acts by a leſs arm of a lever.

If two cylinders of the ſame matter, having their baſes and lengths in the ſame proportion, be ſuſpended horizontally; it is evident that the greater has more weight than the leſſer, both on account of it's length, and of it's baſe. But it has leſs *reſiſtence* on account of it's length, conſidered as a longer arm of a lever, and has only more *reſiſtence* on account of it's baſe—Therefore it exceeds the leſſer in it's bulk and weight, more than in *reſiſtence*; and conſequently muſt break more eaſily.

Hence, we ſee why upon making models and machines in ſmall, people are apt to be miſtaken as to the *reſiſtence* and ſtrength of certain horizontal pieces, when they come to execute their deſigns in large; by obſerving the ſame proportion as in the ſmall—Galileo's doctrine of *reſiſtence* therefore is no idle ſpeculation, but becomes applicable in architecture and other arts.

The weight required to break a body placed horizontally, being always leſs than that required to break it in a vertical ſituation; and this weight being to be greater or leſs according to the ratio of the two arms of the lever: the whole theory is always reducible to this; *viz.* to find what part of the abſolute weight the relative weight is to be, ſuppoſing the figure of the body known; which indeed is neceſſary, becauſe it is the figure that determines the two centres of gravity, or the two arms of the lever—For if the body, *e. gr.* were a cone, it's centre of gravity would not be in the middle of it's axis, as in the cylinder; and if it were a ſemi-parabolical ſolid, neither it's centre of gravity would be in the middle of it's length or axis, nor the centre of gravity of it's baſe in the middle of the axis of it's baſe. But ſtill, whereſoever theſe centres fall in the ſeveral figures, it is theſe that regulate the two arms of the lever.

It may be here obſerved, that if the baſe whereby the body is faſtened into the wall be not circular, but, *e. gr.* parabolical, and the vertex of the parabola a-top, the motion of the fracture will not be on an immoveable point, but on a whole immoveable line; which may be called the *axis of equilibrium:* and it is with regard to this, that the diſtances of the centres of gravity are to be determined.

Now, a body horizontally ſuſpended, being ſuppoſed ſuch, as that the ſmalleſt addition of weight would break it; there is an equilibrium between it's poſitive and relative weight; and of conſequence thoſe two oppoſite powers are to each other reciprocally as the arms of the lever to which they are applied—On the other hand, the *reſiſtence* of a body is always equal to the greateſt weight which it will ſuſtain in a vertical ſituation, without breaking, *i. e.* is equal to it's abſolute weight. Therefore, ſubſtituting the abſolute weight for the *reſiſtence*, it appears that the abſolute weight, of a body ſuſpended horizontally, is to it's relative weight, as the diſtance of it's centre of gravity from the axis of equilibrium, is to the diſtance of the centre of gravity of it's baſe from the ſame axis.

The diſcovery of this important truth, at leaſt of an equivalent hereto, and to which this is reducible, we owe to Galileo—From this fundamental propoſition are eaſily deduced ſeveral conſequences—As, for inſtance, that if the diſtance of the centre of gravity of the baſe from the axis of equilibrium, be half the diſtance of the centre of gravity of the body; the relative weight will only be half the abſolute weight: and that a cylinder of copper horizontally ſuſpended, whoſe length is double the diameter, will break, provided it weigh half what a cylinder of the ſame baſe, 4801 fathoms long, weighs. See WEIGHT.

On this ſyſtem of *reſiſtence* of Galileo, M. Mariotte made a very ſubtile remark, which gave birth to a new ſyſtem—Galileo ſuppoſes that where the body breaks, all the fibres break at once; ſo that the body always *reſiſts* with it's whole abſolute force; *i. e.* with the whole force all it's fibres have in the place where it is to be broke—But M. Mariotte finding that all bodies, even glaſs itſelf, bends before it breaks, ſhews that fibres are to be conſidered as ſo many little bent ſprings, which never exert their whole force till ſtretched to a certain point; and never break till entirely unbent. Hence, thoſe neareſt the axis of equilibrium which is an immoveable line, are ſtretched leſs than thoſe farther off; and of conſequence employ a leſs part of their force.

This conſideration only takes place in the horizontal ſituation of the body: in the vertical, the fibres of the baſe all break at once; ſo that the abſolute weight of the body muſt exceed the united *reſiſtence* of all it's fibres: a greater weight is therefore required here, than in the horizontal ſituation; *i. e.* a greater weight is required to overcome their united *reſiſtence*, than to overcome their ſeveral *reſiſtences* one after another—The difference between the two ſituations ariſes hence, that in the horizontal there is an immoveable point or line, a centre of motion, which is not in the horizontal.

M. Varignon has improved on the ſyſtem of M. Mariotte, and ſhewn that to Galileo's ſyſtem, it adds the conſideration of the centre of percuſſion—The compariſon of the centres of gravity, with the centres of percuſſion, afford a fine view; and ſet the whole doctrine in the moſt agreeable light. See CENTER.

In each ſyſtem, the baſe whereby the body breaks, moves on the axis of equilibrium, which is an immoveable line in the ſame baſe; but in the ſecond, the fibres of this baſe are continually ſtretching more and more; and that in the ſame ratio as they recede farther and farther from the axis of equilibrium, and of conſequence are ſtill exerting a greater and greater part of their whole force.

Theſe unequal extentions, like all other forces, muſt have ſome common centre where they all meet; and with regard to which they make equal efforts on each ſide: and as they are preciſely in the ſame proportion as the velocities which the ſeveral points of a rod moved circularly would have to one another; the centre of extenſion of the baſe whereby the body breaks, or tends to break, muſt be the ſame with it's centre of percuſſion—Galileo's hypotheſis, where fibres ſtretch equally, and break all at once, correſponds to the caſe of a rod moving parallel to itſelf; where the centre of extenſion or percuſſion does not appear, as being confounded with the centre of gravity.

The baſe of fraction being a ſurface whoſe particular nature determines it's centre of percuſſion; it is neceſſary to be firſt known to find on what point of the verticle axis of that baſe it is placed; and how far it is from the axis of equilibrium—Indeed, we know, in the general, that it always acts with ſo much more advantage as it is farther from it, in regard it acts by a longer arm of a lever; and of conſequence it is the unequal *reſiſtence* of the fibres in M. Mariotte's hypotheſis, which produces the centre of percuſſion; but this unequal *reſiſtence* is greater or leſs according as the centre of percuſſion is placed more or leſs high on the vertical axis of the baſe, in the different ſurfaces of the baſe of the fracture.

To expreſs this unequal *reſiſtence*, accompanied with all the variations it is capable of, regard muſt be had to the ratio between the diſtance of the centre of percuſſion from the axis of equilibrium, and the length of the vertical axis of the baſe—In which ratio, the firſt term, or the numerator, is always leſs than the ſecond or the denominator: ſo that the ratio is always a fraction leſs than unity; and the unequal *reſiſtence* of the fibres in M. Mariotte's hypotheſis is ſo much the greater, or which amounts to the ſame, approaches ſo much nearer to the equal *reſiſtence* in Galileo's hypotheſis, as the two terms of the ratio are nearer to an equality.

Hence it follows, that the *reſiſtence* of bodies, in M. Mariotte's ſyſtem, is to that in Galileo's, as the leaſt of the terms in the ratio, is to the greateſt—Hence, alſo, the *reſiſtence* being leſs than what Galileo imagined, the relative weight muſt alſo be leſs; ſo that the proportion already mentioned between the abſolute and relative weight, cannot ſubſiſt in the new ſyſtem, without an augmentation of the relative weight, or a diminution of the abſolute weight: which diminution is had by multiplying the weight by the ratio, which is always leſs than unity. This done, we find that the abſolute weight multiplied by the ratio, is to the relative weight, as the diſtance of the centre of gravity of the body from the axis of equilibrium, is to the diſtance of the centre of gravity of the baſe of fracture, from the ſame axis. Which is preciſely the ſame thing with the general formula given by M. Varignon, for the ſyſtem of M. Mariotte. In effect, after conceiving the relative weight of a body, and it's *reſiſtence* equal to it's abſolute weight, as two contrary powers applied to the two arms of a lever, in the hypotheſis of Galileo; there needs nothing to convert it into that of M. Mariotte, but to imagine that the *reſiſtence*, or the abſolute weight is become leſs, every thing elſe remaining the ſame.

We have here only conſidered bodies as to be broke by their own weight—It will amount to the ſame, if we ſuppoſe them void of weight themſelves, and to be broken by a weight applied to their extremities: only it is to be obſerved, that a foreign weight acts by an arm of a lever equal to the whole length of a body; whereas their own weight being all united in their centre of gravity, is only the diſtance of that centre from the axis of equilibrium.

One of the moſt curious, and perhaps the moſt uſeful queſtions in this reſearch, is to find what figure a body muſt have, that it's *reſiſtence* may be equal in all it's parts; whether it be conceived as loaden with a foreign weight; or as only ſuſtaining it's own weight—We ſhall, here, only conſider the latter caſe, from which the former will be eaſily determined.

For a body, then, ſuſpended horizontally, to reſiſt equally in all it's part; it is neceſſary, ſome part of it being conceived as cut off in a plane parallel to the baſe of fracture of the body, the weight of the part retrenched be to it's *reſiſtence*, in the ſame ratio, as the weight of the whole to it's *reſiſtence*; theſe four powers acting by arms of levers peculiar to themſelves—Now the weight of any body thus conceived, is it's whole weight multiplied by the diſtance of the centre of gravity of the body, from the axis of equilibrium; and the *reſiſtence* is the plane of the baſe of fracture multiplied by the diſtance of the centre of gravity of the baſe from the ſame axis: conſequently theſe four quantities are to be proportional in the whole, and in each part of a ſolid of *equal reſiſtence*.

From this proportion M. Varignon eaſily deduces two ſolids, which ſhall *reſiſt* equally in all their parts. Galileo had found one before: that diſcovered by M. Varignon, is in form of a trumpet, and is to be fixed into the wall at it's greater end; ſo that it's bigneſs and weight is always diminiſhed in proportion as it's length, or the arm of the lever whereby it's weight acts, increaſes. It is added, (which ſeems very remarkable) that howſoever different the two ſyſtems may be, the ſolids of equal *reſiſtence* are the ſame in both.

For the RESISTENCE *of a ſolid ſupported at each extreme; as, of a beam between two walls.* See BEAM.

RESISTENCE *of fluids,* in hydroſtatics, is the force wherewith bodies moving in fluid mediums, are impeded and retarded in their motions. See FLUID and MEDIUM.

Laws of RESISTENCE *of the fluid mediums*—A body moving in a fluid, is *reſiſted* from two cauſes; the firſt, the coheſion of the parts of the fluid—For a body in it's motion ſeparating the parts of a liquid, muſt overcome the force with which thoſe parts cohere. See COHESION.

The ſecond is the inertia, or inactivity of matter, whereby a certain force is required to move the particles from their places, in order to let the body paſs. See VIS *Inertiæ*.

The retardation from the firſt cauſe, is always the ſame in the ſame ſpace, the ſame body remaining; be the velocity what it will—Hence, the *reſiſtence* increaſes as the ſpace run through; in which ratio, the velocity alſo increaſes; therefore the *reſiſtence* is as the velocity itſelf. See VELOCITY.

The *reſiſtence* from the ſecond cauſe, when the ſame body moves through different fluids, with the ſame velocity, follows the proportion of the matter to be removed in the ſame time; which is as the denſity of the fluid. See DENSITY.

When the ſame body moves through the ſame fluid with different velocities, this *reſiſtence* increaſes in proportion to the number of particles ſtruck in an equal time; which number is as the ſpace run through in that time, that is, as the velocity. But farther it increaſes in proportion to the force with which the body ſtrikes againſt every part; which force is alſo as the velocity of the body. And therefore if the velocity be triple, the *reſiſtence* is triple, from a triple number of parts to be removed—It is alſo triple from a ſtroke three times ſtronger againſt every particle; therefore the whole *reſiſtence* is ninefold, that is, as the ſquare of the velocity. Hence a body moved in a fluid, is *reſiſted* partly in a ratio of the velocity, and partly in a duplicate ratio of it.

The *reſiſtence* from the coheſion of parts in fluids, except glutinous ones, is not very ſenſible, in reſpect of the other *reſiſtence*, which increaſes in the ratio of the ſquares of the velocities, but the firſt in the ratio of the velocity itſelf. By how much the velocity increaſes, by ſo much more do theſe *reſiſtences* differ; wherefore in ſwifter motions the *reſiſtence* alone is to be conſidered, which is as the ſquare of the velocity.

If a fluid be included in a veſſel of a priſmatic figure, and there be moved along in it, with equal velocity and in a direction parallel to the ſides of the priſm, two bodies, the one ſpherical, the other cylindric; ſo that the diameter of the baſe of the latter be equal to the diameter of the ſphere; and the cylinder be moved in the direction of it's axis; theſe bodies will ſuffer the ſame *reſiſtence*.

To demonſtrate this, ſuppoſe the bodies at reſt, and that the fluid moves in the veſſel, with the ſame velocity that the bodies had: by this, the relative motion of the bodies, and the fluid is not changed: conſequently the actions of the bodies on the fluid, and of the fluid on the bodies, are not changed—The retardation which the liquor ſuffers in paſſing by the body, ariſes only from this, that in that place it is reduced to a narrower ſpace; but the capacity of the veſſel is equally diminiſhed by each body; therefore each body produces an equal retardation. And becauſe action and re-action are equal to one another, the fluid acts equally upon each body; wherefore alſo each body will be equally retarded, when the bodies are moved, and the fluid is at reſt.

Reſiſtence and retardation are uſed indifferently for each other, as being both in the ſame proportion; and the ſame *reſiſtence* always generating the ſame retardation—But with regard to different bodies, the ſame *reſiſtence* frequently generates different retardations; the *reſiſtence* being the quantity of motion, and the retardation the celerity—*For the difference and meaſure of the two*, See RETARDATION.

The retardations from this *reſiſtence* may be compared together, by comparing the *reſiſtence* with the gravity—It is demonſtrated that the *reſiſtence* of a cylinder, which moves in the direction of it's axis, (to which the *reſiſtence* of a ſphere of the ſame diameter is equal) is equal to the weight of a cylinder of that fluid through which the body moves, having it's baſe equal to the body's baſe, and it's height equal to half the height from which a body falling in vacuo, may acquire the velocity with which the cylinder moves through the fluid.

From the given celerity of the body moved, the height of the fluid cylinder is found, as alſo the weight of it, from the known ſpecific gravity of the liquid, and diameter of the body—Let a ball, for inſtance, of three inches diameter be moved in water with a celerity wherewith it would go ſixteen foot in a ſecond: from experiments on falling bodies, and others made on pendulums, it has been found that this is the celerity which a body acquires in falling from a height of four foot; therefore the weight of a cylinder of water, of three inches diameter, and two foot high, that is, a weight of about ſix pound and three ounces, is equal to the *reſiſtence* of the aforeſaid ball. See DESCENT.

Let the *reſiſtence* ſo diſcovered be divided by the weight of the body, which determines it's quantity of matter, and you will have the retardation.

RESISTENCE *of fluid mediums to the motion of pendulums*—The arch deſcribed by a pendulum oſcillating in vacuo, with the celerity it has acquired in deſcending, is equal to the arch deſcribed by the deſcent; but the ſame does not happen in a fluid, and there is a greater difference between thoſe arches, the greater the *reſiſtence* is; that is, the greater the arch is which is deſcribed in the deſcent.

Let the *reſiſtence* of the fluid be in proportion to the velocity; and let two pendulums, entirely alike, oſcillating in a cycloid, perform unequal vibrations, and begin to fall the ſame moment: they here begin to move by forces that are as the arches to be deſcribed. If thoſe impreſſions alone, which are made the firſt moment, be conſidered; after a given time the celerities will be in the ſame ratio, as at the beginning; for the retardations, which are as the velocities themſelves, cannot change their proportions, the ratio between quantities not being changed by the addition and ſubſtraction of quantities in the ſame ratio. Therefore in equal times, however the celerities of bodies are changed in their motion by the *reſiſtence*, the ſpaces gone through, are as the forces in the beginning; that is, as the arches to be deſcribed by the deſcent: therefore, after any times the bodies are in the correſpondent point of thoſe arches. But in theſe points the forces generated are in the ſame ratio as in the beginning, and the proportion of the celerities, which is not varied by the *reſiſtence*, ſuffers no change from the gravity. In the aſcent, gravity retards the motion of the body; but in correſpondent points, it's actions are in the ſame ratio as in deſcents. And therefore every where in correſpondent points, the celerities are in the ſame ratio. But as in the ſame moments the bodies are in their correſpondent points, it follows that the motion of both is deſtroyed in the ſame moment, that is, they finiſh their vibrations in the ſame time. The ſpaces run through in the time of one vibration, are as the forces by which they are run through; that is, the arches of whole vibration are as the arches deſcribed by the deſcent, the doubles whereof are the arches to be deſcribed in vacuo. The deficiencies of the arches to be deſcribed in fluids, from the arches to be deſcribed in vacuo, are the differences of quantities in the ſame ratio, and are as the arches deſcribed in the deſcent. See PENDULUM.

RESISTENCE *of fluid mediums to the motion of falling bodies.*—The *reſiſtences* are as the ſquares of the celerities, and therefore every where in correſpondent points, as the ſquares of the arches deſcribed by the deſcent; in which ratio alſo, the retardations are: but as each of them retain the ſame proportion in correſponding points, the ſums of them all will be in the ſame proportion; that is, the whole retardations, which are the defects of the arches deſcribed in the fluid, from the arches to be deſcribed in vacuo, or which is the ſame, the difference between the arches deſcribed in the deſcent, and the next aſcent. Therefore theſe differences, if the vibrations are not very unequal, are nearly as the ſquares of the arches deſcribed by the deſcent: which is alſo confirmed by experiments in greater vibrations; for in theſe the proportion of *reſiſtence*, here conſidered, obtains.

A body freely deſcending in a fluid is accelerated by the reſpective gravity of the body, which continually acts upon it, yet not equably, as in a vacuum: the *reſiſtence* of the fluid occaſions a retardation, that is, a diminution of acceleration, which diminution increaſes with the velocity of the body. Now there is a certain velocity, which is the greateſt a body can acquire by falling; for if it's velocity be ſuch that the *reſiſtence* ariſing from it becomes equal to the reſpective weight of the body, it's motion can be no longer accelerated; for the motion here continually generated by the reſpective gravity, will be deſtroyed by the *reſiſtence*, and the body forced to go on equably. A body continually comes nearer and nearer to this greateſt celerity, but can never attain to it.

When the denſities of a fluid body are given, the reſpective weight of the body may be known; and by knowing the diameter of the body, it may be found from what height a body falling in vacuo, can acquire ſuch a velocity, as that the *reſiſtence* in a fluid ſhall be equal to that reſpective weight, which will be that greateſt velocity above mentioned—If the body be a ſphere, it is known that a ſphere is equal to a cylinder of the ſame diameter, whoſe height is two third parts of that diameter; which height is to be increaſed in the ratio wherein the reſpective weight of the body exceeds the weight of the fluid, in order to have the height of a cylinder of the fluid, whoſe weight is equal to the reſpective weight of the body; but if you double this height, you will have a height from which a body falling in vacuo, acquires ſuch a velocity as generates a *reſiſtence* equal to this reſpective weight, and which therefore is the greateſt velocity which a body can acquire by falling in a fluid from an infinite height. Lead is eleven times heavier than water, wherefore it's reſpective weight is to the weight of water as ten to one; therefore a leaden ball, as it appears from what has been ſaid, cannot require a greater velocity in falling in water, than it would acquire in falling in vacuo, from an height of $13\frac{1}{3}$ of it's diameters.

A body lighter than a fluid, and aſcending in it by the action of the fluid, is moved exactly by the ſame laws as an heavier body falling in the fluid. Wherever you place the body, it is ſuſtained by the fluid, and carried up with a force equal to the difference of the weight of a quantity of the fluid of the ſame bulk as the body, from the weight of the body. Therefore you have a force that continually acts equably upon the body; by which not only the action of gravity of the body is deſtroyed, ſo as that it is not to be conſidered in this caſe, but the body is alſo carried upwards by a motion equably accelerated; in the ſame manner as a body heavier than a fluid deſcends by it's reſpective gravity; but the equability of the acceleration is deſtroyed in the ſame manner by the *reſiſtence*, in the aſcent of a body lighter than the fluid, as it is deſtroyed in the deſcent of a body heavier.

When a body ſpecifically heavier than a fluid is thrown up in it, it is retarded upon a double account; on account of the gravity of the body, and on account of the *reſiſtence* of the fluid: conſequently, a body riſes to a leſs height than it would riſe to in a vacuo with the ſame celerity. But the defects of the height in a fluid from the height to which a body would riſe in vacuo with the ſame celerity, have a greater proportion to each other than the heights themſelves; and in leſs heights the defects are nearly as the ſquares of the heights in vacuo.

RESISTENCE *of the air*, in pneumatics, is the force wherewith the motion of bodies, particularly projectiles, is retarded by the oppoſition of the air or atmoſphere. See AIR and PROJECTILE.

The air being a fluid, the general laws of the *reſiſtence* of fluids obtain therein; only the different degrees of denſity in the different ſtages or regions of the atmoſphere, occaſion ſome irregularity. See ATMOSPHERE.

Different RESISTENCE *of the ſame medium to bodies of different figures*—Sir Iſaac Newton ſhews, that if a globe and a cylinder of equal diameters, be moved with equal velocity in a thin medium, conſiſting of equal particles, diſpoſed at equal diſtances, according to the direction of the axis of the cylinder; the *reſiſtence* of the globe will be leſs by half than that of the cylinder.

Solid of the leaſt RESISTENCE—From the laſt propoſition the ſame author deduces the figure of a ſolid, which ſhall have the *leaſt reſiſtence* of any containing the ſame quantity of matter and ſurface. See SOLID.

The figure is this—Suppoſe DNFG (*Tab. Mechanics*, *fig*. 57.) to be ſuch a curve, as, that if from any point N, be let fall a perpendicular NM, to the axis AB; and from a given point G, be drawn a right line GR, parallel to a tangent to the figure in N, and cut the axis when continued, in R : MN be to GR as GR *cub.* to 4BR×GB*q*: a ſolid deſcribed by the evolution of this figure about it's axis AB, moving in a medium from A towards B, is leſs *reſiſted* than any other circular ſolid of the ſame area, &c. *Newt. Princ.* p. 300.

RESISTENCE *of a globe*, perfectly hard and in a medium, whoſe particles are ſo too; is to the force wherewith the whole motion may either be deſtroyed or generated which it has at the time, when it has deſcribed four thirds of it's diameter; as the denſity of the medium, to the denſity of the globe—Hence alſo, infers Sir Iſaac Newton that the *reſiſtence* of a globe, is cæteris paribus, in a duplicate ratio of it's velocity. Or it's *reſiſtence* is cæteris paribus, in a duplicate ratio of it's diameter. Or, cæteris paribus, as the denſity of the medium. Laſtly, that the actual *reſiſtence* of a globe is in a ratio compounded of the duplicate ratio of the velocity, and of the duplicate ratio of the diameter, and of the ratio of the denſity of the medium.

In theſe articles, the medium is ſuppoſed to be diſcontinuous, as air probably is; if the medium be continuous, as water, mercury, &c. where the globe does not ſtrike immediately on all the particles of the fluid generating the *reſiſtence*, but only on thoſe next it, and thoſe again on others, &c. the *reſiſtence* will be leſs by half. And a globe in ſuch a medium undergoes a *reſiſtence* which is to the force wherewith the whole motion it has after deſcribing eight thirds of it's diameter, might be generated or taken away, as the denſity of the medium to the denſity of the globe.

RESISTENCE *of a cylinder* moving in the direction of it's axis is not altered by any augmentation or diminution of it's length, and therefore is the ſame with that of a circle of the ſame diameter moving with the ſame velocity in a right line perpendicular to it's plane.

The *reſiſtence* of a cylinder moving in an infinite unelaſtic fluid, ariſing from the magnitude of a tranſverſe ſection, is to the force wherewith it's whole motion while it deſcribes four times it's length may be taken away or generated, as the denſity of the medium to that of the cylinder, very nearly.

Hence, the *reſiſtences* of cylinders moving length-wiſe, in infinitely continued mediums, are in a ratio compounded of the duplicate ratio of their diameters, the duplicate ratio of their velocities, and the ratio of the denſity of the mediums.

The *reſiſtence* of a globe in an infinite unelaſtic medium is to the force whereby it's whole motion while it deſcribes eight thirds of it's diameter, might be either generated or taken away, as the denſity of the fluid, to the denſity of the globe, quam proximè.

Mr James Bernoulli demonſtrates the following theorems.

RESISTENCE *of a triangle*—If an iſoſceles triangle be moved in a fluid according to the direction of a line perpendicular to it's baſe; firſt, with the vertex foremoſt, and then with it's baſe; the *reſiſtences* will be as the legs, and as the ſquare of the baſe, and as the ſum of the legs.

The RESISTENCE *of a ſquare* moved according to the direction of it's ſide, and of it's diagonal, is as the diagonal to the ſide.

The RESISTENCE *of a circular ſegment*, leſs than a ſemicircle carried in a direction perpendicular to it's baſis, when it goes with the baſe foremoſt, and when with it's vertex foremoſt, (the ſame direction and celerity continuing;) is as the ſquare of the diameter, to the ſame, leſs $\frac{1}{3}$ of the ſquare of the baſe of the ſegment.—Hence the *reſiſtences* of a ſemicircle when it's baſe and when it's vertex go foremoſt, are to one another in a ſeſquialterate ratio.

RESISTENCE *of a parabola*—A parabola moving in the direction of it's axis, firſt with it's baſis, and then it's vertex foremoſt, has it's *reſiſtences* as the tangent to an arch of a circle, whoſe diameter is equal to the parameter, and the tangent equal to half the baſis of the parabola.

The *reſiſtence*, if the vertex go foremoſt, may be thus computed—Say, as the ſum (or difference) of the tranſverſe axis, and latus rectum, is to the tranſverſe axis; ſo is the ſquare of the latus rectum to the ſquare of the diameter of a certain circle, in which circle apply a tangent equal to half the baſis of the hyperbola or ellipſis—Then ſay again, as the ſum (and difference) of the axis and parameter, is to the parameter: ſo is the aforeſaid tangent to another right line. And farther, as the ſum (or difference) of the axis and parameter, is to the axis: ſo is the circular arch correſponding to the aforeſaid tangent, to another arch. This done, the *reſiſtences* will be as the tangent to the ſum (or difference) of the right line thus found, and the arch laſt mentioned.

In the general, the *reſiſtences* of any figure whatever, going now with it's baſe foremoſt, and then with it's vertex, are as the figures of the baſe to the ſum of all the cubes of the element of the baſe, divided by the ſquares of the element of the curve line.

All which rules may be of uſe in the conſtruction of ſhips, and in perfecting the art of navigation univerſally: as alſo for determining the figures of the balls of pendulums for clocks, &c. See SHIP, NAVIGATION, PENDULUM, &c.

RESOLUTION, RESOLUTIO, or SOLUTIO, in phyſics, the reduction of a body into it's original, or natural ſtate, by a diſſolution, or ſeparation of it's aggregated parts. See DISSOLUTION.

Thus, ſnow and ice are ſaid to be *reſolved* into water; a compound is *reſolved* into it's ingredients, &c. See THAWING, DECOMPOSITION, &c.—Water *reſolves* into vapour by heat; and vapour is again *reſolved* into water by cold. See VAPOUR, HEAT, &c.

Some of the modern philoſophers, particularly, Mr Boyle, M. Mariotte, Boerhaave, &c. maintain that the natural ſtate of water is to be congealed, or in ice; inaſmuch as a certain degree of heat, which is a foreign and violent agent, is required to make it fluid: ſo that near the pole, where this foreign force is wanting, it conſtantly retains it's fixed or icy-ſtate. See WATER—On this principle, the *reſolution* of ice into water, muſt be an improper expreſſion. See FREEZING.

RESOLUTION, in chymiſtry, is the reduction of a maſs or mixed body into it's component parts, or firſt principles; by a proper analyſis. See PRINCIPLE, ANALYSIS, &c.

The *reſolution* of bodies is performed variouſly; by diſtillation, ſublimation, diſſolution, fermentation, &c. See each operation under it's proper article, DISTILLATION, &c.

RESOLUTION, in logic, is a branch of method, called alſo *analyſis*. See METHOD and ANALYSIS.

The buſineſs of *reſolution* is to inveſtigate, or examine the truth, or falſhood of a propoſition by aſcending from ſome particular known truth, as a principle, by a chain of conſequences, to another more general one, in queſtion. See PROPOSITION, TRUTH, &c.

Reſolution, or the analytic method, ſtands in direct oppoſition to *compoſition*, or the ſynthetic method; in which laſt we deſcend from ſome general known truths to a particular one, in queſtion. See COMPOSITION.

For an inſtance of the method of *reſolution*—Suppoſe the queſtion this: whether on the ſuppoſition of man's exiſtence, we can prove that God exiſts?

To *reſolve* this, our method is thus—"Mankind did not always exiſt. It is evident from a thouſand conſiderations, "the ſpecies had a beginning; and that according to all hiſtory, not 6000 years ago: but if it had a beginning, there "muſt be ſome cauſe of it's beginning; ſomething to in-

“ duce it to exiſt then more than it did before; in effect there muſt be a cauſe or author of it's exiſtence, for from nothing, nothing ariſes: this cauſe, whatever it is, muſt at leaſt have all the faculties we find in ourſelves; for none can give more than he has: nay, he muſt have others which we have not, ſince he could do what we cannot do, *i. e.* create, make man exiſt, *&c.*—Now, this cauſe either exiſts ſtill, or has ceaſed to do ſo: if the former, he did not exiſt from eternity; for what is from eternity is neceſſary, and can neither by itſelf nor any other cauſe be reduced to nothing: if the latter, it muſt have been produced from ſome other; and then the ſame queſtion will return upon the producer—There is then ſome firſt cauſe; and this cauſe has all the properties and faculties we have; nay more, exiſted from eternity, *&c.* Therefore, from the ſuppoſition of man's exiſtence, it follows there is a God, *&c.*

RESOLUTION, or SOLUTION, in mathematics, is an orderly enumeration of the ſeveral things to be done, to obtain what is required in a problem. See PROBLEM.

Wolfius makes a problem to conſiſt of three parts—The *propoſition*, (which is what we properly call the *problem*) the *reſolution*, and the *demonſtration.* See PROPOSITION, *&c.* The general tenor of all problems is, thoſe things being done which are enjoyned by the *reſolution*; the thing is done which was to be done.

As ſoon as a problem is demonſtrated, it is converted into a theorem; whereof the *reſolution* is the hypotheſis; and the propoſition the theſis. See THEOREM, THESIS, *&c.*

The proceſs of a mathematical *reſolution*, ſee in the following article.

RESOLUTION, in algebra, or algebraical, is of two kinds; the one practiſed in numerical problems, the other in geometrical ones. See ALGEBRA.

To reſolve a given numerical problem algebraically, the method is thus: 1°. diſtinguiſh the given quantities from the quantities ſought; and note the former with the firſt letters of the alphabet, and the latter with the laſt. See QUANTITY, and CHARACTER.

2°. Find as many equations as there are unknown quantities: if that cannot be, the problem is indeterminate; and one or more of the ſought quantities may be aſſumed at pleaſure—The equations, unleſs they be contained in the problem itſelf, are found by theorems relating to the equality of quantities. See EQUATION and EQUALITY.

3°. Since, in an equation, the unknown quantities are mixed with the known; it muſt be reduced, in ſuch manner as that only one unknown quantity be found on one ſide, and none but known quantities on the other—This reduction is performed by adding the ſubtracted quantities, dividing the multiplied quantities, and multiplying the divided ones, extracting the roots out of powers, raiſing roots to their powers, *&c.* ſo as that the equality may be ſtill preſerved. See REDUCTION.

To **RESOLVE** *a geometrical problem algebraically*—The proceſs in the former article is to be obſerved throughout: but as it rarely happens we come at an equation in geometrical problems by the ſame means as in numerical ones; there are ſome farther things to be noted: firſt then, ſuppoſe the thing done which was propoſed to be done—2°. Examine the relations of all the lines in the diagram, without any regard to known or unknown; in order to find which depend on which; and from which being had, what others are had, whether by ſimilar triangles, or rectangles, *&c.*—3°. To obtain the ſimilar triangles or rectangles, the lines are to be frequently produced, till they become either directly or indirectly equal to given ones, or interſect others, *&c.* Parallels and perpendiculars to be frequently drawn: points to be frequently connected; and angles to be made equal to others.

If thus you do not arrive at a neat equation; examine the relations of the lines in another manner—Sometimes it is not enough to ſeek the thing directly, but another thing muſt be ſought, whence the firſt may be found.

The equation being reduced, the geometrical conſtruction is to be deduced therefrom, which is done in various manners, in the various kinds of equations. See CONSTRUCTION *of equations.*

Problematical **RESOLUTION**. See PROBLEMATICAL.

RESOLUTION, in medicine, that coction, or alteration of the crude, peccant matter of any diſeaſe, either by the natural ſtrength of the patient, or of it's own accord, or by the application of remedies; whereby it's bulk, figure, coheſion, *&c.* are ſo far changed, as that it ceaſes to be morbid, and becomes laudable. See COCTION, DISEASE, *&c.*

This, the learned Boerhaave obſerves, is of all others the moſt perfect cure, where it is effected without any evacuation; as ſuppoſing the matter favourable, the conſtitution excellent, and the medicines good. See CRISIS, *&c.*

RESOLUTION, in muſic, is when a canon or perpetual fugue is not wrote all on the ſame line, or in one part; but all the voices that are to follow the guida, or firſt voice, are wrote ſeparately, either in ſcore, *i. e.* in ſeparate lines, or ſeparate parts, with the pauſes each is to obſerve, in the beginning, and in the tone proper to each.

RESONANCE, RESOUNDING, in muſic, *&c.* a ſound returned by the air incloſed in the bodies of ſtring-muſical-inſtruments; as lutes, *&c.* or even in the bodies of wind-inſtruments, as flutes, *&c.* See SOUND, MUSIC, INSTRUMENT, *&c.*

Elliptic, and parabolic vaults, *reſound* ſtrongly, *i. e.* reflect or return the ſound. See ECHO.

The mouth, and the parts thereof, as the palate, tongue, teeth, noſe, and lips, Monſ. Dodart obſerves, contribute nothing to the tone of the voice; but their effect is very great as to the *reſonance.* See VOICE.

Of this we have a very ſenſible inſtance in that vulgar inſtrument called the *Jews-harp*, or *trompe de Bearn:* for, if you hold it in your hand, and ſtrike the tongue or ſpring thereof, which yields all the ſound of the inſtrument, it ſcarce makes any noiſe at all. But, holding the body of the inſtrument between the teeth, and ſtriking the ſpring as before, it makes a muſical buzz, which is heard to a good diſtance, and eſpecially the lower notes.

So alſo in the haut-boys, the tone of the reed is always the ſame; being a ſort of drone: the chief variety is in the tone of the *reſonance*, produced in the mouth by the greater or leſs aperture, and the divers motions of the lips. See HAUTBOY.

RESOLVENTS, RESOLVENTIA, in medicine, remedies proper to reſolve and diſſipate tumours and gatherings, to ſoften indurations, and by their tenuity and warmth, evacuate redundant or peccant humours through the pores. See RESOLUTION.

Under this claſs come various unguents, emplaſters, *&c.* See DISCUTIENT.

RESORT. See the article RESSORT.

RESPECTU *computi vicecomitis habendo*, a writ for the reſpiting a ſheriff's accompt, upon juſt occaſion, directed to the treaſurer and barons of the exchequer. See SHERIFF.

RESPECTUANDO *homagio.* See HOMAGIO.

RESPIRATION, RESPIRATIO, the act of *reſpiring*, or breathing the air. See AIR.

Reſpiration is an involuntary motion of the breaſt, whereby the air is alternately taken in and thrown out: it therefore includes two contrary motions; the one called *inſpiration*, whereby the fluid is received into the cavity of the lungs—The other, *expiration*, whereby it is again expelled. See INSPIRATION and EXPIRATION.

The principal organs of *reſpiration* are the lungs, trachea, larynx, *&c.* the deſcriptions whereof ſee under their proper articles, LUNGS, TRACHEA, LARYNX, *&c.*

For the manner wherein RESPIRATION *is performed*—It is to be obſerved, that the lungs, when ſuſpended in the open air, by the contractive power of the muſcular fibres which tie together the ſquamous parts of the bronchia, are reduced to leſs ſpace than they poſſeſſed while in the cavity of the thorax: and when thus contracted, if a quantity of new air be injected through the glottis; they again become diſtended, ſo as to poſſeſs an equal, nay a greater ſpace than that aſſigned them in the thorax. See MUSCLE.

Hence it appears, that the lungs by their proper force, are always endeavouring to contract themſelves into leſs compaſs than they poſſeſs when incloſed in the thorax; and that therefore they are always in a ſtate of violent dilatation while the man lives—For the air that encompaſſes them in the thorax, ſhut up between their external membrane and the pleura, is not of equal denſity with common air.

In effect, the ingreſs of the air through the glottis into the lungs, is always free, but that on the out-ſide wherewith they are compreſſed, is impeded by the diaphragm, ſo as it cannot enter the thorax in quantity ſufficient to make an equilibrium.

Since then, in inſpiration, the air enters the lungs in greater quantity than it was before; it will dilate them more, and will overcome their natural force—The lungs therefore are wholly paſſive in the matter: what it is that acts muſt be learnt from the phænomena.

1°. Then, it is obſerved, that in inſpiration, the nine upper ribs articulated to the vertebræ and the ſternum, riſe archwiſe towards the clavicles; and the three lower are turned downwards; and the eighth, ninth, and tenth, are drawn inwards. 2°. That the abdomen is dilated; and 3°. the thorax enlarged. 4°. The diaphragm is brought from it's convex and ſinuous poſition to a flat figure.

Now, as theſe are the only viſible actions in inſpiration, the cauſe of the operation muſt be referred to them; or rather to the muſcles of theſe parts, which are the intercoſtals, the ſubclavian, *&c.*

The capacity of the thorax being enlarged by the action of theſe muſcles on the ribs, *&c.* a ſpace is left between the pleura and the ſurface of the lungs; ſo that the air entering the glottis inflates them till ſuch time as they become contiguous to the pleura and diaphragm—In this Caſe, now, the air preſſes the lungs as much as the thorax reſiſts them. And hence, the lungs become at reſt; the blood paſſes leſs freely, and is forced in leſs quantity into the left ventricle of the heart, and ſo leſs comes into the cerebellum, and it's nerves, and the arterial blood acts leſs on the intercoſtal muſcles and diaphragm.

The cauſes, therefore, which at firſt dilated the thorax, grow weaker; conſequently the ribs become depreſſed, the diſtended fibres of the muſcles of the abdomen reſtore themſelves, the viſcera thruſt the diaphragm up again into the thorax, the ſpace whereof being thus contracted, the air is drove out of the lungs; and thus is *expiration* performed.

Immediately, the blood being quickened in it's motion, begins to flow ſtronger and more plentifully to the cerebellum and muſcles; and thus the cauſes of the contraction of the intercoſtals and diaphragm, being renewed, inſpiration is repeated—Such is the true, immediate, adequate manner of vital *reſpiration*. See HEART.

For the uſes and effects of *reſpiration*, they are greatly diſputed among anatomiſts—The learned Boerhaave takes the principal uſes thereof to be the farther preparation of the chyle, it's more accurate mixture with the blood, and it's converſion into a nutricious juice proper to repair the decays of the body. See NUTRITION.

Borelli takes the great uſe of *reſpiration* to be the admiſſion and mixture of air with the blood, in the lungs, in order to form thoſe elaſtic globules it conſiſts of; to give it it's red florid colour; and to prepare it for many of the uſes of the œconomy: but how ſuch admiſſion ſhould be effected is hard to ſay—It is impoſſible it ſhould be done in the pulmonary arteries; nor can it be proved in the pulmonary veins—In effect, ſuch a communication muſt be hindered and obſtructed by the air's diſtending the veſiculæ, and compreſſing the veins in inſpiration; by the ſlimy humour that lubricates the membrane lining the inſide of the trachea. Add to this, the difficult paſſage of air through ſuch ſmall pores as will admit water; and the ill effect air ordinarily has when admitted into the blood. See PORE and WATER.

As to the arguments for ſuch communication, *viz.* the florid colour the blood here firſt aſſumes, and the abſolute neceſſity of *reſpiration* to life; they are both well accounted for otherwiſe. See BLOOD.

Other authors, as Sylvius, Etmuller, *&c.* take a great uſe of *reſpiration* to be, by the neighbourhood of the cold nitrous air, to cool the blood coming reeking hot out of the right ventricle of the heart, through the lungs; and to act as a refrigeratory. See REFRIGERATORY.

Mayow, and others, aſſert one grand uſe of expiration to be to throw off the fuliginous vapours of the blood along with the expelled air; and for inſpiration, he aſſerts that it conveys a nitro-aerial ferment to the blood, to which the animal ſpirits and all muſcular motion are owing.

But Dr. Thurſton rejects all theſe from being principal uſes of *reſpiration*, which he ſhews to be, to move or paſs the blood from the right to the left ventricle of the heart, and ſo to effect the circulation. See CIRCULATION.

Whence it is that perſons hanged, drowned, or ſtrangled, ſo ſuddenly die, *viz.* becauſe the circulation of the blood is ſtopped; and for the ſame reaſon it is that animals die ſo ſpeedily in the air-pump. See DROWNING, VACUUM, *&c.*

He inſtances an experiment made by Dr. Croon, before the royal ſociety, who, by ſtrangling a pullet, ſo as not the leaſt ſign of life appeared; yet by blowing into the lungs through the trachea, and ſo ſetting the lungs a playing, he brought the bird to life again—Another experiment of the ſame kind is that of Dr Hook, who after hanging a dog, cut away the ribs, diaphragm, and pericardium, as alſo the top of the wind-pipe, that he might tie it on to the noſe of a pair of bellows; and thus by blowing into the lungs he reſtored the dog to life; and then ceaſing to blow, the dog would ſoon fall into dying fits, but recover again by blowing: and thus alternately as long as he pleaſed.

This uſe of *reſpiration* Dr Drake not only confirms, but carries farther; making it the true cauſe of the diaſtole of the heart; which neither Borelli, Dr. Lower, nor Mr Cowper had well accounted for. See DIASTOLE.

The weight of the incumbent atmoſphere, he ſhews, is the true antagoniſt to all the muſcles, ſerving both for ordinary inſpiration, and the contraction of the heart—As in the elevation of the ribs, that author obſerves, the blood by the paſſage opened for it, is in a manner ſollicited into the lungs; ſo in the depreſſion thereof by the ſubſidence of the lungs, and the contraction of the blood veſſels conſequent thereon, the blood is forcibly driven through the pulmonary vein into the left ventricle of the heart. And this, together with the general compreſſion of the body by the weight of the atmoſphere, is that power which cauſes the blood to mount in the veins, after the force impreſſed on it by the heart is ſpent; and which forces the heart itſelf, from it's natural ſtate of contraction, to that of dilatation. See HEART.

The reciprocal dilatation and contraction of the ſuperficial dimenſions of the body conſequent on *reſpiration*, are ſo neceſſary to animal life, that there is no animal how imperfect ſoever as to want it.

Though moſt kinds of fiſhes and inſects want both lungs and moveable ribs, and conſequently have no dilatable thorax, yet that want is made up to them by an analogous mechaniſm. Fiſhes, for inſtance, have gills which do the office of lungs, receiving and expelling alternately the water, whereby the blood-veſſels ſuffer the ſame alteration of dimenſions as they do in the lungs of more perfect animals. See GILLS.

Inſects having no thorax, or ſeparate cavity for the heart and lungs or air-veſſels, have the latter diſtributed through the whole trunk of their bodies; by which they communicate with the external air through ſeveral ſpiracles or vent holes, to which are faſtened ſo many little tracheæ or wind-pipes, which ſend their branches to all the muſcles and viſcera, and ſeem to accompany the blood-veſſels all over the body, as they do in the lungs only, of the more perfect animals—By this diſpoſition, in every inſpiration, the whole body of theſe little animals is inflated, and in every expiration compreſſed; conſequently the blood-veſſels muſt ſuffer a viciſſitude of extention and compreſſion. See INSECT.

The only animal exempted from this neceſſity of breathing, is a fœtus: but this, while included, in the womb, ſeems to have little more than a vegetative life, and ought ſcarce to be reckoned among the number of animals: It is rather a graft on, or branch of the mother. See FOETUS.

The laws of RESPIRATION, are of the laſt importance to a right underſtanding of the animal œconomy; for which reaſon a computation of the force of the *reſpiring* organs, and of the ſtreſs and preſſure of the air upon the ſame, will not be unacceptable—It may therefore be obſerved, that by blowing into a bladder, a conſiderable weight will be raiſed by the mere force of the breath: for with a bladder that is oblong, nearly of a cylindrical figure, and tied at both ends, if a pipe be fixed at one end, and a weight at the other, and the pipe faſtened at ſuch a diſtance from the ground, as juſt allows the weight to reſt upon the ground; the bladder by an eaſy inſpiration will raiſe ſeven pound weight, and by the greateſt inſpiration of a pretty ſtrong man, twenty eight pound weight.

Now, the force by which the air enters this pipe, is that force by which it is driven out of the lungs; if therefore the force by which the air enters the pipe can be determined, we ſhall have the force by which the air is drove into the trachea—But the preſſure of air upon the bladder is equal to twice the weight it can raiſe; becauſe the upper part of the bladder being fixed, it reſiſts the force of the air, juſt as much as the weight at the other end. And again, ſince the air preſſes every way equally, the whole preſſure will be to that part of it which preſſes on the orifice of the pipe, as the whole ſurface of the bladder is to the orifice of the pipe; that is, as the ſurface of a cylinder, whoſe diameter, for inſtance, is four inches, and axis ſeven, is to the orifice of the pipe.

Thus, if the diameter of the pipe be 0. 28, and it's orifice 0. 616; the ſurface of the cylinder will be 88. Therefore, as 88 : 0. 616 : : 14. double the leaſt weight raiſed, to 0. 098. which is almoſt 2 ounces; and in raiſing the greateſt weight, it is near 7 ounces.

Theſe therefore are the forces by which the air is drove through the trachea, in an eaſy and ſtrong expiration—Now if we conſider the lungs as a bladder, and the larynx as a pipe; the preſſure upon the orifice of the trachea, when the air is drove out, will be to the preſſure upon the lungs, as the whole ſurface of the lungs to the orifice of the trachea.

Suppoſe, *e. gr.* the diameter of the larynx to be 5; the orifice of the larynx will be 0. 19. And ſuppoſe the two lobes of the lungs to be two bladders, or ſpheres, whoſe diameters are each ſix inches; their ſurfaces are each 113 inches, and the preſſure on the larynx will be to the preſſure upon the whole external ſurface, as 0. 19 to 226, which is as 1 to 1189; and therefore if the preſſure upon the larynx in an ordinary breathing be two ounces, the preſſure upon the whole external ſurface of the lungs will be 148 pounds; and the utmoſt force, when the preſſure upon the larynx is ſeven ounces, will be equal to 520 pound—But the lungs are not like an empty bladder, where the air preſſes only upon the ſurface; for they are full of veſicles, upon the ſurface of each of which the air preſſes as it would upon the ſurface of an empty bladder: and therefore to know the whole preſſure of the air, we muſt determine the internal ſurfaces of the lungs.

To do this, ſuppoſe that $\frac{1}{3}$ part of the lungs is taken up with the branches of the trachea, that another third part the blood-veſſels fill, and the remainder is veſicles, where we ſuppoſe the chief preſſure upon the blood-veſſels to be made: now, both lobes of the lungs contain 226 ſolid inches, of which one third, or 75 inches, are full of veſicles—Let the diameter of each veſicle be $\frac{1}{50}$ part of an inch, the ſurface of a veſicle will be .001256, and the ſolidity 0000043, by which ſum if we divide 75 (the ſpace filled by the veſicles) the quotient gives us 17441860 for the number of veſicles in both lobes of the lungs—This number multiplied by .001256, the ſurface of a veſicle gives the ſum of the ſurfaces of all the veſicles, to wit, 21906.976 inches. And therefore the preſſure upon the larynx will be to the preſſure upon the whole ſurface of the lungs, as 0.19 to 21906.976; and conſequently, when in an ordinary expiration the preſſure upon the larynx is two ounces, the preſſure on the whole internal ſurfaces of the lungs will be 14412 pound weight; and the utmoſt force of the air in breathing, when the preſſure upon the larynx is ſeven ounces, will be 50443 pound weight. Though theſe ſeem to be prodigious weights, yet it muſt ſtill be underſtood, that the preſſure upon each part of the ſurface of the lungs equal to the orifice of the larynx, is not greater than it is at the larynx; and that theſe vaſt weights ariſe from the vaſt extent of the ſurfaces of the veſicles upon which it was neceſſary that the blood ſhould be ſpread in the ſmalleſt capillary veſſels, that each globule of blood might, as it were, immediately receive the whole force and energy of the air, and by that be broke into ſmaller parts fit for ſecretion and circulation.

And hence we may learn the mechanical reaſon of the ſtructure of the lungs: for, ſince the whole blood of the body was to paſs through them in order to receive the effect of the air, and that this could not be unleſs the blood were diffuſed in ſmall capillary veſſels; it was neceſſary that the ſurfaces upon which they were to be ſpread, ſhould be proportioned to their number: which is admirably well provided for by the wonderful fabric of the lungs.

If the gravity of the air was always the ſame, and if the diameter of the trachea, and the time of every expiration were equal in all; this weight upon the lungs would be always the ſame. But ſince we find by the barometer, that there is three inches difference between the greateſt and the leaſt gravity of the air, which is a tenth part of it's greateſt gravity; there muſt be likewiſe the difference of a tenth part of it's preſſure upon the lungs at one time and another: for the momenta of all bodies, moved with the ſame velocity, are as their gravities. See Barometer.

This is a difference which ſuch as are aſthmatic muſt be very ſenſible of; eſpecially if we conſider that they likewiſe breathe thicker, that is, every expiration is performed in leſs time; if in half the time, and the ſame quantity of air drawn be in, then the weight of the air upon the lungs muſt be 57648 pounds, of which a tenth part is 5764 pounds: and conſequently aſthmatic people upon the greateſt riſe or fall of the barometer, feel a difference of the air, equal to above one third of its preſſure in ordinary breathing. See Aſthma, Weather, &c.

Again, if the trachea be ſmall, and its aperture narrow, the preſſure of the air increaſes in the ſame proportion as if the times of expiration were ſhorter; and therefore a ſhrill voice is always reckoned amongſt the prognoſtic ſigns of a conſumption, inaſmuch as that proceeds from the narrowneſs of the larynx or trachea; and conſequently increaſes the preſſure of the air upon the lungs, which upon every expiration beats the veſſels ſo thin, that at laſt they break, and a ſpitting of blood comes on a apace. See Phthiſis.

RESPITE,* Reſpectus, in law, &c. a delay, forbearance, or prolongation of time, granted any one for the payment of a debt, or the like.

* Menage derives the word *reſpite* from the Latin, *reſpectus*; as *deſpite* from *deſpectus*.—Du Cange will rather have it come from *reſpirare*, to breathe; *reſpite* being, in effect, a breathing-while, granted a debtor, &c.

Letters of **Reſpite**, or **Credit**, are inſtruments anciently granted by ſovereign princes to honeſt, but unfortunate debtors, to ſcreen them from their too rigorous creditors. See Letter.

Theſe ſtill obtain in France.—They were firſt introduced by pope Urban II. in favour of the Croiſes, *i. e.* of perſons who went to the holy war. See Croiſes.

S. Louis granted three years *reſpite* to all who made the voyage of the holy land with him.—In the cuſtomary of Normandy, *reſpite* is a judicial delay, or demur, given to procedures.

Reſpite *of homage*, is a forbearance of the homage due from the vaſſal or tenant holding by homage, or by knight-ſervice to his lord. See Homage, &c.

Antiently thoſe who held by theſe tenures, paid a ſmall ſum every fifth year into the Exchequer, to be *reſpited* doing their homage or ſervice.

By Stat. 12 Car. II. this *reſpite* of homage is taken away, as a charge ariſing from knight-ſervice; which is thereby likewiſe annulled. See Tenure, &c.

RESPONDEAT *ſuperior*, a law phraſe.—Where the ſheriffs are removeable, as in London, for inſufficiency; *reſpondeat ſuperior*, that is, the mayor and commonalty are to anſwer for them. See Sheriff, &c.

For the inſufficiency of a bailiff of a franchiſe, *reſpondeat ſuperior*, that is, the lord of the franchiſe is to anſwer.

RESPONDENT, Respondens, in the ſchools, a perſon who maintains a theſis in any art or ſcience. See Theſis.

He is thus called as being to *anſwer* all objections propoſed by the opponent or impugner, &c. See Opponent.

The *reſpondent*'s buſineſs is to ſee whether the oppoſition made by the contrary party be juſt and legitimate; or whether ſome of the laws and conditions of oppoſition be not broke, which is called *ignoratio elenchi*.—He is alſo to examine the moods and figures of the ſyllogiſms, to ſee whether the premiſes be juſt, &c. And through the whole to anſwer rather by diſtinguo's than by direct negation. See Syllogiſm, Mood, Figure, Diſtinction, &c.

Respondent,* in law, a perſon who undertakes to anſwer for another; or binds himſelf as ſecurity for the good behaviour of another. See Surety.

* The word is formed from the Latin, *reſpondere*, to anſwer; q. d. *pro alio ſpondere*, to promiſe for another.

The *reſpondent* is to anſwer for the damages done by the perſon for whom he *reſponds*.—There are four ordonnances of the kings of France, whereby the citizens are expreſly forbid to take ſervants without *reſpondents*, bound in writing.

RESPONSALIS, in law, he who appears for another in court at a day aſſigned. See Proctor.

Fleta makes this difference between *reſponſalis atturnatus*, and *eſſoniator*: that the *eſſoniator* comes only to alledge the cauſe of the parties abſence, be he demandant or tenant; whereas *reſponſalis* comes for the tenant, not only to excuſe his abſence, but to ſignify what trial he means to undergo, the combat or the country. See Attorney.

RESPONSARY *ſong*, an anthem in which the choriſters ſing by turns. See Anthem.

RESPONSE, Responsal, Responsatio, an anſwer, reply, or reparty. See Replication and Reparty.

The word is chiefly uſed in ſpeaking of the anſwers made to the prieſt, by the people, in the litany, the pſalms, and other parts of the office.

It has its uſe too in ſpeaking of the opinions or anſwers of the antient juriſconſulti; when conſulted on points of law. See Civil *law* and Juriſconſultus.

The fifty books of the *digeſt* are compoſed of *reſponſa prudentum*, the *reſponſes* of Papinian, Ulpian, Scævola, &c. collected by Juſtinian, who afterwards gave them the force of laws. See Digeſt.

The *reſponſes* of the emperors were more properly called *reſcripts*. See Reſcript.

RESPONSIONS, Responsiones, a term uſed in the military orders for certain penſions or charges which the knights, or the commanderies they held, paid to the order.

Such a knight-templer paid a *reſponſion* of fifty pounds *per annum* to his order, on account of ſuch a commandery. See Commandery and Conventual.—In *Rot. Parl.* 9 *Richard* II. it is written *reſponcies*.

RESSAULT,* in architecture, the effect of a body which either projects or falls back; *i. e.* ſtands either more out, or in than another; ſo as to be out of the line, or range therewith. See Return.

* The term is French; and but little uſed in Engliſh; though the want of a word of equal import, plead for its naturalization.

RESSORT, or Resort, a term purely French, yet frequently uſed by our late writers, to ſignify the juriſdiction or authority of a court.

The word in its popular meaning ſignifies *ſpring*, or the force of elaſticity.—Hence it is alſo uſed for a juriſdiction, and the extent or diſtrict thereof; as, when we ſay ſuch a thing belongs to his *reſſort*; a judge out of his *reſſort* has no authority. But it's chief uſe among us is in ſpeaking of a court or tribunal, where appeals are judged; or of a court or perſon who judges finally and ultimately, and whence there is no appeal. See Court, Appeal, &c.

The houſe of lords judge in the laſt *reſſort*, *en dernier reſſort*.—Preſidials judge in the laſt *reſſort* of all criminals proſecuted by the provoſts of the marſhals.

Ressort, or **Resort**, is alſo uſed in a writ of ayel or couſenage, in the ſame ſenſe, as *deſcent* in a writ of right. See Deſcent, Ayel, Right, &c.

RESSOURCE,* a term purely French, yet uſed by Engliſh writers, to denote a means or foundation of a man's recovering himſelf from his fall or ruin; or an after-game for the repairing his damages.

* Skinner derives the word from the French, *reſoudre*, to reſolve: a *reſſource* ſtrictly and literally, expreſſes a means which preſents itſelf a-freſh.

This merchant has credit and friends ſtill left; he has great *reſſources*.—His laſt *reſſource* was to throw himſelf into a convent.—The jargon of a diſtinction, is the ordinary *reſſource* of a divine at a pinch.

REST, *quies*, in phyſics, the continuance of a body in the ſame place: or its continual application or contiguity to the ſame parts of the ambient and contiguous bodies. See Space.

Reſt is either *abſolute* or *relative*; as place is. See Place.

Some define *reſt*, the ſtate of a thing without motion; and hence, again, *reſt* becomes either abſolute or relative, as motion is. See Motion.

Sir Iſaac Newton defines true or abſolute *reſt* to be the continuance of a body in the ſame part of abſolute and immoveable ſpace: and relative *reſt* to be the continuance of a body in the ſame part of relative ſpace.

Thus, in a ſhip under ſail, relative *reſt* is the continuance of a body in the ſame region of the ſhip, or the ſame part of its cavity.—True, or abſolute *reſt* is its continuance in the ſame part of univerſal ſpace, wherein the ſhip with its cavity and contents are all contained.

Hence, if the earth be really and abſolutely at *reſt*, the body relatively at *reſt* in the ſhip, will really and abſolutely move; and that with the velocity wherewith the veſſel moves.—But if the earth do likewiſe move, there will then ariſe a real and abſolute motion of the body at *reſt*, partly from the real motion of the earth in abſolute ſpace; and partly from the relative motion of the ſhip on the ſea.—Laſtly, if the body be likewiſe relatively moved in the ſhip, its real motion will ariſe partly from the real motion of the earth in immoveable ſpace, and partly from the relative motion of the ſhip on the ſea, and of the body in the ſhip.

Thus, if that part of the earth where the ſhip is, move eaſtward with a velocity of 10010 parts; and the veſſel be carried by the winds weſtward 10 parts; and at the ſame time a ſeaman aboard walk with a velocity of 1 part: the ſeaman will be moved really and abſolutely in immoveable ſpace eaſtwards, with 10001 parts of velocity; and relatively on the earth, with nine parts of velocity weſtwards. See Earth.

It is an axiom in philoſophy, that matter is indifferent as to *reſt*, or motion. See Matter.—Hence, Sir Iſaac Newton lays it down as a law of nature, that every body perſeveres in its ſtate either of *reſt* or uniform motion; except ſo far as it is diſturbed by external cauſes. See Nature.

The Carteſians will have firmneſs, hardneſs, or ſolidity of bodies to conſiſt in this, that their parts are at *reſt*, with regard to each other: and this *reſt* they eſtabliſh as the great nexus, or principle of cohæſion, whereby the parts are connected together. See Firmness, Hardness, *&c.*

Fluidity, they add, conſiſts in a perpetual motion of the parts, *&c.*—But the Newtonian philoſophy furniſhes us with much better ſolutions. See Solidity, Fluidity, and Cohesion.

Rest, *repoſe*, or *pauſe*, in poetry, is uſed for the cæſura, which in Alexandrine verſes, falls on the ſixth ſyllable; and in verſes of ten or eleven ſyllables, on the fourth. See Cæsura. This verſe is naught, there wants a *reſt* or pauſe in it.—The *reſt* ſhould never fall on a monoſyllable, whereon the voice may not dwell: It is called *reſt*, becauſe the ear, and the pronunciation have both a repoſe or reſpite. See Pause.

Rest, in muſic, is a pauſe or interval of time, during which there is an intermiſſion of the voice or ſound. See Pause and Time.

Reſts are ſometimes uſed in melody, that is in muſic of a ſingle part, to expreſs ſome ſimple paſſion, or even for variety ſake; but more frequently in harmony, or compoſitions of ſeveral parts, for the ſake of the pleaſure of hearing one part move on while another *reſts*; and this interchangeably. See Melody and Harmony.

Reſts are either for a whole bar, or more than a bar, or but for a part of a bar.—When the *reſt* is for a part, it is expreſſed by certain ſigns correſponding to the quantity of certain notes of time; as minim, crotchet, *&c.* and is accordingly called *minim-reſt*, *crotchet-reſt*, &c.

The characters or figures, whereof, ſee under Characters *of muſic*; where the notes and correſponding *reſts* are found together.

When any one of thoſe characters occurs either on a line or ſpace; that part is always ſilent for the time of a minim, or crotchet, *&c.*—Sometimes a *reſt* is for a crotchet and quaver together; or for other quantities of time, for which there is no particular note: In which caſe the ſigns of ſilence are not many *reſts*, but ſuch ſilence is expreſſed by placing together as multiplied; of different time, as make up the deſigned *reſt*. When the *reſt* is for a whole bar, the ſemibreve *reſt* is always uſed.—If the *reſt* be for two meaſures, it is marked by a line drawn a-croſs a whole ſpace.—For three meaſures it is drawn a-croſs a ſpace and a half; and for four meaſures a-croſs two ſpaces. But to prevent ambiguity, the number of bars is uſually writ over the ſign.

Some of the more antient writers in muſic, make theſe *reſts* of different value in different ſpecies of time.—*E. gr.* The character of a minim-*reſt*, in common time, ſay they, expreſſes the *reſt* of three crotchets in triple time; in that of the triples $\frac{6}{8}$, $\frac{6}{16}$, $\frac{12}{8}$, $\frac{12}{16}$, it always marks an half meaſure, how different ſoever theſe may be among themſelves.

They add that the *reſt* of a crotchet in common time is a *reſt* of three quavers in the triple $\frac{9}{8}$; and that the quaver *reſt* of common time is equal to three ſemi-quavers in the triple $\frac{9}{16}$. But this variety in the uſe of the ſame character, is now lay aſide.

RESTAUR, **Restor**, in antient cuſtoms, the remedy or recourſe which aſſurers have againſt each other, according to the date of their aſſurances; or againſt the maſters, if the average ariſe through their default, as through ill loading, want of caulking, or want of having the veſſel tight. See Assurance.

The word is alſo uſed for the remedy or recourſe a perſon has againſt his guarantee or other perſon, who is to indemnify him from any damage ſuſtained.—Hence *reſtaurant* and *reſtauration*.—In the lower Latin they alſo uſe the words, *reſtor* and *reſtour*.

RESTAURATION, **Restauratio**, **Restoration**, the act of re-eſtabliſhing, or ſettling a thing in its former good eſtate. See Restitution, Redintregation, *&c.*

Thus we ſay, the *reſtauration* of a minor to the poſſeſſion of his effects, alienated in the time of his minority. In the French laws is an antient formula, uſed for the *reſtoring* a perſon to his good name, after he has been wrongfully accuſed and condemned.

Sour and decayed beer and ale are *reſtored* various ways.—By a handful of wheat thrown into the veſſel, or by ſalt made of the aſhes of barly-ſtraw, put into the veſſel and ſtirred.

Glauber commends three or four handfuls of beech aſhes applied in the ſame manner.—Chalk ſcraped into it, renders it drinkable immediately. The ſame effect is produced by calcined oyſter-ſhells, burnt egg-ſhells, ſea-ſhells, or crab's eyes. See Beer, Ale, Brewing, *&c.*

In England we ſay, *the* Restauration, by way of eminence, for the return of king Charles II. in 1660; after the civil wars.

The 29th of May is an anniverſary feſtival held in commemoration of the *reſtoration*; the *reſtauration* of regal, and epiſcopal government.

Restauration, in architecture, the act of repairing all the parts of a building gone to decay, either through the courſe of time, or other injuries; in ſuch manner, as that it is not only re-eſtabliſhed in its firſt form, but conſiderably augmented. See Repair and Reparation.

It is evident from the plinths of the corinthian columns of the Pantheon, which are almoſt wholly under ground, that the pavement of this temple is only a *reſtauration* made in the time of Septimius Severus. *Daviler*.

The temple of concord, behind the capitol at Rome, having been burnt long after it was built, and having angular baſes different from the reſt; ſeems to have been *reſtored* from the ruins of ſeveral ancient buildings. *Id.*

Restauration, in ſculpture, is the repairing of a mutilated ſtatue, *&c.* See Repairing.

Moſt of the antique ſtatues have undergone a *reſtauration*; as the Farneſe Hercules, the Faunus in the Villa Borgheſe at Rome, the wreſtlers, in the gallery of the great duke of Florence; the Venus of Arles in the gallery at Verſailles.—But theſe *reſtaurations* have all been made by the ableſt ſculptors. *Daviler*.

RESTINCTION, **Restinctio**, in chymiſtry, the quenching of a metal or mineral in ſome liquor; in order either to correct, or to exalt it, by giving it ſome new quality, power *&c.* See Extinctio, *&c.*

RESTITUTION, **Restitutio**, in phyſics, the returning of elaſtic bodies forcibly bent, to their natural ſtate: by ſome called, the *motion of reſtitution*. See Elasticity.

Contraction being the proper and natural action of muſcular fibres, ſome authors aſcribe dilatation to a motion of *reſtitution*; but the expreſſion, as well as the idea, are very faulty. See Fibre, Muscular, *&c.* See alſo Heart, *&c.*

Restitution, in a moral and legal ſenſe, is the act of reſtoring a perſon to his right; or of returning ſomething unjuſtly taken or detained from him. See Restauration.

Reſtitution is reducible to commutative juſtice; and till it be made, the caſuiſts determine the party all the while guilty of theft. See Justice, Injury, *&c.*

The illegal incumbents of benefices are condemned to a *reſtitution* of the fruits of the benefices.—In the Romiſh church uſurers, *&c.* are obliged to a *reſtitution* of their ill-gotten goods, otherwiſe the prieſt has no authority to give them abſolution. See Usury.

Restitution *in integrum*, is uſed for what is otherwiſe called *reſciſſion*. See Rescission.

Religious obtain *reſtitution* againſt their vows, *i. e.* are freed from their obligation, when they proteſt againſt them within five years of their profeſſion. See Vow, *&c.*

In the hiſtory of Germany for the XVIIth century, the firſt day of January 1624, is called the *term of reſtitution*: becauſe by the peace of Munſter, then concluded, the Lutheran and Calviniſt princes were obliged to *reſtitute*, reſtore what they had taken from the Roman catholic churches in their territories, till that day.

Restitutions *of medals*, or **Restituted** *medals*, is a phraſe uſed by antiquaries, for ſuch medals as were ſtruck by the emperors, to renew or retrieve the memory of their predeceſſors. See Medal.

Hence it is that in ſeveral medals we find the letters REST.—Claudius was the firſt who begun this practice, by ſtriking a-freſh ſeveral medals of Auguſtus. Nero did the ſame; and Titus, after the example of his father, ſtruck *reſtitutions* of moſt of his predeceſſors.

Gallienus ſtruck a general *reſtitution* of all the preceding emperors in two medals, the one bearing an altar, the other an eagle, without the REST. — F. Joubert chuſes rather to call them *conſervations*, than *reſtitutions*; as being done quite a-new.

RESTITUTIONE *extracti ab eccleſia*, a writ anciently granted for the reſtoring a man to the church or ſanctuary from which he had been forced away. See Sanctuary.

Restitutione *temporalium*, a writ which lies where a man is elected and confirmed biſhop of a dioceſe; for the recovery of the temporalities or barony of the ſaid biſhoprick. See Bishop, Temporalities, *&c.*

It is directed from the king to the eſcheator, or rather ſheriff of the county.

RESTIVE, or **Resty**, a term applied to a horſe, *&c.* that ſtops, or runs back, inſtead of advancing forwards.

In the manage, a *reſtive* horſe is a rebellious, refractory, ill-broken horſe; which only goes where it will, and when it will.—The word is formed from the Latin, *reſtivus*, which ſignifies the ſame thing.

RESTOR. See the article Restaur.

RESTORATION. See the article Restauration.

RESTORATIVE, in medicine, a remedy proper for the reſtoring and retrieving of ſtrength and vigour. See Medicine.

Reſtoratives belong to the claſs of balſamics; and are otherwiſe called *analeptics*. See Balsamic, and Analeptic.

The medicines that come under this denomination are of an emollient, ſoftening nature, but nutritive withal; and are rather adminiſtred to repair the waſtes of the conſtitution, than to alter and rectify it's diſorders. See Nutrition.

Such are the leaves of white, and black maiden-hair, black hellebore; rocket, eruca; ſcabious; colts-foot; bohea-tea; chich-peas; hops; chocolate; piſtachio-nuts; balſam of Tolu; bdellium; benzoin; ſtorax; eryngo; iris; ſatyrion, *&c.* See Hellebore, Tea, Pistachio, Chocolate, Balsom, Bdellum, Storax, *&c.*

RESTRAINT, is when an action is hindered or ſtopped, contrary to volition, or the preference of the mind. See Liberty, Necessity, Will, Volition, Voluntary, *&c.*

RESTRICTION, the act of modifying, limiting, or reſtraining a thing to narrower bounds.

General laws always bear ſome *reſtriction.*—In contracts 'tis uſual to have *reſtrictive clauſes*, which bind the covenants down to certain bounds. See Clause, Condition, *&c.*

Mental **Resriction.** See Reservation.

Restriction, among logicians, is underſtood of the limiting a term, ſo as to make it ſignify leſs than it uſually does.

In which ſenſe the name Philoſopher is *reſtrained* to Ariſtotle; Great to Alexander; City to Rome, *&c.*

It is obſerved to be good arguing affirmatively from a non-reſtrained to a reſtrained term; but not contrarily: And negatively, from a reſtrained to a non-reſtrained term; but not contrarily.

RESTRICTIVE *propoſition.* See the article Proposition.

Restrictive *ſuture.* See the article Suture.

RESTRINGENT, in medicine. See Astrigent.

RESTY. See the article Restive.

RESULT, what is gathered from a conference, an inquiry, meditation, diſcourſe, or the like; or the concluſion and effect thereof.

The aſſembly was ſo tumultuous that there was no knowing the *reſult.*—The uſual *reſult* of diſputes, Mr *Bayle* obſerves, is that each perſon remains more attached to his own opinion.

RESUMMONS, **Resummonitio**, a ſecond ſummons, or calling a man to anſwer an action where the firſt ſummons is defeated, or ſuſpended by any accident; as the death of a party, *&c.* See Summons.

RESUMPTION, **Resumptio**, in a law ſenſe, ſignifies the taking again into the king's hands ſuch lands or tenements as before, upon falſe ſuggeſtion, or other error, he had delivered to the heir, or granted by letters patent to any man.

Resumption, in the ſchools, a ſummary repetition, or running over of an argument, or of the ſubſtance thereof, in order to refute it.

The reſpondent *reſumed* all the points of the objection, and anſwered them one by one. See Recapitulation, *&c.*

Resumption is alſo uſed by logicians for the reduction of ſome figurative or quaint propoſition, to a more intelligible and ſignificant one. See Reduction.

As, Peter is half-ſeas over; that is, he is half fuddled.—The meadows ſmile; that is, look pleaſant.

RESUMPTIVE, in pharmacy, an epithet given to a kind of unguent, uſed to recruit and reſtore arid languiſhing conſtitutions, and to diſpoſe the dry body to receive nouriſhment.—It is called in Latin, *unguentum reſumptivum.* See Restorative and Unguent.

RESURRECTION, **Resurrectio**, **Resuscitation**, the act of returning, to a new, or ſecond life, after having been deed. See Life and Death.

The great argument for the truth of chriſtianity, and that urged with the moſt force and conviction for the ſame; is drawn from the *reſurrection* of our Saviour.—The circumſtances thereof are ſuch as almoſt admit of a demonſtration; which has accordingly been attempted on the ſtrict principles of the geometricians. See Ditton *on the reſurrection.*

The chriſtians generally believe the *reſurrection* of the ſame identic body, the very ſame fleſh and bones at the day of judgment.—The two principal philoſophical objections againſt it are theſe.

1°. That the ſame piece of matter or ſubſtance may happen to be a part of two or more bodies—Thus a fiſh feeding on a man, and another man afterwards feeding on the fiſh; part of the body of the firſt man becomes firſt incorporated with the fiſh, and afterwards in the fiſh, with the laſt man. Again, inſtances have been known of one man's feeding immediately on another; and among the cannibals of the Weſt-indies the practice is frequent. See Anthropopagi.

Now, where the ſubſtance of one is thus converted into the ſubſtance of another, each cannot ariſe with his whole body; and to which ſhall the common part be allotted?

To this objection ſome anſwer, that as all matter is not fit or diſpoſed to be aſſimilated to the body, and incorporated with it: human fleſh may very probably be of this kind, and therefore what is thus eaten, may be again excreted and carried off—But Mr Leibnitz's anſwer ſeems the more ſolid—All that is eſſential to the body, he urges, is the original ſtamen, which exiſted in the ſemen of the father; nay, and on the footing of the modern theory of generation, which exiſted in the ſemen of the firſt man. This we may conceive as the moſt minute ſpeck or point imaginable, and therefore not to be ſeparated, or tore aſunder, and any part of it united with the ſtamen of any other man. All this bulk we ſee in the body, is only an acretion to this original ſtamen; an addition of foreign matter, of new juices to the primary, ſolid ſtamen. There is therefore no reciprocation of the proper matter of the human body. See Stamina, Solid, *&c.*

The ſecond objection is this—The human body, we know by the late diſcoveries in the animal œconomy, is continually changing: a man has not entirely the ſame body, to day as he had yeſterday; and it is even computed, that in leſs than ſeven years time, his whole body undergoes a change, and not a particle of the ſame body remains—Which of thoſe many bodies, then, which the ſame perſon has in the courſe of his life, is it that ſhall riſe? or does all the matter that has ever belonged to him, riſe again? or does only ſome particular ſyſtem thereof? the body, *e. gr.* he had at 20, at 30, or at 60 years old? if only this or that body ariſe, how ſhall it be rewarded or puniſhed for what was done by the other? with what juſtice does one perſon ſuffer, *&c.* for another?

To this it may be anſwered, on Mr Lock's principles, that perſonal identity, or the ſameneſs of a rational being, conſiſts in ſelf-conſciouſneſs; in the power of conſidering it ſelf the ſame thing in different times and places—By this every one is to himſelf what he calls *ſelf*; without conſidering whether that ſelf be continued in the ſame or divers ſubſtances. So far reaches the identity of that perſon. It is the ſame ſelf now it was then, and it was by the ſame ſelf which now reflects on an action, that action was performed.

Now, it is this perſonal identity is the object of rewards and puniſhments, which we have obſerved may exiſt in different ſucceſſions of matter; ſo that to render the rewards and puniſhments juſt and pertinent, nothing needs but that we riſe again with ſuch a body as that we retain the conſciouſneſs of our paſt actions. See Identity.

RESUSCITATION. See Resurrection and Revivication.

RETAIL, in commerce, *&c.* the buying of goods in the great, or by wholeſale, and ſelling them out again in ſmall parcels—*Qui rem integram ementes, per minutiores eam partes diſtrahebant.* See Commerce.

To **RETAIN**, ſpoken of mares, ſignifies to hold, *i. e.* to conceive after covering.

RETAINER, in law, a ſervant not menial or domeſtic, that is, not continually dwelling in the houſe of his lord or maſter, but only wearing his livery, and attending on ſpecial occaſions. See Servant.

This livery was anciently given by a great man, and frequently for the maintainance of quarrels; whence it was juſtly prohibited by ſeveral ſtatutes: as, under Richard II. on pain of impriſonment, and grievous forfeiture to the king. See LIVERY, YEOMAN, &c.

It was farther prohibited by other ſtatutes of the ſucceeding kings, whereby the delinquents were ſubjected to make ranſom at the king's pleaſure; and knights and eſquires hereof duly attainted, where to loſe their ſaid liveries, and forfeit their fees for ever.

Edward IV. added a ſpecial penalty of five pounds per month on every man that gave ſuch livery, and as much on every perſon ſo *retained*, either by writing, word, or oath—But moſt of theſe ſtatutes are repealed by a ſtatute 3 Car. I.

RETAINING-*fee*, is the firſt fee given in any cauſe to a ſerjeant or counſellor at law, whereby to make him ſure, that he ſhall not be on the contrary ſide. See FEE.

RETALIATION, RETALIATIO, the act of returning like for like. See TALIONIS *lex*.

RETARDATION, RETARDATIO, in phyſics, the act of *retarding*, that is, of delaying the motion or progreſs of a body, or of diminiſhing its velocity. See MOTION.

The *retardation* of moving bodies ariſes from two great cauſes: the *reſiſtence of the medium*, and the *force of gravity*.

The RETARDATION *from the reſiſtence* is frequently confounded with the reſiſtence itſelf; becauſe with reſpect to the ſame moving body, they are in the ſame proportion. See RESISTENCE.

With reſpect to different bodies, however, the ſame reſiſtence often generates different *retardations*—For if bodies of equal bulk, but different denſities, be moved through the ſame fluid with equal velocity, the fluid will act equally on each; ſo that they will have equal reſiſtences, but different *retardations*. And the *retardations* will be to each other as the velocities which might be generated by the ſame forces in the bodies propoſed: that is, they are inverſely as the quantities of matter in the bodies, or inverſely as the denſities.

Suppoſe, then, bodies of equal denſity, but of unequal bulk, to move equally faſt through the ſame fluid; the reſiſtences increaſe according to their ſuperficies, that is, as the ſquares of their diameters; but the quantities of matter are increaſed in proportion to the cubes of the diameters: the reſiſtences are the quantities of motion, the *retardations* are the celerities ariſing from them; and dividing the quantities of motion by the quantities of matter, you will have the celerities; therefore the *retardations* are directly as the ſquares of the diameters, and inverſely as the cubes of the diameters, that is, inverſely, as the diameters themſelves.

If the bodies be equal, move equally ſwift, and are of the ſame denſity, but moved through different fluids; their *retardations* are as the denſities of thoſe fluids. See FLUID.

When bodies equally denſe, and of bulk equal, are carried through the ſame fluid with different velocities, the *retardations* are as the ſquares of the velocities. See DENSITY, &c.

The RETARDATION *from gravity* is peculiar to bodies projected upwards—A body thrown upwards is *retarded* after the ſame manner as a falling body is accelerated; only in the one caſe the force of gravity conſpires with the motion acquired: and in the other acts contrary to it. See ACCELERATION.

As the force of gravity is uniform, the *retardation* from that cauſe will be equal in equal times. See GRAVITY.

Hence, as it is the ſame force which generates motion in the falling, and diminiſhes it in the riſing body, a body riſes till it has loſt all it's motion; which it does in the ſame time wherein a body falling would have acquired a velocity equal to that wherewith the body was thrown up. See PROJECTILE.

Thus alſo, a body thrown up will riſe to the ſame height from which falling it would acquire the velocity wherewith it is thrown up: therefore the heights which bodies thrown up with different velocities can riſe to, are to each other as the ſquares of the velocities. See PROJECTILE and DESCENT.

Hence the *retardations* of motions may be compared together: for they are firſt, as the ſquares of the velocities; ſecondly, as the denſities of the fluids, through which the bodies are moved; thirdly, inverſely, as the diameters of thoſe bodies; laſtly, inverſely, as the denſities of the bodies themſelves. The numbers in the ratio compounded of thoſe ratio's, expreſs the proportion of the *retardations*; multiplying the ſquare of the velocity by the denſity of the fluid, and dividing the product by the product of the diameter of the body, multiplied into it's denſity, and working thus for ſeveral motions; the quotients of the diviſions will have the ſame compound ratio to one another.

Laws of RETARDATION *of motion*—1°. If the motion of a body be uniformly *retarded*; that is, if it's celerity be diminiſhed equally in equal times, the ſpace it paſſes over is one half of that it would paſs over in the ſame time by an uniform motion.

2°. The ſpaces deſcribed in equal times by an uniformly *retarded* motion; decreaſe according to the uneven numbers; 9, 7, 5, 3, &c.—See further under ACCELERATION.

RETCHING, or REACHING, the effort or endeavour to vomit. See NAUSEA and VOMITING.

RETE *mirabile*, in anatomy, a ſmall plexus, or net-work of veſſels in the brain, ſurrounding the pituitary gland. See PLEXUS and BRAIN.

The *rete mirabile* is very conſpicuous in brutes, but either not exiſtent in man, or ſo very minute that it's exiſtence is fairly doubted.

Willis will have it to conſiſt of arteries, veins, and nerves; Vieuſſens of arteries only; and others, of arteries and ſmall veins. Vieuſſens aſſerts, with many other anatomiſts, that there is no *rete mirabile* in man, in the horſe, dog, &c. But it is found in the calf, ſheep, goat, &c.

It was obſerved and deſcribed by Galen; who upon finding it in ſome brutes, concluded it to be likewiſe in man: but all we ſee like it in man, is, that on the ſides of the pituitary gland, where it's place ſhould be, the carotid arteries make a double flexure, in form of ∽, before they penetrate the dura mater.

The uſe of the *rete mirabile*, Galen takes to be for concocting and elaborating the animal ſpirits; as that of the epididymides is for elaborating the ſeed. See SPIRIT and SEED. Dr Willis thinks, with more probability, it may ſerve to bridle the too rapid incurſions of the blood into the brain of thoſe creatures whoſe head hangs down much; to ſeparate ſome of the ſuperfluous ſerous parts of the blood, and ſend them to the ſalival glands as the blood enters the brain; and to obviate obſtructions which may happen in the arteries.

RETE *penny*, in antient records, a cuſtomary due of one penny for every perſon, to the pariſh-prieſt.

RETEINER or RETAINER. See RETAINER.

RETENTIO, RETINENTIA, in our law books, is ſometimes uſed to ſignify *retinue*. See RETINUE.

RETENTION, RETENTIO, a faculty of the human mind, whereby in order to a farther progreſs in knowledge, it keeps or *retains* thoſe ſimple ideas which it before received by ſenſation or reflection. See FACULTY, IDEA, &c.

This is done two ways—Firſt, by keeping the idea which is brought into the mind, for ſome time, actually in view; called *contemplation*. See CONTEMPLATION.

Secondly, by reviving thoſe ideas in our minds which have diſappeared, and have been, as it were, laid out of ſight: this is *memory*, which is, as it were, the repoſitory of our ideas. See MEMORY, RECOLLECTION, and REMINESCENCE.

Our ideas being nothing but actual perceptions in the mind, which ceaſe to be any thing, when there is no perception of them; this laying up of our ideas in the repoſitory of the memory, amounts to no more than this, that the mind has a power in many caſes to revive perceptions it once had: with this additional perception annexed to them, that it has had them before. See PERCEPTION.

It is by the aſſiſtance of this faculty, that we are ſaid to have all thoſe ideas in our underſtanding which we can bring in ſight, and make the objects of our thoughts, without the help of thoſe ſenſible qualities, which firſt imprinted them there. See UNDERSTANDING.

Attention and repetition help much to the fixing ideas in our memories; but thoſe which make the deepeſt and moſt laſting impreſſions, are ſuch as come accompanied with pleaſure and pain—Ideas but once taken in, and never again repeated, are ſoon loſt; as thoſe of colours, in ſuch as loſe their ſight when very young.

The memory in ſome men is tenacious, even to a miracle; but yet there ſeems to be a conſtant decay of all our ideas, even of thoſe which are ſtruck deepeſt; and in the minds the moſt *retentive*: ſo that if they be not ſometimes renewed, the print wears out, and at laſt there remains nothing to be ſeen. See TRACE.

Thoſe ideas which are often renewed by a frequent return of the objects or actions that produce them, fix themſelves beſt in the memory, and remain longeſt there: ſuch are the original qualities of bodies; *viz.* ſolidity, extenſion, figure, motion, &c. and thoſe that almoſt conſtantly affect us, as heat and cold; and thoſe that are the affections of all kinds of beings, as exiſtence, duration, number; which are ſeldom quite loſt, while the mind retains any ideas at all. See QUALITY, HABIT, &c.

RETENTION, is alſo uſed in medicine, &c. for the ſtate of contraction in the ſolids, or vaſcular parts of the body, which makes them hold faſt their proper contents. See SOLID, VESSEL, &c.

In this ſenſe *retention* ſtands oppoſed to *evacuation* and *excretion*. See EVACUATION and EXCRETION.

Retention and excretion make one of the ſix non-naturals. See NON-NATURAL.

RETENTION is alſo frequently conſidered as a diſorder; and defined the act of retaining the excrements, humours, &c. ſo as they cannot be voided out of the body. See EXCREMENT.

It is the *retention* of peccant humours which cauſes ſuch a diſeaſe—A *retention* of urine is very painful and dangerous. See URINE.

RETIARII*, in antiquity, a kind of gladiators, thus denominated from a net which they made uſe of againſt their antagoniſts, who were called *ſecutores*, and ſometimes *mirmillones*. See GLADIATOR and SECUTOR.

* The word is formed from the Latin, *rete*, *net*; or perhaps from *retejaculum*, for they called their net *jaculum*, and ſometimes in one word, *retejaculum*.

This net they carried under their buckler, and when opportunity ſerved, caſt it over the head of their antagoniſt, and in this condition killed him with a trident which they bore in the other hand.

Lipſius, and others obſerve that they fought in tunics, and were furniſhed with ſpunges to wipe off the ſweat, blood, &c. and to ſtop their wounds.

RETICENCY, RETICENTIA, a figure in rhetoric, whereby we make oblique mention of a thing, in pretending to paſs it over unmentioned. See FIGURE.

Thus: *To ſay nothing of the nobility of his anceſtors: I forbear to ſpeak of his courage, and paſs over the ſeverity of his morals.* See PRETERITION.

RETICULA, RETICULE, in aſtronomy, a contrivance for the exact meaſuring the quantity of eclipſes; introduced about fifty years ago by the royal academy of Paris. See ECLIPSE.

The *reticule* is a little frame, conſiſting of thirteen fine ſilken threads, equidiſtant from each other, and parallel; placed in the focus of object glaſſes of teleſcopes; that is, in the place where the image of the luminary is painted, in it's full extent—Of conſequence, therefore, the diameter of the ſun or moon is hereby ſeen divided into twelve equal parts or digits; ſo that to find the quantity of the eclipſe, there is nothing to do but to number the luminous and the dark parts. See DIGIT.

As a ſquare *reticle* is only proper for the diameter, not for the circumference of the luminary. It is ſometimes made circular, by drawing ſix concentric equi-diſtant circles, which repreſents the phaſes of the eclipſe perfectly.

But it is viſible that the *reticule*, whether ſquare or circular, ought to be perfectly equal to the diameter or circumference of the ſtar, ſuch as it appears in the focus of the glaſs; otherwiſe the diviſion cannot be juſt.

Now this is no eaſy matter to effect, by reaſon the apparent diameter of the ſun and moon differ in each eclipſe; nay that of the moon differs from itſelf in the progreſs of the ſame eclipſe.

Another imperfection in the *reticule* is, that it's bigneſs is determined by that of the image in the focus; and of conſequence will only fit one certain magnitude.

But M. de la Hire has found a remedy for all theſe inconveniences, and contrived that the ſame *reticule* ſhall ſerve for all teleſcopes, and all altitudes of the luminary in the ſame eclipſe—The principle whereon his invention ſtands, is, that two object-glaſſes applied againſt each other, having a common focus, and there forming an image of a certain magnitude; this image will increaſe in proportion as the diſtance between the two glaſſes is increaſed, as far as a certain limit.

If then a *reticule* be taken of ſuch a magnitude as juſt to comprehend the greateſt diameter the ſun or moon can ever have in the common focus of two object-glaſſes applied to each other; there needs nothing but to remove them from each other, as the ſtar comes to have a leſs diameter, to have the image ſtill exactly comprehended in the ſame *reticule*.

Another improvement is, that whereas the ſilken threads are ſubject to ſwerve from the paralleliſm, &c. by the different temperature of the air; a *reticule* may be made of a thin looking-glaſs, by drawing lines or circles thereon, with the fine point of a diamond; which ſhall be ſafe from any alteration of the air.

RETICULAR *body*, *corpus* RETICULARE, in anatomy, a body of veſſels lying immediately under the cuticle or ſcarfſkin. See CUTICLE, &c.

Theſe veſſels contain a mucous liquor, from the tincture whereof Malpighi imagines the colour of the ſkin to be derived; founding his conjecture on this, that the cutis as well as cuticle of blacks, is white; and that they differ in no other circumſtance from thoſe of Europeans, but in this particular. See NEGRO. See alſo CUTIS and PAPILLA.

RETICULAR *plexus*, *plexis* RETICULARIS, ſometimes denotes the choroides, which is thus called, becauſe it's fibres are interwoven like a net. See CHOROIDES.

RETICULUM, the *caul*, or *omentum*; a name ſometimes given this part from it's net-like ſtructure. See OMENTUM.

RETIFORMIS *lacis*, in anatomy, the ſame with rete mirabile. See RETE.

RETINA, in anatomy and optics, one of the tunics of the eye; called alſo *amphibleſtroides*, *retiformis*, and *reticularis tunica*, as being woven in manner of a net. See TUNIC and EYE.

The *retina* is the laſt or innermoſt of the coats of the eye, lying immediately under the choroides. See CHOROIDES. It is formed of an expanſion of the medullary part of the optic nerve; whence it is found very thin, ſoft, white, &c. reſembling the ſubſtance of the brain, with the tranſparency of the horn of a lantern. See OPTIC *nerve*—When ſeparated from the choroides, it runs into a mucous maſs, or lump.

The *retina* is uſually ſuppoſed to be the great organ of viſion, which is effected by means of the rays of light reflected from each point of objects, refracted in their paſſage through the aqueous, vitreous, and cryſtallin humours, and thus thrown on the *retina*; where they paint the image of the object; and where they make an impreſſion, which is continued thence, by the fine capillaries of the optic nerves, to the ſenſory. See VISION.

Indeed, whether the *retina* or the choroides be the principal organ of viſion, and that whereon the images of objects are repreſented; has been much controverted between ſeveral members of the royal academy, particularly Meſſ. Mariotte, Pecquet, Perrault, Mery, and de la Hire—Mariotte firſt ſtood up for the choroides, and was ſeconded by Mery: the reſt aſſerted the cauſe of the *retina*.

The *retina* was always judged to have all the characters of the principal organ—It is ſituate in the focus of the refraction of the humours of the eye; and of conſequence receives the vertices of the cones of rays, proceeding from the ſeveral points of objects. It is very thin, and conſequently very ſenſible. It has it's origin from the optic nerve; and is itſelf wholly nervous, and it is the common opinion that the nerves are the vehicles of all ſenſations. Laſtly, it communicates with the ſubſtance of the brain, where all ſenſations terminate. See BRAIN, SENSATION, &c.

As to the choroides, it's uſe was ſuppoſed to be to ſtop the rays, which the extreme tenuity of the *retina* ſhould let paſs; and to do the ſame office to the *retina* which the quickſilver does to a looking-glaſs; eſpecially in animals wherein it is black. See CHOROIDES.

But from an experiment of a cat plunged into water, M. Mery conceived a different opinion—He obſerved the *retina* to diſappear abſolutely on that occaſion, as well as all the other humours of the eye; while the choroides ſtill appeared diſtinctly, and even with all the lively colours it has in that animal—Hence he concluded, that the *retina* was as tranſparent as the humours, but the choroides opake: conſequently the *retina* was not a proper inſtrument to terminate and ſtop the cones of rays, or to receive the images of objects: but that the light muſt paſs through it, and could only be ſtopped on the choroides; which therefore would become the principal organ of viſion.

The black colour of the choroides in man is extremely favourable to this ſentiment: the principal organ ſhould ſeem to require that the action of the light ſhould terminate on it, as it arrives; which it is certain it here does in the black that abſorbs all the rays, and reflects none; and it ſhould alſo ſeem neceſſary that the action of the light ſhould be ſtronger on the organ of ſight than any where elſe: now, it is certain that the light being received and abſorbed in a black body, muſt excite a greater vibration there than any where elſe; and hence it is that black bodies are kindled by a burning glaſs much ſooner than white ones. See BLACKNESS, &c.

The ſituation of the choroides behind the *retina* is another circumſtance on it's ſide; M. Mery having obſerved the ſame poſition of the principal organ behind a mediate organ in the other ſenſes: which makes a happy analogy—Thus the cuticle extended over the skin, is the mean organ of feeling; but the cutis underneath is the principal organ. The like is obſerved in the ear, noſe, &c.

The *retina*, therefore, ſhould ſeem, a kind of mediate or ſecondary organ, ſerving to break the too ſtrong impreſſion of the light on the choroides, or to preſerve it; which is the uſe aſcribed to the cuticle—Add to all this, that the *retina* is inſenſible, as having it's origin from the medullary ſubſtance of the brain, which is ſo too; and the choroides, on the contrary, very ſenſible, as ariſing from the pia mater, which is certainly ſenſible in a great degree. See NERVE, MEDULLA, MENINX.

This laſt argument being doubted of, M. Mery was engaged to prove it; which he did before the royal academy, where he ſhew'd that the optic nerve is not compoſed like the other nerves, of fibres; that it is only a train of the medulla incloſed in a canal, out of which it is eaſily ſeparable. See OPTIC *nerve*.

This ſtructure of the optic nerve, hitherto unknown, ſhews that the *retina* can be no membrane; it is only a dilatation of the medulla, incloſed under two membranes, and a pith or medulla ſeems no proper ſubſtance to be the ſeat of ſenſation—It can ſcarce ſerve for any thing but to filtrate the ſpirits neceſſary for the action of viſion—The vibration whereby the ſenſation itſelf is effected, muſt be made on a part more ſolid, more firm, and more ſuſceptible of a briſk impreſſion.

RETINUE, Retinentia, the attendants or followers of a prince, or perſon of quality; chiefly in a journey.

In law, thoſe perſons are properly ſaid to be of a nobleman's *retinue* who belong to him in quality either of ſervants or retainers. See Retainer, and Livery.

RETIRADE, in fortification, a kind of retrenchment made in the body of a baſtion, or other work, which is to be diſputed inch by inch, after the firſt defences are diſmantled. See Retrenchment, &c.

It uſually conſiſts of two faces, which make a re-entering angle—When a breach is made in a baſtion, the enemy may alſo make a *retirade*, or a new fortification behind it. See Bastion.

RETIRED *flank*, in fortification. See Flank.

RETORNO *falſo brevium*. See the article Falso.

RETORT, Retorta, in chymiſtry, a kind of crooked matraſs, or a round, bellied veſſel, either of earth or glaſs, with a ſlender crooked beak, or noſe, to which the recipient is to be faſtened. See Matrass.

When the *retort* is of glaſs, it is uſually lined with a lute of paſte an inch thick; to enable it to bear the fire the better. See Lute and Heat.

The *retort* ſerves to draw ſpirits and oils from woods, gums, minerals, earths, and other matters which require a ſtrong fire. See Spirit, &c.

The *retort* is a kind of compendium or improvement on the cucurbit and bolt-head; anſwering all the purpoſes of both, without the aſſiſtance of a capital or head, which the other frequently require. See Cucurbit, &c.

RETRACTATION, Retractatio, the act of unſaying what a perſon had ſaid, or wrote. See Palinody.

Galileo made a public *retractation* of his doctrine of the world, *de mundo*, after it's being cenſured and condemned by the pope. Among St. Auguſtin's works is a book of *retractations*; where, however, the word is to be underſtood in a new ſenſe; not as if he recanted or unſaid any thing he had taught, but only treated of the ſame matter, or handled the ſame ſubject a ſecond time—This ſenſe the word will very well bear; being a compound of *re*, again, and *tracto*, I handle, treat of.

RETRACTION,* Retractio, in anatomy, the contraction or ſhortening of a part. See Contraction.

* The word is formed from the Latin, *retrahere*, to draw back.

A *retraction* of the nerves takes away the uſe of the limbs. See Nerve.

RETRACTS, among horſemen, pricks in a horſe's feet, ariſing from the fault of the farrier in driving nails that are weak, ill-pointed, or driven amiſs. See Shoe.

Theſe, unleſs timely prevented, feſter, and prove very dangerous.—When the farrier, in ſhoeing, perceives the horſe to ſhrink at every blow on the nail; it is a ſign of a *retract*, and the nail is to be pulled out again, which is done without any harm.

When the horſe halts immediately after he is ſhod, it is concluded ſome of the nails preſs the veins, or touch him in the quick.

To find where the grievance lies, they knock the nails round with a hammer, till the horſe's ſhrinking upon hitting a particular nail, diſcovers the place.

Some farriers give this as a rule, that throwing water on the hoof, the place where he is hurt will be dry ſooner than any of the reſt. The places where the horſes are moſt uſually pricked, are the heel in the fore-foot, and the toe in the hind-foot. See Hoof.

RETRACTOR *alæ naſi*, in anatomy, a pair of muſcles, called alſo *elevator labii ſuperioris*. See Elevator.

RETRAHENS *auriculam*, in anatomy, a pair of muſcles, of the external ear; conſiſting of a parcel of fleſhy fibres, which in ſome bodies are divided into three diſtinct muſcles, ariſing from the os temporale, and fixed to the hind part of the concha. See Auricle.

But theſe muſcles are ſo ſmall in men, that the auricle is ſeldom moveable at all. See Ear.

RETRAXIT, in law, is where the plaintiff comes into court in perſon, alone, or with the defendant; and declares he will proceed no further in his action.

A *retraxit* is peremptory, and a perpetual bar; and may be pleaded as ſuch to the plaintiff in the ſame action for ever.

RETREAT, in war, the retiring or moving back again of an army, or part thereof.

We ſay, to ſound a *retreat*, ſecure a *retreat*, &c. What they call a *retreat* in the armies, is really a flight; only a flight made by deſign, and with conduct.

The ſkill and ability of the general, is known by his *retreats*, more than his engagements.—The *retreat* of the ten thouſand Greeks under the command of Xenophon, has been admired in all antiquity.

Retreat, or Relay, in maſonry, denotes a little receſs or diminution of the thickneſs of a wall, rampart, &c. in proportion as it is raiſed. See Wall, &c.

The *retreat* is properly the diminution of a wall, withoutſide; or the contraction of its upper courſes more than the foundation.—Where the foundation is very large, they uſually make two or three *retreats*—Parapets are always built with *retreats*.

RETRENCHMENT,* literally ſignifies ſomething cut off, or taken from a thing: In which ſenſe it coincides with ſubſtraction, diminution. &c.

* The word is French, *retrenchement*, formed of *re* and *trancher*, to cut.

By a gradual *retrenchment* of the ordinary quantity of food, a man may bring himſelf to a great degree of abſtinence. See Abstinence, Fasting, Food, &c.

The reformation of the calendar in 1582, occaſioned a *retrenchment* of ten days which had crept into the account more than there ſhould have been. See Calendar.

The frugality ſo much boaſted of among the ancient Romans, St Evremont obſerves, did not ſo much conſiſt in a voluntary abſtinence or *retrenchment* of things ſuperfluous, as a coarſe and ſordid way of employing or uſing them.

Retrenchment, in architecture, carpentry, &c. is uſed not only for what is cut off from a piece when too large, in order to a better proportioning it, or ſome other convenience; but alſo for the projectures taken out of ſtreets, public ways, &c. to render them more even, and in a line.

Retrenchment, in war, denotes any kind of work caſt up to ſtrengthen, or defend a poſt againſt the enemy. See Fortification, Defence, Work, &c.

Such are ditches, with parapets, gabions, faſcines, &c. for a covering, &c. See Ditch, &c.

The enemy came with deſign to oblige them to raiſe the ſiege, but could not force the *retrenchments*.

Retrenchment is more particularly uſed for a ſimple retirade made on a horn-work, or baſtion; when it is intended to diſpute the ground inch by inch. See Retirade.

It is uſually a re-entering angle, whoſe faces flank each other; and fortified with ditches, parapets, gabions, &c.

RETRIBUTION, Retributio, a handſome preſent, gratuity, or acknowledgment, given in lieu of a formal ſalary or hire, to perſons employed in affairs that do not ſo immediately fall under eſtimation, nor within the ordinary commerce of money. See Hono.

Thoſe who miniſtred at the altar anciently lived of *retributions*, which they received for the ſervices they did the church. But theſe *retributions* were afterwards judged proper to be fixed to preciſe ſums. See Tithe.

RETRIEVE, Retrouver, to recover, get again, or repair a thing loſt or damaged. See Recovery, Reparation, &c.

To *retrieve* in falconry, ſignifies to ſpring or find partridges again, which have been once ſprung before. See Hawking.

RETROACTIVE,* in law, that which has an influence or effect on time paſt.

* The word is compounded of the Latin, *retro*, backwards, and *ago*, I act.

New laws and ſtatutes, we ſay, have no *retroactive* effect; that is, they have no force or effect as to what is already paſſed; nor can be alledged as rules for any thing done before their promulgation.—Their authority is wholly as to what is to come.

Indeed we have ſome inſtances of laws that have a retroſpect, or *retroaction*, i. e. are made with expreſs deſign to extend to things already paſſed—Theſe we uſually call laws *ex poſt facto*. See Law, &c.

RETROCESSION, Retroceſſio, the act of going backwards; more uſually expreſſed by *retrogreſſion*, or *retrogradation*. See Retrogradation, &c.

Retroceſſion of the equinox. See Preceſſion.

Retroceſſion of curves, &c. See Retrogradation, *contrary* Flexure, &c.

RETROGRADATION, or Retrogreſſion, the act or effect of a thing moving backwards. See Retrograde.

Retrogradation, in aſtronomy, is an apparent motion of the planets, wherein they ſeem to go backwards in the ecliptic, and to move contrary to the order, or ſucceſſion of the ſigns. See Planet, Ecliptic, &c.

When a planet moves in *conſequentia*, i. e. towards the following ſigns, or according to the order of the ſigns, as from Aries to Taurus, from Taurus to Gemini, &c. that is, from weſt to eaſt, it is ſaid to be direct. See Direct.

When it appears for ſome days in the ſame point of the heavens, it is ſaid to be *ſtationary*. See Stationary.

And when it goes in *antecedentia*, i. e. towards the antecedent ſigns, or contrary to the order of the ſigns, *viz.* from eaſt to weſt, it is ſaid to be *retrogade*. See Antecedentia, Sign, &c.

The ſun and moon always appear direct. — Saturn, Jupiter, Mars, Venus, and Mercury, ſometimes direct, ſometimes ſtationary, and ſometimes *retrograde*. See Saturn, Jupiter, Venus, *&c.*

The ſuperior planets are *retrograde* about their oppoſition with the ſun; the inferior ones about their conjunction. See Opposition and Conjunction.

The intervals of time between two *retrogradations* of the ſeveral planets, are unequal. — In Saturn it is a year and 13 days; in Jupiter a year and 43 days; in Mars two years 50 days; in Venus one year 220 days; in Mercury 115 days. Again, Saturn continues *retrogade* 140 days, Jupiter 120, Mars 73, Venus 42, Mercury 22: yet are not the ſeveral *retrogradations* of the ſame planet conſtantly equal.

Theſe changes of the courſes and motions of the planets are not real, but apparent: when viewed from the centre of the ſyſtem, *i. e.* from the ſun, they appear always uniform and regular. — The inequalities ariſe from the motion and poſition of the earth whence they are viewed, and are thus accounted for.

Suppoſe PNO (*Tab. Aſtronomy*, *Fig.* 58.) a portion of the zodiac, ABCD the earth's orbit, and EMGHZ the orbit of a ſuperior planet, *e. gr.* Saturn. And ſuppoſe the earth in A, and Saturn in E; in which caſe he will appear in the zodiac at the point O. — If now Saturn remained without any motion, when the earth arrives at B, he would be ſeen in the point of the zodiac L, and would appear to have deſcribed the arch OL, and to have moved according to the order of the ſigns from weſt to eaſt. But becauſe while the earth is paſſing from A to B, Saturn likewiſe moves from E to M, where he is ſeen in conjunction with the ſun, he will appear to have deſcribed the arch OQ greater than that OL. In this ſtate, the planet is direct, and its motion, from weſt to eaſt, or according to the order of the ſigns. And its motion, now that it is in conjunction with the ſun and moſt remote from us, is quicker than at any other time. See Direction.

The earth arriving at C, while Saturn deſcribes the arch MG, he will be obſerved in the zodiac at R. But the earth being advanced to K, and Saturn to H, ſo as the line KH joining the earth and Saturn, be for ſome time parallel to itſelf, or nearly ſo; Saturn will be ſeen all that time in the ſame point of the zodiac at P, and with the ſame fixed ſtars; and is therefore ſtationary. See Station.

But the earth being come to D, and Saturn arrived in oppoſition to the ſun in Z, he will appear in the zodiac in V, and will ſeem to have been *retrograde*, or to have gone backwards through the arch PV—Thus the ſuperior planets, on optical conſiderations, are always *retrograde*, when in oppoſition to the ſun. See Sun, Opposition, *&c.*

The arch which the planet deſcribes while thus *retrograde*, is called the *arch of retrogradation*. See Arch.

The arches of *retrogradation* of the ſeveral planets are not equal.—That of Saturn is greater than that of Jupiter; that of Jupiter than that of Mars, *&c.*

Retrogradation *of the nodes*, is a motion of the line of the nodes, whereby it continually ſhifts its ſituation from eaſt to weſt, contrary to the order of the ſigns; compleating its *retrograde* circulation in the compaſs of about 19 years: after which time either of the nodes having receded from any point of the ecliptic returns to the ſame again. See Node.

Retrogradation *of the ſun*.—When the ſun is in the torrid zone, and has his declination, AM, (*Tab. Aſtronomy*, *fig.* 59.) greater than the latitude of the place AZ, but either northern or ſouthern as that is; the ſun will appear to go backwards, or to be *retrograde* both before and after noon. See Sun and Zone.

For, draw the vertical circle ZGN to be a tangent to the ſun's diurnal circle in G, and another ZON, through the ſun riſing in O. — It is evident all the intermediate vertical circles cut the ſun's diurnal circle twice: firſt, in the arch GO, and the ſecond time in the arch GI.—Wherefore, as the ſun aſcends through the arch GO, it continually arrives at further and further verticals. But as it continues its aſcent through the arch GI, it returns to its former verticals; and therefore is ſeen *retrograde* for ſome time before noon.—The ſame, it may be ſhewn after the ſame manner, it does for ſome time after noon.

Hence, as the ſhadow always tends the oppoſite way to that of the ſun, the ſhadow will be *retrograde* twice every day in all places of the torrid zone, where the ſun's declination exceeds the latitude. See Shadow.

Retrogradation, or Retrogression, in the higher geometry, is the ſame with what we otherwiſe call *contrary flexion*. See *Contrary* Flexion.

The *retrogreſſion* of curves may be thus conceived. — Suppoſe a curve line AFK, (*Tab. Geometry*, *fig.* 82.) to be partly concave, partly convex, in reſpect of the right line AB, or in reſpect of the determinate point B; the point F which ſeparates the concave part of the curve from the convex, or which makes the end of one, and the beginning of the other, is called the *point of contrary flexion*, when the curve is continued from F towards the ſame ſide as before—When the curve is continued backwards towards A, then is F the point of *retrogreſſion*. See Point and Curve.

RETROGRADE,* Retrogradus, ſomething that goes backwards, or in a direction contrary to the natural one. — Such is the motion of the lobſter, the crab, *&c.*

* The word is formed from the Latin, *retro*, backwards, and *gradior*, I go.

If the eye and the object move both the ſame way, but the eye much faſter than the object; the object will appear to be *retrograde*, i. e. to go back, or to advance the contrary way from what it really does. See Visible.

Hence, the planets in ſome parts of their orbits appear to be *retrograde*. See Planet and Retrogradation.

Retrograde *order*, in matters of numeration, is when in lieu of accounting 1, 2, 3, 4, we count 4, 3, 2, 1. See Progression, Series, Number, *&c.*

Retrograde *verſes* are ſuch as give the ſame words, whether read backwards or forwards; called alſo *reciprocal verſes*, and *recurrents*.

Such is — *Signa te ſigna temere me tangis et angis.*

RETROGRESSION, or Retrocession, the ſame with *retrogradation*. See Retrogradation.

RETROMINGENTS,* in natural hiſtory, a claſs or diviſion of animals, whoſe characteriſtic is, that they ſtale, or piſs backwards; both males and females. — Such are lions, cats, *&c.* See Animal.

* The word is compounded of the Latin, *retro*, backwards, and *mingo*, I make water.

RETROPANNAGIUM,* Retropannage, in our ancient law-books, *afterpannage*; or what is left when the beaſts have done, or eat the beſt. See Pannage.

* *Et debent habere* retropannagium *a feſto ſancti Martini uſquod feſtum pur. beatæ Mariæ. Petit. in parl. temp. Edw.* III.

RETROSPECT, a look or view backwards. See Retroactive.

RETURN, Returna or Retorna in law, hath divers acceptations. — A

Return *of writs* by ſheriffs and bailiffs, is a certificate made to the court by the ſheriff, bailiff, *&c.* of what is done with regard to the execution of the writ directed to them. See Writ.

Such alſo is the *return of a commiſſion*, which is a certificate, or anſwer of what is done by the commiſſioners, to whom ſuch commiſſions, precepts, mandates, or the like, are directed. See Commission.

Return is alſo uſed in caſe of a replevin. If a man diſtrain cattle for rent, *&c.* and afterwards juſtify or avow his act, ſo as it is found lawful; the cattle before delivered unto him that was diſtrained, upon ſecurity given to proſecute the action, ſhall now be *returned* to him that diſtrained them. See Distress, Replevy, and Returno.

Returns, Return-*days*, or *days in bank*, are certain days in each term, peculiarly ſet a-part for the ſeveral kinds of proceedings, in any cauſe to be determined. See Term, Day, *&c.*

Hillary term has four ſuch *returns*—viz. *octabis hillarii*, eight days after hillary day; *quindena hillarii*, fifteen days; *craſtina purificationis*, the day after the purification; and *octabis purificationis*, eight days after, incluſive.

Eaſter term has five *returns*, viz. *quindena paſchæ*, fifteen days after eaſter; *tres paſchæ*, three weeks after; *menſe paſchæ*, the day-month after eaſter; *quinque paſchæ*, the day five weeks from eaſter; and *craſtino aſcenſionis domini*, the day after aſcenſion-day.

Trinity term has four *returns*; viz. *craſtino trinitatis*, the day after trinity; *octabis trinitatis*, eight days after, incluſive; *quindena trinitatis*, fifteen days after; and *tres trinitatis*, three weeks after.

Michaelmas term has ſix *returns*; viz. *tres michaelis*, three weeks after michaelmas; *menſe michaelis*, the day month after michaelmas; *craſtino animarum*, the day after all-ſouls; *craſtino martini*, the day after martinmas day, *octabis martini*, eight days after, incluſive; and *quindena martini*, fifteen days. See Term.

Return, in building, denotes a ſide, or part that falls away from the foreſide of any ſtraight work. See Ressaut.

Returns, of a trench, in fortification, are the turnings and windings which form the lines of a trench. See Trench.

RETURNO *habendo*, or Returnum *averiorum*, a writ which lies for him who has avowed a diſtreſs made of cattle, and proved his diſtreſs to be lawfully taken; for the *return* of the cattle diſtrained unto him, which before were replevied by the party diſtrained, upon ſurety given to purſue the action. See Distress, Return, *&c.*

The ſame writ is granted when the plaint or action is removed by recordare, or accedas ad curiam, into the court of common-pleas; and he whoſe cattle were diſtrained, makes default, and does not proſecute his action.

RETURNUM *irreplegiabile*, a judicial writ, ſent out of the common-pleas to the ſheriff, for the final reſtitution or return of cattle to the owner, unjuſtly diſtrained damage-feſant, and ſo found by the jury before juſtices of aſſize in the county, or otherwiſe through default or proſecution. See RETURN, DISTRESS, REPLEVY, *&c.*

REVE,* REEVE, or GREVE, in ancient cuſtoms, the bailiff of a franchiſe, or manor; thus called, eſpecially in the weſtern parts. See GREVE and BAILIFF.

* M. du Cange derives the word from the Latin, *roga* of *rogare*, to ask; as being a tribute anciently granted princes at their requeſt, as a free-gift.

Hence, *ſhire-reve*, ſheriff, *port-greve*, *church-reve*, &c. See SHERIFF, PORT-GREVE, *&c.*

REVE, REVA, is alſo uſed in ancient cuſtoms for a duty or impoſition on merchandizes imported. See DUTY and CUSTOM.

REVEALED *religion*. See RELIGION and REVELATION.

REVEALED *theology*. See the article THEOLOGY.

REVEILLE*, a beat of drum in the morning, intended to give notice that it is day-break; and that the ſoldiers are to riſe, and the centries forbear challenging. See DRUM.

* The word is French, formed of the verb *reveiller*, to awake.

REVELATION*, REVELATIO, the act of revealing, or making a thing public which before was a ſecret, or unknown.

* The word is formed from the Latin, *revelo*, of *re* and *velum*, *q. d.* to unvail.

The *revelation* of a confeſſion made by the confeſſor, is adjudged in the Romiſh church, to deſerve the moſt exemplary puniſhment. See CONFESSION.

REVELATION is uſed, by way of eminence, for the diſcoveries made by God to his prophets, *&c.* and by them to the world. See PROPHECY.

The Romaniſts have two huge volumes of the *revelations* of St. Bridget. See LEGEND, VISION, *&c.*

REVELATION, is more particularly uſed for the diſcovery which God has made to the world, by the mouths of his prophets, of certain points of faith and duty, which they could not learn from natural reaſon. See NATURE, REASON, FAITH, *&c.*

Religion is divided into natural religion, and *revelation* or *revealed* religion. See RELIGION.

The Chriſtian *revelation* is that made by Chriſt, and his apoſtles, in the new teſtament—The Jewiſh *revelation* is that made by Moſes and the prophets, in the old teſtament. See BIBLE, PROPHET, *&c.*

A late author obſerves, ſomewhat invidiouſly, that it is the common method of all new *revelations*, to be built on precedent ones.—Thus, the miſſion of Moſes to the Iſraelites, ſuppoſes a former *revelation* to Abraham, *&c.* The miſſion of Chriſt ſuppoſes that of Moſes; and the pretended miſſion of Mahomet, ſuppoſes the miſſion of Chriſt. The miſſion of Zoroaſter to the Perſians, ſuppoſes the religion of the Magi, *&c.*

The general foundation of all *revelation* is this, that God is pleaſed man ſhould know ſomething relating to himſelf, his own nature, diſpenſation, *&c.* which the natural faculties he was pleaſed to create him withal, could not attain to; and that he requires ſome duty or ſervice at our hands, more than what neceſſarily follows from the relation we are under to him as our creator, preſerver, *&c.*

Particular or occaſional *revelations* have their particular genius's, characteriſtics, and deſigns—That made by Moſes and the prophets, chiefly related to the nation of the Jews, conſidered as the deſcendants of Abraham: its deſign ſeems to have been to reſcue that people from their ſlavery; to ſettle them in a new plantation; to give them a ſet of laws; to new form their manners; to ſupport them under difficulties and dangers of their enemies, from an opinion of their being under the immediate direction and appointment of God; to keep them from intermixing again with their neighbours, from an opinion of their being a choſen people, and of a Meſſiah to be born among them; and to lay a foundation for a reſtoration, in caſe of their being oppreſſed, from the opinion of a deliverer—To ſome or other of theſe ends do all the old teſtament propheſies ſeem to tend.

The Chriſtian *revelation* is founded on a part of the Jewiſh. The Meſſiah promiſed in the one, is *revealed* in the other. All the reſt of the Jewiſh *revelation*, which related peculiarly to the Jewiſh people, is here ſet aſide; and only that part of it which was to affect the world in general, we mean that relating to the coming of the Meſſiah, is here built upon. See MESSIAH.

Indeed it muſt be owned the Jews ever looked on this as peculiar to themſelves, as any of the reſt: the Meſſiah was promiſed to them; he was to be their deliverer, their reſtorer, *&c.*—But upon the taking place of this new *revelation*, a new ſcene was opened—This part of the old *revelation*, it was ſhewn, was all typical, or allegorical; and the propheſies relating hereto, not to be underſtood in their primary or literal ſenſe. The Meſſiah was not to be the reſtorer of the Jewiſh ſovereignty and liberties, which were now fallen into the hands of the Romans, but to reſtore and re-eſtabliſh the world, who had loſt their original righteouſneſs, and were become ſlaves of ſin; to preach repentance and remiſſion; and at laſt to ſuffer death, that all who believed in him, might not die, but have everlaſting life.

Such is the tenor and deſign of the Chriſtian *revelation*, which in the event, was ſo far from being what it had been apprehended to be, by the people to whom it was firſt promiſed; that it proved the very reverſe; and inſtead of re-eſtabliſhing and confirming the other branches of their *revelation*, ſuperſeded, and ſet them all aſide—The pale was now broken down, and the being of the ſeed of Abraham, ceaſed to be a privilege; all the world being invited on the ſame terms with the Jews.

The conſequence was, that the Jews denying this to be the Meſſiah that had been promiſed to them, as not able to ſee the propheſies fulfilled in him, for want of the typical meanings thereof, were generally excluded from the privileges of that miſſion which had been ſuppoſed wholly intended for them; and had their ruin compleated from the very means whence they expected their redemption. See TYPE, PROPHECY, *&c.*

REVELS*, entertainments of dancing, masking, gaming, acting comedies, farces, *&c.* anciently very frequent in inns of courts, at certain ſeaſons, and in noblemens houſes, *&c.* but now much diſuſed.

* The word is formed from the French, *reveiller*, to awake, as alluding to the night ſeaſon, when they were chiefly held.

The officer who has the direction, or ordering of the *revels*, at court, is called the *maſter of the revels*. See MASTER.

REVENUE*, the yearly rent, or profits ariſing to a man from his lands, poſſeſſions, *&c.* See RENT.

* The word is French, formed from *revenir*, to return—Whence *revenue* is ſometimes alſo uſed in ancient authors for a return: as the *revenue* of Eaſter. See RETURN.

The *revenue* of this manor conſiſts in tiths, rents, *&c.* See MANOR, TITH, *&c.*

The *revenues* of the Engliſh clergy were firſt fixed by king Ethelwolf, anno 855; who granted them for ever, the tithe of all goods, and the tenth part of all the lands of England, free from all ſecular ſervice, taxes, impoſitions, *&c.* See TITHE and CLERGY.

The certain *revenues* of the king of England were anciently greater than thoſe of any king in Europe; and till the time of the civil wars they enjoyed in domains and fee-farm rents almoſt enough to diſcharge all the ordinary expences of the crown, without any tax or impoſition on the ſubject. See TAX, *&c.*

Upon the reſtauration, the crown *revenues* being found much alienated, and the crown charges increaſed; the parliament ſettled a yearly revenue of 1,200,000 *l.* upon the king; ſo much as the former crown *revenues* fell ſhort of that ſum, to be raiſed on goods exported and imported, upon liquors, and fire-hearths. See DUTY, *&c.*

At the death of king Charles II. the *revenue* amounted to 1,800,200 l. per ann.—In king James the ſecond's time, it was raiſed to 2,000,000 l. which was computed to be one tenth of the *revenues* of the whole kingdom.

At the ſame time, the *revenues* of the king of France were computed at ſeven millions ſterling; and thoſe of the ſtates of Holland, at three millions—*For more particulars of this kind*, ſee POLITICAL *arithmetic*.

Auditors of the REVENUE. See AUDITOR.

REVENUE, REVENU, in hunting, a fleſhy maſs or lump formed chiefly of a cluſter of whitiſh worms on the heads of deer, and occaſioning them to caſt their horns, by gnawing the roots thereof. See HEAD, *&c.*

The *revenue* diſtilled, is ſaid to help women in travel.

REVENUE is alſo uſed for a new tail of a partridge, growing out after the loſs of a former.—The *revenue* is meaſured by fingers: thus they ſay a partridge of two, three, four fingers *revenue*.

REVERBERATION*, REVERBERATIO, in phyſics, the act of a body repelling or reflecting another, after its impinging thereon. See REFLECTION.

* The word is formed from the Latin, *re* and *verbero*, *q. d.* I beat again.

In the glaſs-mens furnaces the flame *reverberates*, or bends back again, to ſcorch the matter on all ſides. See GLASS and FURNACE. Echos are occaſioned by the *reverberation* of ſounds from arched obſtacles. See ECHO.

Reverberation and *reſilition* refer to the ſame action; only the one to the agent, the other to the patient.—A poliſhed body *reverberates* the rays all around: the *reſilition* of the rays does not ariſe from their ſtriking againſt the ſolid parts of bodies. See REFLECTION.

REVERBERATION, in chymiſtry, denotes a kind of circulation of the flame, by means of a *reverberatory*; or the return of the flame from the top of the furnace, back to the bottom, chiefly uſed in calcination. See REVERBERATORY, CALX, and CALCINATION.

Reverberation is of two kinds.—The firſt with a *cloſe fire*;

that is, in a *reverberatory* furnace, where the flame has no vent a-top; being covered with a dome, or capital, which repels it's action back on the matter, or the veſſel that contains it, with increaſed vehemence.

After this manner, are refining, the diſtillation of acid ſpirits, *&c.* performed. See DISTILLATION and REFINING.

Reverberation with an *open fire*, is that performed in a furnace or *reverberatory* whoſe regiſters are all open; uſed in calcination, *&c.* See CALCINATION, FIRE, HEAT, AIR, *&c.*

REVERBERATORY, or REVERBERATING *furnace*, is a chymical furnace built cloſe all around, and covered a-top with a capital of bricks or tiles, ſo as not to give any vent to the heat or flame, but to determine it to *reverberate* or turn back from the brick work with new force, upon the matters placed at bottom. See REVERBERATION.

When the fire has no vent or paſſage a-top, it is a whole *reverberatory*; when the middle of the capital is open, and only the ſides cloſe, ſo that there is only a half circulation of the flame, it is called a *half reverberatory*.

The *reverberating* furnace is chiefly uſed in the fuſion and calcination of metals, and minerals, and on other occaſions where the moſt intenſe heat is required, as in aſſaying, *&c.* Whence it is alſo called the *melting furnace*, and *aſſaying furnace*. See FURNACE, FIRE, FUSION, ASSAY, *&c.*

REVEREND, REVERENDUS, a title of reſpect given to eccleſiaſtics. See TITLE and QUALITY.

The religious abroad are called *reverend* fathers; abbeſſes, prioreſſes, *&c.* are called *reverend* mothers. See ABBOT, RELIGIOUS, *&c.*

With us, biſhops are *right reverend*; and archbiſhops *moſt reverend*—In France their biſhops, archbiſhops, and abbots, are all alike *reverendiſſime's*, *moſt reverend*. See BISHOP, *&c.*

REVERIE, a term purely French, frequently uſed of late in Engliſh, to ſignify a delirium, raving, or diſtraction—It is an ill ſign when the patient falls into a *reverie*. See DELIRIUM.

Hence alſo REVERY comes to be uſed for any ridiculous, extravagant imagination, action, or propoſition; a chimera or viſion—Thus we ſay, authors obtrude abundance of their *reveries* upon us for ſolid truths.

But the moſt ordinary uſe of *revery* among Engliſh writers is for a deep, diſorderly muſing, or meditation; equivalent to what we popularly call a *brown-ſtudy*—Thus: a little diſtraction I would allow; but for that continued ſeries of *reveries* ſome people are guilty of, who are even abſent from the place where you ſee them, and are never preſent any where, it is inexcuſeable.

REVERS. *Battery de* REVERS. See the article BATTERY.

REVERSATA *arma*. See the article ARMA.

REVERSE*, in law, *&c.*—To *reverſe*, ſignifies to undo, repeal, or make void. See REPEAL, ANNUL, *&c.*

* The word is formed of the Latin, *re*, again, and *verſus*, turned.

REVERSE, of a medal, coin, *&c.* denotes the ſecond, or backſide; in oppoſition to the head or principal figure. See COIN, MEDAL, *&c.*

F. Chamillart, a jeſuit, has an expreſs diſſertation on this point, whether or no the *reverſes* of medals have always a regard to the emperors or empreſſes whoſe heads are repreſented on the front ſide of the medal? he ſays, that till of late the antiquaries have made no doubt of it; but that there are now ſeveral authors of another opinion.

REVERSE, in fencing, a back-ſtroke. See GUARD, FENCING, *&c.*

REVERSED, in heraldry, a thing turned backwards, or upſide down. See INVERSE and INVERSION.

REVERSED *talon*, in architecture. See TALON.

REVERSING, or RENVERSING, in muſic, the inverting the order of the parts; that is, placing the higher part or treble, in the room of the lower part or baſs. See PART, BASS, TREBLE, *&c.*

Reverſing is frequently practiced in figurative counterpoint, where the baſs ſerves as treble; and the treble, at the ſame time, as baſs; and all this, in ſuch manner, as that the harmony, though very different, is yet as correct as before the *reverſing*, when the parts were in their natural order.

To know how to diſpoſe the parts, ſo as the *reverſing* may not do any damage, is a ſecret, whereon M. Broſſard has promiſed a treatiſe expreſs.

A *reverſed* fugue or counterfugue, called by the Italians, *per contrarii movementi*, is when the guida falls, and the other inſtead of imitating by falling, imitates by riſing; or a figure *per arſin* and *theſin*. See ARSIS.

REVERSION, REVERSIO, in law, is defined by Coke, a returning of lands, *&c.* into the poſſeſſion of the donor, or his heirs; after the expiration of the term for which they were given or granted to another. See DONATION, *&c.*

The word has a double acceptation—The firſt is, *jus revertendi cum ſtatus poſſeſſionis defecerit*, which is no more than an intereſt in the land, when the occupation or poſſeſſion of it ſhall fall.

The ſecond is, when the poſſeſſion and eſtate, which was parted with for a time, ceaſeth, and is determined in the perſon of the alienees, aſſignees, grantees, or their heirs; or effectually returns to the donor, his heirs or aſſigns, whence it was derived.

This is the moſt proper ſignification of the word, which is derived from *revertor*: *Et aptè dici non poteſt reverſio antequam revertatur in facto.* Littlet.

The difference between a *reverſion* and a *remainder* conſiſts in this, that a remainder is general, and may remain or belong to any man but him that granteth or conveyeth the land, *&c.* See REMAINDER.

Whereas a *reverſion* is to himſelf, from whom the conveyance of the land, *&c.* proceeded, and is commonly perpetual, as to his heirs alſo—And yet ſometimes *reverſion* is confounded with remainder.

For the values of *reverſions*, or eſtates in *reverſion*, the little book of tables for renewing and purchaſing college and church leaſes, printed at Cambridge in 1700, and recommended by Sir Iſaac Newton, furniſhes us with a very uſeful table, which ſhews what one pound due at the end of any number of years to come, not exceeding 40, is worth in ready money, at 5, 6, 7, 8, and 10 per cent. per annum.

Suppoſe, it required, what 1 *l.* due a year hence, is worth in ready mony: to find this by the common operations, the method is this—Let 100 *l.* with the intereſt of a year added to it, be the firſt term in the rule of three; 100 *l.* the ſecond, and 1 *l.* the third; (for as 100 *l.* with its intereſt going on to the end of the year, is to a bare 100 *l.* then due: ſo muſt 1 *l.* with its growing intereſt, be to the decreaſe of 1 *l.* at the year's end) then, at 6 *l.* *e. gr.* and 10 *l.* per cent, the work will ſtand thus:

As, 106 . 100 : : 1 . . 0,9433071, or 18 *s.* 10 *d.* $\frac{1}{4}$.
110 . 100 : : 1 . . 90909, or 18 *s.* 2 *d.*

Whence it appears, that 1 *l.* due a year hence, at 6 *l.* per cent, is worth 18 *s.* 10 *d.* $\frac{1}{4}$; and at 10 per cent, to 18 *s.* 2 *d.* So that 18 *s.* 10 *d.* $\frac{1}{4}$ ready money, is worth 20 *s.* to be paid a year hence at 6 per cent; and 18 *s.* 2 *d.* ready money, is worth 20 *s.* to be paid a year hence at 10 per cent. See INTEREST.

But this table ſhortens the work—To find by it how to renew a leaſe of 21 years, that hath but one year lapſed, at the rate of 10 per cent; look into the ſame, and under the rate of intereſt mentioned, and right againſt 21 years, in the common angle of meeting, you have 2 *s.* 8 *d.* $\frac{1}{2}$, which is the fine to be paid to renew one year lapſed in the ſaid leaſe; ſuppoſing the rent to be 1 *l.* per annum. For it is 21 years before the leaſe is compleated, in which time the fine of 2 *s.* 8 *d.* $\frac{1}{2}$, will amount to 20 *s.* and therefore by paying that fine, the leaſe may fairly be made up again.

Suppoſe again, an eſtate in fee-ſimple, whoſe real value is 100 *l.* but mortgaged, or leaſed out for 20 years; what is the *reverſion* of it now worth at 6 *l.* per cent. intereſt?—By the table you find, that 1 *l.* to be paid 20 years hence, is worth but 6 *s.* 2 *d.* $\frac{3}{4}$, and multiplying that with 100, you will find 100 times 6 *s.* is 30 *l.* 00 *s.* 00 *d.* 100 times 2 *d.* or 200 *d.* makes 00 *l.* 16 *s.* 8 *d.* and 100 times $\frac{3}{4}$, or 300 *q.* makes 00 *l.* 6 *s.* 3 *d.* the ſum is 31 *l.* 2 *s.* 11 *d.* which is the preſent value of 100 *l.* to be paid 20 years hence.

A Table of *reverſions* ſhewing what 1 *l.* due any number of years hence, under 41, is worth in ready money at 5, 6, 7, 8, and 10 *per cent.*

Years.	5 *per Cent.*			6 *per Cent.*			7 *per Cent.*			8 *per Cent.*			10 *per Cent.*		
	s.	d.	q.	s.	d.	q.	s.	d.	q.	s.	d.	q.	s.	d.	q.
1	19	0	2	18	10	1	18	8	0	18	6	0	18	2	0
2	18	1	2	17	9	1	17	5	2	17	1	3	16	6	1
3	17	3	1	16	9	2	16	3	3	15	10	1	15	0	3
4	16	5	1	15	10	0	15	3	0	14	8	1	13	8	0
5	15	8	0	14	11	1	14	3	1	13	7	1	12	5	0
6	14	11	0	14	1	0	13	4	0	12	7	0	11	3	2
7	14	2	2	13	3	2	12	5	1	11	8	0	10	3	0
8	13	6	1	12	6	2	11	7	2	10	9	2	9	4	0
9	12	10	2	11	10	0	10	10	2	10	0	0	8	5	3
10	12	3	1	11	2	0	10	2	0	9	3	0	7	8	2
11	11	8	0	10	6	1	9	6	0	8	6	3	7	0	0
12	11	1	2	9	11	1	8	10	2	7	11	1	6	4	2
13	10	7	1	9	4	2	8	3	2	7	4	0	5	9	2
14	10	1	0	8	10	0	7	9	0	6	9	2	5	3	0
15	9	7	2	8	4	0	7	3	0	6	3	2	4	9	1
16	9	2	0	7	10	2	6	9	1	5	10	0	4	4	1
17	8	1	2	7	5	0	6	4	0	5	4	3	3	11	1
18	8	4	0	7	0	0	5	11	0	5	0	0	3	7	0
19	7	11	0	6	7	0	5	6	1	4	7	1	3	3	0
20	7	6	1	6	2	3	5	2	0	4	3	2	2	11	2
21	7	2	0	5	10	2	4	10	0	3	11	3	2	8	2
22	6	10	0	5	6	2	4	6	0	3	8	0	2	5	2
23	6	6	0	5	3	0	4	2	2	3	4	3	2	2	3
24	6	2	1	4	11	1	3	11	1	3	1	3	2	0	1
25	5	10	3	4	8	0	3	8	1	2	11	0	1	10	0
26	5	7	1	4	4	3	3	5	1	2	8	1	1	8	0
27	5	4	1	4	1	3	3	2	2	2	6	0	1	6	1
28	5	1	0	3	10	3	3	0	0	2	3	3	1	4	2
29	4	10	1	3	8	1	2	9	2	2	1	3	1	3	0
30	4	7	2	3	6	1	2	7	2	1	11	3	1	1	3
31	4	5	1	3	3	1	2	5	1	1	10	0	1	1	0
32	4	2	1	3	0	2	2	3	2	1	8	1		11	1
33	4	0	0	2	10	1	2	1	2	1	6	3		10	1
34	3	9	2	2	8	3	2	0	0	1	5	1		9	1
35	3	7	2	2	6	2	1	10	2	1	4	0		8	2
36	3	5	1	2	5	1	1	9	0	1	3	0		7	3
37	3	3	1	2	3	2	1	7	2	1	2	0		7	0
38	3	1	2	2	2	0	1	6	2	1	1	0		6	1
39	2	11	3	2	0	0	1	5	0	1	0	0		5	3
40	2	10	0	1	11	0	1	4	0	0	11	0		5	1

Reversion *of ſeries*, in algebra, is a method of finding a natural number from its logarithm given; or the ſine from its arch; or the ordinate of an ellipſis from an area given to be cut off from any point in the axis. See Series. See alſo Logarithm, Sine, Ordinate, &c.

REVERT, in law—A thing is ſaid to *revert* when it returns or falls back to its firſt owner. See Reversion.

All honours, and royal fees, alienated, *revert* to the crown; or are *revertible*—Apanages, or portions of younger ſons of kings, are granted on condition of *reverſion*. See Apanage.

REVESTIARY, or **Revestry**. See Vestry.

REVIEW, in war, the ſhew or appearance of a body of troops, ranged in form of battle, and afterwards made to file off; to ſee if the companies be compleat, as to number and good condition; or to receive their pay, or the like.

The general always *reviews* his troops before they go into winter quarters, &c. See Quarter.

Review in chancery—A *bill of* Review is, where the cauſe has been heard, and a decree therein ſigned and enrolled; but ſome error in law appears in the body of thedecree or ſome new matter is diſcovered in time after the decree made. See Decree—A bill of *review* is not exhibited but by leave of the court. See Bill, Chancery, &c.

REVISE, among printers, a ſecond proof of a ſheet to be printed, taken off after correcting the firſt. See Printing.

REVIVER. See the article Revivor.

REVIVIFICATION, or **Resuscitation**, in chymiſtry, the art of reſtoring a mixed body to its firſt ſtate, after it had been altered and diſguiſed by diſſolution, calcination, or the like.

Thus cinnabar and other preparations of mercury are *revived* or *revivified* into fluid mercury—Olaus Borrichius aſſures us, that having tormented mercury with ſeveral fires, for the ſpace of a whole year; having reduced it into water, turbith, into aſhes, &c. it *revivified*, and reſumed its firſt form in the middle of the flames, by the attraction of ſalt of tartar. See Mercury.

Gold, and other metals, it is ſaid, may be recovered or *revivified* into running mercury, by the uſe of certain ſalts, which penetrating the ſubſtance of the metals, abſorb the fixing ſulpher or cement by which the mercury was before bound into a malleable maſs. See Metal, Gold, &c.

Revivified *antimony*. See the article Antimony.

REVIVING, in law, a renewing of rents and actions; after they had been extinguiſhed. See Rent, Extinguishment, &c.

REVIVOR, or **Reviver** in law—A *bill of* Revivor is where a bill has been exhibited in chancery againſt one who anſwers; but before the cauſe is heard, or at leaſt before the decree is enrolled, one of the parties dies.

In this caſe, a bill of *revivor* muſt be brought, praying the former proceedings may ſtand *revived*; and be put in the ſame condition as at the time of the abatement. See Bill.

REVOCATION, **Revocatio**, in law, the act of *revoking*, calling back, or annulling a power, grant, &c. made before. See Repealing.

The *revocation* of an offer after it is accepted of is invalid—All preceding wills or teſtaments are *revoked* by the laſt—A prior clauſtral is *revocable* at pleaſure—The *revocation* of the edict of Nants was fatal to the French proteſtants. See Edict.

REVOLUTION*, in politics, denotes a grand turn or change of government. See Government.

* The word is formed from the Latin, *re-volvo*, to roll backwards.

There are no ſtates in the world but have undergone frequent *revolutions*—The abbot de Vertot has furniſhed us with two or three good hiſtories, of the *revolutions* of Sweden, the *revolutions* of Rome, &c.

The **Revolution**, uſed by way of eminence, denotes the great turn of affairs in England in 1688; when king James II. abdicating, the prince and princeſs of Orange were declared king and queen of England, &c. See Abdication.

Revolution, in geometry. The motion of any figure quite round a fixed line as an axis, is called the *revolution* of that figure; and the figure ſo moving is ſaid to *revolve*. See Axis.

Thus a right angled triangle revolving round one of its legs, as an axis, generates by that *revolution*, a cone. See Cone.

Revolution, in aſtronomy, denotes the period of a ſtar, planet, comet, or other phænomenon; or its courſe from any point of its orbit, till it return to the ſame. See Planet, Period, &c.

The planets have a twofold *revolution*—the one about their own axis, uſually called their *diurnal rotation*, which conſtitutes what we call their *day*. See Diurnal and Day.—The other about the ſun, called their *annual revolution*, or *period*; conſtituting their *year*. See Annual and Year. Saturn according to Kepler, makes his *annual revolution* in the ſpace of 29 years, 174 days, 4 hours, 58′ 25″ 30‴. Jupiter in 11 years, 317 days, 14 hours, 49′ 31″ 56‴. Mars in 1 year, 321 days, 23 hours, 31′ 56″ 49‴. Venus in 224 days, 17 hours, 44′ 55″ 14‴. Mercury in 87 days, 23 hours, 14′ 24″. See Saturn, Jupiter, Mars, &c.

REVULSION, **Revulsio**, in medicine, the turning a flux of humours, from one part of the body to another either neighbouring, or oppoſite part. See Humour, Derivation, &c.

In very dangerous wounds, where the loſs of blood is great, and the ſtopping it ſpeedily enough. impracticable; it is uſual to open a vein in ſome remote part, to cauſe a *revulſion*; that is, to turn the courſe of the blood from the former part, to that where the aperture is made. See Phlebotomy.

Revulſions are alſo cauſed by cupping, friction, &c. See Cupping and Friction.

Revulsion is alſo uſed for a ſpontaneous turn, or re-flux of humours in the body.—Sudden diſeaſes are occaſioned by great *revulſions* of humours, which fall all at once on certain parts.

RHABDOIDES, Ῥαβδοειδης, in anatomy, a name given the ſecond true ſuture of the ſkull; called alſo the *ſagittal ſuture*. See Suture and Sagittalis.

* The word is formed from the Greek, ῥαβδος rod, or ſtaff, and ειδος, form.

RHABDOLOGY, or **Rabdology**, in arithmetic, a name ſometimes given to the method of performing the two moſt difficult and operoſe rules, *viz.* multiplication and diviſion, by the two eaſieſt, *viz.* addition and ſubſtraction; by means of two little rods or laminæ, whereon are inſcribed the ſimple numbers, and which are to be ſhifted according to certain rules.

Theſe rods are what we popularly call *Nepair's bones*, from their inventor, a Scotiſh baron, who likewiſe invented logarithms.—For their deſcription and uſe, ſee Nepair's-*bones*.

RHABDOMANCY*, an ancient method of divination, performed by means of rods, or ſtaves. See Divination.

* Whence its name, from the Greek, ῥαβδος, rod, and *μαντεια*, divination.

St Jerom makes mention of this kind of divination, in his commentary on Hoſeah, chap. iv. 12, where the prophet ſays in the name of God, *my people ask council at their ſtocks; and their ſtaff declareth unto them:* which paſſage that father underſtands of the Grecian *rhabdomancy*.

The ſame he finds over again in Ezekiel xxi. 21, 22, where the prophet ſays, *for the king of Babylon ſtood at the parting of the way, at the head of the two ways, to uſe divination; he made his arrows bright:* or as St Jerom renders it, *he mixed his arrows, he conſulted with images, he looked in the liver.*

If it be the ſame kind of divination that is mentioned in the two paſſages; *rhabdomancy* muſt have been the ſame ſuperſtition with *belomancy*. See Belomancy.

In effect the two are ordinarily confounded—The ſeventy themſelves tranſlate the חצים of Ezekiel by ῥαβδος, a rod; though in ſtrictneſs it ſignify an arrow.

This, however, is certain, the inſtruments of divination mentioned by Hoſeah, are different from thoſe of Ezekiel. In the former, it is, עצו *etſo*, מקלו *maklo*, his wood his ſtaff: in the latter, חצים *hbitſim*, arrows. Though it is poſſible they might uſe rods or arrows indifferently; the military men arrows, and the reſt rods.

It appears by the laws of the Friſones, that the ancient inhabitants of Germany practiced *rhabdomancy*—The Scythians were likewiſe acquainted with the uſe hereof; and Herodotus obſerves, *lib.* iv. That the women among the Alani ſought and gathered together fine ſtraight rods or wands, and uſed them in the like ſuperſtition.

Rhachitis, Ῥαχιτις, in medicine. See Rickets.

RHAGADES, Ῥαγαδες, in medicine, a Greek term uſed for the chaps or clefts in the lips, hands, anus and other ſoft parts of the body.

Rhagades are a ſort of fiſſures, or little chapped ulcers of the oedematous kind; formed of a ſharp ſaline humour, and occaſioning a great contraction, and ſtreightening of the part, which is by this means ſhrivelled up like a wet parchment when held to the fire. See Oedema.

They are chiefly on the fundament, the neck of the womb, the præputium, lips, &c. ſometimes even in the mouth; in which caſe the patient is not able to ſpeak, chew, or the like.

They are ſometimes moiſt, and of a cancerous nature, eating deep, and difficult of cure; but are more commonly of a leſs malignant tendency, being the conſequences of a diarrhæa, dyſentery, or the like. See Tumor, Ulcer, &c.

RHAGOIDES*, Ῥαγοειδης, in anatomy, the ſecond coat, or tunic of the eye; more uſually called *uvea*. See Uvea and Choroides.

* It has its name *rhagoides*, as reſembling a grape-ſtone.

In the tunica *rhagoides* is the hole called the *pupil*. See Pupil.

RHAPONTICUM*, a medicinal root, in form reſembling rhubarb; and nearly of the ſame virtues, whence it is ſometimes called Turkiſh *rhubarb*.

* It was called *rhaponticum*, *q. d.* root of Pontus; becauſe chiefly produced in the country of Pontus in Aſia.

It is frequently mixed with rhubarb by thoſe who ſend that drug into Europe: they are diſtinguiſhed by this, that the rhubarb is uſually in roundiſh pieces, the internal ſtreaks or lines whereof run tranſverſe, and *rhaponticum* in longiſh pieces, having its ſtreaks running lengthwiſe—Beſides, that *rhaponticum* chewed in the mouth, leaves a viſcidity behind it, which rhubarb does not. See Rhubarb.

The ſcarcity of the *rhaponticum* of the Levant, occaſions the mountain *rhaponticum*, or monk's rhubarb, to be frequently ſubſtituted for it, which is a wild ſort of lapathum, by botaniſts called *alpinum*—They are diſtinguiſhed by this, that the former is yellow without, and reddiſh within; but the latter blackiſh without and yellow within.

Dr. Quincy, however, confounds the two, when he ſays, the *rhaponticum* grows plentifully in England; and that it is only uſed as an alterative, and does not come up to a cathartic.

It is certain, what now obtains in the ſhops, under the name of *rhaponticum*, is no other than the mountain *rhapontic*, or monk's rhubarb; and is much inferior in virtue to the *rhaponticum verum*.

RHAPSODI, Ῥαψωδοι, Rhapsodists, in antiquity, perſons who made a buſineſs of ſinging pieces of Homer's poems.

Cuper informs us, that the *rhapſodi* were clothed in red when they ſung the Iliad; and in blue when they ſung the Odyſſee.

They performed on the theatres; and ſometimes for prizes, in conteſts of poetry, ſinging, &c.

After the two antagoniſts had finiſhed their parts, the two pieces, or papers they were wrote in, were joined together again; whence the name, *viz.* from ῥαπτω, *ſuo*, I join together; and ωδη, ode, ſong.

But there muſt have been other *rhapſodi* of more antiquity than theſe; people who compoſed heroic poems, or ſongs in praiſe of heroes and great men, and ſung their own compoſitions from town to town for a livelihood: of which profeſſion was Homer himſelf.

Hence, ſome critics inſtead of the former origin, fetch the word *rhapſodiſt* from ῥαβδω αδειν, *to ſing with a lawrel rod in the hand*, which it ſeems was the badge of the primitive *rhapſodi*.

Philochorus, again, derives the word from ῥαπτειν τας ωδας, q. d. συντιθεναι, to compoſe ſongs or poems, as if they were the authors of the poems they ſung. This opinion, to which Scaliger inclines, reduces theſe *rhapſodi* to the ſecond kind.

In effect, it is probable that they were all of the ſame claſs, whatever diſtinction ſome authors may imagine; and that their buſineſs was to ſing or rehearſe poems, either of their own, or other people's compoſition, as might beſt ſerve their purpoſe, the getting of a penny—So that we do not apprehend it any injury to them, to ſet them on the foot of our ballad-ſingers; many of whom, no doubt, pen their own ditties. After Homer's time, it is no wonder they confined themſelves altogether to his pieces, for which the people had the utmoſt veneration; nor is it ſurpriſing they ſhould erect ſtages, &c. and diſpute the point of recitation in fairs and markets.

RHAPSODOMANCY, Ῥαψωδομαντεια, an ancient kind of divination performed by pitching on a paſſage of a poet at hazard, and reckoning on it as a prediction of what was to come to paſs. See Divination and Chance.

There were various methods of practicing *rhapſodomancy*—Sometimes they wrote ſeveral verſes or ſentences of a poet, on ſo many pieces of wood, paper, or the like; ſhook them together in an urn, and drew out one, which was accounted the lot.

Sometimes they caſt dice on a table, whereon verſes were wrote; and that whereon the dye lodged, contained the prediction.

A third manner was by opening a book, and pitching on ſome verſe, at firſt ſight. This method they particularly called the *ſortes præneſtinæ*; and, afterwards, according to the poet thus made uſe of, *ſortes homericæ*, *ſortes virgilianæ*, &c. See Sortes.

RHAPSODY, Ῥαψωδια, in antiquity, a diſcourſe in verſe, ſung or rehearſed by a rhapſodiſt. See Rhapsodi.

Others will have *rhapſody* properly to ſignify a collection of verſes, eſpecially thoſe of Homer; which having been a long time diſperſed in pieces and fragments, were at length by Piſiſtratus's order, digeſted into books, called *rhapſodies*: from the Greek ῥαπτω, *ſuo*, I ſew; and ωδη, ſong.

Hence among the moderns, *rhapſody* is alſo uſed for an aſſemblage of paſſages, thoughts, and authorities, raked together from divers authors, to compoſe ſome new piece.—Lipſius's politics makes ſuch a *rhapſody*, wherein there is nothing of the author's own, but conjunctions, and particles.

RHETORIANS, Rhetorii, a ſect of heretics in Egypt, denominated from their leader Rhetorius.

The diſtinguiſhing doctrine of this hereſiarch, as repreſented by Philaſtrius, was, that he approved of all the hereſies before him; and taught that they were all in the right.—But what Philaſtrius mentions of him appears ſo abſurd and ridiculous that St Auguſtin, *Hæreſ.* 7. could not perſuade himſelf it was true.

RHETORIC*, Rhetorica, the art of ſpeaking copiouſly on any ſubject, with all the advantages of beauty and force. See Speaking.

* The word is Greek, formed from Ῥητορικη, of ῥεω, *dico*, I ſpeak; whence ῥητορ, ſpeaker, orator, &c.

Lord Bacon defines *rhetoric*, very philoſophically, the art of applying and addreſſing the dictates of reaſon to the fancy, and of recommending them there, ſo as to affect the will and deſires.—The end of *rhetoric*, the ſame author obſerves, is to fill the imagination with ideas and images, which may aſſiſt nature, without oppreſſing it. See Image and Imagination.

Voſſius defines *rhetoric* the faculty of diſcovering what every ſubject affords of uſe for perſuaſion.—Hence, as every author muſt invent arguments to make his ſubject prevail; diſpoſe thoſe arguments thus found out in their proper places: and give them the embelliſhments of language proper to the ſubject; and, if this diſcourſe be to be delivered in public, utter them with that decency and force which may ſtrike the reader: *rhetoric* becomes divided into four parts, *invention*, *diſpoſition*, *elocution* and *pronunciation*; each whereof ſee under its proper head, Invention, Disposition, Elocution, and Pronunciation.

Rhetoric and *oratory* differ from each other as the theory from the practice; the *rhetorician* being he who preſcribes the rules of eloquence; and the orator he who uſes them to advantage and ſpeaks elegantly, &c.—Ordinarily, however, the two are uſed indifferently for each other. See Oratory.

Characters in Rhetoric. See the article Character.

Rhetorical *Numbers*. See the article Number.

RHEUM*, Rheuma, Ῥευμα, a thin ſerous humour, occaſionally oozing out of the glands about the mouth and throat. See Humour.

* The word is formed from the Greek, ῥεω, *fluo*, I flow.

A fluxion of *rheum*, uſually happening after taking cold, occaſions excoriations and inflammations of the fauces, lungs, &c. See Fluxion and Defluxion.

Rheum is alſo uſed for a *catarrh*, or a defluxion of ſuch humours on the trachea, and the neighbouring parts; occaſioning a coughing, ſpitting, hoarſneſs, running at the noſe, &c. See Catarrh, Cough, Hoarseness, &c.

The *rheum* is not cauſed by a pituita falling from the brain on theſe parts, as the ancients imagined, there being no paſſage from the brain thither; but from a thin, ſharp, ſerous humour, oozing out of the extremities of the glands about the fauces and throat.

The moſt ordinary occaſion of *rheums*, is external cold; eſpecially he being expoſed to it when the body is much heated. —And hence the diſorder itſelf is popularly called a *cold*.

Rheums falling on the breaſt, lungs, &c. are dangerous; others, not very violent, ſerve to clear the head, &c. The uſual remedies are aſtringents, agglutinants, and abſorbents. See Astringent, &c.

RHEUMATISM, Ῥευματισμος, in medicine, a painful diſorder felt in various external parts of the body, accompanied with heavineſs, difficulty of motion, and frequently a wandering fever.

A *rheumatiſm* is a pain uſually wandering, but ſometimes fixed in the muſcular and membranous parts of the body; happening chiefly in autumn.

The proper ſeat of the *rheumatiſm* is ſuppoſed to be in the membrana communis of the muſcles; which it renders rigid and unfit for motion without great pain. See Membrane.

The *rheumatiſm* is either *univerſal* or *particular*.

Univerſal Rheumatism is that which attacks all the parts of the body, even the internal ones.

Particular Rheumatism is that which is confined to particular parts.

In which caſe the pains are uſually erratic, paſſing from one ſide to another; but ſometimes fixed. This is alſo called a *windy* or *ſcorbutic rheumatiſm*.

The *rheumatiſm* bears a great analogy to the gout; whence ſome call it the *univerſal gout*.—The difference between them conſiſts chiefly in this, that the *rheumatiſm* attacks not only the joints, as the gout does, but alſo the muſcles and membranes between the joints. See Gout.

A fit of the *rheumatiſm* is frequently preceded by a fever of two or three days; and ſometimes by a ſhivering.—The attack happens in various parts of the body, as the hands, arms, thighs, legs, feet, &c. a redneſs, ſwelling, and lameneſs often ſucceeding.

The pain ſometimes fixing on the loins, and reaching as far as the os ſacrum; this diſorder is called *lumbago*; and bears a near reſemblance to the nephritis; being only diſtinguiſhable therefrom by this, that the latter is attended with a vomiting, which the former is not.

The *rheumatiſm* is ſuppoſed to ariſe from a ſharp ſerous humor thrown on the ſenſible parts, and occaſioning a pain by its vellication.—Dr Quincy ſays, it proceeds from the ſame cauſe, as that whereby the mucilaginous glands become ſtiff and gritty in the gout. See Gout.

Dr Muſgrave takes it to be occaſioned by a ſharp alcaline ſalt, rather than an acid one; from this conſideration, that the urine of *rheumatic* people does not afford above a thirtieth part of the alcaline ſalt found in that of healthful people.

Hence, he conjectures, that the ſalt is retained in the blood, implicated and embarraſed in the pituita; by which means it forms a viſcidity which occaſions all the pains and tumors of the *rheumatiſm*.

The expoſing of the body too ſuddenly to the cold air, after having heated it to a great degree, is the moſt uſual remote cauſe.—The cure is by evacuation; chiefly, according to Sydenham, by repeated phlebotomy, with a plentiful uſe of volatiles and diluters.—Schmitzius recommends ſudorifics; and Muſgrave, cathartics, and emetics.

The *rheumatiſm* uſually proves a tedious, laſting diſeaſe; holding for ſeveral months, ſometimes years; not continually, but by paroxyſms. In aged perſons, and thoſe of weak conſtitutions, and decayed viſcera, it ſometimes ſeizes the head.

RHEXIS*, or Rhegma, among occuliſts, denotes a rupture of the cornea of the eye. See Cornea.

* The word is formed from the Greek ῥηξις, rupture, of ῥηγνυμαι, *frango*, I break.

RHIME, or Rime, in poetry. See Rhyme.

RHINE-Grave, in Germany, a count palatine of Rhine. See Grave and Palatine.

RHINE-Land-*Rod*, in fortification, &c. a meaſure of two fathom, or 12 foot, uſed by the Dutch and German engineers, &c. See Measure, Foot, and Decempeda.

RHODIUM *lignum*, rhodian-wood. See Aspalath.

RHODON, in pharmacy, from ῥοδον, *roſa*; a name given to ſome compoſitions wherein roſes are the chief ingredient; as *diarrhodon*, &c. See Diarrhodon, &c.—Hence alſo, Rhodosaccharum, *i. e. ſugar of roſes*, &c. See Rose.

RHOMBOIDES, in geometry, a quadrilateral figure, whoſe ſides and angles are unequal; but the oppoſite ones equal. See Figure.

Or, *rhomboides* is a quadrilateral figure, whoſe oppoſite ſides and angles are equal; but is neither equilateral nor equiangular.

Such is the figure NOPQ. *Tab. Geometry*, *fig.* 24.

For the method of finding the area of a *rhomboides*. See Rhombus.

Rhomboides, in anatomy, a muſcle, thus called from its figure.—See *Tab. Anat.* (Myol) *fig.* 6. *n.* 29. See alſo Muscle.

It lies under the cucullaris, and ariſes from the two inferior ſpines of the neck, and four ſuperior of the back; and is inſerted fleſhy into the whole baſis of the ſcapula, which it draws backwards, and a little upwards.

RHOMBUS*, Ῥομβος, in geometry, an obliqueangular parallelogram; or a quadrilateral figure, whoſe ſides are equal and parallel, but the angles unequal: two of the oppoſite ones being obtuſe, and the other two acute.—Such is the figure ABCD, *Tab. Geometry*, *fig.* 83. See Figure.

* The word is formed of the Greek ῥομβος, of ῥεμβειν, to incompaſs, turn round.

To find the area of a rhombus, *or* rhomboides.—Upon CD, which is here aſſumed as a baſe, let fall a perpendicular Ae; which will be the altitude of the parallelogram: multiply the baſe by the altitude, the product is the area.—Thus, if CD be = 456, and Ae = 234; the area will be found 102704.

For it is demonſtrated that an obliqueangular parallelogram is equal to a rectangle upon the ſame baſe CD, *fig.* 25. and of the ſame altitude AE. (See Parallelogram.) But the area of a rectangle is equal to the factum of the baſe into the altitude. Therefore the area of an obliqueangular triangle is equal to the ſame. See Rectangle.

Rhombus, among ſurgeons, denotes a ſort of bandage of a *rhomboidal* figure. See Bandage.

RHOPALIC *verſes*, among the ancients, a kind of verſes which began with monoſyllables, and were continued in words growing gradually longer and longer to the laſt, which was the longeſt of all. See Verse.

They had their name from the Greek ῥοπαλον, a club, which, like them begins with a ſlender tip, and grows bigger and bigger to the head.—Such is that verſe of Homer, Ω μακαρ Ατρειδη μοιρηγενες, ολβιοδαιμων.

And this Latin one of Auſonius: *Spes deus æternæ ſtationis conciliator*.

RHOPOGRAPHI*, Ῥοπωγραφοι, in antiquity, an appellation given to certain painters, who confined themſelves to low ſubjects; ſuch as animals, plants, landſcapes, &c.

* The word is formed the Greek ῥοπος, toys or odd ware, and γραφω, I write, I paint.

The ſame appellation was alſo given to ſuch as cut figures of men, &c. in box, phyleria, yew, &c. in gardens.

RHUBARB, Rhabarbarum, a medicinal root, large, compact, and heavy; yellow without, of a nutmeg colour within; an aſtringent, bitteriſh taſte; and an agreeable, aromatic ſmell: of great uſe in medicine, as a purgative. See Root and Purgative.

Conſidering the mighty uſe of this drug, it is ſurpriſing we ſhould know ſo little of the place where the plant grows that produces it—Some ſay it comes from the kingdom of Boutan, in the extremeties of India; others, that it is found in the provinces of Xenſi and Suchen in China. Others will have it only grow in Perſia; and others on the confines of Muſcovy; deriving its name from *rha*, the river among us called *Wolga*, and *barbarum*, q. d. root found by the barbarians on the river *rha*.

Rhubarb, in Latin, *rhabarbarum officinarum*, was not known to the ancients; and their *rhaponticum*, which indeed reſembles it, is not the real *rhubarb*. See Rhaponticum.

Good *rhubarb* ſteeped in water gives it a ſaffron colour; and when broke, looks bright, with ſomewhat of a vermillion caſt.—Some druggiſts have the art of renewing their old roots, by dying them of a yellow hue; but the cheat is eaſily known by handling them; the powder wherewith they colour them ſticking to the fingers.

Rhubarb is eſteemed an excellent cathartic; proper in diarrhæas, to fortify the ſtomach, and to create an appetite.

M. Boulduc informs us, in the memoirs of the royal academy, that he drew extracts from *rhubarb* both with water and ſpirit of wine; but the purgative virtue, he ſays, was much more viſible in the former than the latter; which ſhews that it conſiſts more in a ſalt than an oil.—He obſerves, however, that *rhubarb* taken in ſubſtance, has a ſtill better effect; and adds, that of all the operations he performed on it, none gave any credit to the common opinion, which aſcribes an aſtringent quality to *rhubarb*.

Monks RHUBARB. See the article RHAPONTICUM.

White RHUBARB. See the article MECHOACAN.

RHUMB, RUMB, or RUM, in navigation, a verticle circle, of any given place; or the interſection of a part of ſuch a circle with the horizon. See VERTICAL.

Rhumbs therefore coincide with *points* of the world, or of the horizon. See POINT and HORIZON.

And hence the mariners diſtinguiſh the *rhumbs* by the ſame names as the points, and winds. See WIND.

They uſually reckon 32 *rhumbs*; which are repreſented by the 32 lines in the roſe, or card of the compaſs. See COMPASS.

Aubin defines a *rhumb*, a line on the terreſtrial globe, ſea-compaſs, or ſea-chart, repreſenting one of the 32 winds which ſerve to conduct a veſſel—So that the *rhumb* a veſſel purſues is conceived as its rout, or courſe. See COURSE.

Rhumbs are divided, and ſubdivided like points—Thus, the whole *rhumb* anſwers to the cardinal point—The half *rhumb*, to a collateral point, or makes an angle of 45 degrees with the former—The quarter *rhumb* makes an angle of 22° 30′ therewith—And the half-quarter *rhumb* makes an angle of 11° 15′. See CARDINAL, COLLATERAL, QUARTER, *&c.*

A table of the *rhumbs*, or points, and their diſtances from the meridian. See under the article WIND.

RHUMB-LINE, *loxodromia*, in navigation, is the line which a ſhip keeping in the ſame collateral point or *rhumb*, deſcribes, throughout its whole courſe. See LOXODROMY.

The great property of the *rhumb-line*, or loxodromia, and that from which ſome authors define it, is, that it cuts all the meridians under the ſame angle. See MERIDIAN.

This angle is called the *angle of the rhumb*, or the *loxodromic* angle. See ANGLE.

The angle which the *rhumb line* makes with any parallel to the equator is called the *complement of the rhumb*. See COMPLEMENT.

An idea of the origin and properties of the *rhumb-line*, the great foundation of navigation, may be conceived thus—A veſſel beginning its courſe, the wind wherewith it is driven makes a certain angle with the meridian of the place; and as it is ſuppoſed the veſſel runs exactly in the direction of the wind, it makes the ſame angle with the meridian which the wind makes.

Suppoſing, then, the wind to continue the ſame; as each point or inſtant of the progreſs may be eſteemed the beginning, the veſſel always makes the ſame angle with the meridian of the place where it is each moment, or in each point of its courſe, which the wind makes.

Now, a wind, *e. gr.* that is north-eaſt, and which of conſequence makes an angle of 45°, with the meridian, is equally north-eaſt wherever it blows; and makes the ſame angle of 45°, with all the meridians it meets—A veſſel therefore driven by the ſame wind, always makes the ſame angle with all the meridians it meets withal on the ſurface of the earth.

If the veſſel ſail north and ſouth, it makes an angle infinitely acute with the meridian, *i. e.* it is parallel to it, or rather ſails in it—If it run eaſt and weſt, it cuts all the meridians at right angles.

In the firſt caſe it deſcribes a great circle; in the ſecond, either a great circle, *viz.* the equator, or a parallel to it.—If its courſe be between the two, it does not then deſcribe a circle; ſince a circle drawn in ſuch a manner would cut all the meridians at unequal angles, which the veſſel cannot do.

It deſcribes, therefore, another curve, the eſſential property whereof is, that it cuts all the meridians under the ſame angle.—This curve is what we call the *loxodromic curve*, *rhumb-line*, or *loxodromy*. See CURVE.

It is a kind of ſpiral, which, like the logarithmic ſpiral, makes an infinity of circumvolutions without ever arriving at a certain point to which it ſtill tends, and towards which it approaches every ſtep. See SPIRAL.

This aſympotic point of the *rhumb-line* is the pole; to which were it poſſible for it to arrive, it would find all the meridians conjoined, and be loſt in them. See POLE.

The courſe of a veſſel, then, except in the two firſt caſes is always a *rhumb-line*; which line is the hypothenuſe of a rectangle-triangle, whoſe two other ſides are the ſhips way or diſtance run in longitude, and latitude. Now the latitude is uſually had by obſervation, (See LATITUDE); and the angle of the *rhumb*, with one or other of the two ſides, by the compaſs. See COMPASS.

All therefore that is required by calculation in ſailing, is the value of the length of the *rhumb-line*, or the diſtance run. See COURSE.

But as ſuch curve line would prove very perplexing in the calculation; it was neceſſary to have the ſhips way in a right line; which right line however muſt have the eſſential property of the curve line, *viz.* to cut all the meridians at right angles—*The method of effecting which ſee under the article* CHART.

If PA, PF, PG, *&c.* (*Tab. Navigation*, *fig.* 19.) be ſuppoſed meridians, AI the equator, and AE another great circle of the ſphere: AO will repreſent a *rhumb-line*, the angles whereof with the ſeveral meridians, being leſs than thoſe of the great circle; it follows, that the *rhumb* is not a great circle of the ſphere—If a ſhip therefore be at firſt directed towards E, and conſtantly perſiſt in the ſame *rhumb*, it will never arrive at the place E, but at the place O, which is further from the equator AI.

Hence, as on the ſurface of a ſphere, the ſhorteſt way between A and O is an arch of a great circle between A and O; the *rhumb-line* is not the ſhorteſt way, or leaſt diſtance from one place to another. See CIRCLE, SPHERE, DISTANCE, *&c.*

Uſe of the RHUMB-LINES *in navigation.* 1°. If the meridians PA, PC, PD, *&c.* (*fig.* 20.) be not very far apart, the *rhumb-line* AIHG is divided by the equidiſtant parallels BI, KH, FG, *&c.* into equal parts.

Hence, 1°. the parts of the *rhumb* AI, and AG, are as the latitudes AL and AN of the places I and G—2°. Since the arches AB, IK, HF, are equal in magnitude, and therefore unequal in number of degrees; the ſum of the arches, called the *latus mecodynamicum*, or *miles of longitude*, is not equal to the difference of longitude AB of the places A and G. See MECODYNAMICUM.

2°. The length of the *rhumb-line* AG is to the change or difference of latitude GD, in the ſame ratio, as the whole ſine to the co-ſine of the angle of the *rhumb*.

Hence, 1°. the *rhumb* ſailed on being given, together with the difference or change of latitude, turned into miles; the length of the *rhumb-line*, or the diſtance from the place A to the place G upon the ſame *rhumb*, is had by the rule of three—2°. The *rhumb* being given, together with the quantity of the ſhip's way on the ſame *rhumb*, *i. e.* the length of the *rhumb* AG; the difference of latitude DG, is had by the rule of three, in miles to be converted into degrees of a great circle—3°. The difference of latitude DG being given in miles; as alſo the length of the *rhumb-line* AG: the angle of the *rhumb*, and conſequently the *rhumb* ſailed on is had by the rule of three—4°. Since the co-ſine is to the whole ſine as the whole ſine to the ſecant; the difference of latitude GD, is to the length of the *rhumb-line* AG, as the whole ſine to the ſecant of the angle of the *rhumb*.

3°. The length of the *rhumb-line*, or of the ſhip's way in the ſame *rhumb* AG, is to the *latus mecodynamicum*, or *mecodynamic* ſide AB+IK+HF, as the whole ſinet o the ſine of the *loxodromic* angle GAP.

Hence, 1°. the *rhumb*, or angle of the *rhumb*, being given, as alſo the ſhip's way in the ſame *rhumb-line* AG; the *mecodynamic* ſide is had by the rule of three, in miles; *i. e.* in the ſame meaſure wherein the length of the *rhumb* is given—2°. In like manner, the *mecodynamic* ſide AB+IK+HF being given, as alſo the *rhumb-line* or ſhip's way AG; the *rhumb* ſailed in is found by the rule of three.

4°. The change of latitude GD, is to the *mecodynamic* ſide AB+IK+HF; as the whole ſine, to the tangent of the *loxodromic* angle PAG or AIB.

Hence, the *rhumb*, or *loxodromic* angle PAG, and the change of latitude GD, being given; the *mecodynamic* ſide is found by the rule of three.

5°. The *mecodynamic* ſide AB+IK+HF is a mean proportional between the aggregate of the *rhumb* AG, and the change of latitude GD and their difference.

Hence, the change of latitude GD, and the *rhumb-line* AG, being given in miles; the *mecodynamic* ſide is found in the ſame meaſure.

6°. The *mecodynamic* ſide AB+IK+HF being given; to find the longitude AD.

Multiply the change or difference of latitude GD by ſix, which reduces it into parts, of ten minutes each; divide by the product the *mecodynamic* ſide; the quotient gives the miles of longitude anſwering to the difference of latitude in ten minutes. Reduce theſe miles of longitude in each parallel into differences of longitude, from a *loxodromic* table. The ſum of theſe is the longitude required. See LONGITUDE.

7°. If a ſhip ſail on a north or ſouth *rhumb*, it deſcribes a meridian; if on an eaſt or weſt *rhumb*, it deſcribes either the equinoctial, or a parallel thereto. See SAILING.

8°. *To find the rhumb between two places, by calculation, or geometrically.* We have two canons, or proportions: the firſt,—As the radius, is to the co-ſine of the middle latitude; ſo is the difference of longitude to the whole departure from the meridian, in the courſe between the two places propoſed. The ſecond,—As the radius is to the half ſum of the co-ſines of both latitudes; or (rather for geometrical ſchemes) as the diameter, is to the ſum of the co-ſines of both latitudes; ſo is the difference of longitude, to the departure from the meridian.

For an example of the former proportion—Let the *rhumb* be required between Cape Finiſterre, latitude 43°, longitude 7° 20′, 20′, and St Nicholas Iſle, latitude 38°, longitude 352°. The middle latitude is 40° 30′, the complement 49° 30′; and the difference of longitude 15° 20′. Out of theſe leſſer equal parts, prick down 15° from C to L, (*fig.* 21.) and deſcribe the arch BD with 60° of the chords, and make it equal to 49° 30′, and draw CD continued farther to A—From L take the neareſt diſtance to AC which is equal to LM, and make it one leg of a right angled triangle; make the other leg the difference of latitude 5°, which prick from the equal parts from L to B—Then, the extent MB meaſured on the ſaid parts, ſhews the diſtance to be 13° 24′; which allowing 20 leagues to a degree, is almoſt 268 leagues—Then, with the radius CB ſetting one foot at M, croſs the *rhumb* triangle at GH; which extent meaſured on the greater chord is almoſt 22°, the complement whereof is 68°; and ſo much is the *rhumb* from the meridian between the two places, amounting to 6 points, and upwards of 80 minutes.

For an inſtance of the latter proportion—Let it be required to find the *rhumb* and diſtance between the Lizard and Bermudas. The latitude of the Lizard being 56°, and that of Bermudas 32°, 20′, or 32°, 41 centeſms, and their difference of longitude, 55 degrees; draw the lines AC and CD (*fig.* 21. N°. 2.) at right angles, and with 60° of the leſſer chords deſcribe the quadrant HI, and prick the radius from I to D; ſo is CD the diameter; then count both latitudes from H to F and G, the neareſt diſtance from F to CI, is the co-ſine of Bermudas latitude, which prick from C to E: Again, the neareſt diſtance from G to CI, is the co-ſine of the Lizard's latitude, which place from C to S, ſo is CS the ſum of both co-ſines; draw DS, and prick down 55 degrees, the difference of longitude from C to V, out of the greateſt equal parts, and draw VB parallel to DS, ſo is CB the departure from the meridian in the courſe between both places—Making that, therefore, one leg of a right-angled triangle, prick down 17°, 59 centeſms, the difference of latitude between thoſe places, out of the ſame equal parts from C to L, and draw BL—This repreſents the courſe and diſtance between the Lizard and Bermudas; and the extent LB meaſured on the ſame equal parts, ſhews the diſtance to be 44°, 31 centeſms, which allowing 20 leagues to a degree, is 886 leagues.

Then, to find the courſe—With 60° of the chords, ſetting one foot in L, with the other make marks at Y and Z; then the extent ZY, meaſured on the chord, ſhews the *rhumb* to be 66°, 37′ from the meridian. This proportion in the preſent example, holds very juſt, according to Mercator's chart; whereas the former proportion, by the middle latitude, would have given the *rhumb* 67°, 2′, from the meridian, and the diſtance 902 leagues.

Again, making CA equal to CV, a line joining LA would be the courſe and diſtance according to the ſame longitudes and latitudes laid down on the plain chart; whereby the courſe ſhould be 72°, 17′ from the meridian, and the diſtance 1155 leagues. See SAILING, CHART, &c.

RHYAS*, ῾Ρυας, in medicine, a diminution or conſumption of the caruncula lachrymalis ſituate in the great canthus or angle of the eye. See CARUNCULA.

* The word is formed from the Greek, ῥειν, to flow.

The *rhyas* is uſed in oppoſition to the *encanthis*, which is an exceſſive augmentation of the ſame caruncle. See ENCANTHIS.

The cauſe of the *rhyas* is a ſharp humour falling on this part; and gnawing and conſuming it by degrees; though it is ſometimes alſo produced by the too great uſe of catheretics in the fiſtula lachrymalis—It is cured by incarnatives.

RHYME, RHIME, RYME, or RIME, in poetry, the ſimilar ſound, or cadence and termination of two words which end two verſes, &c. See VERSE.

Or, *rhyme* is a ſimilitude of ſound between the laſt ſyllable or ſyllables of one verſe, and the laſt ſyllable or ſyllables of a verſe ſucceeding either immediately or at a diſtance of two or three lines.

Rhyme is a modern invention, the product of a Gothic age: Milton calls it the *modern bondage*. Yet ſome authors will have it, that the Engliſh, French, &c. borrow their *rhyme* from the Greeks and Latins—The Greek orators, ſay they, who endeavoured to tickle the ears of the people, affected a certain cadence of periods, which ended alike, and called them ὁμοιοτελευτα. The Latins, who imitated them, called theſe chiming terminations, *ſimiliter deſinentia*.

This affectation increaſed as the Latin tongue declined; ſo that in the later Latin writers, ſcarce any thing is more common than *rhyming* periods.

The French, and from them the Engliſh, &c. adopted this cadence of *rhyme*, which ſeemed to them more pretty, and agreeable than the metrical verſes of the Greek and Roman poets. See MEASURE, QUANTITY, VERSIFICATION, &c.

This kind of Latin poetry in *rhyme* was much in vogue in the XIIth century; and the verſes thus running were called *leonine verſes*; for what reaſon Camden owns he does not know; (for a lion's-tail, ſays he, does not anſwer to the middle parts as theſe verſes do) but doubtleſs they had their name from a canon called *Leoninus*, who firſt compoſed them with ſucceſs, and of whom we have ſeveral pieces remaining, addreſſed to pope Adrian IV. and Alexander III. See LEONINE *verſes*.

Camden has given us a collection of Latin *rhymes* of our ancient Engliſh writers; among whom Walter de Mapes, archdeacon of Oxford, in the time of king Henry II. makes a principal figure: eſpecially for two pieces, the one in praiſe of wine, beginning,

> *Mihi eſt propoſitum in taberna mori,*
> *Vinum ſit appoſitum morientis ori;*
> *Ut dicant, cum venerint, angelorum chori,*
> *Deus ſit propitius huic potatori.*

The other againſt the pope, for forbidding the clergy to have wives; beginning,

> *Priſciani regula penitus caſſatur,*
> *Sacerdos per* hic & hæc *olim declinatur*;
> *Sed per* hic *ſolummodo, nunc articulatur,*
> *Cum per noſtrum præſulem* hæc *amoveatur.*

Since the reſtoration of learning in the 16th century, attempts have been made to baniſh *rhyme* out of the modern poetry, and to ſettle the Engliſh and French verſes on the footing of the ancient Greek and Latin ones; by fixing the quantities of the ſyllables, and truſting wholly to thoſe, and the numbers or meaſure. See QUANTITY, NUMBERS, &c.

This, Milton has done with great ſucceſs, in his *Paradiſe Loſt*, and other pieces; and after him Philips, Addiſon, and ſome others—Verſes of this kind we call *blank verſes*.

The French have attempted the ſame, but not with the ſame ſucceſs—Jodelet made the firſt eſſay; and after him Paſquier; but they failed. Paerſſat and Rapin followed them, and failed like them. Their hexameter and ſapphic verſes were neither imitated nor approved; and the cadence of *rhyme* was preferred to quantity, or the uſe of long and ſhort ſyllables. Des Portes likewiſe made ſome eſſays of verſes conſtructed of long and ſhort verſes without *rhyme*, but the attempt only ſerved to convince the world that this kind of meaſure is inconſiſtent with the genius of the French tongue.

To ſucceed in ſuch kind of verſes there muſt be a liberty of varying the order of the words, or of changing their ſituation as may beſt ſuit the occaſions of the poet; of making the ſubſtantive either go before, or follow after the verb, as the verſe requires, &c. Now none of the modern tongues admit of ſuch an arbitrary ſituation of the words, equally with the ancient; yet none more than the Engliſh, nor leſs than the French. See CONSRUCTION.

Rhymes are either *ſingle*, or *double*, or *treble*; though the two laſt are now diſuſed.

Single RHYMES are divided into perfect or whole *rhymes*, and imperfect or half *rhymes*.

A *whole* or *perfect* RHYME is were there is a ſimilitude of ſound, without any difference; or where a thorough identity of ſound appears in the pronunciation of the two ſyllables, notwithſtanding that there may be ſome difference in the orthography.

An *imperfect* or *half* RHYME is where there is a ſimilitude with a difference, either in reſpect of the pronunciation or the orthography; but chiefly the former.

In the time of S. Louis, the French began to be more exact in their verſification; and to diſtinguiſh their *rhymes* into *maſculine* and *feminine*; and to obſerve a regular mixture of the two, in their verſes—The invention of this mixture is uſually attributed to Marot; however it was Ronſard who firſt practiced it with ſucceſs. See MASCULINE.

The feminine RHYME is that where the laſt ſyllable of the *rhyme* ends with an *e* mute or quieſcent: as in *dove*, *belle*, &c.

Maſculine RHYMES are thoſe of all other words.

Menage obſerves that maſculine *rhymes* cloſe the periods better: but that feminines, being the ſofter and more languiſhing, end more agreeably, eſpecially in mournful ſubjects.

Double RHYMES by the French called *rich rhymes*, are thoſe where the two words terminate alike through the whole two laſt ſyllables, as *ſquabble* and *rabble*, &c.

Plain RHYMES are thoſe where the two *rhyming* verſes ſucceed immediately to each other.

Croſs RHYMES, thoſe where the verſes are ſo diſpoſed as that the firſt *rhymes* with the third, and the ſecond with the fourth, &c.

Aſſonant RHYMES. See the article ASSONANT.

RHYPTICS, RHYPTICA, ῾Ρυπτικα, in medicine, detergent remedies, or cleanſers. See DETERGENT.

RHYTHM, RHYTHMUS, ῾Ρυθμος, in muſic, the variety in the movement as to the quickneſs or ſlowneſs, length and ſhortneſs of the notes. See NOTE and HETERORHYTHMUS.

Or, the *rhythmus* may be defined more generally, the proportion which the parts of a motion bear to each other. See RHYTHMICA.

Ariſtides among the ancient muſicians, applies the word *rythmus*

mus three ways: *viz.* either to immoveable bodies, when their parts are rightly proportioned to each other; as a well-made ſtatue, *&c.* or to things that move regularly, as in handſome walking, in dancing, in the dumb ſhews of the pantomimes, *&c.* or thirdly, to the motion of ſound, or the voice; in which, the *rythmus* conſiſts of long and ſhort ſyllables or notes joined together in ſucceſſion in ſome kind of order, ſo as their cadence on the ear may be agreeable.

This, in oratory conſtitutes what we call *a numerous ſtyle*, and when the tones of the voice are well choſen, a *harmonious ſtyle*. See STYLE and NUMBERS.

In effect, *rhythmus* in the general is perceived either by the eye or ear; and may either be with or without metre: but the ſtrict muſical *rhythm* is only perceived by the ear, and cannot exiſt without it—The firſt either exiſts without ſound, as in dancing; or with ſounds; it may be either without any difference of acute and grave, as in a drum, or with a variety of theſe as in a ſong.

The *rhythmus* of the ancients, Mr. Malcolm obſerves, was very different from that of the moderns—The former was only that of the long and ſhort ſyllables of the words and verſes: it depended altogether on the poetry, and had no other forms or varieties than what the metrical art afforded. The changes therein are none but thoſe made from one kind of metre to another, as from Iambic to Choraic, *&c.*

In the modern muſic, the conſtitution of the *rhythmus* differs from that of the verſe, ſo far, that in ſetting muſic to words, the thing chiefly regarded is to accommodate the long and ſhort notes to the ſyllables in ſuch manner, as that the words be well ſeparated, and the accented ſyllable of each word ſo conſpicuous, that what is ſung may be diſtinctly underſtood. See MELODY.

Voſſius in his book *de poematum cantu & viribus rhythmi*, extols the ancient *rhythmus*—Though he owns it was confined to the metrical feet; yet, ſo well did they cultivate their language, eſpecially in what relates to the *rhythmus*; that the whole effect of the muſic was aſcribed to it, as appears by that ſaying of theirs, το παν παρα μουσικοις ὁ ῥυθμος. See MUSIC, PANTOMIME, *&c.* See alſo ODE, *&c.*

RHYTHM, RHYTHMUS, in the ancient poetry, denotes the meaſure of the feet, or the number and combination of long and ſhort ſyllables; called alſo *metre* and *quantity*. See MEASURE, QUANTITY, *&c.*

Voſſius attributes the whole force of the ancient muſic to their happy *rhythmus*: but this is ſomewhat inconceiveable. Mr Malcolm rather takes it, that the words and ſenſe of what was ſung had the chief effect: hence it was that in all the ancient muſic the greateſt care was taken, that not a ſyllable of the words ſhould be loſt, leſt the muſic ſhould be ſpoiled.

Pancirollus ſeems of this opinion; and the reaſon he gives why the modern muſic is leſs perfect than the ancient, is, that we hear ſounds without words. See MUSIC.

Voſſius ſays, the *rhythm* which does not expreſs the very forms and figures of things, can have no effect; and that the ancient poetical numbers alone are juſtly contrived for this end — He adds, that the modern languages and verſe is altogether unfit for muſic; and that we ſhall never have any right vocal muſic till our poets learn to make verſes capable of being ſung, *i. e.* till we new model our languages, reſtore the ancient quantities and metrical feet, and baniſh our barbarous rhymes.

Our verſes, ſays he, run all as it were on one foot; ſo that we have not any real *rhythmus* at all in our poetry: he adds, that we mind nothing farther than to have ſuch a number of ſyllables in a verſe, of whatever nature, and in whatever order. But this is an unjuſt exaggeration. See VERSE.

RHYTHMICA, RHYTHMICE, Ῥυθμικη, in the ancient muſic, that branch of muſic which regulated the *rhythmus*. See RHYTHMUS.

The *rhythmica* conſidered the motions; regulated their meaſure, order, mixture, *&c.* ſo as to excite the paſſions, keep them up, augment, diminiſh, or allay them.

Ariſtides and other ancient muſical writers, divided artificial muſic into *harmonica*, *rhythmica*, and *metrica*. See MUSIC. But the *rhythmica* with them likewiſe comprehended dumb motions, and in effect, all *rhythmical*, *i. e.* regular motion.

Porphyry divides muſic into *harmonica*, *rhythmica*, *metrica*, *organica*, *poetica*, and *hypocritica*. See HARMONICA, *&c.*

The ancients ſeem to have had no rhythm in their muſic beſide the long and ſhort ſyllables of their words and verſes, which were ſung, and always made a part of their muſic; ſo that the *rhythmica* with them was only the application of the metrical feet, and the various kinds of verſes uſed by them—The modern goes much farther. See RHYTHM.

RHYTHMOPOEIA, one of the muſical faculties, as they are called, which preſcribes rules for the motions, or *rhythm*. See RHYTHM.

The ancient *rhythmopœia* is very defective—We find nothing of it in the books of the ancients but ſome general hints; which can ſcarce be called rules. In their explications there appears nothing but what belongs to the words and verſes of their ſongs, which is a ſtrong preſumption they had no other. See RHYTHMICA.

RIAL*, or RYAL, a Spaniſh ſilver coin; being the eighth part of the piaſter or pieces of eight. See PIECE *of eight*.

* The word in the original Spaniſh, *real*, ſignifies *royal*.

The *rial* is equal to about ſix pence $\frac{3}{4}$ ſterling. See COIN.

The ſilver *rial* is equal to 34 ſilver maravedis; the copper *rial* to 44 copper maravedis, which only amount to 18 ſilver maravedis. See MARAVEDI.

There are alſo *rials* of eight, *rials* of four, *rials* of two, and half *rials*—The *rials* of eight are the piaſters; thoſe of four, half piaſters, *&c.*

Great quantities of *rials*, or *rials* of eight, are carried into the Eaſt-Indies, where they are divided into three claſſes, and received on different footings, *viz.* the *old rial*, known by the chaplet around, whereof 100 are current for 215 rupees: the *ſecond*, known by the largeneſs of its bead, current at $212\frac{1}{4}$ rupees for 100; and the *new* at $208\frac{1}{4}$ rupees for 100 *rials*. See RUPEE.

RIAL or ROYAL is alſo the name of a piece of gold, anciently current among us for ten ſhillings. See COIN.

In 1 Henry VI. by indenture of the mint, a pound weight of gold of the old ſtandard was coined into 45 *rials*, going for ten ſhillings a-piece, or a proportional number of *half rials*, going at five ſhillings a-piece: or *rial farthings*, which went at 2 *s.* and 2 *d.*

In 1 Henry VIII. the gold *rial* was ordered to go at 11 *s.* 3 *d.*—In 2 Elizabeth gold *rials* were coined at 15 *s.* a-piece, when a pound weight of old ſtandard gold was to be coined into 48 *rials*—In 3 James I. *roſe rials* of gold were coined at 30 *s.* a-piece, and *ſpur-rials* at 15 *s.* See MONEY.

RIBBAND, or RIBBOND, a narrow ſort of ſilk, chiefly uſed for head ornaments, badges of chivalry, *&c.* See SILK.

The knights of the garter wear a blue *ribbond*, thoſe of the thiſtle, a green *ribbond*, &c. ſcarfwiſe. See COLLAR, GARTER, *&c.*

RIBBAND, or RIBBON, in heraldry, is the eighth part of a bend. See *Tab. Herald. fig.* 82. See alſo the article BEND.

It is born a little cut off from the out-lines of the eſcutcheon; thus; he beareth or, a *ribband* gules.

RIBBING *nails*. See the article NAIL.

RIBS, *coſtæ*, in anatomy, long, arched bones; ſerving to form or ſuſtain the inner ſides of the thorax, or breaſt—See *Tab. Anat.* (*Oſteol, fig.* 7 *lit. p. p. p.* &c. ſee alſo BONE and THORAX.

The *ribs* are in number 24; twelve on each ſide—Their figure is an imperfect ſegment of a circle, harder, rounder, and more incurvated towards their articulation with the vertebræ, than at the other extremity towards the ſternum, which is thinner, broader, and more ſpungy.

The *ribs* are divided into *true* or genuine, and *ſpurious*.

The *true* RIBS are the ſeven upper pair, which are thus diſtinguiſhed, as forming the moſt perfect arches, and as having a ſtrong articulation with the ſternum—See *Tab. Anat. (Oſteol) fig.* 3. *lit. a. a.* &c. ſee alſo STERNUM.

The five lower are called *nothæ*, or *ſpurious* RIBS, as being ſmaller, ſhorter, and more cartilaginous than the reſt, and not reaching ſo far as the ſternum, which makes their articulation very lax; in regard they terminate in long, ſoft cartilages, which bending upwards are joined to the upper ribs. —See *Tab. Anat. (Oſteol) fig.* 3. *lit. c. c.* &c.

On the inſide of the true *ribs*, except the loweſt, and ſometimes the next to it, runs a pretty deep ſinus, reaching from the end next the ſpine, almoſt to its juncture with the cartilage.

All the *ribs*, together with the ſternum, are raiſed by the reſpiratory muſcles, in the action of inſpiration; by which means, and the deſcent of the diaphragm in that action, the cavity of the thorax is enlarged for the more commodious expanſion of the lungs. See RESPIRATION.

RIBS *of a ſhip*, are the timbers of the futtocks, when the planks are off; ſo called becauſe they are bent like the *ribs* of a carcaſe or skeleton.

RICE, *oriza*, a grain or ſeed of a leguminous plant of the ſame name; frequent in the Eaſt-Indies, in Greece, and Italy. See LEGUMINOUS.

The grains of *rice* which grow in cluſters each terminated with a ſpica or beard, are incloſed ſeverally in yellow rough capſulæ, or caſes. When ſtript of their skin they appear almoſt oval; of a ſhining white colour, and as it were tranſparent. *Rice* grows in moiſt marſhy places.

Throughout the Eaſt, and a great part of the Levant, *rice* is the principal food, and ſerves for bread—In the Indies the women thraſh and dreſs all the *rice*, which is a very painful office, that the men leave to them either out of idleneſs, or diſrepect.

Rice is a great food in the Roman Catholic countries in time of Lent—The ordinary preparation is by firſt ſteeping it in water, then boiling it in milk—Some make it into a ſort of farina, or flower, by pounding it in a mortar, after having firſt put it in hot water, and again waſhed it out in cold.

Rice is of ſome uſe in medicine, being eſteemed proper to ſoften and thicken ſharp humours, to moderate fluxes of the belly, *&c.*—The northern nations eat their fowls and other meats with *rice* and ſaffron—The Chineſe make a wine of *rice*, which is of an amber colour, taſtes like Spaniſh wine, and ſerves them for their common drink—In ſome parts of Europe they alſo draw a very ſtrong brandy or ſpirit from *rice.* See BRANDY and SPIRIT.

RICKETS, RHACHITIS, in medicine, a diſorder affecting the bones of children, and cauſing a conſiderable protuberance, incurvation, or diſtortion thereof. See CHILDREN, BONE, *&c.*

It ſometimes ariſes from a fault in ſwathing the child; rolling him too tight in ſome places, and too looſe in others; placing him in an inconvenient, or too often in the ſame poſture, or ſuffering him to be long wet—It is likewiſe attributed to the want of proper motion, and the uſing of the child to be born in one arm only; whence the legs and knees remain too long in the ſame incurvated ſituation.

Or it may be occaſioned by ſome fault in the digeſtion, occaſioning the aliment to be unequally applied to the body, by which ſome parts of the bones increaſe in bulk more than the reſt.

The *rickets* uſually appear between the firſt eight months, and the ſixth year of the child's age: the part it affects grows lax, flaccid, and weak; and if it be the legs, they become unable to ſupport the body—All the parts ſubſervient to voluntary motion are likewiſe debilitated and enfeebled; and the child grows pale, ſickly, ſlothful, and cannot ſit erect.

His head generally becomes too large for the trunk, and cannot be ſupported or managed by the muſcles of the neck, which gradually wear away. Swellings, and knotty excreſcencies appear in the wriſts, ancles, and tips of the ribs; and the bones of the legs and thighs grow bowed or crooked —The like diſorder ſometimes alſo ſeizes the bones of the arms.

If the ſymptoms continue long, the thorax becomes ſtrait, a difficulty of reſpiration enſues, as alſo a cough, and a hectic fever; the abdomen ſwells, the pulſe grows weak and languid, and the ſymptoms increaſing, at length prove mortal.

When the child is able to talk before he can make uſe of his legs, he is preſumed to have the *rickets.*

When the diſorder is taken early, it may be remedied by proper bolſters and bandages, ſuited to the parts affected: but when the bones are grown rigid and inflexible, other mechanical contrivances, as padding, ſtrait boots, and ſeveral ſorts of machines or engines, made of paſte-board, whale-bone, tin, *&c.* are made uſe of; to reſtore the diſtorted bones to their natural ſtraitneſs.

Cold bathing is alſo found of ſervice in the *rickets*, before the diſtemper comes to be confirmed, during May and June; continuing the child in the water two or three ſeconds at each plunge.

Others chuſe a liniment of rum and palm oil; and others a plaiſter de minio and oxycroceum, applied along the back, to cover the whole ſpine—Dry frictions over the whole body, with a warm linnen cloth before the fire, eſpecially on the parts affected, are found of ſervice. The oil of ſnails is very famous for the ſame intention, being what drops from them, after bruiſing and ſuſpending them in a flannel bag. With this the limbs and ſpinal bone are annointed.

RIDDLE. See the article ÆNIGMA.

RIDE, of hazle, or other wood, is a group or plump of ſprigs ſhooting out of the ſame root, or foot.

RIDE, in the manage—To *ride*, ſignifies to learn to *ride*—Thus, he *rides* under a good maſter. See HORSE, HEEL, and GENET.

RIDE, in the ſea language, is a term variouſly applied—Thus, a ſhip is ſaid to *ride*, when her anchors hold her faſt, ſo that ſhe drives not away by the force of the wind or tide.

A ſhip is ſaid to *ride well*, when ſhe is built ſo as not to over-beat herſelf into an head ſea, as that the waves over-rake her (that is, over-waſh her) from ſtem to ſtern.

A ſhip *rides a-croſs*, when ſhe *rides* with her main-yards and fore-yards hoiſted up to the hounds; and both yards and arms topped alike.

She is ſaid to *ride a peek* when one end of the yard is peeked up, and the other hangs down: this is alſo ſaid of a ſhip when in weighing, ſhe is brought directly over her anchor. See PEEK.

She is ſaid to *ride athwart*, when her ſide is to the tide—and to *ride betwixt wind and tide*, when the wind hath equal force over her one way and the tide another—If the wind have more power over her than the tide, ſhe is ſaid to *ride wind road.*

She is ſaid to *ride hawſeful*, when in a ſtreſs of weather ſhe falls ſo deep, that the water runs in at her hawſes.

She is ſaid to *ride-portoiſe*, when her yards are ſtruck down upon the deck, or when they are down a-port-laſt.

RIDEAU*, in fortification, a ſmall elevation of earth, extending itſelf lengthways on a plain; ſerving to cover a camp, or give an advantage to a poſt.

* The word in its original French ſignifies a curtain or cover; formed from the Latin, *ridellum*—Borel derives it from *ridere.*

A *rideau* is alſo convenient for thoſe who would beſiege a place at a near diſtance, and to ſecure the workmen in their approaches to the foot of a fortreſs.

RIDEAU, is ſometimes alſo uſed for a trench, the earth whereof is thrown up on its ſide; to ſerve as a parapet for covering the men. See TRENCH.

RIDERS, in a ſhip, are great timbers both in the hold and aloft, which are bolted on to other timbers to ſtrengthen them when the ſhip is diſcovered to be too ſlightly built—See *Tab. Ship*, *fig.* 2. *n.* 47. 49. 50.

RIDER is alſo uſed for after-clauſes, added to bills, whilſt they are depending in parliament. See BILL and PARLIAMENT.

Out-RIDERS. See the article OUT-*riders.*

RIDER-*roll.* See the article ROLL.

RIDGE, in building, the higheſt part of the roof or covering of a houſe. See ROOF.

Ridge is particularly uſed for the piece of wood wherein the rafters meet. See RAFTER.

RIDGE-TYLE. See the article TYLE.

RIDGES *of a horſe's mouth*, are wrinkles or riſings of the fleſh in the roof of the mouth, running a-croſs from one ſide of the jaw to the other, with interjacent furrows. See HORSE.

It is commonly in the third or fourth *ridge* that the farriers ſtrike with the horn in order to bleed a horſe whoſe mouth is overheated.

RIDGLING, or RIDGEL, among farriers, *&c.* the male of any beaſt that has been but half gelt. See GELDING.

RIDICULE. See LAUGHTER, RISIBILITY, *&c.*

RIDING, a diviſion of Yorkſhire; whereof there are three, *viz.* the Eaſt-*riding*, Weſt-*riding*, and North-*riding*.

In indictments in that county, it is neceſſary the town and *riding* be expreſſed.

RIDING-CLERK, one of the ſix clerks in chancery, who in his turn, for one year, keeps the controllment books of all grants that paſs the great ſeal that year. See CLERK, GRANT, *&c.*

RIENS *arrear*, in law, a kind of plea uſed to an action of debt, upon arrearages of accounts; whereby the defendant alledges that there is *nothing in arrear*. See ARREAR.

RIENS *paſſe par le fait*, nothing paſſes by the deed, is the form of an exception taken in ſome caſes to an action. See EXCEPTION and DEED.

RIENS *par deſcent*, nothing by deſcent, is the plea of an heir, when ſued for his anceſtor's debt, though he had no lands from him by deſcent, nor has aſſets in hand. See DESCENT.

RIER, or REER-COUNTY, RETRO COMITATUS, is uſed in our law books in oppoſition to *open county*. See COUNTY.

This appears to be ſome public place, which the ſheriff appoints for the receipt of the king's money, after the end of the county court—Fleta ſays it is *dies craſtinus poſt comitatum.*

RIGADOON*, a kind of dance, borrowed originally from Provence; performed in figure, by a man and a woman—The *rigadoon* is gay, merry, *&c.*

* The word is formed from the French *rigodon*, which ſignifies the ſame.

RIGEL. See the article REGEL.

RIGGING, *of a ſhip*, includes her whole cordage; or all the ropes belonging to her maſts, and yards, *&c.*—See *Tab. Ship*, *fig.* 1. ſee alſo CORDAGE, ROPE, *&c.*

A ſhip is ſaid to be *well-rigged* when all her ropes are of their fit ſize, in proportion to her burden—She is *over-rigged*, when her ropes are too big for her; which wrongs her much in her ſailing, and is apt to make her heel. See SHIP.

RIGHT, in geometry, ſomething that lies evenly, and without inclining or bending one way or another.

Thus, a *right line* is that whoſe ſeveral points all tend the ſame way. See LINE, INCLINATION, and PARALLEL.

In this ſenſe *right* ſignifies as much as *ſtraight*, and ſtands oppoſed to *curved* or *crooked*. See CURVE.

RIGHT *angle* is that formed by two lines falling perpendicularly on one another. See PERPENDICULAR.

The quantity or meaſure of a *right angle* is a quadrant of a circle, or 90°—All *right angles* therefore are equal. See ANGLE.

In this ſenſe the word *right* ſtands oppoſed to *oblique*. See OBLIQUE.

RIGHT-*angled* is underſtood of a figure when its ſides are at right angles, or ſtand perpendicularly one upon another. See FIGURE.

This ſometimes holds in all the angles of the figure, as in ſquares and rectangles; ſometimes, only in part, as in *right angled* triangles.

RIGHT-*cone.* See the article CONE.

RIGHT *lined angle.* See the article ANGLE.

RIGHT *ſine.* See the article SINE.

The word here ſtands contradiſtinguiſhed to *verſed.* See VERSED.

RIGHT *ſphere*, is that where the equator cuts the horizon at right angles—Or, that wherein the poles are in the horizon, and the equator in the zenith. See SPHERE.

Such is the poſition of the ſphere with regard to thoſe who live directly under the equator—The conſequences hereof are, that they have no latitude nor elevation of the pole—They can ſee nearly both poles of the world; all the ſtars riſe, culminate, and ſet with them, and the ſun always riſes and deſcends at right angles to their horizon, and makes their days and nights equal. See LATITUDE, STAR, RISING, DAY, NIGHT, *&c.*

In a *right ſphere* the horizon is a meridian; and if the ſphere be ſuppoſed to revolve, all the meridians ſucceſſively become horizons, one after another. See HORIZON, *&c.*

RIGHT *Aſcenſion*, of the ſun, or a ſtar, is that degree of the equinoctial, accounted from the beginning of aries, which riſes with the ſun or ſtar in a *right* ſphere. See ASCENSION.

Angle of RIGHT *aſcenſion.* See ANGLE.

Parallax of RIGHT *aſcenſion.* See PARALLAX.

RIGHT *deſcenſion.* See the article DESCENSION.

Parallax of RIGHT *deſcenſion.* See PARALLAX.

RIGHT *ſailing*, is when a voyage is performed on ſome one of the four cardinal points. See SAILING and CARDINAL *point.*

If a ſhip ſail under the meridian, that is, on the north or ſouth points, ſhe varies not in longitude at all, but only changes the latitude, and that juſt ſo much as the number of degrees ſhe hath run. See LATITUDE.

If a ſhip ſail under the equinoctial, upon the very eaſt or weſt points, ſhe alters not her latitude at all, but only changes the longitude, and that juſt ſo much as the number of degrees ſhe has run. See LONGITUDE.

If ſhe ſail directly eaſt or weſt, under any parallel, ſhe there alſo altereth not her latitude, but only the longitude; yet not according to the number of degrees of the great circle ſhe hath failed in, as under the equinoctial, but more according as the parallel is remoter from the equinoctial towards the pole. For the leſs any parallel is, the greater is the difference of longitude. See RHUMB.

RIGHT *circle*, in the ſtereographical projection of the ſphere, is a circle at right angles to the plane of projection, or that which paſſes through the eye. See CIRCLE, PROJECTION, and STEREOGRAPHIC.

RIGHT, RECTUM, in logics and ethics. See RECTITUDE.

In this ſenſe the word ſtands oppoſed to *wrong*, *erroneous*, *falſe*, &c. See ERROR, FALSHOOD, *&c.*

RIGHT, *jus*, in law, ſignifies not only a property, for which a writ of right lies, but alſo any title or claim, either by virtue of a condition, mortgage, or the like, for which no action is given by law, but only an entry. See PROPERTY. Such are, *jus proprietatis*, a right of property: *jus poſſeſſionis*, a right of poſſeſſion: and *jus proprietatis & poſſeſſionis*, a right both of property and poſſeſſion. See POSSESSION, *&c.*

This laſt was formerly called *jus duplicatum*—As, if a man be diſſeiſed of an acre of land, the diſſeiſee hath *jus proprietatis*; the diſſeiſor hath *jus poſſeſſionis*, and if the diſſeiſee releaſe to the diſſeiſor, he hath *jus proprietatis & poſſeſſionis.*

Hereditary RIGHT. See the article HEREDITARY.

Pretenſed RIGHT. See PRETENSED.

RIGHT *of reformation.* See REFORMATION.

Writ of RIGHT. See the article WRIT.

RIGHT *in court.* See RECTUS *in curia.*

RIGHT *diſtillation.* See DISTILLATION.

RIGHT *the helm*, a ſea phraſe, ordering to keep the helm even with the middle of the ſhip. See HELM.

RIGID *marble.* See the article MARBLE.

RIGIDITY, among philoſophers, a brittle-hardneſs; or that kind of hardneſs ſuppoſed to ariſe from the mutual indentation of the component particles within one another. See HARDNESS.

Rigidity is oppoſed to ductility, malleability, *&c.* See DUCTILITY.

RIGLET. See the article REGLET.

RIGOL, a kind of muſical inſtrument, conſiſting of ſeveral ſticks bound together, only ſeparated by beads—It makes a tolerable harmony, being well ſtruck with a ball at the end of a ſtick.

RIGOR, in medicine, a convulſive ſhuddering, from ſevere cold, an ague-fit, or other diſorder. See HORROR, FEVER, AGUE, *&c.*

RILL, or RIVULET. See the article RIVER.

RIM, in a watch or clock, the circumference, or circular part of a wheel. See WHEEL, WATCH, CLOCK, *&c.*

RIMA, litterally denotes a fiſſure, or chink. See FISSURE and RHAGADES.

Hence, it is applied to ſeveral parts of the body that bear a reſemblance thereto: as, *rima pudendi*, fiſſura magna, the ſame with *vulva*; *rima laryngis*, the aperture of the larynx, called the *glottis.* See GLOTTIS, *&c.*

RIMA, is alſo uſed for a narrow aperture of a ſmall cavity under the fornix, opening into the infundibulum; called alſo the third ventricle of the brain. See BRAIN and VENTRICLE.

RIME *in poetry.* See the article RHYME.

RIND, the ſkin of any fruit that may be cut off, or pared. See SKIN, FRUIT, *&c.*

The outer coat of the cheſnut, ſet with prickles, is particularly called the *urchin-like rind.*

RIND, is alſo uſed for the inner bark of trees; or that ſoft, whitiſh, juicy ſubſtance, adhering immediately to the wood. See TREE and WOOD.

Through this it is that the ſap, in the modern theory of vegetation, is ſuppoſed to return from the extremities of the branches to the root; the veſſels hereof being ſuppoſed to do the office of arteries; whence Mr Bradley calls them *arterial* veſſels. See BARK. See alſo PLANT and VEGETATION.

Grafting in the RIND. See ENGRAFTING.

RING, *annulus*, a little moveable, put on the finger, either by way of ceremony, or of ornament.

The biſhop's *ring*, makes a part of the pontifical apparatus; and is eſteemed a pledge of the ſpiritual marriage between the biſhop and his church. See BISHOP.

The epiſcopal *ring* is of a very ancient ſtanding—The fourth council of Toledo, held in 633, appoints, that a biſhop condemned by one council, and found afterwards innocent by a ſecond, ſhall be reſtored, by giving him the *ring*, ſtaff, *&c.* From biſhops, the cuſtom of the *ring* has paſſed to cardinals, who are to pay, I know not what ſum, *pro jure annuli cardinalitii.* See CARDINAL.

Origin of RINGS—Pliny, lib. xxxvii. cap. 1. obſerves, that we are in the dark as to the perſon who firſt invented, or wore the *ring*; for that what is ſaid of Prometheus, as alſo of Midas's *ring*, are fables. The firſt among whom we find the *ring* in uſe, are the Hebrews, Gen. xxxviii. where Judah, Jacob's ſon, gives Tamar his *ring* or ſignet, as a pledge of his promiſe: but the *ring* appears to have been in uſe at the ſame time among the Egyptians, from Gen. xli. where Pharaoh puts his *ring* upon Joſeph's hand as a mark of the power he gave him. And in the firſt book of Kings, chap. xxi. Jezebel ſeals the warrant ſhe ſent for the killing of Naboth with the king's *ring.*

The ancient Caldeans, Babylonians, Perſians and Greeks, had likewiſe the uſe of the *ring*; as appears from ſeveral paſſages in Scripture, and from Quintus Curtius, who tells us that Alexander ſealed the letters he wrote into Europe, with his own ſeal; and thoſe into Aſia with Darius's *ring.*

The Perſians will have Guiamſchild the fourth king of their firſt race, to have firſt introduced the *ring*, to ſeal his letters and other acts withal—The Greeks, Pliny thinks, knew nothing of the *ring* in the time of the Trojan war: the reaſon he gives is, that we find no mention thereof in Homer, but that when letters, *&c.* were to be ſent away, they were tied up, and the ſtrings knotted.

The Sabins had *rings* in Romulus's time; and it is to them probably, the practice firſt came from the Greeks; and from them paſſed to the Romans, though it was ſome time before it got footing there—Pliny cannot learn which of the kings of Rome firſt adopted it; but there are no ſigns of it in any of their ſtatues, before thoſe of Numa, and Servius Tullus. He adds, that it was in uſe among the ancient Gauls and Britons. See SEAL.

Matter of RINGS—There were ſome of one ſingle metal, and others of a mixture, or of two. For the iron and ſilver were frequently gilt; or at leaſt the gold was encloſed within the iron, as appears from Artemidorus, lib. ii. cap. 5.—The Romans were contented with iron *rings* a long time; and Pliny aſſures us, that Marius firſt wore a gold one in his third conſulate, which was in the year of Rome 650. Sometimes the *ring* was iron, and the ſeal gold; ſometimes it was hollow, and ſometimes ſolid; ſometimes the ſtone was engraven, and ſometimes plain; and the graving ſometimes in relievo, and ſometimes in creux: the laſt were called *gemmæ ectypæ*; the former *gemmæ ſculptura prominente.*

The *manner of wearing the* RING has been various: from Jeremy, chap. xxii. it appears that the Hebrews wore it on their right hand. Among the Romans, before they came to be adorned with ſtones, and while the graving was yet on the metal itſelf, every body wore them at pleaſure, on what hand and finger he liſted—When ſtones came to be added, they wore them altogether on the left hand; and it would have been held an exceſſive foppery to have put them on the right.

Pliny ſays, they were at firſt wore on the fourth finger, then on the ſecond or index; then on the little finger; and at laſt on all the fingers, excepting the middle one—The Greeks wore them altogether on the fourth finger of the left hand, as we are informed by Aul. Gelius, lib. x. and the reaſon he gives for it is, that having found from anatomy, that this finger had a little nerve that went ſtraight to the heart, they eſteemed it the moſt honourable, by reaſon of this communication with that noble part—Pliny ſays, the Gauls and ancient Britons wore it on the middle finger.

At firſt they only wore a ſingle *ring*; then one on each finger; and at length ſeveral on each finger. Martial, lib. xi. Epig. 60. At laſt, one on each joint of each finger. Ariſtoph. *in Nub.* &c.—Their delicacy, at length went to that pitch, that they had their weekly *rings*. Juvenal. *Sat.* VII. ſpeaks of *annuli ſemeſtres*; as alſo of winter and ſummer *rings*. But of all others Lampridius, cap. 32. obſerves, Heliogabalus carried the point fartheſt, who never wore the ſame *ring*, or the ſame ſhoe twice.

Rings have been alſo wore in the noſe, as pendants in the ears—Barthlin has an expreſs treatiſe, *de annulis narium*, of *rings of the noſtrils*. St Auguſtin aſſures us, it was the faſhion of the Moors; and Pietro della Valle obſerves the ſame of the modern Orientals.

In effect, there is no part of the body where it has not been wore—Several Eaſt-India travellers affirm, that the natives commonly wear them on their noſe, lips, cheeks, and chin. Ramuſio tells us, that the ladies of Narſingua in the Levant, and Diodorus Siculus, *lib.* 3. that thoſe of Ethiopia, uſed to adorn their lips with iron *rings*.

As to the ears, the cuſtom ſtill obtains of wearing *rings* therein, both by men and women, all over the world. See PENDANT.

The Indians, particularly the Guzzerattes, have wore *rings* on their feet—And when Peter Alvarez had his firſt audience of the King of Calicut, he found him all covered with ſtones ſet in *rings*; bracelets and *rings* both on the hands and fingers, and even the feet and toes. Louis Bartome repreſents a king of Pegu, as ſtill more extravagant, having *rings* ſet with precious ſtones on every toe.

Uſe of RINGS—The antients had three different kinds: the firſt ſerved to diſtinguiſh conditions or qualities. Pliny aſſures us, that the ſenators at firſt were not allowed to wear the gold *ring*, unleſs they had been embaſſadors at ſome foreign court. Nor was it even allowed them to wear the gold *ring* which was given them, in public; except on public occaſions. At other times they wore an iron one. And thoſe who had had a triumph, obſerved the ſame rules.

At length the ſenators and knights were allowed the common uſe of the gold *ring*; but Acron on Horace, *lib.* ii. *ſat.* vii obſerves, they could not do it unleſs it were given them by the prætor.

In after days the gold *ring* became the badge of the knights; the people wearing ſilver *rings*, and the ſlaves iron ones. Though the gold *ring* was ſometimes alſo allowed the people, and Severus granted it his common ſoldiers. Auguſtus allowed it the liberti, or freedmen; and though Nero made a regulation to the contrary, yet it was ſoon ſet aſide.

A ſecond kind of *rings* were the *annuli ſponſalitii*, *wedding-rings*. Some carry the origin of this cuſtom as far back as the Hebrews, on the authority of a text in Exodus xxxv. 22—Leo of Modena, however, maintains that the ancient Hebrews did not uſe any nuptial *ring*. Selden, in his *Uxor Ebraica*, *lib.* ii. *chap.* xiv. owns, that they gave a *ring* in the marriage, but that it was only in lieu of a piece of money of the ſame value, which had uſed to have been given before—The Greeks and Romans did the ſame; and from them the chriſtians took it up very early, as appears from Tertullian, and in ſome ancient liturgies, where we find the form of bleſſing the nuptial *ring*. See MARRIAGE.

The third kind of *rings* were thoſe uſed as ſeals, called *cerographi*, or *cirographi*, an account whereof ſee under the article SEAL.

Richard biſhop of Saliſbury, in his conſtitutions, *anni* 1217, forbids the putting of *ruſh-rings*, or any the like matter, on women's fingers, in order to the debauching them more readily: and he inſinuates the reaſon of his prohibition, that there were ſome people weak enough to believe, that what was thus done in jeſt was a real marriage.

De Brevil in his antiquities of Paris, ſays, it was an ancient cuſtom to uſe a *ruſh-ring* in the marriage of ſuch as had had an affair together before marriage. See CONCUBINE, &c.

RING, in aſtronomy—The *ring of Saturn* is a thin, luminous circle, incompaſſing the body of that planet, but without touching the ſame. See SATURN.

The diſcovery hereof is owing to M. Huygens, who after frequent obſervation of Saturn, perceived two lucid points, or *anſæ*, ariſing out from the body, in a right line. See ANSÆ.

Hence, as in ſubſequent obſervations, he always found the ſame appearance, he concluded that Saturn was incompaſs'd with a permanent *ring*; and accordingly produced his new ſyſtem of Saturn in 1659.

The plane of the *ring* is inclined to the plane of the ecliptic in an angle of 23° 30′—It ſometimes appears oval; and according to Campani, its greateſt diameter is double its leaſt. See PLANET.

RING, is alſo the name of an inſtrument uſed in navigation, for taking the altitudes of the ſun, &c. See ALTITUDE. It is uſually of braſs, about 9 inches diameter, ſuſpended by a little ſwivel, 45° from the point whereof is a perforation, which is the centre of a quadrant of 90° divided in the inner concave ſurface.

To uſe it, they hold it up by the ſwivel, and turn it to the ſun, till the ſun-beams falling through the hole, make a ſpot among the degrees, which is the altitude required.

This inſtrument is preferred to the aſtrolabe by reaſon the diviſions are here larger than on the aſtrolabe. See ASTROLABE.

RING is alſo uſed for the ſound or tone of a bell. See BELL, SOUND, &c.

Baſe RING. See the article BASE.

RING-*Bone*, among farriers, &c. a hard callous ſubſtance, growing in the hollow circle of the little paſtern of a horſe, above the coronet. See HORSE.

It ſometimes goes quite round, like a *ring*; whence its name: ſometimes it is hereditary, derived from the ſtallion, or mare, but oftener comes by accident, as a ſtrain, blow of a horſe, &c.

Corniche RING. See the article CORNICHE.

RING-*dial*, is a kind of dial, uſually ſmall, and portable, conſiſting of a braſs ring, or rim, ſeldom exceeding two inches in diameter, and one third of an inch in breadth. See DIAL.

In a point of this rim, is a hole, through which the ſun-beams being received, make a lucid ſpeck on the concavity of the oppoſite ſemicircle, which gives the hour of the day in the diviſions marked therein.

But it only holds good about the times of the equinox—To have the dial perform throughout the whole year, the hole is made moveable; and the ſigns of the zodiac, or the days of the month are marked on the convex ſide of the *ring*; by means whereof the dial is rectified for the time.

To uſe it, put the moveable hole to the day of the month, or the degree of the zodiac the ſun is in; then ſuſpending it by the little ring, turn it towards the ſun, till his rays, as before, point out the hour among the diviſions on the inſide.

Univerſal, or *aſtronomical* RING-*dial*, is *a* ring-dial which ſerves to find the hour of the day in any part of the earth; whereas the former is confined to a certain latitude—Its figure ſee repreſented in *Table Dialling*, *fig.* 7. See alſo DIAL.

It conſiſts of two rings, or flat circles, from two to ſix inches in diameter; and their breadth, &c. proportionable—The outward ring, A, repreſents the meridian of any place you are at; and contains two diviſions of 90° each, diametrically oppoſite to one another; ſerving, the one from the equator to the north, the other to the ſouth pole—The inner ring repreſents the equator, and turns exactly within the outer, by means of two pivots in each ring at the hour of 12.

A-croſs the two circles goes a thin reglet or bridge, with a curſor, C, that ſlides along the middle of the bridge. In the curſor is a little hole for the ſun to ſhine through.

The middle of this bridge is conceived as the axis of the world, and the extremities as the poles; and on the one ſide are drawn the ſigns of the zodiac, and on the other the days of the month. On the edge of the meridian ſlides a piece, to which is fitted a ring to ſuſpend the inſtrument by.

Uſe of the univerſal RING-*dial*—Place the line *a* (on the middle of the ſliding piece) over the degree of latitude of the place (*e. gr.* 51° for London) put the line which croſſes the hole of the curſor to the degree of the ſign, or day of the month. Open the inſtrument ſo as the two rings be at right angles to each other, and ſuſpend it by the ring H, that the axis of the dial, repreſented by the middle of the bridge, may be parallel to the axis of the world. Then turn the flat ſide of the bridge towards the ſun, ſo as his rays ſtriking through the little hole in the middle of the curſor, fall exactly on a line drawn round the middle of the concave ſurface of the inner ring; in which caſe the bright ſpot ſhews the hour of the day in the ſaid concave ſurface of the ring.

Note, The hour of 12 is not ſhewn by this dial; by reaſon the outer circle being then in the plane of the meridian, hinders the ſun's rays from falling on the inner: nor will this dial ſhew the hour when the ſun is in the equinoctial, by reaſon his rays, then, fall parallel to the plane of the inner circle.

Fairy RING.
Natal RING.
Reinforced RING.
Trunnion RING.
See the articles
FAIRY.
NATAL.
REINFORCED.
TRUNNION.

RING-*walk*, among hunters, a round walk. See HUNTING.

RING-*worm*, in medicine. See the article SERPIGO.

RIOT, in law, the forcible doing of an unlawful thing, of a private nature, by three or more perſons aſſembled together for that purpoſe.

The word is formed from the Latin, *riota*, of *arietare*, to run at each other as rams do. Though, from an ancient Gauliſh verſion of the bible, quoted by Skinner, *riot* ſhould rather ſeem originally to ſignify luxury and exceſs: whence our law *riot* might proceed; in regard theſe are frequently attended with quarrels.

For the difference between a *riot*, rout, and unlawful aſſembly. See ROUT and UNLAWFUL *Aſſembly*.

Kitchen gives us the following caſes of *riots*, *viz.*—The breach of incloſures, banks, conduits, parks, pounds, barns, the burning of ſtacks of corn, *&c.* Lambard adds, the beating a man, and entering on a poſſeſſion forcibly.

By a late act of parliament, made on occaſion of the frequent pulling down of meeting-houſes, *&c.* by mobs, or riotous aſſemblies, about the time of the laſt rebellion; a *riot* was made felony, if the *rioters* did not diſperſe after reading a proclamation made for that purpoſe.

RIPENERS, in medicine, a ſort of topical remedies, called alſo *drawers*, *digeſtives*, *maturantia*, *ſuppuratives*, &c. See DIGESTIVES, SUPPURATIVES, *&c.*

RIPENING. See MATURATION, DIGESTION, SUPPURATION, *&c.*

RISIBILITY, the faculty of laughter. See LAUGHING.

Riſibility is commonly ſuppoſed an attribute peculiar to man; as being the only creature capable of judging of what is ridiculous—Some philoſophers go ſo far as to aſſert, that the degree of judgment is always ſeen in that of laughter; fools either have too little or too much.

Authors do not agree as to the peculiar mechaniſm in man, whereby laughter is raiſed—It is uſually attributed to the communication between the plexus nervoſus, and the diaphragmatic nerves. See CONSENT *of parts*.

RISING, in aſtronomy, the appearance of the ſun, a ſtar, or other luminary above the horizon, which before was hid beneath it. See HORIZON, SUN, STAR, *&c.* See alſo AMPLITUDE.

By reaſon of the refraction of the atmoſphere, the heavenly bodies always *riſe* before their time, *i. e.* are ſeen above the horizon, while they really are below it. See REFRACTION.

There are three poetical kinds of *riſing* of the ſtars—The *coſmical* RISING, when a ſtar riſes at the ſame time with the ſun. See COSMICAL.

Acronycal RISING is when the ſtar riſes at the ſame time that the ſun ſets. See ACRONYCAL.

Heliacal, *ſolar*, or *apparent* RISING, is when the ſtar emerges out of the ſun's rays near the horizon, and is no longer hid in his brightneſs; which happens about 20 days after the conjunction of ſuch ſtar with the ſun; more or leſs, according to the magnitude of the ſtar, its diſtance, *&c.* See HELIACAL.

Heſiod long ago obſerved, that Sirius was hid 40 days; *viz.* 20 days before his *coſmical riſing*, and 20 after—Some nations of America, and among others the ſavages of Cayenna, regulate their civil year by the courſe of Sirius; beginning it with the *heliacal riſing* of that ſtar. See CANICULA and CANICULAR.

To find the riſing, &c. *of the ſun and ſtars by the Globe.* See GLOBE.

RISK, or RISQUE, the hazard or chance of a loſs, damage, *&c.* See CHANCE.

There is a great *riſk* run in letting goods go upon credit to great lords, wives not authoriſed by their huſbands, and young people not yet arrived at the age of majority.

Skinner derives the word from the Spaniſh, *riſco*, ſteep: Covarruvias, from *rigeo*. In the barbarous Greek, they ſay, ειζικαρω, for *periclitor*, I hazard; and ειζικον, for lot or chance; which words as well as *riſque*, Skinner thinks, may be deduced from ῥιπτω, for αναῤῥιπτω τον κυβον, I caſt the dye.

To prevent any *risk* in invoices of merchandizes by ſea, 'tis uſual to inſure them. See POLICY *of inſurance*.

The *risk* of merchandiſes commences from the time they are carried aboard—In matters of inſurance, it is a maxim, that all is never to be *risked* on one bottom, or in the ſame veſſel; to denote, that aſſurers muſt act with diſcretion in the ſigning of policies, and not hazard too much on each veſſel; there being more to be expected from ſeveral than from one.

RISUS, *laughter*. See the article LAUGHTER.

RISUS *caninus* is a kind of laughter wherein the lips are contracted, ſo as to ſhew all the teeth.

RISUS *ſardonius*, ſardonian laughter, is a forced, ſpightful laughter; or a laughter that does not go beyond the teeth.

The phraſe is by ſome ſaid to be founded on this, that in Sardinia there is a venomous plant, which occaſions ſuch a contraction of the muſcles of the face in perſons it kills, that they ſeem to die laughing.

RITE, RITUS, in ſchool divinity, denotes the particular manner or form of celebrating or performing the religious ceremonies, which obtains in this or that place. See CEREMONY.

The Eaſtern people, Armenians, *&c.* celebrate divine ſervice according to the Greek *rite*—The Weſtern world follow the Latin *rite*; or that of the *Roman* church.

The Engliſh obſerve the *rite* of the church of England, preſcribed in the book of Common-prayer, *&c.* See RITUAL.

RITORNELLO, or REFRET, in muſic, the burthen of a ſong, or a repetition of the firſt verſes of the ſong, at the end of each ſtanza or couplet. See REPETITION.

The word is Italian, and ſignifies properly a *little return*, or a ſhort repetition, ſuch as that of an eccho, or of the laſt words of a ſong; eſpecially when the repetition is made after a voice, by one or more inſtruments.

But cuſtom has extended the uſe of the word to all ſymphonies, played before the voices begin, and which ſerve by way of prelude or introduction to what follows.

In the partitions or ſcore of the Italian muſic, we frequently find the *ritornello*'s ſignified by the words *ſi ſuona* to ſhew that the organ, ſpinnet, or the like, are to repeat what the voice has been ſinging. See REPEAT.

RITUAL, RITUALE, a church-book, directing the order and manner of the ceremonies to be obſerved in celebrating divine ſervice, in a particular church, dioceſe, religious order, or the like. See RITE, CEREMONY, *&c.*

The ancient heathens had, likewiſe, their *rituals*, *rituales libri*; whereof thoſe of the Hetrurians were famed—Theſe books contained the rites and ceremonies to be obſerved in the building a city, in the conſecrating a temple or an altar, in ſacrificing, deifying, in dividing the curiæ, tribes, centuries, and in general, all their religious ceremonies. See SACRIFICE, APOTHEOSIS, ALTAR, *&c.*

There are ſeveral paſſages in Cato's books, *de re ruſtica*, which may give us ſome idea of the *rituals* of the ancients.

RIVAGE, RIVAGIUM, a toll anciently paid to the king in ſome rivers, for the paſſage of boats or veſſels therein. See FERRY.

RIVAL, RIVALIS, a term of relation, applied to two perſons who have the ſame pretenſion. See CORRIVAL.

It is properly uſed for a competitor in love; and figuratively for an antagoniſt in any other purſuit—The intrigues of comedies and romances uſually turn on the jealouſies of *rivals*, who diſpute for the ſame miſtreſs.

The lawyers derive the word from the Latin, *rivus*, ſtream, *quod ab eodem rivo aquam hauriant*. Donatus ſuppoſes it to have been formed hence, that beaſts coming to drink at the ſame brook, or fountain, frequently quarrel.

Cælius ſays, that *rivales* were originally ſuch whoſe fields were parted by a brook or rivulet; the courſe whereof being liable to be varied ſeveral ways, occaſioned frequent diſputes and law-ſuits.

RIVER, *fluvius*, or *flumen*, in geography, a ſtream or current of freſh water, flowing in a bed or channel, from a ſource or ſpring, into the ſea. See WATER, *&c.*

If the ſtream be not large enough to bear boats, or ſmall veſſels, loaden; it is properly called in Engliſh, by the diminutive, *rivulet* or *brook*; by the Latins, *rivus*; and the French, *riviere*—If it will only bear ſuch veſſels, the Latins call it *amnis*—If it be conſiderable enough to carry larger veſſels, it is called by the general name *river*; by the Latins, *fluvius*, and *flumen*; and by the French, *fleuve*—In all which, the difference is only as to greater and leſs.

Some will have none to be properly *rivers*, except thoſe which bear the ſame name from their ſource to their mouth. Others, none but thoſe which empty themſelves immediately into the ſea; and not into any other river. See SEA, and OCEAN.

Rivulets have their riſe, ſometimes, from great rains, or great quantities of thawed ſnow; eſpecially in mountainous places; as in the long ridges in Africa, India, Sumatra, *&c.* But the generality of *rivulets* ariſe from ſprings. See SPRING.

Rivers themſelves all ariſe either from the confluence of ſeveral *rivulets*, or from lakes: nor is there any great *river*, ſuch as the Rhine, Elbe, *&c.* known to flow from a ſingle ſpring—The Volga. *e. gr.* conſiſts of above two hundred *rivulets*, all flowing into it, before it reach the Caſpian: and the Danube receives as many. Pliny, indeed, and Cardan, ſay, that the Nile receives none; but the later travellers into Abyſſinia aſſure us of the contrary.

The Rhine, Rhone, Danube, Boryſthenes, *&c.* ariſe originally from ſprings in the mountains; the Nile, Volga, the great *river* of St Laurence, *&c.* from lakes. See LAKE.

Phænomena and variations of RIVERS—*Rivers* are found ſubject to great alterations, at different ſeaſons of the year, day, *&c.* from frequent rains, and melted ſnow—Thus in Peru and Chili many of the *rivers* are almoſt inſenſible in the night-time, and only flow by day, as being then augmented by the diſſolution of the ſnow on the mountains *Andes*—Thus the Volga abounds in water in May and June, ſo as to cover the ſand-banks, *&c.* which all the reſt of the year lie bare, ſo as ſcarce to allow a paſſage to the loaden ſhips. —Thus alſo the Nile, Ganges, Indus, *&c.* are frequently ſo increaſed as to overflow; and that either in the winter, from rain, or in the ſummer, from the melting of the ſnow.

Some *rivers* bury themſelves under ground in the middle of their courſe, and break out again in other places, like new *rivers*—Thus the Niger, which ſome coſmographers derive by a ſubterraneous channel from the Nile, becauſe it ſwells at the ſame time with the Nile without any other apparent cauſe of its ſwelling: The Niger itſelf meeting the mountains of Nubia, is hid under them, and riſes again on the weſtern ſide of the mountains. Thus alſo the Tygris is loſt in the mountain Taurus, *&c.*

Ariſtotle, and the poets, mention ſeveral ſuch *rivers* about Arcadia: Alpheus, a *river* of Arcadia, is particularly famed.—This, being ſwallowed up in the ground, is ſuppoſed by the Greek authors to continue its progreſs under earth and ſea, into Sicily; where breaking up near Syracuſe, it forms the *river* Arethuſa. The great reaſon of this opinion is, that every fifth ſummer the *river* Arethuſa in Sicily, caſts up the dung of cattle about the time of the celebration of the olympic games, in Achaia, when the dung of victims was uſed to be caſt into the Alpheus.

Some *rivers* empty themſelves into the ſea by one mouth, ſome by ſeveral—Thus the Danube opens into the Euxine ſea by ſeven mouths, the Nile by ſeven, and the Volga by at leaſt ſeventy. The cauſe of this variety of mouths Varenius attributes principally to banks of ſand, *&c.* formed therein; which gradually increaſing, form iſlands, whereby the channel is divided into ſeveral branches—Indeed, the ancients tell us that the Nile formerly only emptied itſelf at one mouth, called the *oſtium canobicum*; and add, that the other ſix are artificial.

The channels of *rivers*, except ſuch as were formed at the creation, Varenius endeavours to prove to be all artificial, and dug by men—His reaſons are, that when a new ſpring breaks forth, the water does not make itſelf a channel, but ſpreads over the adjacent land; ſo that the people have been neceſſitated to cut it a channel to ſecure their grounds; and that a great number of channels of *rivers* are certainly known, from hiſtory, to have been dug by men, *&c.*

As to the queſtion, whether thoſe *rivers* which run into others, have made themſelves that way by their own motion, or have been turned thither in canals cut by men? he takes the latter to be the more probable; and concludes the ſame of the arms or branches of *rivers*; and of the turns whereby iſlands are formed in the Tanais, Volga, *&c.*

To the queſtion, why we have no ſalt-*rivers*, when there are ſo many ſalt ſprings? he anſwers, that it is becauſe men having no occaſion for ſalt water, have not dug channels to conduct the water of ſalt ſprings; ſalt being procureable at leſs expence. See SALT.

The water of moſt *rivers* flows impregnated with particles of metals, minerals, ſands, oily and fat bodies, *&c.*—Thus ſome *rivers* bring ſands intermixed with grains of gold; of which kind is, 1°. A *river* in Japon; 2°. Another in the iſland Lequeo, near Japon; 3°. A *rivulet* in Africa called Arroe, breaking out of the roots of the mountains of the moon, wherein are gold mines: 4°. A *river* in Guinea, where the negroes ſeparate the gold duſt from the ſand, and ſell it to the Europeans, who traffic hither for that very purpoſe. 5°. In ſome *rivulets* near the city of Mexico, are grains of gold taken up, eſpecially after rain; which is to be underſtood of all the other *rivers*; none of which yield any thing conſiderable except in rainy ſeaſons. 6°. In Peru, Sumatra, Cuba, Hiſpaniola, and Guiana. Laſtly, there are ſeveral brooks in the countries about the Alps, eſpecially Tirol, out of whoſe waters gold is drawn, though there be no grains conſpicuous therein. Add to this, that the Rhine in many places affords a golden Mud. See GOLD.

As to *rivers* that bring grains of ſilver, iron, copper, lead, *&c.* we find no mention of them in authors; though doubtleſs there are great numbers of each; and many of the medicinal effects of mineral waters are doubtleſs owing thereto.

We muſt not here omit a *river* in Germany which is ordinarily ſuppoſed to change iron into copper—The truth is, there is no real converſion of the metal; all that is done is, that the cuprine, and vitriolic particles in the water, corrode the iron, and detaching parts thereof by means of the motion of the water, ſucceed in their room. See TRANSMUTATION.

From this variety in the mixture of the *river* water, reſult various qualities, different ſpecific gravities, different colours, *&c.* See *mineral*-WATER.

Some *rivers*, at certain ſeaſons of the year, ſwell, ſo as to overflow their banks, and drown the neighbouring lands—Of theſe the moſt eminent is the Nile, which riſes ſo as to cover all Egypt, except the hills. The inundation begins about the 17th day of June, and increaſes for the ſpace of forty days; and decreaſes for as many: during which period the cities of Egypt, which are all built on hills, appear as ſo many iſlands. See NILOMETER.

To theſe inundations Egypt owes all its fertility; the heavens there affording no rain, or at leaſt none in any reſpect conſiderable—Hence as the inundation is great or ſmall, Egypt for that year is fruitful or barren.

The ancient Greeks, *&c.* were miſtaken as to the cauſe of this inundation; no body in thoſe days having travelled up to the ſource of the river: but the modern Engliſh and Portugueze traders into Congo, Angola, Monomotapa, *&c.* have let us into the ſecret—From them we learn that the ſpring or ſource of the Nile is in a large lake called Zaire, round which are a great number of huge mountains, called the mountains of the moon. Now as theſe lie in the ſouthern hemiſphere, their winter will be at the time of our ſummer: but by reaſon of their nearneſs to the equator, (being only 10° diſtant from it) they never feel any notable cold: hence it is, that inſtead of ſnow in the winter, they have rain every day, at leaſt two hours before, and two after noon. In effect, the tops of theſe mountains are always covered with clouds, and the rains almoſt continual. Hence torrents are conſtantly guſhing down from the mountains; all ending in the lake of Zaire: whence they flow into the channel of the Nile, and other *rivers* ariſing from the ſame lake, as the Cuamar, the Zaire, *&c.* Hence the inundation of the Nile.

The other *rivers*, which have any notable ſtated inundations, are, the Niger, or Gambia, which overflows at the ſame time with the Nile. Leo Africanus ſays, it begins on the 15th day of June, increaſes for 40 days, and decreaſes as long—The Zaire, a *river* of Congo, proceeding from the ſame lake with the Nile, and therefore affected in the ſame manner: the Rio de la Plata in Braſil, which Maffeus obſerves, overflows at the ſame time with the Nile: the Ganges: the Indus; both which laſt overflow in June, July, and Auguſt; at which times the natives ſave great quantities of the water in ponds, to ſerve them the reſt of the year: ſeveral *rivers* flowing out of the lake Chiamay, into the bay of Bengal, which overflow in September, October, and November. Theſe all bring a very great fertility with them to the ground; the *river* Macoa in Camboia: the *river* Parana or Paranaguaſa, which ſome will have to be the ſame with the ſilver *river*: ſeveral *rivers* in Coromandelia, a part of India, which overflows in the rainy months from the great quantity of water iſſuing from the mountain Gatis: the Euphrates, which overflows Meſopotomia certain days in the year. Laſtly, the *river* Sus in Numidia.

The *rivers* moſt celebrated for their length, breadth, ſwiftneſs of current, *&c.* are,—the Nile, which runs almoſt in a ſtraight courſe 2520 geographical miles. The Niger, which runs 2400 miles. The Ganges, 1200 miles. The Ob, 1600 miles. The Jeniſcea in Aſia, about the ſame length with the Ob. The *river* Orellana in America, 60 miles broad at its mouth, and 5000 miles long. The Rio de la Plata, 80 miles broad at the mouth. The Omarannan, another *river* of Braſil: and the great *river* of St. Laurence, near 2500 miles long. See DANUBE and WOLGA.

RIVER, in phyſicks, denotes a ſtream of water running by its own gravity, in a channel open above—Such is A E *Tab. Hydroſtatics, fig.* 34.—See alſo WAVE.

Laws of the motion of RIVERS—The modern philoſophers endeavour to bring the motion and flux of *rivers* to preciſe laws; and with this view have applied geometry and mechanics thereto: ſo that the doctrine of *rivers* is become a part of the new philoſophy.

The Italian authors have diſtinguiſhed themſelves herein; and it is chiefly to them we are indebted for the improvement; particularly S. Guglielmini, who in his treatiſe, *della Natura de Fiumi*, has abundance of new obſervations and diſcoveries relating thereto.

Rivers, he obſerves, uſually have their ſources in mountains or elevations of ground; and it is in their deſcent from theſe, that they acquire the velocity or acceleration which maintains their future current—In proportion as they advance farther, this velocity diminiſhes; by reaſon of the continual friction of the water againſt the bottom and ſides of the channel, of the various obſtacles they meet withal in their progreſs, and of their arriving at length in plains, where the deſcent is leſs, and their inclination to the horizon, of conſequence, greater—Thus the Reno, a *river* of Italy, which gave occaſion in ſome meaſure to theſe ſpeculations, is found near its mouth, to have ſcarce a deſcent of 52 ſeconds.

If the acquired velocity be quite ſpent through the many obſtacles; ſo that the current becomes horizontal; there will then nothing remain to propagate the motion, and continue the ſtream, but the depth, or the perpendicular preſſure of the water which is always proportional to the depth—And, happily for us, this reſource increaſes as the occaſion for it increaſes: for in proportion as the water loſes of the velocity acquired by the deſcent, it riſes and augments in depth.

The upper parts of the water of a *river*, and thoſe at a diſtance from the banks, may continue to flow from the ſingle cauſe or principle of declivity, how ſmall ſoever it be; for not being detained by any obſtacle, the minuteſt difference of level will have its effect: but the lower parts, which roll along the bottom, will ſcarce be ſenſible of ſo ſmall a declivity, and will only have what motion they receive from the preſſion of the ſuperincumbent waters.

The natural viſcidity and coheſion of the particles of water, and that implication, as it were, which they ſeem to have with one another, makes the lower, which are moved by means of the depth, carry along with them the upper, which in a horizontal channel would have no motion at all, or in a channel very little inclined, next to none. So that the lower, in this caſe, communicate to the upper, a part of the motion they have received from the preſſure of it. Hence the preſſure of it frequently happens that the greateſt velocity of a *river* is about the middle of its depth; ſuch middle parts having the advantage of being preſſed with half the depth of the *river*, and of being free, at the ſame time, from the friction of the bottom.

To find whether the water of a *river* almoſt horizontal, flows by means of the velocity acquired in its deſcent, or by the preſſure of its depth; ſet up an obſtacle perpendicular thereto: if the water riſe and ſwell immediately againſt ſuch obſtacle, it runs in virtue of its fall; or if it ſtop a little while, in virtue of its preſſion.

Rivers according to this author, almoſt always make their own beds—If the bottom have originally been a large declivity; the water in conſequence hereof falling with a great deal of force, will have ſwept away the moſt elevated parts of the ſoil, and carrying them lower down, will gradually render the bottom horizontal; where the ſtream is ſwifteſt, there will the earth be moſt dug up, and conſequently there the greateſt cavity will be made.

The water having made its bed horizontal, becomes ſo itſelf, and conſequently rakes with the leſs force againſt the bottom; till at length that force becomes only equal to the reſiſtence of the bottom. The bottom is now arrived at a ſtate of permanency, at leaſt for a conſiderable time: and the longer, according to the quality of the ſoil; clay and chalk reſiſting longer than ſand or mud.

On the other hand, the water is continually gnawing and eating off the brims of it channel; and this with the more force as by the direction of its ſtream it impinges more perpendicularly againſt them. By this means is has a continual tendency to render them parallel to its own courſe; and when it has arrived as near that as poſſible, it ceaſes to have any effect that way. At the ſame time that it has thus rectified its edges, it has inlarged its own bed; that is, has loſt of its depth, and conſequently of its force and preſſure: this it continues to do till there is an equilibrium between the force of the water and the reſiſtence of its banks, upon which they will remain without farther mutation—And it is evident from experience, that theſe equilibriums are all real; inaſmuch as we find that *rivers* only dig and widen to a certain pitch.

The very reverſe of all theſe things does alſo on ſome occaſions happen—*Rivers* whoſe waters are thick and muddy, raiſe their bed by letting part of the heterogeneous matters contained in them fall to the bottom: they alſo contract their banks by a continual appoſition of the ſame matter in bruſhing over them. This matter being thrown aſide far from the ſtream of water, might even ſerve, by reaſon of the obſcureneſs of the motion, to form new banks.

Now, theſe oppoſite effects ſeem almoſt always to concur, and are differently combined, according to the circumſtances; whence it is very difficult judging of the reſult. Yet muſt this combination be known very accurately, before any meaſures can be taken about *rivers*, eſpecially as to the diverting their courſes—The Lamona, which emptied itſelf into the Po, being turned another way to make it diſcharge itſelf into the Adriatic, was ſo altered, and its force ſo far diminiſhed, now that its waters were left to themſelves, that it raiſed its bed a great heighth, by continual depoſitions of mud; till it became much higher than the Po, in its utmoſt accretions, and needed very high banks or dykes to keep it from overflowing. See ALLUVION.

A little *river* may be received into a large one, without either augmenting its width or depth—This ſeeming paradox ariſes hence, that the addition of the little *river* may only go towards moving the waters before at reſt near the banks of the large one, and thus augmenting the velocity of the ſtream, in the ſame proportion as it does that of the quantity of water—Thus the Venetian branch of the Po ſwallowed up the Ferrareſe branch, and that of Panaro, without any enlargement of its own dimenſions. And the ſame may be concluded proportionably of all other acceſſions to *rivers*; and in the general, of all new augmentations of water.

A *river* offering to enter into another, either perpendicularly, or in an oppoſite direction, will be diverted by degrees from that direction, and obliged to make itſelf a new and more favourable bed towards the mouth.

The union of two *rivers* into one, makes it flow the ſwifter; by reaſon, in lieu of the friction of four ſhores, they have only two to ſurmount, and that the ſtream, being farther diſtant from the banks, goes on with the leſs interruption; beſide that a greater quantity of water moving with a greater velocity digs deeper in the bed, and of courſe retrenches of its former width—Hence alſo it is that *rivers*, by being united, take up leſs ſpace on the ſurface of the earth, and are more advantageous to low grounds which diſcharge their ſuperfluous moiſture into them, and have likewiſe leſs occaſion for dykes to prevent their overflowing.

Theſe advantages are ſo conſiderable, that S. Guglielmini thinks them worthy of nature's having had a view to them in her contriving to make the confluences of *rivers* ſo frequent as we find them.

To determine more preciſely the general laws of the motion of *rivers*, it may be obſerved that a *river* is ſaid to remain in the *ſame ſtate*, or to be in a *permanent ſtate*, when it flows uniformly, ſo as to be always at the ſame heighth in the ſame place. 2°. That a plane, which cutting a *river* is perpendicular to the bottom, as *p o n q*, is called the *ſection of a river* —See *Tab. Hydroſtat. fig.* 34.

Hence, when a *river* is terminated by flat ſides, parallel to each other, and perpendicular to the horizon, and the bottom alſo is a plane, either horizontal or inclined, the ſection of the *river* with theſe three planes makes right angles, and is a parallelogram.

Now in every *river* that is in a permanent ſtate, the ſame quantity of water flows in the ſame time through every ſection; for unleſs there be in every place as great a ſupply of water, as what runs from it, the *river* will not remain in the ſame ſtate. This will hold good, whatever be the irregularity of the bed, or channel, from which in other reſpects ſeveral changes in the motion of the *river* may ariſe: for example, a greater friction, in proportion to the inequality of the channel.

The irregularities in the motion of a *river* may be infinitely varied, nor can any rules be given to ſettle them.—To aſcertain their general courſe, all irregularities muſt be ſet aſide; only the general tenor or flux be conſidered.

Suppoſe then, the water to run in a regular channel, without any ſenſible friction, and that the channel is terminated with plane ſides, parallel to one another, and vertical; and alſo that the bottom is a plane, and inclined to the horizon—Let A E be the channel, into which the water runs from a greater receptacle or head; and let the water always remain of the ſame depth at the head, ſo that the *river* may be in a permanent ſtate: the water here deſcends along an inclined plane, and is accelerated; whereby, becauſe the ſame quantity of water flows through every ſection, the depth of the water, as you recede from the head of the *river*, is continually diminiſhed, and its ſurface will acquire the figure *i q s*.

To determine the velocity of the water in different places; ſuppoſe the aperture of the channel A D C B to be ſhut up with a plane; if there be an hole made in the plane, the water will ſpout the faſter through the hole, as the hole is more diſtant from the ſurface of the water *h i*; and the water will have the ſame celerity that a body falling from the ſurface of the water to the depth of the hole below it, would acquire: all which ariſes from the preſſure of the ſuperincumbent water—There is the ſame preſſure, that is, the ſame moving force, when the obſtacle at A C is taken away, upon which every particle of water enters into the channel with the celerity a body would acquire in falling from the ſurface of the water to the depth of the particle. This particle is moved along in an inclined plane in the channel, with an accelerated motion; and that in the ſame manner, as if falling vertically, it had continued its motion to the ſame depth below the ſurface of the water in the head of the *river*.

So, if you draw the horizontal line *i t*, the particle at *r* will have the ſame celerity as a body falling the length *i* C, and running down C *r*, can acquire; which is the celerity acquired by the body in falling down *t r*. Therefore the celerity of a particle may be every where meaſured, by drawing from it a perpendicular to the horizontal plane, which is conceived to run along the ſurface of the water in the head of the *river*; and the velocity which a body acquires in falling down that perpendicular, will be the celerity of the particle; which is greater, the longer the perpendicular is. From any point, as *r*, draw *r s* perpendicular to the bottom of the *river*; this will meaſure the heighth or depth of the *river*.—Since *r s* is inclined to the horizon, if from the ſeveral points of that line, you draw perpendiculars to *i t*, they will be ſhorter, the more diſtant they are from *r*, and the ſhorteſt of them will alſo be *s v*: therefore the celerities of the particles in the line *r s*, are ſo much the leſs, the nearer they are to the ſurface of the *river*, and the lower water is moved faſter than the upper water.

Yet the celerities of thoſe waters, as the *river* runs on, continually approach nearer and nearer to an equality: for the ſquares of thoſe celerities are as *r t* to *s v*, the difference of which lines, as you recede from the head of the *river* is continually leſſened, becauſe of the depth *r s*, which is alſo continually diminiſhed as the lines themſelves are lengthened. Now as this obtains in the ſquares, it will much more obtain in the celerities themſelves, whoſe difference therefore is diminiſhed as they increaſe.

If the inclination of the bottom be changed up to the head of the *river*, ſo as to become *y* Z, and a greater quantity of water flow into the channel, it will be deeper every where in the *river*, but the celerity of the water will not be changed—For this celerity does not depend on the depth of the water in the *river*, but, on the diſtance of the moved particle from the horizontal plane of the ſurface at the head continued over the ſaid particle; which diſtance is meaſured by the perpendicular *r t*, or *s v*: but theſe lines, are not changed by the afflux of water, provided the water remain at the ſame height in the baſon or head.

Suppoſe the upper part of the channel ſtopped by an obſtacle, as X, which deſcends a little way below the ſurface of the water; here, the whole water which comes cannot run through, therefore it muſt riſe: but the celerity of the water below this cataract is not increaſed; and the water that comes on, is continually heaped up, ſo that at laſt it muſt riſe ſo as to flow over the obſtacle, or the banks of the *river*. If the banks be raiſed, and the obſtacle be continued; the height of the water would riſe above the line *i t*: but before that, the celerity of the water cannot be increaſed; in which caſe the heighth of all the water in the head will be increaſed; for, as we ſuppoſe the *river* in a permanent ſtate, there muſt continually be as great a ſupply of water to the head, as there runs from it down the channel; but if leſs water runs down, the heighth muſt neceſſarily be increaſed in the head, till the celerity of the water flowing under the obſtacle be increaſed to ſuch degree, that the ſame quantity of water ſhall run under the obſtacle, as uſed to run in the open channel before. See WAVE.

RIVULET, a diminutive of *river*. See RIVER.

RIXDOLLAR, or RIXDALLER, a ſilver coin, ſtruck in ſeveral ſtates and free cities of Germany; as alſo in Flanders, Poland, Denmark, Sweden, *&c.* See COIN.

There is but little difference between the *rixdollar* and the *dollar*, another ſilver coin ſtruck in Germany; each being nearly equal to the French crown of three livres, the Spaniſh piece of eight, or 4 *s.* 6 *d.* ſterling. See DOLLAR, CROWN, *&c.*

The *rixdollar* is one of the moſt current and univerſal coins in the world—It is uſed equally in the commerce of the Levant, the North, Muſcovy, and the Eaſt-Indies.

ROACH-*fiſhing*. See the article FISHING.

ROAD, VIA, an open way or paſſage, forming a commodious communication between one place and another. See WAY.

The Romans, of all people took the moſt pains in their *roads*: the labour and expences they were at to render them ſpacious, ſtraight, ſmooth, and agreeable to the very extremities of their empire, are incredible. See Bergier's *Hiſtory of the great roads of the Roman empire.*

Uſually, they ſtrengthened the ground by ramming it, laying it with flints, pebbles, or ſand; ſometimes by a lining of maſonry, rubbiſh, bricks, potſhards, *&c.* bound together with mortar.

F. Meneſtrier obſerves, that in ſome places in the Lyonnois he has found huge cluſters of flints cemented with lime, reaching 10 or 12 foot deep, and making a maſs as hard and compact as marble itſelf; and which, after reſiſting the injuries of time for 1600 years, is ſtill ſcarce penetrable by all the force of hammers, mattocks, *&c.* and yet the flints it conſiſts of are not bigger than eggs.

Sometimes they even paved their *roads* regularly, with large, ſquare free-ſtones: ſuch are the Appian and Flaminian ways, *&c.* See PAVING.

The *roads* paved of very hard ſtones they uſually called *viæ ferreæ*, either becauſe they reſembled iron, or becauſe they reſiſted the iron of the horſe's feet, chariots, *&c.*

Roads are either *natural* or *artificial*: *terreſtrial* or *aquatic*, *public* or *private*.

Natural ROAD is that which has been frequented for a long ſucceſſion of time, and ſubſiſts with little expence, by reaſon of its diſpoſition, *&c.*

Artificial ROAD is that made by labour of the hand, either of earth, or maſonry; and in the making whereof ſeveral difficulties were to be ſurmounted, ſuch are moſt of thoſe along the banks of rivers, through marſhes, lakes, *&c.*

Terreſtrial, or *land* ROADS, are not only thoſe made upon the ground, but alſo thoſe formed of earth heaped up in manner of a bank, and ſuſtained by ſpurs, buttreſſes, and counterforts.

Aquatic ROAD, is a *road* made in the waters, whether currant, as over rivers, *&c.* or ſtagnant, as banks and cauſeways over moraſſes, *&c.* See CAUSEWAY.

Under this denomination are alſo comprehended navigable rivers, and artificial canals; as thoſe in Italy, Holland, *&c.*

Public ROAD, or *grand road*, is any common road, whether ſtraight, or a-croſs, military or royal, *&c.*—*Private road* is that made for the convenience of ſome particular houſe, *&c.*

Military ROADS, ſo called among the Romans, were grand roads appointed for the marching of their armies into the provinces of the empire, for the aſſiſtance of their allies, *&c.* See MILITARY.

The principal of theſe *roads* in England, are Watling-ſtreet, Ikenild-ſtreet, Foſs way, and Erminage-ſtreet; which ſee under the article WAY.

Double-ROADS, among the Romans, were roads for carriages, having two pavements, or cauſeways; the one for thoſe going one way, the other for thoſe returning the other: to prevent claſhing, ſtopping, and confuſion.

Theſe two ways were ſeparated from each other by a bank raiſed in the middle, paved with bricks, for the convenience of foot-people, with borders, mounting ſtones from ſpace to ſpace, and military columns to mark the diſtance—Such was the *road* from Rome to Oſtia, called *Via Portuenſis*. See MILITARY.

Subterraneous ROAD, is that dug in a rock, with the chiſſel, and left vaulted—Such is that of Puzzuoli near Naples, which is near half a league long, fifteen foot broad, and as many high. See SUBTERRANEOUS.

Strabo ſays it was made by one Cocceius, a relation, probably, of Nerva's; but it has ſince been widened by Alphonſus king of Arragon and Naples, and made ſtraight by the viceroys—There is another of the ſame kind in the ſame kingdom, between Baiæ and Cumæ, called the *Grotto of Virgil*, becauſe mentioned by that poet in the ſixth book of his Æneid. See GROTTO.

ROAD, in navigation, denotes a place of anchorage, at ſome diſtance from ſhore, and ſheltered from the winds; where veſſels uſually moor, to wait for a wind or tide proper to carry them into harbour, or to ſet ſail. See HARBOUR, MOORING, ANCHOR, *&c.*

When the bottom is clear of rocks, and the hold firm, and the place well covered from the wind; the *road* is ſaid to be good—An open *road* is one which has but little land on any ſide.

The *roads* within his majeſty's dominions are free to all merchant veſſels, either of his ſubjects or allies—Captains and maſters of ſhips who are forced by ſtorms, *&c.* to cut their cables, and leave their anchors in the *roads*, are obliged to fix up marks or buoys, on pain of forfeiture of their anchors, *&c.* See BUOY.

The maſters of ſhips coming to moor in a *road*, muſt caſt anchor at ſuch diſtance as that the cables, *&c.* may not mix, on pain of anſwering the damages: when there are ſeveral veſſels in the ſame *road*, the outermoſt to the ſeaward, is obliged to keep a light in his lanthorn in the night-time, to apprize veſſels coming in from ſea. See MOORING.

Cock ROAD. See the article COCK-*road*.

ROADER, among ſailors, a ſhip that rides at anchor in a road. See ROAD and ANCHOR.

ROB, in pharmacy, *ſapa*; a preparation anciently much uſed, conſiſting of the juices of fruits, purified, and boiled to a conſumption of two thirds of their moiſture. See MEDICINE, *&c.*

There are *robs* made of quinces, ſloes, cherries, mulberries, elderberries, barberries, gooſeberries, and other fruits, for various diſeaſes—The juice of grapes thus prepared is more particularly called *rob* or *ſapa ſimplex*, which is almoſt of the conſiſtence of honey. See SAPA.

When only one third of the humidity is boiled away, it is called *defrutum*: and when only boiled to the conſiſtence of a ſoft electuary, a *reſin*.

The word *rob* is pure Arabic; and ſignifies, originally, a juice dried in the ſun, or over the fire; that it may keep the longer without damage.

Sometimes it alſo denotes a compoſition of ſome juice made up with honey or ſugar; in which ſenſe it is confounded with loche or lohoc. See LOHOC.

The *rob* is a form now much out of uſe: though there are ſeveral directed in the college diſpenſatory; as *robs* of black cherries, of ſloes, of quinces, *&c.*

ROBBERY, ROBBERIA, or ROBERIA, in law, a felonious taking away another man's goods, from his perſon, preſence, or eſtate, againſt his will; putting him in fear, *&c.*—This is ſometimes alſo called *violent theft*; and its puniſhment, be the value of the thing taken ever ſo ſmall, is death. See THEFT, FELONY, *&c.*

The word is ſaid to have taken its riſe hence, that anciently *robbers* only took away the *robes*, or clothes from travellers. Though my lord Coke, in the third of his Inſtitutes, takes the name to have had its riſe from Robin Hood, who lived under Richard I. in the borders of England and Scotland, by *robbery*, burning houſes, rape and ſpoil—Hence alſo,

Robers-men or *roberds-men*, mentioned in ſeveral ſtatutes for mighty thieves.

ROBBING. See the article HOUSE-*robbing*.

ROBE, ROBA. See the article GOWN.

Maſter of the ROBES, is an officer of the houſhold, who has the ordering of all his majeſty's *robes*; as thoſe of the coronation, thoſe of St George's feaſt, of parliament, *&c.* as alſo of his wearing apparel, collar of SS's, *&c.*

He has ſeveral officers under him, as a clerk of the *robes*, a yeoman, three grooms, a page, a bruſher, ſempſtreſs, laundreſs, ſtarcher, keeper of the wardrobe at Whitehall, *&c.* See WARDROBE.

ROBERVALLIAN *lines*, a name given to certain lines, uſed for the transformation of figures; thus called from their inventor M. de Roberval. See TRANSMUTATION, &c.

The abbot Gallois, in the memoirs of the royal academy, an. 1693. obſerves, that the method of transforming figures, explained at the latter end of M. de Roberval's *treatiſe of indiviſibles*, is the ſame with that ſince publiſhed by Mr James Gregory, in his *univerſal geometry*; and that, by a letter of Torricelli's, it appears that *Roberval* was the inventor of this manner of transforming figures, by means of certain lines which Torricelli called *Robervallian lines*.

He adds, that it is highly probable that J. Gregory firſt learned the method in the journey he made to Padua in 1668; the method itſelf having been known in Italy from the year 1646; though the book was not publiſhed till the year 1692.

This account Dr David Gregory has endeavoured to refute, in vindication of his brother—His anſwer is inſerted in the *Phil. Tranſact.* an. 1694, and the abbot has rejoined in the French memoirs of the academy, an. 1703. See ABBOT.

ROBIGALIA, or RUBIGALIA, in antiquity. See RUBIGALIA.

ROBORANTIA, in medicine, *ſtrengtheners*; or ſuch medicines as ſtrengthen the parts, and give new vigour to the conſtitution. See STRENGTHENER.

ROCAMBOLES, a mild ſort of garlic, by ſome called Spaniſh garlic; being much of the nature of ſhalot; and well known in cookery, in quality of a ſauce.

ROCHE, or ROCH *alum*. See the article ALLUM.

ROCHET*, or ROCKET, a lawn garment, wore by biſhops and abbots; reſembling a ſurplice, except in this, that the ſleeves are gathered at the wriſt; whereas the ſurplice is quite open.

* Menage derives the word from the Latin, *rochettus*, a diminutive of *rocchus*, uſed in writers of the lower Latin for *tunica*, and formed originally from the German, *rok*.

The regular canons of St Auguſtin do alſo wear *rochets* under their copes.

ROCHETS alſo denote the mantles wore on days of ceremony, by the peers ſitting in the Engliſh parliament. See PEER and PARLIAMENT.

Thoſe of viſcounts have two bands or borders and a half; thoſe of earls, three; thoſe of marquiſſes, three and an half; and thoſe of dukes four. *Larrey.*

ROCHET *fiſhing*. See the article FISHING.

ROCK*, RUPES, a large maſs or block of hard ſtone, rooted in the ground. See STONE.

* The word is formed of the Greek ῥωξ, *rima*, cleft, chink; and ῥωξ from ῥηγνυμαι, I break; whence ῥαχια, a ſtony ſhore.

There are various ways of breaking *rocks* with wood, gun-powder, &c. See QUARRY, WOOD, &c.

We have roads, grotto's, labyrinths, &c. dug through *rocks*. See ROAD, GROTTO, LABYRINTH, &c.

ROCK-*allum*. See the article ALLUM.

ROCK-*cryſtal*, or *cryſtal of the rock*, is that ſuppoſed to be formed by a congelation of the lapidific juice which trickles down in *rocks*, and caverns. See CRYSTAL, and STALACTITES.

ROCK-*Salt*. See the article SALT.

ROCKET, in pyrotechny, an artificial fire-work, conſiſting of a cylindrical caſe of paper, filled with a compoſition of certain combuſtible ingredients; which being tied to a ſtick, mounts in the air to a conſiderable heighth, and there burſts. See PYROTECHNY and FIRE-WORKS.

The *rocket* has a great part in all fire-works of entertainment, being not only uſed ſingly, but ſometimes, alſo, as an ingredient in others.

Beſides the *rocket* here defined, which is properly called the *ſky-rocket*, there is another, which from the ſphere it moves in, the water, is denominated *water-rocket*—The mechaniſm, *preparation*, &c. of each whereof, we ſhall here deſcribe.

*Method of making Sky-*ROCKETS—1°. A concave cylindrical mould, or frame, A B, (*Tab. Miſcellany, Fig.* 7.) is turned, of hard wood, with a baſe BD, and a capital HC, uſually adorned with architectonical mouldings—The cylinder is to be open at both ends, and its dimenſions, for *rockets* of various ſizes, as in the following article—When large, it is ſometimes alſo made of braſs or tin; and when ſmall, of bone.

2°. Of the ſame matter with the cylinder, is prepared a quadra, or foot E; in the middle whereof is turned a hemiſphere G, conſiderably leſs than that of the cavity of the frame; making the cap or head of another cylinder I K, and reaching up within the caſe; where it is kept ſteady by a pin L M.

Authors do not agree about the proportions—Simionowitz preſcribes thoſe that follow. If the diameter of the aperture H N be equal to that of a leaden-ball of a pound, or at moſt two pound weight; the heighth of the cylinder, with the baſe and capital H C, to be ſeven diameters, and the heighth of the quadra F E 1$\frac{1}{3}$. The altitude of the cylinder K I, 1. The diameter I N $\frac{1}{2}\frac{4}{3}$. The diameter of the hemiſphere G, $\frac{2}{3}$. The heighth of the capital A C, 1—The ſame author adds, that he finds by abundant experience, that if the diameter of the aperture be divided into 100 parts, according to the different weight of the leaden-balls to whoſe diameter it is equal, the following numbers being multiplied by 7 give the heighth H E.

Weight of Leaden-Ball.	Subſeptuple of Altitude H E.	Weight of Leaden-Ball.	Subſeptuple of Altitude H E.
1	100	20	86
2	98	30	82
4	96	40	78
6	94	50	75
10	91	70	67
15	88	100	57

The mould being ready, a wooden cylinder or mould A B (*Fig.* 8.) is provided, whoſe diameter is $\frac{3}{4}$ of the aperture of the frame, and its length equal to the heighth of the ſame; to which is fixed a haft or hilt A D. About this mould is a thick ſtrong paper rolled, till ſuch time as it fill the cavity of the frame. This done, where the haft is joined to the cylinder, as at A, it is choaked, *i. e.* firmly bound round with fine pack-thread, ſo as to conſtringe or ſtraighten the cavity thereof—The part thus choaked or bound up F G, (*fig.* 9.) to be equal to the hemiſphere G. (*fig.* 7.)

The caſe is now taken off the mould, and put into the cavity of the frame, *fig.* 7. the choak G F upon the hemiſphere; and in this diſpoſition is filled with a compoſition deſcribed in the following article, rammed ſtrongly in by means of a wooden cylinder or rammer fitting the cavity, and a mallet.

When filled, a paper cap of a conical form is glued over the end of the caſe filled laſt; and the ſpace left a-top filled with whole gun-powder, to the heighth of about one diameter; then the *rocket* bound, or choaked in E, as before in G. Laſtly, the *rocket* is bored, as is repreſented in A L *fig.* 9. care being taken to do it in the middle—Some, indeed, bore the *rocket* as they fill it, by thruſting a long, ſharp ſpike through the lower baſis, and drawing it out again when the *rocket* is full: But it is beſt not to bore till the *rocket* be uſed.

The boring is to go two thirds of the heighth of the *rocket*, abating one diameter of the cavity. The diameter of the bore in G is to be $\frac{1}{4}$ of the diameter of the cylinder; and in L $\frac{1}{8}$ of the lower diameter.

To make the *rocket* mount ſtraight up, it is tied faſt to the end of a long ſlender ſtick, M D, eight times as long as the *rocket*; in ſuch manner as that when poiſed on the finger near the touch-hole F, the ſtick (which is uſually made biggeſt at this end, and ſloping gently to the other) may preponderate, though very little—The *rocket* thus equipped, is hung at freedom, and lighted with port-fire.

Note, Some inſtead of a ſtick to make the *rocket* mount, furniſh it with two wings, as M N, (*fig.* 10.) which have the ſame effect: and inſtead of paper ſome make the caſes of wood covered with leather; others of a thin iron plate. And ſome, inſtead of a wooden ſtick uſe an iron wire, with a plummet at the end of it.

The compoſition wherewith *rockets* are filled, conſiſts of the three following ingredients, *viz.* Salt-petre, charcoal and ſulphur; all well ground: but the proportions of theſe are various for *rockets* of various ſizes: as in the following table. Noting, that in ſmall *rockets* gun-powder duſt is added.

Compoſitions for ROCKETS *of various ſizes.*

Weight of Rocket.		Salt-pet.	Sul. phur.	Char coal.	Gun powder Duſt.
	℔	℔	℔	℔	
100 or	60	30	10	20	
50	30	30	7	18	
20	18	42	12	26	
15	12	23	8	16	
10	9	62	9	20	
9	6	35	5	10	
5	4	64	8	16	
3	2	60	2	15	
	1		2	6	32
Ounces.		Oun.	Oun.	Oun.	Ounces.
9		4	1	2	9
6		12	1$\frac{1}{2}$	4	15
3		2	$\frac{1}{2}$	1$\frac{1}{2}$	12
1				2	15

Note, ſeveral *rockets* being diſpoſed round the circumference of a wheel, whether circular or polygonous, the head of the one applied to the tail of another, and the wheel put in motion; as one *rocket* is ſpent another will take fire: and the wheel be continued in its rotation.

As an additional ornament to *rockets*, it is uſual to furniſh them either with ſtars or with ſerpents, or ſparks, which take fire when the *rocket* burſts: and ſometimes little *rockets* are incloſed in great ones, to take fire when the great one is as its greateſt heighth.

To make ſtars for Rockets—Mix 3 pound of ſalt-petre, with 11 ounces of ſulphur, 3 ounces of beaten gun-powder, and 10 of antimony. Moiſten the maſs with gum-water, and form them into little balls of the ſize of filberds; drying them well, either in the ſun or an oven. When dry incloſe a number of them in the conical cap of the *rocket*.

Method of making a water-Rocket—Make a *rocket* AB after the uſual manner, excepting in the number of choaks, expreſſed in *fig.* 11—Let its diameter be equal to that of a leaden ball of two or three inches diameter, and let it be bored to a third part of its heighth. Incloſe the *rocket* in a hollow paper cylinder; which ſmear over with melted pitch or wax, that it may reſiſt the moiſture.

Note, The weight of the *rocket* is to be ſo proportioned to that of the water, that the whole cylinder may be immerged. —Some inſtead of a cylinder uſe a truncated cone, or even a ſpheriod; and ſome hang a weight to the end at which it is lighted.

Theory of the flight of ſky-Rockets—Mariotte takes the riſe of *rockets* to be owing to the impulſe or reſiſtence of the air againſt the flame: Dr Deſaguliers accounts for it otherwiſe.

Conceive the *rocket* to have no vent at the choak, and to be ſet on fire in the conical bore; the conſequence would be, either that the *rocket* would burſt in the weakeſt place, or that if all its parts were equally ſtrong and able to ſuſtain the impulſe of the flame, the *rocket* would burn out immoveable—Now, as the force of the flame is equable, ſuppoſe its action downwards, or that upwards ſufficient to lift 40 pounds. As theſe forces are equal, but their directions contrary, they will deſtroy each other's action. See Action and Reaction.

Imagine, then, the *rocket* opened at the choak: by this means the action of the flame downwards is taken away, and there remains a force equal to 40 pounds acting upwards, to carry up the *rocket*, and the ſtick it is tied to—Accordingly, we find that if the compoſition of the *rocket* be very weak, ſo as not to give an impulſe greater than the weight of the *rocket* and ſtick, it does not riſe at all: or if the compoſition be ſlow, ſo that a ſmall part of it only kindles at firſt, the *rocket* will not riſe.

The ſtick ſerves to keep it perpendicular: for if the *rocket* ſhould begin to tumble, moving round a point in the choak, as being the common centre of gravity of *rocket* and ſtick, there would be ſo much friction againſt the air, by the ſtick between the centre and the point, and the point would beat againſt the air with ſo much velocity, that the reaction of the medium would reſtore it to its perpendicularity.

When the compoſition is burnt out, and the impulſe upwards is ceaſed, the common centre of gravity is brought lower towards the middle of the ſtick; by which means the velocity of the point of the ſtick is decreaſed, and that of the point of the *rocket* increaſed: ſo that the whole will tumble down, with the *rocket*-end foremoſt.

All the while the *rocket* burns, the common centre of gravity is ſhifting and getting downwards, and ſtill the faſter and the lower as the ſtick is the lighter: ſo that it ſometimes begins to tumble, before it be burnt out: but when the ſtick being a little too heavy, the weight of the *rocket* bears a leſs proportion to that of the ſtick, the common centre of gravity will not get ſo low, but that the *rocket* will riſe ſtrait, though not ſo faſt.

Rocket, uſed for a habit. See Rochet.

ROD, Virga, Verge, a wand, or long ſlender ſtick or ſtaff. See Verge, Staff, &c.

Rod, is alſo uſed for a land-meaſure of 16 foot ½: the ſame with *perch* and *pole*. See Perch.

Rod, in gauging. See Gauging-*rod*.

Rod-*knights*, in ancient cuſtoms. See Redmans.

Black-Rod. See Black-*rod* and Usher.

Ezechiel's Rod. See the article Ezechiel.

Fiſhing-Rod. See the article Fishing.

Rhineland-Rod. See the article Rhineland.

ROE, of a fiſh, is that part which contains the ſperm or ſeed thereof. See Fish, Seed, &c.

That of male-fiſhes is uſually diſtinguiſhed by the name of *ſoft roe*, or milt; that of the female by *hard roe*, or ſpawn.

The ſoft *roe* when ſqueezed, yields a liquor reſembling milk; whence its name *milt:* the French call it expreſly *milk*, *laite*. See Milt.

M. Petit found 342144 ovula or little eggs in the hard roe of a carp 18 inches long. Leewenhoeck, Tom. 1. p. 216. only found 211629 eggs in a carp; but four times the number in a cod; and page 188 he ſays, that a cod contains 9344000 eggs; and that the eggs of a fiſh of one year old, are as big as thoſe of a fiſh of 25 years old. *Mem. Acad. R. Scienc. an.* 1733. p. 290.

Roe, is alſo one of the beaſts of chaſe. See Beast and Game.

Roe-Buck, a beaſt of chace or foreſt. See Beast, Game, &c.

The *Roe-buck* is called an *hind* the firſt year; *gyrle* the ſecond; *henuſe* the third; *roe-buck of the firſt head* the fourth; and a *fair roe-buck* the fifth.

The *roe-buck* is a deer well known in Germany; and ſeems to have alſo been formerly found in England, though now the race be extinct. See Hunting.

ROFFENSIS *textus*. See the article Textus.

ROGA*, Ῥογα, in antiquity, a donative, or preſent which the auguſti or emperors made to the ſenators, magiſtrates, and even the people; and the popes or patriarchs to their clergy. See Donative.

* The word is derived by ſome from the Latin *erogare*, to give, diſtribute; according to others from *rogo*, I ask; hence, ſay they, it is that St Gregory the great calls ſuch diſtributions *precaria*; as being to be demanded, in order to be had —Others, again, derive it from the Greek ῥογος, ſometimes uſed for corn; becauſe it anciently conſiſted in corn diſtributed among the populace, the ſoldiery, &c.

The emperors uſed to diſtribute theſe *rogæ* on the firſt day of the year, or on their birth day; or on the natalis dies of the cities—The popes and patriarchs, in paſſion week.

This cuſtom of *rogæ*, or largeſſes, was firſt introduced by the tribunes of the people, to gain the populace more effectually over to their intereſt. The emperors at length took it up, and made ſuch diſtributions to the people, and even to the ſoldiery, who are hence called by the Greek writers of the middle age ῬΟΓΑΤΟΡΕΣ.

Roga is alſo uſed for the ordinary pay of the ſoldiery.

ROGATIO. Rogation, in the Roman juriſprudence, a demand made by the conſuls, or the tribunes, of the Roman people, when a law was propoſed to be paſſed. See Law.

The demand was made in theſe terms: *do you will and appoint that* (for inſtance) *war be declared againſt Philip?* this was the *rogatio*; and what the people returned in anſwer, as, *the Roman people do appoint war to be made againſt Philip*, was the *decretum*, decree, or reſolve.

The word Rogatio is frequently alſo uſed for the decree it ſelf; to diſtinguiſh it from a ſenatus conſultum, or decree of the ſenate. See Senate.

Frequently, alſo, Rogatio is uſed in the ſame ſenſe with *law*; becauſe there never were no laws eſtabliſhed among the Romans, but what was done by this kind of *rogation*—Otherwiſe they were null. See Law.

ROGATION-*week*, the week immediately preceeding Whitſunday; thus called from three faſts therein, *viz.* on the Monday, Tueſday, and Wedneſday, called alſo *rogations*, or *rogation days*, becauſe of the extraordinary prayers, and proceſſions then made for the fruits of the earth. See Procession.

The firſt who appointed theſe *rogations* was St Mamertus, biſhop of Vienne, who in 474 aſſembled ſeveral biſhops, to implore the mercy of God by a faſt of three days; on occaſion of an incurſion then made into the country by a great number of wild beaſts—Others ſay, it was firſt ſet on foot by the ſame Mamertus in 468, on occaſion of ſome public calamities.

ROGUE, in law, an idle and ſturdy beggar; who by ancient ſtatutes, for the firſt offence, is called *a rogue of the firſt degree*; and puniſhed by whipping, and boring through the griſtle of the right ear with an hot iron, an inch in compaſs: and for the ſecond offence is called a *rogue of the ſecond degree*, and ordered to be put to death as felon, if he be above eighteen years of age. See Felony, &c.

ROLL, in the manufactories, ſomething wound and folded up in a cylindrical form. See Rolling.

Few ſtuffs are made up in *rolls*, except ſattins, gawſes, and crapes, which are apt to break, and take plaits not eaſy to be got out if folded otherwiſe—Ribbonds, however, and laces, galloons, and paduas of all kinds, are thus *rolled*.

To *roll hot*—By an arret of council in 1698, fullers, ſhearmen, &c. in Poictou, are prohibited to *roll* any ſtuff *hot*, either by having fire over or under it, or by heating the rollers, or otherwiſe, on forfeiture of 100 livres for the firſt offence; or of being degraded from the privileges of maſterſhip in caſe of a relapſe.

The ancients made all their books up in form of *rolls*, or little columns; and in Cicero's time, the libraries conſiſted wholly of ſuch *rolls*—The dearneſs of parchment, and the cheapneſs of papyrus, whereof the *rolls* were made, was the reaſon that ſcarce any but paper *rolls* were uſed. See Book, Paper, Parchment, &c.

Voſſius ſays, they paſted ſeveral ſheets end to end, when filled on one ſide, and *rolled* them up together; beginning with the laſt, which they called *umbilicus*, and to which they faſtened an ivory or boxen ſtick, to ſuſtain the *roll*—To the other extremity they paſted a piece of parchment, to cover and preſerve it. See Volume, Umbilicus, &c.

Theſe *rolls* were placed in the libraries, perpendicularly to the horizon—The Jews ſtill preſerve the ancient uſage of *rolls* for the books they read in their ſynagogues. See Book-*binding*, &c.

Roll *of tobacco*, is tobacco in the leaf, twiſted on the mill, and wound twiſt over twiſt, about a ſtick or roller.

The generality of tobacco in America is there ſold in *rolls*, of various weights: and it is not till after its arrival in England, Spain, France, and Holland, that it is cut—*Roll* tobacco is what is chiefly uſed both for chewing and raſping. See Tobacco.

Roll, Rotulus, in law, denotes a ſchedule of paper or parchment, which may be wound up by the hand into the faſhion of a pipe. See Schedule, &c.

Of theſe, there are in the Exchequer ſeveral kinds, *viz.* the great *wardrobe-roll*, the *cofferer's-roll*, the *ſubſidy-roll*, &c. See Pipe, &c.

The word is formed from the french *rolle*, of the latin *rotulus*, becauſe moſt inſtruments and expeditions in law were anciently wrote on papers, or parchments ſewed or glued together, and thus rolled up: whence the words *enroll*, *controll*. See Inrolment, Controll, &c.

Rolls *of parliament*, are the manuſcript regiſters of the proceedings of our ancient parliaments. See Parliament, Register, &c.

Before the uſe of printing, and till the reign of Henry VII. our ſtatutes were all engroſſed in parchment, (and by virtue of the king's writ for that purpoſe) proclaimed openly in every county.

In theſe *rolls* we have alſo a great many deciſions of difficult points of law, which were frequently in former times referred to the deciſion of that high court. See Statute, Common-law, &c.

Rider-Roll, a ſchedule or ſmall piece of parchment, frequently ſewed or added to ſome part of a *roll*, or record.

Noy obſerves that the court ex officio, may award a *certiorari, ad informandam conſcientiam*; and that which is certified ſhall be annexed to the record, and called a *rider-roll.*

Roll, is alſo uſed for a liſt of the names of ſeveral perſons of the ſame condition, or entered in the ſame engagement. See Rotulus.

Court-Roll, of a manor, is that wherein the names, rents, and ſervices of each tenant are copied and enrolled. See Court, Manor, Tenant, Rent, Copyhold, &c.

Muſter-Roll, that wherein are entered the ſoldiers of every troop, company, regiment, &c. See Muster.

As ſoon as a ſoldier's name is wrote down on the *roll*, it is death for him to deſert. See Desertion.

Calves-head-Roll, is a *roll* in the two Temples, wherein every bencher is taxed yearly at 2*s.* every barriſter at 1*s.* 6*d.* and every gentleman under the bar, at 1*s.* to the cook, and other officers of the houſe, in conſideration of a dinner of calves-heads, provided in Eaſter term. See Temple.

Ragman's-Roll, or *Ragimund's*-Roll, is a roll denominated from *Ragimund*, a papal legate in Scotland, who calling before him all the people who held benefices in that kingdom, cauſed them upon oath to give in the value of their eſtates; according to which they were taxed in the court of Rome.

Rolls, or *office of* Rolls, in Chancery-lane, London, is an office appointed for the cuſtody of the *rolls* and records in chancery. See Chancery, Record, &c.

The maſter of this office is the ſecond perſon in that court; and in the abſence of the lord-chancellor, ſits as judge. See Master *of the rolls*.

This houſe or office was anciently called *domus converſorum*, as being appointed by king Henry III. for the uſe of converted Jews; but their irregularities occaſioned king Edward III. to expell them thence: upon which the place was deputed for the cuſtody of the *rolls*. See Converſorum.

Roll or Roul among military men. See Roul.

Bead-Roll. See the article Bead-*roll*.

Check-Roll. See the article Check-*roll*.

Counter-Roll. See the article Counter-*roll*.

Roll *of parchment*, denotes the quantity of ſixty ſkins. See Parchment.

Roll, in antiquity—From the time of Anaſtaſius, we find in the hands of the emperors, on medals, a kind of narrow long *roll* or ſachel, the meaning whereof has puzzled the antiquaries.

Some imagine it to be a *roll* or bundle of papers, memoirs, petitions, &c. preſented occaſionally to princes, conſuls and the like—Others take it to be a plaited handkerchief, which the perſons who preſided at the games, caſt forth as a ſignal for their beginning—Others will have it a bag of duſt and aſhes, preſented the emperor at the ceremony of his coronation. and called AKAKIA, *q. d.* a means of preſerving innocence, by the remembrance of duſt, &c. See Acacia.

Roll, or Roller, is alſo a piece of wood, of a cylindrical form, uſed in the conſtruction of ſeveral machines, and in ſeveral works and manufactures; though ſometimes under other names. See Rolling, &c.

It is on ſuch *rolls*, properly called *beams*, that the woollen, ſilken, and other threads are wound, whereof the weaver's works conſiſt—For which end each loom has uſually two, that of the gawſe-weavers, three. See Loom.

In the glaſs manufacture they have a *running roll*, being a thick cylinder of caſt braſs, ſerving to conduct the melted glaſs to the end of the table whereon large looking-glaſſes, &c. are to be caſt. See Glass.

The founders alſo uſe a *roller* to work the ſand which they uſe in making their moulds. See Foundery.

The preſſes called calenders, as ſerving to calender ſtuffs withal, conſiſt, among other eſſential parts, of two *rollers*. See Calender.

It is alſo between two *rollers* that the waves are given to ſilks, mohairs, and other ſtuffs proper to be tabbied. See Tabby.

Prints, or impreſſions from copper-plates, are alſo taken by paſſing the plate and the paper between two *rollers*. See Print and Rolling-*preſs-printing*.

Rolls, in coining, are two iron inſtruments of a cylindrical figure, which ſerve to draw or ſtretch out the plates of gold, ſilver, and other metals, whereof the planks or pieces are to be formed for the ſpecies. See Coining.

Rolls, in printing, are two large cylinders or barrels of wood, faſtened in the middle of what they call the cradle or gallows of the preſs; and which by means of a cord, or girt, paſſing over each, and a handle, which gives motion to one of them, draws the carriage of the preſs backwards and forwards. See Printing.

Rolls, in the ſugar-works, are two large iron barrels which ſerve to bruiſe the canes, and expreſs the juice—They are caſt hollow, and their cavities filled up with wood; the cylinders of which are properly the *rollers*. See Sugar.

Rolls, or Rollers, among carpenters, maſons, &c. are plain cylinders of wood, ſeven or eight inches in diameter, and three or four foot long; uſed for the removing of beams, huge ſtones, and other like burdens, which are cumberſome, but not exceeding heavy.

Theſe *rollers* are placed ſucceſſively under the fore-part of the maſſives to be removed; which, at the ſame time, are puſhed forwards by levers, &c. applied behind. See Lever.

Endleſs Rolls—When blocks of marble, or other exceſſive heavy loads are to be removed; they uſe what they call *endleſs-rolls*.

Theſe to give them the greater force, and prevent their burſting, are made of wood joined together by croſs-quarters: they are about double the length and thickneſs of the common *roller*; and beſides, are girt with ſeveral large iron hoops at each end—At a foot's diſtance from the ends are four mortiſes, or rather only two, but pierced through and through; into which are put the ends of long levers, which the workmen draw by ropes faſtened to the ends; ſtill changing the mortiſe, as the *roll* has made a quarter of a turn.

Roll-*rich-ſtones*, in antiquity, a ſeries of huge ſtones, ranged in a circle, near Morton in Marſh, in Oxfordſhire—There are a world of fabulous traditions about them—Among the antiquaries, ſome take them to be a monument of a victory, others a burying-place; and others a place for the coronation of the Daniſh kings.

Near Penros in Cornwall is a like monument called

ROLLER. See the article Roll.

Roller, in Surgery, a long and broad ligature, uſually of linen cloth, for binding, ſurrounding and containing the parts of the human body, and keeping them in, or diſpoſing them to a ſtate of health.

A *Roller* conſiſts of two parts; the *body*, and the two extremities, which ſome call *heads* or *chiefs*, and others *tails*—There are ſingle headed *rollers*, that is, ſuch as are rolled at one head only: double headed rollers, &c.

Again, ſome are equally rolled and gathered together, as thoſe applied to fractures and diſlocated joints—Others are cut into ſeveral chiefs or heads; as thoſe for the head, chin, &c.—Others are compoſed of ſeveral ſwaths gathered and ſtitched together, as thoſe for the teſticles, &c.—Some again are *broad*, as thoſe for the breaſt, belly, &c.—Others narrow, as thoſe for the lips, fingers, &c. Guidon directs the roller for the ſhoulder to be ſix fingers broad; that for the thigh five; for the leg four; for the arm three; and the finger one.

ROLLING, Rotation, in mechanics, a kind of circular motion, wherein the moveable turns round its own axis, or centre, and continually applies new parts of its ſurface to the body it moves upon. See Motion, Revolution, Axis, &.

Such is that of a wheel, a ſphere, or the like—Such, particularly,

ticularly, are the motions of the earth, the planets, *&c.* See WHEEL, PLANET, EARTH, *&c.*

The motion of *rolling* is oppoſed to that of *ſliding*, wherein the ſame ſurface is continually applied to the plane it moves along. See SLIDING.

It muſt be noted, that in a wheel, it is only the circumference that properly *rolls*; the reſt proceeds in a compound, angular kind of motion, and partly *rolls*, partly ſlides—The not diſtinguiſhing between which two, occaſioned the difficulty of that celebrated problem the *rota Ariſtotelica*, Ariſtotle's wheel. See ROTA *Ariſtotelica*, and ANGULAR-*motion*.

The friction of a body in *rolling*, or the reſiſtence made to it by the roughneſs of the plane it moves on, is found to be much leſs than the friction in ſliding. See FRICTION.

Hence the great uſe of wheels, rolls, &c. in machines; as much of the action as poſſible being laid thereon, to make the reſiſtence the leſſer. See WHEEL, MACHINE, *&c.*

For the laws of bodies ROLLING *on inclined planes*, ſee *Inclined* PLANE, DESCENT, *&c.*

ROLLING-*preſs-printing*. See PRINTING and PRESS.

ROMAN, ſomething belonging to the city of Rome—The *Roman* commonwealth laſted from the expulſion of the Tarquins, to the battle of Pharſalia, 460 years: The *Roman* empire, from the battle of Pharſalia to the building of Conſtantinople by Conſtantine, in the year 330, laſted 378 years; from the building of Conſtantinople to the taking of it by the Turks in 1453, was a farther period of 1123 years. See COMMONWEALTH, EMPIRE, *&c.*

A *Roman* citizen, at firſt, was only a citizen of Rome; at length the right of citizenſhip was given to other cities and people, both in Italy and the provinces—It was thus St Paul was a Roman citizen, Acts xvi. 21, 37, 38, xxii. 25, 26, 27. xxiii, 27, the city of Tarſus in Cilicia, a native of which he was, having the right of *Roman* citizens. See CITIZEN.

For the *Roman* ſenate, their magiſtracy, conſuls, ſoldiery, tribes, courts, names, weights, meaſures, coins, and other matters relating to the antiquities of that people, their policy, religion, law, cuſtoms, *&c.* ſee the reſpective articles in this work.

ROMAN *purple*, now denotes the dignity of a cardinal. See CARDINAL.

ROMAN, or ROMISH *church*, is that whereof the pope is head; in oppoſition to the reformed churches. See CHURCH, POPE, *&c.*

The *Roman* law is the civil law, or the written law, as compiled by the emperor Juſtinian. See CIVIL *law*.

A ROMAN *charity* among painters, is a picture of a woman ſuckling an old man—*Roman* knight, *&c.* See KNIGHT, *&c.*

King of the ROMANS, in our age, is a prince elected, and deſigned ſucceſſor to the German empire. See KING, EMPIRE, and ELECTOR.

ROMAN *games*, *ludi* ROMANI, were ſolemn games held in ancient Rome; thus called by way of eminence, and on account of their antiquity, as having been inſtituted by Romulus. See GAMES.

They were ſometimes, alſo called, *magni ludi*, from the great pomp and expence thereof; ſometimes *conſualia*, becauſe performed in honour of the god Neptune, who was alſo called *conſus*, in his quality of god of ſecret councils. See CONSUALIA.

They alſo bore the denomination of *ludi circenſes*, becauſe held in the Circus. See CIRCENSES *ludi*, &c.

This ſolemnity, Halicarnaſſeus obſerves, was originally inſtituted by Evander, in honour of Neptune under the name of ἵππιος; whence the feſtival itſelf was called ἱπποκρατια; and was afterwards renewed by Romulus in honour of the ſame deity, only under another name.

For Romulus, needing the advice of a god to council him in the deſign he had to furniſh his new citizens with wives, applied to the god of ſecret council himſelf, Conſus; proclaimed the conſualia, and invited his neighbours all a-round to the firſt celebration thereof—The conſequence was, the rape of the Sabine women, who came to be ſpectators thereof.

The great ceremony in theſe games conſiſted in a cavalcade of horſes and aſſes, adorned with garlands; Neptune being reputed the firſt author of riding on horſeback.

Their horſes here were of two kinds, *viz.* πομπικοι, or ſuch as were merely led up and down for ſtate; and δρομικοι, which were for race and exerciſe.

The other diverſions were fencing, and that till one of the combatants were killed on the ſpot; fighting with beaſts, and cæſtus, or whirlbats; wreſtling, running, leaping, ſea-fights, horſe-races, chariot-races, *&c.* See CIRCUS, GLADIATOR, GYMNASIASTICKS, *&c.*

Theſe games, Livy tells us, were improved, and rendered much more magnificent by Tarquinus Priſcus—Manutius ſays, they were held on the eve of the nones of September, *i. e.* on the 14th day of the month.

ROMAN *order*, in architecture, is that more uſually called the *compoſite*. See COMPOSITE.

ROMAN *ballance*, *ſtatera* ROMANA, the ſteelyard. See BALLANCE, and STEELYARD.

ROMAN *indiction*. } See the articles { INDICTION.
ROMAN *year*, &c. } See the articles { YEAR, *&c.*
ROMAN *language*, &c. } See the articles { LATIN, *&c.*

ROMANCE, anciently ROMAUNT, and ROMANT, a fabulous relation of certain intrigues and adventures in the way of love and galantry; invented to entertain and inſtruct the readers. See FABLE, NOVEL, *&c.*

M. Fontenelle calls *romance*, poems in proſe; and Boſſu is not averſe to their being admitted as poetical pieces. See POEM and POETRY.

Setting aſide the verſification, it is certain an epic poem, and a *romance* are almoſt the ſame thing—The juſt notion, therefore of a *romance*, is, that it is a diſcourſe invented with art to pleaſe and improve the mind, and to form or mend the manners, by inſtructions diſguiſed under the allegory of an action or ſeries of actions, related in proſe, in a delightful, probable, yet ſurprizing manner. See EPIC.

A juſt *romance* conſiſts of two parts, *viz.* a moral, as its foundation and end; and a fable, or action, as the ſuperſtructure and means. See ACTION, FABLE, *&c.*

It muſt alſo have the manners; that is, the characters muſt be diſtinguiſhed, and the manners muſt be neceſſary, and have all the other qualities of poetical manners. See MANNERS.

The incidents muſt be delightful, and to that end rightly diſpoſed and ſurprizing—The ſentiments fall under the ſame rules as in the drama. See SENTIMENT.

But the diction is allowed to be more lofty and figurative; as being a narration; and not having terror or pity, but admiration for its end. See NARRATION, PASSION, *&c.*

As compoſitions of this kind have a long time been little elſe but hiſtories of amorous adventures, and feats of knight-errantry: the origin of *romances* is referred to that of love hiſtories; and accordingly Dearchus, a diſciple of Ariſtotle, who firſt wrote of thoſe matters, is uſually eſteemed the author of *romances*—Though Photius is of opinion that Antonius Diogenes's book on the errors and amours of Dinias and Dercyllis, gave birth to moſt of the works of this kind.

Be this as it will, it is certain the ancients have had their *romances* as well as we—Such are the amours of Rhodanis and Sinonides, deſcribed in Iambics: ſuch is the *romance* of Leucippe and Clitophon, compoſed by Achilles Tatius, a Greek writer, afterwards a biſhop: ſuch are the four books of incredible things, wrote by Damaſcius: ſuch are the Ethiopics of Heliodorus, wherein he relates the amours of Theagenes and Chariclea—Laſtly, under the ſame claſs may be ranked the fables of Parthenius Nicenus, of Athenagoras, Theodorus Prodromus, Euſtathius, and Longus.

Indeed antiquity could ſcarce be reconciled to ſuch pieces, and always looked on them as abuſes—Photius, in his *Bibliotheca*, Cod. LXXXVII. gives a frightful account of that of Tatius; and the Ethiopics of Heliodorus, though one of the modeſteſt and moſt reſerved pieces of the kind, met with very ſevere treatment—That author was biſhop of Tricca in Theſſalia in the fourth century. Nicephorus tells us, that a ſynod, conſidering the danger which might accrue to youth from reading his *romance*, authorized as it was by the dignity of its author, propoſed it to him, either to ſuppreſs his book, or renounce his biſhopric; and that he choſe the latter—But this hiſtory is a little doubtful.

Be this as it will, Heliodorus has ſerved as a model to all the *romances* wrote ſince; the marriage of Theagenes and Chariclea, has produced a very numerous iſſue; even all the *romances* now extant in the world.

In imitation of the archbiſhop Turpinus, who paſſed for author of the *romance* of the feats of Charlemaign and Orlando, a great number of hiſtories of the like kind were wrote in France, during the time of Philip the fair; the authors whereof ſeemed to improve on each other, contending who ſhould go fartheſt in the merveilleux—Theſe books, being intended for the polite people, were wrote in the court language of that age; which was called the *romans*, *romant*, or *romanic*; whence the books themſelves were called by thoſe names: and thus by degrees *romans*, &c. became the general name of all books of this kind: whence at length our *romance*. See ROMANS.

Others derive the word from the Spaniſh *romanſero*, I invent, as intimating *romances* to be meer fictions—And hence it is that the ancient poets of Provence, who were the firſt great dealers in *romances*, are called *troubadours*, q. d. finders, or inventors. See TROUBADOUR.

The French, above all other nations, have applied themſelves to this kind of writing; whether it be owing to the natural taſte and genius of the people, or to the freedom, *&c.* wherewith they converſe with the women—They began chiefly with *romances* of chivalry; hence their Amadis, in 24 volumes; Palmerin d'Oliva, and of England, king Arthur, *&c.* whereof we have an agreeable critique in Don Quixot. See CHIVALRY, *&c.*

The later *romances* are much more polite; the beſt of which are the Aſtrea of D'Urfe; the Cyrus and Clelie of mademoiſelle de Scuderi; the Caſſandre and Cleopatre of la Calprenede; Ariane, François; and the Adventures of Telemachus by the late archbiſhop of Cambray, worth all the reſt.

The Germans, too, have their *romances*; eſpecially Hercules and Herculiſcus, the Aramena, Octavia, Arminius Otbert, *&c.*

The Italians have their Eromena, by Biondi; the works of Loredano, Marino, *&c.*—The Spaniards, their Diana, and Don Quixot—The Engliſh their Arcadia, *&c.* The Argenis of Barclay is rather a ſatyr than a *romance.* See NOVEL.

ROMANS, ROMANT, or ROMANIC, the polite language formerly ſpoke at the court of France; in contradiſtinction to the *Waloon*, or ancient Gauliſh, ſpoke by the common people. See LANGUAGE and WALOON.

The *Romans* having ſubdued the Gauls, introduced part of their language among them; a mixture then of half Latin, half Gauliſh, or celtic, conſtituted the *Romans*; whereof the modern French is only an improvement. See FRENCH.

Hence to *enromance*, was to write in *romans*, &c. See ROMANCE.

ROME-*ſcot.* } See the article PETER-*pence.*
ROME-*penny.*

ROMPEE, or ROMPU, in heraldry, is applied to ordinaries, that are repreſented as broken; and to chevrons whoſe upper points are cut off—As in *Tab. Herald. fig.* 83—He beareth a chevron rompee, between three mullets, argent, by the name of Sault.

RONDEL, in fortification, a round tower, ſometimes erected at the foot of a baſtion. See TOWER.

ROOD, a quantity of land, equal to the fourth part of an acre; and containing 40 ſquare perches or poles. See ACRE, PERCH, *&c.*

ROOF, in architecture, the uppermoſt part of a building; being that which forms the covering of the whole. See BUILDING.

The *roof* contains the timber-work and its furniture of ſlate or tile, wherewith a houſe is covered, or that which ſerves it as a cover.—Though carpenters uſually reſtrain *roof* to the timber-work only. See COVERING and RIDGE.

The form of the *roof* is various: ſometimes it is pointed, in which caſe the moſt beautiful proportion is to have its profile an equilateral triangle.

Sometimes it is ſquare, that is, the pitch or angle of the ridge, is a right angle; which therefore, is a mean proportion between the pointed and the flat form.

A flat-*roof*, is that in the form and proportions of a triangular pediment. See PEDIMENT—This is chiefly practiſed in Italy, and the hot countries, where little ſnow falls.

Sometimes the *roof* is in the pinnacle form. See PINNACLE.

Sometimes it has a double ridge—Sometimes it is cut, or mutilated, that is, conſiſts of a true, and a falſe *roof* which is laid over the former: this laſt is particularly called a *manſard*, from its inventor M. Manſard, a famous French architect.

Sometimes, again, it is in form of a platform; as in moſt of the eaſtern buildings. See PLATFORM.

Sometimes it is truncated; that is, inſtead of terminating in a ridge or angle, it is cut ſquare off at a certain heighth, and covered with a terrace, and ſometimes alſo incompaſſed with a bullaſtrade. See TERRACE.

Sometimes it is in manner of a dome, that is, its plan is ſquare, and the contour circular. See DOME, CUPOLA, *&c.*

Sometimes it is round, that is, the plan is round or oval, and the profile ſpherical—Sometimes the baſe being very large, it is cut off to diminiſh its heighth, and covered with a terrace of lead, raiſed a little in the middle, with ſky-lights from ſpace to ſpace, to give light to ſome corridore, or other intermediate piece, which without ſuch an expedient would be too dark. See HOUSE, *&c.*

ROOF-*trees*, or RUFF-*trees*, are the timbers in a ſhip which go from the half-deck to the fore caſtle.

The term is alſo uſed for the upper timbers of any building; whence in the northern counties, it is common to ſignify a whole family, by ſaying, all under ſuch a-one's *roof-tree.*

Falſe ROOF.	See	FALSE.
Hip ROOF.		HIP-*roof.*
Attic of a ROOF.		ATTIC.
ROOF-*tyles.*		TYLE.

ROOM, in building—See BUILDING, HOUSE, APARTMENT, DISTRIBUTION, CHAMBER, *&c.*

Cook-ROOM. See the article COOK-*room.*

Flight of ROOMS. See the article FUGUE.

ROOMER, in the ſea language: A ſhip is ſaid to be a *roomer*, when ſhe is larger than ordinary. See SHIP, VESSEL, *&c.*

ROOT, RADIX, in botany, that part of a plant which immediately imbibes the juices of the earth, and tranſmits them to the other parts, for nutrition. See NUTRITION, PLANT, VEGETABLE, *&c.*

The *root* conſiſts of woody fibres, covered with bark, more or leſs thick.—It ariſes from a little point in the ſeed, called the *radicle.* See RADICLE.

It is no ſmall difficulty to conceive, how the *root* ſhould always get downwards, and turn up the ſtem perpendicularly; conſidering that in the ſowing of plants the *radicle* muſt frequently happen to be upwards, and the plumule downwards! See SEED, SEMINATION, PERPENDICULARITY, *&c.*

The *root* is always found in the ground, in terreſtrial plants, except in a very few caſes: the ivy and cuſcuta, being perhaps the only plants where part of the *root* lies bare.

The *root* in plants has been obſerved to do the office of the ſtomach in animals; that is, to make the firſt and principal digeſtion of the alimentary matter—M. Reneaume ſhews that the *root* does the office of all the parts in the belly of animals deſtined for nutrition; it being the *root* that receives the nouriſhment, that prepares it, digeſts it, alters and changes it into ſap, to be afterwards diſtributed to all the parts. See SAP.

The ſmell, colour, and even taſte, ſhew how conſiderable an alteration the juices undergo in the *root*; ſo that the *root* may be laid down as the principle of vegetation. See VEGETATION.

Plants growing at the bottom of the ſea have this peculiar to them, that they have no *roots*; at leaſt the parts which do the office of *roots* have nothing of the uſual figure of other roots—Theſe plants are uſually faſtened to ſome ſolid body; adhering to it by a very ſmooth poliſhed lamina, which does not ſend forth any fibre. Add to this, that the body to which they adhere, being frequently a rock or flint, appears very unfit to feed them, in caſe they had *roots.* M. Tournefort, therefore, conjectures that they are fed by a juice afforded them by the thick oily mud at the bottom of the ſea, which they receive by the pores of the exterior ſurface of this lamina.

Boerhaave obſerves, that the *root* may have any ſituation at pleaſure, with reſpect to the body of the plant; nor needs to be either loweſt, or higheſt—Accordingly in the aloë, coral, moſſes, funguſes, *&c.* the *root* is frequently uppermoſt, and its growth downwards. See CORAL, MOSS, *&c.*

Roots are divided by botaniſts into

1°. *Fibrous*, which ſend out only ſmall ſtrings from the bottom of the plant, diſtinct from each other—Such are thoſe of moſt ſpecies of graſs.

2°. More *thick and groſs*, which have a body thick and groſs, either branched out into ſubdiviſions or elſe ſending out fibres from it all along.

Theſe laſt are either *carnous*, which again are either,

- 1. *Broad* and ſwelling, or
- 2. *Long* and ſlender, which are commonly harder and more woody.

Broad and ſwelling *roots* are either,

- 1. *Bulbous*, which conſiſt but of one globe or head, and ſend out fibres from the bottom, and are either,
  - *Squammoſe*, and ſcaly, as lillies, martagon, *&c.*
  - *Coated*, which are involved in ſkins or coats, as cepa, hyacinthus, allium, *&c.* See BULB.
- 2. *Tuberous*, which are of a carnous, ſolid, and continued conſiſtence, and theſe either
  - 1°. *Simple*, with but one globe or head, as rapa, crocus, *&c.*
  - 2°. *Manifold*, as aſphodelus, pæonia, *&c.*

Long roots are either,

- (1) *Sarmentous*, i. e. twiggy, or branching, which ſhoot or creep out tranſverſe or in breadth: of theſe ſome are geniculated, knotty or jointy; as couch-graſs, mints, *&c.*
- (2) *Cauliformes*, i. e. ſtemmy or ſtalky, which ſhoot down deep directly, though often ſending out fibres and ſtrings from the great ſtem; which alſo itſelf is ſometimes divided or branching.

ROOTS, in medicine—The principal *roots* uſed in the practice of phyſic, are rhubarb, rhaponticum, ſarſaparilla, ipecacuanha, jalap, zedoary, galangal, caſſumenar, gentian, turmeric, liquorice, madder, *&c.* See each deſcribed under its proper article RHUBARB, RHAPONTIC, SARSAPARILLA, IPECACUANHA, *&c.*

ROOT-*grafting.* See the article ENGRAFTING.

ROOT, in mathematics, denotes a quantity which is multiplied by itſelf; or a quantity conſidered as the baſis or foundation of a higher power. See QUANTITY, POWER, *&c.*

Thus if any number, as 2 be multiplied by itſelf, the product 4 is called the *ſquare*, or ſecond power of 2; and 2 itſelf, with regard to that power, is called the *root*; or particularly the *ſquare root* of 4. See SQUARE-*root.*

Since, as unity is to the ſquare *root*, ſo is the *root* to the ſquare; the *root* is a mean proportional between unity and the ſquare—Thus 1 : 2 : : 2 : 4.

If a ſquare number, as 4, be multiplied by its *root* 2, the product 8 is called the *cube*, or third power of 2; and with reſpect to this cubic number 8, the number 2 is called *root*; or particularly the *cube-root*. See CUBE-*root*.

Since as unity is to the *root*, ſo is the *root* to the ſquare; and as unity is to the *root*, ſo is the ſquare to the cube; the *root* will be to the ſquare, as the ſquare to the cube, *i. e.* unity, the root, the ſquare, and the cube, are in continual proportion: thus: 1 : 2 : : 4 : 8. And the *cube-root* is the firſt of the two mean proportionals between unity and the cube.

To extract the ROOT out of a given number, or power, as 8, is the ſame thing as to find a number, as 2, which being multipled by itſelf a certain number of times, *v. gr.* twice, produces the given number, 8. See EXTRACTION.

A *root*, whether ſquare or cubic, or of any higher power; if it conſiſt of two parts, is called a *binomial root*, or ſimply a *binomial*; as 24, or 20 + 4. See BINOMIAL.

If it conſiſt of three, a *trinomial*; as 245, or 240 + 5: Or 100 + 140 + 5. See TRINOMIAL — If of more than three, it is called *multinomial*; as 2456, or 2450 + 6, or 2400 + 56, or 2000 + 456, or 2000 + 400 + 50 + 6. See MULTINOMIAL.

ROOT *of an equation*, in algebra, denotes the value of the unknown quantity in an equation. See EQUATION.

Thus, if the equation be $a^2 + b^2 = x^2$, the *root* of the equation is the ſquare *root* of a, and that of b; expreſſed thus, $\surd\ (a^2 + b^2.)$

Real ROOT — If the value of x be poſitive, *i. e.* if x be a poſitive quantity; *e. gr.* $x = r$, the *root* is called a *real* or *true root*. See POSITIVE.

Falſe ROOT — If the value of x be negative, *e. gr.* $x = -5$, the *root* is ſaid to be falſe. See NEGATIVE.

Imaginary ROOT — If the value of x be the *root* of a negative quantity, *e. gr.* $\surd - 5$; it is ſaid to be *imaginary*.

The great uſe of algebra is to bring problems to equations; then to reduce thoſe equations, or to exhibit them in the moſt ſimple terms. See REDUCTION.

What remains after this to the ſolution of the problems, is to extract the *roots* of the equations thus reduced, be they lines or numbers. See RESOLUTION.

Reſidual ROOT. See the article RESIDUAL.

Extraction of the ROOTS *of equations*. See EXTRACTION.

ROOTS, RADICES, in grammar, are the primitive words of a language, whence others are compounded or derived. See PRIMITIVE, COMPOUND, and DERIVATIVE.

Thus the Latin *fluo* is the *root* of *fluctus*, *fluxio*, *flumen*, *fluvialis*, *influxus*, *refluens*, *fluctifer*, *fluctiſonus*, *fluctivagus*, &c. — Thus alſo the Greek, θεος, is the *root* of αθεος, ενθεος, ενθȣσιασμος, *&c.*

And thus alſo, though in a leſs proper ſenſe, the Daniſh *rood* is the *root* of the Engliſh word *root*; the Latin *radix* the *root* of the French *racine*, as *rado* is the *root* of *radix*; and perhaps ῥαδιος the *root* of *rado*.

The Greek and Hebrew tongues are learnt by *roots*—Of dictionaries, ſome are in alphabetical order, others are diſpoſed by *roots*, as Scapula, Faber's Theſaurus, and the firſt edition of the dictionary of the French academy: in the edition of 1718, this laſt is thrown into the uſual alphabetical order. See DICTIONARY.

ROPE, an aſſemblage of ſeveral twiſts or ſtrings of hemp, twiſted together by means of a wheel: of various uſes, as in binding, ſtaying, drawing, ſuſpending, *&c.* See HEMP and CORDAGE.

When the *rope* is made very thick, it is called a *cable*, and when very ſmall, a *cord*. See CABLE and CORD.

The greateſt conſumption of *ropes* is in navigation, for the tackling of ſhips; where, though *ropes* include the whole cordage. See TACKLE and SHIP.

Yet there are ſeveral *ropes* particularly ſo denominated: as, the *entering rope*, hung at the ladder to help people up — The *top-rope*—A *bolt-rope*, wherein the ſail is ſowed—*Buoy-rope*, to which the buoy of the anchor hangs—*Gueſt-rope*, to tow the long-boat—The *keel-rope*—The *bucket-rope*—*Rudder-rope*, to ſave the rudder if it ſhould chance to be beat off —*Preventer-rope*, to ſave the yard in caſe any part of the tyes ſhould be broke—*Breaſt-rope*, to laſh the pannels to the maſts—*Guy-rope*, to keep the foremaſt forwards, directly over the hatch-way—And *boat-rope*, by which the boat hangs, or is faſtened a-ſtern of the ſhip—*Port-ropes*. See PORT-*ropes*.

ROPE, *cord*, or *ſtrap*, in the manage, is any of theſe tied round a pillar to which the horſe is faſtened when they begin to quicken and ſupple and teach him to fly from the ſhambrier, and not gallop faſtly or incompactly. See PILLAR.

In thoſe manages where there is no pillar, a man ſtands in the centre of the ground, and holds the end of the *rope*.

ROPES *of two pillars*, are the ropes or reins of a cavezon, uſed to a horſe that works between two pillars. See PILLAR.

ROPE *dancer*. See the article DANCER.

ROPE *deck*. See the article DECK.

ROPE *yarn*, is the yarn of any *rope* untwiſted—It commonly conſiſts of cable-ends, which are worn out; and are called *junks of the cables*—It ſerves for many purpoſes among the ſailors.

RORIFEROUS-*duct*, q. d. *dew dropping pipe*; a name given by ſome to the thoracic duct; from its ſlow manner of conveying, and as it were, inſtilling, the chyle into the common ſtream of blood. See THORACIC-*duct*, &c.

ROS, *dew*. See the article DEW.

ROS *vitrioli*, among chymiſts, is ſometimes uſed for the firſt phlegm diſtilled from vitriol in balneo mariæ. See VITRIOL.

ROSADE, a kind of liquor, prepared of pounded almonds and milk, mixed with clarified ſugar.

ROSARUM *acetum*. See ACETUM.

ROSARY, in the Romiſh church, a chaplet conſiſting of five, or fifteen decads of beads, to direct the recitation of ſo many ave maria's, in honour of the virgin. See CHAPLET.

ROSARY, alſo denotes a particular maſs or form of devotion addreſſed to the virgin, to which the chaplet of that name is accommodated. See VIRGIN.

Some attribute the inſtitution of the *roſary* to St Dominic; but F. d'Achery ſhews it was in uſe in the year 1100; ſo that St Dominic could only make it more celebrated—Others attribute it to Paulus Libycus, and others to St Benedict; others to the Chartreux; others to venerable Bede; and others to Peter the hermit.

Thoſe who aſcribe it to St Dominic, differ as to the particular time of its inſtitution; ſome referring it to the year 1208, when he preached againſt the Albigenſes; others will have him to have ſet it on foot in the courſe of his miſſions in Spain, before he paſſed into France.

Order of the ROSARY, or *of our lady of the* ROSARY, is an order of knights, ſuppoſed by Schoonebeck, and the jeſuit Bonanni, to have been inſtituted by St Dominic; but by miſtake: for that ſaint never inſtituted any order under this name, and theſe authors apparently make a military order of an army of croiſees, who under the command of the count de Montfort, fought againſt the Albigenſes. See CROISADE and ALBIGENSES.

The abbot Juſtiniani, and M. Hermant, will have this order to have been eſtabliſhed by an archbiſhop of Toledo, named Frederick, after St. Dominic's death; and to have bore for a badge, a black and white croſs, in the middle whereof was repreſented our lady, holding her little ſon in one hand, and in the other a *roſary*—F. Mendo adds, that they were obliged to rehearſe the *roſary* on certain days—After all, F. Helyot doubts whether or no ſuch an order ever exiſted. See ORDER.

ROSATA *aloe.*	See	ALOE.
ROSATUM *acetum.*		ACETUM.
ROSATUM *aromaticum*		AROMATICUM.
ROSATUM *vinum.*		VINUM.

ROSE, ROSA, Ῥοδον, a medicinal flower, produced by a ſhrub of the ſame name; which gives the denomination to ſeveral preparations in pharmacy. See FLOWER.

The kinds of *roſes* are various: thoſe chiefly uſed in medicine are the *red* and *damask roſes*—The *damask* are a good and ſafe purgative, adminiſtred in infuſion, or by way of ſyrup — The *red* are aſtringent; and the conſerve thereof uſed with ſucceſs againſt diſtempers of the breaſt and lungs, and diſorders of the eyes. See CONSERVE.

It is a tradition among the ancients, that the god of love made a preſent to Harpocrates the god of ſilence, of a beautiful *roſe*, the firſt that had been known; to engage him not to diſcover any of the private practices of his mother Venus —And hence it became a cuſtom to have a *roſe* placed in their rooms of mirth and entertainment, that under the aſſurance thereof they might be induced to lay aſide all conſtraint, and ſpeak what they pleaſed—Thus did the *roſe* become a ſymbol of ſilence; ſo that to be *ſub roſa*, under the *roſe*, denotes as much as to be out of danger of having any converſation divulged.

Sugar of ROSES, is made of red roſe leaves, dried in an oven, pulverized, and put into a proper quantity of ſugar diſſolved with a little water in a chafing-diſh over the fire. See SUGAR.

ROSE-WATER, a water drawn by diſtillation from red or damask *roſes*. See WATER.

It is a good cordial, and was formerly highly eſteemed; but is ſince fallen from its reputation, and is little uſed but in diſeaſes of the eyes, and in perfumes and waſhes.

It is however, in great eſteem throughout the Eaſt, particularly in China and Perſia, where the trade thereof is very conſiderable. The *roſe*-leaves remaining at the bottom of the ſtill, have the natural cathartic quality; and are alſo kept for a perfume.

Golden Roſe, is a roſe which the pope bleſſes at maſs on the firſt ſunday in Lent, while they ſing lætare Jeruſalem; and which, after maſs, he carries in proceſſion; and then ſends it as a preſent to ſome ſovereign prince.

The factions of the red and white Roſe, are famous in our Engliſh hiſtories—They had their riſe in 1454, under Henry VI. between the houſes of York and Lancaſter, and ended in Henry VII. who united the two branches—The houſe of Lancaſter had for its badge a *white roſe*; that of York a *red* one. See Faction.

Roſe-wood, *lignum rhodium*, or *aſpalathum*. See Aspalath.

Roſe, in architecture and ſculpture, an ornament cut in reſemblance of a *roſe*—See *Tab. Archit. fig.* 54. *fig.* 26. *lit. b.* See alſo Ornament.

It is chiefly uſed in frizes, corniches, vaults of churches, and particularly in the middle of each face of the corinthian abacus. See Abacus—And in the ſpaces between the modillions; under the plafonds of corniches. See Modillion.

Roſe *nails.* See the article Nail.

Roſe *diamond.* See the article Diamond.

Roſe-noble, an ancient Engliſh gold coin, firſt ſtruck in the reign of Edward III. and then called the *penny of gold*; ſince called *roſe-noble*, becauſe ſtamped with a *roſe*: It was current at 6 *s.* 8 *d.* See Noble and Coin.

ROSEMARY, Roſmarinus, a medicinal plant, whoſe flower, called *anthos*, is of conſiderable uſe in the preſent practice. See Anthos.

Roſemery flowers are eſteemed the principal aromatic of our growth—Dr Quincy ſpeaks of them as good in moſt nervous complaints, eſpecially ſuch as ariſe from too great moiſture and cold, as they are hot and drying—In epilepſies, apoplexies, palſies, &c. they are rarely omitted in preſcription, under one form or other. See Aromatic.

They abound with a ſubtile detergent oil, which makes them deobſtruent and opening, whence their uſe in uterine obſtructions, the jaundice, &c.

They are the baſis of the celebrated Hungary water; with a ſmall quantity of which, diluted in common water, the confectioners make conſerve of *roſemary* flowers, eſſence of *roſemary*-water, &c. See Hungary *water.*

ROSICRUCIANS. See the article Rosycrucians.

ROSIN, Reſina, in pharmacy. See Resina.

Roſin, is particularly uſed for a reſinous matter prepared from the juice of the pine-tree; in ordinary uſe for the making of wax, &c.

Mr Bent in the *Phil. Tranſ.* N°. 243, gives us the manner of preparing this coarſe drug, in the ſouthern parts of France; thus—The bark being pared off the pine, to make the ſap run down into a hole made at bottom to receive it; as the juice runs it leaves a cream or cruſt a-top; which being tempered with water, is ſold, by a cheat, for white bees-wax. See Wax.

When they have got a quantity of the juice they ſtrain it through a basket, and what runs through is the common turpentine. See Turpentine.

What ſtays behind, they mix with water, and diſtilling it in an alembic, the matter that riſes is the oil of turpentine; and the calx that remains is the common *roſin.*

ROSOLIS, or Roſ-ſolis, popularly, Roſa-ſolis, *ſundew*, an agreeable ſpirituous liquor, chiefly taken after meals, by way of dram, to aid digeſtion: being compoſed of burnt brandy, ſugar, cinnamon, and milk-water, and ſometimes perfumed with a little musk.

It had its name, becauſe anciently prepared wholly of the juice of the plant *ros ſolis*; but that plant is no longer any ingredient therein.

The beſt is that of Turin—The French have a particular kind not called *ros ſolis*, but *du roy*; becauſe uſed with good effect by the late king Lewis XIV.—It is compoſed of Spaniſh wine, wherein are infuſed aniſe, fennel, aneth, coriander, &c. for three weeks.

ROSTING. See the articles Dressing, Food, &c.

ROSTRA, in antiquity, a part of the Roman forum, wherein orations, pleadings, funeral harangues, &c. were delivered. See Forum.

The *roſtrum* was a kind of chapel, taken out of the forum, and furniſhed with a ſuggeſtum, or eminence called more particularly the *roſtra*, where the orators ſtood to ſpeak.

It was adorned, or, as Livy ſays, built, with the beaks of ſhips taken from the people of Antium, in a naval engagement; whence the name. See Rostrum.

ROSTRALIS *corona*, Roſtral *crown*, in antiquity. See Crown.

Roſtralis *columna*, Roſtral *column.* See Column.

ROSTRI-FORMIS *proceſſus*, in anatomy, the ſame as coracoides. See Coracoides.

ROSTRUM litterally denotes the beak or bill of a bird. See Bird.

Hence the word is alſo figuratively applied to the beak, or fore-part of the head of a ſhip. See Head, Prow, Ship, &c. See alſo Rostra.

Roſtrum, in chymiſtry, ſignifies the noſe, or beak of the common alembic, which conveys the liquor diſtilled into its receiver. See Alembic, Receiver, Distillation, &c.

Roſtrum, is alſo a ſort of crooked ſciſſars, which the ſurgeons in ſome caſes make uſe of for the dilation of wounds.

ROSYCRUCIANS, Roſicrucians, or *brothers of the* Roſy-croſs, a name aſſumed by a ſect or cabal of hermetical philoſophers; who aroſe, or at leaſt became firſt taken notice of in Germany, in the beginning of the laſt century. See Hermetical.

They bound themſelves together by a ſolemn ſecret, which the ſwore inviolably to preſerve; and obliged themſelves at their admiſſion into the order, to a ſtrict obſervance of certain eſtabliſhed rules.

They pretended to know all ſciences, and chiefly medicine; whereof they publiſhed themſelves the reſtorers—They pretended to be maſters of abundance of important ſecrets; and among others, that of the philoſopher's ſtone; all which they affirmed to have received by tradition from the ancient Egyptians, Chaldeans, the Magi, and Gymnoſophiſts. See Philosopher'*s ſtone.*

Their chief was a German gentleman, educated in a monaſtery, where he learnt the languages—In 1378 he went to the Holy Land, where falling ſick at Damaſcus, he conſulted the Arabs, and other Eaſtern philoſophers, by whom he was ſuppoſed to be initiated into this wonderful art—At his return into Germany, he formed a ſociety, to whom he communicated the ſecrets he had brought with him out of the Eaſt, and died in 1484.

They have been diſtinguiſhed by ſeveral names, accommodated to the ſeveral branches of their doctrine—Becauſe they pretended to protract the period of human life, by means of certain noſtrums, and even to reſtore youth; they were called *immortales.*

As they pretended to know all things, they have been called *illuminati*; and becauſe they have made no appearance for ſeveral years, but have kept altogether incognito, they have been called the *inviſible brothers.*

Their ſociety is frequently ſignified by the letters F. R. C. with ſome among them interpret *fratres roris cocti*, it being pretended that the matter of the philoſopher's ſtone is dew concocted, exalted, &c.

Some, who are no friends to free maſonry, make the preſent flouriſhing ſociety of free maſons a branch of *Roſicrucians*; or rather the *Roſicrucians* themſelves under a new name, or relation; *viz.* as retainers to building—And it is certain, there are ſome free maſons who have all the characters of *Roſicrucians*; but how the æra and original of maſonry, as traced by Mr Anderſon, and that of *Roſicrucianiſm*, here fixed from Naudæus, who has wrote expreſly on the ſubject, conſiſt, we leave others to judge. See Masonry.

ROT, a diſeaſe, which in moiſt years is incident to ſheep, in the ſame ground where in drier years they are free from it; which, yet, ariſes, not only from the moiſture, but from a certain principle of putrefaction, both in the air and the graſs. See Putrefaction.

ROTA, in mechanics. See the article Wheel.

Rota *Ariſtotelica*, *Ariſtotle's wheel*, is the name of a celebrated problem in mechanics, founded on the motion of a wheel about its axis; thus called, becauſe firſt, that we know of, taken notice of by Ariſtotle.

The difficulty is this—While a circle makes a revolution on its centre, advancing at the ſame time in a right line along a plane; it deſcribes, on that plane, a right line equal to its circumference. Now if this circle which we may call the *deferent*, carry with it another ſmaller circle concentric with it, and which has no motion but what it receives from the deferent; which is the caſe of the nave of a coach-wheel carried along by the wheel; this little circle, or nave, will deſcribe a line in the time of the revolution, equal, not to its own circumference, but to that of the wheel: for that its centre advances in a right line, as faſt as that of the wheel does; as being in reality the ſame therewith.

The matter of fact is certain—But how it ſhould be, ſeems a myſtery—It is obvious, that the wheel advancing during the revolution, muſt deſcribe a right line equal to its circumference; but how ſhould the nave, which revolves like the wheel, deſcribe a right line ſo much greater than its circumference?

The ſolution Ariſtotle gives is no more than a good explication of the difficulty—Galileo, who next attempted it, has recourſe to an infinity of infinitely little vacuities in the right line deſcribed by the two circles; and imagines that the little circle never applies its circumference to thoſe vacuities; but in reality only applies it to a line equal to its own circumference; though it appears to have applied it to a much larger.

But it is evident this is all gratis dictum—The vacuities are imaginary; and why does not the great circle apply its circumference to them? laſtly, the magnitude of theſe vacuities muſt be augmented or diminiſhed according to the different proportion of the two circles.

F. Tacquet will have it that the little circle making its rotation more ſlowly than the great one, does on that account deſcribe a line longer than its circumference; yet without applying any point of its circumference to more than one point of its baſe—But this is no more allowable than the former.

The attempts of ſo many great men proving vain; M. Dortous de Meyran, a French gentleman, had the good fortune to hit on a ſolution, which he ſent to the royal academy of ſciences; where being examined by Meſſ. de Louville and Saulmon, appointed for that purpoſe, they made their report that it was ſatisfactory—The ſolution is to this effect.

The wheel of a coach is only acted on, or drawn in a right line: its circular motion, or rotation ariſes purely from the reſiſtance of the ground whereon it is applied. Now this reſiſtance is equal to the force wherewith the wheel is drawn in the right line; inaſmuch as it defeats that direction: of conſequence the cauſes of the two motions, the one right, the other circular, are equal, and therefore their effects, *i. e.* the motions are equal. And hence, the wheel deſcribes a right line on the ground, equal to its circumference.

For the nave of the wheel, the caſe is otherwiſe—It is drawn in a right line by the ſame force as the wheel, but it only turns round, becauſe the wheel turns, and can only turn with it, and at the ſame time therewith. Hence it follows that its circular velocity is leſs than that of the wheel, in the ratio of the two circumferences; and therefore its circular motion is leſs than its rectilinear one.

Since then it neceſſarily deſcribes a right line equal to that of the wheel, it can only do it by ſliding, or what they call the motion of *raſion*—That is, a part of the circular nave cannot be applied to a part of a right line greater than itſelf, but by ſliding along that part; and that more or leſs, as the part of the nave is leſs than that of the circle. See Rolling and Sliding.

Rota, is alſo uſed for a particular court or juriſdiction in Rome, eſtabliſhed for taking cognizance of beneficiary matters, *&c.* See Benefice, *&c.*

The *rota* conſiſts of twelve doctors, choſen out of the four nations of Italy, France, Spain, and Germany; three of them being Romans, one a Florentine, one a Milaneze, one of Bologna, one of Ferrara, one a Venetian, one a Frenchman, two Spaniards, and one a German; each having four clerks or notaries under him.

Their office is to judge of all beneficiary cauſes, both within Rome, and throughout the ſtate of the church, in caſe of appeal; and of all civil proceſſes for above 500 crowns.

They are alſo called *chaplains* of the pope, as ſucceeding the ancient judges of the ſacred palace, who held their court in his chapel. See Chaplain.

The denomination *rota*, *wheel*, ſome will have derived hence, that they officiate by rotation; others, becauſe the moſt important affairs of the Chriſtian world turn upon them—Du Cange derives it from *rota porphyretica*, becauſe the pavement of the chamber where they formerly ſate was of porphyry; and faſhioned like a wheel.

ROTATION, Rolling, in mechanics. See Rolling, Rota, *&c.*

Rotation, in geometry, the circumvolution of a ſurface round an immoveable line, called the *axis of rotation*. See Axis.

By ſuch *rotation* of planes, ſolids are formed or generated. See Genesis, Solid, *&c.*

The method of cubing ſolids, generated by ſuch *rotation*, is laid down by M. de Moivre, in his ſpecimen of the uſe of the doctrine of fluxions—For the fluxions of ſuch ſolids take the product of the fluxion of the abſciſſa, multiplied by the circular baſe; and ſuppoſe the ratio of a ſquare to the circle inſcribed, be as $\frac{n}{1}$: the equation expreſſing the nature or property of any circle, whoſe diameter is d; is $yy = dx - xx$. Therefore $\frac{4d\dot{x}x - x^2\dot{x}}{n}$ is the fluxion of a portion of the ſphere, and conſequently, the portion itſelf $4\,\frac{1}{2}dxx - x\frac{1}{3}x3$, and the circumſcribed cylinder is $4\,\frac{dxx - x3}{n}$ therefor the portion of the ſphere is to the circumſcribed cylinder, as $\frac{1}{2}d - \frac{1}{3}x$ to $d - x$. *Philoſ. Tranſact.* N°. 216.

Rotation, Revolution, in aſtronomy. See Revolution.

Diurnal **Rotation**. See Diurnal *Rotation* and Earth.

Rotation, in anatomy, the action of the *muſculi rotatores*; or the motion which they give to the parts they are fixed to. See Rotator.

There are two muſcles, the great and the little obliquus, to perform the *rotation* of the eye—The obturator internus and externus effect the *rotation* of the thighs. See Eye, *&c.*

ROTATOR, in anatomy, a name given the oblique muſcles of the eye; called alſo from the direction of the fibres, *circulares*, and from the effect of their action, *amatorii*. See Amatorii, Obliquus and Eye.

ROTHER-beasts, a word uſed in old ſtatutes, and ſtill in the northern parts of Englands, for horned beaſts; as oxen, cows, ſteers, heifers, *&c.*

Whence *rother-ſoil*, in Herefordſhire, is taken for the dung or ſoil of ſuch cattle.

Rother-nails, are ſuch as have a very full head, and are uſed to faſten the rudder-irons in ſhips. See Nail.

ROTONDO, Rotundo, in architecture, a popular term for any building that is round both within and without ſide; whether it be a church, a ſalon, a veſtible, or the like. See Building, *&c.*

The moſt celebrated *rotondo* of antiquity is the pantheon at Rome, dedicated to Cybele and all the gods, by Agrippa, ſon-in-law of Auguſtus; but ſince conſecrated by pope Boniface IV. to the virgin and all the ſaints, under the title of *Sta. Maria della rotonda*. See Pantheon.

The chapel of the Eſcurial, which is the burying place of the kings of Spain, is alſo a *rotondo*; and in imitation of that of Rome, is alſo called *pantheon*. See Escurial.

ROTTENNESS, *Putredo*. See Putrifaction.

ROTULA, in anatomy. See the article Patella.

ROTULI *magni ingroſſator*. See Ingrossator.

ROTULORUM *cuſtos*. See the article Custos.

ROTULUS, a *roll*. See the article Roll.

Rotulus *contrarientium*—The earl of Lancaſter taking part with the barons againſt king Edward II. it was not thought fit, in reſpect of their power, to call them rebels or traytors, but only *contrarients*: accordingly, we have a record of thoſe times called *rotulus contrarientium*.

Rotulus *wintoniæ*, an exact ſurvey of all England, by counties, hundreds, and tithings; made under king Alfred; not unlike that of *domes-day*. See Domes-day.

It was thus called, becauſe anciently kept at Wincheſter, among other records of the kingdom.

ROTUNDO. See the article Rotondo.

ROTUNDUS, in anatomy, a name given to ſeveral muſcles, from the roundneſs of their body. See Muscle.

Such are the *rotundus major*, called alſo *teres major*; and the *rotundus minor*, called alſo *teres minor*, and *tranſverſalis*—See *Tab. Anat.* (*Myol*) *fig.* 2. *n.* 13. *fig.* 6. *n.* 12. 13. *fig.* 7. *n.* 14, 34 *and* 35. See alſo Teres, *&c.*

Pronator radii **Rotundus**. See Pronator.

ROUAGE. *Battery en* Rouage. See Battery.

ROUGE-*croſs*, q. d. *red-croſs*. See Poursuivants.

Rouge-*dragon*, q. d. *red-dragon*. See Poursuivants.

ROUGH, Roughness, in mechanics. See Friction and Resistence.

Rough *caſting*. See Plaistering and Mortar.

Rough *diamond*. See the article Diamond.

Rough *emerald*. See the article Emerald.

Rough *leaved plants*. See the article Plant.

Rough *taſte*. See Taste, Acerb, Austere, *&c.*

ROUL, Roll, or Rowl, in the military art—Officers of the ſame rank, who mount the ſame guards, and take their turns in relieving one another, are ſaid to *roul* or *roll*. See Guard.

ROULADE, in muſic, a trilling or quavering. See Quavering.

ROUND, Rotundus, in geometry. See Circle, Globe, Sphere, *&c.*

Round, in anatomy. See the article Rotundus.

Round, in muſic—The Italians call b *round*, what we call a *flat*; and the French b *mol*; and b *ſquare*, what we call a *ſharp*. See Flat and Sharp, *&c.*

Round, is alſo a military term, ſignifying a walk or turn which an officer, attended with ſome ſoldiers, takes in a garriſon or fortified place, *around* the ramparts, in the nighttime; to liſten if any thing be ſtirring without the works, and to ſee that the centries are watchful, and do their duty, and all things in good order. See Counter *round*.

In ſtrict garriſon, the *rounds* go every quarter of an hour, that the rampart may be always furniſhed—The centuries are to challenge at a diſtance; and to reſt their arms as the *rounds* paſs, and let no one come near them.

When the *round* is near the corps de garde, the centry calls aloud, *who comes there?* and when the anſwer is, *the rounds*, he ſays, *ſtand*; then calls for the corporal of the guard, who draws his ſword, and calls alſo, *who comes there?* and when it is anſwered, *the rounds*, he that has the word advances and delivers it to the corporal, who receives it with his ſword pointed at the giver's breaſt. See WORD.

Way of the ROUNDS. See the article WAY.

Counter-ROUNDS. See COUNTER-*round.*

Quarter-ROUND. See the article QUARTER-*round.*

ROUNDS, among maſons, denotes the broken pieces of ſtatues.

ROUND-*heads.* See WHIG and TORY.

ROUND-*head nails.* See the article NAIL.

ROUND-HOUSE, in a ſhip, is the uppermoſt room or cabin on the ſtern of a ſhip, where the maſter lies. See SHIP and STERN.

ROUND-*houſe* alſo denotes a kind of priſon, for the nightly-watch to ſecure perſons in, till they can be carried before a magiſtrate. See WATCH.

ROUND *niche*	See the articles	NICHE.
ROUND *roof*		ROOF.
ROUND *table*		TABLE.

ROUND, in the academies, denotes a circular piſte or tread. See PISTE.

To ROUND *a horſe*, is a general term for all ſorts of manages upon a volt, or circular tread. See VOLT—Hence to *round* a horſe upon a trot, gallop, *&c.* is to make him carry his ſhoulders and haunches roundly or compactly, upon a large or ſmaller circle, without traverſing or bearing to a ſide.

ROUNDELAY*, or ROUNDO, a kind of ancient poem, thus called, according to Menage, from its form; and becauſe it ſtill turns back again to the firſt verſe, and thus goes round. See LAY.

* The word is formed from *round* and *lay*—The French call it *rondeau.* The Spaniards *gloſes.*

The common *roundelay* conſiſts of thirteen verſes, eight whereof are in one rhyme, and five in another—It is divided into couplets; at the end of the ſecond and third whereof, the beginning of the *roundelay* is repeated; if poſſible, in an equivocal or punning ſenſe.

The *roundelay* is a popular poem among the French, but little known among us—Marot and Voiture have ſucceeded the beſt in it.

Rapin obſerves, that if the *roundelay* be not very exquiſite, it is ſtark nought—In all the ancient *roundelays*, Menage obſerves, the verſe preceeding has a compleat ſenſe; and yet joins agreeably with that of the cloſe; without depending neceſſarily thereon. This rule well obſerved makes the *roundelay* more ingenious; and is one of the fineſſes of the poem.

ROUNDELET. See the article RUNDLET.

ROUNDNESS, ROTUNDITY, in phyſics. See SPHERICITY.

ROUNDO, or ROUNDELAY, in muſic, a kind of burden or ritornello; where the beginning of each couplet is repeated at the end thereof. See RITORNELLO.

ROUPIA, or RUPEE. See the article RUPEE.

ROUSE *up a hart*, among hunters. See HUNTING.

To ROUSE, among falconers, is when a hawk lifts up and ſhakes himſelf. See HAWK and HAWKING.

To ROUSE *a hawſer*, or *cable*, in the ſea phraſe, ſignifies to hale in part of the hawſer or cable, which lies ſlack in the water. See CABLE, *&c.*

ROUT*, ROUTE, a public road, highway, or courſe; eſpecially that which military forces take. See ROAD.

* The word is French, *route*, formed from the Latin, *rupta*, or *ruta*; or the French, *roux*, an old word for horſe; or rather from the old Celtic, *rout*, road.

Sanſon and Ogilby have made maps of the *routs* and poſt-roads of France and England: ſoldiers are prohibited going out of their *routs*—*Routs* are frequently cut in parks, foreſts, *&c.* both for ornament and the conveniencies of hunting. See HUNTING.

Some uſe *rout* for a path cut a-croſs a wood; in oppoſition to *way*, which is a great road. See WAY.

ROUT, in navigation. See the article COURSE.

ROUT is alſo uſed for the defeat and flight of an army—The ſerjeants endeavour to rally the ſoldiers in a *rout.* See RALLYING.

ROUT, in law, is an aſſembly or combination of three, or more perſons, going forcibly to commit an unlawful act; though they do not actually perform it. See ASSEMBLY.

If they go, ride, or move forwards, after their meeting, it is a *rout*, though they do not put their purpoſe in execution; if they do, it is a *riot.*

A *rout*, therefore, ſeems to be an unlawful aſſembly; and a riot the diſorderly fact committed thereby. See RIOT.

Two things, however, there are in common to *rout*, *riot*, and *unlawful aſſembly*: the one, that there be at leaſt three perſons together; the other, that, being together, they diſturb the peace, either by words, ſhew of arms, turbulent geſture, or actual violence. See UNLAWFUL *aſſembly.*

ROUT *of wolves*, among hunters, denotes a herd of theſe wild beaſts. See HERD.

ROUTIER, in navigation. See WAGGONER.

ROWEL, among farriers, a kind of iſſue, made by drawing a skain of ſilk, thread, hair, or the like, through the nape of the neck, or other part of an horſe; anſwering to what in chirurgery is called a *ſeton.* See SETON.

The ROWELLING *of horſes* is a method of cure frequently had recourſe to in inward ſtrains, eſpecially about the ſhoulders or hips; as alſo for hard ſwellings not eaſy to be reſolved.

The operation is thus—A little ſlit being made through the skin, about a handful below the part aggrieved, big enough to put a ſwan's quill in; the skin is raiſed from the fleſh, the end of the quill put in, and the skin blow'd from the fleſh upwards, and all over the ſhoulder—Then the hole being ſtopped with the finger, the place blown is beaten with a hazel-ſtick, and the wind ſpread with the hand all over; then let go.

This done, horſe-hair, or red ſarſenet, half the thickneſs of the little finger, is put in a *rowelling* needle ſeven or eight inches long; the needle is put into the hole, and drawn through again ſix or ſeven inches higher; then the needle is drawn out, and the two ends of the *rowel* tied together: anointing it every day, as well as before the putting it in, with ſweet butter and hog's greaſe, and drawing it backwards and forwards in the skin, to make the putrid matter diſcharge itſelf more plentifully.

Others, diſliking theſe *rowels*, as making too great a ſore and ſcar, uſe the French *rowel*, which is a round piece of ſtiff leather, with a hole in the midſt; laying it flat between the fleſh and skin, the hole of the *rowel* juſt againſt that in the skin; ſowing it with a needle and thread drawn through the hole and the skin; cleaning it once in two or three days, and anointing it a freſh.

ROWING. See OAR, BOAT, *&c.*

ROWS *of trees.* See the article PARALLELISM.

ROYAL*, REGAL, ſomething relating to a king. See KING.

* The word is French, formed from the Latin, *regalis*, of *rex*, king.

In this ſenſe we ſay, the *royal family*, the *royal blood*, *royal line*, &c.

In England the prince and princeſs of Wales, the kings brother, *&c.* are addreſſed under the title of *royal highneſs.* See PRINCE and HIGHNESS—The ducheſs of Savoy is called *madame royale.*

ROYAL *abby*, denotes an abby founded by a king, or by a prince who is ſucceeded by a king. See ABBY.

ROYAL *academy of ſciences*, &c. See ACADEMY, *&c.*

ROYAL *antler*, among hunters, expreſſes the third branch of the horn of a hart or buck, that ſhoots out from the rear or or main horn above the back antler. See ANTLER, HEAD, ATTIRE.

ROYAL *army*, is an army marching with heavy cannon, capable of beſieging a ſtrong, well fortified city—It is uſual to hang up a governor who has the aſſurance to hold out a petty place againſt a *royal army.*

ROYAL *aſſent*, is that aſſent or approbation which the king gives to a thing done by others; as the election of a biſhop by dean and chapter; or a bill paſſed in both houſes of parliament. See KING, *&c.*

The *royal* aſſent in parliament being given, the bill is endorſed with theſe words, *Le roy le veult*; that is, it pleaſes the king—If he refuſes it, thus, *Le roy s'aviſera*, q. d. the king will adviſe upon it. See BILL, PARLIAMENT, *&c.*

ROYAL *boroughs.* See the article BOROUGH.

ROYAL *crown*, is that worn by kings. See CROWN.

This they alſo call an *imperial crown*, being cloſed a-top.

The Engliſh crown is cloſed by ſemicircles of gold meeting at the monde or globe, on which the croſs ſtands; and thoſe ſemicircles adorned with croſſes and fleur-de-liſes: the whole embelliſhed with precious ſtones.

ROYAL *charter.* See the article CHARTER.

ROYAL *African company.* See the article COMPANY.

ROYAL *Exchange*, the burſe or meeting place of the merchants in London. See EXCHANGE.

It was firſt built in 1566, at the charge of Sir Thomas Greſham; and in a ſolemn manner, by herald with ſound of trumpet, in preſence of queen Elizabeth, proclaimed the *royal exchange*—Till that time the merchants met in Lombard-ſtreet.

It was built of brick; yet then eſteemed the moſt ſplendid burſe in Europe—An hundred years after its building, at the great fire, it was burnt down; but ſoon raiſed again, in a ſtill more magnificent manner; the expence thereof amounting to 50000 *l.*

One half of this ſum was diſburſed by the chamber of London, the other by the company of Mercers; who, to reimburſe themſelves, let to hire 190 ſhops above ſtairs, at 20 pound each; which with other ſhops, &c. on the ground, yield a yearly rent of above 4000 pounds, yet the ground it ſtands on does not exceed ¾ of an acre: whence it is obſerved to be much the richeſt ſpot of ground in the world.

It is built quadrangular, with walks a-round, wherein the merchants of the reſpective countries aſſociate themſelves. In the middle of the area or court, is a fine marble ſtatue of king Charles II. in the habit of a Roman Cæſar; erected by the ſociety of merchant adventurers; the workmanſhip of Grinlin Gibbons. Around are the ſtatues of the ſeveral kings ſince the Norman conqueſt, ranged.

Royal *fiſhes*, are whales and ſturgeons, and, ſome add, porpoiſes too, which the king, by his prerogative, is to have whenever caſt on ſhore, or wrecked, in all places of the realm, unleſs granted to ſubjects by expreſs words. See Fishes.

Royal *Foot*. See the article Foot.

Royal *Fort*. See the article Fort.

Royal *franchiſe*. See the article Franchise.

Royal *hoſpital*. See the article Hospital.

The Royal *oak* is a fair ſpreading tree at Boſcobel in the pariſh of Donnington in Staffordſhire, the boughs whereof were all covered with ivy; in the thick of which king Charles II. ſat in the day time with colonel Careleſs, and in the night lodged in Boſcobel-houſe: ſo that they are miſtaken who ſpeak of it as an old hollow oak; it being then a gay flouriſhing tree, ſurrounded with many more —The poor remains hereof are now fenced in with a handſome wall, with this inſcription over the gate, in gold letters—*Fœliciſſimam arborem quam in aſylum potentiſſimi regis Caroli II. Deus op. max. per quem reges regnant, hic creſſere voluit*, &c. Philoſoph. Tranſact. N°. 310.

Royal *officers*. See the article Officer.

Royal *Parapet*, or *parapet of the rampart*, in fortification, is a bank about three fathoms broad, and ſix foot high, placed upon the brink of the rampart, towards the country; to cover thoſe who defend the rampart. See Rampart and Parapet.

Port Royal. See the article Port *royal*.

Royal *Society*, is an academy, or body of perſons of eminent learning; inſtituted by king Charles II. for the promoting of natural knowledge. See Academy.

This illuſtrious body had its original in an aſſembly of ingenious men, who before the reſtauration met weekly in Wadham-college, in Oxford, at the lodgings of Dr Wilkins.

Afterwards, from about the year 1658, many of them living in London, held meetings at Greſham-college; till they were at length taken notice of by the king, who was pleaſed to grant them an ample charter, dated the 22d of April, 1663; whereby they were erected into a corporation, *conſiſting of a preſident, council, and fellows, for promoting the knowledge of natural things, and uſeful experiments.*

Their manner of electing fellows is by balloting. Their council are in number 21, eleven of which are continued for the next year, and ten more added to them, all choſen on St Andrew's day.

Each member at his admiſſion ſubſcribes an engagement, that he will endeavour to promote the good of the ſociety; from which he may be freed at any time, by ſignifying to the preſident, that he deſires to withdraw.

The charges are 40*s*. paid to the treaſurer at admiſſion; and 13*s*. per quarter, ſo long as the perſon continues a member.

Their deſign is to “make faithful records of all the works of nature or art, which come within their reach; ſo that the preſent as well as after ages may be enabled to put a mark on errors which have been ſtrengthened by long preſcription, to reſtore truths that have been neglected; to puſh thoſe already known to more various uſes; to make the way more paſſable to what remains unrevealed, &c.

To this purpoſe they have made a great number of experiments and obſervations on moſt of the works of nature; eclipſes, comets, meteors, mines, plants, earthquakes, inundations, ſprings, damps, ſubterraneous fires, tides, currents, the magnet, &c.—Alſo, numbers of ſhort hiſtories of nature, arts, manufactures, uſeful engines, contrivances, &c. The ſervices they have been of to the public, are very great—They have improved naval, civil, and military architecture; advanced the ſecurity and perfection of navigation; improved agriculture; and put not only this kingdom, but alſo Ireland, the Plantations, &c. upon planting.

They have regiſtered experiments, hiſtories, relations, obſervations, &c. reduced them into one common ſtock; have from time to time publiſhed ſome of the moſt immediate uſe, under the title of *Philoſophical Tranſactions*, &c. and laid the reſt up in public regiſters, to be nakedly tranſmitted to poſterity, as a ſolid ground-work for future ſyſtems. See Transactions.

They have a library adapted to their inſtitution; towards which the late earl-marſhal contributed the Norfolcian library; and a muſæum, or repoſitory of natural and artificial rarities, given them by Daniel Colwal, Eſq;—Their motto, *Nullius in Verba*.

Royal *Spaniſh academy*. See the article Academy.

Royal *ſugar*. See the article Sugar.

ROYALTIES, Regalties, the rights of the king; otherwiſe called the *king's prerogative*, and the *regalia*. See Prerogative and Regalia.

Of theſe, ſome the king may grant to common perſons; others are inſeparable from the crown. See King, Grant, &c.

RUBARB, Rhabarbarum, in medicine. See Rhubarb.

RUBBING. See Attrition and Friction.

RUBIA *Tinctorum*, a root or drug popularly called *madder*. See Madder.

RUBIFYING*, in chymiſtry, &c. the act of turning a thing red by force of fire, &c. See Red and Ruby.

* The word is formed of the Latin *rubens*, ruddy, and *fio*, I become.

Red arſenic is ſuppoſed to be no more than the common orpiment *rubified* by fire, with the addition of nut or olive-oil. See Arsenic.

RUBIGALIA, or Robigalia, in antiquity, a feaſt celebrated by the Romans in honour of the god Rubigus, or the goddeſs Rubigo; and to engage thoſe deities to preſerve the corn from blaſting, and mildews. See Feast.

The *rubigalia* were inſtituted by Numa in the eleventh year of his reign; and were held on the 7th of the calends of May, which is our 25th of April; being the time when the blight or mildew, called by the Latins *rubigo*, uſes to attack the corn. See Rubigo.

Varro fixes it to the time when the ſun enters the 16th degree of Taurus—Indeed the true time ſeems rather to have been on the eighteenth day before the equinox; and the true reaſon, becauſe then canicula, or the little dog, ſets; which is eſteemed a malific conſtellation.

Hence they ſacrificed a dog to rubigo: Ovid ſays, the entrails of a dog, and thoſe of a ſheep: Columella, only a ſucking puppy. Feſtus inſinuates, that the victim muſt be red.

RUBIGO, or Robigo, a diſeaſe incident to corn, popularly called *mildew*. See Smut and Mildew.

The *rubigo* is a ſpecies of blight. See Blight.

RUBRICK, Rubrica, in the cannon law, denotes a title or article in certain antient law-books; thus called, becauſe wrote, as the titles of the chapters in our antient bibles are, in red letters. See Title—You'll find ſuch a law under ſuch a *rubrick*.

Rubricks, alſo denote the rules and directions given at the beginning, and in the courſe of the liturgy; for the order, and manner wherein the ſeveral parts of the office are to be performed. See Liturgy.

There are *general rubricks*, and *ſpecial rubricks*, a *rubrick for the communion*, &c.—In the Romiſh miſſal and breviary are *rubricks* for mattins, for lauds, for tranſlations, beatifications, commemorations, &c.

They are called *rubricks*, from the Latin, *ruber*, *red*; becauſe formerly printed in *red-ink*, to diſtinguiſh them from the reſt of the office, which was in black; as they ſtill are in the Romiſh miſſal, &c.

The great *rubrick* for the celebration of Eaſter, preſcribed by the Nicene council, is to this purpoſe—Eaſter-day to be the Sunday which falls upon, or next after, the firſt full moon which immediately ſucceeds the vernal equinox. See Easter.—Dr Wallis has a particular diſcourſe on the ancient *rubricks* for the feaſt of Eaſter; in the *Philoſoph. Tranſactions*.

RUBY, Rubinus, a red coloured, ſparkling gem, of the firſt rank among precious ſtones. See Gem and Stone.

There are but two places in the Eaſt where the *ruby* is found: The kingdom of Pegu, and the iſle of Ceylon—The mine in Pegu, where it is found in greateſt plenty, is in the mountain Capelan, 12 days journey from Siren, the reſidence of the king of that country—The fineſt *rubies* brought hence do not exceed three or four carats; the king reſerving all the larger to himſelf.

In Ceylon, the *rubies* are found in a river which deſcends from the mountains towards the middle of the iſland: Some few are alſo found in the ground—The *rubies* of Ceylon are uſually brighter and more beautiful than thoſe of Pegu; but they are rare; the king of Ceylon prohibiting his people to gather them, or traffick with them.

There are *rubies* alſo found in Europe, particularly in Bohemia and Hungary; eſpecially the former, wherein is a mine of flints of divers ſizes, which upon breaking, are ſometimes found to contain *rubies* as fine and hard as any of the Eaſtern ones.

The Greeks call the *ruby* απυρωτος, *q. d.* reſiſting the fire —The ancients out of their credulity and ſuperſtition attributed many virtues to the *ruby*; as, that it expels poiſons, cures the plague, abates luxury and incontinence, baniſhes ſorrow, *&c.* See Gem.

Lapidaries uſually diſtinguiſh three kinds of *rubies*; the *rocky*, *balaſs*, and *ſpinell*: Some add a fourth kind, *viz.* the *rubacelle*. It is the different degree of colour which makes their different value and beauty—The *balaſs ruby* is of a crimſon colour with a caſt of purple: The *ſpinell ruby* is of a bright roſy red.

It is ſaid the inhabitants of Pegu have the art of heightening the redneſs and brilliant of *rubies*, by laying them in the fire, and giving them a proper degree of heat.

The *ruby* is formed in a ſtony ſubſtance or marcaſite of a roſe colour, called *mother of ruby*; it has not all its colour and luſtre at once; but comes to it by degrees—At firſt it grows whitiſh, and as it approaches to maturity, becomes red. Hence we have white *rubies*, others half white, half red; and others blue and red, called *ſapphire rubies*.

When a *ruby* exceeds twenty carats, it may be called a *carbuncle*, the name of an imaginary ſtone, whereof the ancients and moderns have given us ſo many deſcriptions. See Carbuncle.

They have ſeveral manners of counterfeiting *rubies*; and have carried the imitation to that length, that the moſt able lapidaries are ſometimes over-ſeen.

Furetiere aſſures us, though the thing ſurpaſſes all belief, that there have been *rubies* in France of 240 carats—Tavernier tells us, he ſaw one in the indies of fifty carats, which he had a mind to have bought. He adds, that the king of France has finer and larger *rubies* than any in the poſſeſſion of the Great Mogul.

The value of *rubies* from one carat, or four grains, to ten carats, is thus given us in the *dictionaire de commerce*, from a good hand:

	l.	*s.*	*d.*
A *ruby* of one carat, is worth	1	15	0
Of two C.	9	00	0
Of three C.	22	10	0
Of four C.	33	15	0
Of five C.	45	00	0
Of ſix C.	67	10	0
Of ſeven C.	84	00	0
Of eight C.	106	00	0
Of nine C.	150	00	0
Of ten C.	216	00	0

Sapphire Ruby. See the article Sapphire.

Ruby, in chymiſtry, is a name given to ſeveral preparations of natural bodies, becauſe of their red colour; as, *ruby of arſenic*, &c. See Rubifying.

Ruby, in heraldry, denotes the red colour wherewith the arms of noblemen are blazoned; being the ſame which in the arms of others not noble, is called *gules*. See Colour, Gules, *&c.*

RUCTATION, *belching*, a ventoſity ariſing from indigeſtion, and diſcharging itſelf at the mouth, with a diſagreeable noiſe. See Flatus.

There are belches owing to repletion, and others to inanition, or emptineſs. See Repletion, *&c.*

Dr Quincy ſays, hypochondriac and hyſteric people are particularly liable to this diſorder—They are rather to be cured with proper ſtomachics, than carminatives and hot liquors—Burnet recommends the iliac pills of Rhaſis againſt *ructation*.

RUDDER, in navigation, a piece of timber turning on hinges in the ſtern of a ſhip, and which oppoſing ſometimes one ſide to the water, and ſometimes another, turns or directs the veſſel this way or that—See *Tab. Ship, fig. 2. n.* 106. See alſo Ship.

The *rudder* of a ſhip is a piece of timber hung on the ſtern-poſts, by four or five iron hooks called *pintles*; ſerving, as it were, for the bridle of a ſhip; to turn her about at the pleaſure of the ſteer's-man. See Steering.

The *rudder* being perpendicular, and without ſide the ſhip, another piece of timber is fitted into it at right angles, which comes into the ſhip; by which the *rudder* is managed and directed—This latter is properly called the *helm*, or *tiller*; and ſometimes, tho' improperly, the *rudder* itſelf. See Helm and Tiller.

The power of the *rudder* is reducible to that of the lever. See Lever.

As to the angle the *rudder* ſhould make with the keel; the author of a late book on the working of ſhips, ſhews, that, in order to ſtay or bear up the ſooneſt poſſible, the tiller of the *rudder* ought to make an angle of near 55° with the keel. See Windmill.

A narrow *rudder* is beſt for a ſhip's ſailing, provided ſhe can feel it, that is, be guided and turned by it; for a broad *rudder* will hold much water when the helm is put over to any ſide: yet if a ſhip have a fat quarter, ſo that the water cannot come quick and ſtrong to her *rudder*, ſhe will require a broad *rudder*.

The aſt-moſt part of the *rudder* is called, the *rake* of the *rudder*.

RUDDLE, Rubrica, a ſort of dusky red chalk or earth found in divers parts of England; chiefly in iron mines, of which mineral it has a copious mixture. See Reddle.

This ſome take for the ancient lapis hæmatites. See Hæmatites.

RUDENTED *column*. See the article Column.

RUDENTURE, in architecture, the figure of a rope or ſtaff, ſometimes plain, ſometimes carved, wherewith a third part of the flutings of columns are frequently filled up. See Flute.

It is thus called from the Latin, *rudens*, *cable*; whence ſome call it a *cabling*, aud the columns whoſe flutings are thus filled, *rudented*, or *cabled columns*. See Column, Cabled, *&c.*

There are alſo *rudentures* in relievo, laid on the naked of pilaſters not fluted; an inſtance of which we have in the church of St Sapienza at Rome.

RUDERATION, Ruderatio, in building, a term uſed by Vitruvius for the laying a pavement with pebbles or little ſtones. See Pavement.

To perform the *ruderation*, it is neceſſary the ground be firſt well beaten, to make it firm, and prevent its cracking—Then a ſtratum of little ſtones is laid, to be afterwards bound together with mortar made of lime and ſand, called by Vitruvius, *ſtatumen*.

If the ſand be new, its proportion to the lime may be as 3 to 1; if dug out of old pavements or walls, as 5 to 2. See Mortar, *&c.*

Ruderation, Daviler obſerves, is alſo uſed by Vitruvius, lib. 7. cap. 1. for the coarſeſt and moſt artleſs kind of maſonry; where a wall is, as it were, cobled up. See Masonry.

RUDIARIUS, in antiquity, a veteran gladiator, who had got a diſcharge from the ſervice. See Gladiator.

He was thus called, becauſe as a mark of diſmiſſion a rod was put into his hand called *rudis*. See Rudis.

The *rudiarii* were alſo called *ſpectatores*. See Spectator.

RUDIMENTS, Rudimenta, the firſt principles or grounds of any art or ſcience; called alſo the *elements* thereof. See Elements.

RUDIS, a knotty rugged ſtick, which the prætor among the Romans, gave the gladiators, as a mark of their freedom and diſmiſſion. See Gladiator.

Hence the Latin phraſe, *rude donare*, to make a gladiator free, to diſcharge him from fighting any more—They were hence called *rudiarii*. See Rudiarii.

RUE, Ruta *hortenſis*, a medicinal plant, much uſed in the preſent practice—Schroder commends it as an alexipharmic, and cephalic; ſays it reſiſts poiſons and malignities, and is therefore to be uſed in fevers; and that it is good in all convulſive caſes.

It is replete with a fat viſcous juice, and by that means yields little to any purpoſe in diſtillation, unleſs where firſt digeſted in a ſpirituous menſtruum—Hence its ſimple water in the ſhops, according to Dr Quincy, is nothing worth, though others are of a very different opinion. It ought to be raiſed with a ſpirituous liquor, or uſed in conſerve; or which is beſt of all, the plant eat alone freſh gathered, with bread and butter. It is of ſervice in nervous caſes, particularly ſuch as ariſe from the womb, as it deterges the glands, and by its viſcidity, bridles thoſe inordinate motions, which frequently begin there, and affect the whole conſtitution. See Hysteric, Uterine, *&c.*

RUELLE, a French term, lately introduced into our language: it is a diminutive of *rue*, ſtreet; and ſignifies, literally, a *little-ſtreet*.

Its uſe among us, is for an alcove, or other genteel apartment, where the ladies receive viſits either in bed or up—The poets go reading their works from *ruelle* to *ruelle*, to beſpeak the approbation and intereſt of the ladies.

RUFF-TREES. See the article Roof-Trees.

RUFTER-HOOD, among falconers, a plain leather-hood, large and open behind, to be worn by an hawk, when ſhe is firſt drawn. See Hood, Hawk, Hawking, *&c.*

RUINS, a term particularly uſed for magnificent buildings fallen to decay by length of time; and whereof there only remains a confuſed heap of materials. See Antiquity.

Such are the *ruins* of the tower of Babel, or tower of Belus, two days journey from Bagdat, in Syria, on the banks of the Euphrates; which are now no more than a heap of bricks, cemented with bitumen; and whereof we only perceive the plan to have been ſquare.

Such, alſo, are the *ruins* of a famous temple or palace near Schiras in Perſia; which the antiquaries will have to have been built by Ahaſhuerus; and which the Perſians now call Tchelminar, or Chelminar, q. d. the forty columns; becauſe there are ſo many columns remaining pretty entire, with the traces of others; a great quantity of baſſo relievo's, and unknown characters, ſufficient to ſhew the magnificence of the antique architecture. See Chelminar.

RULE, or RULER, REGULA, a very ſimple inſtrument, ordinarily of hard wood, thin, narrow, and ſtrait; ſerving to direct the drawing of right lines. See LINE.

The *rule* is of principal uſe in all the mechanical arts—To prove whether or no it be juſt; draw a line by it on paper; then turn the *rule* about, the right end to the left; and apply the ſame edge this way to the line: if the edge now agree exactly with the line, the *ruler* is true.

Deſmarets has a fine poem on the amours of the *rule* and compaſs—The ſtone-cutters-*rule* is uſually four foot long; and divided into feet and inches.

The Maſon's *rule* is 12 or 15 foot long, and is applied under the level, to regulate the courſes, to make the piedroits equal, *&c.*

Parallel RULE, or RULER. See PARALLEL.

RULE is alſo applied to certain inſtruments which have other conſiderable uſes beſide that of drawing lines.—Such are the carpenters *joint-rule*, Everard's, and Coggeſhal's *ſliding-rules*, &c.

Carpenters joint-RULE, is an inſtrument uſually of box, 24 inches long, and one and a half broad; each inch being ſubdivided into eight parts—On the ſame ſide with theſe diviſions, is uſually added Gunter's line of numbers.

On the other ſide are the lines of timber and board-meaſure; the firſt beginning at 82, and continued to 36, near the other end: The latter is numbered from 7 to 36, four inches from the other end.

Uſe of the carpenters joint-RULE—The application of the inches in meaſuring lengths, breadths, *&c.* is obvious—That of the Gunter's line, ſee under GUNTER's *line*—The uſe of the other ſide is all we need here meddle with.

1. *The breadth, of any ſurface, as board, glaſs,* &c. *being given; to find how much in length makes a ſquare foot*—Find the number of inches the ſurface is broad, in the line of board meaſure; and right againſt it is the number of inches required.

Thus if the ſurface were 8 inches broad, 18 inches will be found to make a ſuperficial foot.

Or, more readily thus:—Apply the *rule* to the breadth of the board or glaſs; that end marked 36 being even with the edge; the other edge of the ſurface will ſhew the inches and quarters of inches which go to a ſquare foot.

2. *Uſe of the table at the end of the board meaſure*—If a ſurface be one inch broad, how many inches long will make a ſuperficial foot? Look in the upper row of figures for one inch, and under it in the ſecond row is 12 inches, the anſwer to the queſtion.

3. *Uſe of the line of timber meaſure*—This reſembles the former; for having learnt how much the piece is ſquare, look for that number on the line of timber-meaſure: The ſpace thence to the end of the *rule* is the length, which at that breadth, makes a foot of timber—Thus, if the piece be 9 inches ſquare, the length neceſſary to make a ſolid foot of timber, is 21 $\frac{1}{3}$ inches—If the timber be ſmall, and under 9 inches ſquare, ſeek the ſquare in the upper rank of the table; and immediately under it is the feet and inches that make a ſolid foot—Thus, if it be 7 inches ſquare, 2 foot 11 inches will be found to make a ſolid foot.

If the piece be not exactly ſquare, but broader at one end than another; the method is to add the two together, and take half the ſum for the ſide of the ſquare—For round timber, the method is to girt it round with a ſtring, and to allow the fourth part for the ſide of the ſquare—But this method is erroneous; for hereby you loſe above $\frac{1}{5}$ of the true ſolidity. See TIMBER.

Caliber-RULE. See CALIBER-*meaſure*.

Everard's ſliding-RULE. } See the article { SLIDING-*rule*.
Coggeſhal's ſliding-RULE.

RULE, REGULA, alſo denotes a certain maxim, canon, or precept, to be obſerved in any art or ſcience. See CANON, MAXIM, *&c*—Thus we ſay, the *rules* of grammar, of logic, of philoſophizing, *&c.* See GRAMMAR, LOGIC, PHILOSOPHIZING, *&c.*

School philoſophers diſtinguiſh two kinds of *rules*, viz. *theoretical*, or *rules of knowing*, which relate to the underſtanding; being of uſe in the diſcovery of truth. (See UNDERSTANDING, CRITERION, and TRUTH)—And *practical*, or *rules of acting*, which relate to the will, and ſerve to direct it to what is good and right. See GOOD and RECTITUDE.

For the management and application of theſe two Sorts of *rules*, there are two diſtinct arts; *viz. logic* and *ethics*. See LOGIC, ETHICS, and MORALITY, *&c.*

RULES *of knowing, regulæ ſciendi*, are ſuch as direct and aſſiſt the mind, in perceiving, judging, and reaſoning. See PERCEPTION, JUDGMENT, and REASONING.

RULES *of acting, regulæ agendi*, are thoſe whereby the mind is guided in her deſires, purſuits, *&c.* See WILL.

Authors are extremely divided about the regard to be had to the RULES *of poetry* fixed by the antients, Ariſtotle, Horace, Longinus, *&c.* and admitted by the modern critics, as Boſſu, *&c.* ſome contended that they muſt be inviolably obſerved; others pleading for liberty to ſet them aſide on occaſion—*Rules*, it is complained, are fetters; rank enemies to genius; and never religiouſly obſerved by any, but thoſe who have nothing in themſelves to depend on. Voiture frequently neglected all the *rules* of poetry; as a maſter who ſcorned to be confined by them. See POETRY.

The theatre has its particular *rules*; as the *rule* of 24 hours, the unities of action, time, and place, *&c.* See UNITY. See alſo THEATRE.

If it be true, ſays Moliere, that plays conducted according to the *rules*, do not pleaſe; but thoſe which are not, do: The *rules* muſt be naught—For myſelf, when a thing hits and diverts me, I do not enquire whether I have done amiſs; nor whether Ariſtotle's *rules* forbid me to laugh. See LAW.

RULES *of philoſophizing*. See PHILOSOPHIZING.

RULE, in arithmetic, denotes a certain operation with figures to find ſums or numbers unknown; and to facilitate computations, mercantile, aſtronomical, *&c.* See ARITHMETIC, NUMBER, *&c.*

Each *rule* in arithmetic has its particular name, according to the uſe for which it is intended—The four firſt, which ſerve as the foundation of the whole art, are called *addition*, *ſubſtraction*, *multiplication*, and *diviſion*; each whereof ſee under its proper article ADDITION, *&c.*

From theſe ariſe ſeveral other *rules*: as the *rule of three*, or *of proportion*; called alſo, *the golden rule*; and diſtinguiſhed into *direct*, and *inverſe*, *ſimple*, and *compound*. —Alſo, the *rule of five numbers*—*rule of fellowſhip*, *ſimple*, and *with time*—*rule of allegation*, *medial* and *alternate*—*rule of exchange*—*rule of falſe poſition*, *ſingle and double*.—To which add, *approximation*, *barter*, *combination*, *equation*, *exchange*, *extraction*, *involution*, *progreſſion*, *rebate*, *reduction*, &c. See FELLOWSHIP, ALLIGATION, POSITION, *&c.*

RULE *of three*, or *of proportion*, commonly called the *golden-rule*, is a rule which teaches how to find a fourth proportional number, to three others given. See PROPORTION.

As, if three degrees of the equator contain 70 leagues, how many do 360 degrees, the circumference of the earth, contain?

The *rule* is this—*Multiply the ſecond term* 70, *by the third* 360; *divide the product* 25200, *by the firſt term* 3: *the quotient* 8400 *is the fourth term required.*

The uſe of this *rule* is of vaſt extent, both in common life, and the ſciences; but has no place, except where the proportion of the given numbers is known—Suppoſe, *e. gr.* a large veſſel full of water to empty itſelf by a little aperture; and ſuppoſe 3 gallons to flow out in 2 minutes: and it were required to know in what time 100 gallons would be thus evacuated?—Here indeed are three terms given, and a fourth required: But, as it is evident from experience, that water flows faſter at firſt than afterwards, the quantity of flowing water is not proportional to the time; and therefore the queſtion does not come under the *rule of three*.

The things which come under commerce are proportionable to their prices; twice as much of any commodity coſting twice as much money, *&c.* The price, therefore, of any quantity of a commodity being given, the price of any other quantity of the ſame, or the quantity of the commodity anſwering to any other given ſum, is found by the *rule of three*—*e. gr.* If 3 pounds coſt 17 *s.* what will 30 pounds coſt? Since, as 3 pounds are to 30 pounds, ſo is the value of the former 17 *s.* to the value of the latter. The queſtion ſtands thus:

3 ℔ ——— 30 ℔ ——— 17 *s.*
17
——
3)510(170 *s.* 8 *l.* 10 *s.*

Again; if 3 pounds be bought for 17 *s.* how many will 170 *s.* buy? Since as 17 *s.* is to 170 *s.* ſo are 3 pounds to the pounds required: The number will be found thus:

17 *s.* ——— 170 *s.* ——— 3 *lb.*
3
——
17)510(30 *lb.*
51
——
00

If the given terms be heterogeneous, *i. e.* have broken numbers among them, they do not bear the ſame proportion to each other which the things they expreſs bear—They muſt therefore be reduced to homogeneous ones; or to the ſame denomination, as pounds into ſhillings, ſhillings into pence, *&c.* hours into minutes, *&c.* See REDUCTION.

E. gr. If 3 pounds and 4 ounces coſt 2 *s.* 4 *d.* what will 2 pounds coſt? The operation will be thus:

```
 3 lb.   4 ℥———— 2 lb.———— 2 s. 4 d.
 16              16          12
 ——              ——          ——
 52              32          28
                 28
                 ——
                256
                 64
                ———
             52)896(17 d. 12/52 of a penny.
                 52
                 ——
                376
                364
                ———
                 12
```

In many caſes of commerce and accounts, we have more compendious ways of working queſtions that come under the *rule of three*, than by the *rule* itſelf; which, by reaſon of their expediting practice, are called *practice*; and conſtitute a particular *rule* of themſelves. See PRACTICE.

RULE *of three inverſe*, is where the natural order of the terms is inverted—As, if 100 workmen build a houſe in 2 years, in how long time will 200 workmen build the ſame?

This is uſually conſidered by the writers of arithmetic, and taught in the ſchools, as a particular *rule*: being wrought by multiplying the firſt term 100 by the ſecond 2, and dividing the product 200 by the third term 200; the quotient 1 is the number required.

But there is no neceſſity for making a particular *rule* for the matter; this coming naturally enough under the former, by only ranging the terms as the nature of the queſtion requires.

Thus it is evident, that as the number of men 200, is to 100, ſo is the ſpace 2 years, wherein 100 build the houſe, to the ſpace wherein 200 will build the ſame—For the leſs time, the more hands are required. The queſtion then will ſtand thus:

```
200 M.———— 100 M.———— 2 Y.
                  2
            ————————
            200)200(1 year.
```

RULE *of five numbers*, or *compound rule of three*, is where two rules of three are required to be wrought, before the number ſought be found—As if 300 *l.* in 2 years yield 30 *l.* intereſt, how much will 1000 *l.* yield in 12 years?

Here the firſt thing to be done is to find by the *rule of three*, what intereſt 1000 *l.* will give in 2 years; and then by the ſame *rule* what it will give in 12 years.

This is conſidered by the writers, &c. of arithmetic, as a particular *rule*, but without any neceſſity; a double operation ſolving it better, as in this example:

```
   300 l.———— 1000 l.———— 30 int.
                30
               ————
          3|00)300|00(100 int.
 2 Y.———— 12 ———— 100 l.
                   12
                  ————
             2)12000(600 int.
```

But in queſtions of this kind a ſingle *rule of three* may do the buſineſs: for 300 *l.* give the ſame intereſt in two years, which twice 300 give in one year; and twelve times 1000 *l.* give the ſame intereſt in one year that 1000 give in 12: omitting therefore the circumſtances of time, ſay, if twice 300 (that is, 600) give 36 *l.* intereſt, (in one year) what will 12 times 1000 (that is, 12000) give (in one year)?

```
 600 ———— 12000 ———— 36
             36
           ————
          72000
         36000
          ————
     6|00)4320|00(720 l. int.
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Central RULE. See the article CENTRAL.

RULE, in a monaſtic ſenſe, is a ſyſtem of laws or conſtitutions, whereby religious houſes are eſtabliſhed and regulated; and which the religious make a vow to obſerve at their entrance. See RELIGIOUS, MONASTERY, VOW, &c.

The monaſtic *rules* are all to be approved of by the pope, to make them valid—The *rule* of St Benedict, is by ſome authors called the *holy rule*. See BENEDICTIN.

Thoſe of St Bruno, and St Francis, are of all others the moſt auſtere. See CARTHUSIANS, &c.—When a religious cannot ſupport the auſterities of his *rule*, he ſues for a diſpenſation.

RULE, in the canon law—The RULE, *de veriſimili notitia*, *of probable notice*, renders all proviſions to a benefice vacant by death, null; if it appear that from the day of the deceaſe, to the day of the date of the proviſions, or to the day when the courier arrives from Rome, there has not been time ſufficient for regular notice of the perſon's deceaſe to be conveyed to the pope. See PROVISION.

Proviſions are even null if it be proved the courier ſet out before the perſon was deceaſed—This *rule* is ſtrictly obſerved in France; in other countries the pope finds frequent occaſions to diſpenſe with it.

RULE *of twenty days*, *regula viginti dierum*. By this *rule*, if an eccleſiaſtic reſign his benefice; to make the reſignation valid, the reſigner muſt ſurvive its admiſſion in the court of Rome twenty days—If he die before the expiration of the twenty days, the reſignation is void; and the benefice becomes vacant by death.

This *rule* does not hold of the proviſions of ordinary collators, nor of ſimple and pure reſignations into the hands of the ordinary; but only in caſe of proviſions of the pope, diſpatched on reſignations *in favorem*. See RESIGNATION.

This *rule* antiently extended to ſuch as reſigned in time of health as well as of ſickneſs—Pope Boniface reſtrained it to the latter; whence it is commonly called, *regula de infirmis reſignantibus*.

RULE *de publicandis*—By this *rule* the reſignee of a benefice, if he have a proviſion from the court of Rome, is obliged to publiſh the reſignation and take poſſeſſion within ſix months; or if he have it from the ordinary collator within one month. Otherwiſe, if the reſigner die, the reſignation becomes null.

RUM*, a ſpecies of brandy, or vinous ſpirit, drawn by diſtillation from ſugar canes. See SUGAR, SPIRIT, DISTILLATION, &c.

* The word *rum* is the name it bears among the native Americans.

Rum is very hot and inflammable; and is in the ſame uſe among the natives of the ſugar countries, as brandy among us. See BRANDY.

RUMB, RUM, or RHUMB, in navigation. See RHUMB.

RUMB-*Line*, or *loxodromia*. See RHUMB-*Line*.

RUMEN, the firſt ſtomach of animals which chew the cud, hence called *ruminants*. See STOMACH, RUMINANT and RUMINATION.

The food is tranſmitted into the *rumen* without any other alteration in the mouth, than being a little rowled and wrapped up together. See FOOD.

The *rumen* or paunch is much the largeſt of all the ſtomachs; as being to contain both the drink, and the whole crude maſs of aliment, which there lie and macerate together; to be thence remitted to the mouth, to be re-chewed and comminuted, in order to their farther digeſtion in the other ventricles, See DIGESTION.

In the *rumen*, or firſt ventricle of camels, are found divers ſacculi, which contain a conſiderable quantity of water: an admirable contrivance for the neceſſities of that animal, which living in dry countries, and feeding on dry hard food, would be in danger of periſhing, but for theſe reſervoirs of water. See DRINK, THIRST, &c.

RUMINANT, RUMINANS, in natural hiſtory, an animal which chews over-again what it has eat before; popularly called *chewing the cud*. See RUMINATION.

Joah. Con. Peyer has an expreſs treatiſe *de ruminantibus & ruminatione*, where he ſhews, that there are ſome animals which do really *ruminate*; ſuch are oxen, ſheep, deer, goats, camels, hares, and ſquirrels: whereas others only appear to *ruminate*; which he calls *ruminantia ſpuria*; of which number are moles, crickets, bees, beetles, crabs, mullets, and ſeveral other fiſhes.

This latter claſs, he adds, have their ſtomachs compoſed of muſcular fibres, by means whereof the food is ground up and down, much as in real *ruminants*.

Ruminants, Mr Ray obſerves, are all quadrupedal, hairy, and viviparous; ſome with hollow and perpetual horns, others with deciduous ones. See QUADRUPED, HAIR, HORN, &c.

The horned *ruminants* have all four ſtomachs, appropriated to the office; *viz.* 1°. The κοιλια μεγαλη of Ariſtotle, the *rumen*, *venter magnus*, or what we call the *paunch* or *inward*, which receives the meat ſlightly chewed, retains it a-while, and then delivers it back again into the mouth, which is what we call the *cud*, to be re-chewed—2°. The κεκρυφαλος or *reticulum*, which we call the *hony-comb*, from its internal coat being divided into cells, like honey-combs—3°. The εχινος, which Mr Ray thinks hath been wrong tranſlated, *omaſus*; and which he chuſes to call the *echinus*: This being difficult to clear, our people throw it away, and call it the *manifold*—4°. The ηνυϛρον of Ariſtotle, by Gaza called the *abomaſus*, among us the *maw*. See RUMEN, OMASUS, ABOMASUS, &c.

Again, all the horned *ruminant* animals want the *dentes primores*, or broad teeth in the upper jaw; and have that kind of fat, called *ſuet*, *ſebum*, Στεαρ, which is harder and firmer, and leſs liquifiable in them, than the adeps of other animals. See FAT, ADEPS, &c.

RUMINATION, RUMINATIO, an action peculiar to a claſs of animals called *ruminants*; whereby they return the food they have formerly ſwallowed, to be chewed over-again, and rendered more fit for chyle. See RUMINANT and RUMEN.

Peyer defines *rumination*, a natural motion of the ſtomach, mouth, and other parts; by means of which the food eaten, at firſt, haſtily, is returned back again to the mouth; where it is re-chewed and ſwallowed a ſecond time; and that much to the benefit of the animal. See FOOD, CHYLE, MASTICATION, &c.

Burnet, in his *Theſaur. med.* gives ſeveral inſtances of men that *ruminated*, from Salmuth, Rhodius, &c.—Dr Slare in the *Philoſ. Tranſact.* gives us a freſher inſtance in one of our own countrymen, living at Briſtol. His account, as it is curious, and may let us ſee a little how it fares with *ruminating* animals, we ſhall here add.

"He begins to chew his meat over again within a quarter of an hour after meals, if he drink with it; if not, ſomewhat later. His chewing after a full meal laſts about an hour and a half: and if he go to bed preſently after meals, he cannot ſleep till the uſual time of chewing be over. The victuals, upon the return, taſte ſomewhat more pleaſantly than at firſt. Bread, meat, cheeſe, and drink, return much of ſuch colours as they would be of were they mixed together in a mortar. Liquids, as ſpoon-meat, return to his mouth all one as dry and ſolid food. The victuals ſeem to him to lie heavy till they have paſſed the ſecond chewing; after that they paſs clean away. If he eat variety of things, that which paſſes down firſt, comes up again firſt. If the *ruminating* faculty chance to leave him, it ſignifies ſickneſs; and it is never well with him till it returns. He is about twenty years of age, and was always thus ſince he can remember. His father does the like, ſometimes; but in ſmall quantities.

RUMMAGE,* in the ſea language, ſignifies to clear a ſhip's hold, or remove goods or luggage from one place to another. See HOLD.

* The Word is probably derived from the Saxon, *raum*, room, or ſpace.

RUN *of a ſhip*, ſo much of her hull as is always under water; growing thinner and lanker by degrees, from the floor timber to the ſtern-poſts. See Ship.

This is alſo called the *ſhip's way aftward*.

A ſhip is ſaid to have a *good run*, when it is long, and the water paſſes cleverly to her rudder, her tuck not lying too low, which is of great importance to her ſailing—If the water do not come ſtrongly to her rudder, by reaſon of her being built too broad below, ſhe cannot ſteer well; and a ſhip that cannot ſteer well, cannot keep a good wind, nor will have any freſh way through the ſea, but will ſtill be falling to leeward. See RUDDER, STEERING, &c.

And yet a ſhip with a large and good *run*, loſes much ſtowage, becauſe made narrow below. See HOLD, BURTHEN, &c.

RUNDLES, or ROUNDLES, in heraldry, the ſame as balls or pellets. See PELLET, &c.

RUNDLET, RUNLET, or ROUNDLET, a ſmall veſſel, containing an uncertain quantity of any liquor, from three to twenty gallons. See MEASURE, &c.

RUNIC, a term applied to the language and letters of the antient Goths, Danes, and other northern nations.

Some have been of opinion that Gulphilas, or Ulphilas, a Gothic biſhop about the year 370 was the firſt inventor of the *runic character*: but Olaus Wormius ſhews at large that Ulphilas could only be the firſt who taught it to foreigners; for that the *runæ* or characters themſelves were older than he. See Wormius *de liter. run.* c. 4. citante Becman, *Hiſt. orb. terr.* c. 9. ſect. 3. §. 15. See alſo CHARACTER.

In reality, Ulphilas, according to other authors, was ſo far even from teaching the Character, that he invented an Alphabet of his own, on purpoſe to put the runic characters which had been made ſubſervient to the ſuperſtitions of heatheniſm, out of uſe. *V. Sherringh. de Anglor. Gent. Orig.* p. 174.

It is ſuppoſed they were called *runic*, as being myſterious and ſcientifical; like the Egyptian hieroglyphics. See Wormius *de literatura runica*; and Hicks's *Theſaurus* of the antient northen languages.

There are ſome *runic* medals in the cloſets of the curious; and ſome modern Daniſh and Engliſh medals, the incriptions whereof are Latin, and the character *runic*. See TALISMAN.

RUNNER, in the ſea language, a rope belonging to the garnet, and to the two bolt tackles.—It is reeved in a ſingle block ſeiſed to the end of a pennant, and has at one end a nooſe to hitch into any thing, and at the other end a double block, into which is reeved the fall of the tackle or the garnet, by which means it purchaſes more than the tackle or garnet could allow—See *Tab. Ship. fig.* 1. *n.* 39. 73. 82. 110.

To *overhale the runner*, is to pull down the hooked end, and hitch it into the ſling.

RUNNET, or RENNET, an acid juice, found in the ſtomachs of calves that have fed on nothing but milk, and are killed before the digeſtion be perfected. See MILK.

It is this *runnet* is chiefly uſed to curdle or turn milk for cheeſe. See CURDLING, CHEESE, &c.

Its proper place is the abomaſus—The like matter is alſo ſaid to be found in goats and hares. See ABOMASUS.

The longer the *runnet* is kept, the better it is—Though it readily coagulates milk: yet if put into it when already coagulated, it diſſolves it. See COAGULATION and DISSOLUTION.

If ſalt be put in the milk, before the *runnet* be applied, it prevents its coagulation.—If the ſalt be put in afterwards it hardens the coagulum. See SALT.

Ariſtotle will have the *runnet* to be the proper ſubſtance of the milk; but he is miſtaken when he ſays it is found in all animals which give milk, eſpecially all ruminants. See RUMINANT.

RUNNING *of goods*, a clandeſtine landing of goods without paying the legal cuſtoms or duties for the ſame. See SMUGGLING, OWLER, DUTY, CUSTOM, &c.

RUNNING-*ſaddle*. See the article SADDLE.

RUPEE, ROUPIA, or ROUPIAS, a coin very current in the territories of the Great Mogul, and ſeveral other parts of the Eaſt-Indies. See COIN and MONEY.

Rupees are ſtruck both of gold and ſilver; and both the one and the other have their diminutions; as *half-rupees*, *quarter-rupees*, &c.

The gold *rupee* is worth 1 *s.* 6 *d.* ſterl. The value of the ſilver *rupee* is various, according to it's quality, and the place where it is coin'd. A general obſervation is, that the *rupees* are always current for more at the place where they are ſtruck, than elſe-where; and the new *rupees* for more than the old ones.—The reaſon of this laſt difference is, that the Indians being very fond of ſilver, to ſave it, uſe, as ſoon as they have got a few *rupees* together, to hide them under ground. To prevent which inconvenience, tending to drain the ſtate of current monies, the princes and rajas ſtrike new *rupees* every year, ſtill augmenting the value thereof, without any augmentation of the weight.

Beſides this difference of new and old *rupees*, the Indians make three other claſſes—The firſt called *rupees ſiceas*, which at Bengal are worth 2 *s.* 11 *d.* ſterl. The ſecond, *rupees of Surat*, worth 2 *s.* 6 *d.* ſterl.—The third *rupees of Maderas*, worth 2 *s.* 5 *d.* ſterl. All which is to be underſtood of the new *rupees*.

As to the old ones, thoſe of Maderas are only current at 1 *s.* 11 *d.* ſterl. Thoſe of Surat at 2 *s.* and the Siceas at 2 *s.* 4 *d.* Yet in other places, the order and prices vary: at Surat, thoſe ſtruck there have the firſt place; the Siceas the ſecond; and thoſe of maderas the third. Along the coaſt of Coromandel, the Maderas have the firſt place, and the Siceas the ſecond, &c.

RUPTURE, in medicine, called alſo *hernia*, and popularly *burſtneſs*; is when the rim, thin film, or caul which holds up the inteſtines, is broken, or over-ſtrained or ſtretch'd, ſo as the guts fall down either into the groin, cod, or flank. See HERNIA.

According as the *rupture* happens in the abdomen, or inguen, ſcrotum, it is called *exomphalus*, *hernia inguinalis*, or *hernia ſcroti*. See EXOMPHALUS, &c.

RURAL*, or RUSTIC, ſomething that relates to the country. See RUSTIC.

* The word is form'd of the Latin *rus*, *ruris*, country.

RURAL *dean*, in the antient church was a temporay dean appointed by the biſhop or archbiſhop, for ſome particular miniſtry, without canonical inſtitution. See DEAN.

The *rural* dean is the ſame with what in the laws of Edward the confeſſor, is called *decanus epiſcopi*, the *biſhop's dean*.—In ſome places theſe deans ſeem to have been called *chorepiſcopi*. See CHOREPISCOPUS.

Heylin obſerves that each dioceſe has in it one or more archdeaconries for diſpatch of eccleſiaſtical buſineſs; and each archdeaconry is ſubdivided into *rural deanaries*, fewer or more according to the extent thereof; the deans whereof were alſo called *archipresbyteri*, and *decani chriſtianitatis* See ARCHPRIEST, &c.

RUSSIA-*company*. See the article COMPANY.

RUST *of a metal*, the flowers or calx thereof; procured by corroding and diſſolving its ſuperficial parts by ſome menſtrous fluid. See METAL, CALX, FLOWER, MENSTRUUM, &c.

Water is the great inſtrument or agent in producing *ruſt*; the air apparently ruſts bodies, but it is only in virtue of the water it contains. See AIR.

Hence, in a dry air, metals remain a long time without contracting *ruſt*; and hence oils and other fatty bodies ſecure metals from *ruſt*; water being no menſtruum to oil, &c. and therefore not able to make its way through it. See WATER, &c.

All metals are liable to *ruſt*; even gold itſelf, though generally held incapable thereof, grows *ruſty* if expoſed to the fumes of ſea-ſalt. See GOLD.

The reaſon why gold is ſo rarely found to *ruſt*, is that ſea-ſalt, which is the only ſalt that will prey upon it, is of a very fixed nature, and therefore little of its effluvia or exhalations are found floating in the air. See GOLD, AQUA *Regia*, VOLATILISATION, *&c.*

Ruſt is uſually ſuppoſed a corruption of the metal, but without much foundation: it is the very metal itſelf, only under another form; and accordingly we find that *ruſt* of copper may be again turned into copper.

The *ruſt* of copper, called *ærugo*, makes what we call *verdigreaſe*. See VERDEGREASE—Ceruſs is made of lead converted into *ruſt* by vinegar. See CERUSS—Iron, in time, turns wholly into *ruſt*, unleſs preſerved from the air by paint or varniſh. See IRON, PAINTING, *&c.*

RUSTIC *gods*, in antiquity, *dii* RUSTICI, were the gods of the country; or thoſe who preſide over agriculture, *&c.* See GOD, *&c.*

Varro invokes the twelve *dii conſentes*, as the principal among the *ruſtic* Gods; *viz.* Jupiter, Tellus, the Sun, Moon, Ceres, Bacchus, Rubigus, Flora, Minerva, Venus, Lympha, and Good Luck—Beſides theſe twelve arch-*ruſtic*-gods, there were an infinity of leſſer ones: as, Pales, Vertumnus, Tutelina, Fulgor, Sterculius, Mellona, Jugatinus, Collinus, Vallonia, Terminus, Sylvanus, and Priapus—Struvius adds, the Satyrs, Fauns, Sileni, Nymphs, and even Tritons; and gives the empire over all the *ruſtic* gods to the god Pan. See SATYR, FAUN, NYMPH, DRYADES, *&c.*

RUSTIC, in architecture, expreſſes a manner of building in imitation of ſimple or coarſe nature, rather than according to the rules of art. See BUILDING and ARCHITECTURE.

RUSTIC *faſti*. See the article FASTI.

RUSTIC *fountain*. See the article FOUNTAIN.

RUSTIC *freeze*. See the article FREEZE.

RUSTIC *quoins*, by Vitruvius called *lapides minantes*. See *Ruſtic* QUOIN.

RUSTIC *work*, is where the ſtones in the face, *&c.* of a building, inſtead of being ſmooth, are hatched or picked with the point of a hammer.

RUSTIC *order*, is an order decorated with *ruſtic* quoins, *ruſtic* work, *&c.* See ORDER.

Felibien ſays, it is properly where the ſeveral parts, of the five orders are not exactly obſerved; but this confounds *ruſtic* with *Gothic*. See GOTHIC.

RUT, in hunting, *&c.* a term uſed for the venery or copulation of deer—*For the terms which obtain in reſpect of other beaſts of game, with the noiſe they make during the act.* See HUNTING.

The *rutting*-time with the hart begins about the middle of September, and holds two months; the older they are, the better, and the more beloved by the hinds, and the earlier do they go to *rut*—At this time they will turn head, and furiouſly make at any living creature. It is eaſy killing them now; their whole buſineſs being to ſcent and purſue the track of the females; ſcarce feeding at all. The young herd are forced to fly with great precipitancy when the hart come in ſight of his mate. If there be any other of bulk, they will diſpute it very hotly with their horns—As the ſeaſon expires, they withdraw and dig themſelves holes wherein to lie to aſſwage the ſtrong favour of their luſt: when become a little ſweet, they return to their paſture, and live in herds. See *Hart*-HUNTING.

The *rutting* or tourning-time of the roe-buck begins in October, and only laſts 12 or 15 days. This over, he caſts his horns. See HEAD—After the hind is filled, ſhe keeps no more company with the male till ſhe be delivered—But the doe always accompanies her paramour, till her time approaches; when ſhe retires, for the ſafety of her young, which he would otherwiſe kill. See *Roe-buck* HUNTING.

RYAL. See the article RIAL.

RYME. See the article RHYME.

RYPTICKS, in medicine. See RHYPTICKS.

RUYSCHIANA. See TUNICA.

S

S, A conſonant, and the eighteenth letter of the alphabet. See LETTER and ALPHABET.

S is accounted one of the three hiſſing conſonants; the other two being Z and J.—It is alſo held a ſemi-vowel, as forming a kind of imperfect ſound, without the aſſiſtance of any vowels.

Some of the Ancients avoided all uſe of the S very ſtudiouſly; particularly Pindar, who has whole poems without once mentioning it. And hence alſo in Plautus, and ſome others of the Latin poets, we find it cut abruptly off, as in *dignu'*, *omnibu'*, &c.—Others, on the contrary, affected the uſe of it every where, inſerting it where 'twas not wanted; as *Caſmenæ* for *Camenæ*, *duſmoſæ* for *dumoſæ*, *cæſna* for *cæna*, &c.

Of all others, the S is neareſt a-kin to the R; whence it was frequently changed, by reaſon of its diſagreeable ſound, into R.—Thus the *Valerii*, *Furii*, &c. were at firſt call'd *Valeſii*, *Fuſii*, &c. and what we now call *ara*, *arena*, *carmen*, *feriæ*, *lares*, &c. were antiently wrote *aſa*, *aſena*, *caſmen*, *feſiæ*, *laſes*, &c. Add to this, that the Latin nouns now terminated in *or*, as *arbor*, *labor*, &c. anciently ended in *s*, as *arbos*, *labos*, &c. See R.

In the inflections of nouns, S is variouſly changed; ſometimes into *rs*, as *flos*, *floris*; ſometimes into *n*, as *ſanguis ſanguinis*; ſometimes into *d*, as *pes pedis*; ſometimes into *t*, as *nepos nepotis*.—On the contrary, in verbs, it is frequently put for other letters; for *b*, as in *jubeo juſſi*; for *c*, as in *parco parsi*; for *d*, as in *ludo lusi*; for *g*, as in *ſpargo ſparſi*, &c. See B, D, *&c.*

The Latins alſo frequently changed the Greek *s* into *l*, as Αννιϐας Annibal; into *d*, as μεσον *medium*, &c.—The double *s* was frequently changed into *x*, as πισσα *pix*; and ſometimes even the ſingle one, as Αιας Ajax.

The old and the new orthography of the French, differ chiefly on the uſe of the *s*; the latter omitting it in writing, where it is not heard in the pronunciation, and the former retaining it: thus the followers of the one, particularly the academy in their dictionary, write *tempeſte*, *huiſtre*, *fluſte*; thoſe of the other, *tempête*, *huître*, *flûte*, &c. See ORTHOGRAPHY.

S was a numerical letter among the Ancients, ſignifying ſeven: according to the verſe,

S vera ſeptenos numeratos ſignificabit.

S, in books of navigation, &c. ſignifies South.—S.E. South-Eaſt.—S.W. South-Weſt.—S.S.E. South South-Eaſt, &c. See WIND.

S ſometimes alſo ſtands for *ſocius*, fellow, member; and ſometimes for *ſocietas*: as R.S.S. *regiæ ſocietatis ſocius*, fellow of the royal ſociety.

S. A. in medicinal preſcriptions is an abbreviature of *ſecundum artem*, according to the rules of art; chiefly uſed where ſome uncommon care or dexterity is required.

SABÆANS*, SABÆI, the adherents to *Sabaiſm*; a ſect of idolaters, much ancienter than Moſes and the Jewiſh law. See SABAISM.

* The word is ſometimes alſo written *Sabians*, *Sabaites*, *Zabæans*, *Zabians*, *Zabaites*, *Tſabæans Tſabians* and *Tſabaiſts*.

The Sabæans were very numerous throughout the eaſt: in later times they have mixed ſomething of chriſtianity with their ſuperſtition. They ſet a great value on the baptiſm of St. John; whence they have been alſo denominated *chriſtians of St. John*. See CHRISTIANS *of St. John*.

Some, indeed, doubt whether the *Sabæans* be the ſame with the chriſtians of St. John; but Father Angelo de St. Joſeph, a Carmelite miſſionary, and Maracci, in his notes on the Alcoran, aſſert it expreſly. Be this as it will, Mahomet, in his Alcoran, and the Arabian authors ſince him, make frequent mention of them. Beidavius, in his comment on the Alcoran, repreſents them as a kind of mean between the Chriſtians and the Maguſians, who are the followers of the Magi, among the Perſians: he adds, that they pretend to be of the religion of Noah.—Keſſæus notes, that they pretend to be in poſſeſſion of the books of Seth and Enoch; though they own none of the books of ſcripture.

Some charge them with worſhipping the ſtars; and others, the angels, or dæmons. Maimonides attributes both to them; as is obſerved under the Article SABAISM.

Abu Joſeph Aſchæus, and Keſſæus place the *Sabæans* about Charan, or Charres, and Ghezira in Meſopotamia; which opinion is confirmed by this, that their books are in the Chaldee tongue, though in a character very different from the Chaldee.

Hottinger ſets aſide the common derivation of *Sabæan* from צבא *militia*, *hoſt*; and will not have it the name of a ſect of religion, but of a people in Arabia Felix, the deſcendants of *Saba*, Grandſon of Cham.—But the criticks, to a man, conſpire againſt this opinion.

SABAISM, an ancient kind of idolatry; the firſt that ever entered into the world. See IDOLATRY.

Sabaiſm conſiſted in the worſhip and adoration of the ſtars; or as the ſcriptures call them צבא שמים *tſeba ſchamaim*, or *ſeba ſchamaim*, i. e. hoſt, or militia of heaven; whence ſome Moderns formed the word *Sabaiſm*, to denote the worſhip of the heavenly bodies, and that of *Sabæans* for the worſhippers. See SABÆANS. But as the Hebrew word, whence theſe are formed, is wrote with a צ *tzade*, which ſome expreſs in the modern tongues by an *s*, ſome by a *z*, others by *ts*, and others by *tz*; hence ariſes a great many different manners of writing the word among different authors. Some *e. gr.* writing *Sabæans*, others *Zabians*, or *Zabæans*, or *Zabæiſts*, as Buxtorf; others *Tſabians*, others *Tſabæans*, &c.

Maimonides makes frequent mention of this idolatry in his *More Nevochim*: it was very general, he obſerves, in the time of Moſes. The retainers hereto taught, that God was the ſpirit of the ſphere, that is the ſoul of the world. Abraham, he adds, was brought up in the doctrine of the *Sabæans*, who admitted no other gods but the ſtars, and who in their books, many of which have been tranſlated into Arabic, maintain expreſly, that the fixed ſtars and planets, are inferior gods, and the ſun and moon the ſuperior ones. Abraham at length, he tells us, oppoſing theſe errors, firſt aſſerted the exiſtence of a creator diſtinct from the ſun. The king of the Cuthæans clapt him up in priſon; but he ſtill perſiſting, that prince, from an apprehenſion of his diſturbing the ſtate by teaching a new religion, confiſcated his goods, and baniſhed him to the extremities of the eaſt.—This relation, he tells us, is found in a book intitled, העבורה הנבטיה *The religion of the* Nabathæans.

He adds, That the *Sabæans*, to the adoration of the ſtars, joined a great reſpect for agriculture; ſet a high value on cattle and ſheep; and taught, that it was unlawful to kill them. He even adds, that they worſhipped dæmons, under the form of goats, and eat the blood of animals, (though they judged it unclean,) merely becauſe they imagined it was the food of dæmons.

This is a ſummary of what that Rabbin gives us concerning *Sabaiſm*; from whence, it is eaſy judging of what ſome people tell us, that *Sabaiſm* is a mixture of Judaiſm, Chriſtianity, Mahometaniſm, and Paganiſm. The truth is, the worſhip of the ſtars was eſtabliſhed long before not only Chriſtianity, but even before the law of Moſes. Not but ſome of the later *Sabæans* have given into divers articles of almoſt all religions. See SABÆANS.

SABBATARIANS, a ſect of Anabaptiſts, in the XVIth century; thus called, becauſe they obſerved the Jewiſh or ſaturday-ſabbath, from a perſuaſion that it was never abrogated in the New Teſtament by the inſtitution of any other. See SABBATH, ANABAPTIST, *&c.*

SABBATH*, SABBATUM, the ſeventh day of the week, held as a feaſt among the Jews, in memory of God's reſting on the ſeventh day of the creation. See WEEK.

* The word is pure Hebrew, שבת, and ſignifies *ceſſation* or *reſt*. Philo calls it, Τȣ κοσμȣ γενεσια, The world's birth-day.

The Sabbath was appointed from the begininng, by God himſelf, Gen. ii. 2, 3. and by him ſet apart for the commemoration of the great work of the creation; and when it had fallen into neglect after the flood, was re-eſtabliſhed by him, upon his ſettling the Jewiſh polity after the return out of Egypt.

The Chriſtians alſo apply the word *Sabbath* by extenſion, to the firſt day of the week, popularly called *Sunday*, or the *Lord's-Day*; as inſtituted by the apoſtles to take place of the Jewiſh *Sabbath*, and by us obſerved in remembrance, not of the creation, but of the work of redemption's being compleated by our Saviour's reſurrection on that day. See SUNDAY.

Thoſe who diſpute the divine appointment of a Chriſtian *Sabbath*, yet allow the moral neceſſity thereof, as a wiſe deſignation of time for the recruiting of our bodies, and at the ſame time, keeping up a ſenſe of the great benefits we have received from God, and a ſpiritual temper of mind. By allowing ſix days to labour, the poor has time to earn his bread, and the man of buſineſs time to diſpatch his affairs. Had more time been allotted to labour and buſineſs, and none to reſt; our bodies would have been too much fatigued and waſted, and our minds too long engaged about worldly matters, ſo as to have forgotten divine things. Greedy people, without ſuch an injunction, would ſcarce have ſpared their own bodies, much leſs their ſervants, ſlaves, cattle, &c.—The creation, therefore, would have ſuffered, had it not been provided for by the inſtitution of a *Sabbath*. See SUNDAY.

The Jews had alſo their SABBATICK YEAR, which was every ſeventh year; wherein they were obliged to ſet their ſlaves at liberty, and to let their lands lie idle. See JUBILEE.

SABBATH, is alſo uſed for a nocturnal aſſembly which Witches are ſuppoſed to hold on ſaturdays, where the devil appears in form of a goat, around whom they make ſeveral dances, and magick ceremonies, amply deſcribed in the books of Dæmonomania.

To prepare themſelves for this meeting, it is pretended, they take certain ſoporific drugs; after which they are ſaid to fly up the chimney, and to be ſpirited through the air to the *Sabbath* on a ſwitch.

SABBATH-*day's-journey*, is a Jewiſh itinerary meaſure, fixed by criticks to the ſpace of 750 paces; or of 2000 Jewiſh cubits. See MEASURE.

SABBATIANS, SABBATIANI, a ſect of hereticks thus called from *Sabbatius*, their leader, who lived under Diocleſian, was firſt a Jew, then converted, and made a prieſt by Marcion; but afterwards left the ſect of Marcionites, on account of the celebration of Eaſter, which he would have to be on the fourteenth day of the moon; whence he, and his adherents, were called *Quartodecimans*. See QUARTODECIMAN.

The *Sabbatians* are recorded by eccleſiaſtical hiſtorians, as having a great abhorrence of the left-hand; ſo as to make it a point of religion, not to receive any thing with it.—This cuſtom, which is now become a piece of manners among us, was then eſteemed ſo ſingular, that the *Sabbatians* were thence denominated Αριϛεροι, *q. d. ſiniſtri*, or left-handed.

SABELLIANS, a ſect of ancient hereticks in the eaſt, who reduced the three perſons in the Trinity, to three ſtates or relations; or rather reduced the whole Trinity to the one perſon of the Father; making the Word and the Holy Spirit to be only virtues, emanations, or functions thereof. See TRINITY and PERSON.

Sabellius, their chief, firſt broached this doctrine, in the third century, in a city of Lybia, called Ptolemais: he taught, that he, who in heaven is the Father of all things, deſcended into the virgin, became a child, and was born of her as a Son; and that, having accompliſhed the myſtery of our ſalvation, he diffuſed himſelf on the apoſtles, in tongues of fire; and was then denominated the Holy Ghoſt.

Epiphanius tells us, that the God of the *Sabellians*, whom they called the Father, reſembled the ſun, and was a mere ſubſtratum; whereof the Son was the illuminative virtue or quality, and the Holy Spirit the warming virtue.

The Word, they taught, was ſhot or darted forth like a divine ray, to accompliſh the work of redemption; and that, being re-aſcended to heaven, as the ray returns to its ſource, the warmth of the Father was communicated, after a like manner, to the apoſtles.

The council of Antioch, held by the Euſebians in 345, tells us, that, at Rome, they were called *Patripaſſians*, who, in the eaſt, were called *Sabellians*. See PATRIPASSIAN.

SABLE*, in heraldry, the black colour, in the arms of gentlemen. See COLOUR.

* The name is borrowed from the little animal called *Sable*, which is of a black colour.

In thoſe of nobility, it is called *Diamond*; and in the coats of ſovereign princes, *Saturn*. See DIAMOND.

It is expreſſed in engraving by perpendicular and horizontal hatches drawn a-croſs each other—as repreſented in *Tab. Herald. fig.* 27.

SABRE*, a kind of cutting ſword, or ſcimiter, having a very broad, heavy blade; thick at the back, and a little crooked towards the point. See SWORD.

* The word is formed from the German *Sabel*, which ſignifies the ſame, of the Sclavonic *Sabla*, a ſword or hanger.

The Turks are very expert in the uſe of the *Sabre*, which is the weapon they ordinarily wear by their ſide, *&c.*—With this, it is ſaid, they can cleave a man quite down, at a ſingle ſtroke.

SAC*, or SAK, SACA, or SACHA, in law, a royal privilege which a lord of a manor claims in his court, of holding plea in cauſes of debate ariſing among his tenants and vaſſals, and of impoſing and levying fines and amercements touching the ſame. See SOC.

* The word is Saxon, Sac, and literally ſignifies *cauſe*, *conteſt*, &c.

Raſtal defines *Sac* by the forfeiture or amercement itſelf.

SACÆA, ΣΑΚΑΙΑ, in antiquity, a feaſt which the ancient Babylonians, and other Orientals, held annually in honour of the god Anaitis.

The Sacæa were in the eaſt what the *Saturnalia* were at Rome, *viz.* a feaſt for the ſlaves. One of the ceremonies hereof, was to chuſe a priſoner condemned to death, and allow him all the pleaſures and gratifications he would wiſh, ere he were carried to execution. See SATURNALIA.

SACCADE, in the manage, a jerk or violent check which the cavalier gives his horſe, by drawing both the reins very ſuddenly; uſed when the horſe bears too heavy on the hand, or obſtinately arms himſelf. See HORSE.

The Saccade is a kind of correction rarely to be uſed; for fear of ſpoiling the horſe's mouth.

SACCHARUM, or SACCHAR. See SUGAR.

SACCO BENITTO, or SACO BENITO. See SAN-BENI.

SACCOPHORI*, a ſect of ancient hereticks, thus called, becauſe they always went cloathed in ſackcloth, and affected a world of auſterity and penance.

* The word is Greek, Σακκοφοροι; formed of σακκος, a ſack or bag, and φερω, I bear.

We know but little of their tenets: in all probability they were the ſame with the Maſſalians. See MASSALIAN.—The emperor Theodoſius made a law againſt the *Saccophori*, and Manichees.

SACCULUS, a diminutive of *Saccus*; uſed in anatomy, to expreſs ſeveral parts of the body, bearing ſome reſemblance to bags; as,

SACCULUS *Chyliferus*, or *Roriferus*, a paſſage which makes the beginning of the thoracic duct: called alſo *receptaculum chyli*. See RORIFERUS, THORACIC, and RECEPTACULUM.

SACCULUS *Cordis*, the pericardium. See PERICARDIUM.

SACCULUS *Lacrymalis*, a little membranous bag, into which the puncta lacrymalia of the eye open; and which is, itſelf, the entrance of a canal, by which the liquor ſeparated in the glandula lacrymalis, is diſcharged into the cavity of the noſe. It is the ulceration of this *Saccus*, that makes the fiſtula lacrymalis. See FISTULA.

SACCULI *Adipoſi*, little cells or veſicles, in the membrana adipoſa, wherein the fat of the body is contained. See ADIPOSE and FAT.

SACCULUS *Medicinalis*, denotes a topical medicine, applied to the ſide, ſtomach, or other painful part; conſiſting of herbs, or drugs incloſed in a linen bag.

SACCULUS *Medicinalis*, is alſo a name given to a bag of ingredients ſuſpended in a liquor, in making diet-drinks; called alſo *Nodule*. See NODULE.

SACER, or SACER DORSI, in anatomy, a muſcle ariſing from the hind-part of the os ſacrum, and running along under the longiſſimus dorſi.—With its ſeveral tendons, it lays hold on the ſpine, and every tranſverſe proceſs of the loins, and the loweſt of the back.—It aſſiſts in erecting the trunk. See MUSCLE.

SACER *Ignis*, } See the articles { ERYSIPELAS.
SACER *Morbus*, } { EPILEPSY.

SACERDOTAL*, SACERDOTALIS, ſomething belonging to the prieſthood. See PRIEST.

* The word is formed from the Latin, *Sacerdos* prieſt, of *Sacer* holy.

SACERDOTAL *Benefices*, are ſuch as cannot be legally held by any but perſons in holy orders: ſuch are all cures of ſouls, biſhopricks, *&c.* See BENEFICE.

The SACERDOTAL *Ornaments*, are thoſe wherewith the prieſts are cloathed, when they officiate, *&c.*

SACK *of Wool*, is a determinate quantity, containing juſt 26 ſtone; and every ſtone 14 pounds. 14 *E.* 3. Stat. 1. c. 2. See STONE and WOOL.

In Scotland, a *Sack* is 24 ſtone; each ſtone containing 16 pounds.

A SACK *of Cotton Wool*, is a quantity from an hundred and half to 400 weight.

SACKS *of Earth*, SACS *a Terre*, in fortification, are canvaſs bags full of earth, the largeſt about a cubic-foot wide, and the leſſer ſomewhat more than half a foot.

They are alſo called *Earth-bags* and *Canvaſs-bags*, and are uſed on ſeveral occaſions; particularly for making retrenchments in haſte, to place on parapets, or the head of the breaches, *&c.* or to repair them when beaten down.

They are of good uſe alſo, where the ground is rocky, and affords not earth to carry on the approaches, becauſe they can eaſily be brought on, and carried off.

The ſame bags, on occaſion, are uſed to carry powder in, of which, they hold about fifty pounds a-piece.

SACKBUT, a muſical inſtrument of the wind kind; being a kind of a trumpet, though different from the common trumpet both in form, and ſize.

The Sackbut is very fit for playing baſs; and is contrived ſo as to be drawn out or ſhorten'd, according to the gravity or acuteneſs of the tones.—The Italians call it *Trombone*, the Latins, *Tuba Ductilis*.

It takes aſunder into four pieces, or branches; and hath frequently a wreath in the middle; which is the ſame tube, only twiſted twice, or making two circles in the middle of the inſtrument; by which means, it is brought down one fourth lower than its natural tone. It has alſo two pieces or branches on the inſide, which do not appear, except when drawn out by means of an iron bar, and which lengthen it to the degree requiſite to hit the tone required.

The Sackbut is uſually eight foot long, without being drawn out, or without reckoning the circles. When extended to its full length, it is uſually fifteen foot. The wreath is two foot nine inches in circumference. It ſerves as baſs in all concerts of wind muſick.

There are *Sackbuts* of different ſizes, ſerving to excute different parts; particularly a ſmall one, called by the Italians, *Trombone picciolo*, and by the Germans, *Cleine alt-poſaune*, proper for a counter-tenor. The part aſſigned it, is uſually called *Trombone primo*, or I°. There is another large, called *Trombone maggiore*, which may ſerve as a tenor: its part is uſually called *Trombone ſecondo*, or II°. or 2°. There is a third ſtill bigger, called *Trombone groſſo*; its part is called *Trombone terzo*, or III°. or 3°. Laſtly, there is another which exceeds all the reſt, and which is much heard in the muſic, eſpecially in the baſs; its part is called *Trombone quarto*, or IV°. or 4t. or ſimply *Trombone*. It has uſually the key of *F*, *ut*, *fa* on the fourth line; though frequently alſo on the fifth line from the top, by reaſon of the gravity or depth of the ſounds.

SACRA *Arteria*, a branch of the aorta deſcendens, which deſcends through the middle of the os ſacrum to the pelvis. See AORTA and ARTERY.

SACRA *Vena*, a vein ariſing from the os ſacrum, and terminating uſually in the iliac vein; ſometimes in the place where the two iliacs meet the aſcending aorta. See VEIN.

SACRAMENT *, SACRAMENTUM, in the general, denotes a ſign of a holy, or ſacred thing. See SIGN and SYMBOL.

* The word is formed from the Latin, *Sacramentum*, which ſignified an oath, particularly that which the ſoldiers took to be true to their commanders; the words whereof according to Polybius, were *Obtemperaturus ſum & facturus quicquid mandabitur ab imperatoribus juxta vires.*

In which ſenſe, the word includes both the *Sacraments* of the law of nature, as ſound morality, the manner of offering the bread and wine practiſed by Melchiſedech, *&c.* and thoſe of the law of Moſes, as the circumciſion, the paſchal lamb, purifications, order of prieſthood, *&c.* See TYPE.

SACRAMENT, with regard to the Chriſtian church, is defined, a viſible ſign of a ſpiritual grace annexed to the uſe thereof. See GRACE, *&c.*

There are two objects in a *Sacrament*; the one a material ſign, the object of the ſenſes; the other the thing ſignified, which is the object of faith.—Thus it has pleaſed God to give as it were a body or ſubſtance to ſpiritual myſteries, that our faith might have the aſſiſtance of ſenſible ſigns.

Roman Catholicks own ſeven *Sacraments*, viz. baptiſm, confirmation, the euchariſt, penance, extreme unction, ordination and marriage. See each under its proper article.—The Proteſtants admit of only two, *viz.* baptiſm and the euchariſt, or Lord's ſupper. See BAPTISM, *&c.*

The Romaniſts, however, call the euchariſt, by way of eminence, the *Holy Sacrament.*—Thus to expoſe the *H. Sacrament*, is to lay a conſecrated hoſt on the altar to be adored.

The proceſſion of the *H. Sacrament*, is that wherein it is carried about the church, or about the town. See PROCESSION.

In a like ſenſe they ſay, the feaſt of the *H. Sacrament*, the congregation of the *H. Sacrament*, &c.

SACRAMENT, was alſo uſed in the Roman law, for a pledge or gage of money, which both the plaintiff and defendant, in a real action, laid down in court, to be forfeited by him who ſhould loſe the cauſe.—This was particularly called, *Sacramento provocare, rogare, ſtipulari*, &c.

SACRAMENTARIANS, a general name given to all ſuch as have publiſhed, or held erroneous doctrines of the ſacrament of the ſupper.

The term is chiefly applied among Roman Catholicks, by way of reproach, to the Lutherans, Calviniſts, and other Proteſtants.

SACRAMENTARY, SACRAMENTARIUM, an ancient church-book, comprehending all the prayers and ceremonies practiſed at the celebration of the ſacraments.

Pope Gelaſius was the firſt author of the *Sacramentarium:* it was afterwards reviſed, corrected and abridged by St. Gregory.—It was the ſame with what the Greeks now call *Euchologium.* See EUCHOLOGIUM.

SACRED, SACER, ſomething holy, or, that is ſolemnly offered, and conſecrated to God with ceremonies, benedictions, unctions, *&c.* See CONSECRATION.

Kings, prelates, and prieſts, are held *ſacred* perſons; abbots are only bleſſed.—The deaconhood, ſub-deaconhood, and prieſthood, are *ſacred* orders, and impreſs a *ſacred*, indelible character. See ORDER.

The cuſtom of conſecrating kings with holy oil, is derived, according to Gutlingius, from the Hebrews; among whom, he agrees with Grotius, it was never uſed but to kings who had not an evident right by ſucceſſion. He adds, that the Chriſtian emperors never uſed it before Juſtin the younger; from whom he takes it to have paſſed to the Goths, *&c.* See UNCTION, KING, *&c.*

SACRED, is alſo applied to things belonging to God, and the church. See HOLINESS.

Church lands, ornaments, *&c.* are held *ſacred.*—The *ſacred* college is that of the cardinals. See CARDINAL.

SACRED *Majeſty*, is applied to the emperor, and the king of England; yet Loyſeau ſays it is blaſphemy. See MAJESTY.

The Ancients held a place ſtruck with a thunder-bolt as *ſacred.* See THUNDER-BOLT.

In the civil law, *ſacred* place chiefly denotes that, where a perſon deceaſed, has heen interred. See TOMB, *&c.*

SACRIFICE, SACRIFICIUM, an offering made to God on an altar, by means of a regular miniſter, as an acknowledgment of his power, and a payment of homage. See ALTAR.

Sacrifices differ from mere oblations, in that in a *Sacrifice* there is a real deſtruction or change of the thing offered; whereas an oblation is only a ſimple offering or gift, without any ſuch change at all. See OBLATION.

Divines divide *Sacrifices* into *bloody*, ſuch as thoſe of the old law; and *bloodleſs*, ſuch as thoſe of the new law.

They alſo divide them again into *impetratory*, which are thoſe offered, to obtain ſome favour of God, or to thank him for ſome already received: and *propitiatory*, which are thoſe offered to obtain forgiveneſs of ſins. See PROPITIATION.

The Phœnicians are uſually held the firſt authors of *Sacrifices:* Porphyry, indeed, attributes the invention to the Egyptians; who, he ſays, firſt offered the firſt-fruits of their grounds, to the gods; burning them upon an altar of turf. At length they came to burn perfumes, and at laſt ſacrificed animals; obſerving that they firſt eat ſome herbs, or fruits, regularly offered on the altars.—He adds, that libations were very frequent ere *Sacrifices* of beaſts got footing. See LIBATION.

Ovid obſerves, that the very names *victim* and *hoſtia* import, that they were not ſlain, till ſuch time as victories were obtained over enemies: indeed, while men lived on herbs and pulſe, it is no wonder they abſtained from *Sacrifices* of beaſts: ſince the law of *Sacrifices* required, that they ſhould eat ſome part thereof. In effect, it is ſuppoſed to be this that firſt introduced fleſh as a food, and made man a carnivorous animal. See CARNIVOROUS.

The truth is, in all antiquity, both ſacred and profane, *Sacrifices* were ordinarily nothing elſe but holy banquets. See FEAST, EPULO, *&c.*

The ſcriptures furniſh us a ſomewhat different account; Noah certainly *ſacrificed* animals at his coming out of the ark; and it is even ſuggeſted, that Abel himſelf *ſacrificed* the beſt and fatteſt of his flocks: though Grotius thinks it more probable, he contented himſelf with making a mere oblation of his lambs, *&c.* to God without *ſacrificing* them.

Macrobius tells us, that the Egyptians, long accuſtomed to bloodleſs *Sacrifices*, being at length obliged to admit the worſhip of Serapis and Saturn, to whom *Victims* were to be *ſacrificed*; would not allow their temples to be built in the cities.

Theſe *Victims*, however, or bloody *Sacrifices*, at length obtained, in excluſion of almoſt all the reſt: the moſt uſual among the Ancients, were bulls, oxen, cows, ſheep and lambs, in regard theſe were the moſt ordinary food of man.

The manner of *ſacrificing* among the ancient Hebrews, is amply deſcribed in the books of Moſes. That in uſe among the Romans, is as follows.—In the choice of the *Victims*, care was taken it were without blemiſh or imperfection, its tail not too ſmall at the end; the tongue not black, nor ears cleft; and the bulls ſuch as had never been yoked. The *Victim* pitched upon, they gilt his forehead and horns, eſpecially if a bull, heifer, or cow. The head they alſo adorned with a woollen infula, whence hung two rows of chaplets with twiſted ribbons; and on the middle of the body a kind of ſtole, pretty large, hung down on both ſides: the leſſer *Victims* were only adorned with bundles of flowers and garlands, together with white tufts or garlands.

The *Victims* thus made ready, were brought before the altar; the leſſer were not led in a ſtring, but driven to the place: the greater were conducted in an halter; if they made any ſtruggle, or refuſed to go, the reſiſtance was taken for an ill augury, and the *Sacrifice* ſet aſide.—The *Victim* thus brought before the altar, was examined very circumſpectly, to ſee if there were no defect in it: then the prieſt, being clad in his ſacerdotal habit, and accompanied with the *Sacrificers* and other attendants, and being waſhed and purified according to the ceremonies preſcribed, began the *Sacrifice*, with making a loud confeſſion of his unworthineſs, acknowledging himſelf guilty of divers ſins; for which he begged pardon of the gods, hoping they would be pleaſed to grant his requeſts.—Theſe confeſſions were like thoſe of the Hebrews; with this difference, that the Pagans confeſſed the frailty of mankind, and owned their faults; the Jews confeſſed chiefly the greatneſs of God, accompanying it with hymns and muſical inſtruments.

The confeſſion over, the prieſt cried aloud, *hoc age*, i. e. compoſe yourſelves, and mind your buſineſs; and preſently an uſher, holding a rod in his hand, called *Commentaculum*, went through the temple, and made all thoſe withdraw, who were not initiated in the myſteries of religion, or ſuch as were excommunicated.

The cuſtom of the Greeks, from whom the Romans borrowed theirs, was, that the prieſt coming to the altar, ſhould aſk aloud, Τις τι δε? Who is here? The people anſwered, Πολλοι ϗ αγαθοι, Many good perſons: then the uſher went through the temple, crying, Ἑκας, ἑκας, εϛε βεϐηλοι, that is, Out with the wicked. The Romans commonly uſed the words, *Nocentes, profani, abſcedite.*—All thoſe who were driven out of the temples among the Greeks, were comprehended under theſe general words, βεβηλοι, αμυητοι, ακαθαροι.

The profane being withdrawn, they cried, *Favete linguis*, or *animis*, and *Paſcite linguam*, to require ſilence, and attention during the *Sacrifice.*

Theſe ceremonies ended, the chief *Sacrificer* being ſate down, and the reſt of them ſtanding, the magiſtrates or private perſons, who offered *Sacrifice*, came before him, and preſented him with the firſt-fruits and victim, and ſometimes made a ſhort diſcourſe, by way of compliment; as we find Homer makes Ulyſſes do, when he preſented the high-prieſt with Iphigenia to be *ſacrificed.*—As any perſon came to preſent his offering, he waſhed his hands in a place appointed in the temple for that purpoſe.

Laſtly, when the offering was made, the prieſt that officiated, perfumed the victim with incenſe, and ſprinkled it with luſtral water; and having waſhed his hands, and got up again to the altar, he prayed to the god to whom he preſented the

Sacrifice, with a loud voice, that he would accept of thoſe offerings, and be pleaſed with the victim he *ſacrificed* to him for the publick good, and for ſuch and ſuch things in particular.—In the cloſe of the offertory and prayer, made by the prieſt to the gods, he came down the ſteps of the altar, and from the hand of one of his aſſiſtants, received the ſacred paſte, called *mola ſalſa*, made of barley or wheat flour, mixed with ſalt and water, which he threw upon the head of the victim, ſprinkling a little wine upon it, which was called *immolatio.*—Servius ſays, the prieſt ſcattered little bits of this paſte upon the head of the victim, the altar where the ſacred fire burned, and the knives, by way of conſecration.

He then took wine in a veſſel called *ſimpulum*, and having taſted it himſelf firſt, and made his aſſiſtants do the ſame, to ſhew that they partook of the *Sacrifice*, he poured it between the horns of the victim, pronouncing theſe words of the conſecration, *Mactus hoc vino inferis eſto*; Let this victim be improved and honoured by this wine. This done, he pulled off the hairs from between the horns, and threw them into the fire; and commanded the victimarius (who aſked him, *Agon'*, Shall I ſtrike?) to knock down the victim with a blow on the head with an hammer or ax; upon which, another aſſiſtant, named *Popa*, preſently thruſt a knife into his throat; whilſt a third received the blood, wherewith the prieſt ſprinkled the altar.

When the victim was ſlain, they flead him, if it was not a burnt-offering; (for then they burned ſkin and all,) took the fleſh off the head, and adorning it with garlands and flowers, faſtened it to the pillars of temples, as well as the ſkins, as enſigns of religion; carrying them about in proceſſion in publick calamities.—Not but that the prieſts oft wore the ſkins, and others went to ſleep upon them in the temples of Æſculapius and Faunus, that they might receive favourable reſponſes in their dreams, or be cured of their maladies.

They then opened the victim's entrails, and after circumſpectly viewing them, to draw preſages therefrom, according to the art of the aruſpices, they flowered them with meal, and ſprinkled them with wine, and made a preſent of them to the gods, *reddebant exta diis*, by throwing them into the fire in ſmall bits, boiled or parboiled; and hence the entrails were called *porricæ.*

The entrails being burned, and the other ceremonies finiſhed, they believed the gods to be ſatisfied; and that they could not fail to find their vows accompliſhed, which they expreſſed by the word *litare*, *q. d.* all is finiſhed, and well done; whereas *non litare*, on the contrary, intimated there was ſomething wanting to the perfection of the *Sacrifice*, and that the gods were not appeaſed.—The prieſt afterwards diſmiſſed the people with theſe words, *Ilicet*.

Hence it may be obſerved, that the *Sacrifices* conſiſted of four principal parts; the firſt called *libatio*, or the pouring a little wine upon the victim; the ſecond *immolatio*, when, after they had ſcattered the crumbs of ſalted paſte thereon, they killed it; the third *redditio*, when they offered the entrails to the gods; and the fourth *litatio*, when the *Sacrifice* was perfected, and accompliſhed without any fault.

SACRILEGE, SACRILEGIUM, the crime of profaning ſacred things, or things devoted to God; or of alienating to laymen, or common purpoſes, what was given to religious perſons, and pious uſes. See PROFANATION, *&c.*

Our fore-fathers were ſo tender in this caſe, that, when the order of knights templars was diſſolved, their lands, *&c.* were all given to the knights hoſpitallers of Jeruſalem, for this reaſon, *Ne in pios uſus erogata, contra donatorum voluntatem, in alios uſus diſtraherentur.* See TEMPLAR, *&c.*

SACRISTA, or SACRISTAN, a church officer, otherwiſe called *Sexton.* See SEXTON.

SACRISTY, SACRISTIA, a place or apartment in a church, where the veſſels and other utenſils, and ornaments of the church, are preſerved; and where the miniſters dreſs and undreſs themſelves before and after ſervice. *The Sacriſty* is alſo called in ancient authors, *Secretarium.*—Among us *Veſtry.* See VESTRY.

SACROLUMBARIS, or SACROLUMBUS, in anatomy, a muſcle, that ariſes fleſhy from the ſuperior part of the os ſacrum, poſterior part of the ilium, and from all the ſpines and tranſverſe proceſſes of the vertebræ of the loins.—It gives a ſmall tendon to the poſterior part of each rib near its root, where a ſmall bundle of fleſhy fibres ariſes and unites with each aſcending tendon, to the third, fourth, fifth, and ſixth vertebræ of the neck.—See *Tab. Anat.* (Myol.) *fig.* 6. *n.* 30. 30. *fig.* 7. *n.* 16. 16.

This with the ſerratus poſticus inferior, and triangularis, help to contract the ribs in expiration. But they are but of ſmall force; and ſeem only to accelerate the motion of the ribs, which fall down chiefly by their own gravity, and the elaſticity of the ligaments, by which they are tied to the vertebræ. See MUSCLE.

SACRUM OS, in anatomy, the lower extremity of the ſpina dorſi; being that part whereon we ſit.—See *Tab. Anat.* (Oſteol.) *fig.* 3. *n.* 15. *fig.* 7. *n.* 20. See alſo the article SPINE.

It is doubted whence this name ſhould ariſe: ſome think it is becauſe the Ancients offered it in ſacrifice to the gods; others, becauſe it is very large; and others, becauſe it incloſes the natural parts.

Its figure is triangular: it is hollow within-ſide, and by that means contributes to the forming of the cavity at the bottom of the hypogaſtrum, called the *pelvis.* Its fore-part is ſmooth, by which means, the parts it contains are ſecured from being wounded: its hind-part rough, that the muſcles may faſten the better to it.

It has three different articulations: the firſt is with the laſt of the vertebræ of the loins, and is like that of the other vertebræ: the ſecond, with the os coccygis, by ſynchondroſis: the third, with the bones of the hips.

The *os ſacrum* is uſually divided into five parts, which are ranked among the number of vertebræ: the higheſt is the greateſt; the reſt growing leſs as they go lower. Theſe vertebræ are eaſily ſeparated in children, by reaſon the cartilages which join them, are not yet oſſified. But in adults, they are ſo firm, that they only make one bone. See VERTEBRA.

It is in the *os ſacrum*, that the cavity which contains the ſpinal marrow, terminates. See MEDULLA *Spinalis.*

SADDLE, in the manage, a kind of ſtuffed ſeat, laid on the back of a horſe, for the convenience of the rider. See HORSE, *&c.*

The origin of the *Saddle* is not well known: Gorop. Becanus attributes its invention to the Salii, a people among the ancient Franks; and hence, ſays he, came the Latin *Sella* ſaddle.

It is certain, the ancient Romans were unacquainted with the uſe either of *Saddle* or ſtirrups; whence Galen obſerves in ſeveral places, that the Roman cavalry, in his time, were ſubject to ſeveral diſeaſes of the hips and legs, for want of having their feet ſuſtained on horſe-back. And long before him, Hippocrates had noted, that the Scythians, who were much on horſe-back, were troubled with defluxions in their legs, becauſe of their hanging down.

The firſt time we hear of *Saddles* among the Romans, was *Anno* 340; when Conſtantius, endeavouring to deprive his brother Conſtantine of the empire, made head againſt his army, and entering the ſquadron where he himſelf was, threw him off his *Saddle*, as we are informed by the hiſtorian Zonaras.—Before, they made uſe of ſquare pannels; ſuch as we ſee in the ſtatue of Antoninus in the capitol.

The uſe of *Saddles* was firſt eſtabliſhed in England, by a law of Henry VII. whereby the nobility were obliged to ride on *Saddles.*—It is but very lately that the Iriſh have taken to it.

There are various kinds of *Saddles*; as the

Running SADDLE, a very ſmall one, with round ſkirts.

Burford SADDLE, which has the ſeat and ſkirts plain.

Pad SADDLE, of which there are two kinds; the one made with burs before the ſeat, the other with bolſters under the thighs.

French Pad SADDLE, the burs whereof, came all round the ſeat.

Portmantua SADDLE furniſhed with a cantle behind the ſeat, to keep a carriage off the rider's back.

War SADDLE, furniſhed with a cantle, and a bolſter both behind and before.

SADDLE-GALLED, is when a horſe's back is hurt, or fretted with the *Saddle.*

It is cured by bathing the part with urine, or warm wine: when the ſore is large, they bathe it with aqua ſecunda, ſtrewing over it the powder of old ropes or flax, and conſuming the proud fleſh with vitriol or colcothar.

SADDUCES, or SADDUCEES, SADUCÆI, a ſect among the ancient Jews, eſteemed as deiſts, or free-thinkers, rather than real Jews; though they aſſiſted at all the ceremonies of the worſhip in the temple. See JUDAISM.

St. Epiphanius will have the *Sadduces* to have taken their riſe from Doſitheus, a Samaritan ſectary; and Tertullian is of the ſame opinion. St. Jerom, and other writers add, that the *Sadduces* came near the Samaritans in many things; particularly in this, that they allowed no books of ſcripture, but the five books of Moſes. The Jeſuit Serrarius has alſo embraced this opinion, as ſeeming to be ſupported by the authority of Joſephus. But Joſephus ſays only this, that they admitted all that was written, *i. e.* all the books of ſcripture; intimating hereby, that they diſowned the unwritten traditions of the Phariſees.—In effect, St. Epiphanius is forced to own, that the *Sadduces* were Jews, not Samaritans; inaſmuch, as they aſſiſted at the worſhip and ſacrifices of the temple at Jeruſalem: whereas the Samaritans ſacrificed on Mount Gerizzim. See SAMARITANS.

Some authors aſcribe the origin of this ſect to one Sadoc, a diſciple of Antigonus Sochæus, who frequently inculcated it on his ſcholars, that God is to be ſerved for his own ſake, and not out of view to any reward from him in the next world, as ſlaves ſerve their maſters merely for recompence.—Sadoc, add they, putting a falſe interpretation on theſe words of his maſter, publiſhed, that there was no reward allotted to good actions done in this world. And hence aroſe the ſect of *Sadduces*; thus denominated from their leader Sadoc.—Though St. Epiphanius, and ſome modern writers after him, take the *Sadduces* to have been thus called from the Hebrew, *Sadec*, juſt, or *Sedec*, juſtice, in regard of the great juſtice and equity they ſhewed in all their actions.

It is obſerved, Acts xxiii. 8. that the *Sadduces* ſay, there is no reſurrection, neither any angel or ſpirit; but that the Phariſees believe both the one and the other. Theſe words, *The one and the other*, ſeem to inſinuate, that angel and ſpirit are one and the ſame thing. But as the apoſtles, obſerves Oecumenius on that paſſage, do not always uſe the exacteſt terms, one may underſtand by ſpirit, all ſpiritual ſubſtances; as if the *Sadduces* had believed that God himſelf was corporeal.—This, however, is not Oecumenius's opinion: he aſks, why the ſcripture ſays, *The one and the other*, though it ſpoke of three things, reſurrection, angel, and ſpirit? and he anſwers, that it is either becauſe angel and ſpirit are the ſame thing; or that *one and the other*, which is only properly underſtood of two things, is, perhaps, here ſpoke of three: exact propriety of words not being to be required in books wrote by ſimple illiterate fiſhermen. It is true, in explaining what goes before, he obſerves, that the *Sadduces*, being very ignorant, might poſſibly disbelieve the exiſtence of a God; and on that account, might be repreſented as denying a reſurrection, *&c.* But he does not ſay, that by ſpirit, they might mean all ſpiritual ſubſtance. It is probable, all meant by it, is the immortality of the ſoul; it being the opinion of the *Sadduces*, that there is nothing immortal in man.

It is certain, they denied all reſurrection; and allowed of no happineſs but what is enjoyed in this life; believing, that every thing told of the other world, had been invented by the Phariſees.—Hence, alſo, they denied a divine providence, and attributed all things to free-will; in which, they oppoſed the opinion of the Phariſees, who admitted a kind of deſtiny, or fatality, in all our actions. See PHARISEES.

SAFE-CONDUCT, SALVUS CONDUCTUS, a ſecurity given by the prince under his great ſeal, to a ſtranger, for his quiet coming in and paſſing out of the realm.

The *Safe-Conduct* is granted to enemies, the paſſport to friends. See PASSPORT.

Judges ſometimes give *Safe-Conducts* to delinquents, or priſoners, to enable them to act in their affairs.

SAFE-GUARD, SALVA GUARDIA, in a law ſenſe, a protection given by the king to a perſon fearing the violence of ſome other, for ſeeking his right by courſe of law.

SAFE-GUARD, at ſea, denotes a rope which ſaves, and ſecures any thing: for inſtance, that whereby perſons walk ſecurely over the bolt-ſprit.

SAFE-GUARD *of the Helm*, is a rope which goes through the helm, and is faſtened to the futtocks of the ſhip. See HELM, *&c.*

SAFE-PLEDGE, SALVUS PLEGIUS, in law, a ſecurity given for a man's appearance on a day aſſigned. See PLEDGE.

SAFFRON*, CROCUS, a plant which produces a flower of the ſame name; whence, alſo, a drug called *Saffron* or *Crocus* is gathered. See CROCUS.

* The word is formed from the Arabic, *Zapheran*, which ſignifies the ſame. Botaniſts call the plant Crocus autumnalis ſativus.

The root which produces the *Saffron*, is a kind of bulb, or onion, covered with ſeveral bulbous cartilages: its graſſy leaves are long, narrow, thick and ſoft to the touch: its flower, which appears ſometimes before the leaves, and ſometimes after them, is a pale purple, ſtreaked with whitiſh lines: but towards the bottom of the petala the purple is deeper. From the middle of the flower ariſe three long flame-coloured ſtamina or chives, crowned with their apices. Under theſe is the ovary or vaſculum ſeminale, by ſome called the Piſtil of the plant: it is divided into three capſulæ, wherein the ſeeds are formed. From the upper part of the ovarium ariſes the ſtylus, a long ſlender tube incloſed within the fiſtular part of the flower, where it is of a whitiſh colour, but changes into a yellow before its diviſion, which is into three parts, oppoſite to the tops of the ſtamina: 'tis theſe three parts only that make the true *Saffron* of the ſhops, for the ſake of which alone the plant is cultivated. They are of a yellow colour juſt at the beginning from the ſtylus, but afterwards are all of a deep red colour, only their jagged extremities tipp'd with white inclining to yellow. See a figure and deſcription of the plant by Dr. Douglas in Phil. Tranſ. N° 380. p. 441.

As ſoon as the flower is gathered, they ſeparate the ſtylets and lay them on hurdles, or in large ſieves, or on a little kiln for that purpoſe, with a little coal-fire underneath to dry them. When dry, the *Saffron* is in its perfection, and fit for uſe.

It is obſerved, that five pounds of freſh ſtyles, which ſome miſtakenly call the *chives*, only make one pound of dry *Saffron*.

The good qualities of *Saffron* are, that its ſtyles be long and broad, that they be velveted over with a fine red, of an agreeable ſmell, free of yellow threads, and very dry.

The beſt *Saffron* in Europe is that of England, chiefly about Walden in Eſſex: that brought from Spain is good for nothing; becauſe of the oil the Spaniards mix with it to make it keep.

Saffron is uſed both in food and medicine, to chear, fortify, and reſolve. It is the greateſt cordial in medicine; and a ſure promoter of a diaphoreſis.—It is alſo uſed by illuminors, to make a golden yellow colour.

SAFFRON is alſo a name given to ſeveral chymical preparations, from the reſemblance of their colour to that of vegetable *Saffron*, but more uſually called *Croci*. Such are

SAFFRON *of Venus*. See COPPER and VENUS.

SAFFRON *of Mars*. See CROCUS MARTIS.

SAFFRON *of Gold*. See AURUM *Fulminans*.

SAGAPENUM, Σαγαπηνον, a medicinal gum, whoſe ſmell comes very near that of the pine; whence its name.

It flows by inciſion, from the trunk of a ferulaceous plant growing in Perſia: the beſt is in bright tranſparent tears, of a ſtrong, pungent, porraceous ſmell; and the whiter and freer of dirt, the better. Sometimes it is found as white, both within and without ſide, as milk; though this is very rare. It is eſteemed aperitive and purgative, proper in the epilepſy, aſthma and palſy; and is alſo uſed externally to aſſuage pains, and reſolve tumours.

SAGATHEE*, in commerce, a ſlight woollen ſtuff; being a kind of ſerge, or ratteen; ſometimes mixed with a little ſilk.—It is manufactured chiefly at Amiens; though we have our ſhare in England.

* The word is formed from the French, *Sayette*, a diminutive of *Saye, Say*. See SAY.—The French name *Sayette*, again is derived from that of the thread uſed herein, which is chiefly prepared and ſpun in Flanders, about Turcoing, *&c.* and called *Fil de Sayette*.

SAGE, SALVIA, a medicinal herb of an agreeable, aromatic taſte; eſteemed an excellent cephalic of the detergent kind; and on that ſcore likewiſe uſed as a vulnerary and diuretic.

There are ſeveral kinds of *Sage*; thoſe uſed and cultivated by us are the *Tea-Sage*, or *Sage of Virtue*, the *Red Sage*, and the common or *Wormwood-Sage*.

The firſt, *ſalvia virtutis*, or *ſalvia hortenſis minor*, has the moſt agreeable flower; and on that ſcore is cut when young and full of ſap, dried, and kept for tea.—The Dutch dry and prepare their *Sage* like other teas, and carry it to the Indies as a very precious thing. They there find a good market for it; the Chineſe preferring it to the beſt of their Indian teas; and for every pound of *Sage* tea, giving in exchange four pounds of theirs, which they ſell again very dear in Europe. See TEA.

The common or wormwood *Sage*, *ſalvia hortenſis major*, is eſteemed of the moſt efficacy in medicine, and is that alone uſed in the ſhops.—It makes an excellent gargariſm, eſpecially if ſharpened with a little acid. Its decoction is very grateful and cooling, with the addition of a little lemon-juice. It is both detergent and abſorbent, and as ſuch, finds place in diet-drinks, and medicated ales, intended for ſweetners and cleanſers of the blood.

The ſchool of Salernum recommend *Sage* as a remedy in all diſeaſes: hence the verſe,

Cur moriatur homo, cui ſalvia creſcit in horto?

Sage, when viewed with a microſcope, appears covered all over with little ſpiders, which are ſeen to walk, *&c.* about.—It yields, by diſtillation, a very agreeable, aromatic oil, of ſome uſe in the ſhops.

SAGITTA, in aſtronomy, the arrow or dart, a conſtellation of the northern hemiſphere near the eagle. See CONSTELLATION. The ſtars in the conſtellation *Sagitta*, in Tycho's catalogue, are five, and as many in Ptolemy's. In Mr. Flamſteed's catalogue they are twenty three; the longitudes, latitudes, *&c.* whereof are as follow:

Names and ſituation of the ſtars.	Signs.	Longitude			Lat. Nort.			Magn.
		°	'	"	°	'	"	
	♑	20	00	08	43	07	45	6
		20	20	24	43	15	10	6
		21	45	45	38	31	25	6
Informes over *Sagitta*, and preceding it.		21	53	27	38	31	18	6
5		22	47	43	41	16	27	6
		23	07	32	41	32	45	6
		24	07	59	41	34	28	6 5
		25	35	50	40	49	26	6
Preced. glyphis or nib tow. S.		25	29	42	37	27	09	5
Preced. of three in the ſhaft 10		26	45	16	38	49	52	4
In the extremity of the nib		26	53	23	38	15	17	4
In the middle of the ſhaft		29	04	40	38	56	52	4 5
Laſt of three in the ſhaft		29	43	47	39	27	05	6
	♒	0	35	41	38	48	23	6
15		1	02	13	36	36	54	6
		1	34	53	36	39	43	6
In the point of the arrow		2	42	58	39	13	39	4
In the triangle under the point, north		2	28	06	37	14	03	6
In the triangle under the point, ſouth		3	00	24	35	35	06	6
Middle and poſterior 20		3	33	10	36	35	02	6
Preced. of 3 following the point		4	46	28	39	18	22	6
Middle		6	29	53	39	52	58	6
Laſt	♒	8	37	48	40	07	17	6

SAGITTA, in botany, ſignifies the top of any ſmall twig, cyon, or graft of a tree. See GRAFT, *&c.*

SAGITTA, in geometry, is a term which ſome writers uſe for the abſciſſe of a curve. See ABSCISSE.

SAGITTA, in trigonometry, *&c.* is the ſame as the verſed ſine of any arch; and is ſo called by ſome writers, becauſe it is like a dart, or arrow, ſtanding on the chord of the arch. See SINE.

SAGITTAL, SAGITTALIS, SUTURA, in anatomy, the ſecond of the genuine *Sutures* of the Cranium.—See *Tab. Anat.* (Myol.) *fig.* 1. *lit. f. fig.* 2. *lit. i.* See alſo SUTURE.

It reaches the whole length of the head; and has its name from the Latin, *Sagitta*, as being ſtreight, like an arrow.—Whence it is alſo called *Recta*, and ſometimes alſo *Rhabdoides*. See RHABDOIDES.

SAGITTARIUS, in aſtronomy, the *archer*, one of the ſigns of the zodiac; the ninth in order. See SIGN.

The ſtars in the conſtellation *Sagittarius*, in Ptolemy's catalogue are thirty one; in Tycho's ſixteen; in the Britannic catalogue fifty. The longitudes, latitudes, magnitudes, *&c.* whereof are as follow:

Names and ſituations of the ſtars.	Signs.	Longitude	Latitude.	Magn.
		° ′ ″	° ′ ″	
Inform. preced. the bow	♐	22 55 01	4 22 42 S	6
Nebulous ſtars		25 38 16	0 19 45 S	6
		25 43 17	0 47 41 S	7
		26 19 47	0 47 50 S	6
That in point of the arrow		26 55 47	6 55 51 S	3
5 More north in top of the bow		28 54 10	2 22 54N	4
Subſeq.		29 15 05	2 43 28N	6
In handle of bow againſt hand	♑	0 14 10	6 25 21 S	3
In the ſouth part of the bow		0 45 33	10 59 54 S	2 3
		1 04 54	7 24 47 S	7
10		1 37 40	2 48 39N	6
South. in north part of bow		1 59 55	2 04 01 S	4
Preced. the clara humeri		5 50 42	3 54 35 S	4
		7 19 56	2 39 12N	6
		7 26 23	0 48 34N	7
15		7 45 55	1 01 30N	7
1ſt. of contig. ſtars in the eye		8 09 07	0 09 12N	5
		8 15 09	1 32 03N	6
Bright ſt. in preced. ſhould.		8 03 12	3 23 32 S	3
Subſeqt. of contig. in the eye		8 22 14	0 12 33N	5
20		9 06 09	2 09 25N	6
Preced. of three in the head		9 08 52	1 42 12N	4
That under the arm-pit		9 17 22	7 07 55 S	3
Middle one in the head		10 40 42	0 54 38N	4
That under preced. ſhould. bone		10 30 10	5 01 12 S	4
25 Laſt of three in the head		11 56 44	1 28 59N	3 4
Between the ſhoulders		12 43 06	2 52 57 S	5
In north part of the ſouth		14 02 22	3 17 59N	6
Ephaptis of three middle		15 08 20	4 15 43N	5
Contiguous to that		15 06 17	3 48 43N	6
30 North of 3 in the Ephaptis		15 21 49	6 08 42N	6
In the hind ſhoulder		15 00 19	2 26 17 S	5
Contiguous to that		15 02 43	2 21 05 S	5
A third more north		15 07 46	1 54 36 S	6
		15 39 04	0 12 20N	6
35		17 24 12	3 01 53 S	6
In the cubitus of ſol. arm		17 31 15	3 13 01 S	5
		18 28 04	1 54 04 S	6
Thoſe following the n. preced.		19 53 56	5 05 54N	6
part of Ephapt. of 2 ſubſeq.		20 20 29	5 11 26N	6 5
40 Preced. in ſouth Ephaptis		20 37 36	1 27 02N	6
		22 06 02	1 54 03N	6
Preced. in the root of tail		21 29 46	5 22 55 S	5
Of four middle ones in ſouth		21 35 15	6 16 34 S	5
the root of the tail north		22 13 16	5 24 44 S	5
45 2d. and north in ſouth Ephaptis		24 07 49	5 08 03N	6
2d. in the root of the tail		22 43 30	7 03 48 S	5
		25 27 19	6 54 32N	6
		26 38 01	8 44 40N	6
50	♑	26 29 27	7 31 45N	6

SAGO, a medicinal ſimple brought from the Eaſt-Indies; of conſiderable uſe in diet, as a nouriſher, and reſtorative.

Sago is a ſort of bread procured from a tree called *Landan*, growing in the Molucco's.

When the tree is felled they cleave it into two in the middle, and dig out the pith, which is even eatable when it comes freſh out of the tree. They pound it very ſmall in a mortar, till ſuch time as it is reduced into a kind of powder ſomewhat like meal. This done, they put it in a ſearce made of the bark of the ſame tree, and place the ſearce over a ciſtern made of its leaves, pouring water upon it, and by this means ſeparating the pure part of the powder from the veins of wood wherewith the pith abounds.

The flour thus filtrated, they call *Sagu*: they make it into paſte, and bake it in earthen furnaces; and this they do with ſo much expedition, that in three or four hours a man makes as much bread as will feed an hundred perſons a day.

From the ſame tree they alſo draw a liquor, as agreeable to drink as our wines.

The leaves, when they are young, are covered with a kind of cotton, whereof they make their cloth; and as they grow older they ſerve them to tile their houſes. The larger veins of theſe leaves ſerve them for ſtakes in building; and of the ſmaller they make a kind of hemp, wherewith they make very good ropes.

SAGUM, in antiquity, a military garment wore by the Greeks, Romans and Gauls, in manner of a cloak or caſſock; covering the ſhoulders and back, as low as the hips; where it was faſtened to the cuiras.

It was made of coarſe wool, and ſquare.—They had one for the winter, and another lighter for ſummer.

SAICK, or **SAIQUE**, a Turkiſh veſſel, very proper for the carriage of merchandizes. See VESSEL.

It has ſquare ſails on the middle-maſt; without either mizzen, top-gallant, or ſhrouds: only a main-maſt, with a main top-maſt, both very high; with a bolt-ſprit, and a little mizzen-maſt.

The height of the main-maſt makes the *Saicks* viſible at a great diſtance: their make renders it impoſſible for them to go with a ſide-wind; but when they have the wind behind them, nothing can out-go them.—The generality of them carry no guns.

SAIGNER, in fortification, a French term, ſignifying to bleed or drain.

Hence *ſaigner la foſſe*, is to empty or drain the water out of the moat, by conveyances under ground; that it may be paſſed over the more eaſily; by laying hurdles or ruſhes on the mud remaining. See DITCH.

SAIL, in navigation, an aſſemblage of ſeveral breadths of canvas, or ſtrong hempen cloth, ſewed together by the liſts, and edged around with a cord; faſtened to the yards and ſtays of a veſſel, to make it drive before the wind which bears thereupon. See SHIP.

There are two kinds of *Sails*; the one ſquare, generally uſed in high-bottomed veſſels.—This has various names, according to the various maſts it is faſtened to; as the *Main-ſail*, *Fore-ſail*, the *Mizzen-ſail*, the *Sprit-ſail*, &c. See MAST, *&c.*

The others are triangular, called *Smack-ſails*, and by ſome *Latin-ſails*, becauſe chiefly uſed in Italy, and in flat-bottomed veſſels; though they are alſo uſed on the mizzen-maſts and ſtays of other veſſels.—They need but few ropes, and little wind; but are dangerous, and not to be uſed in foul weather.

There are ordinarily ten *Sails* in large veſſels; which number is increaſed at bottom by the addition of bonnets, and at the ſides by *Caſe-ſails*.—See *Tab. Ship. fig.* 1. *n.* 2. 17. 20. 44. 65. 67. 86. 107. 109. 126. 138.—See alſo the articles BONNET, *&c.*

A veſſel is ſaid to ſet *ſail*, to go with full *ſail*, to make all her *ſail*, that is, to open all her *Sails*. To be under *ſail*, is to be ready to ſet *ſail*, &c.

SAILS, alſo denote the vanes of windmills; or the arms or flights, whereby the wind has its effect on windmills.—Theſe are either horizontal or perpendicular. See WINDMILL.

SAILS, in falconry, denote the wings of an hawk. See HAWK, WING, *&c.*

SAILING, in a general ſenſe, is uſed for the art, or act of navigating; or of determining all the caſes of a ſhip's motion, by means of ſea-charts. See NAVIGATION.

Of this there are three kinds, *plain*, *Mercator*'s, and *circular*.

Plain **SAILING**, is that performed by means of rhumbs drawn on a plain chart. See *Plain* CHART, and RHUMB.

Mercator's **SAILING**, is that performed by rhumbs drawn on a *Mercator*'s chart. See MERCATOR's *Chart*.

Circular **SAILING**, is that performed by the arch of a great circle; which, of all others, where practicable, is the ſhorteſt. See CIRCULAR and GLOBULAR *Chart*.

Doctrine of plain and Mercator's SAILING.—I. *The longitude and latitude of two places given; to find the departure, or miles of longitude.*

In plain Sailing. 1°. If both places be more eaſterly than the firſt meridian, ſubtract the leſs longitude from the greater, the remainder is the difference of meridians. If one of the places be more eaſterly, and the other more weſterly than the firſt meridian, add the longitude of the more eaſterly to the complement of the longitude of the more weſterly to a whole circle; the ſum is the difference of meridians. 2° Divide the difference of meridians into ſo many parts as there are degrees in the difference of latitude: or, if the difference of latitude be greater than that of the meridians, into ſo many fewer. 3°. Reduce the minutes of longitude anſwering to one part, into miles of the ſeveral parallels, in the former caſe; or into miles of the parallel, which is an arithmetically mean proportional between the two, in the latter caſe. 4°. The aggregates of theſe parts collected into one ſum, exhibit the departure, or miles of longitude. *E. gr.* Suppoſe the longitude of the one place 35°. and that of the other 47°. the difference of meridians is 12'. Suppoſe the latitude of the firſt 4°. and that of the latter 8°. the difference will be 4°. conſequently we have *ſailed* from the 4th to the 8th parallel. Therefore divide 12 by 4, and reduce the quotient 3°. into miles in the ſeveral parallels 4, 5, 6, and 7. (ſee DEGREE) the ſeveral quotients will be 43°. 71'. 43°. 68'. 43°. 65'. 43°. 59'. the ſum of which is 174, the departure or miles of longitude required.

In Mercator's Sailing. The reduction is much more commodiouſly performed in Mercator's charts; wherein the arch intercepted between the two meridians, is applied to an arch of the meridian intercepted between the two parallels; and the diſtance it there meaſures, gives the departure, or miles of longitude required. See DEPARTURE and LONGITUDE.

II. *The longitude and latitude of two places, to and from which, a ſhip is to ſail, being given; to find the rhumb to be ſailed on, and the diſtance to be run.*

In plain Sailing. 1. Find the departure by the laſt caſe. 2. From the departure, and difference of latitudes, find the loxodromic angle or rhumb-line; which is done by this proportion: as the difference of latitude is to the departure, ſo is the whole ſine to the tangent of the angle of the rhumb-line. The diſtance then, to be run on this rhumb, is to the departure, as the whole ſine to the ſine of the angle of the rhumb. See RHUMB.

In Mercator's Sailing. 1. Apply the center of the mariners compaſs on the place ſailed from, on the Mercator's chart, as *a*, (*Tab. Navigation, fig.* 7.) and ſo as that the north and ſouth line thereof be parallel to ſome of the meridians. 2. Mark the rhumb of the compaſs, wherein the place ſailed to, as *b*, is placed. For this is the rhumb to be ſailed on. 3. The ſame rhumb is likewiſe found by drawing a right line from *a* to *b*; and with a protractor, finding the angle the rhumb makes with any meridian it cuts. 4. The quantity or diſtance *a b* is found by applying the part *a* 1 to I K, 1 2 to *k l*, 2 *b* to *l m*.

Note, the rhumb and diſtance may alſo be found after the ſame manner on a plain chart.

The ſame may likewiſe be found by loxodromic tables; thus, 1. Chuſe a rhumb at pleaſure, and under the ſame, in the tables, find the longitudes correſponding to the given latitudes. The difference whereof, if it coincide with the difference of the given longitudes, the rhumb is well choſen; otherwiſe another muſt be pitched on, either more or leſs oblique, till the tabular difference agree with the given difference. 2. The rhumb thus found, the diſtances anſwering to the given latitudes, muſt be taken from the tables, and the leſs ſubtracted from the greater; the remainder is the diſtance ſought.

III. *The rhumb and diſtance ſailed being given; to find the longitude and latitude of the place arrived at.*

In plain Sailing. 1. From the data, find the difference of latitude of the two places: (by the proportion delivered under the article RHUMB-*line.*) This difference added to the latitude of the place ſailed from, or ſubtracted from the ſame, the ſum, or the remainder, leaves the latitude of the place ſailed to. 2. From the ſame, find the departure; and thence the latitudes of the place ſailed to (as directed under RHUMB-*line.*)

In Mercator's Sailing. 1. Place the mariner's compaſs on the chart, with the center over the place *a*; and the meridian, and north or ſouth line, parallel to the meridian thereof. 2. From the point *a*, draw a right line, as *a b*, for the ſhip's courſe. Take the diſtance by parts, in parts of the meridian I K, K l, *&c.* and ſet it off upon the right line *a b*; *e. gr.* from *a* to *c*; then will *c* be the place the ſhip is arrived at; the longitude and latitude whereof are given by the chart. See CHART.

By the loxodromic tables. 1. Under the given rhumb, ſeek the diſtance anſwering to the latitude of the place ſailed from; and either add it to, or ſubtract it from the given diſtance; as the latitude of the place ſailed to is greater, or leſs than that ſailed from. 2. Under the ſame rhumb, aſcend or deſcend further, till you meet with the diſtance corrected. 3. The latitude anſwering thereto in the firſt column, is the latitude of the place ſailed to. 4. From the ſecond column of the table take the longitudes correſponding to the latitudes of the places ſailed to and from. Their difference is the difference of longitude of the places ſailed to and from.

IV. *The latitudes of the places ſailed to and from, together with the rhumb ſailed in, being given; to find the diſtance and difference of latitudes.*

In plain Sailing. From the difference of latitude and the rhumb given, find the diſtance; and from the ſame data, the departure. See RHUMB. This converted into degrees of a great circle (ſee DEGREE) exhibits the difference of longitudes ſought.

In Mercator's Sailing. 1. Place the compaſs on the chart, as in the preceding caſe. From the place ſailed from, *a*, draw the rhumb-line *a b*, ſailed in; till it cut the parallel of the given latitude. 2. The point of interſection will be the place arrived in. 3. Hence its longitude is eaſily found; and the diſtances. See RHUMB.

By the tables. Take both the longitudes and the diſtances anſwering to the latitudes of the given places, out of the tables; then ſubtract both the longitudes and the diſtances from each other. The firſt remainder is the difference of longitude, the latter the diſtance of the places.

V. *The latitudes of the places ſailed from, and to, with the diſtance given; to find the rhumb and the difference of longitude.*

In plain Sailing. From the difference of latitude, and the diſtance, find the rhumb, and from the ſame data find the departure; which may be alſo determined from the rhumb now found, and the difference of latitude, or from the rhumb and the diſtance run. Laſtly, from the departure find the difference of longitude. See RHUMB.

In Mercator's Sailing. On the map draw the parallel the ſhip arrives at, C D. Reduce the diſtance run into parts proportional to the degrees of the map. The diſtance reduced, being *a* 2; from *a* deſcribe an arch touching the parallel C D in 2: then will 2 be the place in the map; whoſe longitude accordingly is eaſily found.

By the tables. Subtract the given latitudes from each other; and in the tables ſeek the rhumb; under which, the diſtance run anſwers to the given difference of latitude. Subtract the longitude under the rhumb, anſwering to the latitude of the place ſailed to; and that under the ſame rhumb againſt the latitude of the term ſailed to, from each other; the remainder is the difference of longitude ſought.

VI. *The difference of longitudes of the places ſailed to, and from, with the latitude of one of the places, and the diſtance run, being given; to find the rhumb, and the latitude of the other.*

In plain Sailing. Convert the difference of longitudes into miles of longitude for the departure; from the given departure and diſtance run, ſeek the rhumb: and from the ſame, and the rhumb, ſeek the difference of latitude; which, and the latitude of one place being had, the latitude of the other readily follows. See RHUMB.

In Mercator's Sailing. Through the given place *a* in the map, draw a right line E F parallel to the meridian I H; and make F L equal to the difference of longitudes. From F draw L M parallel to E F, which will be the meridian the ſhip is arrived at. Then from *a*, with the interval of the diſtance run, *a c*, deſcribe an arch interſecting the meridian M L; the place ſought will be in *c*. If then a compaſs be placed on the map, as before directed, the rhumb-line will fall in with *a c*; and conſequently the rhumb will be known. Laſtly, if through *c* be drawn N O, parallel to A B; N A will be the latitude of the place required.

By the tables. Take a rhumb at pleaſure, and under the ſame in the tables, find the longitude, and the diſtance anſwering to the given latitude. Add the given diſtance to the diſtance found in the tables, if the veſſel ſailed from the equator; or ſubtract it therefrom, if it ſailed towards the ſame. With the ſame ſum, or the difference, enter the tables; and the longitude found againſt it, ſubtract or add from that juſt found. If the remainder be found the given difference of longitudes, the rhumb is well taken. Otherwiſe, it muſt be changed for a more or leſs oblique one, till the ſame operation being repeated, the remainder be found the difference of longitudes; then the latitude in the firſt column, correſponding to the diſtance, will be the latitude of the other place.

VII. *The difference of longitude, and the latitude of one of the places, being given, together with the rhumb; to find the diſtance run, and the latitude of the other place.*

In plain Sailing. Reduce the difference of longitude into miles of longitude, or departure, as under the firſt caſe. From the departure and the rhumb, find the diſtance run. (See RHUMB.) And from theſe, or from the rhumb, and the diſtance run, find the difference of latitude. This done, as the latitude of the one is already had, that of the other is ſo too.

In Mercator's Sailing. Place the compaſs on the chart as before; and by the given rhumb, draw the rhumb-line, *a b*. Draw a meridian E F through the given place *a*; and with the interval of the difference of longitude F L, draw another, L M, for that the veſſel is arrived at. Where this interſects the rhumb-line, is the place *c* that the veſſel is arrived at. Wherefore, if through *c* be drawn N O parallel to A B; N A will be the latitude of the place. The diſtance run *a c* is eaſily reduced into miles by the ſcale.

By the tables. Under the given rhumb, ſeek the diſtance run, and the difference of longitude anſwering to the given latitude. If the veſſel have ſailed towards the pole, the difference of longitude is to be added to the given difference of longitude; if towards the equator, it is to be ſubtracted from the ſame. In the former caſe, deſcend in the table, and in the latter, aſcend; till in the firſt, the aggregate, in the latter, the difference be ſeen in the column of longitude. The latitude anſwering hereto in the firſt column, is that ſought. And from the diſtance anſwering to this latitude in the firſt caſe, the tabular diſtance is to be ſubtracted; or in the latter caſe, that diſtance to be ſubtracted from the tabular diſtance. What remains, is the diſtance run.

From the ſolution of theſe caſes in *Sailing*, it is evident, ſome are more eaſily performed by the charts than the tables; and that the Mercator's charts are preferable to the plain ones; ſince in the latter, the diſtance is not reduced by the map, but by a particular ſcale for that purpoſe.

Doctrine of circular SAILING.—I. *The latitude and longitude of the places ſailed to, and from, being given; to find the angle* M (fig. 8.) *which a ſhip's way* M O *proceeding in a circular courſe, includes with the meridian* P M *of the place ſailed from.*

Since in the triangle P M N, we have P M and P N, the complements of the given latitudes H M, and I N, together with the angle M P N, meaſured by the arch H T, the difference of the given longitudes H and T; the angle P M N is found by ſpherical trigonometry. See TRIANGLE.

II. *The latitude* H M, *and the longitude* H, *of the place ſailed from,* M, *with the diſtance run, and the latitude of the place* L S *the ſhip in a circular voyage arrives at, being given; to find the longitude of the place* L, *and the angle* P L M *comprehended between the ſhip's way* M L, *and the meridian* P S.

In the triangle P M L, we have given P M the complement of the latitude H M, and P L the complement of the latitude L S. Wherefore, if the ſhip's way M L be turned into degrees of the equator; we ſhall find the angle M P L, which is equivalent to the difference of longitudes H S; and likewiſe the angle P L M by ſpherical trigonometry. See *Spherical* TRIANGLE.

After the like manner may other problems be ſolved; but as it is eaſier and better *Sailing* by rhumbs, than by circles, and as this latter way is but very little in uſe; we chuſe to paſs them over. See GLOBULAR *Chart*.

SAILING, in a more confined ſenſe, is the art of conducting a veſſel from place to place, by the working or handling of her ſails and rudder: though, what is done by means of this latter, is more properly called *Steering*. See STEERING.

To bring *Sailing* to certain rules, M. Renau computes the force of the water, againſt the ſhip's rudder, ſtem, and ſide; and that of the wind againſt her ſails.—In order to this, he 1°. conſiders all fluid bodies, as the air, water, *&c.* as compoſed of little particles, which, when they act upon, or move againſt any ſurface, do all move parallel to one another, or ſtrike againſt the ſurface after the ſame manner.

2°. That the motion of any body, with regard to a ſurface on which it is to ſtrike, muſt be either perpendicular, parallel, or oblique. In the firſt caſe, the body ſtrikes with all its force, which will be greater or leſs, according as the body moves ſwifter or ſlower. In the ſecond caſe, the line of motion *a b*, (*Tab. Navigation, fig.* 3.) will not affect the ſurface at all, becauſe it is no way oppoſed to it; nor can the moving body ſtrike upon it, or touch it. In the third, if the line of motion, A D, be oblique to the ſurface D C, ſo that the angle of incidence be A D C, then the motion of the body in the line A D may be reſolved into two directions, *viz.* into A E, or B D, and into A B. But the direction or line of motion A E being parallel to the ſurface D C, cannot affect it at all; ſo that the whole motion of the body A in that oblique manner of ſtriking on the ſurface, will be expounded by the perpendicular line, A B. And if D A be made the radius of a circle, whoſe center is at D, B A will be the ſine of the angle of incidence, A D C.

Hence it is deduced, that the force of a particle of air or water, as A, ſtriking againſt the ſurface D C, which may repreſent, either a ſail or the rudder of a ſhip, in the oblique direction A D, will be to the perpendicular force thereof, as B A is to D A: that is, as the ſine of the angle of incidence is to the radius.

And ſince what is thus true of one particle, ſingly conſidered, will be true of all the particles of any fluid body collectively; it will follow, that the force of the air or water ſtriking perpendicularly upon a ſail or rudder, to the force of the ſame, in any oblique impingency, will be, as the ſquare of the radius, to the ſquare of the ſine of the angle of incidence: and conſequently, that all oblique forces of the wind againſt the ſails, or of the water againſt the rudder, will be to one another, as the ſquares of the ſines of the angles of incidence.

If the different degrees of velocities be conſidered, it will be found, that the forces will then be as the ſquares of the velocities of the moving air or water; that is, a wind that blows thrice as ſtrong, or moves thrice as ſwift as another, will have nine times the force upon the ſail.—And it being alſo indifferent, whether you conſider the motion of a ſolid in a fluid whoſe particles are at reſt; or of thoſe particles moving all parallel againſt a ſolid that is at reſt; the reciprocal impreſſions being always the ſame: if a ſolid be moved with different velocities in the ſame fluid matter (as ſuppoſe water) the different reſiſtances which it will receive from that water, will be in the ſame proportion, as the ſquares of the velocities of that body.

Let H M (fig. 4.) repreſent a ſhip, C D the poſition of the ſail, and A B the courſe of the wind blowing towards B. Draw B G perpendicular to the ſail, and G K perpendicular to the line of the keel produced H M K. By what is ſaid above, the ſail C D, will be driven by the wind A B, according to the direction of the line B G. So that if ſhe could divide the water every way with the ſame facility, as ſhe doth with her head, the ſhip would go directly to the point G, along the line B G. And if H K repreſent her direct courſe, ſhe would have got forward the length B K, and ſideways ſhe would have gone the quantity G K. But as her length is much greater than her breadth, ſo ſhe will divide the water, or make her way in it with more difficulty with her ſide, than with her head or ſtern; on which account, ſhe will not run ſideways ſo far as K G, but fall ſhort of it in proportion to the ſaid difficulty of dividing the water with her ſide, that is, if the reſiſtance ſhe finds in her paſſing through the water ſideways, be to that of paſſing lengthways, ſuppoſe, as ten to one, then will not the ſhip get ſideways above a tenth part of the line G K.

Wherefore, if K G be found to G L, in the ratio of the reſiſtance of the ſide to that of the ſtern, and the line B L be drawn; the ſhip will go to the point L, along the line, B L, in the ſame time as it would have gone to G, if it could have divided the water every way equally.—This part, K L, is called the *drift*, or *lee-way* of a ſhip, and the angle K B L is her degrees of lee-way; as the angle A B K, expreſſes how near the wind ſhe lies.

After this, the author proceeds to demonſtrate, that the beſt poſition or ſituation of a ſhip, ſo as ſhe may make the beſt lee-way, but go to wind-ward as much as poſſible, is this: that, let the ſail have what ſituation it will, the ſhip be always in a line biſſecting the complement of the wind's angle of incidence upon the ſail; that is, ſuppoſing the ſail in the poſition B C (fig. 5.) the wind blowing from A to B, and conſequently, the angle of the wind's incidence on the ſail A B C, and its complement C B E; then muſt the ſhip be put into the poſition B K, or move in the line B K, biſſecting the angle C B E.

He ſhews farther, that the angle which the ſail ought to make with the wind, *i. e.* the angle A B C, ought to be but 24 degrees; that being the moſt advantageous ſituation to go to wind-ward, the moſt that is poſſible. And in order to bring this to bear in practice, he directs to put marks to the ſheets, braces, and bow-lines of the lower ſails, to know when they are in their beſt ſituation; and then, even in the night, when the marks of a brace or of a ſheet ſhall come to the cleat, one may be pretty well aſſured, that the ſail trims well.

To this might be added, many curious things from Borelli *de Vi Percuſſionis* concerning the different direction given to a veſſel from the rudder, when ſailing with a wind, or floating without ſails in a current; in the former caſe, the head of the ſhip always coming to the rudder, and in the latter always flying off from it.

SAILORS, the elder ſeamen, who are employed in working or managing the ſails, the tackle, ſteering, *&c.*

SAINTS, SANCTI, in the Romiſh church, holy perſons deceaſed, and ſince their deceaſe, canonized by the pope; after ſeveral informations and ceremonies. See CANONIZATION.

One of the points wherein the Roman Catholicks and Proteſtants differ, is, that the former addreſs, invoke, ſupplicate ſaints, *&c.* to intercede for them; whereas the latter hold it ſufficient to propoſe their good examples for our imitation. See LATRIA.

The number of *Saints*, allowed as ſuch, in the Romiſh church, is prodigious: Father Papebroche reckons ſeventeen or eighteen hundred to have died on the firſt of June, only. Indeed, the crowd of *Saints* wherewith their martyrologies are ſtocked, is ſcandalous, even to the more ſober of their own communion. Father Mabillon, in an expreſs diſſertation on the worſhip of unknown *Saints*, obſerves, that honours are given to *Saints*, who, perhaps, were not Chriſtians; and whoſe names were never known. Hence, being under a neceſſity of giving them names, they are therefore called *Baptized Saints*. He adds, that they every day beſeech *Saints* to intercede for them with God; when, it is much doubted, whether they themſelves be in heaven. See RELICK, MARTYR, *&c.*

Father Papebroche and his aſſociates have been a long time employed in writing the lives and acts of the *Saints*: they range them each on the day of the year wherein they died: for the firſt ſix months they have publiſhed twenty-four volumes in folio; and ſince Papebroche's death, in 1714, his ſucceſſors have publiſhed two more. See ACT, and BOLLANDIST.

SAKER, a ſmall ſort of cannon; whereof there are three ſpecies: *extraordinary*, *ordinary*, and *leaſt ſized*.

SAKER *Extraordinary*, is about four inches diameter at the bore, 1800 pound weight, 10 foot long; its load 5 pounds, ſhot 3 inches and half diameter, and ſomething more than 7 pound and a quarter weight; its level range is 163 paces.

Saker *Ordinary*, is a ſize leſs, 3 inches 3 quarters bore, 9 foot long, 1500 weight; its charge, 4 pounds of powder; bullets diameter 3 inches and a half, weight 6 pounds, its level range 160 paces.

Saker *of the leaſt Size*, is 3 inches and a half diameter at the bore, 1400 pound weight, 8 foot long, its load near 3 pounds and a half; ſhot 4 pounds 3 quarters weight, and 3 inches and a quarter diameter. See Cannon, and Ordnance.

SAL, in chymiſtry, &c.		Salt.
Sal *Armoniac*, or *Ammoniac*,		Armoniac.
Sal *Petræ*, or *Nitri*,		Salt-Petre, & Nitre.
Sal *Prunellæ*,	See	Prunellæ.
Sal *Tartari*,		Tartar.
Sal *Polychreſtum*,		Polychrest.
Sal *Gemmæ*,		Gemma.

Sal *Volatile Oleoſum*, is the name of an aromatic volatile ſalt, firſt prepared by Sylvius de la Boe, and found a very notable medicine, chiefly as a cephalic, and cordial.

It is made thus: to an ounce of volatile ſalt of ſal ammoniac, diſtilled with ſalt of tartar, and dulcified with ſpirit of wine, put a dram and half of ſome aromatic oil, or eſſence, drawn from ſome generous aromatic vegetable, as cinnamon, cloves, roſemary, balm, &c. And when the ſpirit and oil are well ſtirred and incorporated together, draw off the volatile ſalt and ſpirit in a cucurbit. Some, inſtead of this, mix all the ingredients together at firſt, *viz.* the ſal ammoniac, ſal tartari, ſpirit of wine and powder of cinnamon or cloves, &c. and diſtil off the volatile ſpirit and ſalt at once; but the former way is preferred. See Volatile.

SALADINE, a tax, impoſed in England and France, in the year 1188, to raiſe a fund for the cruzade undertook by Richard I. of England, and Philip Auguſtus of France, againſt Saladin ſultan of Egypt, then going to beſiege Jeruſalem.

The *Saladine*-tax was thus laid: that every perſon who did not enter himſelf a croiſe, was obliged to pay a tenth of his yearly revenue, and of the value of all his moveables, except his wearing apparel, books and arms.

The Carthuſians, Bernardines, and ſome other religious, were exempted from the *Saladine.*

SALAMANDER's Blood, a term which chymiſts give to the red vapours, which in diſtilling ſpirit of nitre, riſe towards the latter end, and fill the receiver with red clouds.

They are the moſt fixed, and ſtrongeſt part of the ſpirit; and nothing but nitre yields a red vapour in diſtillation. See Nitre.

SALARY, Salarium, a ſtipend, or wages allowed any perſon in conſideration of his pains, induſtry, or ſervice in another man's buſineſs.

SALET*, Sallet, or Salade, in war, a light covering, or armour for the head, anciently wore by the light horſe; only differing from the caſk, in that it had no creſt, and was little more than a bare cap. See Cask.

* Nicod derives the word from *Sila*, which had the ſame ſignification among the Latins: others from *Saladinus*, alledging, that it was borrowed from the orientals; others from the Italian *Celeta*, as if the head were hid hereby. Others from the Spaniſh *Celada*, a little caſk, &c.

SALIANT*, in fortification, denotes *projecting.*

* The word is formed from the French *Saillant*, which ſignifies the ſame thing; of *ſailler*, to project, advance outwards, and that, of the Latin *ſalire*, to leap.

There are two kinds of angles; the one *Saliant*, which are thoſe that preſent their point outwards.—The other *Reentring*, which have their points inwards. Inſtances of both kinds, we have in tenailles, and ſtar-works. See Angle.

SALIENT, Saliant, or Saillant, in heraldry, is applied to a lion, or other beaſt, when its fore-legs are raiſed in a leaping poſture.

A lion *Salient* is that which is erected bend-ways: ſtanding ſo as that his right fore-foot is in the dexter chief point, and his hinder left-foot, in the ſiniſter baſe point of the eſcutcheon.—By which it is diſtinguiſhed from rampant. See Rampant.

SALIC*, or Salique *Law*, *Lex* Salica, an ancient and fundamental law of the kingdom of France, uſually ſuppoſed to have been made by Pharamond, or at leaſt by Clovis; in virtue whereof males only are to inherit. See Succession.

* Some, as Poſtellus, will have it to have been called *Salic*, *q. d. Gallic*, becauſe peculiar to the Gauls. Cenal takes the reaſon to be, that the law was only ordained for the royal *ſalles*, or palaces: Claud. Seiſſel ſays, it was thus called, becauſe of the *ſalt* and the prudence it abounds withal: Fer. Montanus inſiſts, it was becauſe Pharamond was at firſt called *Salicus.* Others, with the abbot Uſperg, derive its name from *Salogaſt*, Pharamond's principal miniſter; and others from the frequent repetition of the words *Si aliqua*, at the beginning of the articles. Genebrard ſays, it was called *Salic* for *Salomonic*, by reaſon Solomon ſet the firſt example of it. Daviſon derives it from the German words, *Salts* and *Lick*, *q. d.* like to ſalt.—The moſt probable opinion is, that which derives the word from the ancient Franks, who were called *Sali*, *Salici*, and *Salingi*, on account of the river Sala, a river of ancient Germany: this is the ſentiment of Rhenanus and Æmilius, who are followed by ſeveral others; among the reſt, Menage, Paſquier, Borel, and Juncker. Bouteroue gives another plauſible origin of the word: he ſays, it comes from the word *Salich*, which, in the old Teutonic language, ſignified *ſalutary*; and that the French in this law imitated the policy of the ancient Romans, who made ſalutary laws, which the magiſtrates were to have before them when they adminiſtred Juſtice. This he confirms from a curious figure taken out of the *Notitia Imperii*, where the book is repreſented covered with gold, with this Inſcription, *Leges Salutares.*

Du Haillan, after a critical examination of the *Salic Law*, declares it to have been an expedient of Philip the Long, in 1316, for the excluſion of the daughter of Louis Hutin, from inheriting the crown. Father Daniel, on the other hand, maintains, that it is quoted by authors more ancient than Philip the Long; and that Clovis is the real author of it. The ſtyle, which is ſcarce intelligible, and which is in a latinized dialect, is a mark of its antiquity.

This law has not any particular regard to the crown of France: it only imports in the general, that in *Salic* land, no part of the inheritance ſhall fall to any female; but the whole to the male ſex. *De terra Salica nulla portio hæreditatis mulieri veniat; ſed ad virilem ſexum tota terræ hæreditas perveniat.*—So that it is a popular error to ſuppoſe, that the *Salic Law* was eſtabliſhed purely on account of the ſucceſſion to the crown: ſince it extends to private perſons as much as to thoſe of the royal family.

Part of it ſeems to have been borrowed by our Henry I. in compiling his laws, *cap.* 89. *Qui hoc fecerit ſecundum legem Salicam moriatur.*

By *Salic* lands or inheritances were anciently denoted all lands, by whatever tenure held, whether noble or baſe, from the ſucceſſion whereto, women were excluded by the *Salic Law*; and admitted to inherit nothing but moveables, and purchaſes; whenever there were any males.—Indeed M. Fenelon obſerves, that there were originally *Salic* lands, diſtinguiſhed from all others, and deſtined for the military people of the nation; and to theſe, it is ſuppoſed, the law was originally intended to be confined.

M. Eccard, a Hanoverian, is ſaid to have recovered an ancient MS. of this famous law, containing a third part thereof, much more amply than any yet diſcovered, with a very curious chronology of the ſame law, hitherto unknown.

SALII, in antiquity, prieſts of Mars, whereof there were twelve, inſtituted by Numa; wearing painted, parti-coloured garments, and high bonnets, with a ſteel cuiraſſe on the breaſt.

They had their name *Salii* from *ſaltare*, to dance; becauſe, after aſſiſting at ſacrifices, they went dancing about the ſtreets with ancylia, or bucklers in the left-hand, and a rod in the right, ſtriking muſically on one another's bucklers with their rods, and ſinging hymns in honour of the gods. See Ancyle, &c.

There were two companies or colleges of *Salii:* The ancient eſtabliſhed by Numa, called *Palatini*; the latter by Tullus Hoſtilius, called *Collini*, and *Agonales.* Though Servius tells us, there were two kinds inſtituted by Numa, the *Collini* and *Quirinales*; and two others by Tullus, the *Pavorii* and *Palorii.*

In ſinging, they uſed a peculiar ancient ſong, called *Saliare Carmen*; and after the ceremony, were entertained with a feaſt: whence *Saliares Epulæ*, and *Saliares Dapes*, paſſed into a proverb for good eating.

Their chief, called *Præſul*, and *Magiſter Saliorum*, was one of their number: it was he led the band, and begun the dance; the reſt imitating all his ſteps and motions.—The whole company was called *Collegium Saliorum.*

Sext. Pompeius makes mention of *Salian Maids*, *Virgines Saliares*, hired for the purpoſe, and joined with the *Salii*, wearing a kind of military garb, called *Paludamentum*, with high round bonnets like the *Salii*, and, like them, performing ſacrifice with the pontifices in the palaces of kings.

M. Patin takes it, there is a figure of one of the *Salii* on a medal of the Saquinian family; who, beſides the buckler in one hand, holds the caduceus in the other.—But his look appears too grave, and ſedate: and beſides, the buckler he holds, does not ſeem to be an ancyle, as being quite round, and not indented any where. And again, why ſhould a prieſt of Mars, the god of war, be repreſented with a caduceus, the emblem of peace? It is probable therefore, this is no figure of any *Salius*, as Patin imagines.

SALIVA, *ſpittle*, a thin, pellucid humour, ſeparated from the arterial blood by the glands about the mouth and fauces; and conveyed by proper ſalival ducts into the mouth, for ſeveral uſes. See Salival *Ducts.*

It conſiſts of a great deal of water or phlegm, and a volatile ſalt; ſome add, a ſulphurous ſpirit.

The *Saliva*, Boerhaave obſerves, is void both of taſte and ſmell; does not harden by heat; is more copious, fluid, ſharp, penetrating, and detergent, as a perſon has faſted longer; and is ſeparated from the pure arterial blood.

The glands wherein the *Saliva* is ſeparated from the blood, are the parotides; the maxillary glands; the ſublinguales, or thoſe under the tongue; the amygdalæ, or almonds of the ears, and the palatinæ, or glands of the palate. See each under its proper article, PAROTIDES, &c.

The great uſe of the *Saliva*, is in maſticating and diluting the food, and making the firſt digeſtion thereof. The other uſes are to moiſten the tongue, to render its motion more quick and eaſy; to lubricate the throat and oeſophagus, in order to facilitate deglutition; to prevent thirſt; and to aſſiſt in the ſenſation of taſtes, by diſſolving the ſalts. See MASTICATION, DEGLUTITION, DIGESTION, &c.

Some imagine it to do the office of a menſtruum, by mixing the oily and aqueous parts of the food more intimately, diſſolving the ſaline parts, and procuring a fermentation in the ſtomach. But Dr. Drake will not allow it fit for that purpoſe. Were the *Saliva*, ſays he, acrimonious enough for this, it would be impoſſible but it muſt offend the ſtomach; eſpecially, conſidering the quantities of it that many ſwallow, even upon an empty ſtomach. See MENSTRUUM, FERMENTATION, &c.

M. Gaſtaldy, in a theſis on the *Saliva*, obſerves, that it takes its name from the ſalt it contains; which ſalt he will have to be partly a volatile acid, and partly alcalious. He adds, that it contains ſome oleaginous parts, and a little earth. By being compounded of ſo many different kinds of parts, it becomes a diſſolvent proper for all the different kinds of foods whereof we live.—Its natural and laudable ſtate, is to be a little more viſcid than common water, and much leſs ſo than milk. It is preſerved in this ſtate by the application of the ſpirits, and of the particles of air which inſinuate into it.

According to all appearance, the *Saliva* is derived from the blood of the arteries: part of the arterial blood brought to the ſalival glands, ſerves to feed them; another part is returned into the veins, and continues the circulation; and a third part, which is the ſerum, receiving a ſub-acid quality from them, is converted into *Saliva*.

Some authors have imagined, that the nervous juice contributed to the compoſition of the *Saliva*; the rather becauſe larger and more numerous twigs of nerves are communicated to theſe glands, than to moſt other parts, which yet have a more exquiſite feeling than theſe. But Dr. Nuck has refuted this opinion by ſeveral experiments.

Too great an excretion of *Saliva*, Boerhaave obſerves, diſorders the firſt digeſtion; and hence cauſes thirſt, drineſs, a black bile, conſumption, atrophy.—On the contrary, if no *Saliva* be diſcharged into the mouth, or leſs than ordinary, it ſpoils both the manducation of the food, and its taſte, ſwallowing, and digeſtion; and withal, occaſions thirſt. See THIRST, &c.

SALIVAL, or SALIVARY *Ducts*, in anatomy, certain little lymphatic canals lately diſcovered; whereby the ſaliva falls into the mouth. See SALIVA and DUCT.

The *Lower Salival Duct* comes from the maxillary glands, ſituate under the lower jaw, and terminated behind the dentes inciſores.—It was firſt deſcribed by our Dr. Wharton, in his treatiſe of the glands, in 1656.

The *Upper Salival Duct* was diſcovered by Nicolas Steno, in 1660.—It comes from the parotid glands; whence perforating the buccinator, it terminates near the third upper grinder.

Caſp. Bartholine, in 1682, diſcover'd another *Salival Duct*, coming from the glands ſituate on the ſide of the tongue; though Rivinus, a phyſician of Leipſic, had mentioned it before, in a diſſertation printed in 1679.

Ant. Nuck, profeſſor at Leyden, diſcovered a fourth *Salival Duct*, ariſing from a gland ſituate in the orbit of the eye, between the muſculus abductor, and the upper part of the os jugale.

Theſe ducts are all double, there being one of each kind on either ſide.—But it is pretended, the two laſt are only found in ſome brutes, and not in man.

As the demand of ſaliva is greateſt in maſtication, deglutition, talking, &c. the diſpoſition of the *Salival Ducts*, to favour the diſcharge on thoſe occaſions, is very remarkable: thus the ducts of the parotides paſs cloſe over the muſculi maſſeteres, and through the buccinatores: the *Salival Ducts* of the maxillary glands paſs cloſe under the mylohyoideus, where the ſublingual glands are placed; by means whereof, the intumeſcence of the maſſeters, in chewing, accelerates the ſpittle in the parotid *Salival Ducts*: as the mylohyoideus does in the action of deglutition, by drawing the hyoides upwards.—The agitation of the cheeks and lips, is ſufficient to promote the diſcharge from the glands of the lips, &c.

SALIVATION, SALIVATIO, in medicine, a promoting of the flux of ſaliva, by means of medicines; chiefly mercury. See MERCURIALS.

The chief uſe of *Salivation* is in diſeaſes belonging to the glands, and the membrana adipoſa; principally in the cure of the venereal diſeaſe. Though it is ſometimes alſo uſed in epidemic diſeaſes.

The body is prepared for *Salivation* by a copious and continued uſe of attenuating, diluting, ſoftening decoctions; as of ſcabious, pellitory, china, ſarſaparilla, ſaſſafras, and ſantal.

Salivation is either *partial* or *univerſal*. By the firſt, only, the humours of ſome part of the body are to be diſcharged; as in catarrhs, tooth-ach, &c.—By the ſecond, the whole maſs of blood is to be purged.

The firſt is raiſed either by a ſlow continued chewing of ſome tenacious matter, as maſtich, wax, myrrh; eſpecially if other ſharp things be mixed with them, as pyrethrum, ginger, or pepper: or by drawing in ſharp irritating vapours, as thoſe of tobacco, roſemary, thyme, marjoram, &c.

The latter is effected by the action of ſuch medicines as create ſome ſlight but conſtant nauſea; as ſtibium not quite fixed, nor yet quite emetic; a little common vitriol, &c.—But chiefly by ſuch as diſſolve all the parts of the maſs of blood, turn them into lympha, and thus cauſe a ptyaliſm: ſuch are crude quickſilver, cinnabar, a ſolution of quickſilver in aqua-fortis, white and red precipitate, turbith mineral, ſweet ſublimate of mercury, &c. See APOPHLEGMATIZANT.

Mercurial SALIVATION, is now a very uſual method of cure; eſpecially in venereal, ſcrophulous, and hypochondriac caſes. In effect, it proves the ſureſt remedy yet diſcovered for the Gallic lues; though the diſcovery hereof, as that of moſt other remedies, is owing to chance. Jac. Carpi, a phyſician of Bologna, having read in Avicenna, and Meſve, two Arab authors, that mercury applied externally, was proper for the lepra, and ſome kinds of puſtules, particularly the ſcabies or itch; had a mind to try it in a pocky itch: a *Salivation* was hereupon unexpectedly raiſed, and the patient was cured not only of his itch, but of his pox.—The ſame method he afterwards uſed for the pox itſelf; and meeting with great ſucceſs therein, others were induced to follow him; and thus did it arrive at its preſent height. See VENEREAL.

There are two manners of applying mercury to raiſe a *Salivation*: the one external, or in the way of unction; by mixing it up with ſome unguent, plaiſter, or perfume, and then rubbing it on the joints, &c.—The other internal, where it is taken at the mouth.

In each caſe, the mercury inſinuates itſelf into the maſs of blood, and mixing with the venereal poiſon, the two bodies thus locked together, are drawn, with the ſeroſity, into the ſalival glands, where they are ſeparated and diſcharged, as finding the pores of the glands proportioned to their figures, and proper to receive them.—But for the manner wherein the mercury acts to raiſe the *Salivation*, ſee further under MERCURIALS.

Dr. Quincy will have the internal to be much the ſafer and better method: the mineral globules, he thinks, being intimately combined with ſalts, in the preparations given inwardly, will, by the irritation thereof, be eaſily and fully thrown off by the ſecretory organs, till the blood is quite diſcharged of its load.—Whereas, in mercurial frictions, it is poſſible, ſome of the heavy particles may be left lodged in the interſtices of the fibres, or cells of the bones. Add to this, that by computing the proportion of mercury in all the doſes neceſſary to promote a ſpitting, internally; and the weight of the ſame mineral uſed when it is done by unction; the quantity uſed in the latter caſe, far exceeds that in the former; conſequently, the ill effects apprehended from that dangerous medicine, ſhould be more ſenſible in the one caſe than the other.

The external application, therefore, is only to be allowed of, where either the caſe will bear the violence of ſuch a management; or outward ulcers and tumours require a particular cure by liniments. Thus Quincy.

But a learned French Phyſician, M. Chicoyneau, chancellor of the univerſity of Montpellier, has lately done ſome diſcredit to the practice of ſalivating in any manner; and that, in a little treatiſe lately publiſhed, where he endeavours to prove, that the *Salivation* itſelf contributes nothing to the cure, but is rather prejudicial thereto: that the ſalutary effects of the mercury are independent of any evacuation at all; and that it acts purely as a ſpecific. It is without reaſon, therefore, he urges, that venereal patients are put to the torture of a *Salivation*, ſince the full effect of the medicine may be had without carrying matters to that extremity. The *Salivation* is only an accident to the cure; which is effectually obtained by a mercurial unguent rubbed on the joints in ſuch quantities, and at ſuch intervals, as not to raiſe any *Salivation*. He ſupports the whole by the experience of forty or fifty cures wrought in one year, by the new method. The ſame method, it ſeems, has been lately, too, tried in England, and with ſucceſs; as appears from a tranſlation of Chicoyneau's piece lately publiſhed with notes, by an Engliſh phyſician.

SALLET*, or SALLAD, a diſh of eatable herbs ordinarily accompanying roaſt-meat, compoſed chiefly of crude, freſh herbage, ſeaſoned with ſalt, oil, and vinegar.

Some add muſtard, hard eggs, and ſugar; others, pepper, and other ſpices, with orange-peel, ſaffron, &c.

* Menage derives the word from the Latin, *Salata*, of *Sal* ſalt; others from *Salcedo*: Du Cange from *Salgama*, which is uſed in Auſonius, and Columella in the ſame ſenſe.

Some define *Sallet* more generally, a compoſition of plants and roots, of ſeveral kinds, to be eaten either raw or green, blanched or candied, by themſelves, or mixed with others; and even, occaſionally, boiled, pickled, or otherwiſe prepared and diſguiſed, to render them more grateful to the palate.—But this definition includes pot-herbs, *&c.* which the generality of authors deny to be any proper *Salleting*.

The principal SALLET-*herbs*, and thoſe which ordinarily make the baſis of our Engliſh *Sallets*, are lettice, ſellery, endive, creſſes, radiſh, and rape, *&c.* Along with which, by way of furniture, or additionals, are uſed purſlane, ſpinage, ſorrel, tarragon, burnet, corn-ſallet, and chervil.

The different taſtes of mankind will not allow any certain mixture of theſe to be preſcribed as moſt agreeable; but, ſtill, in mixing them, the reliſh of the ſeveral herbs is to be conſidered: thoſe, for inſtance, which are moſt hot and biting; as creſſes, muſtard, ſellery, tarragon, chervil, *&c.* with thoſe that are more cool and inſipid to the taſte; as turnips, rape, ſpinage, lettice, corn-ſallet, purſlane, *&c.* by this means the herbs may be ſo judiciouſly mixed, that the too ſtrong taſte of one kind may not over-power all the reſt; and the inſipid kinds be diſcretely uſed to moderate and qualify the heat and pungency of the others, as the ſeaſon of the year is more hot or cold; ſo as every *Sallet* may not only be agreeable to the taſte, but alſo phyſic to the body.

The gardeners call *ſmall herbs*, in *Sallets*, thoſe which ſhould always be cut while in the ſeed leaf; as creſſes, muſtard, radiſh, turnip, ſpinage, and lettice; all which are raiſed from ſeeds ſown in drills or lines, from mid-February to the end of March, under glaſſes or frames, and thence to the middle of May, upon natural beds, warmly expoſed; and during the ſummer-heats, in more ſhady places; and afterwards, in September, *&c.* as in March, *&c.* and laſtly, in the rigour of the winter, in hot beds. If they chance to be frozen in very froſty weather, putting them in ſpring-water two hours, ere they be uſed, recovers them.

In gathering ſmall-herbs, the beſt way is to pull them up by the roots from the hot beds. If the roots be left, and a ſecond crop of *Salleting* ſown on the ſame bed, it will not proſper.—In ſowing ſecond crops, it is alſo to be obſerved, that ſeeds of the ſame kind be not ſown in the ſame place; but the ground is to be eaſed by varying its burden, putting hot ſeeds where cold ones grew before, *&c.* Another rule is, that no plant be placed in the ſame ſpot where the ſame kinds have grown before.

Winter-*Sallets* are greatly improved by blanched ſellery, which is a hot herb, of a very rich flavour; raiſed from ſeed ſown in March, and April, in a well-expoſed place, and tranſplanted, ſix weeks after its firſt appearance, into beds, where it remains till the middle of June, and then planted in trenches eight or ten inches wide, and as many deep, firſt pruning off the tops and roots. As they grow large, they are earthed up within four or five inches of the top, which is repeated ſeveral times, till they be fit for uſe.—Endive blanched is much uſed in winter *Sallets*, though it have neither taſte nor flavour; it is cultivated much after the ſame manner as ſellery.—Of lettice there are various kinds, the beſt are the Roman, Dutch brown, Imperial, and Sileſia-kinds, all which cabbage well. They are all commonly ſown with other crops in March, for ſummer *Sallets*; and in Auguſt, to be tranſplanted; or September, to ſtand the winter; either to be cut for winter *Sallets*, or to cabbage early next ſpring for ſeeds. See SEEDS.

For the additional, or ſecondary SALLET-*herbs*: Burnet is a cool perennial herb, whoſe tender leaves, mixed with other herbs in winter, give the agreeable flavour of a cucumber: It is propagated by ſeed ſown in March. Corn-ſallet, raiſed at the ſame time, and in the ſame manner, makes a good winter-*Sallet* furniture; purſlane, an inſipid, yet cooling herb, is admired by ſome in ſummer-*Sallets*: it is raiſed by ſeeds ſown in March in a warm place.—Sorrel is chiefly uſed in the ſpring, when the young leaves are very agreeable. It is raiſed from ſeeds ſown in March, uſually in rows or drills. Spinage is a neceſſary ingredient in raw *Sallets*, to be cut in the ear-leaf; but it is better for boiled *Sallets* in the winter and ſpring. It is ſown in March, April, and May; and again in Auguſt, in a place well expoſed to the ſun, that the leaves may be large enough for boiling in the winter.—Tarragon, of all others, ſhould never be wanting; it is a cordial herb, though not the moſt agreeable taſted: yet a few leaves, or three or four of the tender tops, give a *Sallet* a good reliſh. It is propagated from ſlips, taken from the root, and planted in March.—Note, in the ſpring dandelion blanched, which is gathered in almoſt every ploughed field, makes an excellent *Sallet* mixed with other herbs. Some likewiſe gather violet flowers, cowſlips, and bloſſoms of burrage, as part of the *Sallet* furniture; others, fennel, and parſley.

Dreſſing of SALLETS.—The ſellery and endive are to have their hollow, green ſtem, or ſtalk, ſtripped of all its outſide leaves, and ſliced in the blanched part, cutting the root into four parts. The other ingredient herbs being exquiſitely culled and cleanſed, of all faulty leaves, *&c.* are waſhed rather by ſprinkling, than ſobbing them in ſpring-water; laid to drain of all ſuperfluous moiſture, then ſhook and ſqueezed together gently, in a coarſe cloth, to diſpoſe them to receive the ſeaſonings, *viz.* the ſalt, vinegar, oil, *&c.* The oil not to be yellow, or high-coloured, but of a pale olive green, without either taſte or ſmell. See OIL. The vinegar perfectly clear, neither ſour nor palled. See VINEGAR. The ſalt to be the beſt ordinary bay-ſalt, clean, bright, and dry. See SALT.

Some indeed recommend the eſſential ſalts and ſpirits of vegetables, or thoſe of the alcalizate and fixed kind, extracted from the calcination of balm, roſemary, wormwood, *&c.* and affirm, that, without eating the groſs *ſallet*-herbs themſelves, we might have healing, cooling, generous *ſallets*, wholly out of the ſalt-ſeller.

Note, in the proportion of the ſalt, pepper, and vinegar, regard is to be had to the ſeaſon, conſtitution, *&c.* the two firſt being beſt for cold, the ſecond for hot ſtomachs and ſeaſons.—For a moderate oxaline, or *ſallet*-vehicle, to three parts of oil, put one of vinegar, or lemon, or orange juice, and in the mixture, ſteep ſlices of horſe-radiſh with a little ſalt; occaſionally, add a little Guinea pepper, and muſtard, with the yolks of two eggs boiled, ſqueezed, and bruiſed into a maſh therein. Pour the whole on the herbs, ſtirring and mingling them till they be thoroughly imbibed.

SALLY, in architecture, from the French *Saillie*, is what we more uſually call *Projecture*. See PROJECTURE.

SALLY, in the military art, the iſſuing out of the beſieged from their town or fort, and falling upon the beſiegers to cut them off, nail their cannon, hinder the progreſs of their approaches, deſtroy their works, *&c.*

We ſay, *to make a Sally*, *to repulſe a Sally*, &c.

To cut off a Sally, is to get between thoſe who made it and the town.

SALON, or SALOON, in architecture, a grand, lofty, ſpacious ſort of hall, vaulted at top, and uſually comprehending two ſtories, with two ranges of windows.

The *ſalon* is a grand room in the middle of a building, or at the head of a gallery, *&c.* Its faces, or ſides, are all to have a ſymmetry with each other; and as it uſually takes up the height of two ſtories, its ceiling, Daviler obſerves, ſhould be with a moderate ſweep.

The *ſalon* is a ſtate-room: it is much uſed in the palaces in Italy; and from thence the mode came to us. Embaſſadors, and other great viſitors, are uſually received in the *ſalon*.

It is ſometimes built ſquare, ſometimes round or oval, ſometimes octogonal, as at Marly, and ſometimes in other forms.

SALT, SAL, in chymiſtry, a ſimple, acid ſubſtance, which enters the compoſition of all bodies, and is held one of the five principles, or elements thereof; only to be extracted by fire. See PRINCIPLE.

Salt, M. Homberg obſerves, is an ingredient in all animal, vegetable, and mineral bodies, excepting perhaps ſome metals, and ſtones. In vegetables and mineral bodies, that have undergone a fermentation, the *ſalt* riſes firſt in the alembic, then the phlegm: if the mixt have undergone a fermentation, the *ſalt* riſes after the phlegm. See ANALYSIS.

Salts are diſtinguiſhed, with regard to the manner of extracting them, *&c.* into *volatile*, *fixed*, and *eſſential*.

Volatile SALTS, are thoſe light, ſubtile ones, which riſe eaſily upon diſtillation, or are even exhaled by the noſe, and rendered ſenſible to the ſmell. See VOLATILE.

Fixed SALTS, are ſuch as, being more groſs and material, reſiſt and ſuſtain the fire; and are not raiſed by it, but remain, after calcination, or diſtillation, in the earthy part, at the bottom.—For the manner of extracting them, *&c.* ſee FIXT *ſalt*.

Eſſential SALTS, are thoſe drawn from vegetables, without the uſe of fire; as by cryſtallization, and other eaſy, natural means. See ESSENTIAL *ſalts*.

Volatile ſalts become diſtinguiſhable to the noſe, tongue, and brain, by their tenuity and briſkneſs: *fixed ſalts* by their bitterneſs, and heat in the mouth. To theſe may be added an intermediate kind of *ſalt*, under the title of

Mixed SALTS, which are thoſe reſulting from a mixture of a *volatile* with a *fixed ſalt*.

SALTS again are of different kinds, according to the different matters wherewith they are found mixed: ſome are mixed bodies themſelves, and their mixture ſeparable by fire, and lixivation.—Such are all eſſential *ſalts* of plants, and all foſſile *ſalts*, &c. but theſe are no proper chymical principles.

There are others which we are ſenſible are mixed, and whoſe mixture we know pretty nearly, though we are not yet able to decompound them: it is theſe make the chymical principle *ſalt*; for our analyſes will not render them more ſimple, which is the character of a principle.—And in this ſenſe, *ſalt* is defined, a matter diſſoluble by water, and unchangeable by fire; to which ſome add, of a pungent taſte.

There are three kinds, or claſſes, of *ſalts*, which come under this definition; two whereof are *volatile*, and the third *fixed*.—The *volatile* ones, are acid *ſalts*, and urinous *ſalts*: the *fixed*, are thoſe drawn by a lixivium after calcination, and called *Lixivious ſalts*. Nature produces none of theſe *ſalts* ſimple and unmixed; but we eaſily extract them by art, from the mixts wherein ſhe has placed them.

The principal natural *ſalts* may be reduced to *Salt-petre*, *Sea-Salt*, and *Vitriol*. Each whereof has its different kinds; of the various combination whereof, with different oily matters, all the natural *Salts*, we know of, are compounded.

Theſe *Salts* are found, by chymical analyſes, to conſiſt of aqueous, earthy, oily, ſulphurous, and acid particles.—The acid matter is the pure *Salt*, or *Saline* principle, and is the baſe of all the reſt. This M. Homberg obſerves, is pretty uniform, and nearly the ſame in all *Salts*, before the particular determination to form this or that *Salt*, by the particular admixture of the ſulphur, *&c.* See ACID.

Salt-petre, *Sea-Salt*, and the reſt, therefore are not principles; but the acid *Salts* diſtilled from them are: and the water wherein theſe *Salts* ſwim, and the earth, or fixed *Salt* remaining in the retort after diſtillation, are other chymical principles. See PHLEGM, and EARTH.

The principle *Salt* is held a mean between the active and paſſive principles. The pure acid, though accompanied with its ſulphurous determinating matter, never becomes ſenſible but when lodged either in ſome earthy matter, or artificially in ſome ſimple aqueous matter. In the firſt caſe, it appears, under the form of a chryſtallized *Salt*, as *Salt-petre*, &c. In the ſecond caſe, it appears in the form of an acid ſpirit, which, according to the determination of the ſulphur that accompanies it, is either ſpirit of nitre, or ſpirit of common *Salt*, or ſpirit of vitriol.—And what we have here obſerved of the three ſimple, or foſſile *Salts*, may be applied to all other more compound *Salts* of plants, animals, *&c.* with this difference, that when in form of a concrete *Salt*, theſe laſt always have a greater quantity of earthy matter, and when in form of an acid ſpirit, a greater quantity of aqueous matter, than the ſimple ones. Whence it follows, that the acid ſpirits of compound *Salts* are always weaker, lighter, and leſs penetrating than thoſe of foſſile *Salts*; and after diſtillation leave a greater quantity of earthy matter behind them. See SPIRIT.

We do not know preciſely what figures the three *Salt*-principles, acid, urinous, and lixivial, muſt have: But to judge by their effects, one would conclude, the acids to be pointed, only the points ſheathed in ſome ſulphurous matter; the urinous *Salts* to be ſpunges, containing ſome of the acid, and ſome of the fœtid oil of the animal or plant: and the lixivious *Salts* to be ſpunges only containing the remainder of the acid, which the calcining fire could not expel. See LIXIVIOUS and URINOUS.

Acid ſpirits may be conceived as pure, and without any mixture; in which caſe all acids will be found of the ſame nature: but if we conſider them as diſtillation gives them, we ſhall always find them accompanied with ſome ſulphurous matter, which we cannot ſeparate from them, and which gives the degree of activity to the acid ſpirits. It is this ſulphurous matter which characterizes them, and makes all the difference we find between acid ſpirits. M. Homberg ranges all the kinds of acid ſpirits under three different claſſes, according to the different ſulphurous matters which accompany them.—The firſt claſs is of thoſe which contain animal or vegetable ſulphur; under which come all acids, diſtill'd from plants, fruits, woods, *&c.* as alſo ſpirit of nitre.

It is eaſy to conceive, that the acids of plants may have retained a part of the oil of the plant, which is their ſulphur; ſince in reducing theſe acids into *Salts*, we always find a little oil therein; which can be nothing elſe but that of the plants themſelves. And for *Salt-petre*, as this is always drawn from earths moiſtened with the excrements of animals, or from old wall, plaiſter, *&c.* full of the ſulphurous matters of the animals that lived within them, the ſoot, *&c.* it is thence, doubtleſs, *Salt-petre* borrows its ſulphur. See SALT-PETRE.

The ſecond claſs is of thoſe which contain a bituminous ſulphur: under which come the acids of vitriol, common ſulphur, and alum. For thoſe are all uſually drawn from the ſame mineral ſtone, wherein the bituminous matter, which makes one of the principal parts of common ſulphur, predominates. See SULPHUR.

The third claſs is of thoſe which contain a more fixed mineral, ſulphurous matter; approaching nearer the properties of a metaline ſulphur: under which claſs come the acids drawn from ſeveral kinds of *Sea-Salts*, *Rock-Salts*, &c. For the *Rock-Salt*, or *Sal-Gemmæ*, is always found in places near metalic mines; and *Sea-Salt*, in all appearance, is nothing but *Rock-Salt*, the quarries whereof have been penetrated by the ſea-water, which has extracted all the ſaltneſs therefrom. See *Sea*-SALT.

The ſulphurous matters of the firſt claſs of acids being very light, and taking up a deal of ſpace, muſt augment the bulk of the points of the acids to which they are joined. And hence theſe acids become diſabled from penetrating very compact bodies; but their ſurface being increaſed from the ſame cauſe, the flame will have the greater hold to impel them: And hence the acids of this claſs act more ſwiftly than any of the reſt.

The bituminous ſulphur is the leaſt active of all the ſulphurs we know, as being loaden with a great quantity of earthy matter, which ſerves it as a matrix. Hence it unites more difficultly with ſaline matters than any of the other ſulphurs; ſo that a leſs quantity of it may be conceived to adhere to the acids of this, than of either of the other claſſes.—Accordingly we find, that the acids of this claſs, uſed alone, ſcarce diſſolve any metals; but mixed with the others, partake of their ſulphur, and thereby become enabled to diſſolve all metals.

The metalick-ſulphur is of all others the moſt fixed; that is, its parts are the ſmalleſt, and moſt compact. See FIXITY. Hence the points of this claſs of acids will not be much ſwelled by it, and of conſequence will be able to inſinuate themſelves into the moſt compact bodies, or thoſe whoſe pores are the ſmalleſt. And for the ſame reaſon they will not give much hold to the flame that agitates them, and will therefore act with leſs violence than thoſe of the firſt claſs of *Salts*.

Acids joined to fixed *Salts*, compoſe mixed *Salts*: thus ſpirit of nitre, with *Salt* of tartar, make *Salt-petre*; and ſpirit of *Salt*, with *Salt* of tartar, make a true common *Salt*; and ſpirit of vitriol, with *Salt* of tartar, a true vitriol.

However, the two ingredient *Salts* ſtill remain, the one fixed, the other volatile: acids joined with urinous *Salts*, compoſe another kind of *Salts*, called *Sales Ammoniaci*, which are always volatile. See ARMONIAC.

Lixivial and urinous *Salts* are called *Alcalies*; the firſt a fixed alcali, the ſecond a volatile alcali. See ALKALY.

Theſe alcalies are uſually eſteemed antagoniſts to the acid *Salts*, becauſe their mixtures always occaſion a ſudden ebullition. But it is more probable this ebullition is not the effect of a combat, but rather a proper junction and union of two matters which had been naturally united together, and only ſeparated by the fire, and now re-place themſelves in the ſame parts whence the flame had tore them off. Hence, the one are compared to ſheaths, and the other to points, fit to be ſheathed therein. Now, the precipitation wherewith the points of the acids enter the pores of the alcalies, tears aſunder their contexture, and reduces them into minute parts inviſible to the eye; and thus is the buſineſs of diſſolution accounted for. See DISSOLUTION.

Thus far will the mere doctrine of alcali and acid go towards accounting for ſome of the great phænomena of nature. But the theory is made vaſtly more compleat and adequate, by Sir Iſaac Newton's principle of attraction, for which we refer the reader to the articles ACID, MENSTRUUM, *&c.* where the operation of *Salts*, or acid ſpirits, are perhaps more ſatisfactorily accounted for.

The principal chymical *Salts* of uſe in medicine are; *Salt* of urine, of lavender, of viper, of human blood, of wormwood, of guaiac, of quinquina, of tobacco, of rhubarb, of roſemary, of ſage, of juniper, of vitriol, of amber, of ſaturn, *&c.* moſt of which, with many others, are explained under the articles of the reſpective drugs, *&c.* whence they are drawn: to which the reader may have recourſe.

SALT, in its popular ſenſe, denotes a kind of ſaline cryſtallization; or a ſharp, pungent, detergent and aſtringent ſubſtance, uſed to ſeaſon fleſh, fiſh, butter, hides, and other things that are to be kept; as alſo to give a reliſh to meats, *&c.*

This we uſually call *Common Salt*, in contra-diſtinction to the chymical *Salt*.

M. Guglielmini, in an expreſs diſſertation *de Salibus*, lays it down as a fundamental, that the firſt principles of common *Salt*, *Salt-petre*, vitriol, *&c.* had their figures unalterably fixed at their firſt creation, and are indiviſible as to any created force. That of common *Salt* he maintains to be a little cube; that of *Salt* of vitriol, a parallelepiped; that of *Salt-petre* a priſm whoſe baſe is an equilateral triangle, *&c.*

Common *Salt* is of three kinds, *viz.* *Sea-Salt*, *Foſſile* or *Rock-Salt*, and *Salt* drawn from briny ſprings, and wells.

For *Sea-Salt*, the greateſt and beſt part is made in France; little in England.—*Foſſile*, or *Rock-Salts*, are chiefly found in Poland, Hungary, and Catalonia.—For *Salt* ſprings, they are conſiderable in Cheſhire, Worceſterſhire, Hampſhire, Northumberland, Franche Comte, Lorrain, Tirol, and ſome other places.

The great *property* of SALT is, that it is incapable of corruption, and that it even preſerves meats, *&c.* ſeaſoned therewith, or ſteeped in ſolutions thereof. It endures the fire, and even comes purer out of it, as being thereby freed of its humidity. In very hot fires it fuſes, and is converted into corroſive waters.

It gives fertility to lands, and promotes the fuſion of all metals; yet, we read of princes, who, as a mark of their indignation, ſowed grounds with *Salt* to render them barren. Plutarch obſerves, that the Egyptians believed *Salt* to be the ſpittle, or foam of the giant Typhon, the great enemy of their gods: and hence, adds he, they held it in the greateſt horror.

Salt is found to have two oppoſite qualities: by its ſubtile, penetrating acidity, it breaks and diſſolves the hardeſt and moſt compact minerals and metals; and by a contrary property, it coagulates liquid bodies, as milk, blood, *&c.* Some of its ſpirits, mixed in a certain proportion with water, produce an exceſſive heat; yet, when mixed in a leſs quantity augment its coldneſs: as *Salt-petre* in ſnow, *&c.*

Though all *Salts* diſſolve by moiſture, yet water only diſſolves, *&c.* a certain quantity. However, when impregnated with any *Salt*, as much as it can bear, it will ſtill diſſolve a quantity of another *Salt*, whoſe particles are of different figures, proper to inſinuate into the remaining vacuities of the water: thus, after *Common Salt* will no longer diſſolve in it, alum will, and after alum, *Salt-petre*, then *Sal-Armoniac*, &c.

The uſe of *Salt* is ſo univerſal, and the traffic thereof ſo very important in the places where nature has produced the different *Salts*, and ſo neceſſary for thoſe which have not that advantage; that a detail of the preparation, commerce, *&c.* of the ſeveral kinds, cannot fail of being acceptable.

Sea-SALT is made of ſea-water, thickened by frequent evaporations, and at length cryſtallized.—Of *Sea-Salt* there are two kinds: that which requires the ſun's rays to give it its conſiſtence, called, from its own brown colour, *Bay-Salt*; and that which receives its conſiſtence from the heat of a fire, called *White-Salt*.

They uſe either this or that manner of preparation, according to the diſpoſition of the coaſts, where it is made: if the coaſts riſe in downs or hills of ſand, the *Salt* is made by fire, in copper or leaden veſſels.—If the coaſts be flat, and low; eſpecially, if the bottom be a little clayey, the *Salt* is cryſtallized wholly by the action of the ſun.

We have nothing very conſiderable of either kind in England: ſome indeed we have of the latter, at Shields in Northumberland; and of the former in the iſle of May. France is the principal place for theſe *Salts*; more being made there than in all Europe, perhaps in all the world beſide; and it is hence that we are chiefly furniſhed therewith. We ſhall therefore deliver the method of making it, as it is practiſed there.

The chief coaſts for *Bay-Salt* are thoſe of Bretagne, Saintonge, and the Pays d' Aunis. The chief *Salt*-works, in the two latter places, are Brouage, Maran, and the iſle of Rhe. Thoſe in Bretagne are in the bay of Borneuf, Guerand, and Croiſil: for *White-Salt*, it is chiefly made on the coaſts of Normandy. In the bay of Borneuf alone, are computed above twenty thouſand conſiderable *Salt*-works.

Manner of making Bay-SALT.—Low marſhy-grounds, diſpoſed by nature for the reception of the ſea-waters when the tide ſwells, and provided with banks and ſluices to retain the ſame, are called a *Salt-marſh*.

Theſe *Salt*-marſhes, the bottoms whereof they ram with a deal of care, are divided into ſeveral ſquare pits or baſons, ſome greater, others leſs, ſeparated by little dikes 13 or 14 inches broad: and into theſe baſons, when the ſeaſon is at hand, they let in the ſea-water.

The *Salt* ſeaſon is from the middle of May to the end of Auguſt; in which time the days being long, and the ſun's rays ſtrongeſt, the *Salt* is raiſed and cryſtallized better than in any other ſeaſon. Ere they let in the water, they take care the baſons be well cleared of what had been left in them during the winter to keep them in order. The water is admitted to the height of about ſix inches, after having firſt let it reſt, and warm two or three days in huge reſervoirs, without the works, that it may come in luke-warm. The water admitted, the ſluices are ſhut, and the reſt of the work left to the wind and the ſun.

The ſurface of the water being ſtruck, and agitated by the direct rays of the luminary, thickens, at firſt, imperceptibly, and becomes, at length, covered over with a ſlight cruſt, which hardening by the continuance of the heat, is wholly converted into *Salt*. The water, in this condition, is ſo hot, that the hand cannot be put into it without ſcalding it. When the *Salt* has received its full coction, they break it with a pole, upon which it ſinks to the bottom, whence being dragged out again, they leave it ſometime in little heaps, about the edge of the pit, to compleat the drying; and at length in greater heaps, containing ſeveral thouſand muids, which they cover over with ſtraw, or ruſhes, to ſecure them from the rain.

Eight, ten, or at moſt fifteen days, having thus perfected the cryſtallization of the *Salt*, they open the ſluices, when the tide is riſing, for a freſh ſtock of water; and thus they continue alternately, taking in water, and gathering the *Salt*, till the ſeaſon be over. Rainy weather is very pernicious to the work; for rain-water, mixing in any quantity with the ſea-water, renders it uſeleſs, ſo that new water muſt be called in.

The *Salt* is brown when taken out of the pits, and is uſually thus ſold, without farther preparation: indeed in ſome places they make it into *White-Salt* by refining. They refine it by boiling it in large flat caldrons, which not only takes away its acrimony, but is found to increaſe the quantity.

Method of making White Sea-SALT.—The *White-Salt* of Normandy is not made by refining the *Bay-Salt*, but has this colour naturally when taken out of the pits.—To make it, they gather a muddy ſand on the flats of the ſhoar, which the riſing tide has covered and impregnated with its waters for ſeven or eight days. This ſand being removed into pits for the purpoſe, diſcharges itſelf by degrees of all its water, which filtrates through ſome ſtraw wherewith the bottom of the pit is filled, and trickles into veſſels ſet on purpoſe to receive it. Of this water it is that they make their *Salt*.

Their furnaces are of earth, and their boilers of lead: each furnace boils four leads. When the water wherewith they have filled the leads begins to boil, they take off the ſkim, which ariſes in abundance, and in proportion as it diminiſhes, throw in freſh water, which they continue to ſkim, as before. When it thickens, they keep it continually ſtirring, with a crooked ſtick, or ladle; and when the grain is formed, take it off the fire to purify it.

The purifying is peformed by letting it ſtand in large oſier baſkets; where it drains itſelf of certain humidities that remained. When dry, it is laid in heaps, and thence carried into the magazines.

The commerce of *White-Salt* brings an immenſe profit to France, though more to the king than to the makers and ſellers: the duty is one fourth part of the price the *Salt* is ſold at. The Engliſh and Dutch, and (when they are at war with France) the Swedes and Danes, take off moſt of the *Salts* of the Comte Nantois; paying for it, *communibus annis*, from 20 to 35 livres the load. That of Guerande is preferred, by the Engliſh and Iriſh, to all the reſt, as the beſt and whiteſt. Yet that of Borneuf, though browner and heavier, is moſt uſed in France, as alſo throughout the Baltic; particularly in Poland, where, beſides the ordinary uſes, it ſerves in tilling the ground; being found to warm it, and to prevent little vermin from gnawing the grain.

The Engliſh and Dutch have oft ſtrove hard, in times of war, to do without the French *Salts*; and to that end, have endeavoured to take *Salts* from the Spaniſh and Portugueze; but there is a diſagreeable ſharpneſs and ſeroſity natural to them, which renders them very unfit for the ſalting of fleſh, fiſh, *&c.*—To remove this, they boil them with ſea-water, and a little French *Salt*, which they procure by means of neutral nations; which not only ſoftens them, but increaſes their quantity by one third. But it ſhould ſeem their refining does not ſucceed to their wiſh, by the eagerneſs wherewith they return to the *Salts* of Bretagne, *&c.* as ſoon as any treaty has opened the commerce.

Foſſile, or *Rock*-SALT, is called alſo SAL-*Gemmæ*, from a certain brightneſs it has, which gives it ſome reſemblance to gems. Indeed, it ſhould have ſomething of the gem in its nature; if there be nothing exaggerated in the account Dr. Ed. Brown, (who went down into the *Salt*-mines in Hungary) gives us thereof in his travels.

This *Salt* was intirely unknown to the ancients: Pliny, however, gives ſome curious things about *Salts* in Nat. Hiſt. lib. 30. c. 7. which we ſhould have tranſcribed hither, could we believe them as true as they are pretty. We ſhall here content ourſelves with what well-warranted relations we could get of the *Salt*-mines of Wiliſca in Poland; thoſe in the Upper Hungary, and thoſe in the mountains of Catalonia, which make a very conſiderable article of commerce in thoſe three ſtates; *Salt* being tranſported hence to the ſeveral neighbouring nations, who cannot be conveniently ſupplied with *Sea-Salt*.

SALT-MINES *of Poland*, *&c.*—The Poliſh-mines, in the village Wiliſca, five leagues from Cracow, were firſt diſcovered in 1251. Their depth and capacity are ſurprizing. Within them is found a kind of ſubterraneous republick, which has its polity, laws, families, *&c.* and even publick roads, and carriages; horſes, *&c.* being kept here to draw the *Salt* to the mouth of the quarry, where it is taken up by engines. Theſe horſes, when once they are down never ſee the light again; but the men take frequent occaſions of breathing the village air. When a traveller is arrived at the bottom of this ſtrange abyſs, where ſo many people are interred alive, and where ſo many are even born, and have never ſtirred out, he is ſurprized with a long ſeries of lofty vaults, ſuſtained by huge pilaſters cut with the chiſſel, and which, being themſelves *Rock-Salt*, appear, by the light of flambeaux which are inceſſantly burning, as ſo many cryſtals, or precious ſtones of various colours, caſting a luſtre, which the eye has much ado to bear.

The rocks of *Salt* are hewn in form of huge cylinders; the workmen uſing hammers, pick-axes, and chiſſels, much as in our ſtone quarries, to ſeparate the ſeveral banks of ſtone. As ſoon as the maſſive pieces are got out of the quarry, they break them into fragments fit to be thrown into the mill, where they are ground, and reduced into a coarſe farina or flour, which ſerves all the uſes of *Sea-Salt*.

In the *Salt*-mines of Wiliſca, there are two kinds of *Sal-Gemmæ*; the one harder and more tranſparent, and the cryſtallization whereof appears more perfect than that of the other: This is the real *Sal-Gemmæ* of the Druggiſts and Dyers. It cuts like cryſtal, and is frequently uſed for toys, chaplets, little vaſes, *&c.* the other is leſs compact, and only fit for kitchen uſes. One of the chief wonders of the place is, that through theſe mountains of *Salt*, and along the middle of the mine, there runs a rivulet of freſh water ſufficient to ſupply the inhabitants.

The SALT-*Mines in the Upper Hungary* are every whit as extraordinary. They are found in the mountains, two miles from Eperies, a city in the county of Sarax, on the river Tarhz. The depth is 180 fathoms. The mineral runs in huge veins, ſo that pieces are ſometimes dug not leſs than an hundred thouſand weight; which however, are afterwards reduced into ſquare pieces two foot long, and a foot thick, for the conveniency of drawing them out of the mine. When out, they are broke farther, and put to the mill to be ground. The colour of the ſtone is a little browniſh, and yet, when ground, becomes as white as if it had been refined. Some of the ſtones are found as hard and tranſparent as cryſtal; ſome white, yellow, blue, *&c.* fit for various works, whereon they engrave as on precious ſtones. The mine is cold and moiſt, whence there ariſes ſome difficulty in reducing the *Salt* into powder. Of the water drawn out of it and boiled, is made a blackiſh *Salt*, which fattens cattle.

The SALT-*Mines of Catalonia* are found in the mountains of the dutchy of Cardonna, and belong to the grandees of that name. It is the opinion of the country people, that the *Salt* grows again, and is re-produced, after ſeveral years, in the ſame places whence it had been dug. But the naturaliſts will ſcarce allow of ſuch a re-production. There is no doubt, however, but it vegetates, or grows ſometimes: M. Tournefort, and the ſpecimens he had of it in his cabinet, make it plain.

The *Salt* is of four kinds, white, bay, red, and brilliant: The firſt, is almoſt like our *Sea-Salt*, only that it is not granulated. The ſecond, of an iron and ſlate colour, has moſt of the qualities of the white. The third, of a conſerve roſe colour, only differing from the reſt by the mixture of ſome bole, or earth, which gives it this colour. The fourth is a brilliant *Salt*, yet tranſparent as cryſtal, which is the proper *Sal-Gemmæ* of the druggiſts.—Of this kind there is ſome blue, others green, orange, red, *&c.* but they all become white by grinding.

Theſe four kinds of *Salts* are found over each other in diſtinct ſtrata or beds: the commerce hereof is very conſiderable: The Engliſh, *&c.* when trade is prohibited with France, furniſh themſelves hence.

Sal-Gemmæ is to be choſen in large, bright, tranſparent pieces, eaſy to break, and dividing into little ſquare grains. It grows red-hot in the fire, like iron, but diſſolves eaſily in air: yet the druggiſts waſh it, to give it the greater luſtre, but they take care to wipe it dry again ſpeedily.

SALT *drawn from briny ſprings.*—Our method in England is thus: near the ſpring, or place of the brine, is built a ſaltern, or boiling-houſe, with a convenience for the conveyance of the brine within it. The ſaltern is uſually large enough to contain ſeveral huge flat pans, or boilers, each furniſhed with its grate and furnace.

At Shields, *&c.* on the eaſtern coaſt, where brine ſprings are wanting, they uſe ſea-water in its place; which at ſpring-tides is let into their ponds called *ſumps*, and from thence pumped into the pans.

The brine being in the pan, the fire is kindled; and after two hours time, the liquor begins to be ready to granulate: which is known by a thin ſkin riſing at the top; this they ſkim off into brine tubs, that the brine that goes with it may not be loſt: and whereas all brines contain, or yield ſand, which is ſuppoſed to petrify in boiling; for that if the liquor have been ſtrained before-hand through brown paper, yet upon boiling it, ſand will ariſe; and the pan boiling violently in the middle, the ſand is caſt towards the corners, where it falls to the bottom of the pan, before the *Salt* precipitates; therefore, they rake it to one corner of the pan, with a broad rake, and then take it out with ladles, and put it into wooden veſſels, open at one end, placed on ſtands.

The ſand being removed, that the *Salt* floating in the liquor may precipitate, they ſhut up the vent-holes, and door, and let the fire go out; and in twelve hours time the *Salt* falls to the bottom, and grows hard; a liquor called the *bittern*, remaining at top, which being again boiled away, yields more *Salt.*—To make the *Salt* precipitate more readily, after the liquor is ſcummed, *&c.* they frequently uſe ſome beef-ſuet, and wine-lees, of each a like weight, melting and mixing them together; and putting an ounce of this mixture on the end of a ſlice, turn it round in the liquor till it be ſpent: then after two hours, at moſt, open the vent-holes and door, quicken the fire, and lade away the liquor in a good meaſure, and ſo is the *Salt* found lying at the bottom, fit to be removed.

It is now raked up to one ſide, taken out and put into cribs, or veſſels, like hay-racks, with looſe ribs on each ſide, ſo cloſe to one another, that an half-crown will ſcarce go between: here, after eight hours draining, it is found an hard granulated *Salt*, and may be taken away; but yet continues dripping three weeks, and afterwards, if not often moved, will become rocky: the liquor in the pan, called *bittern*, is to be all taken out, except a little to keep the pan from burning; drained from the *Salt*, and caſt away, or reſerved for *Salt-petre* makers; and the pan immediately filled with freſh brine, for another boiling.

A pan of brine, of moderate ſtrength, in eight hours time will be compleatly made into *Salt*, with the expence of about a buſhel and half of coals, which will make a pan of *Salt* from two buſhels and half to four buſhels, or more, according as the liquor is in ſtrength.

This *Salt* they ſometimes mould into the form of ſugar-loaves, in which ſtate it will keep dry without fire, and that for a long time. At Nantwich, they bake the loaves twice or thrice, in an oven, and keep them in a ſtove, or the chimney-corner.

SALT *from brine raiſed by the ſun.*—In ſome parts of England, as at Limington, Port-ſea, *&c.* they uſe water raiſed by the ſun, and then boiled, which they find preferable to the natural brines of ſprings; thoſe being always found either too weak, or too ſtrong.

To this end, they have ſeveral ponds, or ciſterns, called *ſun-ponds*, built with mud, and well-expoſed to the ſun, with little channels, to convey the brine from them all to a large ſhallow reſervoir, called the *common-ſun-pan*, not exceeding ſeven or eight inches in height. Here the liquor is left to mellow, from twelve to twenty-four hours, or till the liquor will bear a hen's egg new laid; and when it has attained a ſufficient ſtrength, it is from thence derived by channels into the ciſterns, where the rain and ſun breed red worms, which cleanſe and purify the liquor, which ripens by age, and is rendered fitter for boiling, which is performed after the ſame manner as is already deſcribed.

SALTIER, SALTEER, or SALTIRE, in heraldry, an ordinary in form of a St. Andrew's croſs; anciently called the *Croſs of Burgundy.* See CROSS.

The *Saltier* may be ſaid to be compoſed of a bend dexter and ſiniſter, croſſing each other in the centre of the eſcutcheon. See *Tab. Herald. fig.* 35. See alſo the article BEND.

Its ordinary breadth, when alone, is one third of the eſcutcheon. It is ſometimes bore alaiſé, and ſometimes in number, placed in different parts of the field: Sometimes charged, countercharged with the field, accompanied, raguled, engrailed, indented, quarterly-quartered, *&c.*

The *Saltier* was anciently a piece of the knight's harneſs; being faſtened to the ſaddle, and ſerving him for a ſtirrup to mount upon; and it was hence it had its name *Saltier*, by the French *Sautoir*, from *Sauter*, to leap.—It was made of ſilk cord, or ſome other kind of cord, covered with ſome rich ſtuff.

Others will have it, that the original *Saltier* was a kind of paliſade, ſerving to fence parks, woods, *&c.* where wild beaſts were incloſed. Though Spelman ſays, it was an inſtrument for the taking them, thus called, *Quod ſit in uſu in Saltu.* Laſtly, others aſſure us, that *Saltier* was anciently the figure of an engine, which being full of pins, was uſed in the ſcaling of the walls of a beſieged place: whence its origin from *Sauter*, as it helped the ſoldiers to leap over the wall.

SALTNESS, SALSEDO, the quality of ſomething that is impregnated with ſalt; or that yields a ſaline taſte. See SALT and TASTE.

The *Saltneſs* of the ſea, lakes, *&c.* is a thing that has long perplexed the philoſophers to account for. Some take it to be the effect of the dry, aduſt, and even ſaline exhalations, which the ſun raiſes from the earth, and the winds, and rains diſcharge into the ſea: and hence, ſay they, it is, that the ſea is found more brackiſh near the ſurface, than towards the bottom.—Others contend, that the ſun being continually extracting the pureſt and ſubtileſt parts from the water; the coarſer parts remaining, being exalted and concocted by this heat, acquire by little and little, their degree of *Saltneſs.*—Others, as father Bouhours, will have it, that the Creator gave the waters of the ocean their *Saltneſs* at the beginning, not only to prevent their corruption, but alſo to enable them to bear greater burdens.—Bernier ſeems to be nearer the matter, when he aſcribes the *Saltneſs* of the ocean to the foſſile or mineral ſalts brought into it by the rivers, and diſſolved in the water.

The Count de Marſigli obſerves, that in Provence, the bottom of the ſea is wholly ſtony, and nothing but a continuation of the mountains of the Cevennes; being even found to conſiſt of ſeveral ſtrata; among which, are ſalt, and pit-coal: and hence he derives the *Saltneſs* and bitterneſs of the ſea-water.

Dr. Halley, in an expreſs diſcourſe of the *Saltneſs* of the ocean, in the Philoſophical Tranſactions, obſerves, that all the lakes in the world are *ſaline*, ſome more, ſome leſs, than the ocean; which, in this caſe, may be eſteemed a great lake itſelf: and that all the vapours exhaled by the ſun from lakes, are perfectly freſh; ſo that all the ſaline particles brought in by the rivers remain behind, while the freſh evaporate. Hence it is evident, their *Saltneſs* muſt be continually augmented.

Now if this be the true reaſon of the *Saltneſs* of lakes, it is probable the *Saltneſs* of the ocean itſelf ariſes from the ſame cauſe: and hence we are furniſhed with a method of eſtimating the age of the world, by obſerving the increaſe of *Saltneſs* in the waters of lakes; and computing in how long time the ocean might, at that rate, arrive at its preſent *Saltneſs.* See LAKE, *&c.*

SALT-PETRE, SALPETRA, *nitre*; a bitter, ſulphurous or inflammable kind of ſalt; of great uſe in chymical preparations, the compoſition of gun-powder, dying, the glaſs-manufacture, making aqua-fortis, &c.

All the *Salt-petre* we now have, M. Homberg obſerves, is drawn either from earths moiſtened, and manured with the excrements of animals; or from old walls, and the plaiſter of ruined buildings, which have been filled with ſulphurous matters as well from the animals which inhabited them, as the ſoot penetrating them, and the air incompaſſing them. See SALT.

However, we uſually make a diviſion of *Salt-petre* into *natural* and *factitious*.

Of native SALT-PETRE there are two kinds: the firſt formed by a natural cryſtallization of ſaline ſulphurous juices diſtilling in caverns, or along old walls.—This is what they call *Salt-petre of the rocks*; the ſame with the aphronitre of the ancients. See APHRONITRE.

The ſecond is furniſhed by the water of a dead lake in the territory of Terrana in Egypt, called the *Nitrian Waters*, exalted and concocted by the heat of the ſun, much after the manner of our bay ſalt.—This is the natrum or anatrum of the ancients, which our druggiſts call *natron*; now little uſed but in the bleaching of linens. See NATRON and ANATRON.

Artificial, or factitious SALT-PETRE, is alſo of two kinds: the firſt, called, by ſome, *Mineral Salt-petre*, is procured in ſeveral places in the kingdom of Pegu, and about Agra, in villages anciently populous, but now deſart: alſo, in ſome places along the banks of the Wolga, that famous river, which after watering a good part of Muſcovy, empties itſelf into the Caſpian ſea.

The *Salt-petre* is here drawn from three different kinds of mineral earths, black, yellow, and white. The beſt is that procured from the black; as being freeſt from common-ſalt, and needing no purifying after it comes to us, to fit it for making of gun-powder; as the reſt do. See GUN-POWDER.

The method of working it is thus: two flat pits are dug; one of which they fill up with the mineral earth, turning water upon it for ſome time; and then tread it with their feet into the conſiſtence of pap, letting it ſtand two days for the water to imbibe, and extract all the ſalt therein. They then paſs the water into another pit, where ſtanding ſome time, it ſhoots and cryſtallizes into *Salt-petre*. This they boil once, or twice, as they would have it more or leſs white and pure, ſcumming it continually, and filling it out into pots, holding 25 or 30 pounds each, and expoſing theſe to the air in clear nights; by which means, if there be any impurity, it ſinks to the bottom: they then break the pots, and dry the ſalt in the ſun.

The ſecond kind of artificial or factitious *Salt-petre*, is that prepared from nitrous matters collected in old buildings, dove-houſes, the middle of ancient ruins, &c. by means of lixiviums, or lyes made of wood-aſhes, and ſometimes of thoſe of herbs.

Of this there are great quantities made in France, particularly in the arſenal at Paris, where there is a corporation of *Salt-petre makers* appointed for the purpoſe.—The *Salt-petre* gained thus, they refine, by boiling it three or four times, and paſſing it ſucceſſively through ſeveral lyes.

Some naturaliſts pretend, that the earths, which have already ſerved for *Salt-petre*, may be re-animated, and made fit to ſerve again, by keeping them covered for twelve or fourteen years, and watering them with the ſcum, &c. of the *Salt-petre*, and even with brine.

Good common *Salt-petre* ſhould be well cleanſed, white, dry, and as free from common ſalt as poſſible: the beſt refined *Salt-petre*, is that whoſe cryſtals are the longeſt, largeſt, and fineſt.

Philoſophers generally allow the air to be impregnated with a volatile nitre, or *Salt-petre*, which is thence communicated to plaiſter, mortar, &c. It is probable it may derive it from ſoot and ſmoak, which are actually found to abound with volatile ſalt of a nitrous nature. Dew and rain are ſuppoſed to fertilize the ground principally by their bringing down this nitre. See AIR.

Salt-petre has a property of rarifying, or expanding itſelf to a prodigious degree. It is hence gun-powder derives its force, whereof *Salt-petre* is the principal ingredient. It is computed, that when inflamed, it takes up above ten thouſand times the ſpace it poſſeſſed before. See GUN-POWDER.

There are abundance of chymical preparations made with *Salt-petre*, as ſpirit of nitre, aqua-regalis, aqua-fortis, cryſtal-mineral, ſal-polychreſt, butter of nitre, &c. each of which ſee under its proper article, AQUA-*Fortis*, &c.

SALTS, or SAULTS, in the manage, denote the leaps, or high airs and vaults of a horſe: from the French *Saut*, of the Latin *Saltus*, a leap, dance, &c.

A *ſtep and a Salt* is a high air, wherein the horſe riſing, makes a curvet between two *Salts*, or caprioles; ſo as to mount before, and fling back with his hind-feet.

Two ſteps and a Salt is a motion compoſed of two curvets, ending with a capriole.

SALTUARIUS, in antiquity, an officer, or ſervant among the Romans, who had the care and cuſtody of a country-houſe, with lands and woods, and who was to look to the fruit, the fences, &c. See FOREST, &c.

In Nehemiah, chap. ii. 8. mention is made of an officer of this kind; *cuſtos ſaltus regis*, which the Engliſh tranſlators interpret, keeper of the king's foreſt; but he was more; having not only the keeping of a foreſt, but of a houſe with a foreſt; *Saltus* being here uſed as *horti* for a houſe of pleaſure; becauſe gardens are the principal part.

In the laws of the Lombards, *Saltuarius* is an officer who has the guard of the frontiers.

SALTUM. *Ordination per* SALTUM. See ORDINATION.

SALTUS, in law books, a high, thick wood. See WOOD, and BOSCAGE.

SALVAGE *Money*, is a recompence allowed both by the ſtatute and civil law, to ſuch perſons as have aſſiſted in ſaving merchandizes, ſhips, &c. periſhing in wrecks, or by pirates, or enemies.

This uſually was a tenth part of the value of the things ſaved. See WRECK.

SALVATELLA, in anatomy, a famous branch of the axillary vein, paſſing over the back of the hand, between the ring finger and the little finger. See AXILLARY, and VEIN.

Several phyſicians, in imitation of the Arabs, recommend bleeding in the *Salvatella*, as proper in tertian and quartan agues, and moſt hypochondriac diſeaſes.

SALVE *Regina*, among the Romaniſts, the name of a Latin prayer, or ſequence addreſſed to the virgin, and ſung after complines; as alſo upon the point of executing a criminal.

Durandus ſays, it was compoſed by Peter biſhop of Compoſtella.—The cuſtom of ſinging the *Salve Regina*, at the cloſe of the office, was begun by order of St. Dominic; and firſt, in the congregation of Dominicans at Bologna, about 1237. Gregory IX. firſt appointed it to be general. St. Bernard added the concluſion, *O dulcis! O pia*, &c.

SALVER, a flat diſh, commonly of ſilver or other precious metal, uſed to ſet glaſſes on to ſerve wines, and other liquors.

The French call it *Sous-couppe*, under-cup.—The Italians uſe to preſent a *Salver*, with ſeveral kinds of wines, with this compliment, *Si non e buono, fatte lo:* If it be not good, make it ſo.

SALUTATION, the act or ceremony of ſaluting, greeting, or paying reſpect, or reverence to any one.

There is a great variety in the forms of *Salutation*: we *ſalute* God by adorations, prayers, &c. kings, by genuflexion, &c. In England, we *ſalute* one another by uncovering the head, inclining the body, &c. The orientals *ſalute* by uncovering their feet, laying their hands on the breaſt, &c.

The pope makes no reverence to any mortal but the emperor of Germany, to whom he ſtoops a very little, when he admits him to kiſs his mouth.

In the army, the officers *ſalute* by certain orderly, ſtudied motions of the half-pike, &c.

It was believed by the ancients, that the ſtatue of Memnon, in a temple of Egypt, *ſaluted* the ſun every morning at his riſing: the cheat conſiſted in this, that the ſtatue being hollow, when the warmth of the morning began to rarify the included air, it was driven out through a narrow duct in the mouth: thus making a gentle murmur, which the prieſts interpreted a *Salutation*.

At ſea, they *ſalute* by a diſcharge of cannon, which is greater or leſs, with ball or without, according to the degree of reſpect they would ſhew.

Ships always *ſalute* with an odd number of guns; galleys with an even one.—A veſſel under the wind of another, is always obliged to *ſalute* firſt.

To *ſalute with muſquets*, is to fire one, two or three volleys; which is a method of *Salutation* that ſometimes precedes that of the cannon; and is chiefly uſed on occaſion of feaſts.

After the cannon, they ſometimes alſo *ſalute* or hale with the voice, that is, a joint ſhout of all the ſhip's company three times; which *Salutation* alſo occaſionally obtains where they carry no guns, or do not care to diſcharge any.

Saluting with the flag, is performed two ways; either by holding it cloſe to the ſtaff, ſo as it cannot flutter; or by ſtriking it ſo as it cannot be ſeen at all, which is the moſt reſpectful *Salutation*.

Saluting with the Sails, is performed by hovering the top-ſails half way of the maſts.—Only thoſe veſſels which carry no guns, *ſalute* with the ſails.

When there are ſeveral ſhips of war together, the commander alone *ſalutes*.

Father Fournier has an expreſs treatiſe of *ſea-ſalutes* and ſignals. See SIGNAL.

Angelical SALUTATION, is an addreſs which the Romaniſts make to the virgin; containing the formula wherein the angel ſaluted her, when he acquainted her with the myſtery of the incarnation. See ANNUNCIATION and AVE MARIA.

SALZ, SULZ, SALTZ, or SULTZ, a ſort of brine or pickle made of ſalt, diſſolved by the coldneſs, or moiſture of a cellar.

SAMARITANS, an ancient ſect among the Jews; ſtill ſubſiſting in ſome parts of the Levant, under the ſame name. See JUDAISM.

Its origin was in the time of Rehoboam; under whoſe reign, a diviſion was made of the people of Iſrael into two diſtinct kingdoms. One of theſe kingdoms, called Judah, conſiſted of ſuch as adhered to Rehoboam, and the houſe of David; the other retained the ancient name of Iſraelites, under the command of Jeroboam.—The capital of the ſtate of theſe latter was Samaria; and hence it was they were denominated *Samaritans*.

Salmanazar, king of Aſſyria, having conquered Samaria, led the whole people captive into the remoteſt parts of his empire; and filled their place with colonies of Babylonians, Cutheans, and other idolaters. Theſe finding themſelves daily deſtroyed by wild beaſts, deſired an Iſraelitiſh prieſt to inſtruct them in the ancient laws and cuſtoms of the land they inhabited. This was granted them; and they thenceforth ceaſed to be incommoded with any beaſts.—However, with the law of Moſes, they ſtill retained ſomewhat of their ancient idolatry. The Rabbins ſay, they adored the figure of a dove on mount Gerizim.

Be this as it will, it is certain, the modern *Samaritans* are far from idolatry: ſome of the moſt learned among the Jewiſh doctors own, that they obſerve the law of Moſes more rigidly than the Jews themſelves.—They have a Hebrew copy of the Pentateuch, differing in ſome reſpects from that of the Jews; and written in different characters, commonly called *Samaritan* characters; which Origen, Jerom, and other fathers and criticks, ancient and modern, take to be the primitive character of the ancient Hebrews; though others maintain the contrary. The point of preference, as to purity, antiquity, *&c.* of the two Pentateuchs, is alſo diſputed by the modern criticks. See HEBREW, PENTATEUCH, CHARACTER, *&c.*

The *Samaritans* are now few in number; though it is not very long, ſince they pretended to have prieſts deſcended directly from Abraham. They were chiefly found at Gaza, Neapolis, (the ancient Sichem) Damaſcus, Cairo, *&c.* They had a temple, or chapel on mount Gerizim, where they performed their ſacrifices.

Joſeph Scaliger, being curious to know their uſages, wrote to the *Samaritans* of Egypt, and to the high prieſt of the whole ſect, who reſided at Neapolis. They returned two anſwers to Scaliger, dated in the year 998 of the Hegira of Mahomet. Theſe anſwers never came to the hands of Scaliger. They are now in the French king's library, and have been tranſlated into Latin by father Morin, prieſt of the oratory; and printed in the collection of letters of that father in England, 1682, under the title of *Antiquitates Eccleſiæ Orientalis*. M. Simon has inſerted a French tranſlation in the firſt edition, of *Ceremonies & Coutumes des Juifs*, by way of ſupplement to Leo de Modena.

In the firſt of theſe anſwers, wrote in the name of the aſſembly of Iſrael in Egypt, they declare, that they celebrate the paſſover every year, on the fourteenth day of the firſt month, on mount Gerizim; and that he who then did the office of high prieſt, was called Eleazar, a deſcendant of Phineas, ſon of Aaron.—At preſent they have no high prieſt.

In the ſecond anſwer, which is in the name of the high prieſt Eleazar and the ſynagogue of Sichem, they declare, that they keep the Sabbath in all the rigour wherewith it is enjoined in the book of Exodus; none among them ſtirring out of doors, but to the ſynagogue. They add, that on that night they do not lie with their wives; that they begin the feaſt of the paſſover with the ſacrifice appointed for that purpoſe in Exodus; that they ſacrifice no where elſe but on mount Gerizim; that they obſerve the feaſts of harveſt, the expiation, the tabernacles, *&c.* They add further, that they never defer circumciſion beyond the eighth day; never marry their nieces, as the Jews do; have but one wife; and, in fine, do nothing but what is commanded in the law: whereas the Jews frequently abandon the law to follow the inventions of their rabbins.

At the time when they wrote to Scaliger, they reckoned 122 high prieſts; affirmed that the Jews had no high prieſts of the race of Phineas; and, that the Jews belied them, in calling them Cutheans, whereas they are deſcended from the tribe of Joſeph, by Ephraim.

The truth is, the Jews impoſe abundance of things on the *Samaritans*: they frequently confound them with the Sadduces, as if they were infected with their errors.—Rabbi Benjamin, who lived in the XIIth century, confirms the beſt part of what we have ſaid of the *Samaritans*: he obſerves, they had prieſts of the tribe of Aaron, and who never married with any but thoſe of the ſame tribe: that they ſacrificed on mount Gerizim, where they had an altar of ſtone raiſed by the Iſraelites after paſſing over Jordan. He adds, that they are of the tribe of Ephraim; that they change their habit to go to the ſynagogue, and waſh ere they put it on.

SAMARITAN *Characters*, or *Letters*. See LETTER and HEBREW

SAMARITAN *Medals*.—In the cabinets of antiquaries we find ſome medals, uſually called *Samaritan Medals*; the inſcriptions and legends whereof are Hebrew; but the character different from the Hebrew of our bibles, which is the ſquare Hebrew, or Chaldee: and it is hence, *viz.* from the character, not from being ſtruck by the *Samaritans*, that they are denominated *Samaritan*. See MEDAL.

Theſe medals have been infinitely canvaſſed by the criticks, both Jewiſh and Chriſtian; particularly rabbi Alaſcher, rabbi Bartenora, rabbi Azarias, rabbi Moſes, father Kircher, Villalpandus Waſerus, Conringius, Hottinger, father Morin, Walton, Hardouin, Spanheim, *&c.*

The learned jeſuit Souciet, in an expreſs diſſertation on the *Samaritan* medals, rejects all Hebrew medals, whoſe inſcriptions are in Chaldee characters, as ſpurious; and allows of none to be genuine but the *Samaritan*.—Of theſe there are four kinds.

The firſt bear expreſly the name of *Simon*, and the ſubject for which they were ſtruck, *viz.* the deliverance of Jeruſalem. The ſecond kind have not the name *Simon*, but only the deliverance of Sion, or Jeruſalem. The third kind have neither Simon, nor the deliverance of Sion; but only the epocha's, firſt year, ſecond year, *&c.* The fourth claſs have neither any inſcriptions, nor any thing whence one may judge of the time when they were ſtruck.

The three firſt kinds were certainly ſtruck after the return from the Babyloniſh captivity, and in the time of Simon Maccabeus, after Jeruſalem had been freed from the yoke of the Greeks. But though ſtruck after the captivity, father Souciet obſerves, their character ſhews itſelf to be that of the ancient Hebrew, which was uſed before the captivity, and the uſe whereof was loſt by the people, during their ſojourn in Babylon and Chaldea; but reſtored after their return, on the ſame footing as before. He adds, that the inſcriptions are pure Hebrew, ſuch as it was ſpoke before the captivity; that the character, therefore, is the true ancient Hebrew character: that it was the cuſtom to write each language in its proper character: that if they had departed from this rule, they had doubtleſs uſed the new character they brought with them from Babylon: that there could be no other reaſon, but that of ſettling all things on the ſame foundation they were on before the deſtruction of Jeruſalem, that could have induced them to uſe this character on their coins. And, laſtly, that theſe medals were not ſtruck by the *Samaritans*, but by the Jews, and in Jeruſalem.

F. Souciet is very full on all theſe points, and, to the proofs drawn from medals, adds two others foreign thereto: the firſt drawn from the reſemblance of the Greek letters, introduced by Cadmus the Phœnician, with this Hebrew character; which was the ſame with that of the Phœnicians, as the language of thoſe people was the ſame with that of the Hebrews.—The ſecond drawn from ſeveral various readings in the ſcriptures, which cannot be well accounted for otherwiſe, than by ſuppoſing, that the books wrote before the captivity, were in the ſame character with theſe medals, and which ſhew, that it is the conformity which certain letters have in that character, that has deceived the copiſts.

From the whole, he concludes, that this character of the medals is the true ancient Hebrew character; and, that to judge of the various readings of the Hebrew text, and the differences of the ancient Greek and Latin tranſlations, either from themſelves, or from the Hebrew text, recourſe muſt be had to this character. See HEBREW.

SAMARITAN *Pentateuch*. See PENTATEUCH.

SAMBUCUS, an ancient muſical inſtrument of the wind kind, reſembling a kind of flute; probably thus called becauſe made of elder, which the Latins call *Sambucus*.

SAMBUCUS was alſo the name of an ancient engine of war, uſed by Marcellus in beſieging the city of Syracuſe.

It was ſo big, that Plutarch, in the life of that general, obſerves, two ſhips were required to carry it.

SAMIAN *Earth*, *Terra* SAMIA, a kind of bole or aſtringent earth brought from the iſland of Samos, in the Ægean ſea. See EARTH.

The beſt is called by Dioſcorides, *Collyrium*, becauſe uſed in the medicines of that name: it is white, very light, ſoft, friable, well-taſted, and a little glutinous on the tongue.

There is another kind, harder, fouler, and more glutinous, called *Aſter-Samius*, in regard little ſhining ſtraws are frequently found in it, diſpoſed like little ſtars.

Each kind is eſteemed very aſtringent, proper to dry, and draw wounds; having much the ſame qualities with the Armenian bole. See ARMENIAN and BOLE.

There is alſo a SAMIAN *Stone*, λιθος Σαμιος, taken out of the mines in the ſame iſland.—It is white, and ſticks to the tongue when applied to it: it is held aſtringent, and cooling; and is alſo uſed by the goldſmiths to burniſh their gold, and give it a greater luſtre.

SAMOSATENIANS, SAMOSATENI, a ſect of ancient Antitrinitarians, thus called from their leader, Paulus * Samoſatenus, biſhop of Antioch, under the emperors Aurelian and Probus.

He renewed the hereſy of Artemonius, and had ſeveral ſentiments in common with Sabellius, *&c.* though he differed from them in the manner of explaining them.—He owned, that the Father, Son, and Holy Ghoſt were but one God; but denied that the Son, and Holy Spirit had any real ſubſtance. According to him, they only ſubſiſted in the Father, as the word of man ſubſiſts in his underſtanding.

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* They are alſo called by St. Auguſtin *Pauliani*, and by the fathers of the council of Nice, Παυλιανιζαντες.

St. Epiphanius will have the *Samoſatenians* to be real Jews, without any thing more than the name of Chriſtians; adding, that they uſe the ſame arguments againſt the myſtery of the trinity that the Jews do; pleading againſt it, with them, on pretence of maintaining the unity of the godhead: though they do not obſerve the ceremonies of the law.

Their chieftain was condemned by a council held at Antioch, in 272, whereat aſſiſted above ſeventy biſhops; and was depoſed from his biſhoprick.

SAMPSEANS, SAMPSÆI, ancient ſectaries; the ſame, according to St. Epiphanius, with the Elceſaites. See ELCESAITES.

The *Sampſeans* were not properly either Jews, Chriſtians, or Gentiles; though they took their name from the Hebrew, *Semes*, ſun; as if they adored the ſun.

They acknowledged one only God; waſhed themſelves often, and were attached, in almoſt every thing, to the religion of the Jews.—Many among them abſtained from eating of fleſh.

Scaliger, after Epiphanius, will have the *Sampſeans* to be the ſame with the *Eſſeni*. In effect, the *Elceſaites*, *Sampſeans*, *Maſſalians*, and *Eſſeni*, appear to be no more than ſo many different names for the ſame ſect; unleſs, perhaps, the firſt added ſomething to the opinions of the laſt. See ESSENI.

SAN BENITO, or SACO BENITO, a kind of linen garment; born as a badge, by perſons condemned by the inquiſition. See INQUISITION, and ACT *of Faith*.

The *San Benito* is in form of a ſcapular; being a broad piece of cloth hanging down before, and behind; with two St. Andrew's croſſes on it: it is of a yellow colour, and painted over with devils, and flames.

It is ſuppoſed to be an imitation of the ancient ſackcloth, uſed by publick penitents in the primitive church. See PENITENT.

SANCTIFICATION, the act of *ſanctifying*, or making a thing holy, and ſeparate to God. See HOLINESS and SACRED.

The reformed divines define *Sanctification* an act of God's grace, whereby a man is renewed inwardly, his deſires and affections alienated from the world, and the man put in a courſe of dying to ſin, and living to righteouſneſs.

The *ſanctifying of the ſabbath*, among the Jews, is of divine right, or inſtitution.—By *ſanctifying* the ſabbath, is meant, the ſpending it in prayer, praiſe, *&c.* not in worldly concerns.

The firſt petition in the Lord's Prayer is, *Hallowed*, i. e. *ſanctified, be thy name:* by which is meant, let thy name be ever accompanied with bleſſing, and praiſe.

SANCTION*, SANCTIO, the authority given to a judicial act; or that, whereby it becomes legal, and authentic.

* The word is formed from the Latin *ſancire*, to eſtabliſh.

The royal aſſent gives the *ſanction* of ſtatutes, to all bills in parliament that have paſſed each houſe thrice. See ASSENT, and PARLIAMENT.

Pragmatical SANCTION. See PRAGMATICAL.

SANCTI-VITI *Chorea*. See CHOREA *Sancti-Viti*.

SANCTUARY, among the *Jews*, was the holieſt and moſt retired part of the temple of Jeruſalem; wherein was preſerved the ark of the covenant; and into which no-body was allowed to enter but the high prieſt, and that only once a year, to intercede for the people.

The *ſanctuary*, called alſo *ſanctum ſanctorum*, or *holy of holies*, is ſuppoſed to be a type, or figure of heaven, and of Jeſus Chriſt the true high prieſt, who is aſcended thither to make interceſſion for us.

Some will have it, that the whole temple was called the *ſanctuary*; and that the *ſanctum ſanctorum*, where the ark was kept, was only a little chapel or oratory therein. See TEMPLE.

To try or examine a thing by the *weight of the* SANCTUARY, is to examine it by a juſt, and equal ſcale; in regard among the Jews, it was the cuſtom for the prieſts to keep ſtone weights, to ſerve as ſtandards for regulating all weights by; though theſe did not differ from the royal, or profane weights. See STANDARD, WEIGHT, SHEKEL, *&c.*

SANCTUARY, in our ancient cuſtoms, denotes an aſylum, or place privileged by the prince, for the ſafeguard of mens lives, who were guilty of capital crimes. See ASYLUM.

In Scotland they call the *Sanctuary*, *Girtholl*, or *Gyrthol*.

The Saxons alſo called it *Frodmortel* and *Fridſtoll*.

Till Henry the VIIIth, all our churches and church-yards were *ſanctuaries*; and protected traitors, murderers, *&c.* if within forty days they acknowledged their fault, and ſubmitted themſelves to baniſhment; and during that time, if any lay-man expelled them, he was excommunicated; if a clerk, he was made irregular: after forty days no man might relieve them, See ABJURATION.

St. John's of Beverly had an eminent *ſanctuary*, called by the Saxons, *a ſeat of Peace:* ſo had St. Martin's le Grand, in London. Rippon had the like granted by Whitlaſe, king of the Mercians: ſo had St. Buriens in Cornwal, granted by king Athelſtan, *Anno* 936; and Weſtminſter the like, granted by Edward the Confeſſor. See FRIDSTOLL.

SANCTUARY, is alſo uſed in the Romiſh church for the chancel, or that part of the church wherein the altar is placed, incompaſſed with a rail or balluſtrade. See CHANCEL.

SANCTUM SANCTORUM. See SANCTUARY.

SAND, a fine, hard, gravelly ſort of earth, or rather ſtones, divided into ſmall grains; of great uſe in building, and many other arts, and manufactures; as glaſs-making, plumbery, foundery, *&c.* See EARTH.

There are three kinds of *ſands*, diſtinguiſhed by the places whence they are drawn, *viz. pit-ſand*, *river-ſand*, and *ſea-ſand*.

The uſe of *ſand* in building, is an ingredient in mortar: See MORTAR.—For this purpoſe, *pit-ſand* is of all others the beſt; and of *pit-ſand*, the whiteſt is always the worſt. Of *river-ſand*, that found in the falls of waters is beſt, becauſe moſt purged. *Sea-ſand* is the worſt.

Pit-ſand, as being fat and tough, is moſt uſed in walls and vaults.—*River-ſand* ſerves for rough-caſting.

All *ſand* is good in its kind, if when ſqueezed and handled it crackles; and if being put on a white cloth, it neither ſtains nor makes it foul.—That *ſand* is naught, which, mixed with water, makes it dirty and muddy, and which has been long in the air; for ſuch will retain much earth and rotten humour.—Hence ſome maſons waſh their *ſand* ere they uſe it.

The *ſand* of Puzzuolo, de Lorme obſerves, is the beſt in the world; eſpecially for maritime buildings. See POZZOLANE.

Some diſtinguiſh a *male ſand*, which is of a deeper colour than another ſort in the ſame bank or bed, called *female ſand*.

The *ſand* whereof glaſs is made, is white, and gritty, full of little ſparkling grains. See GLASS.

The *ſand* uſed by founders, is foſſile: it is properly a yellow fat earth, whereof they make their moulds, for the caſting of ſmall work; whence it is they ſay, *Caſting in ſand.* See FOUNDERY.

The plumbers alſo uſe *ſand* to mould ſeveral of their works, particularly large ſheets.—To prepare the *ſand* for theſe ſheets, they wet it lightly, ſtir and work it with a ſtick, then beat and plain it. See PLUMBERY.

Sands may be divided into *ſharp* and *ſoft*.

Sharp, or *rag-ſand*, is that compoſed of ſmall tranſparent pebbles naturally found in the mountains.

Of this, again, there is ſome *fine* and white, or grey, rediſh or brown; others *coarſe*, either of grieſly, or brown colour.

Soft or *ſmoth ſand*, is that mixed with flat particles from lime-ſtone, with micæ of glittering particles, either ſilver-like, as the *ſea-ſand* about the Scilly iſlands; or gold-like, as in Cleveland.

SAND, in agriculture, denotes one of the three uſual kinds of ſoil; which are *ſand*, *clay*, and *earth*, or *loam*. See GROUND, CLAY, EARTH, LOAM, *&c.*

M. de la Quintinie attributes all the difference we find in ſoils, to the different quality of the *ſands* mixed in them.—*Soft ſands*, according to him, make a ſoft, gentle earth: *unctuous ſands*, a ſtiff earth: *coarſe ſands*, a rough untractable earth, *&c.* See SOIL.

SAND is alſo applied to dry, crumbling earths, which, wanting any fatneſs to bind them together, the wind eaſily breaks into duſt, and carries them away.

In this ſenſe it is that travellers tell us, the caravans in Africa are frequently loſt, and buried under clouds of *ſand*, torn up by whirlwinds; and ſometimes heaped into mountains.—The deſarts of Lybia are mere *ſands*; and hence their ſterility. See DESART.

SANDAL, SANDALIUM, Σανδαλιον, in antiquity, a rich kind of ſlipper, or wear for the feet, made of gold, ſilk, or other precious ſtuff; uſed by the Roman and Greek ladies; conſiſting of a ſole, with a hollow at one extreme to embrace the ancle; but leaving the upper-part of the foot bare.

Terence ſpeaks of this *ſandal*, *Utinam tibi commitigari videam* ſandalio *caput:* I wiſh ſhe would break your head with her *ſandal*.

Apollo was ſometimes called *ſandaliarius*, *ſandal-maker*; the reaſon of which appellation has given great perplexity to the criticks: ſome derive it from a ſtreet called *ſandaliarius*, chiefly inhabited by *ſandal-makers*, wherein that god had a temple: but others, with more probability, derive the name of the ſtreet from that of the god, and take Apollo to have been thus called from his effeminate dreſs, as if he wore womens *ſandals*.

SANDAL is alſo uſed for the ſhoe or ſlipper wore by the pope, and other Romiſh prelates, *&c.* when they officiate; being ſuch as is ſuppoſed to have been worn by St. Bartholomew.

Alcuin obſerves, that there was ſome difference between the *ſandals* of biſhops, prieſts, and deacons.—Monks were not allowed to wear *ſandals*, except in travelling; as is obſerved by Du Cange, Salmaſius, *&c.*

SANDAL is alſo the name of a ſort of ſlipper ſtill worn by ſeveral congregations of reformed monks.

It conſiſts of no more than a mere leathern ſole, faſtened with latches or buckles, all the reſt of the foot being left bare.

The Capuchins wear *ſandals*, the Recollects, clogs: the former are of leather, the latter of wood.

SANDARAC, SANDARACHA, in natural hiſtory, &c. a preparation of orpiment, made by fuſing it by a cloſe fire into a red friable maſs. See ORPIMENT.

Sandaracha is the ſame with what is otherwiſe called *Red Arſenic* and *Realgar*. See ARSENIC and REALGAR.

It is ſometimes alſo called *Sandaracha Græcorum*, in oppoſition to the gum *Sandarach*. Some diſtinguiſh two ſorts of Grecian *Sandarac*: the *natural* which is that above deſcribed; and the *factitious*, which is only ceruſs exalted by the fire, and burnt into a kind of minium. Both the one and the other is a poiſon. See LEAD, CERUSS, and SANDYX.

Gum-SANDARACH, or SANDARACHA *Arabum*, a white gum oozing out of the trunk, and thick branches of the great juniper-tree, by inciſions made in the heats of the ſummer.

The ſmall or common juniper yields very little *Sandarach*: its fruit yields oils, waters, ſalts, ſpirits and extracts of ſome repute in medicine. See JUNIPER.

The *Gum-Sandarach* is an ingredient in varniſh. With this melted in oil of turpentine is made the fictitious varniſh now uſed by painters and cabinet-makers. See VARNISH.—It is alſo reduced into an impalpable powder, and uſed to prevent paper from imbibing ink.

The beſt is in fine white tears, free of duſt: the Engliſh, Swedes, &c. drive a conſiderable trade therewith. Some will have it, that the gum of the juniper is not the right *Sandarach*, but that of the oxycedrus, or leſſer cedar.

SAND-BAGS, in fortification, are bags holding each about a cubic foot of earth, or ſand; uſed for raiſing parapets in haſte, or to repair what is beaten down. See PARAPET.

They are alſo of uſe when the ground is rocky, and affords not earth to carry on the approaches; becauſe they can be eaſily brought on, and off at pleaſure.

There are a leſſer ſort, which hold half what the former do, and are placed upon the upper talus of the parapet, to cover thoſe who are behind, and who fire through the embraſures, or intervals, that are between them.

SANDEVER, or SANDIVER, the droſs of glaſs; or the ſcum that ariſes from the aſhes of the herb kali, uſed in the making of glaſs. See GLASS.

Some alſo uſe *ſandever* for the kali, or glaſs-wort itſelf. See KALI.

SAND-HEAT, or SAND-BATH, denotes one of the chymiſts fires; conſiſting of hot ſand, wherein herbs, flowers, &c. are infuſed in a cucurbit. See BATH.

The *ſand-heat* is eſteemed gentle, digeſtive, and alterative. See HEAT and FIRE.

SANDIVER. See the article SANDEVER.

SANDYX, a kind of minium, made of ceruſs, or rather lead, calcined and rubified; called alſo *factitious ſandarac*. See LEAD and SANDARAC.

It is of little uſe in painting; the real minium, or vermilion, to which it is ſubſtituted, making a much better, brighter, and more durable colour. See VERMILION and MINIUM.

SANGUIFICATION, in the animal œconomy, the action whereby chyle is converted into blood. See CHYLE and BLOOD.

Sanguification ſucceeds chylification, and is followed by nutrition. See CHYLIFICATION and NUTRITION.

Sanguification is thus effected. The chyle having paſſed the lacteals of the ſeveral kinds, is delivered into the blood at the ſubclavian; whence the two humours paſs together to the right ventricle of the heart, where being yet more intimately mixed, they circulate together through the whole body; till, after ſeveral circulations and depurations at the ſeveral colatures and ſtrainers of the body, they become aſſimilated, or, as the chymiſts call it, *cohobated*, ſo as only to make one uniform compound maſs, which appears to be nothing elſe but chyle altered by the artifice of nature, and exalted into blood.—In effect, it does not appear that any thing extraneous is mixed with the circulating liquor but chyle, excepting what was before ſeparated from it for particular occaſions; unleſs perhaps it ſhould receive ſome portion of air in the lungs, which is a point long diſputed, and yet ſcarce aſcertained. See AIR and BLOOD.

Indeed, that there is a quantity of air mixed with the blood and circulating with it, is granted; but whether this be any more than what was at firſt contained in the bodies whereof the chyle was formed, is much doubted: the principal arguments for it, are, the neceſſity of reſpiration, and the florid colour the blood receives in the lungs, and firſt ſhews in the pulmonary vein.—But the firſt is ſatisfactorily accounted for another way. See RESPIRATION.

The latter is chiefly ſupported by this experiment, that blood drawn by venæſection, and ſuffered to coagulate, upon turning up the bottom, which before was blackiſh, being now expoſed to the air, acquires a florid colour, like that we obſerve in the blood of the pulmonary vein.

The ancients were in great perplexity about the ſeat of *ſanguification*, or the place where, and the inſtrument whereby it is effected: whether in the heart, or the liver, or the lungs? but, according to the doctrine of the moderns, the heart, liver, veſſels, &c. contribute no otherwiſe to the changing of the chyle into blood, than the ſun does to the changing of the muſt into wine. See HEART, LIVER, &c.

The ancients accounted for *ſanguification* from a plaſtic power.—In the laſt century, when chymiſtry was introduced, *ſanguification*, and almoſt every thing elſe, was to be effected by a ferment; and the phyſicians of thoſe times, were very ſollicitous as to the particular officina where this ferment was prepared and kept. Some would have it the liver, others the ſpleen, &c. but the very notion is now exploded.

Of *ſanguification* we may admit two degrees; the firſt amounting to no more than a confuſion, or ſuch an intimate mixture of parts, as ſuffices ſo to confound the different coloured liquors, as that the whiteneſs of the chyle ſhall be loſt or drowned in the redneſs of the blood, ſo as never more to appear in its own ſhape and colour.—This we ſuppoſe may be effected by repeated circulations alone: how many circulations are neceſſary thereto, it is difficult to determine.

The ſecond degree of *ſanguification*, is, when the parts of the chyle are ſo exalted, or comminuted and ſubtilized, as to loſe all tendency to a coagulatory ſeparation, ſuch as they have in chyle and milk.

To theſe two degrees may be added a third, wherein the fibres and filaments of the crude blood are ſo broken and blended with the ſerum, as not to be again ſeparable from them.—This is a morbid *ſanguification*, ſuch as happens in fevers, &c. attended with a bloody ſweat, purple ſpots, &c.

All theſe degrees of *ſanguification*, Dr. Drake makes no doubt, are procured by reiterated circulations, wherein as well the inteſtine, as the progreſſive motion, conſpire to the mixing and comminuting of the adventitious parts. Doubtleſs they have their ſtated period, wherein they are in perfection; though where preciſely to fix it, we do not know.

SANGUINE, *bloody*; or a thing abounding in blood. See BLOOD.

SANGUINE *Temperament*, or *Conſtitution*, is that where blood, and heat predominate. See TEMPERAMENT.

Sanguine conſtitutions require a frequent uſe of phlebotomy.

Sanguine people are uſually obſerved to be briſk, bold, daring, and even preſumptuous.—Hence *ſanguine* hopes, *i. e.* ſtrong, aſſured, &c. hopes.

SANGUINE, in heraldry, the colour uſually called *Murrey*; being made of red lake, tinged with a little Spaniſh brown. See MURREY and PURPURE.

It is repreſented in engraving, by tranſverſe hatches like purpure; and is moſtly uſed in the coats of knights of the Bath.

When borne by nobles, it is rather called *Sardonyx*; and in the coats of ſovereign princes *Dragon's-Tail.*

SANGUINE *Stone*, *Lapis* SANGUINALIS, a kind of Jaſper, brought from New-Spain, of a dark brown colour, marked with ſpots of a blood-red. See JASPER.

The Indians cut it in form of a heart, and uſe it in hæmorrhages, immoderate menſes, and other fluxes of blood.—The patient applies it by graſping it in his right-hand, having firſt dipt it in water. It is ſometimes alſo hung on the part whence the blood flows. See HÆMATITES.

SANGUINIS *Periodus*. See the article PERIODUS.

SANGUIS, in medicine, &c. See BLOOD.

SANGUIS, in our ancient cuſtoms, denotes a right or power, which the chief lord of the fee anciently had to judge and determine caſes where blood was ſhed.—*De murderia & raptu, de igne, de* Sanguine, &c. Monaſt.

SANGUINEM *Emere*, was an obligation which the inhabitants of ſome manors, as that of Grendon, were under, to buy and redeem their villain blood, or tenure, and make themſelves freemen. See VILLENAGE.

SANGUIS *Caprinus*, or *Hircinus*, the blood of the he-goat, either wild or tame, which is prepared, with great precaution, to be uſed in medicine, and ſuppoſed by many to have very extraordinary qualities.

The principal precautions are theſe: the goat is not to exceed four or five years of age; it is to be fed a conſiderable time with aromatic herbs, and eſpecially thoſe of the ſaxifrage kind; to be drawn out of the throat, or the teſticles, by cutting them; but neither what comes firſt, nor laſt, to be uſed, the former being too full of humidity, and the latter too thick; the operation to be only performed in July; and the blood put into earthen veſſels, and dried either in the ſun or the ſhade; and, laſtly, bottled up to be uſed occaſionally.

Among other ſpecific virtues attributed to goat's blood, the two moſt conſiderable are, that it cures the pleuriſy without bleeding; and that it diſſolves the ſtone in the bladder, by taking it in vehicles proper for thoſe diſeaſes.—To be good, it is to be extremely hard, and difficult to pulverize.

SANGUIS *Draconis*, in pharmacy. See DRAGON'S-BLOOD.

SANHEDRIN*, or SANHEDRIM, SYNEDRIUM, among the ancient Jews, the ſupreme council, or court of judicature of their republic; wherein were diſpatched all the great affairs both of religion, and policy.

* The word is derived from the Greek Συνεδριον, a council, aſſembly, or company of people ſitting together; from συν *con.* together, and ἕδρα ſeat.

Many of the learned agree, that it was inſtituted by Moſes, Numbers ch. xi. and conſiſted at firſt of ſeventy perſons, all inſpired of the Holy Ghoſt, who judged finally of all cauſes and affairs; and that it ſubſiſted, without intermiſſion, from Moſes to Eſdras.—Others will have it, that the council of ſeventy elders, eſtabliſhed by Moſes, Numb. ch. xi. was temporary, and did not hold after his death; adding, that we find no ſign of any ſuch perpetual and infallible tribunal throughout the whole Old Teſtament.

The Jews, however, contend ſtrenuouſly for the antiquity of their great *ſanhedrin:* M. Simon backs and defends their proofs, and M. le Clerc attacks them.—Be the origin and eſtabliſhment of the *ſanhedrin* how it will, it is certain it was ſubſiſting in the time of our Saviour; that it was held at Jeruſalem; and that the deciſion of all the moſt important affairs belonged to it.—The preſident of this aſſembly was called *Naſi.*

There were ſeveral inferior *ſanhedrim* in Paleſtine, all depending on the great *ſanhedrin* at Jeruſalem. The inferior *ſanhedrim* conſiſted each of twenty-three perſons; and there was one in each city and town. Some ſay, that to have a right to hold a *ſanhedrin*, it was requiſite there were one hundred and twenty inhabitants in the place. Where the inhabitants came ſhort of the number of one hundred and twenty, they only eſtabliſhed three judges.

Into the great as well as the inferior *ſanhedrim* were admitted prieſts, levites, and laymen, of all the tribes, provided they were of noble extraction, rich, wiſe, without any blemiſh of body, and expert in magick; which laſt was eſteemed a neceſſary qualification, to enable them to obviate and deſtroy it: very old people and eunuchs were excluded.

In each *ſanhedrin* there were two ſcribes; the one to write down the ſuffrages of thoſe who were for condemnation; the other to take down the ſuffrages of thoſe who were for abſolution.

Selden has a learned work on the ſubject of the Jewiſh *ſanhedrim, de Synedriis*, printed at London in 1635, in three volumes, quarto.

SANIES, in medicine, a thin, limpid, ſerous matter; iſſuing out of wounds, and ulcers: by the Greeks called Ιχωρ. See ICHOR.

Galen compares it to whey: it differs from *pus*, which is thicker and whiter. See PUS.

SANTALUM, SAUNDERS, a hard, heavy, odoriferous, medicinal wood, brought from the Eaſt-Indies, of ſome repute, as a drier, abſorbent, and ſweetner.

There are *ſantals* of three different colours; *citrine*, *white*, and *red.* The trees whence they are taken are all of the ſame kind; and it is ſuppoſed their different colours only ariſe from the difference of climates where they grow; ſome ſay from the different parts of the tree they are taken from.

They are all held to be a little aſtringent, to ſtrengthen the heart and brain, and to ſtop vomiting; and are frequently uſed in diet-drinks, and medicated ales, againſt ſcorbutick complaints.

The tree is about the height of the European walnut-tree: its leaves reſemble thoſe of the lentiſcus; its flowers blue, bordering on black; its fruit of the ſize of our cherry, green at firſt, but blackening as it ripens, and of a faint taſte.

The *citrine-ſantal* is eſteemed the beſt: it is brought from China, and Siam; is yellow, heavy, and of a good ſmell; uſed in medicine, as alſo by the perfumers.

The *white-ſantal* is leſs odoriferous; it is brought from the iſle of Timor.

The *red* has the leaſt ſmell of the three; but is the moſt aſtringent; it is brought from the iſland Tamaſſarin, and the coaſt of Coromondel.

SAP*, in ſpeaking of plants, denotes *juice.* See JUICE, PLANT, VEGETATION, &c.

* The word is formed from the Saxon *Sæpe*, which ſignifies the ſame; and that according to Mylius from the Greek οπος, *ſuccus*, juice.—Whence alſo the Latin *Sapa*, uſed for an inſpiſſated juice. See ROB.

Circulation of the SAP. See CIRCULATION *of the Sap.*

Procurement of the SAP *for œconomical uſes.* See TAPPING.

SAP, or SAPP, in building. To *ſap* a wall, &c. is to dig or open a hole in the ground at the foot of a wall, &c. to bring it down all at once for want of ſupport.

To *ſap*, according to Daviler, is to undermine a work with hammers, pickaxes, mattocks, &c. *viz.* a bank, or hillock, by propping it up, digging underneath it, and then burning the props, or ſtays; or a rock, by digging a mine underneath it.

To demoliſh the thick, firm walls of old caſtles, &c. *ſapping* is much the readieſt way.

SAP, in the military art, denotes a work carried on under ground, to gain the deſcent of a ditch, counterſcarp, or the like.

It is performed by digging a deep trench, deſcending by ſteps from top to bottom, under a corridor; carrying it as far as the bottom of the ditch, when that is dry, or the ſurface of the water when wet.

When the covert-way is well defended by muſketeers, the beſiegers make their way down into it by *ſapping. V. Tab. Fortif. fig.* 21. *n.* 5. When they are got near the foot of the glacis, the trench is carried on directly forwards; the workmen covering themſelves with blinds, wool-packs, ſand-bags, and mantelets upon wheels. They alſo make epaulements, or traverſes, on each ſide, to lodge a good body of men.

The *ſap* is uſually made five or ſix fathom from the ſaliant angle of the glacis, where the men are only covered ſideways; for which reaſon they lay planks over-head with hurdles, and earth above them.

When they have forced the enemy to quit the covert-way, the pioneers immediately with ſand-bags, wool-packs, or other fences, make a lodgment, and cover themſelves as well as they can, from the fire of the oppoſite baſtion.

SAPATA. See the article ZOPATA.

SAPHENA, in anatomy, a vein which ariſing over the malleolus internus, up along the leg, and the inner part of the thigh, diſcharges itſelf, near the groin, into the crural vein. See *Tab. Anat. Angeiol. fig.* 6. *n.* 44.

It is this vein they uſually open when they bleed in the foot, for ſuppreſſion of the menſes.

It has its name, probably, from σαφης, *manifeſtus*, as lying plain in ſight.

SAPHETA, in architecture, is the board over the top of a window, placed parallel and oppoſite to the window-ſtool at the bottom.

SAPIENTIAL, SAPIENTIALIS, an epithet applied to certain books of ſcripture, calculated for our inſtruction and improvement in prudence, or moral wiſdom; thus called, in contra-diſtinction to the hiſtorical and prophetical books. See BIBLE, &c.

The *ſapiential* books are Proverbs, Canticles, Eccleſiaſtes, the Pſalms, and Job; though ſome reckon this laſt among the hiſtorical books. See HAGIOGRAPHER.

SAPIENTIÆ *Dentes*, the two laſt or inmoſt of the dentes molares of the upper jaw, one on each ſide; thus called becauſe they appear not till perſons are grown. See TOOTH.

SAPP. See the article SAP.

SAPPHIC, in poetry, a kind of verſe much uſed by the Greeks, and Latins; denominated from the inventreſs *Sappho.*

The *Sapphic* verſe conſiſts of eleven ſyllables, or five feet; whereof the firſt, fourth, and fifth, are trochees, the ſecond a ſpondee, and the third a dactyl, as in

Integer vitæ ſceleriſq; purus,
Non eget Mauri jaculis nec arcu. HOR.

Three verſes of this kind, cloſed with an Adonic verſe, conſiſting of a dactyl and ſpondee, uſually make a ſtrophe.—Though we have ſome chorus's in the ancient tragic poets, containing a much greater number of *Sapphicks* ſucceſſively.—They generally run rough, unleſs they have the cæſure after the ſecond foot.

SAPPHIRE, or SAPPHYR, SAPPHIRUS, a precious ſtone of a beautiful azure, or ſky-blue colour.

The *ſapphire* is tranſparent, yet exceedingly hard, ſo as ſcarce to bear being engraven.

Different colours conſtitute different kinds thereof; the deepeſt blues being eſteemed males, and the whiteſt females.

The *ſapphires* of Pegu are the moſt eſteemed. They are found in the ſame mines with the rubies. There are ſome alſo brought from the kingdom of Calecut, Cananor, and Ceylon; from which laſt place we ſhould be furniſhed with abundance, if the king of the iſland did not prohibit all commerce thereof with foreigners.

The ſoft *water-ſapphires* of Bohemia and Sileſia are of ſome account, though far inferior to the oriental ones, both in the brightneſs of their blue, and the firmneſs of their texture.

Many people value the *ſapphire* beyond the ruby; and give it the ſecond place among precious ſtones, *viz.* that next the diamond: others give that place to the ruby.

Some authors affirm, that a *ſapphire* being heated to a certain degree, between two crucibles luted together, loſes all its colour, and becomes perfectly white; ſo as to deceive even the jewellers themſelves, and make it paſs for a diamond.

Our druggiſts ſell two kinds of *ſapphires* uſed in the confection of hyacinth; the one red, the other blackiſh. The laſt, by reaſon of the deep tincture they give that medicine, are very improperly uſed there: the former are little reddiſh ſtones, of the ſize of pins-heads, very hard, and difficult to pulverize.

Some rank the cat's eye, *oculus cati*, in the number of *ſapphires.* This is a gem remarkable for a fine diverſity of colours, as well as for its hardneſs, which bears a poliſh equal with that of the true *ſapphire.*

The chymiſts make ſeveral preparations of *ſapphire*; as a ſalt, a tincture, an eſſence, a water, an oil, *&c.* and there are few diſeaſes but they pretend themſelves able to cure by remedies compoſed thereof.

The ſuperſtitious attribute ſtill more ſtrange virtues to this ſtone; as, that it grows foul, and loſes its beauty, when wore by a perſon that is letcherous, *&c.*

The rabbins hold, that Moſes's rod, and the tables he received on mount Sinai, were of *ſapphire.*—The reaſon is, that in the Hebrew the fineſt things are all called *ſapphires*; whence, in ſcripture, the throne of God is ſaid to reſemble a *ſapphire*.

SAPPHIRE-RUBIES, are certain precious ſtones, between blue and red; which, in effect, are nothing but rubies, whoſe colour is not yet perfectly formed. See RUBY.

SARABAITES *, SARABAITÆ, a name anciently given to vagabond and ſtrolling monks. See MONK.

* The word is derived from the Hebrew סרב *ſarab*, to rebel. St. Benedict gives a frightful idea of theſe *Sarabaites* in the firſt chapter of his rule: Caſſian does not ſpeak a whit more favourably of them in his fourteenth conference; nor St. Jerom in his letter to Euſtochium.

Caſſian calls them, *Renuitæ*; *quia jugum regularis diſciplinæ renuunt*.

SARABAND, a muſical compoſition in triple time; being, in reality, no more than a minuet, whoſe motions are ſlow, and ſerious.

Saraband is alſo a dance to the ſame meaſure, uſually terminating when the hand riſes; whereby it is diſtinguiſhed from the courant, which ends when the hand that beats time, falls.

The *ſaraband* is ſaid to be derived originally from the Saracens, as well as the chacone: it had its name, according to ſome authors, from a comedian called *Sarabande*, who firſt danced it in France. Others derive the name from the Spaniſh *ſarao*, a ball: it is uſually danced to the ſound of the guitarre, or caſtanettes.

SARCASM, SARCASMUS, in rhetorick, a keen, bitter irony, whereby the orator ſcoffs, and inſults his adverſary. See IRONY.

Such was that of the Jews to our Saviour: *Thou who deſtroyeſt the temple, and raiſeſt it in three days, ſave thyſelf,* &c. and again, *He ſaved others, himſelf he cannot ſave.* Or that of Turnus to a Trojan ſlain by him, in Virgil.

En agros, & quam bello, Trojane, petiſti
Heſperiam metire jacens! Hæc præmia qui me
Ferro auſi tentare ferunt: ſic mœnia condunt!

SARCOCELE *, Σαρκοκηλη, in medicine, a fleſhy, ſcirrhous excreſcence, very hard, yet indolent; riſing up by little and little about the teſticles, or on the inner membrane of the ſcrotum.

* The word is formed from the Greek σαρξ *caro*, fleſh, and κηλη tumor.

Sometimes indeed it is painful; in which caſe there is danger of its degenerating into a cancer.

It uſually owes its origin to ſome external cauſe, as a blow, a bruiſe, or contuſion. Such accidents occaſion the nutritious juices to ſtop, and to be collected in great quantities in the relaxed or compreſſed pores of thoſe parts, by which means is formed that kind of tumour called *ſarcocele*, by ſome *hernia carnoſa*.

It is a very troubleſome and obſtinate diſeaſe, and is frequently incurable by any other means than caſtration, or cutting off the teſticle. See CASTRATION.

SARCOCOLLA, Σαρκοκολλα, a gum oozing out of a thorny tree, either with, or without inciſions.

Neither authors, nor merchants are agreed as to the place where it grows: ſome ſay it is in Perſia, others, in Arabia Deſerta.—It comes either in grains, or in tears of different colours; ſometimes white, ſometimes yellow, and ſometimes red, but all equally good, provided they be very dry. Their taſte is bitter, accompanied with ſomewhat of a diſagreeable ſweetneſs.

It is eſteemed warm, and drying; very good to conſolidate and heal wounds; whence its name—from the Greek, σαρξ fleſh, and κολλα glue.

It is ſometimes alſo uſed in collyria to ſtop defluxions, and take off ſpecks in the eye.

SARCOLOGY, in anatomy, a diſcourſe on the fleſh, or the ſoft parts of the human body. See FLESH.

Anatomy is divided into two principal parts; *oſteology* and *ſarcology*. The firſt whereof treats of the bones, and cartilages; the ſecond of the fleſh and ſoft parts. See ANATOMY.

SARCOMA, Σαρκωμα, in medicine, a fleſhy, fungous excreſcence ariſing in the noſtrils, or other parts; nearly reſembling a polypus. See FUNGUS.

The *ſarcoma* chiefly differs from the polypus, as the latter grows from the part by ſeveral roots; the former by one continued root, or without any roots at all. See POLYPUS.

Every polypus is a *ſarcoma*; but not *vice verſa*.—The *ſarcoma* frequently degenerates into a polypus.

SARCOMPHALUM *, Σαρκομφαλον, in medicine, *&c.* a fleſhy excreſcence of the navel.

* The word is formed from the Greek σαρξ fleſh, and ομφαλος navel.

SARCOPHAGUS, Σαρκοφαγος, in antiquity, a ſort of ſtone coffin, or grave, wherein the ancients laid thoſe they had not a mind to burn. See FUNERAL.

The word, as derived from the Greek, literally ſignifies, *fleſh-eater*; becauſe at firſt, they uſed a ſort of ſtones for the making of tombs, which quickly conſumed the bodies.—The quarries from whence they dug them were near a city of Troas, named *Aſſum.*—They had the faculty to waſte away a body to nothing, ſave the teeth, in forty days.

This ſtone reſembled a reddiſh pumice-ſtone, and had a ſaltiſh taſte; they alſo made veſſels of it to cure the gout, into which they put their feet, not ſuffering them to continue there too long.

SARCOTICKS *, Σαρκωτικα, in medicine, remedies proper to fill up wounds and ulcers with new fleſh; the ſame as incarnatives. Such are ſarcocolla, dragon's-blood, frankincenſe, *&c.* See INCARNATIVE and EPULOTIC.

* The word is formed from the Greek σαρξ fleſh.

SARDIAN, SARDOIN, or *Lapis* SARDIUS, a precious ſtone of a blood colour, half tranſparent; the ſame with what we otherwiſe call a *Cornelian*. See CORNELIAN.

The moſt beautiful *Sardians*, are thoſe brought from about Babylon: thoſe of Sardinia, whence they take their name, are in the ſecond claſs. There are others, and thoſe no contemptible ones, found near St. Mauro in Albania; and other, very ſmall ones, about the Rhine, in Bohemia, Sileſia, *&c.*

To give them the greater luſtre, it is uſual in ſetting them, to lay ſilver-leaf underneath. The *Sardian* is moſt uſed for ſeals, as graving eaſily, yet taking a fine poliſh.

The author of the book falſely aſcribed to Albertus Magnus, attributes ſeveral wonderful virtues to this ſtone. See AGATE, GEM, *&c.*

SARDONIAN *Laughter*. See RISUS *Sardonius*.

SARDONYX, Σαρδονυξ, a kind of precious ſtone, partaking partly of the ſardian, and partly of the onyx.

It is ſemi-tranſparent, and reddiſh bordering on white, ſomewhat like the nail of the hand: in ſome, the red inclines to a yellow. It is brought from the Eaſt-Indies, Arabia, and Bohemia. It was anciently much uſed for fine veſſels. See AGATE and SARDIAN.

SARPLAR * *of Wool*, SARPLERA *Lanæ*, otherwiſe called a *pocket*, is half a ſack. See SACK.

* In Scotland, it is called *Serplaith*.

SARRASIN, or SARRAZIN, in fortification, a kind of portcullice, otherwiſe called an *herſe*, which is hung with ropes over the gate of a town, or fortreſs, and let fall in caſe of a ſurprize. See HERSE and PORTCULLICE.

SARSAPARILLA, SALSAPARILLA, or SARSA, a medicinal plant, growing in New Spain, Peru, *&c.* chiefly uſed in decoctions, and potions for the venereal diſeaſe; being eſteemed a great abſorbent and ſweetner; and, on that ſcore, ſometimes taken as a tea. See ROOT.

Its root, which is the part in uſe, divides itſelf into a great number of filaments, ſix or ſeven foot long; of the thickneſs of a quill: it is browniſh without ſide, and white within, only marked with two red ſtreaks. Its branches creep on the earth, or along the trunks of other trees, *&c.* as the ivy does.

To be good, it muſt be very dry, its filaments long, eaſy to cleave; and, in cleaving, muſt not yield any duſt: when boiled in water, it muſt give it a red tincture.—Some phyſicians much doubt the medicinal virtue of this root; as it does not diſcover much, either in taſte, ſmell or tincture.

There is another kind of *ſarſa*, the filaments of whoſe root are thicker, growing in the iſland Marignan, on the coaſt of Braſil: this is not eſteemed ſo good as the former.

There is a third kind brought from Muſcovy, whoſe roots are ſtill bigger, but good for nothing but to burn.

SARTORIUS, in anatomy, the *Taylor's muſcle*; a muſcle thus called, becauſe ſerving to throw one leg a-croſs the other. See MUSCLE.

It is alſo called *Longus tibiæ*, and *Faſcialis*; and is an antagoniſt to the poplitæus.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 49. *fig.* 2. *n.* 38. See alſo the article LONGUS.

SASSAFRAS, a yellow, odoriferous wood, of a briſk, aromatick ſcent, ſomewhat reſembling fennel; the produce of a tree whereof there are whole foreſts growing in Florida, Virginia, *&c.* See WOOD.

The natives call it *Pavama*, the Spaniards and French alſo, *Cinnamon-Wood*; becauſe, at the conqueſt of that country, under Ferdinand Soto, in 1558, they imagined this to have been the true cinnamon-tree.

The lignum *Saſſafras*, chiefly its bark, wherein its principal virtue is ſuppoſed to reſide, was formerly ſold at an incredible price, to be uſed with ſarſaparilla and eſquilina, in the cure of the venereal diſeaſe. It is very drying and hot, though not quite ſo much as the guaiacum.

It is ſomewhat come into faſhion in families, as a common tea, which the ſhavings of it make agreeably enough; but the ſcandal of being good in venereal caſes, is a detriment to it, and prevents a deal of good being done by it.

It is eſteemed in the gout, ſciatica, and green-ſickneſs. Chuſe that covered with a thick bark, reddiſh, and rough, of a ſharp taſte, and a ſtrong aromatic ſmell.

SASSE, in ſome of our ſtatutes, denotes a kind of wear with flood-gates, commonly uſed in navigable rivers for the damming, and looſing the ſtream of water, as occaſion requires, for the better paſſing of boats, and barges to, and from. See WEAR.

This, in the weſt of England, is called a *Lock*; in the river Lee, a *Turn-pike*, and in other places a *Sluice.* See SLUICE.

SATELLITE, SATELLES, *Guard*; a perſon attending on another, either for his ſafety, or to be ready to execute his pleaſure. See GUARD, *&c.*

Among the earſtern emperors, *Satellite* expreſſed the dignity or office of captain of the life-guard.

The term was afterwards applied to the vaſſals of lords; and afterwards, to ſuch as held fees, called *Sergeanties.* See SERGEANTY.

SATELLITES, in aſtronomy, certain ſecundary planets, moving round the other planets, as the moon does round the earth; thus called, becauſe always found attending them from riſing to ſetting, and making the tour of the ſun together with them. See PLANET.

The *Satellites* move round their primary planets, as their centres, by the ſame laws as thoſe primary ones do round their centre, the ſun.—For the phyſical cauſe of their motions, ſee GRAVITY: ſee alſo SYSTEM.

The words moon, and *Satellite*, are ſometimes uſed indifferently; and thus we ſay, either Jupiter's moons, or Jupiter's *Satellites:* but ordinarily we diſtinguiſh; reſtraining the term *moon*, to the earth's *Satellite*; and *Satellite* to the little moons lately diſcovered about Jupiter and Saturn. See MOON.

The *Satellites* were unknown till our time; as needing the aſſiſtance of the teleſcope to render them viſible. See TELESCOPE, and ASTRONOMY.

We do not know of any *Satellites*, beſides thoſe juſt mentioned; nor is there any great foundation to hope that more ſhall be diſcovered hereafter, as the longeſt, and the moſt exquiſite teleſcopes have already been applied.

SATELLITES *of Jupiter*, are four little ſecundary planets, performing their revolutions about Jupiter, as that planet does round about the ſun. See JUPITER.

Simon Marius, mathematician of the elector of Brandenburgh, about the end of November in 1609, obſerved three little ſtars moving round Jupiter's body, and proceeding along with him; and in January 1610, found a fourth.—In January 1610, Galileo obſerved the ſame in Italy; and the ſame year publiſhed his obſervations; from which time commenced the obſervation of the circumjovial *Satellites.*

Galileo, in honour of his patron, firſt called them *aſtra Medicæa*, Medicæan ſtars: Marius, the firſt diſcoverer, called that next Jupiter, *Mercurius Jovialis*, Jupiter's Mercury; the ſecond, *Venus Jovialis*, Jupiter's Venus; the third *Jupiter Jovialis*, and the fourth *Saturnus Jovialis*, Jupiter's Saturn.

Indeed, Anthony Maria Schyrlæus de Rheita, a capuchin of Cologne, imagined, that, beſides the four known *Satellites* of Jupiter, he had diſcovered five more, the 29th of December, *anno* 1642, and in honour of Urban VIII. the pope then reigning, denominated them *Sidera Urbanoctoviana.*—But upon Nauda's communicating the obſervation to Gaſſendus, who had obſerved Jupiter on the ſame day, he ſoon perceived that the monk had miſtaken five fixed ſtars, in the effuſion of the water of Aquarius, marked in Tycho's catalogue 24, 25, 26, 27 and 28, for *Satellites* of Jupiter: whence it is no wonder they ſhould appear to the diſcoverer to move a contrary way to that of the reſt, *viz.* from weſt to eaſt. See *Epiſt. Gaſſend. ad Gab. Naud. de novem ſtellis circa Jovem viſis.*

Phænomena and nature of Jupiter's SATELLITES.—1°. They all diſappear in a clear ſky, when Jupiter interpoſes between them and the ſun; that is, are eclipſed by him.

Hence it follows, that they are deſtitute of light, when the ſun's rays, which are propagated in right lines, are intercepted by Jupiter: and hence it follows, that they are opaque bodies like our moon, and are illumined by the ſun. —And hence, ſince Jupiter does not illumine his *Satellites* when placed behind him; he himſelf, in that ſide oppoſite to the ſun, is deſtitute of all light.

2°. When the *Satellites* are interpoſed between Jupiter and the ſun, a round macula or ſpot is obſerved in Jupiter's diſk; which is ſometimes found bigger even than the *Satellite* itſelf.

Hence, ſince the *Satellites* are opaque bodies, and are illumined by the ſun, and muſt therefore project a ſhadow, oppoſite to the ſun; the round ſpots ſeen in Jupiter, are the ſhadows of the *Satellites.*—Hence alſo, ſince the interſection of the ſhadow is a circle, the ſhadow itſelf is conical: and hence it follows, that the figure of the *Satellites*, at leaſt, as to ſenſe, is ſpherical.

3°. If when the earth is between Jupiter and the ſun, any of the *Satellites* happen to be between the ſame, its light diſappears, and is loſt in Jupiter's light.—Thus M. Maraldi tells us, that on the 26th of March 1707, through a teleſcope of thirty-four foot, he obſerved the fourth of Jupiter's moons paſſing over his body, in form of a dark ſpot; but it had no ſooner got off the diſk, than it reſumed its uſual brightneſs. A like ſpot he obſerved on the 4th of April, from an immerſion of the third *Satellite*; but, on the 11th of April, upon watching an immerſion of the ſame *Satellite*, he found it appeared wholly, without leaving any ſpot at all.—The ſame phænomenon was alſo obſerved at other times by M. Caſſini.

In effect, both Caſſini and Maraldi have frequently obſerved very ſurprizing changes in the apparent magnitudes of the *Satellites*, when there was nothing in their diſtance, either from the earth, ſun, or Jupiter, to occaſion ſuch variations.—*E. gr.* The fourth *Satellite*, which is frequently the leaſt of all, ſometimes appears the biggeſt: and the third, which is ordinarily the biggeſt, ſometimes only appears equal, and ſometimes leſs, than any of the reſt.

Hence, ſince Jupiter's *Satellites* are illumined by the ſun, even when immerged in the light of Jupiter, and yet, notwithſtanding this, ſometimes appear dark, and ſometimes diſappear; there muſt be ſome changes in their atmoſpheres, to prevent the equable reflection of the ſun's rays, from the ſeveral parts of the atmoſphere.—To the ſame cauſe it is owing that their ſhadows are ſometimes ſeen bigger than themſelves.

Periodical times of Jupiter's SATELLITES.—The periods, or revolutions of Jupiter's *Satellites* are found from their conjunctions with Jupiter, after the ſame manner as thoſe of the primary planets are found from their oppoſitions to the ſun. See PERIOD, *&c.*

By this method, Caſſini found the periods of the ſeveral *Satellites* to be as follow.

Firſt *Satellite*	1 Day	18 Hours	28 Min.	36 Seconds
Second *Satellite*	3	13	18	52
Third *Satellite*	7	3	59	40
Fourth *Satellite*	16	18	05	06

Diſtance of Jupiter's SATELLITES *from Jupiter.*—As in the primary planets, with regard to the ſun, ſo in the *Satellites*, with regard to their primaries, the ſquares of the periodical times are in a triplicate ratio of their diſtances therefrom.—To determine the diſtance by obſervation, they meaſure them with a micrometer, in ſemi-diameters of Jupiter.—Theſe diſtances, according to Caſſini, are as follow.

The firſt *Satellite* diſtant from Jupiter's centre,	5 2/3 ſemi-diameters of Jupiter
The ſecond *Satellite*	9 ſemi-diameters
The third *Satellite*	14
The fourth *Satellite*	25 and one 3d.

Hence, as the ſemi-diameter of Jupiter is equal to 27 8/11 ſemi-diameters of the earth, the diſtance of the firſt *Satellite* from the centre of Jupiter is 166 ſemi-diameters of the earth; that of the ſecond 249 and a half; that of the third 388; and that of the fourth 884.

Eclipſes of Jupiter's SATELLITES. See ECLIPSE.

SATELLITES *of Saturn*, are five little ſtars revolving about Saturn. See SATURN.

The firſt was diſcovered by M. Huygens, *anno* 1655, March the 25th, by means of a teleſcope twelve foot long: the other four, at different times, by M. Caſſini, *viz.* thoſe two next Saturn, in March 1684, by help of Campani's Glaſſes, of one hundred, and one hundred and thirty-ſix foot long: the third in December 1672, by a teleſcope of Campani's, of thirty-five foot; and the fifth (that of Huygens being the fourth) in October 1671, by a teleſcope of ſeventeen foot. Moſt, perhaps all, of the phænomena obſerved of Jupiter's *Satellites*, are alſo found exhibited by thoſe of Saturn. Thus, they are found ſometimes bigger, and ſometimes leſs: the fifth is ſometimes, alſo, found eclipſed, *&c.* And hence, there is no doubt, but they are of the ſame nature, *&c.* See SATELLITES *of Jupiter.*

The periodical times of the SATELLITES *of Saturn, according to M. Caſſini, are as follow.*

Firſt *Satellite*	1 Day	21 Hours	18 Min.	31 Seconds.
Second *Satellite*	2	17	41	27
Third *Satellite*	4	13	47	16
Fourth *Satellite*	15	22	41	11
Fifth *Satellite*	74	7	53	57

The diſtances of Saturn's SATELLITES *from his centre, according to the ſame M. Caſſini, are as follow.*

	Semi-diam. of Saturn, or	Diameter of Saturn's ring.
Firſt *Satellite*	4 3/8	1
Second *Satellite*	5 3/5	1 1/4
Third *Satellite*	8	1 2/3
Fourth *Satellite*	18	4
Fifth *Satellite*	54	10 1/2

The great diſtance between the fourth and fifth *Satellite*, gave occaſion to Huygens to ſuſpect that there might be ſome intermediate one; or elſe, that the fifth might have ſome other *Satellite* moving round it, as its centre.

Dr. Halley, in the Philoſophical Tranſactions, gives us a correction of the theory of the motion of the fourth or Huygenian *Satellite.*—Its true period he makes 15 days, 22 hours, 41 minutes, 6 ſeconds; its diurnal motion, 22° 34′ 38″ 18‴; its diſtance from the centre of Saturn, 4 diameters of the ring; and its orbit to be little or nothing diſtant from that of the ring, interſecting the orbit of Saturn under an angle of 23 ½ degrees.

SATIR and SATIRE. See the article SATYR.

SATISFACIENDUM *capias ad.* See CAPIAS.

SATRAPA, or SATRAPES, in antiquity, the governor of a province among the ancient Perſians.

King Darius uſually walked attended by his principal lords, and *ſatrapæ*, Q. Curtius. The kingdom of Perſia was divided into *ſatrapies*, or juriſdictions of *ſatrapæ*.

The word is originally Perſian, ſignifying, ſtrictly, admiral, or commander of a naval army; but was afterwards applied indifferently to all governors of provinces.—In which ſenſe it was alſo borrowed by the Greeks, who uſed σατραπης in the ſame ſignification.

We alſo meet with the word in ſome ancient Engliſh charters of king Ethelred; where the lords, who ſign next after the dukes, take the title of *ſatrapes* of the king.—Du Cange takes the word here to ſignify miniſters of the king.

SATTIN*, or SATIN, a kind of ſilken ſtuff, very ſmooth, and ſhining, the warp whereof is very fine, and ſtands out; the woof coarſer, and hid underneath: on which depends that gloſs, and beauty, which gives it its price.

* The word comes from the French *Satin*, which Menage derives further from the Latin *Seta*, a briſtle, or hair; others from the Hebrew *Sadin*; or from the old French *Sade* and *Sadinet*, handſome, genteel.

There are ſome *ſattins* quite plain, others wrought, ſome flowered with gold or ſilk, others ſtriped, *&c.*—All the varieties in the fabric of *ſattins* are made by uſing new warps, or woofs. The fineſt *ſattins* are thoſe of Florence and Genoa; yet, the French will not allow thoſe of Lyons any thing inferior thereto.—The *ſattins* of Bruges have their warp of ſilk, and their woof of thread.

Indian *ſattins*, or *ſattins* of China, are ſilken ſtuffs, much like thoſe manufactured in Europe.—Of theſe, ſome are plain, either white, or of other colours; others worked, either with gold, or ſilk, flowered, damaſked, ſtriped, *&c.* They are moſtly valued becauſe of their cleaning, and bleaching eaſily, without loſing any thing of their luſtre. In other reſpects they are inferior to thoſe of Europe.

F. le Comte obſerves, that the Chineſe prepare their *ſattins* in oil, to give them the greater luſtre; but this makes the duſt liable to hang to them.

SATTINET*, or SATTINADE, a very ſlight, thin ſort of ſattin, chiefly uſed by the ladies for ſummer night-gowns, *&c.* and ordinarily ſtriped.

* The word is a diminutive of *Sattin*.

SATURANTIA, is ſometimes uſed in the ſame ſenſe as *Abſorbents*. See ABSORBENT.

SATURDAY-STOP, a ſpace of time, in which of old it was not lawful to take ſalmons, in the north, *viz.* from even-ſong on Saturday, till ſun-riſing on Monday.

SATURN, in aſtronomy, one of the primary planets; being that which is furtheſt from the earth, and the ſun, and whoſe motion is the ſloweſt: thus characterized, ♄. See PLANET.

Saturn ſhines but with a feeble light, by reaſon of its diſtance, on which account, though the biggeſt of all the planets, it appears the ſmalleſt, See PLANET.

The period of *Saturn*, or the ſpace of time wherein he revolves round the ſun, which makes his year, according to Kepler, is 29 years, 174 days, 4 hours, 58 minutes, 25 ſeconds, and 30 thirds; whence his diurnal motion muſt be 2 minutes, 0 ſeconds, 36 thirds. Though de la Hire makes his diurnal motion 2 minutes 1 ſecond. See REVOLUTION.—The inclination of his plane to that of the ecliptick, Kepler makes 2°. 32′, de la Hire, 2°. 33′. See INCLINATION.—Its mean diſtance from the ſun is 326925 ſemi-diameters of the earth; and from the earth 210000 of the ſame. See DISTANCE.—Its ſmalleſt diameter, according to Huygens, is 30 ſeconds: the proportion of its diameter to that of the earth, as 20 to 1; of its ſurface to that of the earth, as 400 to 1; of its ſolidity to that of the earth, as 1 to 8000. See DIAMETER and SEMI-DIAMETER.

Dr. Halley obſerves, in the preface to his catalogue of the ſouthern ſtars, that he has found *Saturn* to have a ſlower motion than is aſſigned him in the tables: this irregularity, we may hope, is abundantly rectified in his own tables now in the preſs.

It is doubted whether or no *Saturn*, like the other planets, revolves on his axis: it does not appear from any aſtronomical obſervations that he does; and there is one circumſtance that ſhould ſeem to argue the contrary, *viz.* that whereas the earth, and other planets, which we know do revolve on their axis, have their equatorial diameter greater than their polar, nothing like this is obſerved in *Saturn.* See EARTH.

The diſtance of *Saturn* from the ſun being ten times greater than that of the earth from the ſame, it is found, that the apparent diameter of the ſun ſeen from him, will not exceed 3 minutes, which is but little more than twice the diameter of Venus.—The ſun's diſk, therefore, to an inhabitant of *Saturn*, will appear 100 times leſs than it does to us, and both its light and heat be diminiſhed in the ſame proportion. See SUN.

The phaſes of *Saturn* are very various and extraordinary, and long perplexed the aſtronomers, who could not divine the meaning of ſuch irregularity: thus Hevelius obſerved him to be ſometimes *monoſpherical*, ſometimes *triſpherical*, *ſpherico-anſated*, *elliptico-anſated*, and *ſpherico-cuſpidated*.—But Huygens plainly ſhews, that all theſe monſtrous appearances are owing to the imperfection of the teleſcopes that author had uſed. Huygens, upon obſerving him very attentively with much better glaſſes, reduced all his phaſes to three principal ones, *viz.* *round*, *brachiated*, and *anſated*. See PHASES, ANSÆ, *&c.*

One thing *Saturn* has peculiar to himſelf, *viz.* a ring which ſurrounds his middle like an arch, or like the horizon of a globe, without touching him any where; the diameter thereof more than double that of the planet which it ſurrounds; the former containing 45 diameters of the earth, the latter only 20. When raiſed enough to be out of the ſhadow of the body of *Saturn*, it reflects the light of the ſun very ſtrongly. The thickneſs of the ring, Dr. Keill obſerves, takes up one half of the ſpace between its outer or convex ſurface, and the ſurface of the planet.

This ring is found to be an opaque, ſolid, but ſmooth, and even body.—It was Galileo firſt diſcovered that the figure of *Saturn* was not round; but it was Huygens firſt found that its inequality was in form of a ring; the diſcovery of which he publiſhed in 1659, in his *Syſtema Saturnianum.*—It is doubted whether or no the ring revolves round the planet? its uſe and deſign are ſtill a myſtery.—For its phænomena, *&c.* ſee RING.

Saturn performs his courſe round the ſun, attended with five ſatellites, or ſecondary planets; the periods, diſtances, *&c.* whereof, ſee under SATELLITES.

SATURN, in chymiſtry, ſignifies *lead*; in regard that metal is ſuppoſed to lie immediately under the influence of this planet. See LEAD.

SATURN, in heraldry, denotes the black colour in the coats of arms of ſovereign princes; anſwering to diamond in the coats of noblemen; and ſable in thoſe of gentlemen. See SABLE, *&c.*

SATURNALIA; in antiquity, feaſts celebrated among the Romans, in honour of the god Saturn. See FEAST.

The *Saturnalia* held three days; beginning on the 16th, others ſay, the 17th, and others the 18th day of December.

During the ſolemnity the ſlaves were reputed maſters; they were allowed to ſay any thing; and in fine, were ſerved at table by the maſters themſelves.—Every thing run into debauchery and diſſoluteneſs, and nothing was heard or ſeen in the city of Rome, but the din, riot, and diſorder of a people wholly abandoned to joy, and pleaſure.

M. Dacier obſerves, that the *Saturnalia* were not only celebrated in honour of Saturn, but alſo to keep up the remembrance of the golden age, when all the world was on a level. It was a piece of religion not to begin any war, or execute any criminal during this feaſt.

The *Saturnalia* were not only obſerved at Rome, but alſo in Greece; and were, in reality, much older than Rome itſelf.—Some aſcribe their inſtitution to the Pelaſgi, who were caſt upon the iſland of Delos; others to Hercules, and others to Janus.—Goropius Becanus makes Noah the author of them. *Orig. lib.* 4. That patriarch, he tells us, in the ark, inſtituted a feaſt to be held in the tenth month, in memory of this, that in that month, the tops of the mountains began to appear above the water; and this he makes the origin of the *Saturnalia*: but it is very probable the year then begun in autumn, and of conſequence December could not be the tenth month. Voſſius goes ſtill higher, and will have it, that the Saturn, in honour of whom this feaſt was inſtituted, was Adam.

SATURNILLIANS. See the article SATURNINIANS.

SATURNINE, or SATURNIAN, a term applied to perſons of dark, ſullen, melancholic complections; as being ſuppoſed under the predominancy of Saturn, or at whoſe births Saturn was the aſcendant.

SATURNINIANS, or SATURNILLIANS, a ſect of ancient Gnoſticks; thus called from their chief *Saturnillus*, or *Saturninus*, a diſciple of Menander, the famous Gnoſtick. See GNOSTICK.

Saturnillus taught the ſame errors with his maſter, in Syria. See MENANDRIANS.

SATYR*, SATYRUS, ΣΑΤΥΡΟΣ, in the heathen theology, a fabulous kind of ſemi-god, who with the Fauns, and Sylvans, preſided over groves, and foreſts, under the direction of Pan. See GOD, HERO, *&c.*

* The word is uſually derived from *Sathe*, σαθη, which, in the ancient Greek, ſignified the virile member; theſe deities being ſuppoſed much addicted to laſciviouſneſs.

The *Satyrs* were painted half men, half goats: the upper part was human, excepting for horns on the head; the lower brutal, with the tail and legs of a goat; the whole covered with hair.

The poets uſually confound the *Satyrs*, Silvans, Sileni, Fauns, and Panes. See SILENI and FAUNS.

Nonnus, in his *Dionyſiaca*, makes the *Satyrs* the offspring of Mercury, and a Doric nymph, called Tpthima, and gives us the names of ſeveral, *viz.* Pæminius, Thyaſus, Hypſichorus,

chorus, Oriſtas, Apæus, Phlegræus, Lycon, &c.—Memnon, in his book againſt the tyrants of Heraclea, derives the *Satyrs* from Bacchus, and a Naiad, called Nicæa.

Satyrs made part of the dramatis perſonæ in the ancient Greek tragedies, which gave riſe to a new ſpecies of poetry, called *ſatyrical.* See the article following.

SATYR *, **SATYRA**, or **SATIRA**, in a literary ſenſe, ſignifies all manner of diſcourſe wherein any perſon is reprehended; but more particularly a poem, wherein mens follies, and vices are wittily expoſed, in order to their reformation.

* The origin of the word has been the occaſion of a notable diſpute among criticks. The common opinion, ſupported by Scaliger, Heinſius and Voſſius, deduces it from the Greek Σατυροι, *Satyrs,* a ſort of Sylvan deities, by the Romans called *Fauni,* to whoſe petulancy and wantonneſs this ſort of compoſition is ſuppoſed to bear ſome reſemblance.—On which footing *ſatyr* is conſidered as a poem of a wanton, and licentious nature, which like the *Satyrs,* turns things upſide down to find occaſion for cenſure, and ridicule.—Caſaubon, on the contrary, followed by Spanheim and Dacier, derives the Roman *ſatyr* not from the Grecian divinities called *Satyrs,* to which they aſſert it bears no relation, but from the Latin *ſatur,* uſed for *plenum* full, a thing to which nothing is wanting.—Thus it is *ſatur color* [a], denotes wool which has ſufficiently imbibed the colour, ſo that its dye cannot be further heightened: ſo *ſatur meſſis* denoted a plentiful harveſt [b]; and *ſatur geſtus,* a various one .—From this *ſatur* came *ſatura,* which was alſo written *ſatira* with an *i,* as *maximus* for *maxumus*; and *optimus* for *optumus.* But *ſatura,* it is to be obſerved, is an adjective, referring to a ſubſtantive underſtood, which here is *lanx*; *ſatura lanx* being the name of a baſon filled with all manner of fruits, which the Romans offered yearly to Ceres and Bacchus, as their firſt fruits. Thus the grammarian Diomedes: *Lanx referta variis multiſque primitiis, ſacris Cereris inferebatur, & a copia & ſaturitate rei, ſatura vocabatur.* Thence alſo the word *ſatura* was applied to other mixtures; particularly to a diſh conſiſting of ſeveral ſorts of meats: *Quoddam genus farciminis multis rebus refertum ſaturam dicit Varro vocitari* [d]. And the ſame term was alſo tranſlated to works of genius: thus, *leges ſaturæ* denoted laws conſiſting of many heads or titles, as in Feſtus: *ſatura eſt lex multis aliis legibus conferta.*—And the ancient Gloſſ. *ſatura* Νομος πολλα περιεχων. Such, *e. gr.* is this, *Vultiſne, jubetiſne cum Jugurtha bellum componatur, & fœdus feriatur: elephantos tradat, item omnes tranſfugas, &c.*—Hence alſo a thing was ſaid *per ſaturam fieri,* when it was done haſtily and confuſedly: thus *per ſaturam legem ferre,* was to paſs a law confuſedly and in the lump, without collecting the votes.—Laſtly, *ſatura* alſo became the title of ſeveral books, as of that of Peſcennius Feſtus, who wrote *hiſtorias ſaturas,* or *per ſaturam.*—From the whole it is inferred, that the *ſatyrical* pieces of the poets were ſo called, as being various, and miſcellaneous compoſitions; or as Porphyrion expreſſes it, *quod multis & variis rebus hoc carmen refertum eſt.*—On this principle it is urged, the word ſhould be written in Latin with an *u* or *i, ſatura* or *ſatira,* and in Engliſh only with an *i.* They who write it with a *y,* do it as ſuppoſing with Scaliger, and others, that the Sylvan *Satyri* gave name to this compoſition, and that from *Satyrus* came *ſatyra,* which Caſaubon labours hard to diſprove, by ſhowing, that from *ſatyrus* could never be formed *ſatyra,* but *ſatyrica,* and by explaining the great difference between the Greek *ſatyric* poems and the Roman *ſatire.*—Scaliger nevertheleſs defends the ancient etymon from the Greek Σατυρος, which he makes the origin of the Latin *ſatur, ſatura lanx,* &c. which according to him were appellations firſt uſed in the ſacrifices and ceremonies of Bacchus, where *ſatyrs* were rehearſed: *Non a ſatura vel lege vel lance dicta eſt, ut fruſtra ac temere ſatagunt grammatici; quin has a ſatyris dictas puto: cum lancibus enim prodibant, & caniſtellis pomorum omni genere plenis, quibus nymphas allicerent* [e].—In effect, *ſatyrical* poetry, according to this critick, may be naturally enough deduced from the wantonneſs of the *Satyrs:* and what confirms it is, that Σατυριϛης is rendered in ancient gloſſes by *ludio*; and *ſatyrical,* by *ludicrous, ſportive,* &c. Thus Seneca's *ſatyr* is called *ludus,* and Horace and Perſius uſe *ludere* for *ſcribere ſatyras* [f].—[a] V. Plin. *Hiſt. Nat.* l. 30. c. 10. [b] Sever. *in Ætna.* v. 12. [c] Manil. l. 5. v. 480. [d] Diomed. l. 3. [e] Scal. *Poet.* l. 1. c. 12. [f] V. Dan. Heinſ. *de Satyr. Horatian.* l. 2. Lugd. 1628, 12° Fab. *Theſ.* p. 2248.

Satyr bears a near affinity to raillery, ridicule, lampoon, libel, &c. and ſtands oppoſed to panegyric. See LIBEL, PANEGYRIC, &c.—The reaſon why *ſatyrs* generally pleaſe, and panegyrics tire the readers, ſeems to be, becauſe the former are commonly true, and the latter falſe.—*V. Journ. des Scav.* T. 81. p. 294.

Horace calls his two books of *Satyrs,* indifferently either *Sermones,* or *Satyræ,* two words which at firſt ſight preſent very different ideas. See SERMONES.

The chief *ſatyriſts* among the ancients are, Horace, Juvenal and Perſius; among the moderns, Regnier and Boileau in French; and Dryden, Oldham, Rocheſter, Buckingham, Pope, Young, &c. among the Engliſh.

A *ſatyr* ought to be lively, pleaſant, moral, and full of variety, wherein Juvenal and Horace excelled, though their *ſatyrs* ought not to be read without caution.—Among the qualifications requiſite in a *ſatyriſt,* one of the moſt eſſential is good-nature: all the ſentiments which are beautiful in this way of writing muſt proceed from that quality in the author. It is good-nature produces that diſdain of all baſeneſs, vice and folly, which prompts the poet to expreſs himſelf with ſmartneſs againſt the errors of men, but without bitterneſs towards their perſons. It is this quality keeps the mind in equanimity, and never lets an offence unſeaſonably throw a man out of his character. When Virgil ſaid, he that did not hate Bavius might love Mævius, he was in perfect good humour, and was not ſo much moved at their abſurdities, as paſſionately to call them ſots, or blockheads in a direct invective, but laughed at them with a delicacy of ſcorn, without any mixture of anger.—The beſt good man with the worſt-natured muſe, was the character among us of a gentleman as famous for his humanity, as his wit. In reality, the ordinary ſubjects for *ſatyr* are ſuch as incite the greateſt indignation in the beſt tempers, and conſequently men of ſuch a make are beſt qualified for ſpeaking of them: ſuch men can behold vice and folly, when they injure perſons with whom they are wholly unacquainted, with the ſame ſeverity as others reſent the ills they feel themſelves.—In all the writings of Horace and Juvenal, there is not one ill-natured expreſſion; not one ſentence of ſeverity which does not apparently proceed from the contrary diſpoſition.—*V. Tatl.* N° 242. T. 4. p. 219. *ſeq.*

Satyr may be divided with regard to the meaſure, and kind of verſe, as well as the manner of the poem, and the character, into *narrative, dramatick, mixed,* &c.

Narrative, is a ſimple narration or recital of abuſes in the poet's own perſon.—Such is the firſt of Juvenal.

Dramatic, is that wherein ſeveral perſons diſcourſe together; whether they be nameleſs, as in the firſt of Perſius; or have names, as of Catius and Damaſippus.

Mixt, is compounded of both the former; as that fine one of Horace, *Ibam forte via ſacra.*

Grave, and animated, which inveigh with warmth and earneſtneſs againſt corruption, and vice in every ſhape.—As thoſe of Juvenal and Perſius.

Sportive, and lighter, which ſeem to play with mens follies, but in playing omit no opportunity of making them feel the laſh.—Such are thoſe of Horace, hence ſaid to be *ſermoni propiora.*

The *grave* ſort brandiſhes a naked ſword; the *ſportive* preſents a thyrſus, like that of the ancient *Satyrs* ſurrounded with vine leaves, with which it ſtabs unawares.—The heat of the former ſometimes degenerates into fury, and indignation; and the calmneſs of the latter ſometimes ſinks to mere raillery. But between the two extremes are a great number of intermediate ſpecies and degrees. The former, eſpecially when dictated by paſſion, is much eaſieſt: nothing is more difficult than to make people of taſte laugh, even at the expence of others. The attaining of this muſt be the fruit of genius and talents, rather than rules: perhaps it may be unneceſſary to explain either; ſince vanity, ſelf-love, and even malice are maſters more than ſufficient for a poet who wants not wit, and judgment. Thus Juvenal: *Si natura negat, facit indignatio verſum*; and Boileau: *La colere ſuffit & vaut un* Apollon.—V. Mourg. *Trait. de la poeſ. Franc.* c. 4. *Mem. de. Trev.* Nov. 1723. p. 2150.

In peruſing the writings of the two leaders of the two ſorts of *ſatyr* laſt mentioned, it may not be unneceſſary to conſider, that they lived in very different times: Horace was intimate with a prince of the greateſt goodneſs, and humanity; and his court was formed after his example: therefore the faults that poet falls upon were little inconſiſtencies in behaviour, falſe pretences to politeneſs, or impertinent affectations of what men were not fit for. Vices of a coarſer ſort could not come under his conſideration, or enter the palace of Auguſtus.—Juvenal, on the other hand, lived under Domitian, in whoſe reign every thing great and noble was baniſhed the habitations of the men in power. Therefore he attacks vice as it paſſes by in triumph, not as it breaks into converſation. The fall of empire, contempt of glory, and a general degeneracy of manners, are before his eyes in all his writings.—In the days of Auguſtus, to have talked like Juvenal had been madneſs, or in thoſe of Domitian, like Horace. Morality and virute are every where recommended in Horace, as became a man in a polite court, from the beauty, propriety, and convenience of purſuing them: vice and corruption are attacked by Juvenal in a ſtyle which denotes, he fears he ſhall not be heard unleſs he calls to them in their own language, with a bare-faced mention of the villanies and obſcenities of his contemporaries.—*V. Tatl.* T. 4. N°. 242. p. 219. *ſeqq.*

The Italians divide *ſatyr* into *ſerious,* as that in common uſe; and *jocoſe, giocoſa,* which they alſo call *berneſca,* and we *burleſque.* See BURLESQUE.

Their chief *ſatyriſts* in the *ſerious* way are, Dante (whom they particularly call *Principe Satirico)* Arioſto, Aretine, Ercole Bentivoglio, Luigi Alamanni, Jacobo Soldani, Lorenzo Azzolino, Salvator Roſa, Lud. Adimari, and Benedetto Menzini .—Thoſe who have excelled in the *jocoſe* kind are, Franceſco Berni (the inventor of it) Mauro, Firenzuola, Caſa, Coppetta Varchi Laſca, Caporali [b], &c.—[a] V. Bianchin *della Satira Italiana,* P. I. p. 9. Giorn. *de Letter d'Ital.* T. 20. p. 306. [b] Id. ibid. P. II. p. 25. Giorn. p. 310. *ſeqq.*

Satyr is divided into *general*, which is levelled at common abuſes wherein numbers are equally intereſted: and *perſonal*, which points out and expoſes particular characters.—Which laſt, as it affects mens reputation, on which their intereſt greatly depends, is ſcarce diſtinguiſhable from defamation, and ſcandal. See INFAMOUS and SCANDAL.

To this laſt claſs belong moſt of thoſe which bear the title of *Anti*: as the Anti-Baillet of Menage, with which M. Baillet was ſo ſtung, that he compoſed a treatiſe expreſs on *perſonal ſatyrs which bear the title Anti*; to ſhew the immorality, and unlawfulneſs of them, and their contrariety to the precepts of the goſpel. See ANTI.

It is further objected to this kind of *ſatyr*, that a publick detection, far from producing the effect it is deſigned for, reformation, is apt to drive men to deſperation, and harden them in their courſe. The excellent author of the treatiſe of the *Government of the Tongue*, ſpeaking of uncharitable truths, ſays, a diſcovery of this kind ſerves not to reclaim, but enrage the offender, and precipitate him into farther degrees of ill. Modeſty and fear of ſhame is one of thoſe natural reſtraints which the wiſdom of heaven has put on mankind: and he who once ſtumbles, may yet by a check of that bridle recover himſelf again. But when by a publick detection he is fallen under that infamy he feared, he will be then apt to diſcard all caution, and to think he owes himſelf the utmoſt pleaſures of vice at the price of his reputation.—Nay, perhaps he advances farther, and ſets up for a reverſed ſort of fame, by being eminently wicked: thus he who before was but a clandeſtine diſciple, becomes a doctor of impiety.—Doubtleſs it was this ſort of reaſoning that induced our wiſe legiſlators lately to repeal the law which put the brand of infamy in the face of felons.—In effect, where crimes are enormous, the delinquent deſerves little pity, yet the reporter may deſerve leſs.—*V. Tatl.* N°. 74. T. 2. p 154. *ſeq.* See alſo N°. 76. p. 166. *ſeq.*

Greek SATYR.—Caſaubon makes a diſtinction between the *ſatyrical* poetry of the Greeks, and the *ſatyr* of the Romans, which he maintains was peculiar to themſelves; in which alſo he ſeems to be juſtified by Quintilian. *Satyra quidem tota noſtra eſt, in qua primus inſignem laudem adeptus Lucilius* [a]. Which ſame Lucilius is alſo expreſly ſaid by Horace to have been the firſt *ſatyrical* poet [b].

——————Eſt Lucilius auſus
Primus in hunc operis componere carmina morem.

For a like reaſon Horace calls *ſatyr*, *Græcis intactum carmen*, a ſort of poetry unknown to the Greeks. Spanheim in his fine preface to the Cæſars of the emperor Julian, has ſhown five or ſix eſſential differences between thoſe two poems. The Greeks chiefly reprehended vice, *&c.* in their drama's; though they had alſo a ſort of narrative poems called *Silli*, like the Roman and our *ſatyrs*. Theſe *Silli* were cutting, or ſarcaſtick poems, as may be eaſily ſeen by the fragments of Timon's *Silli*; with this difference, that the Greek *Silli* were parodies from one end to the other, which cannot be ſaid of the Roman *ſatyr*. Or if we find ſometimes a parody, it is what the poet did not deſign, and conſequently the parody does not make the eſſence of *ſatyr*, as it does that of the *Silli* [d].—[a] V. Quint. *Inſt. Orat.* l. 10. c. 1. [b] Hor. *Sat.* 1. l. 2. v. 62. [c] I. Caſaub. *de Satyrica Græcor. Poeſi & Romanor. Satyra.* l. 2. Par. 1605.—[d] See Maſcov. *Exerc. Prior. in Horat. Satyr.* § 10. Langheinrich *Diſſ. de Timon. Sillograph. Lipſ.* 1720. & 1721. Stoll. *Introd. ad Hiſt. Liter.* P. I. c. 5. § 38.

Scaliger, notwithſtanding all this, followed by ſome of the lateſt and beſt criticks, ſcruples not to derive the *ſatyrical* poetry of the Latins from that of the Greeks. According to theſe authors, *ſatyr* in its origin was a ſort of interlude in tragedy, wherein goat-footed *Satyrs* were introduced to alleviate the diſtreſs, and with their jeers and humour diverſify the ſolemnity of the tragick ſcene: much like the mimes in comedy, and the feſcennines in the Atellan ſports. See SATYRICAL.

At firſt it was only in the tragedies exhibited in the feaſts of Bacchus, that *Satyrs*, the ſuppoſed companions and prieſts of that god, were introduced: but afterwards they made a part in the ſolemnities of the other deities. So that *ſatyr*, in its firſt inſtitution, was wholly dramatick.—V. Scalig. *Poet.* l. 1. c. 11 & 12. See alſo the article SATYRICAL.

Roman SATYR.—Dacier, after Caſaubon, traces the inſtitution of the Roman *ſatyr* very minutely; and diſtinguiſhes three ſpecies or ſtates of it: the firſt *dramatick*, the ſecond *narrative*, the third that called the *Varronian* or *Menippean ſatyr*.

The ancient Romans had been without any ſcenical entertainments for almoſt four hundred years; till chance and merriment in one of their feſtivals gave riſe to the ſaturnine and feſcennine verſes, which for ſome years ſupplied the place of theatrical performances. Theſe verſes were rude, and without any meaſure, being extemporary, and the productions of a ſavage people, who had no other inſtructors than the fumes of wine. Accordingly they were ſtuffed with groſs railleries, and accompanied with geſticulations and dances. An idea of them may be formed by conceiving a knot of country fellows, dancing in a hobbling manner, toſſing about their home-ſpun jokes, and expoſing each other's failings. Thus Horace, *Epiſt.* 1. *lib.* 2.

Feſcennina per hunc inventa licentia morem
Verſibus alternis opprobria ruſtica fudit.

The ancient Roman *ſatyrs* then were a ſort of innocent farces, where ſpectators and actors were indifferently rallied.—And thus they continued till the time of Livius Andronicus, who firſt attempted to write plays in imitation of the Greeks. This new entertainment appearing more noble and perfect, drew crowds of ſpectators, which occaſioned the *ſatyrs* to be neglected for ſome time; but they were afterwards reſumed, and tacked to the ends of comedies, much like the modern farces. They were annexed more peculiarly to the Atellane pieces, and on this occaſion changed their name *Satyrs* for that of *Exodia*, which they ever after retained. See EXODIUM.

After Livius Andronicus, Ennius having obſerved the eagerneſs of the Romans for *ſatyr*, imagined that poems not accommodated to the theatre, but retaining the gall, raillery, and pleaſantry of the theatrical *ſatyr*, would not fail of ſucceſs. Accordingly, he wrote diſcourſes under the title of *Satyrs*, in which he took the liberty of mixing ſeveral ſorts of verſe together, as hexameters with iambick trimeters, and trochaic tetrameters. In theſe pieces were found the ſame variety, raillery, alluſions, fables, and even dialogue, in a word every thing that conſtituted the character and beauty of the firſt *ſatyrs*, except the dancing and muſick. Pacuvius ſucceeded, who alſo writ *ſatyrs* in imitation of his uncle, or according to others, his grandfather Ennius. When Pacuvius was in his prime, Lucilius was born, who alſo compoſed *ſatyrs*, ſomewhat of a new turn, endeavouring to imitate the character of the ancient Greek comedy, of which the Romans had but an imperfect image in their own *ſatyrs*. This ſeems to be what Horace meant when he ſaid, *Satyr.* 1. lib. 2.

————Quid, cum eſt Lucilius auſus
Primus in hunc operis componere carmina morem.

He could not mean, that the Romans had no *ſatyrs* before Lucilius, ſince that poet was preceded by Ennius and Pacuvius, whom he imitated. Horace's deſign was only to hint that Lucilius's manner and turn was new, that he had embelliſhed this poem, inſomuch that he might be looked upon as its firſt author. But in fact, Lucilius only added to it a little more politeneſs and ſalt, without other alteration. And though like Ennius he did not mix together ſeveral ſorts of verſe in the ſame piece, yet he compoſed different poems, ſome of which were entirely hexameter, others iambic, and others trochaic, as appears from his fragments.

The third kind of *ſatyr* was the *Varronian* or *Menippean*, ſo called from its author *Varro*, the moſt learned of the Romans, and becauſe in this he imitated the manner of Menippus the Gadarenian, a cynic philoſopher.

This *ſatyr* was not only a miſcellany of different ſorts of verſe, but was alſo interlarded with proſe, and Greek, and Latin.—Seneca's poem on the death of Claudius, Petronius's Satyricon, Lucian's Dialogues, the Golden aſs of Apuleius, and the Cæſars of the emperor Julian, are ſo many *ſatyrs* in the *Varronian* taſte.[a]—To the ſame head may alſo be referred the Catholicon of Spain, the Moriæ Encomium of Eraſmus, the Don Quixot of Cervantes [b], the Advertiſements from Parnaſſus of Boccalini, the Tale of a Tub by Dr. S. *&c.*—[a] V. Dacier *Diſcours ſur la Satire, in Mem. de Liter. de l'Acad. R. des Inſcr.* T. 3. p. 246. *ſeqq.* And in the preface to his verſion of Horace's *Satyrs.* [b] V. Rapin *Reflex ſur la Poet. en Partic.* § 28. *Oeuv. Diverſ.* T. 2. p. 205. *ſeqq.*

SATYRICAL, ſomething relating to, or that partakes of the nature of *ſatyr*. See SATYR.

We have *ſatyrical* poets; *ſatyrical* preachers, as South; *ſatyrical* hiſtorians, as Burnet and Mezeray; *ſatyrical* philoſophers, as Apuleius and Montaign.—In the heathen theology, we find a *ſatyrical* god, *viz.* Momus: Homer in his Therſites gives the character of a *ſatyrical* courtier. The Dutch have been charged with *ſatyrical* prints, and medals; which have ſometimes coſt them dear.

Satyrical poetry had its origin at Athens; though its perfection be owing to the Romans. According to father Mourgues, and Bianchini [a], it was at firſt a ſort of tragedy acted at the feaſts of Bacchus, wherein ſatyrs were introduced converſing with heroes [b]. Burette rather takes it for a ſort of paſtoral farce tacked to the ends of tragedies [c]. One of the chief ornaments of it was a wild, groteſque ſort of dance performed by ſatyrs, and called *Sicinnis* [d]. See DANCING.—[a] Mourg. *Trait. de la Poeſ. Franc.* c. 4. *Mem. de Trev.* Nov. 1723. p. 2149. [b] Bianchin. *Della Satira Italiana,* P. I. p. 5. *ſeqq.* Giorn. *de Letter d' Ital.* T. 20. p. 203. [c] Buret. *Mem.* 2. *ſur la Danſe, in Mem. Acad. R. Inſcript.* T. 2. p. 163. [d] *Buret.* l. c. Averan. *Prælect.* ap. *Bibl. Choiſ.* T. 22. p. 34.

The *ſatyrical* ſhews of the Greeks were through maſquerades: the actors herein were diſguiſed variouſly, ſome in the habits of Satyrs, Sileni, Centaurs, Mænades, and other of Bacchus's crew; while others perſonated giants, cyclopes, monſters, and even beaſts: the whole making a medley more romantick and extravagant than any thing on the modern ſtage, unleſs perhaps ſome of our late groteſque pantomime entertainments [a]. The only piece of the kind now extant is the ΚΥΚΛΩΨ of Euripides [b].—[a] V. Boind. *ſur les Maſq. & Habits de Theatr. des Anc.* in Mem. Acad. R. Inſcr. T. 5. p. 176, & 188. [b] V. Fabric. *Bibl. Græc.* l. 2. c. 18. § 2. p. 645.

SATYRIC *Fountain.* See the article FOUNTAIN.

SATYRION, or SATYRIUM, a root called by this name, becauſe of its fancied promotion of luſt.

Dioſcorides diſtinguiſheth this from the orchis, but Mr. Dale ranks it under that tribe. It paſſes for a great cordial and reſtorer; but its ſhape, reſembling the human teſticles, ſeems to be the chief foundation of its virtues.

SAVAGES*, or SALVAGES, wild, barbarous people, without any fixed habitation, religion, law or policy. See BARBARIAN.

* The word is formed from the Italian *ſalvagio,* of *ſalvaticus, ſelvaticus,* or *ſilvaticus,* which we find uſed in the barbarous Latin for *ſilveſtris,* belonging to the woods.

A great part of America is peopled with *ſavages:* many, ſome ſay moſt, of the *ſavages* are Anthropophagi. See ANTHROPOPHAGI.

SAVANT. See the article SCAVANT.

SAUCE—*white* SAUCE } See the articles { WHITE.
SAUCIDGE } { SAUSAGE.

SAUCISSE, SAUSAGE, in the military art, a long train of powder ſewed up in a roll of pitched cloth, about two inches in diameter; ſerving to ſet fire to mines, or caiſſons. See MINE, &c.

The length of the *ſauciſſe* is to extend from the chamber of the mine, to the place where the engineer ſtands to ſpring the mine. See CHAMBER.

There are uſually two *ſauciſſes* to every mine; that if the one ſhould fail, the other may take effect.

SAUCISSON*, in fortification, a kind of faggot made of thick branches of trees, or of the trunks of ſhrubs bound together: whoſe uſe is to cover the men, and to ſerve as epaulements. See EPAULMENT.

* The word is French, and ſignifies literally, a big ſauſage. See SAUSAGE.

The *ſauciſſon* differs from a *faſcine,* which is only made of the ſmall branches, and by its being bound at both ends, and in the middle. See FASCINE.

Anciently, they made the *ſauciſſon* 46 foot long, and 15 foot thick; ſince, it is uſually 23 foot long, and 12 thick; bound ſtrongly together with three bands ſtrengthened with iron.

SAVE *Appearances.* See the article APPEARANCE.

SAVER DE FAULT, in law, ſignifies to excuſe a fault: as when a man having made default in court, comes afterwards, and alledges good cauſe why he did it; as impriſonment at the time, or the like. See DEFAULT.

SAVIOUR.—*Order of* St. SAVIOUR, is the name of a religious order founded by St. Bridget, about the Year 1344; thus called from an opinion, that Chriſt himſelf, the *Saviour* of the world, preſcribed the rules and conſtitutions thereof.

They are alſo called, from their foundreſs, *Bridgetins,* or *Brigittins.*

Their origin was thus: Wilpho prince of Nericia, to whom St. Bridget had been married, being dead at Arras, in his return from Galicia; the widow thought of nothing but devoting herſelf to a religious life; and accordingly ſoon after, built the monaſtery of Weſtern in the dioceſe of Lincopen in Sweden, where ſhe entered herſelf.

By the conſtitutions of this order, it is principally appointed for women, who are to pay a particular honour, and ſervice to the virgin.—The monks are only to afford them the ſpiritual aſſiſtances they may need, to adminiſter them the ſacraments, &c.

The number of nuns is fixed to ſixty in each monaſtery, and that of monks to thirteen, according to the number of apoſtles, whereof St. Paul makes the thirteenth. Four of them are to be deacons, to repreſent the four doctors of the church, and eight converts; the whole number making ſeventy-two, the number of the diſciples of our *Saviour.*

Setting aſide theſe circumſtances, and the habit; this order is under the rule of St. Auguſtine.—It was approved of by Urban V. and ſeveral ſucceeding popes. In 1603, Clement VIII. made ſome alterations in it, on account of the double monaſteries which then began to be built in Flanders, &c.

SAULTS. See the article SALT.

SAUNDERS. See the article SANTALUM.

SAVOR, or SAVOUR, SAPOR. See the article TASTE.

SAUSAGE*, or SAUCIDGE, a term of ſome ſignificancy in commerce; denoting a popular food prepared of ſome crude meat, uſually either pork or veal ſhred ſmall, ſeaſoned and put up in a ſkin, in manner of a pudding.

* The word comes immediately from the French *ſauciſſe,* which ſignifies the ſame, formed of the Italian *ſalſiccia,* and that according to Salmaſius from the Latin *ſalſicium* wrote for *ſalſum,* ſalted.

The moſt eſteemed confection of this kind, is the Bologna *ſauſage,* which is much thicker than the common one, and is made with moſt ſucceſs in ſome cities in Italy, particularly Bologna, Venice, &c. whence great quantities are exported to other places.

It is made of raw pork, well beaten in a mortar, with a quantity of garlick, pepper in the grain, and other ſpices: the Italians are furniſhed with a great part of the ſkins or guts for their *ſauſages* from England: the quantities of that commodity yearly exported, are greater than one would imagine.

SAUSAGE, in war. See the article SAUCISSE.

SAUT, in the manage. See the article SALTS.

SAW, SERRA, an inſtrument ſerving to divide into pieces, divers ſolid matters; as wood, ſtone, marble, ivory, &c. See SAWING.

The *ſaw* is one of the moſt uſeful machines, in the mechanick arts, ever invented: the fable, which is perhaps founded on ſome ſurer tradition, attributes the invention thereof to Icarus; who, vying with his father Dædalus, enriched the riſing arts with ſeveral diſcoveries.—It is added, he took the firſt hint from the ſpine or backbone of a flat fiſh, ſuch as the ſoal.

The *ſaw* is made of ſteel, with teeth; but thoſe differently filed, and turned, according to the uſe it is deſigned for.—There are alſo a kind of *ſaws* without teeth, uſed in the ſawing of marbles and other ſtones.

The beſt *ſaws* are of tempered ſteel, ground bright and ſmooth; thoſe of iron are only hammer-hardned: hence, the firſt, beſides their being ſtiffer, are likewiſe found ſmoother than the laſt.—They are known to be well hammered by the ſtiff bending of the blade; and well or evenly ground, by bending equally into a bow.

The edge, wherein the teeth are, is always thicker than the back, in regard the back is to follow the edge.—The teeth are cut and ſharpened by a triangular file; firſt fixing the blade of the *ſaw* in a whetting-block.

When filed, the teeth are to be *ſet,* that is, to be turned a-ſkew, or out of the right line, to make the wider kerf or fiſſure, that the back may follow the better. This is done by putting an inſtrument, called a *ſaw-wriſt,* between every other two teeth, and giving it a little wrench, which turns one of the teeth a little towards you, and the other a little from you.—The teeth are always ſet ranker for coarſe cheap ſtuff, than for hard and fine; in regard the ranker the tooth is ſet, the more ſtuff is loſt in the kerf; and if the ſtuff be hard, the greater the labour of ſawing it.

The workmen, who make the greateſt uſe of the *ſaw,* are, the ſawyers, carpenters, joiners, eboniſts, ſtone-cutters, carvers, ſculptors, &c. The lapidaries too have their *ſaw,* as well as the workers in moſaick; but theſe bear little reſemblance to the common *ſaws.* See LAPIDARY and MOSAICK work.

But of all mechanicks, there are none have ſo many *ſaws* as the joiners, nor of ſo many different kinds.—The chief are as follow.

Pit-ſaw, a large two-handed *ſaw,* uſed to ſaw timber in pits.—It is ſet rank for coarſe ſtuff, ſo as to make a kerf or fiſſure of almoſt a quarter of an inch; but for finer ſtuff, finer.

Whip-ſaw, which is likewiſe two-handed, uſed to ſaw ſuch large pieces of ſtuff as the *hand-ſaw* will not eaſily reach.

Hand-ſaw, is made for a ſingle man's uſe: of which there are various kinds; as the

Bow or *frame-ſaw,* furniſhed with cheeks; by the twiſted cord and tongue in the middle thereof, the upper ends are occaſionally drawn cloſe together, and the lower ſet the further apart.

Tenon-ſaw, which being very thin, has a back to keep it from bending.

Compaſs-ſaw, which is very ſmall, and its teeth, uſually, not ſet; its uſe is to cut a round, or any other compaſs-kerf: hence, the edge is made broad, and the back thin, that it may have a compaſs to turn in.

The chirurgeons likewiſe uſe a SAW, to cut off bones.—It is to be very ſmall, and light, in order to be managed with the more eaſe and freedom: the blade exceedingly fine, and the teeth exquiſitely ſharpened; to make its way more gently, and yet with more expedition in amputations of legs, arms, &c.

The SAW is alſo a gardener's inſtrument, uſed in the pruning of trees, &c.—It is chiefly applied in the cutting of old, dry, and, conſequently, hard woods, whether roots or branches, which might ſpoil the pruning-knife; and big branches, &c. which the knife could not well take off at one ſtroke.

Except on theſe occaſions, Quintiney will have us always uſe the knife, rather than the *ſaw.* See PRUNING.

SAWING, the application of the ſaw, in the dividing of timber, &c. into boards, &c. See SAW.

There are wind-mills, and water-mills, which do the office of *ſawing* wood, with infinitely more expedition, and eaſe than is performed by the hand. See MILL.—They conſiſt of ſeveral parallel ſaws, which are made to riſe and fall perpendicularly, by means of one of the grand principles of motion.—A very few hands are here needed, *viz.* only to puſh forward the pieces of timber, which are laid on rollers, or ſuſpended by ropes; in proportion as the *ſawing* advances. Theſe mills are frequently found abroad; and were lately begun to be introduced in England; but the parliament, in conſideration of this, that they would ſpoil the ſawyers trade, and ruin great numbers of families, thought fit to ſuppreſs them.

M. Filibien mentions a kind of long ſaws, invented by one Miſſon, inſpector of the marble quarries in the Pyreneans; by means whereof ſtones are ſawed even in the rock itſelf whence they are taken.—He adds, that ſome of them are twenty-three foot long: but does not deſcribe either their form, or application: he only ſays, they are of iron, and without teeth.

SAXIFRAGE *, SAXIFRAGA *alba*, a medicinal plant, thus called from its ſuppoſed virtue in diſſolving the ſtone in the bladder. See LITHONTHRIPTIC.

* The word is compounded of the Latin *Saxum*, ſtone, and *frango*, I break.

Its leaves are almoſt round, indented, ſucculent and ſhining, like thoſe of ivy: in the middle of the leaves riſe ſtalks, about a foot high, which, at their extremities, bear little white flowers, conſiſting of five leaves, diſpoſed in form of a roſe. Its ſeed, which is very ſmall, is incloſed in the capſula of a roundiſh pod. Its root divides itſelf into ſeveral fibres, at the bottom whereof are found little reddiſh tubercles, like coriander-ſeed.

It is theſe grains are commonly called the ſeed of the *ſaxifrage*, and are the part uſed in medicine.—The beſt manner of adminiſtration, is to take them infuſed in white-wine, or in a decoction in common water.

Some uſe the decoction of the root itſelf: it is held a great diuretick; though Dr. Quincy obſerves, its lithonthriptic virtue is but little ſeen in practice. He adds, that the ſimple water thereof, ſold in the ſhops, is good for nothing; the virtue of the plant, if it have any, conſiſting in ſomething too groſs to riſe over the helm. See STONE.

SAXON, or the SAXON *Language*. See ENGLISH.

SAY, or SAYE, in commerce, a kind of ſerge; or a very light croſſed ſtuff, all wool; much uſed abroad for linings, and by the religious for ſhirts; and with us, by the quakers, for aprons, for which purpoſe it is uſually green.

There are very conſiderable manufactures hereof at Sudbury, near Colcheſter; alſo at Ypres, Houdſcot, &c. in Flanders, &c.—Thoſe made in England, are chiefly exported to Portugal, and Leghorn.

SCABELLUM, in the ancient architecture, a kind of pedeſtal, uſually ſquare, ſometimes polygonous, very high and ſlender, commonly terminating in a kind of ſheath or ſcabbard, or profiled in manner of a balluſter. Its uſe is to ſupport buſto's, or other relievo's, &c. See PEDESTAL, STATUE, &c.

SCABIES, in medicine. See the article ITCH.

SCABIOUS, SCABIOSA, a medicinal plant, very common in the fields, which has a great character among diſpenſatory writers, though it ſeems to grow much out of uſe.

It paſſes for a great pectoral, and to do great things in aſthma's and pleuriſies; and Etmuller gives it the pre-eminence in inward abſceſſes. It has a place alſo among alexipharmicks. But hardly any thing is in better eſteem for the itch, and other cutaneous foulneſſes; whence it has its name, *viz.* from *ſcabies*, itch; and upon which account it is often met with in decoctions, and ſometimes in a ſyrup, among ſuch as are called ſweetners.

SCAFFOLD *, a timber-work, raiſed in manner of an amphitheatre, to place ſpectators upon for the commodious viewing of ſome ſhew, or ceremony.

* Some derive the word from the German *ſchawhaus*, which ſignifies the ſame, compounded of *ſchawen*, to look, view, and *haus*, houſe. Guyet derives it from the Italian *catafalco*, which ſignifies the ſame thing. Du Cange, from *Eſchafaudus*, a word in the corrupt Latin, ſignifying a tribunal, or pulpit: he adds, that it might come originally from *cata*, a wooden machine uſed to carry earth to fill up ditches, and carry over the ſoldiers to the attack; whence the Italians formed their *catafalco*, the old French their *chafaut*, the Monks their *ſcaffaldus*, and the Engliſh their *ſcaffold*.

SCAFFOLD, is alſo uſed for a little ſtage, or theatre, raiſed in ſome publick place, to execute criminals upon, either by beheading or breaking upon the wheel.

SCAFFOLD, or SCAFFOLDING, is alſo uſed for an aſſemblage of planks and boards ſuſtained by treſſels, or by pieces of wood fixed in the wall; whereon maſons, ſculptors, painters, &c. ſtand to work in high places, wells, cielings, &c.

SCALA, in anatomy.—The cochlea, or inner cavity of the ear, is divided by a ſeptum into two canals, called *ſcalæ*: whereof the one, looking towards the tympanum, is called the *ſcala tympani*; the other, having a communication with the veſtibulum, is called the *ſcala veſtibuli*. See COCHLEA, EAR, TYMPANUM, and VESTIBULUM.

SCALA, in the ancient architecture, denotes what in the modern we call a *ſtair-caſe*. See STAIR-CASE.

SCALÆ *Gemoniæ*. See the article GEMONIÆ.

SCALADO, or SCALADE, a furious aſſault made on the wall or rampart of a city, by means of ladders wherewith to mount without carrying on works in form to ſecure the men. Cities are now no longer taken by *ſcalade*, ſince the walls have been flanked. See ESCALADE.

SCALE, a mathematical inſtrument, conſiſting of one or more lines drawn on wood, metal or other matter, divided into equal or unequal parts, of great uſe in laying down diſtances in proportion, or in meaſuring diſtances already laid down.

There are *ſcales* of ſeveral kinds, accommodated to the ſeveral uſes; the principal are, the *plain ſcale*, the *diagonal ſcale*, *Gunter's ſcale*, and the *plotting ſcale*.

Plain SCALE, or SCALE *of equal parts*, is made, by dividing a line, as A B (*Tab. Surveying fig.* 37.) into any number of equal parts, *e. gr.* 5 or 10, and then ſubdividing one of them, as *a b*, into 10 leſs parts.—This done, if one of the larger diviſions repreſent 10 of any meaſure; *e. gr.* 10 miles, 10 chains, 10 poles, 10 feet or 10 inches; each of the leſſer will repreſent one mile, or one chain, pole, foot or inch. See PLAIN and LINE.

The uſe of this *ſcale* is very obvious. *E. gr.* To lay down a diſtance by it of 32 miles, or 32 poles, &c. I take in my compaſſes the interval of three of the larger diviſions, which contain 30, and two of the ſmaller, for the two odd ones: this diſtance drawn on paper, will contain 32 by the *ſcale*.—Again, were I required to meaſure any line by a given *ſcale*: taking the length of the line in my compaſſes, I apply one foot in one of the great diviſions of the *ſcale*, ſo as the other may reach over among the leſſer; then the number of great and ſmall diviſions intercepted between the points, give the number of miles, &c.—See the uſe hereof further illuſtrated under the article PLOTTING *ſcale*.

Proportional SCALES, called alſo *logarithmical*, are the artificial numbers, or logarithms, placed on lines; for the eaſe and advantage of multiplying, dividing, &c. by means of compaſſes, or of ſliding-rules.—They are, in effect, only ſo many lines of numbers, as they are called by Gunter; but made ſingle, double, triple, or quadruple; beyond which they ſeldom go. See DECIMAL, GUNTER's, PLOTTING, REDUCING *ſcale*.

Decimal SCALE,	See the articles	DECIMAL.
Gunter's SCALE,		GUNTER, *and* LINE.
Plotting SCALE,		PLOTTING *ſcale*.
Proportional SCALE,		PROPORTIONAL.
Reducing SCALE,		REDUCING.

SCALE, in geography and architecture, a line divided into equal parts, placed at the bottom of a map or draught, to ſerve as a common meaſure to all the parts of the building, or all the diſtances and places of the map. See MAP, &c.

In maps of large tracts, as kingdoms and provinces, &c. the *ſcale* uſually conſiſts of miles; whence it becomes denominated *A ſcale of miles*.

In more particular maps, as thoſe of manors, &c. the *ſcale* is uſually of chains ſub-divided into poles or links.

The *ſcales* uſed in draughts of buildings, uſually conſiſt of modules, feet, inches, palms, fathoms, or the like.

To find the diſtance between two towns, &c. in a map, the interval is taken in the compaſſes, and ſet off in the *ſcale*, and the number of diviſions it includes, gives the diſtance.—The ſame method ſerves to find the height of a ſtory in a deſign.

Front SCALE, in perſpective, is a right line in the draught, parallel to the horizontal line; divided into equal parts, repreſenting feet, inches, &c.

Flying SCALE, is a right line in the draught, tending to the point of view, and divided into unequal parts, repreſenting feet, inches, &c.

SCALE, SCALA, in muſick, is a denomination given to the arrangement of the ſix ſyllables invented by Guido Aretine, *ut re mi fa ſol la*; called alſo *Gammut*. See GAMMUT and NOTE.

It bears the name *ſcale* (*q. d.* ladder) by reaſon it repreſents a kind of ladder, by means whereof the voice riſes to acute, or deſcends to grave; each of the ſix ſyllables being as it were one ſtep of the ladder.

SCALE is alſo uſed for a ſeries of ſounds riſing or falling towards acuteneſs or gravity, from any given pitch of tune to the greateſt diſtance that is fit or practicable, through ſuch intermediate degrees as make the ſucceſſion moſt agreeable and perfect, and in which we have all the harmonical intervals moſt commodiouſly divided.

This *ſcale* is otherwiſe called an *univerſal ſyſtem*, as including all the particular ſyſtems belonging to muſick. See SYSTEM.

Origin and conſtruction of the SCALE *of muſick.*—Every concord or harmonical interval, is reſolvable into a certain number of degrees or parts; the octave, for inſtance, into three greater tones, two leſs tones, and two ſemi-tones; the greater ſixth, into two greater tones, one leſs tone, and two ſemi-tones; the leſs ſixth, into two greater tones, one leſs tone, and two ſemi-tones; the fifth, into two greater tones, one leſs tone, and one ſemi-tone; the fourth, into one greater tone, one leſs tone, and one ſemi-tone; the greater third, into one greater tone, and one leſs tone; and the leſs third, into one greater tone, and one leſs tone. It is true, there are variety of other intervals or degrees, beſides greater tones, leſs tones, and ſemi-tones, into which the concords may be divided; but theſe three are preferred to all the reſt, and theſe alone are in uſe.—For the reaſon whereof, ſee TONE. Further, it is not any order, or progreſſion, of theſe degrees, that will produce melody: a number, for inſtance, of greater tones will make no muſick, becauſe no number of them is equal to any concord, and the ſame is true of the other degrees: there is a neceſſity, therefore, of mixing the degrees to make muſick; and the mixture muſt be ſuch, as that no two of the ſame kind be ever next each other.

A natural and agreeable order of theſe degrees Mr. Malcolm gives us in the following diviſion of the interval of an octave; wherein (as all the leſſer concords are contained in the greater) the diviſions of all the other ſimple concords are contained.—Under the ſeries are the degrees between each term, and the next.—In the firſt ſeries, the progreſſion is by the leſs third; in the latter by the greater third.

	great 2d	gr. 3d	4th	5th	6th	7th	8th
1 :	$\frac{8}{9}$:	$\frac{4}{5}$:	$\frac{3}{4}$:	$\frac{2}{3}$:	$\frac{3}{5}$:	$\frac{8}{15}$:	$\frac{1}{2}$
Key or fund.	great tone.	leſs tone.	ſemi-tone.	great tone.	leſs tone.	great tone.	ſemi-tone.

	great ſecond.						
1 :	$\frac{8}{9}$:	$\frac{5}{6}$:	$\frac{3}{4}$:	$\frac{2}{3}$:	$\frac{5}{8}$:	$\frac{5}{9}$:	$\frac{1}{2}$
key or fund.	great tone.	ſemi-tone.	leſs tone.	great tone.	ſemi-tone.	great tone.	leſs tone.

Now, the ſyſtem of octave, containing all the original concords; and the compound concords being only the ſums of octave and ſome leſs concord; it is evident, that if we would have the ſeries of degrees continued beyond octave, they are to be continued in the ſame order through a ſecond as through the firſt octave, and ſo on through a third and fourth octave, *&c.* and ſuch a ſeries is what we call the *Scale of muſick.*

Of this, there are two different ſpecies; according as the leſs or greater 3d. or the leſs or greater 6th. are taken in; for both can never ſtand together in relation to the ſame key or fundamental, ſo as to make an harmonical *ſcale.* But if either of theſe ways, we aſcend from a fundamental or given ſound, to an octave, the ſucceſſion will be melodious; though the two make two different ſpecies of melody.—Indeed, every note is diſcord with regard to the next; but each of them is concord to the fundamental, except the 2d. and 7th.

In continuing the ſeries, there are two ways of compounding the names of the ſimple interval with the octave: thus, a greater or leſſer tone or ſemi-tone above an octave, or two octaves, *&c.* or to call them by the number of degrees from the fundamental, as 9th, 10th, *&c.*

In the two *ſcales* above, the ſeveral terms of the *ſcale* are expreſſed by the proportionable ſections of a line, repreſented by 1, the key or fundamental of the ſeries.—If we would have the ſeries expreſſed in the whole numbers, they will ſtand as follows; in each whereof the greateſt number expreſſes the longeſt chord, and the other numbers the reſt in order: ſo that if any number of chords be in theſe proportions of length, they will expreſs the true degrees and intervals of the *ſcale* of muſick, as contained in an octave concinnouſly divided in the two different ſpecies abovementioned.

540 :	480 :	432 :	405 :	360 :	324 :	288 :	270
great tone.	leſs tone.	ſemi-tone.	great tone.	leſs tone.	great tone.	leſs tone.	

216 :	192 :	180 :	162 :	144 :	135 :	120 :	108
great tone.	ſemi-tone.	leſs tone.	great tone.	ſemi-tone.	great tone.	leſs tone.	

This *ſcale* the ancients called the *diatonic ſcale,* becauſe proceeding by tones and ſemi-tones. See DIATONIC.

The moderns call it, ſimply, *The ſcale,* as being the only one now in uſe; and ſometimes, *The natural ſcale,* becauſe its degrees and their order are the moſt agreeable and concinnous, and preferable, by the conſent both of ſenſe and reaſon, to all other diviſions ever inſtituted.—Thoſe others, are the *chromatic* and *enharmonic ſcales,* which, with the *diatonic,* made the three *ſcales,* or *genera* of melody of the ancients. See GENERA: See alſo ENHARMONIC, and CHROMATIC.

The Deſign of the SCALE *of Muſick,* is, to ſhew how a voice may riſe and fall leſs than any harmonical interval, and thereby move from the one extreme of any interval to the other, in the moſt agreeable ſucceſſion of ſounds.—The *ſcale,* therefore, is a ſyſtem, exhibiting the whole principles of muſick; which are either harmonical intervals (commonly called *concords*) or concinnous intervals: the firſt are the eſſential principles, the others ſubſervient to them, to make the greater variety. See CONCORD and INTERVALS.

Accordingly, in the *ſcale,* we have all the concords, with their concinnous degrees, ſo placed, as to make the moſt perfect ſucceſſion of ſounds from any given fundamental or key, which is ſuppoſed to be repreſented by 1. It is not to be ſuppoſed, that the voice is never to move up and down by any other more immediate diſtances than thoſe of the concinnous degrees: for though that be the moſt uſual movement, yet to move by harmonical diſtances, as concords, at once, is not excluded, but is even abſolutely neceſſary. In effect, the degrees were only invented for variety ſake, and that we might not always move up and down by harmonic intervals, though thoſe are the moſt perfect, the others deriving all their agreeableneſs from their ſubſerviency to them. See DEGREE.

Add that, beſides the harmonical and concinnous intervals, which are the immediate principles of muſick, and are directly applied in practice; there are other diſcord relations, which happen unavoidably in muſick, in a kind of accidental and indirect manner: for, in the ſucceſſion of the ſeveral notes of the *ſcale,* there are to be conſidered not only the relations of thoſe that ſucceed others immediately; but alſo of thoſe betwixt which other notes intervene. Now the immediate ſucceſſion may be conducted ſo, as to produce good melody; and yet among the diſtant notes there may be very groſs diſcords, that would not be allowed in immediate ſucceſſion, much leſs in conſonance:—Thus in the firſt ſeries, or *ſcale* above delivered, though the progreſſion be melodious, as the terms refer to one common fundamental; yet are there ſeveral diſcords among the mutual relations of the terms; *e. gr.* from 4th to 7th is 32 : 45, and from the greater 2d to the greater 6th is 27 : 40, and from the greater 2d to 4th is 27 : 32, which are all diſcords; and the ſame will happen in the ſecond ſeries. See DISCORD.

From what we have obſerved here, and under the article KEY, it appears, that the *ſcale* ſuppoſes no determinate pitch of tune; but that being aſſigned to any key, it marks out the tune of all the reſt, with relation to it; ſhews what notes can be naturally joined to any key, and thereby teaches the juſt and natural limitations of melody: and when the ſong is carried through ſeveral keys, yet it is ſtill the ſame natural *ſcale,* only applied to different fundamentals.—If a ſeries of ſounds be fixed to the relations of the *ſcale,* it will be found exceedingly defective; but this imperfection is not any defect in the *ſcale,* but follows accidentally from its being confined to this condition, which is foreign to the nature and office of the *ſcale* of muſick.

This is the caſe in muſical inſtruments; and in this conſiſts their great deficiency.—For, ſuppoſe a ſeries of ſounds, as thoſe of an organ or harpſicord, fixed in the order of this *ſcale;* and the loweſt taken at any pitch of tune; it is evident, 1°. that we can proceed from any note, only by one particular order of degrees: ſince from every note of the *ſcale* to its octave, is contained a different order of the tones and ſemi-tones. Hence, 2°. we cannot find any interval required from any note upwards or downwards; ſince the intervals from every note to every other, are alſo limited. And hence, 3°. a ſong may be ſo contrived, that, beginning at a particular note of the inſtrument, all the intervals, or other notes, ſhall be found exactly on the inſtrument or in the fixed ſeries; yet were the ſong, though perfectly diatonic, begun in any other note, it would not proceed.

In effect, it is demonſtrable, there can be no ſuch thing as a perfect *ſcale* fixed on inſtruments, *i. e.* no ſuch *ſcale* as from any note upwards or downwards, ſhall contain any harmonical or concinnous interval required.

The only remedy for this defect of inſtruments whoſe notes are fixed, muſt be by inſerting other notes and degrees betwixt thoſe of the diatonic ſeries.—Hence ſome authors ſpeak of dividing the octave into 16, 18, 20, 24, 26, 31, and other number of degrees; but it is eaſy to conceive, how hard it muſt be to perform on ſuch an inſtrument.

The beſt on it is, we have a remedy on eaſier terms: for a *ſcale* proceeding by twelve degrees, that is, thirteen notes, including the extremes, to an octave, renders our inſtruments ſo perfect, that we have little reaſon to complain.—This, then, is the preſent *ſcale* for inſtruments, *viz.* between the extremes of every tone of the natural *ſcale* is put a note, which divides it into two unequal parts, called *ſemi-tones;* whence the whole may be called the *ſemitonic ſcale;* as containing twelve ſemi-tones, betwixt thirteen notes, within the compaſs of an octave. See SEMITONE.

And to preſerve the diatonic ſeries diſtinct, theſe inſerted notes take either the name of the natural note next below, with the mark ♯ called a *ſharp;* or the name of the natural note next above, with this mark ♭ called a *flat.* See FLAT and SHARP.

For the SCALE of ſemi-tones,	See	SEMITONIC *Scale.*
For Guido's SCALE, commonly called the *Gammut,*		GAMMUT.
For the SCALE *of the ancients,* commonly called the *Diagram.*		DIAGRAM.

SCALENE*, SCALENUM, or SCALENOUS *triangle,* in geometry, a triangle, whoſe ſides and angles are all unequal. See TRIANGLE.

A cylinder or cone, whoſe axis is inclined to its baſe, is alſo ſaid to be *ſcalenous.* See CONE and CYLINDER.

SCALENUS, or SCALENUM, in anatomy, a name given to three pair of muſcles, from their form; all of them ſerving to draw the ribs upwards, in conjunction with the ſerratus ſuperior poſticus, *&c.*—See *Tab. Anat.* (Myol.) *fig.* 2. *n.* 5. *fig.* 1. *n.* 16.

SCALENUS *Primus,* ſprings, fleſhy, from the tranſverſe proceſſes of the ſecond, third, and fourth vertebræ of the neck, where deſcending laterally, it is inſerted into the firſt rib, which it helps to draw upwards.

SCALENUS *Secundus,* ariſes from the ſame proceſſes, as likewiſe from thoſe of the fifth vertebra of the neck; and is inſerted into the ſecond rib, and ſometimes into the third.

SCALENUS *Tertius,* ariſes from the ſame proceſſes with the former, and from thoſe of the ſixth vertebra of the neck; and is inſerted into the firſt rib.

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* The word is formed from the Greek σκαληνος, which ſignifies oblique, unequal, *&c.*

SCALLOP *Tyles.* See the article TYLES.

SCALPEL, SCALPELLUM, in chirurgery, a kind of knife chiefly uſed in diſſections; but which may be occaſionally uſed in many other operations, as in amputations, and to cut off the fleſh and membranes that are between the two bones of an arm or leg, before the limb be ſawed off.

There are two kinds of *ſcalpels*: the firſt cuts on both ſides, and is fixed in an ebony or ivory handle, which being very flat and thin at the extremity, ſerves to part the membranous and fibrous parts in anatomical preparations.

The other has a back, that is, it only cuts on one ſide; it is crooked, and very commodious for ſtripping the fleſh off the bones in embalming, making ſkeletons, *&c.*

Scultetus, in his *Arſenal*, deſcribes ſeveral other kinds of *ſcalpels*; as, a deceitful *ſcalpel*, thus called, becauſe it deceives the patient by hiding its blade. It was much uſed by the ancients, in opening and dilating of ſinews; but as it is apt to deceive the chirurgeon himſelf, and is beſides very ſlow, it is better uſing a ſyringotomus.—A *ſcalpel*, ſharp on both ſides for ſetons.—A little crooked *ſcalpel* for ſeparating the coherence of the eyelids.—A ſharp, double-cutting *ſcalpel*, with a bone-handle, for the cutting off an ægilops.—*Scalpels* like ſcolopomachærions, *&c.* Even the ſcolopomachærion itſelf is a kind of *ſcalpel.* See SCHOLOPOMACHÆRION.

SCALPER, SCALPRUM, or SCALPING-*Iron*, a ſurgeon's inſtrument wherewith to raſp, and ſcrape foul, carious bones.

SCALPTOR *Ani*, in anatomy. See LATISSIMUS *Dorſi.*

SCAMILLI *Impares*, in the ancient architecture, a term much contended about among the criticks; though, in effect, it ſignify no more than certain zocco's or blocks, ſerving to raiſe the reſt of the members of an order, column, ſtatue or the like, and prevent their being loſt to the eye, which may chance to be placed below their level; or below the projecture of ſome of the ornaments thereof.

Theſe *Scamilli* are well enough repreſented by the pedeſtals of ſtatues. See PEDESTAL.

SCAMMONY, SCAMMONIUM, in pharmacy, an inſpiſſated juice, of the root of a plant of the ſame name, growing in the Levant, particularly about Aleppo and St. John de Acre.

The juice flows from an inciſion made in the root; and is afterwards thickened by the ſun, as it was pretended, but in reality by the fire. The tree is much like an ivy, its leaves in form of hearts, its flowers white, and it creeps on the ground or climbs on other trees, walls, *&c.*

The good and genuine *ſcammony* of Aleppo, is to be grey, tender, friable and reſinous; the taſte bitter, and the ſmell faintiſh, and diſagreeable.

The *ſcammony* of Smyrna, and that of the Eaſt-Indies, are leſs valued; the firſt as being more heavy, hard and black; the latter, though light, friable, *&c.* is in reality only a compoſition of common roſin with ſome other violent purgatives. Pomet aſſerts, that both kinds are rather poiſons than remedies.

The true *ſcammony* is one of the ſureſt purgatives; but, at the ſame time, one of the moſt violent we have: hence, it is ſeldom uſed without correcting it by ſome preparation with ſulphur, quince or the like. See DIAGRYDIUM.

From the juice is drawn a reſin of more virtue than the *ſcammony* itſelf. They alſo make a ſyrup of it, which is found a very gentle purgative.

The *ſcammony* now in uſe, muſt be very different from that of the ancients, at leaſt in the preparation; by reaſon the ancients gave it in much greater doſes: hence Fallopius conjectures, the modern *ſcammony* to be adulterated with ſpurge.

Some give the name of American *ſcammony* to Mechoacan. See MECHOACAN.

SCANDAL,* ΣΚΑΝΔΑΛΟΝ, in the ſcripture language, denotes any thing that may draw us aſide, or ſollicit us to ſin.

* The word is formed from the Greek σκανδαλον, or the Latin *ſcandalum*, which, according to Papias, was originally uſed for a ſudden, extemporary quarrel, *quæ ſubito inter aliquos* ſcandit *vel oritur.*

In which ſenſe, the word is uſed promiſcuouſly with *offence*, and *ſtumbling-block.*

Scandal is either *active* or *paſſive.*

Active *ſcandal* is a real induction to ſin; paſſive *ſcandal* is the impreſſion which an active *ſcandal* makes on the perſon induced to ſin.

SCANDAL, in the popular language, is ſome action, or opinion contrary to good manners, or to the general ſenſe of a people. See ABSURD.

SCANDAL alſo denotes a diſadvantagious rumour, or report; or an action whereby any one is affronted in publick.

Stone of SCANDAL, *Lapis Scandali*, or *Vituperii*, a ſtone raiſed in the great portal of the capitol in Rome; whereon was engraven the figure of a lion; upon which bankrupts or ceſſionaries being ſeated bare-breeched, cried with a loud voice, *Cedo bonis*, I ſurrender my effects; when, ſquatting their breech violently, three times on the ſtone, they were acquitted. See CESSION.

It was called the *Stone of Scandal*, becauſe thence-forward the ceſſionary became inteſtable, and incapable of giving any evidence.

Julius Cæſar introduced this form of ſurrender, after abrogating that article of the laws of the twelve tables, which allowed the creditors to cut their inſolvent debtors in pieces, and take each his member; or at leaſt to make a ſlave of him. See BANKRUPT.

SCANDALUM *Magnatum*, in law, denotes a ſcandal or wrong done to any high perſonage of the land, as peers, prelates, judges, or other great officers, by falſe or ſlanderous news or tales, whereby any debate or diſcord between them and the commons, or any ſcandal to their perſons, might ariſe.

This offence has alſo given name to a writ granted to recover damages thereupon.

SCANNING*, SCANSIO, in poetry, the meaſuring of a verſe, to ſee what number of feet and ſyllables it contains, and whether or no the quantities, that is, the long and ſhort ſyllables, be duly obſerved. See QUANTITY, MEASURE, FOOT, *&c.*

* The word is formed from the Latin, *ſcandere*, to climb.

The term is chiefly uſed with regard to Greek and Latin verſes; the quantities not being well ſettled and obſerved in the verſes of the modern languages. See VERSE.

Hexameters are *ſcanned* one way, iambicks another, ſapphicks another. See HEXAMETER, *&c.*

SCANTLING*, a meaſure, ſize, or ſtandard, whereby the dimenſions, *&c.* of things are to be determined.

* The word is formed from the French, *eſchantillon*, a pattern or ſpecimen. See STANDARD.

SCAPHISM*, SCAPHISMUS, in antiquity, a kind of torture or puniſhment formerly in uſe among the Perſians. It conſiſted in locking the criminal cloſe up within the trunk of a tree bored to the dimenſions of his body, only with five holes for his head, arms, and legs to come through. In this ſtate he was expoſed to the ſun, and the parts thus appearing anointed with honey and milk, to invite the waſps and flies.

* The word is Greek, Σκαφισμος; formed of σκαφος, digging, of σκαπτω, I dig, hollow.

To increaſe the torment, they forced the criminal to eat abundantly, till his excrements, cloſe pent up in the wood, rotted his body. Some authors obſerve, that perſons ordinarily lived forty days in this condition.

The invention is aſcribed to Pariſatis queen of Perſia, and mother of Artaxerxes Mnemon, and the young Cyrus. It is added, ſhe firſt ordered it to be practiſed on the perſon who brought the tidings of the death of Cyrus.

SCAPHOIDES*, ΣΚΑΦΟΕΙΔΗΣ, in anatomy, a bone of the foot; called alſo *Naviculare.* See NAVICULARE.

* The word is formed of the Greek, σκαφη, a boat, or bark; of σκαπτω, I hollow (becauſe boats were originally made of trunks of trees hollowed, as are ſtill the canoes of ſeveral ſavages) and ειδος, form.

SCAPULA, in anatomy, *omoplata*, or *ſhoulder-blade*; a large, broad bone, repreſenting a ſcalenous triangle, ſituate on each ſide of the upper and back part of the thorax.—*V. Tab. Anat.* (Oſteol.) *fig.* 7. *n.* 6, 6.

The ſubſtance of the *ſcapula* is thin, but ſolid and firm; its outſide is ſomewhat convex, and its inſide concave; its upper edge is called *coſta ſuperior*, and its lower, *coſta inferior*; its broad end is called its *baſis*, which, with the two edges, make the upper and lower angles. See OMOPLATE.

The *ſcapulæ* have each three proceſſes, of which the firſt runs all along the middle of their outſide, and is called their *ſpine.*—*Fig.* 3. *n.* 4, 4. & *fig.* 7. *n.* 7, 7. That end of the ſpine, which receives the extremity of the clavicula, is called *Acromium.*—The ſecond proceſs is a little lower than the acromium; it is ſhort and ſharp, like a crow's bill, therefore called *Coracoides*; theſe two proceſſes are tied to one another by a ſtrong ligament, which ſerves to keep the head of the humerus in the cavity of the third proceſs, which is called *Cervix.* This proceſs is the extremity of the *ſcapula*, which is oppoſite to its baſis. It has a round ſinus, tipped about its brim with a cartilage, which receives the head of the humerus.

The uſe of the *ſcapula* is to receive the extremities of the clavicula and humerus, for the eaſier motion of the arm, and to give riſe to the muſcles, which move the arm.

SCAPULAR, SCAPULARIS, in anatomy, an epithet given to two arteries, and as many veins of the body.

The SCAPULARIS *interna & externa*, or inner and outer *ſcapular* arteries, ariſe out of the ſubclavian, and are ſpread over the *ſcapulæ.* See ARTERY.

The Inner and *Outer* SCAPULAR *Veins* diſcharge themſelves into the axillary, or vein of the arm-pits. See VEIN, and SUBSCAPULARIS.

SCAPULAR*, or SCAPULARY, alſo denotes part of the habit of ſeveral orders of religious, worn over the gown, as a badge of peculiar veneration for the virgin.

* The word is formed from the French, *ſcapulaire*, which ſignifies the ſame; and that from the Latin, *ſcapula*, the ſhoulder-blade.

The *ſcapular* conſiſts of two narrow breadths or ſlips of cloth, covering the back and the breaſts, and hanging down to the feet of the profeſſed religious, and to the knees of the lay-brothers, *&c.*

The common opinion concerning the introduction of the *ſcapular*, is, that it was firſt given by the virgin herſelf, in an apparition ſhe made to F. Stock, general of the Carmelites, in the thirteenth century.—Which account of its origin is aſſerted, or at leaſt ſuppoſed, in ſeveral bulls of the popes. See CARMELITE.

M. de Launoy, however, maintains, in an expreſs treatiſe on the ſubject, that the apparition was falſe, and the ſabbatine bull, which approves of the *ſcapulary*, a counterfeit. In effect, the Carmelites themſelves did not begin to wear the *ſcapulary* till ſeveral years after it is pretended the virgin gave it to father Stock.

There is alſo a *Friery*, or *Fraternity of the* SCAPULAR; conſiſting of lay-brothers, who profeſs a particular devotion to the virgin, and who, in honour of her, wear a little *ſcapular*, in manner of a bracelet, or otherwiſe, repreſenting the great one.—They are obliged to certain prayers, and to obſerve certain rules in their manner of life.

SCAPUS, in architecture, the fuſt or ſhaft of a column. See FUST.

SCAPUS, in botany, denotes the ſtrait ſtalk, or ſtem of a plant, ſtanding upright like a pillar, or column. See STEM.

SCAR. See the article ESCHAR.

SCARIFICATION *, SCARIFICATIO, in chirurgery, an operation whereby ſeveral inciſions are made in the ſkin, with a lancet or other inſtrument proper for that purpoſe. See SCARIFICATOR.

* Salmaſius will have us write *ſcarifatio*, not *ſcarificatio*, in regard the word is derived from the Greek, σκαριφος. See his notes on Solinus, p. 519. where he thus corrects the reading of *Plin.* lib. XVII. F. Hardouin lets the old reading *ſcarificatio* ſtand; though he owns the MSS. have it *ſcariphatio*; but adds, that Theod. Priſcian writes *ſcarificatio*.

Sacrification is chiefly practiſed in cupping. See CUPPING. It acts by ſtimulating and evacuating.

SCARIFICATOR, a chirurgical inſtrument uſed in *ſcarification*. See SCARIFICATION.

The *ſcarificator* is made in form of a box, wherein are fitted 10, 12, or 15 lancets, all perfectly in the ſame plane; which being, as it were, cocked, by means of a ſpring, are all diſcharged at the ſame time, by pulling a kind of trigger, and driven equally within the ſkin.—Till of late, they uſed little ſharp cutting wheels inſtead of lancets.

The uſe of the *ſcarificator* is to evacuate the blood, and other humours, ſpread under the ſkin, by making a great number of apertures, or outlets, therein; which being thus all ſtruck at once, gives much leſs pain than when ſtruck ſucceſſively.

SCARLET *, in dying, one of the ſeven kinds of good reds. See RED, COLOUR and DYING.

* Menage derives the word from the barbarous Latin, *ſcarleta*, or *ſcarletum*; which he deduces further from the German *ſcharlach*, or the Flemiſh *ſcarlaken*: whence the Engliſh have formed *ſcarlet*, the Italians *ſcarlato*, and the French their *eſcarlate*.—Others derive it from the Celtic, *ſquarlera*: Dalechampius will have it called *ſcarlatum*, by corruption, for *caſculiatum*, a barbarous word introduced into Spain; others fetch it from the Arabic *yxquerlate*.

There are two kinds of *ſcarlets*; the one given with *kermes*, or *ſcarlet-grain*; the other with *cochineel*. See COCHINEEL, KERMES, *&c.*

SCARLET-GRAIN, is a dyer's drug, uſed for giving a *ſcarlet* colour; and commonly taken for the grain of a plant.

This imaginary grain, called by the Arabs, *kermes*, is found on a kind of ilex, growing in great plenty in the uncultivated parts of Provence, Languedoc, Spain and Portugal.—That of Languedoc paſſes for the beſt, being big, and of a very bright red; that of Spain is the worſt, being very ſmall, and of a blackiſh red; it is to be gathered when ripe, and is only good while new, that is, within the compaſs of the year, after which time a kind of inſect is found in it, that eats out the heart thereof.

F. Plumier has made ſome particular diſcoveries on the ſubject of *ſcarlet-grain*: the Arabic term *kermes*, which ſignifies *little worms*, he obſerves, agrees perfectly with the nature of this drug; which is the work of a worm, and not the grain or ſeed of a tree, as is generally ſuppoſed.—The ſhrub it is found on, is the ilex aculeata cocci-glandifera; on the leaves, and little ſhoots whereof, appear, in the ſpring time, a kind of little veſiculæ, at firſt no bigger than grains of millet, occaſioned by the puncture of an inſect, which depoſits its eggs therein.—In proportion as theſe grow, they become covered with a kind of aſh-coloured down, which hides the red colour underneath: and when arrived at maturity, which thoſe who gather them know very well, they are taken from the tree, in form of little galls.

The huſk, or ſkin of theſe galls, is very light, and brittle, covered with a fine membranous pellicle all around, except at the place where it grows to the leaf: a ſecond ſkin, under the firſt, is full of a duſt, partly red, and partly white.

As ſoon as the galls are gathered, the juice, or pulp is expreſſed from them; and they are waſhed in vinegar, to deſtroy the little inſects within-ſide, which, without ſuch precaution, would grow, feed on the duſt, and, at laſt, be hatched, and leave only empty ſhells.

The *ſcarlet-grain* is alſo of conſiderable uſe in medicine, where it is better known under its Arabic name of *kermes*. See KERMES and CONFECTION.

SCARLETINA *Febris*, SCARLET-*Fever*, the ſame as purple-fever. See PURPLE and FEVER.

SCARP, in fortification, the interior ſlope of the ditch of a place; that is, the ſlope of that ſide of a ditch which is next to the place, and faces the campaign. See DITCH.

The *ſcarp* commences from the liziere or foot of the rampart. The *ſcarp* is oppoſite to the *counterſcarp*, which is the other ſide of the ditch. See COUNTERSCARP.

SCARP, is alſo a term in heraldry, probably derived from the French *eſcharpe*; ſignifying the ſcarf, which military commanders wear for ornament.

It is borne ſomething like a battoon ſiniſter, but is broader, and is continued out to the edges of the field; whereas the battoon is cut off at each end.—He beareth argent, a *ſcarp* azure.—*V. Tab. Herald. fig.* 44. See alſo BATTOON.

SCAVAGE, SCHEVAGE, SCHEWAGE, or SHEWAGE, in our ancient cuſtoms, a kind of toll or cuſtom, exacted by mayors, ſheriffs, *&c.* of merchants-ſtrangers, for wares ſhewed, or offered to ſale within their liberties. This cuſtom is prohibited by Stat. 19. Hen. VII. c. 7. though the city of London ſtill retains the benefit of it. See OSTENSIO.

SCAVANT *, or SAVANT, a term purely French, ſignifying *learned*; little uſed in our language, except in the phraſe, *journal des ſçavans*, denoting, a journal of the works of the learned publiſhed monthly at Paris; being the firſt work of that kind; and that from which all the reſt were taken. See JOURNAL.

* Menage derives the word from the Latin *ſapere*, to be wiſe; and on that footing will have it wrote *ſavant*; others, from *ſcire*, to know, and for that reaſon write it *ſçavant*.—The latter etymology, and orthography, are followed by the academy; though all the ancient MSS. have it *ſavant*, *ſavoir*, &c.

SCAVENGERS *, two officers choſe yearly in each pariſh in London, and the ſuburbs, whoſe buſineſs it is to hire perſons, called *rakers*, and carts to cleanſe the ſtreets, and carry away the dirt and filth thereof.

* The word is derived from the Saxon *ſcaefda*, or Dutch *ſchaven*, to ſcrape or ſhave away.

The *ſcavengers* are much the ſame with what were anciently called *ſtreet-wards*.—The Germans call them *dreckſimons*, from one Simon a famed *ſcavenger* of Marpurg.

SCELOTYRBE *, ΣΚΕΛΟΤΥΡΒΗ, weakneſs and pains in the legs; generally attending ſcorbutick habits.

* The word is compounded of σκελος, leg, and τυρβη, tumult, or uproar.

Scelotyrbe is alſo uſed for the ſcurvy itſelf; and ſometimes applied to medicines contrived againſt ſuch diſorders. See SCORBUTUS.

SCENE *, SCENA, in its primary ſenſe, denoted a theatre, or place where dramatic pieces, and other publick ſhews, were repreſented. See THEATRE.

* The word is originally Greek, Σκηνη, ſignifying a tent, hut, booth, or the like, where dramatic pieces were anciently performed.

According to Roſinus, the *ſcene* in its proper, and original ſenſe, was a ſeries of trees diſpoſed againſt each other, ſo as to form a continued arch, and ſhade, σκια, to defend thoſe underneath it from the injuries of the weather: for in ſuch places it was, that, in ancient times, ere theatres were built, they acted their plays. Thus alſo Caſſiodorus derives the word *ſcene*, from the cloſe ſhade of the grove, where, in the ſpring-time, the ancient ſhepherds uſed to ſing and play.

SCENE, was more particularly uſed for the decorations of a ſtage, or theatre. See DECORATION.

The ancients, we are informed by Vitruvius, had three ſorts of *ſcenes*, or ſcenical decorations in their theatres.—That in common uſe was a ſpacious front or range of building adorned with columns and ſtatues; in which were three large openings, through which other buildings appeared in perſpective, *viz.* a palace for tragedies, houſes and ſtreets for comedies, and foreſts for paſtorals.

Theſe decorations were either *verſatile*, *i. e.* they turned on pivots, as deſcribed by Vitruvius; or *ductile*, *i. e.* ſlided along grooves, as thoſe in our theatres.—And, as this or that ſide, or repreſentation, was turned towards the ſpectators, the *ſcene* was called a *tragic*, a *comic*, or a *paſtoral ſcene*. See ſeveral curious remarks on the ancient *ſcene* in M. Perrault's notes on Vitruvius, lib. 5. cap. 6.

SCENE, is alſo uſed for the place repreſented, or that where the action is conceived to have paſſed. See ACTION.

One of the grand laws of the drama, is, to obſerve the unity of the *ſcene*, which we more uſually call the *unity of place*. See UNITY.

In effect, to keep cloſe to nature and probability, the *ſcene* ſhould never be ſhifted from place to place, in the courſe of the play. The ancients were pretty ſevere in this reſpect,

ſpect, particularly Terence: in ſome of his plays, the *ſcene* never ſhifts at all, but the whole is tranſacted before the door of an old man's houſe, whither, with inimitable art, he brings all his actors, occaſionally.

The French too are very ſtrict in this reſpect: but the Engliſh plead for a diſpenſation from the rule; which they think confines them to too narrow bounds, and precludes them from that variety of adventures and intrigues, which an Engliſh audience will never be ſatisfied without.

However, the more judicious and accurate of our writers are very moderate in the uſe of this licence; and take care not to deviate too far from probability, by ſhifting the *ſcene*, between the acts, much farther than the perſons concerned may be ſuppoſed to have gone in the interval. Hence they ſeldom carry the *ſcene* out of the ſame town.—Though others, who own no ſubjection to the ancient rules, take otherguiſe liberties: with ſome of theſe it is nothing, when a fancied *ſcene*'s in view, to ſkip from Covent-Garden to Peru.—The great Shakeſpear is exceedingly faulty in this reſpect, in almoſt all his plays.

SCENE, is alſo a part, or diviſion, of a dramatic poem, determined by a new actor's entering.

Plays are divided into *acts*, and acts ſubdivided into *ſcenes*. See ACT.

In moſt of our printed plays, a new *ſcene* is never expreſſed to begin, but when the place is ſuppoſed to be changed by ſhifting, or drawing, the moveable *ſcene*; but this muſt be eſteemed an overſight, ſince on our ſtage, the *ſcene* is, properly, the perſons preſent at, or concerned in, the action on the ſtage at ſuch time. Whenever, therefore, a new actor appears, or an old one diſappears, the action is changed into other hands, and therefore a new *ſcene* then commences.

It is one of the laws of the ſtage, that the *ſcenes* be well connected: that is, that one ſucceed another, in ſuch manner, as that the ſtage is never quite empty till the end of the act. See CONNECTION.

The ancients did not allow of above three perſons on the ſtage at the ſame time, excepting in the chorus's, where the number was not limited: the moderns have but little regard to this reſtriction.

SCENIC *Games*, *Ludi* SCENICI, among the ancients, were entertainments exhibited on the *ſcena*, or theatre; including what we now call *plays* of all kinds, with dancing, and other theatrical performances. See THEATRE, GAME, &c.

The Romans were 400 years without any *ſcenic games* at all: Livy obſerves, that they were firſt inſtituted in the year of Rome 392, under the conſulate of C. Sulpitius Peticus, and C. Licinius Stolo. But the criticks have obſerved a trip here in Livy; the conſulate of thoſe perſons falling in the year 389, which, therefore, is held the æra of the introduction of *ſcenic games*. See SATYR.

At firſt, ſome actors were ſent for out of Hetruria; who, without reciting any thing, danced about to the ſound of inſtruments: ſo that thus far was no more than a ball, or rather what the French call a *ballet*.—At length they began to rehearſe verſe. See ATELLAN, FESCENNINE, &c.

Thus, by degrees, growing more and more perfect, their *ſcenical* ſhews were at laſt repreſented with a juſtneſs, and magnificence, beyond any thing the world ever ſaw.—The fathers, in their writings, cry out loudly againſt the *ſcenical games*.

SCENOGRAPHY*, in perſpective, a repreſentation of a body on a perſpective plane; or, a deſcription thereof in all its dimenſions, ſuch as it appears to the eye. See PERSPECTIVE.

* The word is formed from the Greek, σκηνη ſcene, and γραφη deſcription.

The ichnography of a building, &c. repreſents the plan, or ground-work of the building. See ICHNOGRAPHY. The orthography, the front, or one of the ſides. See ORTHOGRAPHY. And the *ſcenography*, the whole building, front, ſides, height and all, raiſed on the geometrical plan.

To exhibit the SCENOGRAPHY *of any body*.—1°. Lay down the baſis, ground-plot, or plan of the body, in the perſpective ichnography, according to the method laid down under the article PERSPECTIVE. 2°. Upon the ſeveral points of the plan raiſe the perſpective heights: thus will the *ſcenography* of the body be compleated; excepting that a proper ſhade is to be added. The method of raiſing the heights is as follows.

On any point given as C, *Tab. Perſpect. fig.* 1. N°. 2. to raiſe a perſpective altitude, anſwerable to an objective altitude P Q.—On the terreſtrial line raiſe a perpendicular P Q, equal to the given objective altitude. From P and Q, to any point, as T, draw right lines P T and Q T. From the given point C draw a right line C K, parallel to the terreſtrial line D E, meeting the right line Q T in K. In the point K, upon the line K C, erect a perpendicular I K. This I K is the *ſcenographic* altitude required.

The application of this general method of drawing the *ſcenography* of a body, is not ſo obvious, in every caſe, but that it may be neceſſary to illuſtrate it a little by a few examples.

To exhibit the SCENOGRAPHY *of a cube, viewed by an angle.*—1°. As the baſis of a cube viewed by an angle, ſtanding on a geometrical plane, is a ſquare viewed by an angle; draw a ſquare, viewed angular-wiſe, on the perſpective table, or plane. 2°. Raiſe the ſide H I (*fig.* 2. N°. 2.) of the ſquare perpendicularly on each point of the terreſtrial line D E; and to any point, as V, of the horizontal line H R, draw the right line V I and V H. 3°. From the angles d, b and c, draw c 1, d 2, &c. parallel to the terreſtrial line D E. 4°. From the points 1 and 2, raiſe L 1, and M 2, perpendicular to the ſame. Laſtly, ſince H I is the height to be raiſed in a, L I in c and b, and M 2 in d; in a, raiſe the line f a perpendicular to a E; in b and c, raiſe b g and c e perpendicular to b c 1; and laſtly, raiſe d h, perpendicular to d 2: and make a f = H I, b g = e c = L 1, and h d = M 2: if then the points g, h, e, f be connected by right lines, the *ſcenography* will be compleat.

To exhibit the SCENOGRAPHY *of a hollow quinquangular priſm.*—1°. Since the baſe of a hollow quinquangular priſm, ſtanding on a geometrical plane, is a pentagon, with a limb or breadth of a certain dimenſion; find the appearance of this pentagon on a table, or plane. See PERSPECTIVE. 2°. On any point, as H, of the terreſtrial line D E (*fig.* 3.) raiſe a perpendicular H I, equal to the objective altitude; and to any point, as V, of the horizontal line H R, draw the lines H V and I V. 3°. From the ſeveral angles, a, b, d, e, c, of the perſpective ichnography, both the internal and external ones, draw right lines, as b 2, d 3, &c. parallel to the terreſtrial line; and from the points 1, 2, 3, raiſe perpendiculars to the ſame, as L 1, M 2 m 2, N 3 n 3. If theſe, then, be raiſed in the correſpondent points of the ichnography, as in the preceding article, the *ſcenography* will be compleat.

To exhibit the SCENOGRAPHY *of a cylinder.*—1°. Since the baſe of a cylinder, ſtanding on a geometrical plane, is a circle; ſeek the appearance of a circle. In the points, a, b, d, f, h, g, e, c, (*fig.* 8.) raiſe the apparent altitudes, as in the preceding articles. If now their upper lines be connected by curve lines, as in the baſe, a, b, d, f, g, h, e, c, the *ſcenography* of the circle will be compleat.

It is evident that thoſe lines are to be omitted, both in the plan and in the elevation, which are not expoſed to the eye; though they are not to be diſregarded, from the beginning, as being neceſſary for the finding of other lines.—*E. gr.* In the *ſcenography* of the cube, viewed angle-wiſe, the lines b d and d c, (*fig.* 2. N°. 2.) in the baſe, and d h in the elevation, are hid from the eye, and are therefore omitted in the deſcription. But ſince the upper point h is not to be found unleſs the point d be had in the ichnography; nor can the lines g h and d e be drawn without the height d h; the appearance of the point d is as neceſſary to be determined in the operation, as the height h d.

To exhibit the SCENOGRAPHY *of a pyramid, ſtanding on its baſe.*—Suppoſe, *e. gr.* it were required to delineate a quadrangular pyramid, viewed by an angle. 1°. Since the baſe of ſuch pyramid is a ſquare ſeen by an angle, draw ſuch a ſquare. 2°. To find the vertex of the pyramid, *i. e.* a perpendicular let fall from the vertex to the baſe, draw diagonals mutually interſecting each other in e (*fig.* 5. N°. 2.) 3°. On any point, as H, of the terreſtrial line D E, raiſe the altitude of the pyramid H I; and drawing the right lines H V, and I V to each point of the horizontal line H R; produce the diagonal a b, till it meet the line V H in h. Laſtly, from h draw h i parallel to H I. This being raiſed on the point e, will give the vertex of the pyramid K; conſequently, the lines d k, k a, and k b, will be determined at the ſame time.

After the like manner is the *ſcenography* of a cone delineated.

To exhibit the SCENOGRAPHY *of a truncated pyramid.*—Suppoſe the truncated pyramid quadrangular; 1°. then, If from the ſeveral angles of the upper baſe be conceived perpendiculars let fall to the lower baſe, we ſhall have a pentagon, with another inſcribed therein, whoſe ſides are parallel to thoſe of the former. This coincides with a pentagon, furniſhed with a rim or breadth, &c. and may therefore be delineated in the ſame manner.—2°. Raiſing the altitude of the truncated pyramid I H (*fig.* 6. N°. 2.) determine the *ſcenographic* altitudes, to be raiſed in the points a, b, c, d, e. If now the points higher f, g, h, i, k, be connected by right lines, and the lines l k, f m, g n, h o, be drawn, the *ſcenography* will be compleat.—By drawing two concentric circles in a geometrical plane, and doing every thing elſe, as in this problem, the *ſcenography* of a truncated cone will be drawn.

To exhibit the SCENOGRAPHY *of walls, columns,* &c. *or to raiſe them on the pavement.*—1°. Suppoſe a pavement A F H I (*fig.* 7. N°. 2.) repreſented in a plan, together with the baſes of the columns, &c. if there be any. 2°. Upon the terreſtrial line ſet off the thickneſs of the wall B A and 1 3. 3°. Upon A and B, as alſo upon 3 and 1, raiſe perpendiculars A D and B C, as alſo 3, 6, and 1, 7. 4°. Connect the points D and 6 with the principal point V, by the right lines D V and 6 V. 5°. Upon F and H raiſe perpendiculars H G and E F. Thus will all the walls be delineated.

Now to raiſe the pillars, &c. there needs nothing but, from their ſeveral baſes (whether ſquare, or circular) projected on the perſpective plan, to raiſe indefinite perpendiculars; and on the fundamental line, where interſected by the radius F A paſſing through the baſe, raiſe the true altitude A D: for D V being drawn as before, the *ſcenographical* altitudes will be determined.

To exhibit the SCENOGRAPHY *of a door in a building.*—Suppoſe a door required to be delineated in a wall D E F A; 1°. Upon the fundamental line ſet off its diſtance A N from the angle A, together with the breadths of the poſts N I and L M, and the breadth of the gate itſelf L I. 2°. To the point of diſtance K, from the ſeveral points N, I, L, M, draw right lines K N, K I, K L, K M, which will determine the breadth of the door l i, and the breadths of the poſts i n and m l. 3°. From A to O, ſet off the height of the gate A O, and from A to P, the height of the poſts A P. 4°. Join O and P with the principal point, by the right lines P V and O V. 5°. Then, from n, i, l, m, raiſe perpendiculars, the middle ones whereof are cut by the right line O V in o, and the extremes, by the right line V P in p. Thus will the door be delineated, with its poſts. If the door were to have been exhibited in the wall E F G H, the method were nearly the ſame. For, 1°. Upon the terreſtrial line, ſet off the diſtance of the door from the angle, and thence alſo the breadth of the door R T. 2°. From R and T, draw right lines to the principal point V, which give the breadth r t in the perſpective plan. 3°. From r and t, raiſe indefinite perpendiculars to F H. 4°. From A to O, ſet off the true height A O. Laſtly, from O, to the principal point V, draw the right line O V, interſecting E F in Z, and make r r and t t equal to F Z.—Thus is the door r r, t t, drawn; and the poſts are eaſily added, as before.

To exhibit the SCENOGRAPHY *of windows in a wall.*—When you know how to repreſent doors, you will find no difficulty in adding windows; all that is here further required, being to ſet off the height of the window from the bottom of the ground. The whole operation is as follows. 1°. From 1 to 2, ſet off the thickneſs of the wall at the window; from 3 to 4, its diſtance from the angle 3; and from 4 to 5 its breadth. 2°. From 4 and 5, to the point of diſtance L, draw the right lines L 5 and L 4, which will give the perſpective breadth 10, 9 of the window. 3°. From 10 and 9 raiſe lines perpendicular to the pavement, *i. e.* draw indefinite parallels to 6, 3. 4°. From 3 to 11 ſet off the diſtance of the window from the pavement 3, 11; and, from 11 to 12, its height 11, 12. Laſtly, from 11 and 12, to the principal point V, draw lines V 11 and V 12; which interſecting the perpendiculars 10, 13, and 9, 14, in 13 and 14, as alſo in 15 and 16, will exhibit the appearance of the window.

From theſe examples, which are all no more than applications of the firſt grand general rule, it will be eaſily perceived what method to take to delineate any other thing, and at any height from the pavement.

For *a mechanical method of exhibiting the* SCENOGRAPHY *of any object*, ſee DESIGNING.

SCENOPEGIA*, ΣΚΗΝΟΠΗΓΙΑ, a feaſt among the Jews, more uſually called *feaſt of tabernacles*, inſtituted after the people of Iſrael were in poſſeſſion of the land of Canaan, in memory of their having dwelt under tents in the wilderneſs.

* The word is Greek, formed of σκηνη, ſcene, tabernacle, tent; and πηγνυμι *figo*, I fix.

The *ſcenopegia* was held for eight days ſucceſſively, commencing on the fifteenth of September. The laſt day was much the moſt ſolemn; both on account of the conflux of perſons, and of the extraordinary tokens they gave of their joy.—It is of this eighth day, St. John muſt be underſtood to ſpeak, when he tells us, our Saviour was at the feaſt of tabernacles, on the laſt and great day.

When the holy ſcripture ſays abſolutely, *the feaſt*, it is uſually to be underſtood of the *ſcenopegia*.

SCEPTER*, SCEPTRUM, a royal ſtaff, or battoon, borne, on ſolemn occaſions, by kings, as a badge of their command and authority. See KING, and REGALIA.

* Nicod derives the word from the Greek, σκηπτρον, which, he ſays, originally ſignified a javelin, which the ancient kings uſually bore as a badge of their authority, in regard that inſtrument was in very great veneration among the heathens.—But, σκηπτρον does not properly ſignify a javelin, but a ſtaff to reſt upon, from σκηπτω, *innitor*, I lean upon.

The *ſcepter* is an enſign of royalty of greater antiquity than the crown. The Greek tragic, and other poets, put *ſcepters* in the hands of the moſt ancient kings they ever introduce.

Juſtin obſerves, that the *ſcepter*, in its original, was a *haſta*, or ſpear: he adds, that in the moſt remote antiquity, men adored the *haſtæ*, or *ſcepters*, as immortal gods; and, that it was upon this account, that even in his time, they ſtill furniſhed the gods with *ſcepters*.—Neptune's *ſcepter* is his trident. See TRIDENT.

Tarquin, the elder, was the firſt who aſſumed the *ſcepter* among the Romans.—Le Gendre tells us, that in the firſt race of the French kings, the *ſcepter* was a golden rod, almoſt always of the ſame height with the king who bore it, and crooked at one end like a crozier.—Frequently, inſtead of a *ſcepter*, kings are ſeen on medals with a palm in their hand.

SCEPTER, SCEPTRUM, in aſtronomy, one of the ſix new conſtellations of the ſouthern hemiſphere, conſiſting of 17 ſtars; one of the 4th magnitude, 8 of the 5th, and as many of the 6th. See STAR and CONSTELLATION.

SCEPTICISM, the doctrine and opinions of the ſcepticks; called alſo *Pyrrhoniſm*, from the name of its author. See SCEPTICKS and PYRRHONISM.

The ancient *ſcepticiſm* conſiſted in doubting of every thing, in affirming nothing at all, and in keeping the judgment in ſuſpenſe on every thing. Sextus Empiricus makes *ſcepticiſm* to conſiſt in a faculty of oppoſing all appearances, of making all, even contrary things, equally probable, and of proceeding firſt to an εποχη, ſuſpenſe of mind, and then to an intire undiſturbedneſs or tranquillity. See ACADEMY and ACADEMICKS.

Hence theſe great maxims of theirs: Ου μαλλον τȣτο η εκεινο, this no more than that: Παντι λογω λογος, &c. every reaſon has another againſt it; and Ουδεν οριζω, I determine nothing.

The proper character then of *ſcepticiſm*, is an ακαταληψια, neutrality, or ſuch a diſpoſition of mind as does not, upon any occaſion, incline to any thing more than the contrary thing. See ACATALEPSIA.

This heſitancy of the ſcepticks is well deſcribed by Ariſtocles in Euſeb. *de præpar. evan.* All things are equally indifferent, uncertain and undeterminate: neither our ſenſes, nor our opinions give us either truth or falſhood: therefore, neither the one, nor the other are to be credited; but all things to be left on a level, without admitting any opinion, inclination or motion of the mind at all.—It is added, that the ſcepticks carried this ſuſpenſe of theirs ſo far, as to deny, that any thing is either good or evil, juſt or unjuſt, true or falſe; or that any thing is this, more than that. See EVIL, GOOD, &c.

It is from this acatalepſia of the ſcepticks, that Des Cartes ſeems to have borrowed his great principle of doubting of all things; as is owned by many of his followers.—It muſt be owned, there is ſome difference between the doubting of the ſcepticks, and that of the Carteſians. In phyſical matters, it is true, there does not ſeem a great deal of difference; and Des Cartes, in that reſpect, may, without much injuſtice, be deemed a ſceptick: but this may be ſaid in his favour, that the great Socrates was ſo far a ſceptick himſelf; phyſical and ſenſible things, he held, were all dubious, and, at beſt, but probable. See CARTESIANISM.

The origin of *ſcepticiſm* is ſomewhat obſcure. Pyrrho, who lived under Alexander the Great, and made the tour of India in his retinue, is uſually reputed the author; whence Pyrrhonians and ſcepticks are ordinarily uſed indifferently. See PYRRHONIAN.

It muſt be owned, however, that the great dogma of the ſcepticks had been countenanced, and even cultivated before Pyrrho, by Democritus, Heraclitus, &c.—Sextus Empiricus ſays, expreſly, that all that Pyrrho did, was to improve, illuſtrate and inforce the dogma, and form the retainers thereto into a ſect.

Democritus's philoſophy was near akin to *ſcepticiſm*; for upon his obſerving, that honey ſeemed ſweet to ſome, and bitter to others, he concluded, that it was neither ſweet nor bitter; and thereupon, pronounced ȣ μαλλον, *non magis*, which is pure *ſcepticiſm*.—Yet the ſame Sextus adds, that Democritus was no ſceptick.

Though Plato argues very ſtrenuouſly againſt the acatalepſy of the ſcepticks; yet it is certain that dogma received a great part of its encouragement from Socrates's ſchool, and Plato's academy. Nay, it was a great controverſy among the ancients, whether Plato himſelf were a ſceptick or dogmatiſt? Indeed Plato's deciſive way of ſpeaking, in many caſes, ſeems to leave no great room for ſuch a doubt; but it is certain, his followers of the new academy founded by Arceſilas, gave much into this way; and *nihil ſcitu*, was held by them a principle. See ACADEMY, PLATONIC, &c.

Sextus Empiricus obſerves, that Socrates himſelf had a tincture of *ſcepticiſm*; ſome even make him the author of it, from that cuſtomary ſaying of his, *I know nothing but this, that I know nothing.* If this were the origin of *ſcepticiſm*, it muſt be owned, it was mightily improved afterwards, ere Metrodorus ſaid, *I know nothing, not even this, that I know nothing.* The ſame Sextus however adds, that Plato, introducing his maſter in his gymnaſtic dialogues, diſputing with the ſophiſts, makes him act the part of a ſceptic. See SOCRATIC.

Some have even charged Job, and Solomon, with *ſcepticiſm*; from their propoſing a great number of queſtions, without deciding any of them. The philoſopher of Kiel, who has publiſhed a diſſertation on *ſcepticiſm*, fetches its origin ſtill higher: he will have the devil the author thereof, who made our firſt parents doubt of the word of God himſelf; and drew them in, the firſt proſelytes to *ſcepticiſm*. See DOUBTING.

SCEPTICKS *, Sceptici, a ſect of ancient philoſophers, founded by Pyrrho, whoſe diſtinguiſhing tenet was, that all things are uncertain and incomprehenſible; contraries equally true; that the mind is never to aſſent to any thing; but to keep up an abſolute heſitancy or indifference. See Scepticism.

* The term *ſceptick*, in its original Greek, σκεπτικος, properly ſignifies *conſiderative*, and *inquiſitive*; or a man who is ever weighing the reaſons on one ſide and the other, without ever deciding between them: it is formed from the verb σκεπτομαι, I conſider, look about, deliberate.

Laertius notes, that the followers of Pyrrho had various denominations: from their maſter, they were called *Pyrrhonians*: from their dogma, *aporetici*, that is, doubters, of απορειν, to doubt.—From their ſuſpenſion and heſitation, *ephectici*, of επεχειν, to ſtay, to keep back.—And from their never getting beyond the ſearch of truth, *zetetici*, ſeekers.

Plato refutes the great principle of the *ſcepticks* thus: when you ſay, that all things are incomprehenſible, do you comprehend or conceive that they are thus incomprehenſible, or do you not? if you do, then ſomething is comprehenſible; if you do not, there is no reaſon we ſhould believe you, ſince you do not comprehend your own aſſertion. See Acatalepsy.

SCHAR-PENNY, Scharn-Penny, or Schorn-Penny.—It appears from our old books, that ſome cuſtomary tenants were obliged to pen up their cattle at night in the pound or yard of their lord, for the benefit of their dung, or *ſcearn*, as the Saxons called it.—In defect of this, they were to pay a ſmall compenſation; hence called *ſcharpenny*.

SCHEAT or **SEAT**, in aſtronomy, a fixed ſtar of the ſecond magnitude in the juncture of the leg with the left ſhoulder of Pegaſus. See Pegasus.

Some call it *ſcheat alpheras*, and ſome *ſcheat Pegaſi*.—Its longitude, according to Mr. Flamſteed, is 25° 2′ 13″, its latitude 31° 8′ 6″ north.

SCHEDULE *, Schedula, a ſcroll of paper, or parchment, annexed to a will, leaſe, or other deed; containing an inventory of goods, or ſome other matter, omitted in the body of the deed. See Codicil.

* The word is a diminutive of the Latin *ſcheda*, or Greek σχηδη, a leaf or piece of paper.

SCHEITER's *fortification*. See Fortification.

SCHEMATISM, ΣΧΗΜΑΤΙΣΜΟΣ. See the articles Figure and Trope.

SCHEME *, a draught, or repreſentation of any geometrical, or aſtronomical figure, or problem, by lines ſenſible to the eye; or of the cœleſtial bodies in their proper places for any moment. See Figure and Diagram.

* The word is formed from the Greek, σχημα, *habitus*.

Scheme *arches*. See the article Arch.

SCHEVAGE. See the article Schewage.

SCHIPPER. See the article Shipper.

SCHIREMOTE, or Scyremot. See Scyremot.

SCHISM *, Schisma, in the general, ſignifies *diviſion*, or *ſeparation*; but it is chiefly uſed in ſpeaking of ſeparations happening through diverſity of opinions among people of the ſame religion, and faith.

* The word is formed from the Greek, σχισμα, cleft, fiſſure.

Thus, we ſay, the *ſchiſm* of the ten tribes of Iſrael, from the two tribes of Juda and Benjamin; the *ſchiſm* of the Perſians, from the Turks and other Mahometans, &c.

Among eccleſiaſtical authors, the *great ſchiſm of the weſt*, is that which happened in the times of Clement VII. and Urban VI. which divided the church for forty or fifty years, and was at length ended by the election of Martin V. at the council of Conſtance.

The Romaniſts number thirty-four *ſchiſms* in their church.—They beſtow the name, *Engliſh ſchiſm* on the reformation of religion in this kingdom.—Thoſe of the church of England again apply the term *ſchiſm* to the ſeparation of the non-conformiſts, *viz.* the preſbyterians, independants, and anabaptiſts, who contend for a further reformation.

Some call the ſeparation of the proteſtants from the church of Rome, a *paſſive ſchiſm*, becauſe that church cut them off from her communion.

Negative Schism. See the article Negative.

SCHOENOBATES *, ΣΧΟΙΝΟΒΑΤΗΣ, a Name which the Greeks gave to their rope-dancers; by the Romans called *funambuli*. See Rope-Dancer and Funambulus.

* The word is formed from the Greek, σχοινος, a rope; and βαινω, I walk.

The *ſchœnobates* were ſlaves, whoſe maſters made money of them, by entertaining the people with their feats of activity.—Mercurialis *de arte gymnaſtica*, *lib.* III. gives us five figures of *ſchœnobates* engraven after ancient ſtones.

SCHOLARUM *domeſticus*. See Domesticus.

SCHOLASTIC, ΣΧΟΛΑΣΤΙΚΟΣ, ſomething belonging to the ſchools; or that is taught in the ſchools. See School.

Scholastic, Scholasticus, was a long time a title of honour; at firſt only given to ſuch as diſtinguiſhed themſelves by their eloquence, in declaiming, &c. See Orator, Sophist, Rhetor, &c.

After Nero, the appellation Scholasticus was alſo given to the advocates; and among others, to Socrates and Euſebius, the eccleſiaſtical hiſtorians, who were advocates at Conſtantinople. Conſtant. Harmenopulus alſo bore it in the twelfth century, with ſeveral others. See Advocate, Advouee, and Defender.

Afterwards, Scholasticus became reſtrained to ſuch as had the government of the eccleſiaſtical ſchools, eſtabliſhed under the firſt race of French kings, who inſtructed the clerks of each church, firſt in the humanities, then in the theology and the liturgy.—Theſe were alſo called *primiciers eſcolaſtres*, and *theologaux*: if the church were ſituated in a city, the *ſcholaſticus* was called the *chancellor*.

Among the Greeks, Scholasticus, Σχολαστικος, was alſo the name of an office, or dignity; anſwering to our *divine* or *theologue*.—Indeed, Genebrard obſerves, it was only properly applied to people of general learning, and fine parts, and who were well known to the world in that character.

Thus, St. Jerom mentions, that Serapion was ſurnamed *Scholaſticus*, by reaſon of the delicacy of his wit: Walafrid Strabo, calls the poet Prudentius, *ſcholaſticus*: Fortunatus was called *ſcholaſticiſſimus*.

Scholastic *divinity*, is that part or ſpecies of divinity which clears, and diſcuſſes queſtions, by reaſon, and arguments. See Theology.

In which ſenſe, it ſtands, in good meaſure, oppoſed to *poſitive* divinity, which is founded on the authority of fathers, councils, &c. See Positive.

The *ſchool divinity*, like Plato's ſchool, has had its three ſeveral ages, or periods: the *ancient*, the *middle*, and the *new*.

The *ancient* began under Lanfrank, archbiſhop of Canterbury, or, more properly, under Peter Lombard, the maſter of the ſentences; and held about 200 years; ending under Albertus Magnus.

This was ſucceeded by the *middle ſchool divinity*, which laſted about 100 years, to the time of Thomas Aquinas; during which time, the peripatetic philoſophy was raiſed to its utmoſt reputation. See Peripatetic.

The third age began under Durandus, who ſet himſelf up againſt Thomas, the chief of the *middle* age. After his time people's wits became more and more ſubtile; and the ſchool began to be wholly taken up in frivolous queſtions. They diſputed, with great heat, about mere formalities; and even raiſed phantoms on purpoſe to combat withal.

The *ſchool divinity* is now fallen into the laſt contempt; and is ſcarce regarded any where, but in ſome of the univerſities, where they are ſtill obliged by their charters to teach it.

SCHOLIAST, ΣΧΟΛΙΑΣΤΗΣ, *commentator*; a grammarian who writes *ſcholia*, that is, notes, gloſſes, &c. upon ancient Greek authors. See Scholium.

SCHOLIUM, ΣΧΟΛΙΟΝ, a note, annotation, or remark occaſionally made on ſome paſſage, propoſition, or the like. See Gloss, Commentary, Annotation, &c.

The term is much uſed in geometry, and other parts of mathematicks; where, after demonſtrating a propoſition, it is frequent to point out how it might be done ſome other way; give ſome advice, or precaution, in order to prevent miſtakes; or add ſome particular uſe or application thereof.

Wolfius has given us abundance of curious and uſeful arts, and methods, a good part of the modern philoſophy, the deſcription of mathematical inſtruments, &c. all by way of *ſcholia* to the reſpective propoſitions in his *Elementa Matheſeos*.

SCHOOL *, Schola, a publick place, wherein the languages, humanities, or other arts and ſciences are taught.

* The word is formed from the Latin, *ſchola*, which according to Du Cange ſignifies *diſcipline*, and *correction*: he adds, that it was anciently uſed, in the general, for all places, where ſeveral perſons met together, either to ſtudy, to converſe, or do any other matter. Accordingly, there were *ſcholæ palatinæ*, being the ſeveral poſts wherein the emperor's guards were placed; *ſchola ſcutariorum*, *ſchola gentilium*, &c. At length the term paſſed alſo to civil magiſtrates; and accordingly in the code, we meet with *ſchola chartulariorum*, *ſchola agentium*, &c. and even to eccleſiaſticks; as, *ſchola cantorum*, *ſchola ſacerdotum*, &c.

Thus we ſay, a grammar *ſchool*, a writing *ſchool*, a *ſchool* of natural philoſophy, &c.

School, is alſo uſed for a whole faculty, univerſity, or ſect: as Plato's *ſchool*, the *ſchool* of Epicurus, the *ſchool* of Paris, &c. The *ſchool* of Tiberias was famous among the ancient Jews; and it is to this we owe the maſſora, and maſſoretes. See Massoretes.

School, in painting, is uſed to diſtinguiſh the different manners of places, and perſons. See Manner, &c.

Thus we ſay, the Roman *ſchool*, the Venetian *ſchool*, the Flemiſh *ſchool*, &c. Raphael's *ſchool*, Titian's *ſchool*, da Vinci's *ſchool*, &c. meaning their diſciples, pupils, &c. See Painting.

School *of Athens*, is the name of a celebrated piece of Raphael, now in the Vatican.—It contains a great number of figures, repreſenting philoſophers, mathematicians, and other perſons engaged in the arts, and ſciences.

Several authors have wrote of this painting, and given different explications thereof: Vaſari will have it to be, the agreement of philoſophy, and aſtronomy, with theology.—The engravers, by the inſcription they add at the bottom of the print thereof, ſhew, that they take it for a painting of St. Paul preaching at Athens.—An Auguſtin of Venice takes the philoſopher who is writing, for St. Mark; and he at his knees, for the angel Gabriel.

M. de Piles rejects all theſe explications of the *ſchool of Athens*, and eſpecially the laſt: his opinion is, that it is nothing more than an image of philoſophy, which Raphael here repreſents under all the philoſophers he has painted.

In behalf of the Venetian engravers it may be ſaid, that they do not pretend to explain the painting, but have only copied ſuch of the figures as they thought proper to repreſent, St. Mark, St. Gabriel, *&c.*

SCHOOL *philoſophy*, *theology*, &c. the ſame with *ſcholaſtic*. See SCHOLASTIC and THEOLOGY.

Charity SCHOOLS. See the article CHARITY.

SCHOOUBIAH, a ſect among the muſſulmen, whoſe diſtinguiſhing tenet it is, that the Sunnites are not a whit preferable to the Shiites or Rafadhites, *i. e.* the orthodox to the heterodox; but that both the one and the other are equally true believers.

The *Schooubiah*, therefore, ſhould be properly, the Latitudinarians of Mahometaniſm: yet are not they regarded by either party, as much better than Gentiles, or Heathens, as their name imports. See DEISM, *&c.*

There are abundance among the muſſulmen, who give into this ſect, only ſecretly; Mahometaniſm, like all other falſe religions, being an avowed enemy to toleration. See MAHOMETANISM, TOLERATION, LIBERTY *of conſcience*, &c.

SCHORN-PENNY. See the article SCHAR-PENNY.

SCIAGRAPHY, or SCIOGRAPHY, the profile, or ſection of a building, to ſhew the inſide thereof. See SECTION and PROFILE.

SCIAGRAPHY, in aſtronomy, *&c.* is a term ſome authors uſe for the art of finding the hour of the day or night, by the ſhadow of the ſun, moon, ſtars, *&c.* See DIAL.

SCIAMANTIA*, SCIAMANCY, or SCIOMANCY, a kind of divination, otherwiſe called *pſychomancy.*—*Sciamancy*, among the ancients, was the art of raiſing and calling up the manes or ſouls of deceaſed perſons, to give intelligence of things to come. The witch who conjured up the ſoul of Samuel, to foretel Saul the event of the battle he was about to give, did it by *ſciamancy.*

* The word is formed from the Greek, σκια, ſhadow, uſed metaphorically for the ſoul, and μαντεια, divination. See DIVINATION.

SCIATICA, in medicine, the gout in the hip. See GOUT.

SCIE.—*Feuille de* SCIE. See FEUILLE *de ſcie.*

SCIENCE*, in philoſophy, a clear and certain knowledge of any thing, founded on ſelf-evident principles, or demonſtration. See KNOWLEDGE.

* The word is formed from the Latin, *ſcientia*, of *ſcire*, to know.

In this ſenſe, *doubting* is oppoſed to *ſcience*; and *opinion* is the middle between the two. See DOUBTING and OPINION.

The ſcepticks profeſs to deny, that we have any ſuch thing as *ſcience*; that is, any clear, certain notices of any thing, capable of producing abſolute conviction. See SCEPTICISM.

Divines ſuppoſe three kinds of *ſcience* in God: the firſt, *ſcience of mere knowledge*, whereby God knows himſelf, and all things poſſible.—The ſecond, *ſcience of viſion*, whereby he knows all things he has reſolved to do, or to permit, in the ſame order wherein he has reſolved to do, and to permit them.—The third, a *mediate* or *intermediate ſcience*, whereby he knows what angels and men will do, in certain caſes and certain circumſtances, if he reſolve to bring them about.

It is greatly diſputed among ſchool divines, whether or no there be ſuch a mediate *ſcience* in God? the reaſon why ſome call it in queſtion, is, becauſe it does not conſiſt well with their particular ſchemes of preſcience, *&c.* See LIBERTY, NECESSITY, *&c.*

SCIENCE *of conditionals.* See CONDITIONAL.

SCIENCE, is more particularly uſed for a formed ſyſtem of any branch of knowledge; comprehending the doctrine, reaſon and theory of the thing, without any immediate application thereof to any uſes or offices of life.

In which ſenſe, the word is uſed in oppoſition to *art.* See ART.

Indeed, the preciſe notion of an art, and *ſcience*, and their juſt, adequate diſtinction, do not ſeem to be yet well fixed. See the PREFACE to this work.

As to the number, and diviſion of the *ſciences*, Mr. Locke limits them thus: all that can fall within the compaſs of human underſtanding, is, firſt, either the nature of things, their relations, and their manner of operation: or, ſecondly, that which man himſelf ought to do as a voluntary and rational agent, for the attainment of any end, eſpecially happineſs: or, thirdly, the ways and means, whereby the knowledge of both of theſe is attained and communicated: whereupon, *ſcience* may be properly divided into theſe three ſorts.

Firſt, the knowledge of things, their conſtitutions, properties and operations, whether material or immaterial.—This, in a little more inlarged ſenſe of the word, may be called, Φυσικη, or *natural philoſophy.*—The end of this is bare ſpeculative truth, and whatſoever can afford the mind of man any ſuch, falls under this branch; whether it be God himſelf, angels, ſpirits, bodies, or any of their affections; as number, figure, *&c.* See PHYSICKS and PHILOSOPHY.

Secondly, πρακτικη, the ſkill of right applying our own powers, and actions for the attainment of things good and uſeful.—The moſt conſiderable under this head, is *ethicks*, which is the ſeeking out thoſe rules and meaſures of human actions, which lead to happineſs, and the means to practiſe them. The end of this is not bare ſpeculation; but right, and a conduct ſuitable thereto. See ETHICKS and MORALITY.

Thirdly, σημειωτικη, or the doctrine of ſigns.—The moſt uſual being words, it is aptly enough termed *logick*; the buſineſs whereof is to conſider the nature of ſigns which the mind makes uſe of for the underſtanding of things, or conveying its knowledge to others. Things are repreſented to the mind by ideas; and mens ideas are communicated to one another by articulate ſounds or words. The conſideration then of ideas and words, as the great inſtruments of knowledge, makes no deſpicable part of their contemplation who would take a view of human knowledge in the whole extent of it. See WORD, LANGUAGE, *&c.*

This ſeems the firſt, and moſt general, as well as natural diviſion of the objects of our underſtanding: for a man can employ his thoughts about nothing, but either the contemplation of things themſelves for the diſcovery of truth; or about the things in his own power, which are his actions, for the attainment of his own ends; or the ſigns the mind makes uſe of, both in the one and the other, and the right ordering of them, for its clearer information.—All which three, *viz.* things as they are in themſelves knowable; actions, as they depend on us in order to happineſs; and the right uſe of ſigns in order to knowledge, being *toto cœlo*, different, they ſeem to be the three great provinces of the intellectual world, wholly ſeparate and diſtinct one from another. See KNOWLEDGE.

Academy of SCIENCES. See the article ACADEMY.

SCIENTIFIC, or SCIENTIFICAL, ſomething relating to the pure, ſublimer ſciences; or, that abounds in ſcience, or knowledge. See SCIENCE, KNOWLEDGE and FAITH.

A work, a method, *&c.* is ſaid to be *ſcientifical*, when it is founded on the pure reaſon of things, or conducted wholly on principles thereof. See METHOD.

In which ſenſe, the word ſtands oppoſed to narrative, arbitrary, opinionative, poſitive, tantative, *&c.*

SCILLA, or SQUILLA, *ſquill*, the *ſea-onion*; a medicinal plant, of the onion-kind, but very large; chiefly brought from Spain: uſed only in infuſion, and that generally in vinegar, which it renders emetic.

There are two kinds of *ſquills*, *male* and *female*: the *male* are whitiſh, and the *female* reddiſh; whence they are alſo diſtinguiſhed by the appellations of *white ſquills*, *ſcillæ albæ*, and *red ſquills*, *ſcillæ rubræ*.

Their infuſion, when boiled to the conſiſtence of a ſyrup, with honey, is called *oxymel ſcilliticum*, in the ſhops, and retains the ſame properties.

Squills powerfully deterge, and ſcour off the viſcid adheſions in the bowels, and gently irritate the ſtomach to ejection. They are alſo, as all of the onion-kind are, very diuretick, and therefore in great eſteem, with ſome, in dropſies: if their infuſion be mixed with cinnamon-water, they will ſeldom vomit, but work downwards, and very forcibly, by urine: in aſthmas, and all obſtructions, or infarctions of the lungs, which are to be removed by deterſives and expectoration, there is ſcarce any thing more effectual. They are alſo eſteemed alexipharmick, and upon that account have a place in the theriaca Andromachi.

SCILLITICUM *vinum.* See the article VINUM.

SCIOPTICK, a ſphere or globe of wood, with a circular hole or perforation wherein a lens is placed.—It is ſo fitted, that, like the eye of an animal, it may be turned round every way; to be uſed in making experiments of the darkened room. See CAMERA OBSCURA.

SCIRE-FACIAS, a judicial writ, moſt commonly uſed to call a man to ſhew cauſe to the court whence it iſſues, why execution of a judgment paſſed, ſhould not be made out?

This writ is not granted, till a year and a day be elapſed after a judgment given.

Scire-facias, upon a fine, lies only after a year and a day after the fine levied.—Otherwiſe, it is the ſame with the writ of *habere facias ſeiſinam.* See HABERE *facias*, &c.

SCIRRHUS*, ΣΚΙ'Ρ'ΡΟΣ, in medicine, a hard, indolent tumor, formed gradually, in the ſoft, glandulous parts of the body; ſometimes internal, and ſometimes external.

* The word is Greek, formed of σκιρος, a piece of marble.

There are two kinds of *ſcirrhus's*; the one only beginning, and frequently painful when preſſed by the fingers; the other, confirmed and ſenſeleſs.

The *ſcirrhus* ariſes from a thick, viſcid, probably gritty matter, detained and indurated in the pores and other minute paſſages of the parts affected.

There are ſome *ſcirrhus's* as hard as ſtones; ſome are even painful in their confirmed ſtate, and partake of the nature of a cancer.

SCITE. See the article SITE.

SCLAVONIC, the language of the Sclavi, an ancient people of Scythia Europæa; who, about the year 518, quitting their native country, ravaged Greece and eſtabliſhed the kingdoms of Poland and Moravia, and at laſt ſettled in Illyria: which thence took the name of *Sclavonia.* See LANGUAGE.

The *Sclavonic* is held, after the Arabic, the moſt extenſive language in the world: it is ſpoke from the Adriatic to the north ſea, and from the Caſpian to Saxony, by a great variety of people, all, the deſcendants of the ancient Sclavi, *viz.* the Poles, Muſcovites, Bulgarians, Carinthians, Bohemians, Hungarians, Pruſſians, Suabians, *&c.* each of whom, however, have their particular dialect; only the *Sclavonic* is the common mother of their ſeveral languages, *viz.* the Poliſh, Ruſſian, Hungarian, *&c.*

By a Latin chronicle of the Sclavi, compoſed by Helmold, a prieſt of Boſow, and Arnold abbot of Lubec, and corrected by M. Leibnitz, it appears, that the Sclavi anciently inhabited the coaſts of the Baltic ſea, and were divided into eaſtern and weſtern: in the latter whereof, were the Ruſſians, Poles, Bohemians, *&c.* And in the former, the Vandals.

Dom. Maur. Orbini Rauſer, abbot of the order of Malta, in an Italian hiſtory of the Sclavi, intitled, *Il regno de gli Slavi*, printed in 1601, will have them to be originally of Finland in Scandinavia. Laur. Pribevo, a Dalmatian, in an expreſs diſcourſe on the origin of the Sclavi, maintains them to be originally of Thrace, and the ſame with the Thracians, the poſterity of Thiras, ſeventh ſon of Japhet. Theod. Polycarpowitz, in a Greek, Latin and *Sclavonic* dictionary, printed at Moſcow in 1704, obſerves, that the word *Sclava*, whence *Sclavonic* is formed, ſignifies in their language, *glory.*

SCLEROPHTHALMIA, ΣΚΛΗΡΟΦΘΑΛΜΙΑ, a kind of ophthalmia, wherein the eye is dry, hard, red and painful; and the eyebrows likewiſe; ſo as not to be opened after ſleep, without great pain. See OPHTHALMIA.

SCLEROTICA*, in anatomy, one of the common membranes of the eye, ſituate between the adnata and the uvea; it is very firm and opaque behind; but tranſparent before.—Though in ſtrictneſs, it is only the hind-part is called *ſclerotica*; the fore-part being properly called the *cornea.* See CORNEA.

* The word is formed from the Greek, σκληρὸς, hard, whence alſo *ſclerotick.* See SCLEROTICKS.

The *ſclerotica* is a ſegment of a larger ſphæroid than the cornea. See EYE.

SCLEROTICKS, medicines, proper to harden and conſolidate the fleſh, *&c.* of parts they are applied to.

Such are purſlain, houſe-leek, flea-wort, garden night-ſhade, *&c.*

SCOLDING.—The puniſhment allotted by our laws for *ſcolds* or *ſcolding* women, is, to be ſet in a trebuchet, commonly called a *cucking-ſtool*, placed over ſome deep water, into which they are to be let down, and plunged thrice, under water, to cool their heat and choler. See CUCKING-STOOL.

SCOLOPOMACHÆRION, ΣΚΟΛΟΠΟΜΑΧΑΙΡΙΩΝ, in chirurgery, a kind of ſcalpel, thus called, by the Greeks, from its reſembling a woodcock's bill. See SCALPEL.

Its uſe is to open, and dilate narrow wounds of the breaſt, abſceſſes, *&c.*—Aquapendente recommends it for tapping in dropſies.

It is uſually furniſhed with a little button at the point, that it may be uſed to open wounds of the breaſt without danger of wounding the lungs.

SCONCES, ſmall forts, built for defence of ſome paſs, river, or other place. See FORT.

Some *ſconces* are made regular, of four, five, or ſix baſtions; others are of ſmaller dimenſions, fit for paſſes, or rivers; and others for the field.—Such are

1. Triangles with half baſtions; which may be all of equal ſides, or they may be ſomething unequal. However it be, divide the ſides of the triangle into three equal parts, one of theſe three parts will ſet off the capitals and the gorges; and the flanks, being at right angles with the ſides, make half of the gorge.—2. Square, with half baſtions; whoſe ſides may be betwixt 100 and 200 feet, and let one third of the ſide ſet off the capital and the gorges, but the flank (which raiſe at right angles to the ſide) muſt be but one half of the gorge or capital, that is, on the ſixth part of the ſide of the ſquare. —3. Square with half baſtions and long.—4. Long ſquares. —5. Star redoubt of four points.—6. Star redoubt of five or ſix points.—7. Plain redoubts, which are either ſmall, or great. The ſmall are fit for court of guards in the trenches, and may be ſquares of 20 feet to 30. The middle ſorts of redoubts may have their ſides from 30 to 50 feet; the great ones from 60 to 80 feet ſquare.

The profiles (that is, the thickneſs and height of the breaſtworks) to be ſet on theſe ſeveral works, and the ditches, are to be accommodated to the occaſion. See REDOUBT, FORTIFICATION, FORTIFIED *place*, &c.

SCOPER-HOLES, or SCUPER-HOLES, in a ſhip, are holes made through the ſides cloſe to the deck, to carry off the water that comes from the pump, or any other way.

Theſe holes in the lower or covert deck, have round leathers nailed over them, to keep the ſea-water from coming up into the ſhip, which are called *ſcoper-leathers.*

And the ſhort nails, with broad heads, which faſten theſe leathers down, are called *ſcoper-nails*, or *ſcuper-nails.*

SCORBUTUS, or SCORBUTUM, the *ſcurvy*; a diſeaſe very frequent in the northern countries, particularly in fenny, wet, humid places, expoſed to the north, *&c.*

It is accompanied with a great variety of ſymptoms, attacking the ſeveral parts of the body all at once: hence Willis ſays, it is not any particular diſeaſe, but a legion of diſeaſes. —The moſt uſual ſymptoms are bleeding, coughing, vomiting, difficulty of breathing, looſeneſs, a relaxation of the parts, ſweating, a fœtid ſmell of the gums, a falling of the teeth, ſtinking breath, reddiſh or yellow livid ſpots, pains of the arms and legs, wearineſs, faintings, head-ach, *&c.*

Some diſtinguiſh the *ſcurvy* into *hot* and *cold*; but there is little foundation for ſuch a diſtinction, as the cauſe is the ſame in all, *viz.* according to Barbette and Decker, a too thick pituitous lymph; whence various ſymptoms in various temperaments.

Charleton obſerves, that it ariſes chiefly from ſharp, ſaline particles, taken in by inſpiration, from ſalt and corrupted meats eaten, from bad waters drank, from naſtineſs, deep chagrins, *&c.* He adds, that it is contagious.

Dr. Quincy will have the *ſcurvy* to conſiſt in ſuch a conſtitution, wherein the blood is unequally fluid: and hence he obſerves, it is beſt remedied by ſtimuli, exerciſe, and ſuch means as promote ſanguification.

The cure is very difficult; and when the diſeaſe is rooted, next to impoſſible. It ſometimes goes off in a flux by ſtool, ſometimes by the hæmorrhoids, and ſometimes by urine; but more often degenerates into a dropſy, atrophy, apoplexy, epilepſy, or convulſions.

A very exact diet is held of more effect than the beſt medicines; without this, it becomes incurable. Bleeding does not avail; ſtrong purgatives are hurtful: ſo is ſugar, and all ſugared things: mercurius dulcis uſed internally, ſo as not to ſalivate, but only raiſe a ſweating, is found excellent. Dolæus undertakes to cure any *ſcorbutus* in twelve days time, by the uſe of this alone; only the patient to drink nothing all that time, but a proper decoction, and to abſtain from acids, and hog's fleſh. Charleton recommends a continued uſe of milk, particularly milk emulſions of ſweet almonds, decoctions of china, broths and other anti-acids and analepticks. Etmuller makes the baſis of the cure of the *ſcorbutus* and hypochondriacal diſeaſe the ſame, *viz.* copious vomiting. Strong catharticks, he obſerves, are prejudicial; but gentle ones good; for the body is to be ſtill kept open. He adds, that vinegar is hurtful, and yet the acid juices of fruits and vegetables, wholeſome. Accordingly the uſe of lemon-juice is much recommended by Liſter. Milk, and all milky things, while the ſtomach is yet able to digeſt, are excellent. So are martials. Etmuller, inſtead of mercurials, recommends antimonials.

Thus much in the general: for the particular ſymptoms, particular medicines adapted thereto, are to be uſed; only mixing antiſcorbuticks with them all.

The chief ſimple antiſcorbuticks are, horſe-radiſh, ſorrel, butter-bur, ſcorzonera, ſow-thiſtle, zedoary, polypody, elecampane, guaiacum, ſaſſafras, muſtard-ſeed, naſturtium aquaticum, trifolium paludoſum, oranges, lemons, juniper-berries, cream of tartar, tartarum vitriolatum, *&c.*

SCORDIUM, } See the articles { DIASCORDIUM.
SCORDIUM *water*, } { WATER.

SCORE, in muſick, denotes *partition*, or the original draught of the whole compoſition, wherein the ſeveral parts, *viz.* treble, ſecond treble, baſs, *&c.* are diſtinctly *ſcored*, and marked. See PARTITION and MUSICK.

SCORPIO, SCORPION, in aſtronomy, the eighth ſign of the zodiac; denoted by the character, ♏. See SIGN.

The ſtars in *ſcorpio*, in Ptolemy's catalogue, are 20; in that of Tycho 10; in that of M. Flamſteed 49: the longitudes, latitudes, magnitudes, *&c.* whereof, are as follow;

Names and ſituations of the ſtars.	Signs.	Longitude			Latitude.			Magn.
		°	′	″	°	′	″	
In the firſt ſouth foot	♏	26	48	50	5	26	33A	6
Subſeq. in the firſt foot		27	18	08	4	54	13A	5
Contiguous to this		27	30	49	4	46	19A	7
That preced. ſouth of forehead		27	55	46	5	43	48A	6
In third ſouth foot		28	48	52	8	33	25A	4 3
5								
South of 3 in the forehead		28	37	25	5	25	46A	3
Middle of the forehead		28	15	50	1	56	31A	3 2
North of the forehead		28	52	56	1	03	09B	2
North } of the contiguous ones		29	21	45	0	16	05B	5
South } under north. ſtar of forehead		29	32	09	0	05	56B	5
10								

Names and ſituations of the ſtars.	Signs.	Longitude			Latitude.			Magn.
		°	′	″	°	′	″	
		28	01	13	8	04	40B	6
Preced. in the laſt ſouth foot	♐	2	00	35	7	07	03A	6
Contiguous thereto northward		1	55	59	6	38	22A	6 5
Moſt north and following forehead		0	20	11	1	40	50B	4
	♏	28	19	54	12	29	24B	6
15								
		29	23	11	9	15	16B	6
		29	09	23	12	46	32B	6
Subſequent in laſt ſouth foot	♐	3	22	10	7	02	25A	6 5
That over the other preced. heart		3	07	35	2	37	10A	6
That preced. heart northward		3	29	24	3	59	04A	4
20								
In preced. heel of ophiuchus		3	14	42	1	36	03B	5
Under the ſole of ophiuchus's foot		4	07	17	1	42	45A	6
In ophiuchus's leg		3	40	27	3	16	29B	5
Scorpion's heart		5	26	04	4	31	26A	1
That over the heart		5	25	12	3	11	30A	5
25								
In the calf of ophiuchus's fore-leg		4	21	27	5	14	41B	5
In the fore-ankle of ophiuchus		5	19	53	0	28	40B	5
That following the heart to ſouth		7	07	56	6	04	23A	4
Fore-knee of ophiuchus		4	54	28	11	25	40B	3
Inform. between ophiuchus's legs		6	59	26	4	28	18B	6
30								
		9	12	54	3	05	10A	6
In the 1ſt ring of the tail		11	03	32	11	39	47A	3
More north and poſterior to this		12	22	01	10	29	56A	6
Poſterior knee of ophiuchus		13	39	28	7	14	12B	3
		15	28	32	3	56	17A	6
35								
In toe of ophiuchus's hind-foot		15	43	28	3	24	16A	5
		15	55	15	3	20	08A	6
		16	12	46	3	29	39A	6 7
In back of ophiuchus's ſecond foot		16	06	17	1	08	53A	6
In tibia of ophiuchus's hind leg		16	34	52	2	04	47B	4
40								
		17	00	23	1	42	28A	6 7
Bright ſtar of ophiuchus foot		17	05	02	1	47	38A	3
		17	34	53	4	54	52A	6
		17	43	57	0	59	54A	7
Preced. in ophiuchus's heel		18	01	32	0	53	48A	5
45								
Preced. of 2 in the ſting		19	41	16	13	57	14A	3 4
Subſequent		20	15	12	13	44	16A	2 3
Subſequent in ophiuchus's heel		19	09	46	0	38	18A	5
That following ophiuchus's foot, n.	♐	20	46	23	1	28	55B	6

SCORPION, Scorpio, is alſo the name of an ancient, military engine, uſed chiefly in the defence of walls, &c.

Marcellinus deſcribes the *ſcorpio*, as conſiſting of two beams bound together by ropes. From the middle of the two, roſe a third beam, ſo diſpoſed, as to be pulled up and let down at pleaſure; and on the top of this, were faſtened iron hooks, where was hung a ſling, either of iron or hemp. Under the third beam lay a piece of hair-cloth full of chaff, tied with cords.

To uſe the engine, a round ſtone was put into the ſling, and four perſons on each ſide, looſening the beams bound by the ropes, drew back the erect beam to the hook: when, the engineer ſtanding on an eminence, giving a ſtroke with a hammer on the cord to which the beam was faſtned with its hook, ſet it at liberty; ſo that hitting againſt the ſoft hair-cloth, it ſtruck out the ſtone with a vaſt force.

It had its name *ſcorpio*, becauſe when the long beam or tillar was erected, it had a ſharp top, in manner of a ſting.—More modern times have given it the name *onager*, wild aſs, becauſe that animal, when hunted, flings back ſtones.

SCORIA, ΣΚΩΡΙΑ, the recrement, or droſs of any metal, remaining after melting, or refining the ſame. See Metal, Refining, &c.

The *ſcoria* of iron, is the ſcum taken from that metal in forges where it is melted. See Scum.

The *ſcoria* of iron, is the ſulphurous part of the iron; which uniting with the ſulphurous part of the charcoal, makes together, thoſe porous maſſes, reſembling ſpunges, frequently ſeen in the ſmiths forges. See Iron.

SCORTUM. See the article Scrotum.

SCOT, Scotta, or Scottus, a cuſtomary contribution laid upon all ſubjects, according to their ability.

Whoever are aſſeſſed to any contribution, though not by equal portions, are ſaid to pay *ſcot and lot*. See Tax.

Church Scot. See the article Church *ſcot*.

SCOTIA *, in architecture, a ſemi-circular cavity or channel between the tores, in the baſes of columns.—See *Tab. Archit. fig.* 4. See alſo Base.

* The *ſcotia* is a concave, dark moulding; whence its name, *viz.* from σκότος, obſcurity, darkneſs.

The *ſcotia* has an effect juſt oppoſite to that of the quarter-round.—Our workmen frequently call it the *caſement*.

It is alſo called *trochilus*, partly from its form. See Trochilus.

In the Inonic and Corinthian baſe, there are two *ſcotias*, the upper whereof is the ſmaller.—*V. Tab. Archit. fig.* 32. *lit. b, c.* and *fig.* 26. *lit. i, k.*

According to Felibien, the cavetto is a fourth part of the *ſcotia*. See Cavetto.

SCOTISH *terms*. See the article Terms.

SCOTISTS, a ſect of ſchool divines and philoſophers; thus called from their founder, J. Duns Scotus, a Scotiſh, or as others ſay, Iriſh cordelier; who maintained the immaculate conception of the virgin, or that ſhe was born without original ſin; in oppoſition to Thomas Aquinas and the Thomiſts. See Thomist.

As to philoſophy, the *Scotiſts* were, like the Thomiſts, peripateticks; only diſtinguiſhed by this, that in each being, as many different qualities as it had, ſo many different formalities did they diſtinguiſh; all diſtinct from the body itſelf; and making, as it were, ſo many different entities: only thoſe metaphyſical, and, as it were, ſuperadded to the being. See Formality, &c.

SCOTOMIA, or Scotoma, in medicine, a dizzineſs, or ſwimming in the head, wherein the animal ſpirits are ſo whirled about, that external objects ſeem to turn round. See Vertigo.

SCOTTA, or Scottus. See the article Scot.

SCRATCHES, among farriers, a diſtemper incident to horſes, conſiſting of dry ſcabs, chops or rifts, that breed between the heel and the paſtern joint.

There are various kinds of *ſcratches*, diſtinguiſhed by various names, as crepances, rats-tails, mules, kibes, pains, &c. which are all ſo many ſpecies of the ſame malady; engendered from ſome dry humour falling on the legs, or from the fumes of the beaſt's own dung lying under his heels, or near them; or for want of rubbing his heels, eſpecially after a journey, from over-hard riding, &c.

The diſorder begins firſt, with dry ſcabs in the paſtern joint, in ſeveral forms. It is known by the ſtaring, dividing and curling of the hair on the ſpot.

SCRATCH-WORK, *ſgraffiata*, a way of painting in freſco, by preparing a black ground, on which is laid a white plaiſter; which white being taken off with an iron bodkin, the black appears through the holes, and ſerves for ſhadows. See Sgraffiata.

This kind of work is laſting; but being very rough, is unpleaſant to the ſight.

SCREW, or Scrue, *cochlea*, in mechanicks, one of the five mechanical powers; chiefly uſed in preſſing or ſqueezing bodies cloſe, though ſometimes alſo in raiſing weights. See Mechanical *power*, Machine, &c.

The *ſcrew* is a right cylinder, as A B, (*Tab. Mechanicks, fig.* 11.) furrowed ſpiral-wiſe: it is generated by the equable motion of a right line F G, around the ſurface of a cylinder; while, at the ſame time, the point I, deſcends equably from F towards G.

If the furrowed ſurface be convex, the *ſcrew* is ſaid to be *male*; if concave, it is *female*.

Where motion is to be generated, the male and female *ſcrew* are always joined; that is, whenever the *ſcrew* is to be uſed as a ſimple engine, or mechanical power.—When joined with an axis in peritrochio, there is no occaſion for a female; but in that caſe, it becomes part of a compound engine. See Axis.

Doctrine of the Screw.—1°. If, as the compaſs deſcribed by the power in one turn of the *ſcrew*, is to the interval or diſtance between any two immediate threads or ſpiral windings, as B I (meaſured according to the length of the *ſcrew*) ſo is the weight or reſiſtance, to the power; then the power and the reſiſtance will be equivalent one to the other: and, conſequently, the power being a little increaſed, will overcome the reſiſtance.

For it is evident, that in one turn of the *ſcrew*, the weight is ſo much lifted up, or the reſiſtance ſo much removed, or the thing to be preſſed, is ſqueezed ſo much cloſer together, as is the diſtance between two immediate ſpirals; and in the ſame time, the power to be moved is ſo much, as is the compaſs deſcribed by the ſaid power in one turn of the *ſcrew*. Wherefore the velocity of the weight (or whatſoever anſwers thereto) will be to the velocity of the power, as is the ſaid diſtance between the ſpirals to the compaſs deſcribed by the power, in one revolution or turning round of the *ſcrew*: ſo that the gaining in power, is here recompenſed by the loſs in time.

2° As the diſtance between two threads, B I, is leſs; the power required to overcome the ſaid reſiſtance is leſs; therefore the finer the thread, the eaſier the motion.

3°. If the male *ſcrew* be turned in the female, at reſt, a leſs power will be required to overcome the reſiſtance, as the lever or ſcytala, B D (*fig.* 12.) is the longer.

4°. The diſtance of the power from the centre of the *ſcrew*, C D, the diſtance of two threads I K, and the power to be applied in D, being given, to determine the reſiſtance it will overcome: or, the reſiſtance being given, to find the power neceſſary to overcome it:

Find the periphery of a circle deſcribed by the radius C D: then to the diſtance between the two threads, the periphery juſt found, and the given power: or, to the periphery found, the diſtance of the two threads, and the given reſiſtance, find a fourth proportional. This in the former caſe will be the reſiſtance that will be overcome by the given power; and in the latter, the power neceſſary to overcome the given reſiſtance.

E. gr. Suppoſe the diſtance between the two threads, 3, the diſtance of the power from the centre of the *ſcrew* CD, 25, and the power 30 pounds; the periphery of the circle to be deſcribed by the power, will be found 157. Therefore, as 3, 157 : 30, 1570, the weight to which the reſiſtance is equal.

5°. The reſiſtance to be overcome by a given power, being given; to determine the diameter of the *ſcrew*, the diſtance of two threads IK, and the length of the ſcytala or handle: the diſtance of the threads, and the diameter of the *ſcrew* may be aſſumed at pleaſure, if the male be to be turned in the female by a handle. Then, as the given power is to the reſiſtance it is to overcome, ſo is the diſtance of the threads to a fourth number, which will be the periphery to be deſcribed by the handle CD, in a turn of the *ſcrew*. The ſemi-diameter of this periphery, therefore, being ſought, we have the length of the handle CD. But if the female *ſcrew* be to be turned about the male, without any handle; then the periphery and ſemi-diameter found, will be very nearly thoſe of the *ſcrew* required.

E. gr. Suppoſe the weight 6000, the power 100, and the diſtance of the threads 2 lines; for the periphery to be paſſed over by the power, ſay, as 100, 6000 : 2, 120; the ſemi-diameter of which periphery being $\frac{1}{3}$ of 120=40 lines will be the length of the handle, if any be uſed; otherwiſe the ſide of the female *ſcrew* muſt be 40 lines.

Endleſs SCREW. If a *ſcrew* be ſo fitted as to turn a dented wheel DF (*fig.* 13.) it is called an *endleſs*, or *perpetual ſcrew*; in regard it may be turned for ever, without coming at an end. From the ſcheme, it is evident enough, that while the *ſcrew* turns once round, the wheel only advances the diſtance of one tooth.

Doctrine of the endleſs SCREW.—1°. If the power applied to the lever, or handle of an *endleſs ſcrew* AB, be to the weight, in a ratio compounded of the periphery of the axis of the wheel EH, to the periphery deſcribed by the power, in turning the handle, and of the revolutions of the wheel DF, to the revolutions of the *ſcrew* CB; the power will be equivalent to the weight.

Hence, 1°. as the motion of the wheel is exceedingly ſlow; a ſmall power may raiſe a vaſt weight, by means of an *endleſs ſcrew:* for this reaſon, the great uſe of the *endleſs ſcrew*, is either where a great weight is to be raiſed through a little ſpace; or, where a very ſlow, gentle motion is required. On which account it is very uſeful in clocks and watches.

2°. The number of teeth, the diſtance of the power from the centre of the *ſcrew* AB, the radius of the axis HF, and the power, being given; to find the weight it will raiſe:

Multiply the diſtance of the power from the centre of the *ſcrew* AB, into the number of teeth: the product is the ſpace of the power paſſed through, in the time the weight paſſes through a ſpace equal to the periphery of the axis. Find a fourth proportional to the radius of the axis, the ſpace of the power now found, and the power. This will be the weight the power is able to ſuſtain. Thus, if AB =3, the radius of the axis HF=1; the power 100 pounds; number of teeth of the wheel DF 48; the weight will be found 14400: whence it appears, that the *endleſs ſcrew* exceeds all others, in increaſing the force of a power.

Archimedes's SCREW, or the *ſpiral pump*, is a machine for the raiſing of water, invented by Archimedes. See PUMP and SPIRAL.

Its ſtructure is as follows: a leaden tube is wound round a cylinder AB (*Tab. Hydraulicks*, *fig.* 1.) after the ſame manner as the ſpiral thread is drawn in the common *ſcrew* above deſcribed. This cylinder is inclined to the horizon, in an angle of about 45 degrees, and the orifice of the tube B immerged under water.—If then, the *ſcrew* be turned about by the handle I, againſt the water; the water will riſe up the ſpiral, and at length be diſcharged in A.

This machine, with a very little ſtrength, is able to raiſe a great quantity of water: whence it is found of good uſe, in the emptying of lakes, *&c.*

If the water be to be raiſed to any conſiderable height, one *ſcrew* will not ſuffice; but the water drawn up by one, is to be taken by another, and ſo ſucceſſively.

SCRIBE, SCRIBA, a principal officer in the Jewiſh law, whoſe buſineſs was to write, and interpret ſcripture.

We find no mention of *ſcribes*, in the Old Teſtament, before Eſdras; whence ſome learned men have concluded, that the office was brought from Chaldæa, and Aſſyria, and firſt eſtabliſhed by the Jews after their return from the Babyloniſh captivity.

The *ſcribes* were in great credit and eſteem among the Jews, and had even the precedency of the prieſts, and ſacrificers.—Indeed, there were three kinds of *ſcribes*, whereof thoſe juſt mentioned, properly called *ſcribes of the law*, were the firſt, and moſt conſiderable: the deciſions of theſe were received with the ſame reſpect as the law of God itſelf.

The ſecond kind, properly called *ſcribes of the people*, were a ſort of magiſtrates, among the Greeks, as well as among the Jews. See the following article.

The third kind were publick notaries, or ſecretaries of the council: theſe were the leaſt conſiderable.

SCRIBE, SCRIBA, was alſo the title of an officer, among the Romans, who wrote decrees, or acts, and made out authentic copies thereof. See CLERK, ACTS, *&c.*

Every magiſtrate had his *ſcriba*, or ſecretary, ſo that there were *ſcribæ ædilitii*, *prætorii*, *quæſtorii*, &c.

The *ſcribæ* were not admitted to the management of the principal offices of the republick, unleſs they relinquiſhed their profeſſion.

In the time of the emperors, they were alſo called *notarii*, becauſe they made uſe of abbreviations, and ſhort notes in writing. See NOTARY.

SCRIBING, in joinery, *&c.* a term uſed, when one ſide of a piece of ſtuff being to be fitted to the ſide of ſome other piece, which laſt is not regular; to make the two join cloſe together all the way, they *ſcribe* it.

That is, they lay the piece of ſtuff to be *ſcribed* cloſe to the other piece they intend to *ſcribe* to, and open their compaſſes to the greateſt diſtance the two pieces any where ſtand from each other; then, bearing one of the legs againſt the ſide to be *ſcribed* to, with the other point they draw a line on the ſtuff to be *ſcribed*.—Thus have they a line on the irregular piece parallel to the edge of the regular one; and if the ſtuff be wrought away exactly to the line, when the two pieces are put together, they will ſeem a joint.

SCRIPTORIUS *calamus*. See the article CALAMUS.

SCRIPTURARY, among the Jews. See CARAITES.

SCRIPTURE, or SCRIPTURES. See BIBLE.

SCROBICULUS *cordis*, the ſame as *anticardium*. See ANTICARDIUM.

SCROLL. See the article ESCROLL.

SCROPHULÆ *, in medicine, ſcirrhous tumours, ariſing uſually about the neck, and ſometimes on other glandulous parts; called alſo *ſtrumæ*, and popularly, the *king's evil*, or ſimply, the *evil*. See EVIL.

* The word is Latin, formed by diminution, from *ſcropha*, ſow.

SCROTUM, or SCORTUM, in anatomy, the common capſula or membrane wherein the teſticles are contained; thus called from its reſembling a pouch or purſe of leather, called by the ancients *ſcortea*. See TESTICLE.

The *ſcrotum* conſiſts of two membranes; the exterior whereof is only a production of the cuticula or cutis, which is here very thin, and without any fat underneath it.

The inner, called *dartos*, is only an expanſion of the panniculus carnoſus, which, together with the cutis, is drawn into the figure of a purſe externally: it is divided longitudinally into two parts, right and left, by a line, called the *ſeam of the ſcrotum*; anſwering to which inwardly is a membrane, called the *ſeptum*, which divides the cavity into two parts; being only the production of the dartos.

It is diviſible into lamellæ, and the teſticles are on each ſide looſely connected to it by means of their outer proper tunic.—Its uſe is to ſuſtain them, prevent their colliſion, as alſo their falling too low, and to promote the corrugation of the *ſcrotum*. See DARTOS.

SCROTUM *cordis*, the ſame as *pericardium*. See PERICARDIUM.

SCROWLS, or SCROLLS, in architecture. See VOLUTES.

SCRUE. See the article SCREW.

SCRUPLE, SCRUPULUS, SCRUPULUM, or SCRIPULUM, the leaſt of the weights uſed by the ancients; which amongſt the Romans was the twenty-fourth part of an ounce, or third part of a dram. See OUNCE and DRACHM.

SCRUPLE is ſtill a weight among us, containing the third part of a dram, or 20 grains. See GRAIN.

Among goldſmiths, the *ſcruple* is 24 grains. See WEIGHT.

SCRUPLE, in chronology.—The Chaldee SCRUPLE is $\frac{1}{1080}$ part of an hour, called, by the Hebrews, *helakim*. Theſe *ſcruples* are much uſed by the Jews, Arabs, and other eaſtern people in computations of time.

SCRUPLES, in aſtronomy.—SCRUPLES *eclipſed*, that part of the moon's diameter which enters the ſhadow, expreſſed in the ſame meaſure wherein the apparent diameter of the moon is expreſſed. See DIGIT.

SCRUPLES *of half duration*, an arch of the moon's orbit, which the moon's centre deſcribes from the beginning of the eclipſe to its middle. See ECLIPSE.

SCRUPLES *of immerſion*, or *incidence*, an arch of the moon's orbit, which her centre deſcribes from the beginning of the eclipſe, to the time when its centre falls into the ſhadow. See IMMERSION.

SCRUPLES *of emerſion*, an arch of the moon's orbit, which her centre deſcribes in the time from the firſt emerſion of the moon's limb, to the end of the eclipſe. See EMERSION.

SCRUTINY, SCRUTINIUM, in antiquity, an examination, or probation, practiſed in the laſt week of lent, on the catechumens, who were to receive baptiſm on Eaſter-day. See CATECHUMEN and BAPTISM.

The *ſcrutiny* was performed with a great many ceremonies: exorciſms and prayers were made over the heads of the catechumens.—On palm-ſunday, the Lord's prayer and creed were given them; which they were afterwards made to rehearſe.

The proceſs was called *ſcrutinium*, *ſcrutiny*; becauſe hereby the hearts of the catechumens were ſcrutinized, or ſearched, that the prieſts might underſtand who were fit to be admitted to baptiſm.

This cuſtom was more in uſe in the church of Rome, than any where elſe: though it appears, by ſome miſſals, to have been likewiſe uſed, though much later, in the Gallican church. It is ſuppoſed to have ceaſed about the year 860.

Scrutiny is alſo uſed, in the canon law, for a ticket, or little paper billet, wherein, at elections, the electors write their votes privately, ſo as it may not be known for whom they vote.

Among us, Scrutiny is chiefly uſed for a ſtrict peruſal, and examination of the ſeveral votes haſtily taken at an election; in order to find out any irregularities committed therein, by unqualified voters, *&c.*

SCRUTORE, or Scrutoir (from the French *eſcritore*) a kind of cabinet, with a door or lid opening downwards, for conveniency of writing on, *&c.*

SCULK, amongſt hunters, denotes a company; as, a *ſculk* of foxes.

SCULPTURE, Sculptura, the art of cutting or carving wood, ſtone, or other matter, and forming various figures or repreſentations therein; as alſo, of faſhioning wax, earth, plaiſter, *&c.* to ſerve as models, or moulds, for the caſting of metalline figures.

Sculpture, in its latitude, includes both the art of working in creux, properly called *engraving*; and of working in relievo, which is what we ſtrictly call *ſculpture*. See Engraving.

The antiquity of this art is paſt doubt; as the ſacred writings, the moſt ancient and authentic monuments we have of the earlieſt ages, mention it in ſeveral places: witneſs Laban's idols ſtolen away by Rachel, and the golden calf which the Iſraelites ſet up in the deſart, *&c.* But it is very difficult to fix the original of the art, and the firſt artiſts, from prophane authors; what we read thereof, being intermixed with fables, after the manner and taſte of thoſe ages.

Some make a potter of Sicyon, named Dibutades, the firſt ſculptor: others ſay, the art had its origin in the iſle of Samos, where one Ideocus, and Theodorus, performed works of this kind, long before Dibutades's time. It is added, that Demaratus, father of Tarquin the elder, firſt brought it into Italy upon his retiring thither; and that by means of Eucirapus and Eutygrammus, two excellent workmen herein, who communicated it chiefly to the Tuſcans; among whom it was afterwards cultivated with great ſucceſs. They add, that Tarquin ſent for Taurianus, one of the moſt eminent among them, to Rome, to make a ſtatue of Jupiter, *&c.* of baked earth; for the frontiſpiece of the temple of that deity.

About this time, there were many ſculptors, both in Greece and Italy, who wrought altogether in earth: ſome of the moſt noted, are, Chalcoſthenes, an Athenian, who made himſelf and his houſe famous, by the great number of earthen figures he adorned it withal; and Demophilus and Gorſanus, two painters, who inriched the temple of Ceres with great variety of painting and earthen images. In effect, all the firſt ſtatues of the heathen deities, were either of earth, or wood; and it was not ſo much any frailty of the matter, or unfitneſs for the purpoſe, as the riches and luxury of the people, that firſt induced them to make images of marble, and other more precious ſtones.

Indeed, how rich ſoever the matter were, whereon they wrought, yet they ſtill uſed earth, to form models thereof: and to this day, whether they be for cutting marble ſtatues with the chiſſel, or for caſting them in metal, they never undertake the one or the other, without firſt making a perfect model thereof in earth. Whence, doubtleſs, aroſe the obſervation of Praxiteles, that the art of moulding earthen figures, was the natural mother of that of making marble and metalline figures; which laſt never appeared in perfection, till about 300 years after the building of Rome; though the firſt was at its height long before.

Phidias of Athens, who came next, ſurpaſſed all his predeceſſors, both in marble, in ivory and metals: and about the ſame time, appeared ſeveral others, who carried *ſculpture* to the higheſt perfection it ever arrived at; particularly, Polycletus at Sicyon; then Myron; Lyſippus, who alone was allowed the honour of caſting Alexander's image in braſs: Praxiteles and Scopas, who made thoſe excellent figures, now before the pope's palace at Montecavallo: Briaxis, Timotheus and Leochares, who, with Scopas, wrought at the famous tomb of Mauſolus king of Caria; Cephiſſodotus, Canachus, Dædalus, Buthieus, Niceratus, Euphranor, Theodorus, Xenocrates, Pyromachus, Stratonicus, Antigonus, who wrote on the ſubject of his art; the famous authors of the Laocoon, *viz.* Ageſander, Polydore, and Athenodorus, and infinite others, the names of ſome whereof have paſſed to poſterity; thoſe of others have periſhed with their works: for though the number of ſtatues in Aſia, Greece, and Italy, was ſo immenſe, that in Rome alone, as we are informed, there were more than there were living perſons, yet we have but few now left, at leaſt very few of the fineſt.

When Marcus Scaurus was ædile, his office obliging him to provide what was requiſite towards the publick rejoicings, he adorned the ſtately theatre which he erected, with 3000 brazen ſtatues; and though L. Mummius, and Lucullus, brought away a great number out of Aſia and Greece, yet, there were ſtill above 3000 remaining in Rhodes, as many at Athens, and more at Delphos.

But what is moſt extraordinary, was the bigneſs of the figures, which thoſe ancient artiſts had the courage to undertake: amongſt thoſe Lucullus brought to Rome, there was one of Apollo, 30 cubits high; the Coloſſus of Rhodes, made by Cares of Lyndos, the diſciple of Lyſippus, far exceeded it; Nero's ſtatue, made by Xenodorus, after that of Mercury, was alſo of an extraordinary ſize, being 110 feet high. See Colossus and Statue.

Sculpture, however, did not continue above 150 years, after Phidias's time, till it began inſenſibly to decline; not but that there were ſtill ſome fine pieces of workmanſhip both in Greece and Italy, though not performed with ſo good a fancy, and ſuch exquiſite beauty as ſome of the former works. Beſides that the Greek ſtatues are moſt eſteemed for the workmanſhip; there is a ſpecial difference between them, and thoſe of the Romans, in that the greateſt part of the firſt are naked, like thoſe who wreſtle or perform ſome other bodily exerciſe, wherein the youth of thoſe times placed all their glory; whereas, the others are clad or armed, and particularly have the toga on, which was the greateſt mark of honour amongſt the Romans. See Statue.

To perform any thing in the way of Sculpture, they begin with making a model of earth, or wax.—For earthen models, they uſe but few inſtruments: their hands and fingers do almoſt the whole.—For waxen models, to a pound of wax they put half a pound of colophony; ſome add turpentine, melting the whole with oil of olive: ſome add a little vermillion, or other matter, to give it a colour. It is wrought and molded with the fingers, like earthen models.

For Sculpture *in wood*, which we properly call *carving*, the firſt thing required, is, to chuſe a wood proper for the particular kind of work.—If it be any thing large, and require a deal of ſtrength and ſolidity; the hardeſt and moſt durable wood is to be choſen, as oak, or cheſnut: for ſmaller works they uſe pear-tree, and ſervice-tree. But as theſe woods are very hard, for little delicate works, they uſe ſofter woods, only cloſe, and of a fine grain: ſuch is the linden-tree, which the chiſſel is found to cut more eaſily, and cleanlily, than any other wood.

As to ſtatues, we find the ancients have made them of almoſt all kinds of wood: at Sicyon was an image of Apollo in box; at Epheſus, that of Diana was in cedar. As theſe two kinds of wood are very hard, and even held incorruptible, eſpecially cedar; Pliny obſerves, they were judged particularly ſuitable for repreſentations of the deities. In a temple, on mount Cyllenius, dedicated to Mercury, was an image of that god formed of the wood of the lemon-tree: others there were of the palm-tree, olive-tree, ebony, and even of the vine.

For large works, if it be only ſingle figures, it is better they conſiſt of ſeveral pieces, than of a ſingle one, by reaſon of the liableneſs of the latter to warp; for every large piece may probably not be dried to the heart, however it may appear without ſide.—Obſerve, that the wood will not be fit for working, till after it have been cut at leaſt ten years.

Sculpture *in marble and ſtone.*—The firſt thing they do, is out of a great block of marble to ſaw another of the ſize required, which is performed with a ſmooth ſteel ſaw without teeth, caſting water and ſand thereon, from time to time: then they faſhion it, by taking off what is ſuperfluous with a ſtubbed point, and a heavy mallet; after this, bringing it near the meaſures required, they reduce it ſtill nearer with another finer point.—They now uſe a flat cutting inſtrument, having two notches in its edge, or three teeth; then a chiſſel to take off the ſcratches the former has left.—This laſt inſtrument they uſe with a deal of delicacy, giving thereby a ſoftneſs, and tenderneſs to their figure; till, at length, taking raſps of different degrees of fineneſs, by degrees they bring their work into a condition for poliſhing.—To poliſh, or make the parts ſmooth and ſleek, they uſe pumice-ſtone, and ſmalt; then tripoli, and when a ſtill greater luſtre is required, a ſkin and burnt ſtraw.

When any conſiderable work is undertaken, as a ſtatue, baſſo relievo, or the like, they always make a model, before-hand, of clay; but as this ſhrinks in drying, and eaſily cracks and breaks, they only uſe it to make a mould of plaiſter, or ſtucco, wherein they make a figure of the ſame matter, which ſerves them thenceforth for a model, and by which they adjuſt all their meaſures and proportions.

To proceed the more regularly; on the head of the model, they place an immoveable circle, divided into degrees, with a moveable ruler, or index faſtened in the centre of the circle, aud divided likewiſe into equal parts. From the end of the ruler hangs a thread with a plummet, which ſerves to take all the points to be transferred thence to the block of marble, from whoſe top hangs another plummet like that of the model.—See *Tab. Miſcell. fig.* 2.

Indeed there are ſome excellent ſculptors who diſapprove of this method; urging, that the ſmalleſt motion of the model changes their meaſures, for which reaſon they rather chuſe to take all their meaſures with the compaſſes.

For the caſting of ſtatues, or figures of metal; *and the moulding of ſtatues*, &c. *of ſtucco, plaiſter*, &c. See STATUE, STUC, PLAISTER, &c.

SCUM, or SPUME, SPUMA, a light excrement, ariſing from liquors when briſkly ſtirred; called alſo *foam*, or *froth*. See FROTH.

SCUM is alſo uſed for the impurities which a liquor by boiling caſts up to the ſurface; and alſo, for thoſe taken from off metals when in fuſion; called alſo *ſcoria*. See SCORIA.

SCUM *of lead*, is a kind of ſmalt, of various colours, produced from the fumes of lead. See LEAD.

SCUM *of ſilver*, is what we commonly call *litharge* of ſilver. See LITHARGE.

SCUM *of nitre*,	See the articles	SALT-PETRE.
SCUM *of ſalt*,		SALT.
Sugar of the SCUM,		SUGAR.

SCUPER *holes*,	See the articles	SCOPER.
SCUPPER *nails*,		NAILS.

SCURVY, in medicine, a diſeaſe called by phyſicians *ſcorbutus*. See SCORBUTUS.

M. Poupart, in the memoirs of the French academy, gives us a very accurate hiſtory of a particular kind of *ſcurvy*, very frequent in Paris in the year 1699. The ſymptoms, and conſequences of this new *ſcurvy* were very extraordinary; and ſoon determined M. Poupart to conclude it ſomewhat of that cruel plague wherewith the Athenians were ſo long and ſo dreadfully harraſſed; yet was it a true *ſcurvy*, and the perſons attacked with it had all the uſual ſcorbutic ſymptoms.

SCUTAGE, SCUTAGIUM, in ancient cuſtoms.—All tenants who held of the king by military ſervice, were either bound to attend perſonally in wars and expeditions; or, for default of ſuch ſervice, to pay *ſcutage*, that is, a compoſition in money, which was levied on every *ſcutum militare*, or knight's fee, and the proportional parts thereof, for the king's uſe. See KNIGHT'S *ſervice* and KNIGHT'S *fee*.

The barons, and knights, who paid *ſcutage* to the king, had a power to levy the ſame tax on thoſe tenants who held from them in military ſervice.

The *ſcutage* was at one, two, or three marks for each knight's fee. See ESCUAGE.

SCUTCHEON. See the article ESCUTCHEON.

SCUTCHEON *grafting*. See ENGRAFTING.

SCUTIFORME *os*, in anatomy, the chief bone of the knee, called alſo *patella*, *mola*, &c. See PATELLA.

SCUTIFORMIS *cartilago*, in anatomy, one of the cartilages of the larynx, the broadeſt, and biggeſt of them all: thus called by the Latins, becauſe in form of a ſhield, or ſquare buckler; by the Greeks *thyroides*. See THYROIDES. It is alſo by ſome called the *anterior cartilage*, becauſe ſituate in the fore-part. See CARTILAGE.

It is gibbous without ſide, and hollow within: ſometimes double, chiefly in women, in whom it does not advance ſo far forward as in men. See LARYNX.

SCUTTLES, in a ſhip, are ſquare holes cut in the deck, big enough to let in the body of a man; ſerving to let people down into any room below, upon occaſion, or from deck to deck.

They are generally before the main-maſt, before the knight in the fore-caſtle; in the gun-room, to go down to the ſtern-ſheets; in the round-houſe, to go down into the captain's cabbin, when forced by the enemy in a fight aloft.

There are alſo ſome ſmaller *ſcuttles*, which have grattings over them; and all of them have covers to them, that men may not tumble in, in the night.

SCUTTLE is alſo a denomination given to thoſe little windows, and long holes, which are cut out in cabbins to let in light.

SCYREGEMOT, or SCYREMOT, in ancient cuſtoms, a county court held twice every year by the biſhop of the dioceſe, and the ealdorman, or ſheriff; wherein both the eccleſiaſtical and temporal laws were given in charge to the country.

In the time of Canutus the *ſcyregemot* was held thrice every year.—Edward the confeſſor appointed it to be held twelve times in the year. See CONSISTORY, COUNTY, and COURT.

SCYTALA, in mechanicks, a term which ſome writers uſe for a kind of radius, or ſpoke, ſtanding out from the axis of a machine, as a handle or lever, to turn it round and work it by. See AXIS *in peritrochio*.

SCYTALA *Laconica*, in antiquity, a ſtratagem, or device of the Lacedæmonians, for the ſecret writing of letters to their correſpondents, ſo that if they ſhould chance to be intercepted, no body might be able to read them.

To this end they had two wooden rollers, or cylinders, perfectly alike, and equal; one whereof was kept in the city, the other by the perſon to whom the letter was directed.—For the letter, a ſkin of very thin parchment was wrapped round the roller, and thereon was the matter wrote; which done, it was taken off, and ſent away to the party, who, upon putting it in the ſame manner upon his roller, found the lines and words in the very ſame diſpoſition, as when they were firſt wrote.

This expedient they ſet a very high value on; though, in truth, artleſs, and groſs enough: the moderns have improved vaſtly on this method of writing. See CIPHER.

SE.—*Felo de* SE,	See the articles	FELO.
Per SE,		PER *ſe*.

SEA, *mare*, in geography, is frequently uſed for that vaſt tract of water incompaſſing the whole earth; more properly called *ocean*. See OCEAN.

For the cauſe of the ſaltneſs of the SEA, ſee SALTNESS.

SEA is more properly uſed for a particular part, or diviſion of the ocean; denominated from the countries it waſhes, or from other circumſtances.

Thus we ſay, the *Iriſh ſea*, the *Mediterranean ſea*, the *Baltic ſea*, the *Red ſea*, &c.

Till the time of the emperor Juſtinian, the *ſea* was common, and open, to all men: whence it is, that the Roman laws grant an action againſt a perſon who ſhall prevent, or moleſt another in the free navigation, or fiſhing therein.—The emperor Leo, in his 56th novel, firſt allowed ſuch as were in poſſeſſion of the lands the ſole privilege of fiſhing before their reſpective territories, excluſive of all others: he even gave a particular commiſſion to certain perſons, to divide the Thracian Boſphorus among them.

From that time, the ſovereign princes have been endeavouring to appropriate the *ſea*, and to withdraw it from the publick uſe. The republick of Venice pretends to be ſo far miſtreſs in her gulf, that there is a formal marriage, every year, between that ſeignory and the Adriatic.

In theſe laſt ages, the Engliſh have particularly claimed the empire of the *ſea* in the channel; and even that of all the *ſeas* incompaſſing the three kingdoms of England, Scotland, and Ireland; and that as far as the ſhores of the neighbouring ſtates. In conſequence of which pretenſion it is, that children born on theſe *ſeas* are declared natural Engliſhmen, as much as if born on Engliſh ground.—The juſtice of this pretenſion is ſtrenuouſly argued between Grotius, and Selden, in the *mare liberum*, and *mare clauſum*.

SEA *army*,	See the articles	ARMY.
SEA *aſtrolabe*,		ASTROLABE.
SEA *biſquet*,		BISQUET.
SEA *chart*,		CHART.
SEA *compaſs*,		COMPASS.

SEA *drags*, among mariners, are ſuch things as hang over the ſhip, in the ſea; as ſhirts, coats, and even the boat, &c. when towed.

SEA *fight*,	See the articles	SIGNAL.
SEA *laws*,		USES *and cuſtoms*.
SEA *officer*,		OFFICER.
SEA *quadrant*,		BACK-STAFF.
SEA *ſalt*,		SALT.

SEA *water*, that briny bitteriſh fluid, which conſtitutes the ſea. See WATER.

To make SEA-WATER *ſweet*, or *freſh*, is a thing long and much wanted, for the advantage of navigation and commerce: a method of doing which has been invented by Mr. Hauton, and the ſecret publiſhed in the *Philoſophical Tranſactions*.—It is performed by precipitating the water with oil of tartar, and then diſtilling it.

The oil of tartar he can draw very cheap, and the diſtillation he performs very compendiouſly, ſo as to gain 24 French quarts of freſh water in a day; for the cooling of which, inſtead of making the worm paſs through a veſſel of water, as uſual, he makes it paſs through a hole in the ſhip into the ſea, and enter in again through another.

To the precipitation, and diſtillation, he adds a third operation, *viz.* filtration, to correct intirely the malignity of the water. The filtration is performed by a peculiar earth, mixed and ſtirred with the diſtilled water, and at length ſuffered to ſettle at the bottom.

The water thus managed, is found perfectly wholſome both to man and beaſt.

Dr. Liſter obſerves, that the *ſea-water* is made freſh by the breath of plants growing in it. This he found by putting a quantity of ſea-weed in a veſſel of *ſea-water*; and fitting the hole with a head, beak and receiver, he diſtilled daily, from the plants, a ſmall quantity of freſh, ſweet, potable water: this he takes to be the moſt natural, ſafe, and ſpeedy way of having freſh water from the ſea. See WATER.

Mr. Boyle relates, from ſome experiments he procured to be made of the gravity of *ſea-water*, in different climates, that ſtill, as you approach nearer the equator, the *ſea-water* is heavier and heavier, as far as within 30 degrees thereof, after which it continues much at one.

SEA *wreck*. See the article WRECK.

SEA *yoke*.—When the ſea is ſo rough, that the helm cannot be governed by the hands, the ſeamen make a *yoke* to ſteer by: that is, they fix two blocks to the end of the helm, and reeving two ſmall ropes through them, which they call *falls*, by having ſome men at each tackle, they govern the helm by direction.

They have another way of making a *ſea-yoke*, by taking a double turn about the end of the helm with a ſingle rope; the ends being laid to the ſhip-ſides, by means whereof they guide the helm. See HELM.

Head SEA,	See the articles	HEAD *ſea.*
High SEA,		HIGH.
Lie under the SEA,		LIE.
Pacific SEA,		PACIFIC.
Reflux of the SEA,		REFLUX.
Trough of the SEA,		TROUGH.
Under the SEA,		UNDER.

SEAL, *ſigillum*, a puncheon, or piece of metal, or other matter, uſually either round or oval; whereon is engraven the arms, device, *&c.* of ſome prince, ſtate, community, magiſtrate, or private perſon, with a legend or inſcription: the impreſſion whereof in wax ſerves to make acts, inſtruments, *&c.* authentick. See SIGNATURE.

The king's *great-ſeal* is that whereby all patents, commiſſions, warrants, *&c.* coming from the king, are ſealed. The keeping hereof is in the hands of the lord high chancellor, who is hence alſo denominated *lord keeper*.—Indeed, there is ſome difference between the lord chancellor and lord keeper; not in office, but in the manner of creation, the latter being made by the delivery of the *great-ſeal* to him by the king; but the former having likewiſe a patent. See CHANCELLOR and KEEPER.

The king's *privy-ſeal*, is a *ſeal* uſually firſt ſet to grants that are to paſs the *great-ſeal*. See PRIVY-SEAL, CLERK, and HALF-SEAL.

The uſe of *ſeals* is very ancient: in Daniel, chap. xiii. we read that Cyrus ſet his *ſeal* on the temple of Bel: but *ſeals* are ſtill older; for Jezabel, in 1 Kings, chap. xxi. *ſeals* the orders ſhe ſent for Naboth's death with the king's ring.—In effect, as the ancient *ſeals* were all engraven on the collets, ſtones, *&c.* of rings, and as the original uſe of rings, it is aſſerted, was only to be in a readineſs for the ſealing of acts, inſtruments, *&c.* *ſeals* ſhould be as ancient as rings themſelves. See RING.

Theſe *ſealing-rings*, called *annuli ſignatorii*, *ſigillares*, *cirographi* or *cerographi*, it is ſaid in ancient authors, were firſt invented by the Lacedæmonians, who, not content to ſhut their cheſts, armories, *&c.* with keys, added *ſeals* to them: and to this end, at firſt, made uſe of worm-eaten wood, the impreſſions whereof they took on wax, or ſoft earth: but they at length found the art of engraving figures, or rings, the impreſſions of which they took in the ſame manner.—This, however, muſt be granted, that even in Moſes's time, the art was known of engraving, not only on metals, but alſo on precious ſtones. See ENGRAVING.

Indeed, it does not appear that the ring had any other uſe among the primitive Jews beſides ornament: but at length it was uſed to *ſeal* inſtruments, contracts, diplomas, letters, *&c.* inſtances whereof we have in the third book of Kings, xxi. 8. Eſther viii. 10. Xenophon. Hellen. lib. I. Quint. Curt. lib. vi. Juſt. lib. xliii. cap. iii. where we learn, the keeping of the emperor's *ſeal* was become a particular office.—Lucian adds, that Alexander gave his to Perdiccas, thereby appointing him his ſucceſſor.

Pliny obſerves, that in his time there were no *ſeals* uſed any where but in the Roman empire: at Rome, he tells us, they were become of abſolute neceſſity, inſomuch that a teſtament was null without the teſtator's *ſeal*, and the *ſeals* of ſeven witneſſes: but it does not appear that the Romans had any ſuch things as public *ſeals*; nor that their edicts, and contracts, were *ſealed*, not even in the times of the emperors.

In France the cuſtom anciently was, inſtead of ſigning their inſtruments, *&c.* only to *ſeal* them; as appears from an infinity of ancient charters, which are not ſigned at all: the reaſon whereof was, that in thoſe days very few people were then able to write; no body could read and write but clerks. In England, the firſt *ſealed* charter we find extant, is that of Edward the confeſſor, upon his founding of Weſtminſter-Abbey: yet, we read of *ſeals* in the MS. hiſtory of king Offa.

Before the time of William the conqueror, the Engliſh did not *ſeal* with wax, but only made a golden croſs on the parchment, and ſometimes an impreſſion on a piece of lead, which hung to the grant with a ſilken ſtring, and was deemed an abundant authorizing of the grant itſelf, without either ſigning or witneſſes.—The colour of the wax wherewith the king's grants were *ſealed*, was uſually green, to ſignify that the act continued for ever freſh, and of force. The uſual impreſſion on all laymens *ſeals*, till the year 1218, was a man on horſeback, with a ſword in his hand; afterwards, they began to engrave their coats of arms on their *ſeals*: only the archbiſhops, and biſhops, by a decree of cardinal Otto, who was legate here in 1237, were to bear in their *ſeals*, their title, office, dignity, and even their proper names.

Du Cheſne obſerves, that none below the dignity of a knight had any right to a pendent *ſeal*, called *authenticum.*

The emperors long *ſealed* all their acts of importance with a golden *ſeal*; and the golden bull of Charles IV. for the election of an emperor, takes its name from the gold *ſeal* hanging to it, which is called *bull*. See BULL.

The pope has two kinds of *ſeals*: the firſt uſed in apoſtolical briefs, and private letters, &c. called, the *fiſherman's ring*.—This is a very large ring, wherein is repreſented St. Peter, drawing his net full of fiſhes. See BRIEF.

The other is uſed in bulls, repreſenting St. Peter's head on the right, that of St. Paul on the left, with a croſs between the two: on the reverſe is ſometimes the pope's name, and arms. See BULL.

The impreſſions of the firſt *ſeal* are taken in red wax, thoſe of the ſecond, in lead.

Theod. Hopingk, a German lawyer, has furniſhed the world with a learned and curious work on the ſubject of *ſeals*: it conſiſts of ſixteen chapters, the 1ſt. whereof treats of the name *ſeal*, *ſigillum*. 2d. Of the antiquity of the *ſealing-rings*, mentioned in Geneſis, their inventors, the reaſons of bearing them, their kinds, and differences, forms, ornaments, hieroglyphicks, ends, uſes, effects, and abuſes. 3°. Of bulls, in the ſame method, and under the ſame circumſtances. 4°. Of different kinds of *ſeals*; which he divides into *publick* and *private*, *proper* and *foreign*, *formed* and *unformed*, *ordinary* and *extraordinary*, *known* and *unknown*, *true* and *falſe*; and, laſtly, *ratificative* and *confirmative*, of *authority*, *ſolemnity*, *teſtimony* and *conſent*. 5°. Of ſuch as have a right to bear *ſeals*. 6°. Of the keeping of *ſeals*. 7°. Of things *ſeals* are put to. 8°. Of the images, figures, arms, characters, inſcriptions, *&c.* the places where *ſeals* are to be put, and the order to be obſerved therein. 9°. Of the number and multitude of *ſeals*, and the advantage they bring. 10°. Of their uſe, end, effects, force, *&c.* 11°. Of the proof of *ſeals* in general, and particular, publick and private. 12°. Of the verifying of *ſeals*. 13°. Of the manner of cenſuring and diſputing *ſeals*. 14°. Of ſubſcriptions that have a regard to *ſeals*. 15°. Of other particulars that have a regard thereto; as the ſignatures of emperors, kings, chancellors, ſecretaries, and notaries, all in the ſame order and method. The book was printed in 1642, at Nurembergh, in quarto, under the title, *De ſigillorum priſco & novo jure, tractatus practicus*, &c.—We have another work of the like kind, by Heineccius, in folio, printed at Francfort, and Leipſic, in 1709, under the title, *De veteribus Germanorum aliarumq; nationum ſigillis, eorumque uſu & præſtantia, ſyntagma hiſtoricum.*

Hermetical SEAL. See the article HERMETICAL.

SEAL is alſo uſed for the wax or lead, and the impreſſion thereon, affixed to the thing *ſealed*.

The manufacturers *ſeal* frequently applied to their ſtuffs, *&c.* is to be of lead. That of knights by the French law is to be of hard wax; that of agents, of ſoft wax.

Some *ſeals* are ſtamped on the paper or parchment itſelf; others hung by ſilken ſtrings.

The French *ſeal* their edicts with green wax, arrets with yellow wax; expeditions for Dauphine with red wax. The letters of the French academy are *ſealed* with blue wax. See WAX.

SEALER, an officer in chancery, appointed by the lord chancellor, or keeper of the great-ſeal, to ſeal the writs and inſtruments there made in his preſence.

SEALING, in architecture, the fixing a piece of wood or iron in a wall, with plaiſter, mortar, cement, lead, or other ſolid binding.

For ſtaples, hinges, and joints, plaiſter is very proper.

SEALING *wax*. See the article WAX.

SEAM or SEME *of corn*, is a meaſure of eight buſhels.

SEAM *of glaſs*, is the quantity of 120 pounds, or 24 ſtone, each five pound weight.—Of wood, an horſe-load.

Monks SEAM. See the article MONK.

SEARCE. See the article SIEVE.

SEARCHER. See the article ALNAGER.

SEAR-CLOTH *, or CERE-CLOTH, in chirurgery, denotes a form of external remedy, ſomewhat harder than an unguent, yet ſofter than an emplaſter; though it is frequently uſed, both for the one, and the other. See CERATE and SPARADRAP.

* The word *ſear-cloth* is ſuppoſed to be a corruption of *cere-cloth*, and to be derived originally from the Greek κηρὸς, wax.

The *ſear-cloth* is ſuppoſed to have wax in its compoſition, which diſtinguiſhes, and even denominates it. In effect, when a liniment or unguent has wax in it, it does not differ from a *ſear-cloth*. See UNGUENT, *&c.*

Sear-cloths are a kind of ſubſtitutes to friction, and are ſometimes uſed for raiſing a ſalivation: they are uſually compounded of reſolvent drugs, as ſaffron, myrrh and aloes, incorporated with wax and gums, as galbanum, gum ammoniac, and ſagapenum: the whole tempered with wine.

SEASE. See the article SEIZE.

SEASONING *of timber*. See TIMBER.

SEASONINGS, in the Weſt-Indies, a kind of aguiſh diſtemper, which foreigners are much ſubject to at their firſt coming.

SEASONS *, in coſmography, certain portions or quarters of the year, diſtinguiſhed by the ſigns which the ſun then enters, or by the meridian altitudes of the ſun; conſequent on which, are different temperatures of the air, different works in tillage, *&c.* See YEAR, SUN, ECLIPTIC, OBLIQUITY, *&c.*

* The word is formed from the French, *ſaiſon*, which Menage derives from the Latin, *ſtatio*, whence the Italians have formed *ſtagione*: Nicod derives it from *ſatio*; *tempus ſationis*, ſowing time.

The year is divided into four *ſeaſons*, ſpring, ſummer, autumn, and winter. The beginnings and endings of each whereof, ſee under its proper article, SPRING, *&c.*

It is to be obſerved, the *ſeaſons* anciently began differently from what they now do: witneſs the old verſes,

Dat Clemens hyemem; dat Petrus ver cathedratus;
Æſtuat Urbanus; autumnat Bartholomæus.

SEAT, in aſtronomy. See the article SCHEAT.

SEAT, in medicine. See the article ANUS.

SEAZE. See the article SEIZE.

SEBACEÆ *glandulæ*. See the article GLANDULÆ.

SEBESTEN, SEBESTENA, *myxa*, in pharmacy, *&c.* a fruit reſembling a little plumb or prune; which when ripe, is of a deep red colour, bordering on black; very ſweet, and the fleſh, or pulp, glutinous, or ſticky. See DIASEBESTEN.

The Syrians make a kind of glue or birdlime, of the *ſebeſtens*, called *birdlime of Alexandria*. The fruit is eſteemed pectoral, cooling, and emollient; though not much uſed in medicine. The ſtone within it is triangular.—It brought its name from Arabia, whence Pliny obſerves it came in his time into Italy.

SEBUÆI, a ſect among the ancient Samaritans; whom St. Epiphanius accuſes of changing the time expreſſed in the law, for the celebration of the great annual feaſts of the Jews. See FEAST and SAMARITAN.

Serrarius conjectures, that they were thus called, from their celebrating the feaſt of the paſſover on the ſeventh month, called by the Hebrews *ſeba*, ſeventh.—Druſius rather takes them to have been denominated from *Sebaia*, the leader of a ſect among the Samaritans; as the followers of Doſitheus, were denominated *Doſithei*; which two ſects, ſome Jewiſh doctors ſuppoſe to have ſubſiſted at the ſame time.—Scaliger derives the name from the Hebrew, *ſebua*, week; as who ſhould ſay, *Hebdomadites*, becauſe of their celebrating every ſecond day of the ſeven weeks, between Eaſter and Whitſuntide. Yet the ſame Scaliger, in his anſwer to Serrarius, gives a different explication.—In effect, all that has hitherto been advanced on the point, is mere conjecture.

SEBURAI *, SEBURÆI, a name which the Jews give to ſuch of their rabbins or doctors, as lived and taught ſome time after the finiſhing of the talmud.

* The word is derived from סבר, *ſebar*, I think, whence סברא, *ſebura*, opinion, ſentiment; and thence סבראי, *ſeburi*, or *ſeburai*, opinionative.

The reaſon of this appellation, ſay the rabbins, is, that the Talmud being finiſhed, publiſhed, and received in all the ſchools and ſynagogues, theſe doctors had nothing to do, but diſpute for, and againſt, the Talmud and its deciſions. Others ſay, it was becauſe their ſentiments were not received as laws, or deciſions; as thoſe of the Miſchnic and Gemaric doctors were; but were held as mere opinions. Others, as the author of *Schalſcheleth Hakkabala*, or chain of tradition, tell us, that the perſecution, the Jews underwent in thoſe times, not allowing them to teach quietly in their academies, they only propoſed their opinions on the compoſition of the Miſchna.

The firſt and chief of the *Seburai*, was R. Joſi, who began to teach in the year 787 of the æra of contracts; which, according to R. David Gautz, falls on the year of the world 4236; and who, according to R. Abraham, was 38 years preſident of the Jewiſh academy.

This æra of contracts is the ſame with that of the *Seleucidæ*, the 787th year whereof, falls on the year of Chriſt 476, which of conſequence, is the æra of the origin of the *Seburai*; whoſe reign did not hold long: Buxtorf ſays, not above 60 years; but R. Abraham and others, not 50. The laſt of them was R. Simona.—They were ſucceeded by the Gaons or Geonim.

SECANT, in geometry, a line that cuts another, or divides it into two parts. See LINE, *&c.*

Thus the line A M (*Tab. Geometry*, *fig.* 12.) is a *ſecant* of the circle A E D, *&c.* as it cuts the circle in B.

It is demonſtrated by geometers; 1°. That if ſeveral *ſecants* M A, M N, M E, *&c.* be drawn from the ſame point M, that paſſing through the centre M A, is the greateſt, and the reſt are all ſo much the leſs, as they are more remote from the centre. On the contrary, the portions thereof without the circle M D, M O, M B, are ſo much the greater, as they are further from the centre. The leaſt, is that of M A, which paſſes through the centre.

2°. That if two *ſecants* M A and M E, be drawn from the ſame point M; the *ſecant* M A, will be to M E, as M D to M B. See TANGENT.

SECANT, in trigonometry, denotes a right line, drawn from the centre of a circle, which cutting the circumference, proceeds, till it meets with a tangent, to the ſame circle. See CIRCLE and TANGENT.

Thus the line F C (*Tab. Trigonometry*, *fig.* 1.) drawn from the centre C, till it meet the tangent E F, is called, a *ſecant*; and particularly, the *ſecant of the arch* A E, to which E F is a tangent.

The *ſecant* of the arch A H, which is the complement of the former arch to a quadrant, is called the *co-ſecant*, or *ſecant of the complement*. See CO-SECANT.

The ſine of an arch, A D, being given; to find the *ſecant* thereof F C, the rule is, as the co-ſine A D C is to the ſine A D, ſo is the whole ſine E C, to the *ſecant* C F.

To find the logarithm of the *ſecant* of any arch, the ſine of the complement of the arch being given; multiply the whole ſine of the logarithm by two, and from the product ſubtract the logarithm of the ſine complement; the remainder is the logarithm of the *ſecant*. See LOGARITHM.

Line of SECANTS. See the article SECTOR.

SECK.—*Rent* SECK. See the article RENT *ſeck*.

SECOND, in anatomy. See SECUNDI *generis*.

SECOND, in geometry, aſtronomy, *&c.* the ſixtieth part of a prime, or minute; either in the diviſion of circles, or in the meaſure of time. See PRIME and MINUTE.

A degree, or an hour, are each divided inte 60 minutes, marked thus ′: a minute is ſub-divided into 60 *ſeconds*, marked thus ″; a *ſecond* into 60 thirds, marked thus ‴, *&c.* See DEGREE.

We ſometimes ſay a *ſecond minute*, a *third minute*, &c. but more uſually, ſimply, *ſecond*, *third*, &c. See MINUTE.

A pendulum three feet three inches, and two tenths of an inch long, vibrates *ſeconds*, according to Sir Jonas Moor's reduction of Huygens's three feet eight lines and a half of Paris meaſure, to Engliſh meaſure. See PENDULUM.

SECOND, in muſick, denotes one of the muſical intervals; being only the diſtance between any ſound, and the next ſound, whether higher or lower. See INTERVAL.

As in the compaſs of a tone, there are reckoned nine ſenſibly different ſounds, which form thoſe little intervals, called *commas*; one might, in ſtrictneſs, ſay, there are eight kinds of *ſeconds*. But as theſe minute intervals, though ſenſible, are not yet ſo far ſo, as to contribute much to the harmony, they uſually only diſtinguiſh four ſorts.

The firſt, called *the diminiſhed ſecond*, containing four commas; being the difference, for inſtance, of a natural *ut*, and an *ut* raiſed four commas higher.

The ſecond, called *leſſer ſecond*, contains five commas, and is made either naturally, as from *mi* to *fa*, or from *ſi* to *ut*; or accidentally, by means of *b*, as from *la* to *ſi*, *b flat*; or from *fa dieſis* to *ſol*; otherwiſe called a *major ſemitone*, or *imperfect ſound*, by the Italians, *ſemitono*. See SEMITONE.

The third is the *greater ſecond*, containing the nine commas, which compoſe the tone. This the Italians call *tono* or *perfect ſound*.

The fourth is the *redundant ſecond*, compoſed of a whole tone and a minor ſemi-tone. See TONE, SEMI-TONE, *&c.*

SECOND *captain*, is a reformed captain, who acts as lieutenant of another, into whoſe company he is incorporated. See CAPTAIN.

SECOND *cauſe*. See the articles CAUSE and EFFICIENT.

SECOND *flank*,	See the articles	FLANK.
SECOND *notion*,		NOTION.
SECOND *order of curves*,		CURVE.
SECOND *rate*,		RATE.

SECOND *ſight*, an odd qualification, which many of tbe inhabitants of the weſtern iſlands of *Scotland* are ſaid to be poſſeſſed of.—The thing is atteſted by ſo many credible authors (the lateſt of whom is Mr. Martin, author of the natural hiſtory of theſe iſlands, and a member of the royal ſociety) that, notwithſtanding the quaintneſs of it, there ſcarce ſeems room to call it in queſtion.

The *ſecond ſight*, then, is a faculty of ſeeing things to come, or things doing at a great diſtance, repreſented to the imagination as if actually viſible, and preſent.

Thus if a man be dying, or about to die, his image ſhall appear diſtinctly in its natural ſhape, in a ſhroud, and with other funeral apparatus, to a *ſecond-ſighted* perſon, who, perhaps, never ſaw his face before: immediately after which, the perſon ſo ſeen, certainly dies.

This quality of *ſecond-ſightedneſs*, is not hereditary: the perſon who has it, cannot exert it at pleaſure: nor can he prevent it, or communicate it to another; but it comes on him involuntarily, and exerciſes itſelf on him arbitrarily: And often, eſpecially in the younger *ſecond* ſeers, to their great trouble and terror.

There are a great number of circumſtances attend theſe viſions; by obſervation whereof, the particular circumſtances as to time, place, *&c.* of the death of the perſon, are learnt.—The method of judging of them, or interpreting them, grows into a kind of art; which is very different in different perſons. *Second-ſightedneſs* is held a diſcredit in the country; ſo that none will counterfeit it; many conceal and diſſemble it.

SECOND *terms*, in algebra, thoſe where the unknown quantity has a degree of power leſs than it has in the term where it is raiſed to the higheſt. See TERM.

The art of throwing theſe *ſecond terms* out of an equation; that is, of forming a new equation, where they have no place, is one of the moſt ingenious and uſeful inventions in all algebra. See REDUCTION *of equations*.

Second *tithe.* See the article Tithe.

SECONDARY, or Secundary, an officer who acts as ſecond, or next to the chief officer. See Officer and Principal.

Such are the *ſecondaries* of the fine-office.—The *ſecondaries* of the compters, who are next the ſheriffs of London in each of the two compters.—*Secondary* of the office of the privy ſeal.—Two *ſecondaries* of the pipe.—*Secondary* to the remembrancers, &c. See Remembrancer, &c.

Secondary, is more frequently uſed in an adjective ſenſe, by way of oppoſition to primary or principal. See Primary, and Principal.

Secondary *actors*,	See the articles	Actor.
Secondary *affections*,		Affection.

Secondary *circles*, of the ecliptick, are circles of longitude of the ſtars; or circles which paſſing through the poles of the ecliptick, are at right angles to the ecliptick. See Circle and Sphere.

By the help of theſe, all points in the heavens are referred to the ecliptick; that is, any ſtar, planet or other phænomenon, is underſtood to be in that point of the ecliptick, which is cut by the *ſecondary* ſemi-circle, which paſſes through ſuch ſtar or phænomenon. See Ecliptick, Longitude, &c.

If two ſtars be thus referred to the ſame point of the ecliptick, they are ſaid to be in conjunction; if in oppoſite points, they are ſaid to be in oppoſition: if they be referred to two points at a quadrant's diſtance, they are ſaid to be in quartile aſpect; if the points differ a ſixth part of the ecliptick, they are ſaid to be in ſextile aſpect. See Aspect, &c.

In the general, all circles which interſect one of the ſix greater circles of the ſphere at right angles, may be called *ſecondary circles.*—As, the azimuth or vertical circles in reſpect of the horizon, &c. the meridian in reſpect of the equator, &c. See Azimuth, Vertical, &c.

Secondary *collateral points*,	See	Collateral.
Secondary *dials*,		Dial.

Secondary *fever*, is that which ariſes after a criſis, or the diſcharge of ſome morbid matter: as, after the declenſion of the ſmall pox, or meaſles. See Fever, *Small*-Pox, &c.

Secondary *motion*,	See the articles	Motion.
Secondary *place*,		Place.

Secondary *planets*, thoſe moving round other planets, as the centres of their motion, and along with them round the ſun. See Planet.

Saturn, Jupiter, and the Earth, are each attended with *ſecondary planets:* Jupiter with four, and Saturn with five, called the *ſatellites* of thoſe two planets. See Satellites. The earth has one *ſecondary planet*, called the *moon*. See Moon.

The motion of the primary planets, is very ſimple and uniform, as being compounded only of a projectile motion, forward in a right line, which is a tangent to the orbit; and a gravitation towards the ſun at the centre. Add, that being at ſuch vaſt diſtances from each other, the effects of their mutual gravitation towards one another are inſenſible.—But the matter is far otherwiſe, in reſpect of the *ſecondary planets*; for every one of theſe, though it chiefly gravitate towards its reſpective primary one, as towards its centre, yet at equal diſtances from the ſun, is attracted towards him with equally accelerated gravity, as the primary one is towards him; but at a greater diſtance with leſs, and at a nearer diſtance with greater: from which double tendency towards the ſun, and towards their own primary planets, the motion of the ſatellites, or *ſecondary planets*, comes to be mightily compounded, and affected with many inequalities: as for inſtance,

1. The ſatellite ſhall be continually accelerated in its motion, from the time of its quadrature with the ſun, to the next following conjunction or oppoſition; but contrary-wiſe from the ſyzygies to the quadratures, it ſhall be retarded; and therefore will not always move ſwifter in or near the ſyzygies, and ſlower near the quadratures. From whence will follow that,

2. The orbits of theſe *ſecondary planets* will be of a figure more circular in the quadratures than in the ſyzygies, where the ſwiftneſs of the motion will make the figure of the orbit more rectilinear, and therefore the ſatellite will run farther from its primary planet at the quadratures, than at the ſyzygies: ſo that the orbit will be a little elliptical, having the primary planet for its centre, and the longer diameter will coincide with the line of the quadratures, and the ſhorter with that of the ſyzygies.—Which irregularities will ariſe, if the ſun's power of diſturbing the motion of the ſatellite be excluded, and the orbit be concentrick with that of the primary planets: for if the orbit be excentrical, it may happen that the ſatellite ſhall be farther off from the primary one in the ſyzygies, and ſo move ſlower than it does at the quadratures: and when this is the caſe, that the ſatellite's orbit is not a circle concentrick to the primary orbit, but an ellipſis, in one of whoſe focus's the primary planet is placed, then, the motion of the ſatellite will be ſo diſturbed by the ſun, that as it proceeds in its orbit, the apſes of the orbit ſhall be moved ſometimes *in conſequentia*, and ſometimes *in antecedentia* (whereas the nodes and apſes of the primary planets are at reſt.) See Apses and Nodes.

3. When the plane of the ſatellite's orbit is inclined to the plane of the primary orbit, the line of the nodes of the *ſecondary* orbit will be moved *in antecedentia*, with an angular motion, and an unequal velocity; for it will recede moſt ſwiftly, when the nodes are in quadrature to the ſun; after which, it will move ſlower; and at the time of the nodes being in the ſyzygies, will be perfectly at reſt.

4. The inclination alſo of the plane of the *ſecondary* orbit, to the primary one, will be continually varying, and will be greateſt, when the nodes are in the ſyzygies with the ſun, and leſs, *cæteris paribus*, when they are in the quadratures; and from the time of the nodes being in the ſyzygies, to the quadratures, it will be always decreaſing, and from the time of their being in the quadratures to the ſyzygies, it will be always increaſing: and all thoſe irregularities, whether in any excentrick or concentrick orbit, will always be ſomething greater, when the ſatellite is in conjunction with the ſun, than when he is in oppoſition to him. See Planet, Quadrature, Syzygy, Gravity, &c.

Secondary *qualities*,	See the articles	Quality.
Secondary *rainbow*,		Rainbow.

SECONDINE. See the article Secundine.

SECRETARY, an officer, who, by order of his maſter, writes letters, diſpatches, and other inſtruments, which he renders authentick by his ſignature. See Clerk.

Of theſe there are ſeveral kinds, as *ſecretary of ſtate*, *ſecretary of war*, *ſecretary of the treaſury*, *ſecretary of the admiralty*, *ſecretary of the lord chancellor*, &c.

Secretaries *of ſtate*, are officers attending the king, for the receipt and diſpatch of letters, grants, petitions, and many of the moſt important affairs of the kingdom, both foreign and domeſtick. See Officer.

The king's *ſecretaries* were anciently called the *king's clerks*, and *notaries*, *regi a commentariis.*—For the name *ſecretary*, it was as firſt applied to ſuch as being always near the king's perſon, received his commands, and were called *clerks of the ſecret*; whence was afterwards formed, the word *ſecretary*, *regi a ſecretis:* and as the great lords began to give their clerks the quality of *ſecretaries*, thoſe who attended the king, were called, by way of diſtinction, *ſecretaries of the commands*, *regi a mandatis.* This continued till the reign of our Henry VIII. 1559; when, at a treaty of peace between the French and Spaniards, the former obſerved, that the Spaniſh miniſters, who treated for Philip II. called themſelves *ſecretaries of ſtate*. Upon which the French *ſecretaries des commandements*, out of emulation, aſſumed the ſame title; which thence paſſed into England.

Till the reign of king Henry VIII. there was only one *ſecretary of ſtate:* but then buſineſs increaſing, that prince appointed a ſecond *ſecretary*; both of equal power and authority, and both ſtiled *principal ſecretaries of ſtate.*—Before queen Elizabeth's time, the *ſecretaries* did not ſit at the council-board; but that princeſs admitted them to the place of privy-counſellors; which honour they have held ever ſince, and a council is never, or at leaſt very ſeldom, held without one of them.—On the union of England and Scotland, queen Anne added a third *ſecretary*, on account of the great increaſe of buſineſs, which, as to Britain, is equally and diſtinctly managed by all the three, although the laſt is frequently ſtiled *ſecretary of ſtate for North Britain.*

They have under their management and direction, the moſt conſiderable affairs of the nation, and are obliged to a conſtant attendance on the king: they receive and diſpatch whatever comes to their hands, be it for the crown, the church, the militia, private grants, pardons, diſpenſations, &c. as likewiſe petitions to the ſovereign, which, when read, are returned to the *ſecretaries* for anſwer; all which they diſpatch according to the king's command and direction.

As to foreign affairs, they are divided into two provinces, or departments, comprehending all the kingdoms and nations which have any intercourſe or buſineſs with Great Britain; each *ſecretary* receiving all letters and addreſſes from, and making all diſpatches to, the ſeveral princes and ſtates comprehended in his province: which diviſion ſtill ſubſiſts, notwithſtanding the addition of a third *ſecretary.*—Ireland and the plantations are under the direction of the elder *ſecretary*, who has the ſouthern province.

Of theſe three principal *ſecretaries*, the two for South Britain, have each two *under ſecretaries*, and one chief clerk; and the other for North Britain one *under ſecretary*, and one chief clerk, with an uncertain number of other clerks and tranſlators, all wholly depending on them.

The *ſecretaries of ſtate* have the cuſtody of that ſeal, properly called the *ſignet*, and the direction of the ſignet-office; wherein are four clerks employed, who prepare ſuch things as are to paſs the ſignet, in order to the privy, or great ſeal. All grants ſigned by the king are returned hither, which, tranſcribed, are carried to one of the principal *ſecretaries of ſtate*, and ſealed, and then called *ſignets*, which being directed to the lord privy-ſeal, are his warrant. See Signet, &c.

On the *ſecretaries of ſtate*, is likewiſe dependant another office, called *the paper-office*, wherein all publick writings, papers, matters of ſtate, &c. are preſerved. See Paper-Office.

All the *under ſecretaries* and clerks are in the choice of the *ſecretary of ſtate*, without reſerve to any perſon: the *under ſecretaries* receive orders and directions from them, for writing diſpatches, foreign and domeſtick, which they give to the chief clerk, who diſtributes them to the under-clerks.

Secretary *of an embaſſy*, is a perſon attending an embaſſador, for the writing of diſpatches relating to the negotiation.

There is a deal of difference between the *ſecretary of the embaſſy*, and the embaſſador's *ſecretary*; the laſt is a domeſtick or menial of the embaſſador's; the firſt a ſervant or miniſter of the prince. See **Embassador.**

SECRETION, Secretio, in medicine, the act whereby the ſeveral juices, or humours in the animal body, are ſeparated from the blood, by means of the glands. See **Humour, Blood, Animal**, *&c.*

In the bodies of animals, we obſerve a great number of juices of different natures, *viz.* the blood, lympha, ſaliva, ſtomach-liquor, inteſtinal juices, pancreatic juice, bile, urine, *&c.*—Now, the blood is the general ſource of all; and from it they are all ſecerned by particular organs, called *glands.* See **Gland.**

The manner wherein this *ſecretion* is effected, has been greatly enquired into in theſe laſt ages; though not with the greateſt ſucceſs. The ancient phyſicians, indeed, contented themſelves to aſſert certain particular virtues, or faculties inherent in the ſeveral viſcera; whereby they were determined to ſeparate one liquor rather than another; without troubling themſelves much about the manner wherein it was done. But the moderns, according to the genius of their philoſophy, muſt have this point cleared, and the modus of *ſecretion* rendered intelligible.—Hence, as the exceeding ſmallneſs of theſe organs prevented any regular ſearch, they have imagined various manners of explaining them.

Some, full of the effects they have obſerved from fermentations, maintain, that there are ferments in the ſeveral parts; by aid whereof, certain kinds of particles mixed in the blood, are ſeparated therefrom; after the ſame manner as we ſee in muſt, or new wine, from which, while fermenting, certain parts are detached in form of froth.—But this opinion has ſo many inconveniencies to grapple withal, that it is almoſt univerſally abandoned. See **Ferment.**

Others conſider the glands as kinds of ſieves, whoſe holes having different figures, will only let paſs certain particles or molecules, whoſe figures reſemble thoſe of the holes.—But the falſity of this hypotheſis was ſoon found out; and it was thought ſufficient to fix ſome proportion between the diameters of the pores and of the molecules that were to paſs through them, to account why very ſubtile parts ſhould paſs through the glands, through which the coarſer could not paſs.—Yet this opinion was not found perfectly ſatisfactory: for on this ſuppoſition, the moſt ſubtile parts of the blood muſt paſs in ſuch quantity through the largeſt pores, that there would not be enough left to furniſh the little ones with what they needed: and for the ſame reaſon, thoſe parts whoſe pores are biggeſt, ought to furniſh liquors much fuller of ſubtile parts, than thoſe whoſe pores are ſmaller; which yet is contrary to experience. For the ſeroſity ſeparated in the kidneys, under the name of *urine*, conſiſts of parts much ſubtiler and ſmaller than the bile ſeparated in the liver: why then does not this ſeroſity eſcape in the liver? the pores whereof muſt be much greater than thoſe of the kidneys. See **Bile.**

This inconvenience, many naturaliſts being aware of, has made them have recourſe to *imbibition* (if the word may be allowed us for want of a better.) They maintain, then, that beſides the different diameters of the pores, it is required that the ſeveral parts be already imbued or moiſtened with a liquor like to that they are to filter.—This opinion is rather the reſult of reaſon than of experiment, and the maintainers hereof, well pleaſed they had ſomething to ſatisfy their reaſon withal, never troubled themſelves whether it were true: till M. Winſlow fell into it.

Dr. Keil, whoſe theory prevails moſt in England, accounts for *ſecretion*, from the joint conſideration of the different diameters of the veſſels, the different velocity of the blood, the different angles the ducts make with the arteries, and the different attraction of the different parts under all theſe different circumſtances.—His theory ſee at length, under the article **Animal** *ſecretion.*—But even in this, there is ſomething arbitrary and conjectural: beſides, the reaſoning is carried ſuch a length, that, in a thing, the principles whereof are ſo obſcure, the parts or organs ſo imperfectly known, and the whole proceſs carried on out of ſight, the mind can ſcarce ſafely acquieſce in it.

M. Winſlow, of the royal academy of ſciences at Paris, ſeems to have taken a better courſe for the diſcovery of this important action of *ſecretion.* He does not take up with conjectural principles, nor draw a plauſible ſcheme of reaſoning therefrom through the dark; but applies himſelf to experiment, and inveſtigates, in nature herſelf, and the ſtructure of the parts, the manner *ſecretion* is performed in. From a ſtrict examination of the ſeveral kinds of glands, both in men and other animals, he finds, with ſome other anatomiſts, that the glands are only bundles or plexus's of veſſels: but the veſſels peculiar to the gland, and which conſtitute the principal part thereof, M. Winſlow firſt diſcovered to be tubes, furniſhed, on the inſide, with a kind of down or lanugo, or rather a very fine, ſpongeous tiſſue, which fills the whole cavity of thoſe veſſels like a pith or marrow. This he finds in all glands, of all animals: in different glands, it appears of different colours, and this different colour is even found in the different glands of fœtus's themſelves.

The gland, then, is, at leaſt its main part, a compound of theſe downy or ſpongeous veſſels, which, from their office, we will call *ſecretory veſſels*, or *ducts*, and which frequently do, almoſt of themſelves, form what we call a *gland*, or *glandulous body:* though beſide theſe veſſels, we uſually remark four other kinds, *viz.* arteries, veins, excretory ducts and nerves. The *ſecretory* ducts we diſtinguiſh from the excretory ones; in that the former, by the peculiar texture of their down, ſerve to ſeparate a particulur liquor; and that the latter only ſerve to receive the liquor thus *ſecreted*, and to carry it to the place it is deſtined for. For a more particular account of the ſtructure and organization of the glands, ſee **Gland.**

For the manner wherein the glands act, in ſeparating the ſeveral liquors from the body, M. Winſlow lays it down thus: it is a thing well known by phyſicians and chymiſts, that a piece of brown paper, which is only an aſſemblage of ſmall fibres impacted cloſe to each other, having once imbibed oil or water, will never let any other liquor paſs through it, but of the ſame kind with what it is impregnated withal. All others it ſtops. And the like is obſerved of a wick of cotton or other matter, which having firſt imbibed its fill of oil or water, and being then dipped at one end, in a veſſel full of oil and water together; the wick that had imbibed the oil, will only raiſe and diſtil oil, and that with water, only water. Now, in the *ſecretory* ducts of the glands, we find a parallel ſtructure; an aſſemblage or plexus of fine threads or filaments bound cloſe together, much as in brown paper, or a cotton-wick; only differently diſpoſed. This plexus, then, having once imbibed a certain juice, will not let paſs any of the liquors which arrive at the orifices of theſe ducts, but that it had firſt imbibed.—The cauſe of this phænomenon is, doubtleſs, to be referred to the great principle of attraction, which is found ſtronger between the homogeneous than the heterogeneous parts of the ſame fluid. But this is an enquiry that belongs to another place. See **Attraction** and **Repulsion.**

As the blood, now, is not a homogeneous liquor; but a compound of an infinity of different parts or molecules, ſome oily, others mucilaginous, aqueous, ſaline, ſubtile, groſs, *&c.* in its motion along the arteries of the gland, it becomes divided into all the little ramifications thereof; by which means its velocity is exceedingly abated, and its molecules obliged to go off one by one, through the narrow paſſage of the artery into the vein, and of conſequence to paſs over the orifices of the *ſecretory* ducts of the glands, whoſe down is already tinged with a juice of a certain nature. Such of the molecules therefore, as are found of the ſame nature with the juice they meet withal at the entrance of the *ſecretory* duct, join themſelves to them, and enter the ducts, driven on by others that follow them. Thus they paſs, ſucceſſively, through the whole veſſel, and at length go out of it into the excretory duct; while the reſt, which are of a different kind, run over the orifice of the *ſecretory* veſſel, without ever mixing with the juice thereof, and thus arriving in the vein, are carried back to the heart.

All that remains, is, to explain how theſe parts ſhould have firſt imbibed the particular juices neceſſary for their reſpective *ſecretions*: how, for inſtance, the bile ſhould come to be ſeparated in the liver, for the firſt time, preferably to any other liquor? To this M. Winſlow anſwers, that having obſerved the glands of the ſmalleſt fœtus's to be coloured, much as in adults; it appears highly probable they had been imbued with the juices they were to filtrate, at the firſt formation of the animal; or at the ſame time when the ſolid parts of the fabric themſelves were framed.

SECT, Secta, a collective term, comprehending all ſuch as follow the doctrines or opinions of ſome famous divine, or philoſopher, *&c.* See **Heresy** and **Schism.**

The *ſects* of philoſophers among the ancients, particularly in Greece, were numerous; as Pyrrhonians, Platoniſts, Epicureans, Stoicks, Peripateticks, Academicks, *&c.* See each under its proper article, **Pyrrhonian, Platonist, Academick**, *&c.*

At preſent the *ſects* of philoſophy are chiefly reduceable to three, *viz.* the Carteſians, Peripateticks, and Newtonians. See **Cartesian**, *&c.*

In theology, the *ſects* are much more numerous; yet the ancients had legions now extinct; as, Manichees, Gnoſticks, Montaniſts, *&c.* See **Manichee, Gnostick**, *&c.*

The principal now on foot, are the Lutherans, Calviniſts, Anabaptiſts, Arians, Socinians, Arminians, *&c.* The riſe, progreſs, and fate, with the diſtinguiſhing characters and opinions of each, ſee under its reſpective head, **Lutheran, Calvinist**, *&c.*

Ionic SECT, *Italic* SECT,	See the articles	IONIC. ITALIC.

SECTA, in law. See the article SUIT.

Hundred SECTA. See the article HUNDRED.

SECTIO *Cæſarea.* See the article CÆSAREAN *ſection.*

SECTION *, SECTIO, a part of a thing divided; or the diviſion itſelf. See DIVISION and DISSECTION.

* The word is formed from the Latin *ſeco,* I cut.

Such, particularly, are the ſub-diviſions of chapters, by others called *paragraphs,* and ſometimes *articles.*—The mark of a *ſection* is §. See PARAGRAPH.

The ancients neglected to divide their books into chapters, and *ſections*; that was a taſk left for future editors, and criticks. See CHAPTER.

SECTION, in geometry, denotes a ſide or ſurface appearing of a body, or figure cut by another; or the place wherein lines, planes, *&c.* cut each other. See BISSECTION, INTERSECTION, and TRISSECTION.

The common *ſection* of two planes is always a right line, being the line ſuppoſed to be drawn by the one plane in its cutting or entering the other. See PLANE.

If a ſphere be cut in any manner, the plane of the *ſection* will be a circle, whoſe centre is in the diameter of the ſphere. See SPHERE.

The *ſections* of the cone are four, *viz.* a circle, parabola, hyperbola and ellipſis. See each under its proper article. See alſo CONE.

Conic SECTIONS. See the article CONIC *ſection.*

Axis of a conic SECTION, *Center of a conic* SECTION, *Diameter of a conic* SECTION, *Tangent of a conic* SECTION,	See	AXIS. CENTER. DIAMETER. TANGENT.

Following SECTIONS, *ſectiones ſequentes,* in conics, may be thus conceived: ſuppoſe two right lines, as A B, C D (*Tab. Conics, fig.* 5.) mutually interſecting one another in E, which point E is ſuppoſed to be the common centre of the oppoſite hyperbolic *ſections,* F G, H I, and whoſe common aſymptotes, the propoſed lines A B, C D alſo are.—In this caſe, the *ſections* G F and H I, are called *ſectiones ſequentes,* becauſe they are placed following one another in the contiguous angles of two interſecting right lines.

If the determinate diameter H G, of one of the *ſectiones ſequentes* (which is coincident with the ſuppoſed indeterminate diameter of its oppoſite) be equal to the vertical tangent K L, applied between the aſymptotes in the point G, of the diameter G F, then, Apollonius calls ſuch *ſections, conjugate ſections.*

Oppoſite SECTIONS, *Similar* SECTIONS,	See the articles	OPPOSITE. SIMILAR.

SECTION *of a building,* denotes its *profile*; or a delineation of its heights and depths raiſed on the plan; as if the fabrick was cut aſunder, to diſcover the inſide. See PROFILE and ORTHOGRAPHY.

Horizontal SECTION. See the article ICHNOGRAPHY.

SECTOR, in geometry, a part of a circle comprehended between two radii, and the arch. See CIRCLE and ARCH.

Thus the mixt triangle A C D (*Tab. Geometry, fig.* 13.) comprehended between the radii A C and C D and the arch A D, is a *ſector of the circle.*

It is demonſtrated by geometricians, that the *ſector* of a circle, as A C D, is equal to a triangle, whoſe baſe is the arch A D, and its altitude the radius A C.

If from the common centre of two concentric circles, be drawn two radii, to the periphery of the outer, the two arches included between the radii, will have the ſame ratio to their peripheries; and the two *ſectors,* the ſame ratio to the areas of their circles.

To find the area of a *ſector* D C E; the radius of the circle C D, and the arch D E being given. To 100, 314 and the radius A C, find a fourth proportional number; this will be the ſemi-periphery. Then to 180°, the given arch D E, and the ſemi-periphery juſt found, find another fourth proportional; this will give the arch D E in the ſame meaſure in which the radius A C is given. Laſtly, multiply the arch D E into the ſemi-radius, the product is the area of the *ſector.*

SECTOR alſo denotes a mathematical inſtrument, of great uſe in finding the proportion between quantities of the ſame kind, as between lines and lines, ſurfaces and ſurfaces, *&c.* whence the French call it the *compaſs of proportion.*

The great advantage of the *ſector* above the common ſcales, *&c.* is, that it is made ſo as to fit all radius's, and ſcales.—By the lines of chords, ſines, *&c.* on the *ſector,* we have lines of chords, ſines, *&c.* to any radius betwixt the length and breadth of the *ſector* when opened. See SCALE and LINE.

The *ſector* is founded on the fourth propoſition of the 6th book of Euclid, where it is demonſtrated, that ſimilar triangles have their homologous ſides proportional: an idea of its foundation may be conceived thus.—Let the lines A B, A C (*fig.* 14.) repreſent the legs of the *ſector,* and A D, A E two equal ſections from the centre. If now the points C B and D E be connected, the lines C B and D E will be parallel; therefore the triangles A D E, A C B ſimilar; and conſequently the ſides A D, D E, A B and B C proportional: that is, as A D : D E : A B : B C; whence if A D be the half, third or fourth part of A B; D E will be a half, third or fourth part of C B: and the ſame holds of all the reſt. If, therefore, A D be the chord, ſine, or tangent of any number of degrees to the radius A B; D E will be the ſame to the radius B C. See CHORD, SINE, *&c.*

Deſcription of the SECTOR.—The inſtrument conſiſts of two equal rules, or legs of braſs or other matter, rivetted together; but ſo as to move eaſy on the rivet. See its figure, *Tab. Geometry, fig.* 15. On the faces of the inſtrument are placed ſeveral lines; the principal are the line of equal parts, line of chords, line of ſines, line of tangents, line of ſecants, and line of polygons.

The *line of equal parts,* called alſo *line of lines,* marked L, is a line divided into 100 equal parts; and, where the length of the leg will allow it, each is ſub-divided into halves and quarters. It is found on each leg, on the ſame ſide; and the diviſions numbered 1, 2, 3, 4, *&c.* to 10, which is near the extremity of each leg. Note, in practice, 1 is taken for 10, or 100, or 1000, or 10000, *&c.* as occaſion requires; in which caſes 2 repreſents 20, or 200, or 2000, *&c.* and ſo of the reſt. The line of chords, marked C on each leg, is divided after the uſual manner, and numbered 10, 20, 30, *&c.* to 60. See CHORD. The line of ſines, denoted on each leg by the letter S, is a line of natural ſines, numbered 10, 20, 30, *&c.* to 90. See SINES. Line of tangents, denoted on each leg by the letter T, is a line of natural tangents, numbered 10, 20, 30, *&c.* to 45: beſides which, is another little line of tangents on each leg, commencing at 45°, and extending to 75°, denoted by the letter t. See TANGENT. Line of ſecants, denoted on each leg by the letter S, is a line of natural ſecants, numbered 10, 20, 30, *&c.* to 75, and commencing, not from the centre of the inſtrument, but at two inches diſtance therefrom. See SECANT. Line of polygons, denoted by the letter P on each leg, is numbered 4, 5, 6, *&c.* to 12, which falls 3 inches ſhort of the centre of the inſtrument. See POLYGON.

Beſide theſe lines, which are eſſential to the *ſector,* there are others placed near the outward edges on both faces, and parallel thereto, which are in all reſpects, the ſame as in Gunter's ſcale, and uſed after the ſame manner. Such are the line of artificial ſines marked S; the line of artificial tangents; a line of 12 inches, marked in; and Gunter's line of numbers, marked N. For the uſes of all which, ſee *Gunter's* SCALE. There are ſometimes, other lines placed, to fill the vacant ſpaces, as the lines of hours, latitudes, and inclinations of meridians, which are uſed the ſame as on the common ſcales. See SCALE.

The lines found by the *ſector* are of two kinds, lateral and parallel. The firſt are ſuch as are found by the ſides of the *ſector,* as A B, A C, *fig.* 14. The latter, ſuch as go acroſs from one leg to the other, as D E, C B. Note, the order of the lines in the newer *ſectors,* is different from what it is in the old ones; for the ſame line is not now put at the ſame diſtance from the edge on both legs; but the line of chords, *e. gr.* is innermoſt upon the one, and the line of tangents on the other. The advantage hereof is, that when the inſtrument is ſet to a radius for the chords, it ſerves alſo for the ſines and tangents without ſtirring it; for the parallel betwixt 60 and 60 of the chords, 90 and 90 of the ſines, and 45 and 45 of the tangents, are all equal.

Uſe of the line of equal parts on the SECTOR.—1°. To divide a given line into any number of equal parts, *e. gr.* ſeven. Take the given line in your compaſſes, and ſetting one foot in a diviſion of the line of equal parts, that may eaſily be divided by 7, *e. gr.* 70, whoſe ſeventh part is 10; open the *ſector* till the other point fall exactly on 70 in the ſame line, in the other leg. In this diſpoſition, applying one point of the compaſſes to 10 in the ſame line; ſhut them till the other fall in 10 in the ſame line of the other leg. This aperture will be the 7th part of the given line. Note, if the line to be divided be too long to be applied to the legs of the *ſector,* only divide one half, or one fourth by 7, and the double or quadruple thereof will be the 7th part of the whole.

2°. To meaſure the lines of the perimeter of a polygon, one of which contains a given number of equal parts. Take the given line in your compaſſes, and ſet it over, upon the line of equal parts, to the number of parts on each ſide expreſſing its length. The *ſector* remaining thus, ſet off the length of each of the other lines parallel to the former; and the numbers each of them falls on will expreſs their lengths.

3°. A right line being given, and the number of parts it contains, *e. gr.* 120, to take from it a leſs line, containing any number of the ſame parts, *e. gr.* 25. Taking the given line in your compaſſes, open the *ſector* till the two feet fall on 120 on each leg; then, the diſtance from 25 to 25 gives the line required.

4°. To find a third proportional to two given lines, and a fourth to three. For the firſt, take the length of the firſt given line in your compaſſes, and lay it off on the line of equal parts from the centre, to find the number where it terminates: then open the *ſector,* till the length of the ſecond line be included in the aperture of the extreme of the firſt: the *ſector* remaining thus, lay off the length of the ſecond line on one of the legs, from the centre; and note the number where it terminates; the diſtance between that number

ber on the two legs, gives the third proportional.—For the ſecond, take the ſecond line in your compaſſes, and opening the *ſector*, apply this extent to the ends of the firſt, laid off from the centre on both legs. The *ſector* thus opened, lay off the third line from the centre, and the extent between the number whereon it terminates on both legs, is the fourth proportional.

5°. To divide a line in any given proportion, *e. gr.* into two parts, which ſhall be to each other as 40 to 70. Add the two numbers together, their ſum is 110. Then, between your compaſſes take the line propoſed, which ſuppoſe 165, and open the *ſector* till this diſtance reach from 110 to 110 on both legs. The *ſector* thus opened, take the extent from 40 to 40, as alſo from 70 to 70; the firſt will give 60, the laſt 105, which will be the parts propoſed, for 40 : 70 : 60 : 105.

6°. To open the *ſector*, ſo as the two lines of equal parts may make a right angle: find three numbers that may expreſs the ſides of a right-angled triangle, as 3, 4 and 5, or their equimultiples, as 60, 80 and 100. Take then, in your compaſſes, the diſtance from the centre to 100; and open the *ſector*, till one point ſet upon 80, the other fall upon 60 in the other leg; then do the two lines of equal parts include a right angle.

7°. To find a right line equal to the circumference of a circle. The diameter of a circle being to the circumference, nearly as 50 to 157, take the diameter in your compaſſes, and ſet it over on the legs of the *ſector*, from 50 to 50. The *ſector* thus opened, take the diſtance from 157 to 157 in your compaſſes. This will be your circumference required.

Uſe of the line of chords on the Sector.—1°. To open the *ſector*, ſo as the two lines of chords may make an angle of any number of degrees, *e. gr.* 40. Take the diſtance from the joint to 4°, the number of degrees propoſed, on the line of chords; open the *ſector*, till the diſtance from 60 to 60, on each leg, be equal to the foreſaid diſtance of 40; then does the line of chords make the angle required.

2°. The *ſector* being opened, to find the degrees of its aperture. Take the extent from 60 to 60, and lay it off on the line of chords from the centre: the number, whereon it terminates, ſhews the degrees of its opening.—By applying ſights on the line of chords, the *ſector* may be uſed to take angles, as a ſurveying inſtrument.

3°. To make an angle of any given number of degrees, with a given line. On the given line deſcribe a circular arch, the centre whereof is the point whereon the angle is to be made. Set off the radius from 60 to 60; and the *ſector* remaining thus, take the diſtance of the two numbers on each leg, expreſſing the propoſed degrees, and lay it from the line upon the arch deſcribed. Laſtly, drawing a line from the centre, through the end of the arch, it will make the angle propoſed.

4°. To find the degrees a given angle contains. About the vertex deſcribe an arch, and open the *ſector*, till the diſtance from 60 to 60 on each leg, be equal to the radius of the circle: then taking the chord of the arch between the compaſſes, and carrying it on the legs of the *ſector*, ſee what equal number, on each leg, the points of the compaſſes fall on: this is the quantity of degrees, the given angle contains.

5°. To take an arch, of any quantity, from off the circumference of a circle. Open the *ſector*, till the diſtance from 60 to 60 be equal to the radius of the given circle: then take the extent of the chord of the number of degrees, on each leg of the *ſector*, and lay it off, on the circumference of the given circle. By this uſe may any regular polygon be inſcribed in a given circle, as well as by the line of polygons.

Uſe of the line of polygons on the Sector.—1°. To inſcribe a regular polygon in a given circle. Take the ſemi-diameter of the given circle, in the compaſſes, and adjuſt it to the number 6, on the line of polygons, on each leg of the *ſector:* then the *ſector* remaining thus opened, take the diſtance of the two equal numbers, expreſſing the number of ſides the polygon is to have. *E. gr.* The diſtance from 5 to 5 for a pentagon, from 7 to 7 for a heptagon, *&c.* Theſe diſtances carried about the circumference of the circle, will divide it into ſo many equal parts.

2°. To deſcribe a regular polygon, *e. gr.* a pentagon, on a given right line. Take the length of the line in the compaſſes, and apply it to the extent of the number 5, 5, on the lines of polygons. The *ſector* thus opened, upon the ſame lines take the extent, from 6 to 6, this will be the ſemi-diameter of the circle the polygon is to be inſcribed in. If, then, with this diſtance, from the ends of the given line, you deſcribe two arches of a circle, their interſection will be the centre of the circle.

3°. On a right line, to deſcribe an iſoſceles triangle, having the angles at the baſe, double that at the vertex. Open the *ſector*, till the ends of the given line fall on 10 and 10 on each leg; then take the diſtance from 6 to 6. This will be the length of the two equal ſides of the triangle.

Uſe of the lines of ſines, tangents, and ſecants, on the Sector.—By the ſeveral lines diſpoſed on the *ſector*, we have ſcales to ſeveral radius's; ſo that having a length, or radius, given, not exceeding the length of the *ſector* when opened, we find the chord, ſine, *&c.* thereto. *E. gr.* Suppoſe the chord, ſine, or tangent, of 10 degrees, to a radius of 3 inches, required: make 3 inches the aperture, between 60 and 60, on the lines of chords of the two legs; then will the ſame extent reach from 45 to 45 on the line of tangents, and from 90 to 90 on the line of ſines on the other ſide; ſo that to whatever radius the line of chords is ſet, to the ſame are all the others ſet. In this diſpoſition, therefore, if the aperture between 10 and 10, on the lines of chords, be taken with the compaſſes, it will give the chord of 10 degrees. If the aperture of 10 and 10 be in like manner taken on the lines of ſines, it will be the ſine of 10 degrees. Laſtly, if the aperture of 10 and 10 be in like manner taken on the lines of tangents, it gives the tangent of 10 degrees.

If the chord, or tangent, of 70 degrees were required; for the chord, the aperture of half the arch, *viz.* 35, muſt be taken, as before; which diſtance, repeated twice, gives the chord of 70°. To find the tangent of 70° to the ſame radius, the ſmall line of tangents muſt be uſed, the other only reaching to 45: making, therefore, 3 inches the aperture between 45 and 45 on the ſmall line; the extent between 70 and 70 degrees, on the ſame, will be the tangent of 70° to 3 inches radius.

To find the ſecant of an arch, make the given radius the aperture between 0 and 0 on the line of ſecants: then will the aperture of 10 and 10, or 70 and 70, on the ſaid lines, give the tangent of 10°, or 70°.

If the converſe of any of theſe things were required; that is, if the radius be required, to which a given line is the ſine, tangent, or ſecant, it is but making the given line, if a chord, the aperture on the line of chords, between 10 and 10, and then the *ſector* will ſtand at the radius required; that is, the aperture between 60 and 60, on the ſaid line, is the radius. If the given line were a ſine, tangent or ſecant, it is but making it the aperture of the given number of degrees; then will the diſtance of 90 and 90 on the ſines, of 45 and 45 on the tangents, of 0 and 0 on the ſecants, be the radius.

Uſe of the Sector *in trigonometry.*—1°. The baſe and perpendicular of a rectangled triangle being given, to find the hypotenuſe. Suppoſe the baſe A C (*Tab. Trigonom. fig.* 2.) 40 miles, and the perpendicular A B 30; open the *ſector* till the two lines of lines make a right angle: then for the baſe, take 40 parts on the line of lines on one leg; and for the perpendicular 30 on the ſame line on the other leg: then the extent from 40 on the one, to 30 on the other, taken in the compaſſes, will be the length of the hypotenuſe, which line will be found 50 miles.

2°. The perpendicular A B of a right-angled triangle A B C, being given, 30, and the angle B C A, 37°, to find the hypotenuſe B C. Take the given ſide A B, and ſet it over, on each ſide, upon the ſine of the given angle A C B; then the parallel diſtance of radius, or of 90 and 90, will be the hypotenuſe B C; which will meaſure 50 on the line of ſines.

3°. The hypotenuſe and baſe being given, to find the perpendicular. Open the *ſector*, till the two lines of lines be at right angles; then lay off the given baſe on one of thoſe lines from the centre. Take the hypotenuſe in your compaſſes, and ſetting one foot in the point of the given baſe, let the other fall on the line of lines, on the other leg: the diſtance from the centre to the point where the compaſſes fall, will be the length of the perpendicular.

4°. The hypotenuſe being given, and the angle A C B, to find the perpendicular. Make the given hypotenuſe a parallel radius, *i. e.* make it the extent from 90 to 90 on the lines of ſines; then will the parallel ſine of the angle A C B be the length of the ſide A B.

5°. The baſe and perpendicular A B given, to find the angle B C A. Lay off the baſe A C on both ſides the *ſector*, from the centre, and note its extent: then take the given perpendicular, and to it open the *ſector*, in the terms of the baſe; the parallel radius will be the tangent of B C A.

6°. In any right-lined triangle, two ſides being given, with the included angle, to find the third ſide. Suppoſe the ſide A C 20, the ſide B C 30, and the included angle A C B 110°; open the *ſector*, till the two lines of lines make an angle equal to the given angle, *viz.* 110°. Lay off the given ſides of the triangle from the centre of the *ſector*, on each of the lines of lines; the extent between their extremes is the length of the ſide A B ſought.

7°. The angles C A B and A C B given, and the ſide C B, to find the baſe A B. Take the given ſide C B, and turn it into the parallel ſine of its oppoſite angle C A B; and the parallel ſine of the angle A C B will be the length of the baſe A B.

8°. The three angles of a triangle being given, to find the proportion of the ſides. Take the lateral ſines of the ſeveral angles, and meaſure them in the line of lines; the numbers anſwering thereto, give the proportion of the ſides.

9°. The three ſides being given, to find the angle A C B. Lay the ſides A C, C B, along the line of lines, from the centre; and ſet over the ſide A B in their terms: ſo is the *ſector* opened, in theſe lines, to the quantity of the angle A C B.

10°. The hypotenuſe A C (*fig.* 3.) of a right-angled ſpherical triangle A B C given, *e. gr.* 43°, and the angle C A B 20°; to find the ſide C B. The rule is: As radius is to the ſine of the given hypotenuſe 43°, ſo is the ſine of the given angle 20° to the ſine of the perpendicular C B. Take, then, 20° from the centre, along the line of ſines, in your compaſſes, and ſet the extent, from 90 to 90, on the two legs; and the parallel ſine of 43°, the given hypotenuſe, will, when meaſured from the centre on the line of ſines, give 13° 30′, the ſide required.

11°. The perpendicular B C, and the hypotenuſe A C given, to find the baſe A B. As the ſine complement of the perpendicular B C is to radius, ſo is the ſine complement of the hypotenuſe to the ſine complement of the baſe.—Therefore, make the radius a parallel ſine of the given perpendicular, *e. gr.* 76° 30′; then the parallel ſine of the complement of the hypotenuſe, *e. gr.* 47° meaſured along the line of ſines, will be found 49° 25′, the complement of the baſe required: conſequently the baſe itſelf will be 40° 35′.

Particular uſes of the SECTOR *in geometry*, &c.—1°. To make a regular polygon, whoſe area ſhall be of any given magnitude. Let the figure required be a pentagon whoſe ſuperficial area is 125 feet: extract the ſquare root of $\frac{1}{5}$ of 125, it will be found 5. Make a ſquare, whoſe ſide is 5 feet; and, by the line of polygons, as already directed, make the iſoſceles triangle C G D (*Tab. Geom. fig.* 14. N°. 2.) ſo as that C G being the ſemi-diameter of a circle, C D may be the ſide of a regular pentagon inſcribed therein, and let fall the perpendicular G E. Then continuing the lines E G and E C, make E F equal to the ſide of the ſquare before made: and from the point F, draw the right line F H parallel to G C; then a mean proportional between G E and E F will be equal to half the ſide of the polygon ſought, which doubled, will give the whole ſide. The ſide of the pentagon thus had, the pentagon itſelf may be deſcribed, as above directed.

2°. A circle being given, to find a ſquare equal thereto. Divide the diameter into 14 equal parts, by the line of lines, as above directed: then will 12. 4 of thoſe parts found by the ſame line, be the ſide of the ſquare ſought.

3°. A ſquare being given, to find the diameter of a circle equal thereto. Divide the ſide of the ſquare into 11 equal parts, by means of the line of lines; and continue that ſide to 12. 4 parts; this will be the diameter of the circle required.

4°. To find the ſide of a ſquare, equal to an ellipſis whoſe tranſverſe and conjugate diameters are given. Find a mean proportional between the tranſverſe and conjugate diameters; which, being divided into 14 equal parts; 12 $\frac{4}{10}$ thereof, will be the ſide of the ſquare required.

5°. To deſcribe an ellipſis in any given ratio of its diameter; the area whereof ſhall be equal to a given ſquare. Suppoſe the proportion of the tranſverſe and conjugate diameters be required, as 2 to 1; divide the ſide of the given ſquare into 11 equal parts: then, as 2 is to 1, ſo is 11 × 14=154 to a 4th number; the ſquare whereof is the conjugate diameter ſought. Then, as 1 to 2, ſo is the conjugate diameter to the tranſverſe. Now,

6°. To deſcribe an ellipſis, by having the tranſverſe and conjugate diameters given. Suppoſe A B and E D (*Tab. Con. fig.* 21.) to be the given diameters; take A C in your compaſſes, and to the extent thereof open the *ſector*, till the diſtance from 90 to 90, on the lines of ſines, be equal thereto. Then may the line A C be divided into a line of ſines, by taking the parallel extents of the ſine of each degree, on the legs of the *ſector*, in your compaſſes, and laying them off from the centre C. The line thus divided into ſines (in the figure it is only done into every 10th ſine) from each raiſe perpendiculars both ways; then, find points in thoſe perpendiculars through which the ellipſis muſt paſs, thus: take the extent of the ſemi-conjugate diameter C E between your compaſſes, and open the *ſector*, till the aperture of 90 and 90 on the lines of ſines be equal thereto: then take the parallel ſines of each degree of the lines of ſines of the *ſector*, and lay them off on thoſe perpendiculars drawn through their complements in the lines of ſines A C; thus will you have two points in each perpendicular, through which the ellipſis muſt paſs. *E. gr.* The *ſector* ſtill remaining the ſame, take the diſtance from 80 to 80 on the lines of ſines, in your compaſſes, and ſetting one foot in the point 10, on the line A C, with the other, make the points *a* and *m* in the perpendiculars paſſing through that point: then will *a* and *m* be the two points in the perpendicular, through which the ellipſis muſt paſs. All the other points, found after the ſame manner, being connected, will give the ſemi-ellipſis D A E; and the other half will be drawn after the ſame manner.

Uſe of the SECTOR *in ſurveying.*—The bearings of three places, as A, B, C, (*Tab. Surveying, fig.* 4. N°. 2.) to each other, *i. e.* the angles A B C, B C A and C A B, being given; and the diſtance of each, from a fourth ſtanding among them, as, D, *i. e.* B D, D C, and A D being given; to find the diſtances of the ſeveral places A, B, C, from each other, *i. e.* the lengths of the ſides A B, B C, A C. Having drawn the triangle E F G (*fig.* 4. N°. 3.) ſimilar to A B C, divide the ſide E G in H, ſo as that E H may be to H G, as A D to D C, after the manner already directed: and, after the like manner muſt E F be divided in I, ſo as E I may be to I F, as A D to D B. Then continuing the ſides E G, E F, ſay, as E H—H G is to H G, ſo is E H+H G to G H; and as E I—I F is to I F, ſo let E I+I F be to F M; which proportions are eaſily wrought by the line of lines on the *ſector*. This done, biſſect H K and I M, in the points L, N; and about the ſaid points as centres, with the diſtances L H and I N, deſcribe two circles interſecting each other, in the point O; to which, from the angles E, F, G, draw the right lines E O, F O, and O G, which will have the ſame proportion to each other, as the lines A D, B D, D C: now, if the lines E O, F O, and G O, be equal to the given lines A D, B D, D C, the diſtances E F, F G, and E G, will be the diſtances of the places required. But if E O, O F, O G, be leſs than A D, D B, D C, continue them, till P O, O R, and O Q be equal to them: then the points P, Q, R, being joined, the diſtances P R, R Q and P Q, will be the diſtances of the places ſought. Laſtly, if the lines E O, O F, O G, be greater than A D, D B, D C, cut off from them lines equal to A D, B D, D C, and join the points of ſection by three right lines; the lengths of the ſaid three right lines will be the diſtances of the three places ſought. Note, if E H be equal to H G, or E I to I F, the centres L and N, will be infinitely diſtant from H and I; that is, in the points H and I, there muſt be perpendiculars raiſed to the ſides E F, E G, inſtead of circles, till they interſect each other; but if E H be leſs than H G, the centre L will fall on the other ſide of the baſe continued; and the ſame is to be underſtood of E I, I F.

The *ſector* is of eſpecial uſe for facilitating the projection of the ſphere, both orthographic and ſtereographic. See PROJECTION and STEREOGRAPHIC.

SECULAR, ſomething that is *temporal:* in which ſenſe, the word ſtands oppoſed to *eccleſiaſtical.* See TEMPORAL and ECCLESIASTICAL.

Thus we ſay, *ſecular power*, *ſecular arm*, *ſecular juriſdiction.* See POWER, ARM, JURISDICTION, &c.

SECULAR, is more peculiarly uſed for a perſon who lives at liberty in the world; not ſhut up in a monaſtery, nor bound by vows, or ſubjected to the particular rules of any religious community. See VOW, RULE, MONASTIC, MONK and ORDER.

In which ſenſe the word ſtands oppoſed to *regular.* See REGULAR.

The Romiſh clergy is divided into *regular* and *ſecular.* See CLERGY.

The *regulars* pretend their ſtate is much more perfect than that of the *ſeculars. Secular* prieſts may hold abbies and priories both ſimple and conventual, though not regularly, but only *in commendam.* See ABBOT and COMMENDAM.

It is a maxim, in their canon law, *ſecularia ſecularibus*, i. e. *ſecular* benefices are only to be given to *ſecular* perſons; regular to regular. See BENEFICE.

SECULAR *corporation.* See the article CORPORATION.

SECULAR *games*, *ludi* SECULARES, in antiquity, ſolemn games, held among the Romans, once in an age; or, in a period deemed the extent of the longeſt life of man, called by the Greeks, *αιων*, and the Latins, *ſeculum.* See AGE and GAME.

The *ſecular games* were alſo called *Terentine games*, *ludi Terentini*, either by reaſon Manius Valerius Terentinus gave occaſion to their inſtitution; for that having been warned, in a dream, to dig in the ground in a place near the Campus Martius, called *Terentum*, he there found an altar inſcribed to Dis, or Pluto and Proſerpine: upon which, as had been foretold him in his dream, three of his children born blind, recovered their ſight; and he, in gratitude, performed ſacrifices, on the ſame altar, for three days and three nights ſucceſſively.—Or by reaſon here was an altar of Pluto buried deep under ground, becauſe the water of the Tyber *terram tereret*, eat into the ground in this place.

The *ſecular games* laſted three days, and as many nights; during which, ſacrifices were performed, theatrical ſhews exhibited, with combats, ſports, &c. in the circus.

Their origin, and inſtitution, is delivered at length by Val. Maximus: the occaſion thereof, according to this writer, was, to ſtop the progreſs of a plague.—The firſt who had them celebrated at Rome, was Valerius Publicola, the firſt conſul created after the expulſion of the kings, in the year of Rome 245.—The ceremonies to be obſerved therein were found preſcribed in one of the books of the Sibyls.

At the time of the celebration of the *ſecular games*, heralds were ſent to invite all the world to a ſolemnity no body had ever yet ſeen, nor was ever to ſee again.

Authors are not agreed as to the number of years wherein theſe games returned; partly, becauſe the quantity of an age or *ſeculum* among the ancients is not known; and partly on other accounts: ſome will have it, that they were held once every hundred years, and that the *ſeculum*, or age, was our century.—This Varro and Livy ſeem to expreſs in very plain terms; yet others will have it, that *ſeculum* comprehended 110 years, and that the *ſecular games* only returned in that period, that is, at the beginning of every 111th year; which opinion is countenanced by Horace, in his *ſecular poem*, v. 21.

Be this as it will, it is certain they ſometimes did not ſtay for the 111th, nor even for the 100th year, for the celebration of theſe games. Auguſtus, for inſtance, held them in the year of Rome 736; and Caligula again in the year of Rome 800, and of Chriſt 38, *viz.* 64 years after the former; and Domitian, again, in ſtill leſs time, *viz.* in the year of Chriſt 87, at which Tacitus aſſiſted in quality of quindecimvir, as he himſelf tells us, *Annal. lib.* xi. c. 11. This was the ſeventh time that Rome had ſeen them from their firſt inſtitution.

The emperor Severus exhibited them the eighth time 110 years after thoſe of Domitian: Zoſimus ſays, theſe were the laſt; but he is miſtaken, for in the year of Rome 1000, fifty years after thoſe of Severus, the emperor Philip had them celebrated with greater magnificence than had ever been known.—We find them repreſented on medals.

Secular *poem.* See the article Seculare *carmen.*

Secular *year*, the ſame with *jubilee.* See Jubilee.

SECULARE *carmen*, Secular *poem*, a poem ſung, or rehearſed, at the *ſecular* games. See Secular *games.*

Of this kind we have a very fine piece among the works of Horace: it is a Sapphic ode, which uſually comes at the end of his epodes.—In ſome editions, the twenty-firſt ode of the firſt book, is called *carmen ſeculare.*

SECULARIZATION, the action of *ſecularizing*, or of converting a regular perſon, place, or benefice, into a ſecular one. See Regular and Secular.

Almoſt all the cathedral churches were anciently regular, *i. e.* the canons were to be religious; but they have been moſt of them *ſecularized.* See Cathedral and Canon.

For the *ſecularization* of a regular church there is required the authority of the pope, that of the prince, the biſhop of the place, the patron, and even the conſent of the people.—In France all this muſt be confirmed by parliament.

Religious, that want to be releaſed from their vows, obtain briefs of *ſecularization* from the pope.

SECUNDA *aqua*, among chymiſts, &c. denotes aqua-fortis which has been already uſed to diſſolve ſome metal, &c. See Aqua-Fortis and Depart.

SECUNDARY, or Secondary. See Secondary.

SECUNDI *generis*, in anatomy, a diſtinction among the lacteal veſſels.—There are two kinds of lacteals, *viz. primary*, or thoſe of the firſt kind, *primi generis:* and *ſecundi generis*, *ſecondary*, or of the ſecond kind.

The firſt carry the chyle from the inteſtines into glands diſperſed in great numbers throughout the meſentery.—The ſecond carry it from theſe glands, after its being diluted there with lympha, into the common receptacle. See Lacteal.

SECUNDI *internodii pollicis extenſor.* See Extensor.

SECUNDINE, or Secundines, Secundinæ, in medicine, the ſeveral coats or membranes wherein the fœtus is wrapped up, in the mother's womb; as the chorion and amnios, with the placenta, &c.—See *Tab. Anat.* (Splanch.) *fig.* 16. *lit. b b.* See alſo the articles Foetus, Chorion, Amnios, &c.

They are thus called, becauſe they come out in the ſecond place, *i. e.* after the child, in delivery.—The matrons and midwives call them the *after-birth*, as being eſteemed a ſecond burthen, whereof the mother is freed. Others call them, the *delivery*, becauſe when theſe are out, the woman is reckoned to be perfectly delivered.

The *ſecundine* muſt never be left in the matrix; it is a foreign body, which would deſtroy the mother: it is dangerous even to have a piece of it left behind.

Hippocrates obſerves, that twins have always the ſame *ſecundine.* See Twins.

Dr. Grew, in his anatomy of plants, applies the term *ſecundine* to the fourth and laſt coat or cover of ſeeds; by reaſon this performs nearly the ſame office in plants, that the membranes inveſting the fœtus do in animals. Indeed Pliny, Columella, Apuleius, &c. have uſed *ſecundine* in the ſame ſenſe.

SECUNDO.—*Propoſitio de* Secundo *adjacente.* See the article Proposition.

SECUNDUS *peronæus*, Secundus *ſcalenus*,	See the articles	Peronæus. Scalenus.

SECURITATE *pacis*, a writ, which lies for one who is threatened with death, or danger; againſt the perſon who ſo threatens him.—It is taken out of chancery, directed to the ſheriff. See Surety and Peace.

SECUTORES *, in antiquity, a kind of gladiators among the Romans, who fought againſt the retiarii. See Gladiator.

* The word is formed from the verb *ſequi*, to follow; becauſe the *ſecutores* uſed to purſue the retiarii. See Retiarii.

The *ſecutores* were armed with a ſword, and a buckler, to keep off the net, or nooſe, of their antagoniſt, and wore a caſk on their head.—Some confound the *ſecutores* with the mirmillones, becauſe both had nearly the ſame weapons.

Secutores was alſo a name given to ſuch gladiators, as took the place of thoſe killed in the combat; or, who fought the conqueror. This poſt was taken by lot.

In ancient inſcriptions we alſo meet with *ſecutor tribuni*, *ſecutor ducis*, *ſecutor Cæſaris*, &c. who were officers attending the tribunes, and generals; perhaps like our aids de camp.

SE-DEFENDENDO, a plea for him who is charged with the death of another; alledging, that he was forced to do what he did, in his own defence, the other ſo aſſaulting him, that had he not done as he did, he muſt have been in danger of his own life. See Manslaughter.

To have this plea admitted, the danger muſt appear inevitable.—Though the party juſtify its being done *ſe-defendendo*, yet he is driven to procure his pardon of courſe from the lord-chancellor, and forfeits his goods to the king.

SEDER OLAM, in philology, a Hebrew term, literally ſignifying, *order of the world*; being the title of two chronicles in that language.

They are both very ſhort, though the one more ſo than the other; for which reaſon the one is called *ſeder olam rabba*, that is, the *great ſeder olam*; and the other, *ſeder olam zuta*, i. e. *little ſeder olam.*

The *great* Seder Olam commences at the creation of the world, and comes down as low as the war of the pſeudo-meſſiah Barchochabas, under Adrian, 52 years after the deſtruction of the temple of Jeruſalem, and, of conſequence, to the 122d year of Chriſt.—It is almoſt all taken from the ſcripture, excepting the end. It is the work of R. Joſa, ſon of Hhelpeta of Tſippora, who lived in the ſecond century, about the year 130, and was maſter of the famous R. Juda Hakkadoſch, the compiler of the Miſchna.

The *leſſer* Seder Olam is an abridgment of the former, brought down as far as Mar Sutra, who lived 450 years after the deſtruction of the temple, or 522 years after Chriſt.—F. Morin, continually bent upon diminiſhing the antiquity of the principal books of the Jews, endeavours to prove it to have been wrote about the year of Chriſt 1124, as indeed it is expreſſed at the beginning: but R. Dav. Gantz has overthrown this opinion in his Tſemahh David, and ſhewn, that the date, in the beginning, is an interpolation.

The two chronologies were firſt printed at Mantua in 1514, quarto; again, at Baſil, by Frobenius in 1580, octavo: at Venice in 1545, quarto: at Paris, with a Latin verſion of Genebrard, in 12°.—They have been ſince re-printed at Amſterdam, in 1711.

SEDIMENT *, the ſettlement, or dregs, of any thing; or that groſs, heavy part of a fluid body, which, upon reſting, ſinks to the bottom of the veſſel. See Hypostasis.

* The word is formed from the Latin, *ſedimentum*, which Matthias Sylvaticus derives *à diuturna ſede.*

Some phyſicians pretend to diſcover much of the nature of the diſeaſe, from the *ſediment* of the urine. See Urine.

Dr. Woodward maintains, that at the deluge, the whole terreſtrial globe was diſſolved into one uniform maſs, and that the new world ariſing thence was perfectly ſpherical, and without any inequalities, conſiſting of ſeveral ſtrata, which the earthy *ſediment* gradually produced, as it drained. See Deluge, Strata, &c.

SEDR, or Sedre, the high prieſt of the ſect of Ali, among the Perſians. See Mahometanism.

The *ſedr* is appointed by the emperor of Perſia, who uſually confers the dignity on his neareſt relation.

The juriſdiction of the *ſedr* extends over all effects deſtined for pious purpoſes, over all moſques, hoſpitals, colleges, ſepulchres, and monaſteries. He diſpoſes of all eccleſiaſtical employments, and nominates all the ſuperiors of religious houſes.—His deciſions, in matters of religion, are received as ſo many infallible oracles: he judges of all criminal matters, in his own houſe, without appeal, and is, without contradiction, the ſecond perſon in the empire.

The *ſedr*, however, has not any indelible character, but frequently quits his poſt, for another purely ſecular one.—His authority is balanced by that of the mudſitehid, or firſt theologue of the empire.

SEED, Semen, a matter prepared by nature, for the reproduction, and conſervation of the ſpecies, both in men, animals, and plants. See Generation, Animal, Plant, &c.

Some naturaliſts add, that even ſtones, minerals, and metals themſelves have each their proper *ſeed* in their mines, and are produced and perpetuated thereby. See Mineral, Stone, &c.

Seed, Semen, in the animal œconomy, is a white, liquid matter, or humour, the thickeſt of any in the body, ſeparated from the blood in the teſticles, and reſerved in proper veſſels, to be the means of generation.—By chymical analyſis it it found to conſiſt almoſt intirely of oil, and volatile ſalts, blended together by the mediation of a little phlegm. Its activity Dr. Drake takes to be derived from the ſalts, wherewith it abounds, far more than any other animal liquor. See Humour.

The parts concerned in the preparation of the *ſeed* are the ſpermatic arteries, which bring the blood to be ſecreted into the teſticles; the teſticles, and paraſtatæ, where the ſecretion itſelf is chiefly effected; the vaſa deferentia, which convey the ſecreted matter out of the teſticles; and the veſiculæ ſeminales, which receive and preſerve it to be emitted in coition. See each of theſe parts deſcribed under its proper article Testicle, &c.

The blood received, in ſmall quantities, into the ſpermatic arteries, and there, by the particular ſtructure of the parts, much diminiſhed of its velocity, is yet farther retarded about the corpus pyramidale, or varicoſum, and its redder, and thicker parts, carried off by canals opening into the veins. Thus rendered paler, and ſlower, it is received into the winding receſſes of the teſticles, where, almoſt ſtagnating, it aſſumes an aſh-colour, and is further prepared, thickened, *&c.* in the ductus Highmorianus, whence, ſlowly driven into the epididymidæ, or paraſtatæ, it is further prepared and elaborated in the folds and complications thereof, and, at length, creeps ſlowly into the vaſa deferentia, or ejaculatoria. Theſe conſiſt, at firſt, of a thick, fungous matter, and are very narrow, but growing ſenſibly wider, and then again narrower, in the winding meanders hereof the humour is collected, its motion abated, further elaborated, and concocted, and at laſt driven into the veſiculæ ſeminales, in the various cells and meatus's whereof it is received, laid up, fixed, thickened, whitened, and raiſed to its laſt perfection; in which ſtate it is called *ſeed*.

It is obſervable, that no humour in the body is generated ſo ſlowly, meets with ſo many means to retard it, or to elaborate, and concoct it, when at reſt, as the *ſeed*. Some imagine that, in its whole retarded progreſs, beſides what is apparent, there is ſomething ſtill added to it from the minute nervous veſicles; and ſomething taken away, by the various lymphatics, and diſcharged thereby into the venous veſicles of the corpus pyramidale, and the little veins of the veſiculæ ſeminales, and thence into the humours of the whole body: Boerhaave takes both the one and the other to be very probable.

The *ſeed*, or humour, thus formed in the teſticles, paraſtatæ, vaſa deferentia, and veſiculæ ſeminales, being, when new, diluted with a little warm water, and viewed with a good microſcope, ſeems to conſiſt of innumerable, little, oblong, living, eel-like animalcula floating in the other part of this humour.—This is ſaid to be always obſerved in the ſeed of all men, quadrupedes, birds, fiſhes, amphibious animals, and inſects. See ANIMALCULE.

Upon comparing this with the bulk, figure, place, change, *&c.* of the carina of the chick deſcribed by Malpighi, and with the known law of nature obſerved in the generation of frogs; it appears highly probable, that the animalcula of the male *ſeed*, contain the rudiments, or ſtamina, of the future human body; and the more ſo, ſince, whenever the teſticles, or this humour is wanting, there is always ſterility on the ſide of the male.

M. Leewenhoeck, the firſt diſcoverer of theſe animalcula, and many after him, make no ſcruple to call them true *fœtus's*, little men; and ſome have even pretended to diſcover ſomewhat of the human figure therein.—But Verheyen, and others after him, deny the exiſtence of any ſuch animalcula; maintaining, that it is only the inteſtine motion of the parts of the *ſeed* kept on foot by the warmth thereof, that exhibits this appearance, which fanciful perſons have improved into friſking animalcula; and urging, in confirmation hereof, that no ſooner is the warmth gone, than all appearance of animals ceaſes.—But this notwithſtanding, the doctrine of the animalcula in ſemine, ſeems now pretty generally received. See GENERATION.

Some admit of four ſeveral kinds of *ſeed:* the *ſeed* of the teſticles, that of the veſiculæ ſeminales, that of the proſtates, and that of the glands of the penis.—The two firſt, which we have deſcribed as one and the ſame humour, only in different ſtages, thoſe authors take to be different, as not being able to find any ſtrict communication between the deferentia and the veſiculæ; but that communication is fully ſhewn by Dr. Drake, ſo that nothing needs further, to ſhew the *ſeeds* the ſame.—The liquor of the proſtates, and that of the glands of the penis, are generally allowed not to be any true *ſeed*, no more than that emitted by women: nor is there any good reaſon why either of them ſhould be called ſo, as their appearance is very different, and as other ſufficient uſes are aſſigned for them, *viz.* to line and lubricate the parts, that the *ſeed*, urine, *&c.* may paſs more freely, and without adhering. See PROSTATES.

The ſeminal liquor, however, ſuch as emitted for uſe, is a mixture of ſeveral fluids, poured at the ſame time into the common canal of the urethra, either from the glands that have ſecreted them, or the reſervoirs that have kept them.—M. du Verney obſerves, that in different ſpecies, the number and ſtructure of theſe organs is different. In man, the principal are the veſiculæ ſeminales, and the proſtates, beſides what was diſcovered by Mr. Cowper, *viz.* a number of new glandulous bodies on each ſide the urethra, whoſe excretory ducts open into the urethra, towards the root of the yard. See MUCOUS *glands*. M. du Verney has found, that the ſame are likewiſe in moſt other animals, and placed in the ſame manner.

It is controverted, whether or no the liquor filtrated hereby, be neceſſary to generation? M. du Verney thinks it is; and his chief reaſon is, that in animals that have been caſtrated, theſe glands, as well as all the other ſources of generation, are found dried up, and decayed.—M. Littre objects to this, that the veſiculæ ſeminales, and proſtates, having little cells, where their filtrated liquor is depoſited, it is eaſily conceived that their humours may wait ſome time, for an occaſion of being emitted; but that theſe new proſtates, or glands, of Mr. Cowper, having no ſuch reſervoirs, their liquor muſt ooze out into the cavity of the urethra, in proportion, as it is ſeparated, and be deſtined for ſome continual, not a momentary, or occaſional uſe. He adds, that as the excretory ducts of theſe glands traverſe the ſpongeous body of the urethra, for two inches, ere they penetrate into its cavity, and that in the ſole moments when the liquor ſhould be diſcharged, to aſſiſt in generation, that ſpongeous body is extremely dilated, and its ſides in a ſtate of compreſſion, the liquor muſt be then leſs diſpoſed to a diſcharge than ever. See ERECTION.

For the fate of the *ſeed* when lodged in the uterus: ſee CONCEPTION, GENERATION, *&c.*

SEED, in botany, is the laſt product of a plant, whereby the ſpecies is propagated. See PLANT.

The *ſeed* is frequently the fruit of the plant, as is the caſe in moſt herbs. See FRUIT.

Sometimes it is only a part incloſed in the fruit, and that in form, either of grain, kernel, or berry. See GRAIN, NUCLEUS, ACINUS, *&c.*

The *ſeed* is the natural offspring of the flower, and that for whoſe production all the parts of the flower are intended; ſo that when this is once well formed, the ſeveral parts of the flower dwindle, and diſappear. See FLOWER.

It is produced from the farina of the apices, let fall on the head of the piſtil, and thence forwarded to an uterus at the bottom thereof, divided into ſeveral cells; where, coming to receive the nutritious juice of the plant, it is firſt ſoftened, then ſwelled, increaſed both in matter and bulk, and at length comes to its ſtate of maturity.—For a more particular accouut of the manner of the generation of the *ſeed*, ſee GENERATION.

That the whole plant is contained in the *ſeed*, is an opinion as old as Empedocles, and is ſtill the prevailing doctrine among the generality of naturaliſts. Experience, the microſcope, and the modern philoſophy, give it great countenance. In effect, by the uſe of good microſcopes, we diſcover, in the *ſeed*, ſeveral of the parts of the future tree, only in miniature; particularly a little root, called the *radicle*, and the ſtem called the *plumule*. See RADICLE and PLUMULE.

In Malpighi's life, we have a debate between him and ſeignior Triumphetti, provoſt of the phyſic garden at Rome, whether the whole plant be actually contained in the *ſeed?* The affirmative is maintained by Malpighi, with cogent arguments; among which this is one, that in a kidney bean ere ſown, the eye, aſſiſted with a microſcope, eaſily diſcovers leaves, a bud, and even the knots, or implantations of the leaves on the ſtem. The ſtem itſelf is very conſpicuous, and plainly conſiſts of woody fibres, and ſeries's of little utricles.—And whereas ſeignior Triumphetti had objected, that by poverty, tranſplantation, *&c.* ſeveral plants degenerate into others, particularly wheat into tares, and tares again into wheat; in anſwer to this, which is one of the ſtrongeſt objections againſt that opinion, Malpighi replies, that he is not fully ſatisfied as to the truth of the objection; for that both himſelf, and his friends, making the experiment, no metamorphoſis of the wheat ſucceeded: but granting the metamorphoſis, it is the ſoil, or the air, or the culture, is in the fault. Now, from a morbid, and monſtrous condition of nature, there is no inferring her genuine and permanent ſtate. See DEGENERATION.

To the ſame effect, Mr. Leewenhoeck, after a nice obſervation of an orange-kernel he had made to germinate in his pocket, *&c.* concludes, "Thus we ſee how ſmall a particle, "no bigger than a coarſe ſand, is increaſed, *&c.*" A plain demonſtration, that the plant, and all that belongs to it, was actually in the *ſeed, viz.* the body, root, *&c.*—Mr. Derham adds, that of all the *ſeeds* he has viewed, except the maple, the plant appears the plaineſt to the naked eye in the nux vomica.

The fecundity of plants, in the production of *ſeeds*, is very ſurprizing. M. Dodart, in the memoirs of the French academy of ſciences, computes, that an elm, living 100 years, ordinarily produces of itſelf 33000000 grains; and adds, that had its crown, or head, been cut off, it would have put forth as many branches, within half an inch of the place where it was cut, as it had before; and that at whatever height it were cut off, the effect would have been ſtill the ſame.—Hence he concludes, that the whole trunk, from the ground to the riſe of the branches, is full of the principles, or little embryo's of branches, which, it is true, cannot all appear at once, but which being conceived, as ſeparated by circular rims, half an inch high, compoſe ſo many ſets of branches, each whereof is ready to appear, and will really appear, if the head be lopped off juſt over it.

Now theſe inviſible branches exiſt as really as thoſe which appear: for whence elſe ſhould they come? the trunk cannot produce them, as being itſelf no more than a packet of fibres, deſtitute of all action: nor can the ſap, which, like the blood, is fit to nouriſh the parts, but not to form any new ones.—The branches thereof exiſted before the tree was lopped; and if they had appeared, would have bore an equal number of *ſeeds* as thoſe which did. Theſe *ſeeds*, therefore, they muſt already contain in little.

On which footing, the tree may be ſaid actually to contain in itſelf 15840000000 *ſeeds*, wherewith to multiply itſelf as many times.—But what ſhall we ſay, if each *ſeed*, or grain of a tree, contain in itſelf another tree, containing the ſame number of *ſeeds?* and, if we can never come either at a *ſeed* which does not contain trees, nor at a tree which does not contain *ſeed?* by this means we ſhall have an increaſing geometrical progreſſion, the firſt term whereof is 1, the ſecond 15840000000, the third, the ſquare of 15840000000; the fourth, its cube, &c. to infinity. See FECUNDITY.

Several ſpecies of plants have been always ſuppoſed to be deſtitute of *ſeed*, in regard no obſervation, no microſcope, no anatomy had diſcovered any thing like them: ſuch are the capillaries, the ſeveral kinds of fuci, ſea-plants, moſſes, &c.—But the happy induſtry of the preſent age has diſcovered the *ſeeds* of ſome of them; and has left us out of all doubt, that the reſt are not without the ſame.

The *ſeeds* of fern, and the capillary-plants, were firſt diſcovered by Cæſius; and ſince, more fully and critically by Mr. W. Cole. The *ſeeds* of ſome ſea-plants, were diſcovered by the Count de Marſigli, and thoſe of others, by M. Reaumur, the firſt mentioned in the hiſtory of the French academy for the year 1712, and the latter for the year 1711. The *ſeeds* of ſome kinds of fuci have been diſcovered by Mr. Samuel Doody; thoſe of coralloid ſhrubs, by Dr. Tanc. Robinſon, as alſo, thoſe of ſeveral fungi, particularly truffles, and crepitus lupi's, or puff-balls; and thoſe of ſome other by Dr. Liſter. See MUSHROOM: under which article, a new theory of the propagation of theſe apparently *ſeedleſs* plants is laid down.

Echinate SEEDS,	See the articles	ECHINATE.
Naked SEEDS,		NAKED.
Winged SEEDS,		WINGED.

SEEDS, in gardening, and agriculture.—Mr. Bradley obſerves, that the *ſeeds* of plants, though exceedingly good, will degenerate from the mother-plant, if they be ſown on the ſame ground, whence they were gathered; ſo that there is a great neceſſity for a yearly change of *ſeeds* of foreſt trees, as acorns, maſt, &c. If the place be too cold to ſow them when gathered in Auguſt, they may be kept barrelled, or potted up, in moiſt ſand or earth, *ſtratum ſuper ſtratum*, during the winter; at the end of which they are found ſprouted, and if gently ſown, will be as forward as if ſown in autumn, beſides their miſſing the vermin to which the winter *ſeed* is much expoſed.

The *ſeed* is not to be choſen from the moſt fruitful trees, ſo much as from the moſt ſolid and fair; nor are we to covet the largeſt acorns, but the moſt weighty, clean, and bright. Porous, inſipid, mild ſorts of *ſeeds*, are to be ſown as ſoon as ripe: hot, bitter *ſeeds* to be kept a year before ſown.

The ſhape and weight of *ſeeds*, direct how they are to be ſet: moſt of them, when they fall, lie on one ſide, with the ſmall end towards the earth, which ſhews that poſture to be beſt to ſet any ſtone or nut in: if they be heavy, ſow them the deeper. Acorns, peaches, &c. to be ſown two or three inches deep. See SEMINATION and PERPENDICULARITY.

SEEDS, in pharmacy, &c.—The medicinal *ſeeds*, eſpecially thoſe imported from the Indies, Levant, &c. are ſeverally deſcribed under their reſpective articles, (which ſee.

Among thoſe cultivated at home, the principal are the four *greater hot*, and the four *greater cold ſeeds*, as they are called.—The firſt are thoſe of aniſe, fennel, cummin, and caraway: the latter, thoſe of gourd, citrul, melon, and cucumber.

The chief uſe of the four cold *ſeeds*, is for the making of emulſions, cool refreſhing drinks, paſts for the hands, and oils uſed by the ladies for the complection.

Amber SEED,	See the articles	AMBER *ſeed*.
Aniſe SEED,		ANISE *ſeed*.
Line SEED,		LINE *ſeed*.
Muſtard SEED,		MUSTARD *ſeed*.
Worm SEED,		WORM *ſeed*.

SEED *of pearls*. See the article PEARL.

SEEDLINGS, among gardeners, denote ſuch roots of gilliflowers as come from ſeed ſown.—Alſo, the young tender ſhoots of any plants, that are newly ſowed.

SEEING, the act of perceiving objects by the organ of ſight; or the ſenſe we have of external objects, by means of the eye. See SIGHT.

For the apparatus, or diſpoſition of the parts neceſſary to *ſeeing*, ſee EYE.—For the manner wherein *ſeeing* is performed, and the laws thereof, ſee VISION.

Our beſt anatomiſts differ greatly as to the cauſe why we do not *ſee* double with the eyes?—Galen, and others after him, aſcribe it to a coalition or decuſſation of the optic nerve behind the os ſphenoides. But whether they decuſſate or coaleſce, or only barely touch one another, is not ſo well agreed. The Bartholines and Veſalius ſay expreſly, they are united by a perfect confuſion of their ſubſtance: Dr. Gibſon allows them to be united by the cloſeſt conjunction, but not confuſion of their fibres. See OPTIC *nerve*.

Des Cartes, and others, account for the effect another way, *viz.* by ſuppoſing that the fibrillæ conſtituting the medullary part of thoſe nerves, being ſpread in the retina of each eye, have each of them correſponding parts in the brain; ſo that when any of thoſe fibrillæ are ſtruck by any part of an image, the correſponding parts of the brain are affected thereby.—Somewhat like which is the opinion of Dr. Briggs; who takes the optic nerves of each eye to conſiſt of homologous fibres, having their riſe in the thalamus nervorum opticorum, and thence continued to both the retinæ which are compoſed of them: and farther, that thoſe fibrillæ have the ſame parallelism, tenſion, &c. in both eyes; conſequently, when an image is painted on the ſame correſponding, ſympathizing parts of each retina, the ſame effects are produced, the ſame notice carried to the thalamus, and ſo imparted to the ſoul.—Hence, that double viſion enſuing upon an interruption of the parallelism of the eyes; as when one eye is depreſſed by the finger, or their ſymphony interrupted by diſeaſe. But Dr. Briggs maintains, that it is but in few ſubjects, there is any decuſſation; in none, any conjunction more than mere contact.

Whence it is that we *ſee* objects erect, when it is certain, the images thereof are painted invertedly on the retina, is another difficulty in the theory of *ſeeing!*—Des Cartes accounts for it hence; that the notice the ſoul takes of the object, does not depend on any image, nor on any action coming from the object, but merely on the ſituation of the minute parts of the brain, whence the nerves ariſe. *E. gr.* the ſituation of a capillament of the optic nerve, correſponds to a certain part of the brain, which occaſions the ſoul to *ſee* all thoſe places lying in a right line therewith.

But Mr. Molyneux gives us another account: the eye, he obſerves, is only the organ, or inſtrument: it is the ſoul that *ſees*. To enquire, then, how the ſoul perceives the object erect by an inverted image, is to enquire into the ſoul's faculties. Again, imagine that the eye receives an impulſe on its lower part, by a ray from the upper part of an object; muſt not the viſive faculty be hereby directed to conſider this ſtroke as coming from the top rather than the bottom of the object, and conſequently, be determined to conclude it the repreſentation of the top? See SIGHT, VISIBLE, &c.

SEEING *faith*. See the article FAITH.

SEELING. A horſe is ſaid to *ſeel*, when he begins to have white eye-brows; that is, when there grows on that part about the breadth of a farthing of white hairs, mixed with thoſe of his natural colour: which is a mark of old age. See AGE.

It is ſaid a horſe never *ſeels* till he is fourteen years old, and always before he is ſixteen.—The light ſorrel and black, ſooner *ſeel* than any other.

Horſe-jockeys uſually pull out thoſe hairs with pincers; but if there be ſo many, that it cannot be done, without making the horſe look bald and ugly, then they colour their eye-brows, that they may not appear old.

SEEM, or SEME. See the article SEAM.

SEGMENT *of a circle*, in geometry, a part of a circle comprehended between an arch and the chord thereof.—Or, it is a part of a circle comprehended between a right line leſs than a ſemi-circle and a part of the circumference. See CIRCLE, ARCH, CHORD, &c.

Thus the portion A F B A (*Tab. Geometry*, *fig.* 23.) comprehended between the arch A F B, and the chord A B, is a *ſegment* of the circle A B E D, &c. a *ſegment* of ſo many degrees.

As it is evident every *ſegment* of a circle muſt either be greater or leſs than a ſemi-circle; the greater part of the circle cut off by a chord, *i. e.* the part greater than a ſemi-circle, is called the *greater ſegment*, as A D E B; and the leſſer part, or the part leſs than a ſemi-circle, the *leſſer ſegment*, as A F B, &c.

The angle which the chord A B, makes with a tangent LB, is called the *angle of a ſegment*. See ANGLE.

Some alſo call the two mixt angles comprehended between the two extremes of the chord, and the arch, *angles of the ſegment*.

Angle in the SEGMENT. See the article ANGLE.

Similar SEGMENTS. See the article SIMILAR.

The height of a SEGMENT D E, *fig.* 22, and half its baſe or chord A E, being given, to find the area of the *ſegment*. Find the diameter of the circle. Seee DIAMETER. On this deſcribe a circle, and draw the baſe of the *ſegment* A B; draw the radii A C, BC; and find the number of degrees of the arch ADB. From the diameter had, and its ratio to the periphery, find the periphery itſelf; and from the ratio of the periphery to the arch A D B, and the periphery itſelf, find the length of the arch A D B. This done, find the area of the ſector A D B C A. See SECTOR. And that of the triangle AC B. See TRIANGLE. Laſtly, ſubtract the triangle from the ſector, the remainder is the area of the *ſegment*. See SINE.

If the area of the greater *ſegment* BFA, were required, the triangle ACB muſt be added to the ſector ADEBC.

SEGMENT *of a ſphere*, is a part of a ſphere terminated by a portion of its ſurface, and a plane which cuts it off; paſſing ſomewhere out of the centre. See SPHERE.

This is more properly called a *ſection of a ſphere*. See SECTION.

The baſe of ſuch a *ſegment*, it is evident, is always a circle whoſe centre is in the centre of the ſphere.

The ſolid content of a *ſegment* of a ſphere is found, by multiplying the ſurface of the whole ſphere by the altitude of the *ſegment*, and then dividing the product by the diameter of the ſphere, and to the quotient adding the area of the baſe of the *ſegment*.—Or, if it be leſs than a hemiſphere, thus; take the altitude of the *ſegment* from the radius of the ſphere, and by the difference multiply the area of the baſe of the *ſegment*; and ſubtract this product, from that which will ariſe by multiplying the ſemi-axis of the ſphere into the convex ſurface of the *ſegment*; then divide the remainder by 3, and the quotient is the ſolidity ſought.

This latter method ſuppoſes the axis of the ſphere to be given; if not, it may be found thus: let the altitude of the *ſegment* be called a, and its ſemi-diameter s, then will

$a.\ s :: s.\ \frac{ss}{a}$; add $\frac{ss}{a}$ to a, and that ſhall give the axis ſought.

Reſiſtance of a **SEGMENT**. See the article RESISTANCE.

SEGMENT is ſometimes alſo extended to the parts of ellipſes, and other curvilinear figures. See ELLIPSIS, CURVE, *&c.*

Line of **SEGMENTS**. On Gunter's ſector there are uſually two lines, called *lines of ſegments*; they are numbered with 5, 6, 7, 8, 9, 10, and lie between the lines of ſines, and thoſe of ſuperficies. They repreſent the diameter of a circle, ſo divided into 100 parts, as that a right line drawn through thoſe parts, and normal to the diameter, ſhall cut the circle into two *ſegments*, of which the greater ſhall have that proportion to the whole circle, which the parts cut have to 100. See SECTOR.

SEGMENT *leaves*, a denomination given by botaniſts to thoſe leaves that are cut and divided into many ſhreds, or ſlices; as fennel, *&c.* See LEAF.

SEGMOIDAL *valves*, in anatomy, are little valves of the pulmonary artery; thus called from their reſembling ſegments of circles; but more uſually ſemilunar valves. See SEMILUNAR.

SEGREANT, is the herald's word for a griffon, when drawn in a leaping poſture, and diſplaying his wings, as if ready to fly.

SEJANT, is a term uſed in heraldry, when a lion, or other beaſt, is drawn in an eſcutcheon, ſitting like a cat, with his fore-feet ſtreight.

SEIGNEUR, or SEIGNOUR, *lord*. See SIRE, SIEUR, MONSEIGNEUR, LORD, *&c.*

SEIGNORAGE, or SEIGNOURAGE, a right or due belonging to a ſeigneur, or lord. See LORD.

SEIGNORAGE is particularly uſed for a duty belonging to the prince for the coining of money, called alſo *coinage*; in the baſer Latin, *monetagium*. See COINAGE.

This duty is not always the ſame; but changes according to the pleaſure of the prince, and the occaſions of ſtate. It is in ſome meaſure for the diſcharge of this duty that alloy was invented; that is, the mixture of other metals with gold and ſilver. See ALLOY.

Under our ancient kings, for every pound of gold brought in the maſs to be coined, the king's duty was five ſhillings; one ſhilling, and ſometimes eighteen-pence whereof went to the maſter of the mint. Under Edward III. the *ſeignorage* of every pound weight of ſilver, was eighteen-penny weight, which was then equivalent to a ſhilling. Under Henry V. the king's *ſeignorage* for every pound of ſilver was fifteen-pence.—At preſent, the king claims no *ſeignorage* at all, but the ſubject has his money coined at the publick expence: nor has the king any advantage therefrom, but what he has by the alloy.

In France, under Philip Auguſtus, the *ſeignorage* was one third of the profit made by the coining: St. Louis fixed it at one fifteenth part of the value of the money coined: king John at three livres the mark of gold: Charles VII. by reaſon of the diſtreſſed ſtate of his finances, raiſed it to three fourths of the value: Louis XIII. fixed it at ſix livres the mark, or eight ounces of gold, and ten ſols the mark of ſilver.—Louis XIV. took away the right of *ſeignorage* in 1679; though it was re-eſtabliſhed in 1689, on the foot of ſeven livres, ten ſols the mark of gold, and twelve ſols, ſix deniers the mark of ſilver.

It muſt be obſerved, that for the levying of this duty of *ſeignorage*, the juſt value of the money is augmented by the value of the duty.

SEISIN, SEISINA, in law, ſignifies poſſeſſion. See POSSESSION.

In this ſenſe we ſay, *primier ſeiſin*, for the firſt poſſeſſion, *&c.* See PRIMIER.

Seiſin is two-fold; *ſeiſin in fact*, and *ſeiſin in law*.

SEISIN *in fact*, is, when an actual and corporal poſſeſſion is taken.

SEISIN *in law*, is, when ſomething is done, which the law accounteth a *ſeiſin*; as an inrollment.

This in law gives a right to lands and tenements, though the owner be by wrong diſſeized of them.—He who hath but an hour's poſſeſſion quietly taken, hath *ſeiſin de droit, & de claime*, whereof no man may diſſeize him by his own force, or ſubtlety, without proceſs of law. See DISSEISIN.

The civilians call the latter *civilem poſſeſſionem*, the former *naturalem*. See POSSESSION.

SEISINAM *habere facias*. See the article HABERE.

SEISOR. See the article DISSEISOR.

SEIZE, SEAZE, or SEASE, in the ſea language, is to make faſt, or bind; particularly to faſten two ropes together, with rope-yarn.

The *ſeazing*, *ſeaſing*, or *ſeaſen* of a boat, is a rope tied to a ring, or little chain in the fore-ſhip of the boat, by which means it is faſtened to the ſide of the ſhip.

SEIZING, in falconry, is when an hawk gripes her prey, or any thing elſe faſt between her claws.

SEIZURE, in commerce, an arreſt of ſome merchandize, moveable, or other matter, either in conſequence of ſome law, or of ſome expreſs order of the ſovereign.

Contraband goods, thoſe fraudulently entered, or landed without entering at all, or landed at wrong places, are ſubject to *ſeizure*. See CONTRABAND.

In *ſeizures*, among us, one half goes to the *ſeizor*, or informer, and the other half to the king.—In France, half the painted linens, *&c.* ſeized, uſed to be burnt, and the other half ſent abroad: but in 1715, by an arret of council, the whole was ordered to be burnt.

SELENITE*, SELENITES, in natural hiſtory, *moon-ſtone*; a ſtone ſaid to be ſtill found in China, which has this remarkable property, that it increaſes and decreaſes, as the moon waxes and wains.—There are ſome of theſe *ſelenites* preſerved in the palace of Peking, valued at an incredible rate. Martinius.

* The word is formed from the Greek, σεληνη, moon.

SELENITES, among the ancient naturaliſts, denotes a white, or tranſparent figured ſtone; thus called from its repreſenting the moon as in a glaſs. It was alſo denominated *lapis ſpecularis*. See SPECULARIS.

Some give the ſame appellation to Muſcovy-talc, from an opinion, that its brightneſs increaſes and diminiſhes with the moon. See TALC.

SELENOGRAPHY*, a branch of coſmography, which deſcribes the moon, and all the parts and appearances thereof; as geography does thoſe of the earth.

* The word is formed from σεληνη, moon, and γραφη, deſcription.

Since the invention of the teleſcope, *ſelenography* is vaſtly improved. We have now diſtinct names for moſt of the regions, ſeas, lakes, mountains, *&c.* viſible in the moon's body. Hevelius, a celebrated aſtronomer and burgher-maſter of Dantzick, who publiſhed the firſt *ſelenography*, named the ſeveral places of the moon from thoſe of the earth; Ricciolus, from the names of the celebrated aſtronomers and philoſophers.—Thus what the one calls *mons Porphyrites*, the other calls *Ariſtarchus*. What the one calls *Ætna*, *Sinai*, *Athos*, *Apenninus*, &c. the other calls *Copernicus*, *Poſſidonius*, *Tycho*, *Gaſſendus*, &c. See MOON.

At the royal obſervatory at Paris, they continue to make *ſelenographic* maps. M. Caſſini has publiſhed a work called *Inſtructions Seleniques*.

SELEUCIANS, SELEUCIANI, a ſect of ancient hereticks, called alſo *Hermiani*. See HERMIANS.

Seleucus and Hermias joining forces, and dogmatizing together, taught, that God was corporeal; that the elementary matter was co-eternal with him, and that the human ſoul was formed by the angels, of fire and air.—They alſo denied that Jeſus Chriſt ſat at the right-hand of God; aſſerting, that he had quitted that right, and had removed his throne into the ſun. See ASCENSION.

SELEUCIDÆ, in chronology.—*Æra of the* SELEUCIDÆ, or the Syro-Macedonian æra, is a computation of time, commencing from the eſtabliſhment of the *Seleucidæ*, a race of Greek kings, who reigned as ſucceſſors of Alexander the Great in Syria; as the Ptolemy's did in Egypt. See EPOCHA.

This æra we find expreſſed in the book of Maccabees, and on a great number of Greek medals ſtruck by the cities of Syria, *&c.*—The Rabbins and Jews call it, ths *æra of contracts*, becauſe being then ſubject to the kings of Syria, they were obliged to follow their method of computing in all contracts.

The Arabs call it *therik dilkarnain*, æra of two horns, which ſome ſay ſignifies the æra of Alexander the Great; by reaſon that prince bore two rams horns on medals, in imitation of Jupiter Ammon, whoſe ſon he would needs be.—But others underſtand it much better of the two kingdoms of Syria and Egypt, which were now cloven or divided; and of one ſingle empire parted into two monarchies.

The grand point, is to know the year wherein the ſeparation was made; or, which is the ſame thing, when Seleucus Nicanor, one of Alexander's captains, and the firſt of the *Seleucidæ*, eſtabliſhed his throne in Syria.—Without detailing the various ſentiments of various authors, it may ſuffice to obſerve, that, according to the beſt accounts, the firſt year of this æra falls in the year 311 before Chriſt, which was 12 years after Alexander's death. See EPOCHA.

SELF *abuſe*, } See the articles { ABUSE,
SELF *examination*, } See the articles { EXAMINATION.

SELL, in building, is of two kinds, *viz.*—*Ground-ſell*, which denotes the loweſt piece of timber in a timber-building, and that whereon the whole ſuperſtructure is raiſed.

Window-ſell, called alſo *window-ſoil*, is the bottom piece in a window-frame. See WINDOW.

SELLA *equina*, *turcica*, or *ſphenoides*, is a name given the four apophyſes of the os ſphenoides, or cuneiforme, in the brain; in regard of their forming a reſemblance of a ſaddle, which the Latins call *ſella*. See SPHENOIDES and BRAIN. They are ſometimes alſo called by the Greek name *clinoides*. Herein is contained the pituitary gland, and in ſome beaſts, the *rete mirabile*. See PITUITARY and RETE.

SEMBIANI, SEMBIANS, a ſect of ancient hereticks, denominated from their leader, *Sembius* or *Sembianus*, who condemned all uſe of wine, as evil of itſelf; perſuaded his followers, that the wine was a production of Satan and the earth; denied the reſurrection of the dead, and rejected moſt of the books of the Old Teſtament. Jovet.

SEMBRADOR, an engine, invented by Don Joſ. de Lucatello, for the evenly ſowing of ſeeds; deſcribed in the Philoſophical Tranſactions, under the title of the *Spaniſh Sembrador*. See SEED and SEMINATION.

The perfection of agriculture is allowed to conſiſt much in ſetting plants at proportional diſtances, and giving ſufficient depth to the roots, that they may ſpread, and receive their neceſſary nouriſhment: yet is very little care taken in the practice of this important part of huſbandry; but all ſorts of grains ſown by handfuls, caſt at random; by which means four parts in five of the ſeed are loſt.—To remedy this inconvenience, the *ſembrador* or ſower is invented, which being faſtened to the plough, the whole buſineſs of plowing, ſowing, and harrowing is done at once; the ſeed-man's trouble ſaved, and the grain ſpread at equal diſtances, and equally deep at the bottom of the furrow.

An experiment hereof was made before the emperor Leopold in the fields of Laxemburgh in Auſtria, where the land uſually yields four or five-fold; but the crop from the ground ſowed by this inſtrument, was ſixty-fold; as appears by a certificate of the emperor's officer, appointed to ſee the experiment: ſigned Vienna, Auguſt 1, 1663.

A figure of the *ſembrador*, we have in the Tranſactions, N°. 60. by the earl of Caſtlemain.

SEME, or SEEME. See the article SEAM.

SEMEIOSIS, ΣΗΜΕΙΩΣΙΣ, in medicine. See SEMEIOTICA, DIAGNOSIS, and PROGNOSIS.

SEMEIOTICA *, ΣΗΜΕΙΩΤΙΚΗ, that part of medicine which conſiders the ſigns, or indications of health, and diſeaſes; and enables the phyſician to judge what is, was, or will be the ſtate, degree, order and effect of health or ſickneſs. See SIGN and INDICATION; ſee alſo MEDICINE.

* The word is formed from the Greek, σημειωτικη, of σημειον, *ſign*, *ſymptom*.

SEMEN *ſanctum*, or *ſantonicum*. See WORM-*ſeed*.

SEMENTINÆ *feriæ*, in antiquity, feaſts held annually among the Romans, to obtain of the gods a plentiful harveſt. See FERIÆ.

They were celebrated in the temple of Tellus, or the earth; where ſolemn ſacrifices were offered to Tellus and Ceres.

The time of the celebration was about ſeed time, uſually in the month of January; for Macrobius obſerves, they were moveable feaſts.—They had their name from *ſemen*, ſeed.

SEMETS, SUMMETS, or SUMMITS, in botany, are uſed by Dr. Grew, and others, for the apices of the attire of plants. See APICES.

SEMI, a word borrowed from the Latin, ſignifying *half*; but only uſed in compoſition with other words, as in the following articles.

The French, inſtead of *ſemi*, frequently uſe *demi*; the Greeks *hemi*. See HEMI and DEMI.

In muſic, *ſemi* has three ſeveral uſages: firſt, when prefixed to the name of a note, it expreſſes a diminution of half its value; as in *ſemi-breve*, &c. See SEMI-BREVE.

Secondly, when added to the name of an interval, it expreſſes a diminution, not of half, but of a leſſer ſemi-tone, or four commas in the whole compaſs; as in *ſemi-diapente*, &c.

Thirdly, it ſometimes alſo ſignifies an imperfection: thus, *ſemicircolo* or *circolo mezzo*, ſignifies an imperfect circle, which is the mark of imperfect time, that is, of double time; whereas, the circle, being a character of perfection, marks triple time.

SEMI-ARIANS, a branch of the ancient Arians; conſiſting, according to Epiphanius, of ſuch as, in appearance, condemned the errors of that hereſiarch, but yet acquieſced in ſome of the principles thereof; only palliating and hiding them under ſofter, and more moderate terms. See ARIANS. It is true, they ſeparated from the Arian faction; but yet could never be brought to acknowledge, that the Son was homoouſios, that is, conſubſtantial, or of the ſame ſubſtance with the Father.—They would only allow him to be homoiouſios, that is, of a like ſubſtance with the Father. See HOMOOUSIAN, &c.

Though, as to expreſſion, they only differed from the orthodox by a ſingle letter; yet were they, in effect, in the error of the Arians, as they placed the Son in the rank of creatures.—It did not avail the teaching, that there was no other creature of the ſame claſs with him; ſince by denying him conſubſtantial with God, they effectually precluded him from being truly God.

Yet ſome, even among the orthodox, uſe the word homoiouſios, in ſpeaking of the Son; applying ſuch an idea to it, as, it ſeems, is conſiſtent with orthodoxy. See CONSUBSTANTIAL.

But the name *ſemi-arians* is given by the ſecond general council to another branch of Arians, who believed orthodoxly of the Father and Son, but denied the deity of the Holy Ghoſt; thus rejecting that part of the Arian hereſy relating to the Son, but ſtifly retaining that which related to the Holy Ghoſt.

As the zeal of the Arians was chiefly leveled againſt the ſecond perſon in the trinity, that of the *ſemi-arians* was bent againſt the third; whence as the former were ſometimes called χριςομαχοι, the latter were denominated πνευματομαχοι. Macedonius, biſhop of Conſtantinople made an innovation in this ſect in 360, and gave riſe to a new branch of Macedonian *ſemi-arians*, or pneumatomachi; who allowed the Son not to be ὁμοουσιος, of the ſame ſubſtance, but ὁμοιος, of like ſubſtance, with the Father; and at the ſame time openly aſſerted the Holy Ghoſt to be a creature.

SEMI-BREVE, in muſic, a note, or meaſure of time, comprehending the ſpace of two minims, or four crotchets, or half a breve. See NOTE, MEASURE, and CHARACTERS *of muſic*.

The *ſemi-breve* is accounted one meaſure or time; or the integer, in fractions and multiples whereof the time of the other notes is expreſſed. See TIME.

Thus the minim is expreſſed by $\frac{1}{2}$; a crotchet by $\frac{1}{4}$, &c. i. e. by $\frac{1}{4}$ of a meaſure or *ſemi-breve*. A breve by 2; a long by 4, that is, by 4 meaſures or *ſemi-breves*. See MINIM, CROTCHET, BREVE, &c. See alſo SEXTUPLE.

The character of the *ſemi-breve* is O.

SEMI-CIRCLE, in geometry, a figure comprehended between the diameter of a circle, and half the circumference. See CIRCLE, ANGLE and CENTRE.

Two *ſemi-circles* can only cut each other in one point.

SEMI-CIRCLE, is alſo an inſtrument in ſurveying, ſometimes called *graphometer*. See SURVEYING.

It conſiſts of a *ſemi-circular* limb, as FIG (*Tab. Surveying*, *fig.* 16.) divided into 180 degrees, and ſometimes ſubdivided, diagonally or otherwiſe, into minutes. This limb is ſubtended by a diameter FG, at the extremities whereof are erected two ſights. In the centre of the *ſemi-circle*, or the middle of the diameter, is fixed a box and needle. On the ſame centre is fitted an alidade or moveable index, carrying two other ſights, as HI. The whole is mounted on a ſtaff with a ball and ſocket.

The *ſemi-circle*, then, is nothing elſe but half a theodolite; with this only difference, that whereas the limb of the theodolite, being an intire circle, takes in all the 360° ſucceſſively; in the *ſemi-circle* the degrees only going from 1 to 180, it is uſual to have the remaining 180°, or thoſe from 180° to 360°, graduated in another line on the limb, within the former.

To take an angle with a SEMI-CIRCLE.—Place the inſtrument in ſuch manner, as that the radius CG may hang over one leg of the angle, to be meaſured, and the centre C over the vertex of the ſame. The firſt is done by looking through the ſights F and G at the extremities of the diameter, to a mark fixed up in one extremity of the leg: the latter is had by letting fall a plummet from the centre of the inſtrument. This done, turn the moveable index HI on its centre towards the other leg of the *ſemi-circle*, till through the ſights fixed on it, you ſee a mark in the extremity of the leg. Then, the degree which the index cuts on the limb, is the quantity of the angle.

For further uſes of the *ſemi-circle*, they are the ſame with thoſe of the theodolite. See THEODOLITE.

SEMICIRCULAR *arches*, } See the articles { ARCH,
Canales SEMICIRCULARES, } See the articles { CANALES.

SEMI-COLON, in grammar, one of the points or ſtops, uſed to diſtinguiſh the ſeveral members of ſentences from each other. See SENTENCE and POINT.

The mark or character of the *ſemi-colon* is (;)—It has its name, as having a ſomewhat leſs effect than a colon, or as demanding a ſhorter pauſe.

The uſe of the *ſemi-colon*, the grammarians generally ſay, is, to mark a ſenſe leſs compleat than the colon, and more compleat than the comma; but this only conveys a very obſcure idea. In effect, the preciſe office of the *ſemi-colon*, or what office it is diſtinguiſhes it from the colon, is a thing very little known in the world. Our beſt authors ſeem to uſe them promiſcuouſly. See COLON.

Mr. Ward, profeſſor at Greſham, we believe, is the firſt who ſettled the juſt uſe of the *ſemi-colon.* His poſition is, that the *ſemi-colon* is properly uſed to diſtinguiſh the conjunct members of ſentences.—Now, by a conjunct member of a ſentence, he means, ſuch a one as contains at leaſt two ſimple members. See SENTENCE.

Whenever, then, a ſentence can be divided into ſeveral members of the ſame degree, which are again diviſible into other ſimple members, the former are to be ſeparated by a *ſemi-colon.*

For an inſtance: If fortune bear a great ſway over him, who has nicely ſtated and concerted every circumſtance of an affair; we muſt not commit every thing, without reſerve to fortune, leſt ſhe have too great a hold of us. Again, *Si quantum in agro locíſque deſertis audacia poteſt, tantum in foro atque judiciis impudentia valeret; non minus in cauſa cederet Aulus Cæcinna Sexti Æbutii impudentiæ, quam tum in vi facienda ceſſit audaciæ.* An inſtance in a more complex ſentence we have in Cicero. *Res familiaris primum bene parta ſit, nulloque turpi quæſtu; tum quam plurimis, modo dignis, ſe utilem præbeat; deinde augeatur ratione, diligentia, parſimonia; nec libidini potius luxuriæque, quam liberalitati & beneficentiæ pareat.*

But though the proper uſe of the *ſemi-colon*, be to diſtinguiſh conjunct members, it is not neceſſary that all the members divided hereby, be conjunct. For upon dividing a ſentence into great and equal parts, if one of them be conjunct, all thoſe other parts of the ſame degree are to be diſtinguiſhed by a *ſemi-colon.*—Thus: Whoever is overtaken with poverty; the ſame will find, that coldneſs, contempt, injuries, &c. are not far behind: or thus: *Nihil eſt tam molle, tam tenerum, tam aut fragile, aut flexibile; quam voluntas civium.*

Sometimes alſo it happens, that members that are oppoſite to each other, but relate to the ſame verb, are ſeparated by a *ſemi-colon:* thus Cicero. *Ex hac parte pudor, illinc petulantia; hinc fides, illinc fraudatio; hinc pietas, illinc ſcelus,* &c.

Hither likewiſe may be referred ſuch ſentences, where the whole going before, the parts follow: as, The parts of rhetorick are four; invention, diſpoſition, elocution, and pronunciation.

SEMI-CROMA, *ſextuple of.* See the article SEXTUPLE.

SEMI-CUPIUM, a half bath, wherein the patient is only up to the navel. See INSESSUS and BATH.

SEMI-DIAMETER, a right line drawn from the centre of a circle or ſphere, to its circumference; the ſame with what we otherwiſe call *radius.* See DIAMETER, CIRCLE and RADIUS.

The diſtances, diameters, &c. of the heavenly bodies, are uſually eſtimated by aſtronomers in *ſemi-diameters* of the earth. See EARTH; ſee alſo SUN, PLANET, &c.

To find the *ſemi-diameters* of the primary planets in *ſemi-diameters* of the earth.—Since the ſun's true *ſemi-diameter* is 152 *ſemi-diameters* of the earth; and we have the ratio of the diameters of the primary planets to that of the ſun (ſee DIAMETER) their *ſemi-diameters* are eaſily found by the rule of three.—Thus, the *ſemi-diameter* of Saturn will be found $20\frac{20}{3}$; that of his ring $45\frac{7}{37}$; that of Jupiter $27\frac{8}{11}$; that of Mars $\frac{11}{12}$; that of Venus $\frac{4}{7}$; and that of Mercury $\frac{12}{9}$. See PLANET.

SEMI-DIAPANTE, in muſic, a defective fifth, called uſually by the Italians, *falſa quinta*, and by us a *falſe fifth.* See FIFTH.

SEMI-DIAPASON, in muſic, a defective octave; or an octave diminiſhed by a leſſer ſemi-tone, or four commas. See DIAPASON.

SEMI-DIATESSARON, in muſic, a defective fourth, called, properly, a *falſe fourth.* See FOURTH.

SEMI-DIATONE, *diapaſon*, } See { DIAPASON.
Dis-Diapaſon SEMI-DITONE, } { DIS-DIAPASON.

SEMI-DOUBLE, in the Romiſh breviary, a term applied to ſuch offices and feſtivals as are celebrated with leſs ſolemnity than the double ones; but yet with more than the ſingle ones.

The *ſemi-double* office has double veſpers, and nine leſſons at mattins; but the anthems are not redoubled.—It is performed on ſundays, on the octaves, and on feaſts marked for *ſemi-double* in the calendar.

SEMI-FISTULAR *flowers.* See the article FLOWERS.

SEMI-LUNAR *valves*, in anatomy, are three little valves or membranes of a *ſemi-lunar* figure, placed in the orifice of the pulmonary artery; to prevent the relapſe of the blood into the heart at the time of its dilatation.—See *Tab. Anat.* (Angeiol.) *fig.* 1. *lit. a.* See alſo the article VALVE.

SEMINAL, SEMINALIS, in medicine, ſpermatic, or ſomething belonging to the ſemen, or ſeed. See SEED and SPERMATIC.

SEMINARY, a place appointed for the inſtruction of young perſons deſtined for the ſacred miniſtry, in the duties, ceremonies, and offices thereof; firſt inſtituted, as Thomaſſin tells us, by St. Auguſtin. See CANON, CLERGY, ACADEMY, &c.

Of theſe *ſeminaries* there are many abroad, furniſhed with halls for the aſſemblies of the exercitants, and little chambers, or cells, where each perſon retires, ſtudies, and prays apart.—Such is the *ſeminary* of St. Sulpitius at Paris.

The council of Trent decrees, that children exceeding 12 years of age, be taken, brought up, and inſtructed in common, to qualify them for the eccleſiaſtical ſtate; and that there be a *ſeminary* of ſuch belonging to each cathedral, under the direction of the biſhop.

In France, the eſtabliſhment of *ſeminaries* is ſomewhat different from the decree of the council: none are taken in but young people ready to ſtudy theology, and be ordained: ſo that the *ſeminaries* are a kind of houſes of probation where the vocation of clerks is examined, and they are prepared to receive orders.

For the ſubſiſtance of theſe *ſeminaries*, there are ſeveral unions of benefices, or elſe the clergy of the dioceſe are obliged to contribute to maintain them.

Pope Pius IV. having eſtabliſhed a *ſeminary* at Rome, in conſequence of the decree of the council of Trent; by advice of the cardinals, it was given to the jeſuits, who have made good uſe thereof.

Among the canons of St. Auguſtin, SEMINARY is uſed for a kind of college, or ſchool, where penſioners are kept, and inſtructed in the claſſical, and other learning.

The houſes of the ſociety *de propaganda fide*, eſtabliſhed for the preparing of eccleſiaſticks for miſſions among infidels and hereticks, are alſo called *ſeminaries.*—The principal whereof is that at Rome, called, the *apoſtolical college, apoſtolical ſeminary, paſtoral ſeminary, ſeminary* of the *propaganda*, &c. See SOCIETY.

SEMINATION, SEMINATIO, in natural hiſtory, &c. the act of ſowing, or ſhedding ſeed; particularly that of vegetables. See SEED and SEMBRADOR.

As ſoon as the ſeed is ripe, Dr. Grew obſerves, nature takes ſeveral methods for its being duly ſown: not only by the opening of the uterus, but in the make of the ſeed itſelf.—Thus, the ſeeds of many plants, which affect a peculiar ſoil or ſeat, as arum, poppy, &c. are heavy and ſmall enough, without farther care, to fall directly down to the ground.

Others, that are large, and light enough to be expoſed to the wind, are often furniſhed with one or more hooks to ſtay them from ſtraying too far from their proper place: thus, the ſeeds of avens have a ſingle hook; thoſe of agrimony and gooſe-graſs, many; both the former loving a warm bank, and the laſt a hedge for its ſupport.

On the contrary, many ſeeds are furniſhed with wings, or feathers, partly with the help of the wind to carry them, when ripe, off the plant, as thoſe of aſh, &c. and partly to enable them to make their flight more or leſs abroad, that they may not, by falling together, come up too thick; and, that if one ſhould miſs a good ſoil or bed, another may hit.—So the kernels of pines have wings, though ſhort ones, whereby they do not fly in the air, but only flutter on the ground. But thoſe of typha, dandelion, and moſt of the pappous kind, have numerous long feathers, by which they are wafted every way.

Others are ſown by being laid in ſpringy elaſtic caſes, which, when they crack and burſt, dart their ſeed at convenient diſtances: thus, wood-ſorrel having a running root, nature ſees fit to ſow the ſeed at ſome diſtance, the doing of which is effected by a white, ſturdy, tendinous cover, which beginning to dry, burſts open on one ſide in an inſtant, and is violently turned inſide outwards. The ſeed of hartstongue, and codded arſmart, is flung, or ſhot away, by means of a ſpring, wound or girt round the ſeed-caſe. When the ſpring is become ſtark and tenſe enough, it ſuddenly breaks the caſe into two halves, like little cups, and ſo flings the ſeed.

Divers notable means of *ſemination* are obſerved by other authors: a quantity of fern-ſeed, Mr. Ray tells us, laid in a lump, on a paper, the ſeminal veſiculæ are heard to crackle, burſt, and, by a microſcope, the ſeeds are ſeen to be projected to a conſiderable diſtance from each other.—Dr. Sloane obſerves, that the gentianella flore cæruleo, or ſpirit leaf, requiring wet weather to be ſown in, as ſoon as the leaſt drop of rain touches the end of the ſeed-veſſels, with a ſmart noiſe, and a ſudden leap, it opens itſelf, and, with a ſpring, ſcatters its ſeed.

The plants of the cardamine-family, throw their cods open, and dart out their ſeed upon a ſlight touch of the hand. Nay, Mr. Ray adds, that the pods of the cardamine impatiens not only burſt upon the ſlighteſt touch, but even by an approach of the hand to touch them, without any real contact.

Other plants ſow their ſeeds by inviting birds, by their agreeable taſte and ſmell, to feed of them, ſwallow them, and carry them about; thereby alſo fertilizing them, by paſſing through their bodies.—In ſuch manner are nutmegs and miſſeltoe, ſown and propagated. See NUTMEG and MISSELTOE.

SEMI-ORDINATES, in geometry, the halves of the ordinates or applicates. See ORDINATE.

SEMI-PARABOLA, in geometry, a curve defined by the equation, $ax^{m-1}=y^m$; as $ax^2=y^3$, $ax^3=y^4$. See PARABOLA and CURVE.

In *ſemi-parabolas* $y^n : v^m :: ax^{m-1} : az^{m-1} = x^{m-1} : z^{m-1}$, or the powers of the *ſemi-ordinates* are as the powers of the abſciſſes one degree lower; *e. gr.* in cubical *ſemi-parabolas*, the cubes of the ordinates y^3 and v^3 are as the ſquares of the abſciſſes x^2 and z^2.

SEMI-PELAGIANS, a name anciently, and even at this day, given to ſuch as retain ſome tincture of Pelagianiſm. See PELAGIANS.

S. Proſper, in a letter to St. Auguſtin, calls them *reliquias Pelagii.*

Many learned men, principally in the Gauls, who could not come into St. Auguſtin's doctrine of grace, *&c.* were accuſed of *Semi-pelagianiſm:* they were alſo called *Maſſilians*, or *prieſts of Marſeilles*, in regard their errors had their firſt riſe in that city.

Caſſian, who had been a deacon of Conſtantinople, and was afterwards a prieſt at Marſeilles, was the chief of theſe *Semi-pelagians:* S. Proſper, who was co-temporary with him, and who attacked him very vigorouſly, tells us, that Caſſian endeavouring to keep I know not what medium between the Pelagians and the orthodox, did not agree either with the one or the other.

The *Semi-pelagians*, with the orthodox, allowed of original ſin; but denied, that man's free agency could be ſo wounded by this ſin, that he could not of himſelf do ſomething which might induce God to afford his grace to one man more than another.—They alſo taught, that the grace which ſaves men, was not given them of the mere will of God, but according to his eternal preſcience, whereby he foreſaw who they were that would believe in him.—They owned, that the vocation or call to the goſpel, was gratuitous; but added, at the ſame time, that it was common to all, inaſmuch as God deſired all ſhould be ſaved.—As to election, they held, that it depended on our perſeverance; God only chuſing ſuch to eternal life, as ſhould perſevere in the faith.

SEMI-PROOF, an imperfect proof. See PROOF.

In the French law, the depoſitions of a ſingle evidence only make a *ſemi-proof.* See WITNESS.

The teſtament of a perſon deceaſed, is deemed a *ſemi-proof.* —In enormous caſes, the *ſemi-proof* frequently determines them to try the torture. See TORTURE.

SEMI-QUARTILE, or SEMI-QUADRATE, is an aſpect of the planets, when diſtant from each other 45 degrees, or one ſign and an half. See ASPECT.

SEMI-QUAVER, in muſic. See the article QUAVER.

SEMI-QUINTILE, is an aſpect of the planets, when at the diſtance of 36 degrees from one another. See ASPECT.

SEMI-SEXTILE, or SEMI-SEXTUS, or S. S. an aſpect of two planets, wherein they are diſtant from each other, one twelfth part of a circle, or 30 degrees. See ASPECT.

The *ſemi-ſextile* was added to the ancient aſpects by Kepler; and, as he ſays, from meteorological obſervations.

SEMI-SPINATUS, in anatomy. See TRANSVERSALIS *dorſi.*

SEMITA *luminoſa*, a name given to a kind of lucid tract in the heavens, which, a little before the vernal equinox, may be ſeen about ſix a clock at night, extending from the weſtern edge of the horizon, up towards the pleiades.

The phænomenon has been taken notice of by Caſſini and Facio, who both evince, that this light comes diffuſed from both ſides of the ſun.—Its brightneſs is much the ſame with that of the via lactea, or the tail of a comet: it is ſeen plaineſt with us about the beginning of October, or the latter end of February.

Facio conjectures, that the bodies, or rather the congeries or aggregate of bodies, which occaſion this light, conforms to the ſun like a lens; and takes it to have ever been the ſame; but Caſſini thinks it ariſes from a vaſt number of ſmall planets, which encompaſs the ſun, and give this light by reflexion; eſteeming it alſo not to have exiſted long before he obſerved it.

SEMI-TEINTS. See the article TEINTS.

SEMI-TONE, in muſic, one of the degrees, or concinnous intervals of concords. See DEGREE and CONCORD.

There are three degrees, or leſſer intervals, by which a ſound can move upwards and downwards ſucceſſively from one extreme of any concord to the other, and yet produce true melody; and, by means whereof, ſeveral voices and inſtruments are capable of the neceſſary variety in paſſing from concord to concord.—Theſe degrees are the greater and leſſer tone, and the *ſemi-tone.* The ratio of the firſt is 8 : 9; that of the ſecond 9 : 10. See TONE.

The ratio of the *ſemi-tone* is 15 : 16, its compaſs is five commas; which interval is called a *ſemi-tone*, not that it is geometrically the half of either of the tones, for it is more; but becauſe it comes ſomewhat near it. It is alſo called the *natural ſemi-tone*, and the *greater ſemi-tone*, becauſe greater than the part it leaves behind, or its complement to a tone, which is four commas.—The Italians alſo call it *ſeconda minore*, or a leſſer ſecond. See SECOND.

Every tone of the diatonic ſcale is divided into a *greater* and *leſs*, or a *natural* and *artificial ſemi-tone.* Mr. Malcolm obſerves, it was very natural to think of a diviſion of each tone, where 15 : 16 ſhould be one part in each diviſion, in regard this being an unavoidable and neceſſary part of the natural ſcale, would readily occur as a fit degree, and the more, as it is not far from an exact half-tone. In effect, the *ſemi-tones* are ſo near equal, that, in practice, at leaſt, on moſt inſtruments, they are accounted equal, ſo that no diſtinction is made into *greater* or *leſs.*

Theſe *ſemi-tones* are called *fictitious notes*, and, with reſpect to the natural ones, are expreſſed by characters called *flats* and *ſharps.* See FLAT and SHARP.

Their uſe is to remedy the defects of inſtruments, which having their ſounds fixed, cannot always be made to anſwer to the diatonic ſcale. See SCALE.

By means of theſe we have a new kind of ſcale, called the

SEMI-TONIC *ſcale*, or the *ſcale of ſemi-tones:* a ſcale or ſyſtem of muſic, conſiſting of 12 degrees, or 13 notes, in the octave, being an improvement on the natural or diatonic ſcale, by inſerting between each two notes thereof, another note, which divides the interval or tone into two unequal parts, called *ſemi-tones.* See SCALE and SEMI-TONE.

The uſe of this ſcale is for inſtruments that have fixed ſounds, as the organ, harpſicord, *&c.* which are exceedingly defective on the foot of the natural or diatonic ſcale.—For the degrees of the ſcale being unequal, from every note to its octave there is a different order of degrees; ſo that from any note we cannot find any interval in a ſeries of fixed ſounds: which yet is neceſſary, that all the notes of a piece of muſic carried through ſeveral keys, may be found in their juſt tune, or that the ſame ſong may be begun indifferently at any note, as may be neceſſary for accommodating ſome inſtruments to others, or to the human voice, when they are to accompany each other in uniſon.

The diatonic ſcale, beginning at the loweſt note, being firſt ſettled on an inſtrument, and the notes thereof diſtinguiſhed by their names *a . b . c . d . e . f . g*; the inſerted notes, or ſemi-tones, are called *fictitious notes*, and take the name or letter below with a ♯ as *c* ♯ called *c ſharp*; ſignifying, that it is a ſemi-tone higher than the ſound of *c* in the natural ſeries; or this mark ♭ called a *flat*, with the name of the note above, ſignifying it to be a ſemi-tone lower. See FLAT and SHARP.

Now $\frac{15}{16}$ and $\frac{128}{135}$ being the two ſemi-tones the greater tone is divided into; and $\frac{15}{16}$ and $\frac{24}{25}$, the ſemi-tones the leſs tone is divided into; the whole octave will ſtand as in the following ſcheme, where the ratio's of each term to the next, are wrote fraction-wiſe between them below.

Scale of SEMI-TONES.

c . *c* ♯ . *d* . *d* ♯ *e* . *f* . *f* ♯ *g* . *g* ♯ . *a* . ♭ . *b* . *c c*

$\frac{15}{16}$ $\frac{128}{135}$ $\frac{15}{16}$ $\frac{24}{25}$ $\frac{15}{16}$ $\frac{128}{135}$ $\frac{15}{16}$ $\frac{15}{16}$ $\frac{24}{25}$ $\frac{15}{16}$ $\frac{128}{135}$ $\frac{15}{16}$

For the names of the intervals in this ſcale it may be conſidered, that as the notes added to the natural ſcale are not deſigned to alter the ſpecies of melody, but leave it ſtill diatonic, and only correct ſome defects ariſing from ſomething foreign to the office of the ſcale of muſic, *viz.* the fixing and limiting the ſounds: we ſee the reaſon why the names of the natural ſcale are continued, only making a diſtinction of each into a greater and leſs.—Thus an interval of one ſemitone is called a *leſſer ſecond*; of two ſemi-tones, a *greater ſecond*; of three ſemi-tones, a *leſs third*; of four, a *greater third*, &c.

A ſecond kind of *ſemitonic-ſcale* we have from another diviſion of the octave into ſemi-tones; which is performed by taking an harmonical mean between the extremes of the greater and leſs tone of the natural ſcale, which divides it into two ſemi-tones nearly equal.—Thus the greater tone 8 : 9 is divided into 16 : 17, and 17 : 18; where 17 is an arithmetical diviſion, the numbers repreſenting the lengths of chords; but if they repreſent the vibrations, the lengths of the chords are reciprocal, *viz.* as $\mathrm{I} : {}^{16} : \frac{8}{9}$, which puts the greater ſemi-tone $\frac{16}{17}$ next the lower part of the tone, and the leſſer $\frac{17}{18}$ next the upper, which is the property of the harmonical diviſion.—After the ſame manner the leſſer tone 9 : 10 is divided into the two ſemi-tones 18 : 19 and 19 : 20, and the whole octave ſtands thus:

c . *c* ♯ . *d* . *d* ♯ *e* . *f* . *f* ♯ . *g* . *g* . ♯ . *a* . ♭ . *b* . *c*

$\frac{16}{17}$ $\frac{17}{18}$ $\frac{18}{19}$ $\frac{19}{20}$ $\frac{15}{16}$ $\frac{16}{17}$ $\frac{17}{18}$ $\frac{18}{19}$ $\frac{19}{20}$ $\frac{16}{17}$ $\frac{17}{18}$ $\frac{15}{16}$

This ſcale, Mr. Salmon tells us, in the Philoſophical Tranſactions, he made an experiment of, before the royal ſociety, on chords, exactly in theſe proportions, which yielded a perfect conſort with other inſtruments, touched by the beſt hands.—Mr. Malcolm adds, that having calculated the ratio's thereof, for his own ſatisfaction, he found more of them falſe than in the preceding ſcale; but their errors were conſiderably leſs, which made amends.

SENA, or SENNA, in medicine, a purgative leaf, much uſed in draughts and compoſitions of that intention.

The ſhrub which bears it, is cultivated in ſeveral parts of the Levant, and grows five or ſix foot high: it puts forth woody branches, furniſhed with leaves on one ſide: its flowers are yellow, its fruit a greeniſh flat pod, containing ſeveral lodges or cells of ſeeds, reſembling grape-ſtones.—Theſe pods ſome phyſicians prefer to the leaves themſelves.

There is alſo a kind of *ſena* growing about Florence; but it is inferior to that of the Levant, as is owned by the Italians themſelves. Father Plumier mentions a third kind growing in the Antilles iſlands.

M. Lemery diſtinguiſhes three ſorts of *ſena* of the Levant:

the firſt brought from Seyda, called *ſena of Apalto*, that is, *cuſtom-ſena*, by reaſon of the cuſtom paid the grand ſeignior, for the privilege of exporting it: the ſecond comes from Tripoli: the third is called *ſena of Mocha*.

The beſt of theſe kinds is the firſt, which Pomet directs us to chuſe, in narrow leaves, of a moderate ſize, ſhaped like the end of a pike, of a pale green colour, a pungent ſmell, ſoft to the touch, *&c.*

The *ſena* of Tripoli holds the ſecond rank in goodneſs: its difference from that of Seyda, conſiſts in its colour, which is green; its ſmell, which is very weak; and in a certain harſhneſs, or roughneſs, which it diſcovers upon a touch.

Beſides theſe three kinds of *ſena*, and their pods, the druggiſts ſell the duſt found at the bottom of the bales, which is a very poor commodity, and yet much better than what they call the *ſmall ſena*, which comes with it in the bales, by way of package, and which many hold to be a plant of no virtue, put in by chance, or, at beſt, to increaſe the weight.

The beſt *ſena*, ordinarily found in our ſhops, Dr. Quincy obſerves, is that which is ſharpeſt leaved, and ſmells freſheſt: the brightneſs of its colour, and quickneſs of its flavour, are alſo indications of its goodneſs; for when it has loſt its ſcent, and grows duſky, it is good for little.

Sena, at firſt taking, is apt to nauſeate the ſtomach; and therefore, if a little cinnamon, or a dram or two of its diſtilled water, be added, it paſſes through with leſs ſickneſs. This is exactly conformable to the ſentiments of Ludovicus, who ſays, that the purgative quality of this herb reſides in its mucilaginous or gummy juice; which, the more it is divided, gripes the leſs in its operation.

Rulandus imagined a ſudorifick quality in *ſena*; and accordingly ordered it in ſome compoſitions of that intention.

SENATE, SENATUS, an aſſembly or council of ſenators; that is, of the principal inhabitants of a ſtate, who have a ſhare in the government. See SENATOR.

Such were the *ſenates* of Rome, of Carthage, *&c.* among the ancients; and ſuch are the *ſenates* of Venice, of Genoa, *&c.* among the moderns. See REPUBLIC.

The *ſenate* of ancient Rome, was, of all others, the moſt celebrated, during the ſplendor of the republic. The Roman *ſenate* exerciſed no contentious juriſdiction: it appointed judges either out of the *ſenate*, or among the knights; but never ſtooped to judge any proceſſes in a body.—The *ſenate* concerted matters of war; appointed who ſhould command the armies; ſent governors into the provinces; took order, and diſpoſed of the revenues of the commonwealth.—Yet did not the whole ſovereign power reſide in the *ſenate*: it could not elect magiſtrates, make laws, nor decide of war and peace: but in all theſe caſes, they were to conſult the people.

Under the emperors, when the *ſenate* became deſpoiled of moſt of its other offices, they began to hear cauſes. For thoſe of leſs conſequence they appointed particular judges; the reſt, principally criminal cauſes, they reſerved for their own cognizance, to be judged by them in a body, and that frequently in the emperor's preſence. This was to keep their heads from ſtate affairs. Nero further committed to the *ſenate*, the judgment of all appeals: but this did not hold long; nor do we find any footſteps thereof any where but in the 62d novel.

The *ſenate* aſſembled on certain ſtated days, *viz.* ordinarily on the calends, nones and ides of each month: their extraordinary meetings were on any other days; when the conſul, dictator, or tribune, thought fit to call them. Their place of meeting, was either the temple of Concord at the Capuan gate, or in the temple of Bellona.—The conſul preſided as chief of the *ſenate*. See CONSUL.

Till Auguſtus's time, the *ſenate* was always opened with a ſacrifice: but that prince, in lieu thereof, appointed, that each ſenator, ere he took his place, ſhould offer wine and incenſe on the altar of the god in whoſe temple they were met; and take an oath, that he would give his vote according to his conſcience.

Halicarnaſſeus, and other authors, mention it as a great defect in the authority of the Roman *ſenate*, that they had none under their command, to execute their orders. Hence the leaſt tribune had it in his power to obſtruct their decrees; and hence it is, that when they gave their orders to the conſuls, and prætors, they did it with a kind of ſubmiſſion, *ſi eis ita videtur*; if they think fit.

SENATOR, a member of a ſenate. See SENATE.

There were two orders, or degrees, among the Roman nobility; that of the *ſenators*, and that of the *knights*: after the two, came the people.—The firſt hundred *ſenators* were appointed by Romulus, and called *patres*, fathers.—Upon the union with the Sabines, Romulus, or as others ſay, Tullus, added a ſecond hundred, called *patres majorum gentium*, to diſtinguiſh them from a third hundred added by the elder Tarquin, and called *patres minorum gentium*, fathers of the lower rank. See PATRES, and CONSCRIPT.

The number of *ſenators* was not fixed: in the time of Gracchus they were 600; during the civil wars, they were reduced to 300. Julius Cæſar augmented that number to 800 or 900; and Auguſtus brought them back again to 600.

The choice of *ſenators* belonged at firſt to the kings, then to the conſuls, then to the cenſors, who in their cenſus or ſurvey every fifth year, appointed new *ſenators* in lieu of thoſe dead or degraded: at length it fell to the emperors.

Though, for a long time, none were raiſed to the dignity of *ſenators*, but thoſe moſt conſpicuous for their prudence, *&c.* yet ſome regard was afterwards had to their eſtate, leſt the dignity ſhould become debaſed by poverty.—To hold the *ſenatorial* dignity, a yearly revenue of 800,000 ſeſterces was required, which amounts to nearly 6000 pounds of our money. Half as much was required for the knights. The *ſenators* who ſunk below this revenue, were diſcarded, and expunged out of the liſt by the cenſor.

The *ſenators* were ordinarily choſe from among the knights, or among ſuch as had bore the principal offices.—At firſt the magiſtrates were taken wholly from among the *ſenators*; whence Tacitus calls the ſenate, the *ſeminary of all dignities*: but after the people had been admitted to magiſtratures, *ſenators* were taken from among ſuch as had diſcharged thoſe offices, though, before, plebeians.

The *ſenators* carried their children with them to the ſenate, to inform them betimes of affairs of ſtate: though their children had not admittance till 17 years of age. See AGE.

Some make a diſtinction among the *ſenators*: beſides the *ſenators* who were allowed to ſpeak, and were aſked their opinions, there were others, who, without ſpeaking, or being ever aſked their judgment, were only to follow the opinion of thoſe they thought the moſt reaſonable, and were hence called *pedarii*. A. Gellius gives us another notion of the pedarii, and ſays, thoſe were thus called, who having never bore the office of curule magiſtrate, were obliged to go to the ſenate on foot.

The *ſenators* alone were allowed to wear the habit called *latus clavus*. See LATUS CLAVUS.—They had a right to ſit, and be carried in curule chairs, to aſſiſt at plays and ſhews, in the orcheſtra; at feaſts of the gods, *&c.* All which privileges were reſerved to ſuch as Auguſtus (in the reform he made of the too numerous ſenate of Julius Cæſar) ſet aſide.

They had the name *ſenators*, q. d. *old men*, given them in imitation of the Greeks, who called their ſenate γερουσια. So when the Athenians aſſembled the people to conſult about the affairs of the public, the officers ſummoned none but ſuch as were fifty years old. The Ægyptians and Perſians followed the ſame example, after the Hebrews. The Lacedæmonians and Carthaginians received none but ſuch as were ſixty years of age.

SENATUS-CONSULTUM, a vote, or reſolution of the Roman ſenate, pronounced on ſome queſtion, or point of law propoſed to it. See SENATE.

The *ſenatus-conſulta* made a part of the Roman law, when paſſed. They were depoſited in the temple of Ceres, under the cuſtody of the ædiles, and at laſt carried, by the cenſor, to the temple of Liberty, and put up in an armory called *tabularia*. See CIVIL LAW.

SENEGA. See the article GUM *ſenega*.

SENESCHAL, SENESCALLUS, a name anciently uſed for a ſteward or majordomo; formed from the German *ſind*, houſe or family, and *ſcalc*, ſervant. See MAJORDOMO.

Thus the *ſeneſchal* of a lord or a baron, is his ſteward or bailiff, who holds his courts, and manages his demeſne lands: *ſub-ſeneſchal*, his under ſteward.

High ſeneſchal of England, is the high ſteward of England: *high ſeneſchal del hotel du Roi*, the ſteward of the king's houſhold.

The ancients uſed the term *ſeneſcallus* indifferently with that of *dapifer*, whence we are ſure it ſignifies *ſteward*. See STEWARD and DAPIFER.

SENNA. See the articles SENA and DIASENNA.

SENOPLE. See the article SINOPLE.

SENSATION, the act of perceiving external objects, by means of the organs of ſenſe. See SENSE and PERCEPTION.

To conceive the manner wherein *ſenſation* is effected; obſerve, that all the organs conſiſt of little filaments, or nerves which have their origin in the middle of the brain, are diffuſed thence throughout all the members which have any ſenſe, and terminate in the exterior parts of the body: that when we are in health, and awake, one end of theſe nerves cannot be agitated or ſhaken, without ſhaking the other; by reaſon they are always a little ſtretched; as is the caſe of an extended chord, one part of which cannot be ſtirred without a like motion of all the reſt.

Obſerve, further, that theſe nerves may be agitated two ways; either at the end out of the brain, or that in the brain.—If they be agitated from without, by the action of objects, and their agitation be not communicated as far as the brain; as frequently happens in ſleep, when the nerves are in a ſtate of relexation; the ſoul does not then receive any new *ſenſation*.—But if the nerves happen to be agitated in the brain, by the flux of the animal ſpirits, or any other cauſe; the ſoul perceives ſomething, though the parts of thoſe nerves, that are out of the brain, diffuſed through the ſeveral parts of the body, remain at perfect reſt: as likewiſe is frequently the caſe in ſleep.

Laſtly, obſerve, that experience tells us, we may ſometimes feel pain in parts of the body that have been entirely cut off; by reaſon the fibres in the brain correſponding to them, being agitated in the ſame manner as if they were really hurt; the ſoul feels a real pain in thoſe imaginary parts.

All theſe things ſeem to ſhew, that the ſoul reſides immediately in that part of the brain wherein the nerves of all the organs of ſenſe terminate: we mean, it is there it perceives all the changes that happen with regard to the objects that cauſe them, or that have been uſed to cauſe them; and, that it only perceives what paſſes out of this part, by the mediation of the fibres terminating in it. See NERVE, FIBRE, SOUL, BRAIN, SENSORY, *&c.*

Theſe things premiſed, it will not be difficult to explain how *ſenſation* is performed: the manner whereof may be conceived from what follows. When the point of a needle, for inſtance, is thruſt againſt the hand, that point ſtirs and ſeparates the fibres of the fleſh; which fibres are extended from that place to the brain, and when we are awake, are in ſuch a degree of tenſion, as that they cannot be ſtirred without ſhaking thoſe of the brain. If then the motion of the fibres of the hand be gentle, that of the fibres of the brain will be ſo too; and if the firſt be violent enough to break any thing in the hand, the laſt will be ſtronger and more violent in proportion.—In like manner, if the hand be held to the fire; the little particles of the wood it throws off in great numbers, and with a great deal of violence, ſtriking againſt theſe fibres, and communicating a part of their agitation thereto; if the action be moderate, that of the extremities of the fibres of the brain correſponding to thoſe of the hand, will be moderate likewiſe: if it be violent enough to ſeparate any of the parts of the hand, as it happens in burning; the motion of the fibres in the brain will be proportionably more violent.—This is what befals the body, when objects ſtrike upon it.—We are now to conſider how the mind is affected.

The mind, we have obſerved, reſides principally, if we may be allowed to ſay ſo, in that part of the brain where all the fibres of the nerves terminate. It attends here, as its ſenſory, or office, to look to the preſervation of all the parts of the body; and, of conſequence, muſt be here advertiſed of all the changes that happen, and muſt be able to diſtinguiſh between thoſe agreeable to the conſtitution of the body, and thoſe hurtful thereto. Any other abſolute knowledge, without a relation to the body, were uſeleſs.—Thus, though all the changes in our fibres, do, in reality, conſiſt in motions, which ordinarily only differ as to more and leſs; it is neceſſary the ſoul ſhould conſider them as changes eſſentially different; for though in themſelves they differ but very little, yet, with regard to preſervation of the body, they are to be looked on as eſſentially different.

The motion, for inſtance, which cauſes pain, frequently differs exceedingly little from that which occaſions a pleaſing titillation: it is not neceſſary there ſhould be an eſſential difference between theſe two motions; but it is neceſſary there be an eſſential difference between the pain and the tickling, which thoſe two motions occaſion in the ſoul; for the agitation of the fibres, which accompanies the titillation, informs the ſoul of the good ſtate of the body, that it is able to reſiſt the impreſſion of the objects, and that it need not apprehend its being hurt: but the motion which occaſions pain, being ſomewhat more violent, is capable of breaking ſome of the fibres of the body; wherefore it is neceſſary the ſoul be advertiſed hereof by ſome diſagreeable *ſenſation*, that it may provide againſt it.

Thus, though all the motions which paſs in the body only differ in themſelves, as to more or leſs, yet, when conſidered with regard to the preſervation of life, they may be ſaid to be eſſentially different: for this reaſon it is, that the ſoul does not perceive the ſhakes, or motions themſelves, which objects excite in the fibres of the fleſh: it would be uſeleſs to perceive them; and ſhe would never be able, thence, to learn whether the objects were capable of doing hurt or good. But ſhe perceives herſelf affected with *ſenſations*, which differ eſſentially, and which ſhewing preciſely the qualities of the objects, as they regard the body, make her perceive diſtinctly, whether or no thoſe objects are capable of hurting it.

In effect, from a ſtrict examination of the ſeveral ſenſes, it appears, that ſenſible objects act no otherwiſe upon the body, for the producing of *ſenſation*, than by exciting a change in the extreme ſurface of the fibres of the nerves: the quality of which change depends on the figure, bulk, hardneſs, and motion of the object; ſo that according to all appearance, the moſt different objects, which ſhould agree in theſe four circumſtances, would produce the ſame *ſenſation*.

From the various texture of the object, the diverſity of the nerve affected, the different fabric of the organ of ſenſe, the different place in the medulla of the brain where the nerve ariſes, and the different degree of motion wherewith the action of the object is applied, ariſe various *ſenſations*, and ideas, in the mind; none of which repreſent any thing in the action of the object, or in the paſſion of the organ. And yet the ſame action of the ſame object, on the ſame organ, always produces the ſame *ſenſation* or idea: and the ſame ideas neceſſarily follow the ſame diſpoſition of the ſame ſenſible organ, in the ſame manner as if the idea perceived, were the natural and neceſſary effect of the action on the organ. See IDEA, KNOWLEDGE, *&c.*

SENSE, a faculty of the ſoul, whereby it perceives external objects, by means of ſome action or impreſſion made on certain parts of the body, called *organs of ſenſe*, and propagated by them to the ſenſory. See SENSATION and SENSORY.

Some uſe the word *ſenſe* in a greater latitude; and define it a faculty whereby the ſoul perceives ideas or images of objects, either conveyed to it from without, by the impreſſion of objects themſelves, or excited within by ſome effort of the ſoul on the ſenſory itſelf.

Under which notion, *ſenſe* becomes diſtinguiſhable into two kinds, *external* and *internal:* correſponding to the two ſeveral manners wherein the images of the objects perceived, are occaſioned, and preſented to the mind, *viz.* either immediately from without, or from within; that is, either by what we commonly call the *five external ſenſes*, hearing, ſeeing, *&c.* or by the *internal* ones, imagination, memory, and attention; to which ſome add hunger and thirſt.

But as theſe *internal ſenſes* are not ordinarily conſidered in the notion of *ſenſes*, nor implied under the word *ſenſe*; but are thus only denominated by analogy; we ſhall wave them to be further conſidered, under their reſpective articles, IMAGINATION, MEMORY, *&c.*

External SENSES, or, ſimply, *the* SENSES, in their general ſignification, are the means whereby the ſoul apprehends, or takes cognizance of external objects: the means, we mean, both on the part of the mind, and of the body.

The means, on the part of the mind, are always the ſame; it being one and the ſame faculty, whereby we ſee, hear, *&c.*—The means, on the part of the body, are different; as different as are the objects we are concerned to perceive: for the being, and well-being of the animal, being the end, nature had in view in giving him any perception of external bodies; by this, the meaſure and manner of that perception is regulated: and we have ſo many ways of perceiving, and of perceiving ſo many things, as the relation we bear to external bodies renders neceſſary for the preſervation, *&c.* of our being.

Hence thoſe ſeveral organs of *ſenſe*, called *eye*, *ear*, *noſe*, *palate*, and the univerſal one *cutis*; each of which is ſo diſpoſed as to give ſome repreſentation and report to the mind, of the ſtate of external things, the nearneſs, convenience, hurtfulneſs, and other habitudes; and each of them a different one, according to the degree, and immediateneſs, *&c.* of the danger, or conveniency. And hence the ſeveral exerciſes of thoſe organs, hearing, ſeeing, ſmelling, taſting, and feeling. See ORGAN, *&c.*

A late excellent author gives us a more ingenious, extenſive, and philoſophical notion of *ſenſe.*—On his principle, *ſenſe* is defined, a power of perception, or, a power of receiving ideas; if what is abſolutely paſſive may be properly called a power. See POWER and FACULTY.

On ſome occaſions, inſtead of power, he chuſes to call it, a determination of the mind to receive ideas.—The ideas thus perceived, or raiſed in the mind, he calls *ſenſations.* See IDEA and SENSATION.

Senſe, he conſiders, either as natural or moral: and the natural, either as external or internal: though the diſtribution is chiefly founded on the common ways of conceiving; for, in reality, they appear to be all natural, and neceſſary: ſome reaſons, however, for the diſtinction, will be ſhewn under the ſeveral articles thereof.

External SENSES, then, are powers of perceiving ideas, upon the preſence of external objects.—On ſuch occaſions, we find the mind is merely paſſive, and has not power directly to prevent the perception, or idea, or to vary it at its reception; as long as the body is continued in a ſtate fit to be acted upon by the external object.

When two perceptions are intirely different from each other, or agree in nothing but the general idea of ſenſation; the power of receiving thoſe different perceptions, is called *different ſenſes.* Thus ſeeing and hearing denote the different powers of receiving the ideas of colours, and ſounds. And though colours, as well as ſounds, have vaſt differences amongſt themſelves; yet is there a greater agreement among the moſt oppoſite colours, than between any colour and a ſound: and hence all colours are deemed perceptions of the ſame *ſenſe*.

All the ſeveral *ſenſes* ſeem to have their diſtinct organs, except feeling, which is, in ſome degree, diffuſed over the whole body. See ORGAN and FEELING.

Internal SENSES, are powers, or determinations of the mind, to be pleaſed with certain forms, and ideas, which occur to our obſervation, in objects perceived by the external *ſenſes.* Of theſe there are two different ſpecies, diſtinguiſhed by the different objects of pleaſure, *viz.* pleaſurable or beautiful forms of natural things, and pleaſurable or beautiful actions, or characters of rational agents: whence the internal *ſenſes* become diviſible into natural and moral; though what we call the *internal natural ſenſe*, our author calls ſimply, and by way of eminence, the *internal ſenſe*.

In reflecting on our external *ſenſes*, we plainly ſee, that our perceptions of pleaſure, and pain, do not depend directly on our will. Objects do not pleaſe us according as we incline they ſhould: the preſence of ſome objects neceſſarily pleaſes us, and the preſence of others as neceſſarily diſpleaſes us; nor can we, by our will, any otherwiſe procure pleaſure, or avoid pain, than by procuring the former kind of objects, and avoiding the latter. By the very frame of our nature, the one is made the occaſion of delight, and the other of diſſatisfaction. In effect, our ſenſitive perceptions are pleaſant, and painful, immediately, and without any knowledge of the caſe of this pleaſure and pain, or of the manner how they excite it, or are occaſions of it, or without ſeeing to what further advantage, or detriment, the uſe of ſuch objects might tend. Nor would the moſt accurate knowledge of theſe things vary either the pleaſure, or the pain, of the perception; however it might give a rational pleaſure diſtinct from the ſenſible; or might raiſe a diſtinct joy, from proſpect of further advantage in the object, or averſion, from apprehenſion of evil. There is ſcarce any object, which our minds are employed about, but is conſtituted the neceſſary occaſion of ſome pleaſure or pain. Thus we ſhall find ourſelves pleaſed with a regular form, a piece of architecture, or painting, a compoſition of notes, a theorem, an action, an affection, a character; and we are conſcious that this pleaſure naturally ariſes from the contemplation of the idea then preſent to the mind, with all its circumſtances, though ſome of thoſe ideas have nothing of what we call ſenſible perception in them; and in thoſe which have, the pleaſure ariſes from ſome uniformity, order, arrangement, imitation; and not from the ſimple ideas of colour, or ſound, or mode of extenſion ſeparately conſidered.

It ſeems hence to follow, that when inſtruction, education, or prejudice of any kind, raiſe any deſire or averſion toward an object; this deſire, or averſion, is founded on an opinion of ſome perfection, or deficiency, in thoſe qualities, for perception whereof we have the proper *ſenſes*. Thus, if beauty be deſired by one who has not the *ſenſe* of ſight; the deſire muſt be raiſed by ſome apprehended regularity of figure, ſweetneſs of voice, ſmoothneſs, ſoftneſs, or ſome other quality perceivable by the other *ſenſes*: without relation to the ideas of colour.

The only pleaſure of *ſenſe*, which our philoſophers ſeem to conſider, is that which accompanies the ſimple ideas of ſenſation; but there are vaſtly greater pleaſures in thoſe complex ideas of objects, which obtain the names of beautiful and harmonious.—The power, then, whereby we receive ideas of beauty, and harmony, has all the characters of a *ſenſe*. It is no matter, whether we call theſe ideas of beauty and harmony, perceptions of the external *ſenſes* of ſeeing and hearing, or not: we ſhould rather chuſe to call theſe ideas an *internal ſenſe*, were it only for the convenience of diſtinguiſhing them from other ſenſations of ſeeing and hearing, which men may have without perception of beauty and harmony. See PLEASURE, BEAUTY and HARMONY.

Moral SENSE, is a determination of the mind, to be pleaſed with the contemplation of thoſe affections, actions, or characters of rational agents, which we call *good* or *virtuous*. See MORAL.

This moral *ſenſe* of beauty, in actions, and affections, may appear ſtrange at firſt view: ſome of our moraliſts themſelves are offended at it in my lord Shaftſbury, as being accuſtomed to deduce every approbation, or averſion, from rational views of intereſt. Our gentlemen of good taſte can tell us of a great many *ſenſes*, taſtes and reliſhes for beauty, harmony, imitation in painting and poetry; and may we not find, too, in mankind, a reliſh for a beauty in characters, in manners? The truth is, human nature does not ſeem to have been left quite indifferent in the affair of virtue, to form to itſelf obſervations concerning the advantage or diſadvantage of actions, and accordingly to regulate its conduct. The weakneſs of our reaſon, and the avocations ariſing from the infirmity and neceſſities of our nature, are ſo great, that very few of mankind could have framed thoſe long deductions of reaſon, which may ſhew ſome actions to be, in the whole, advantageous, and their contraries pernicious. The author of nature has much better furniſhed us for a virtuous conduct, than our moraliſts ſeem to imagine; by almoſt as quick and powerful inſtructions, as we have for the preſervation of our bodies: he has made virtue a lovely form, to excite our purſuit of it, and has given us ſtrong affections, to be the ſprings of each virtuous action. See VIRTUE.

For the general manner wherein our SENSES act; or, more properly, the manner wherein we become *ſenſible*, that is, perceive external objects; ſee SENSATION.

For the particular SENSES, or, more properly, the particular manners wherein we become ſenſible, by the particular organs of *ſenſe*; ſee HEARING, SEEING, SMELLING, &c.

For the ſeveral organs of SENSE, miniſtring to the ſeveral manners of ſenſation; ſee EYE, EAR, NOSE, &c.

Pliny obſerves, that of all the *ſenſes*, feeling and taſting are thoſe which man enjoys in the greateſt perfection.—As to ſeeing, he is excelled by the eagle, &c. as to ſmelling, by the vulture, &c. and as to hearing, by the mole, even when hid under ground. *Nat. Hiſt. lib.* 10.

The *ſenſes* have been ſometimes found greatly ſharpened and improved by diſeaſes: Mr. Boyle mentions a gentleman, who, during a diſtemper he had in his eyes, had his organs of ſight brought to be ſo ſenſible, that when he waked in the night, he could, for a while, plainly ſee and diſtinguiſh colours, and other objects; and the ſame author gives an inſtance of another perſon, who, after getting half-fuddled with claret, if he waked in the night, could ſee, for ſome time, to read a moderate print.

Grimaldi affirms, that ſome women of Megara were able, by their eyes alone, to diſtinguiſh between eggs layed by black hens, and thoſe by white ones. *Grimald. de Lum. & Col.*

In the Philoſoph. Tranſ. N°. 312. we have an account of Dan. Fraſer, who continued deaf and dumb, from his birth to the 17th year of his age; when, upon recovering from a fever, he perceived an uneaſy motion in his brain, after which he began to hear, and, by degrees, to ſpeak.

SENSIBLE *horizon*,	See the articles	HORIZON.
SENSIBLE *point*,		POINT.
SENSIBLE *qualities*,		QUALITY.

SENSITIVE or **SENSIBLE** *ſoul*, the ſoul of brutes, or that which man is ſuppoſed to have in common with brutes. See SOUL.

It is thus called, as intimating its utmoſt faculty, to be that of ſenſation; or, perhaps, becauſe it is ſuppoſed to be material, and to come under our ſenſes.

My lord Bacon aſſerts, that the *ſenſible* or brute ſoul, is plainly no more than a corporeal ſubſtance, attenuated by heat, and thus rendered inviſible; or a kind of aura or vapour partly of an aërial, and partly a fiery nature; endued with the ſoftneſs of air, to be fit to receive impreſſions, and with the vigour of fire, to communicate its action; fed partly with oily matters, and partly with aqueous ones; incloſed in the body, and in the more perfect animals, principally in the head; moving along the nerves; and reſtored and repaired by the ſpirituous blood of the arteries. Bac. *de Augment. Scient. lib.* IV. See LIFE.

SENSITIVE *plants*, a ſpecies of plants, called by the ancients *æſchynomenous*, and by us *ſenſitive*, *living* or *mimic plants*, as giving ſome tokens of ſenſe. See ÆSCHYNOMENOUS.

Theſe are ſuch whoſe frame and conſtitution is ſo nice and tender, that at the touch, or leaſt preſſure of one's hand, they will contract their leaves and flowers, as if *ſenſible* of the contact.

Botanic writers mention many kinds hereof; ſome of which contract with the hand, or a ſtick; others with heat, others with cold.—The truth is, many, if not moſt, vegetables expand their flowers, down, &c. in warm, ſun-ſhiny weather, and again cloſe them towards evening or in rain, &c. eſpecially at the beginning of flowering, whilſt the ſeed is yet young and tender: as is very evident in the down of dandelion, &c. and in the flower of the pimpernel, the opening and ſhutting whereof are the country-man's weather-wiſer; whereby, Gerard ſays, he foretels what weather ſhall follow next day: for if the flowers be cloſe ſhut up, it betokens rain and foul weather; if they be ſpread abroad, fair weather. Ger. *Herb. lib.* II. See SEMINATION.

SENSORY, SENSORIUM *commune*, the ſeat of the common ſenſe; or that part or place where the ſenſible ſoul is ſuppoſed more immediately to reſide. See SOUL and SENSE.

The *ſenſory* is ſuppoſed to be that part of the brain wherein the nerves from all the organs of ſenſe, terminate: which is generally allowed to be about the beginning of the medulla oblongata: Des Cartes will have it in the conarion, or pineal gland. See CONARION.

Sir Iſaac Newton deſcribes the *ſenſory* of animals as the place to which the ſenſible ſpecies of things are carried through the nerves and brain, that they may be there perceived by their immediate preſence to the ſoul.—The organs of ſenſe are not for enabling the ſoul to perceive the ſpecies of things, in its *ſenſory*: but only for conveying them thither. See SENSE and ORGAN.

The ſame great author conſiders the univerſe, as the *ſenſory* of the godhead. See GOD, UNIVERSE, NATURE, &c.

SENTENCE, in law, *doom*: a judgment paſſed in court by the judge, upon ſome proceſs either civil, or criminal. See JUDGE and JUDGMENT.

Sentences are either *definitive*, *interlocutory*, *contradictory*, &c.

There are *ſentences* of abſolution, excommunication, &c.

Superior judges either confirm or annul the *ſentences* of inferior ones. See APPEAL.

Three conformable SENTENCES, *tres* SENTENTIÆ *conformes*: in the Romiſh eccleſiaſtical law, it is allowed to appeal three times; ſo that there muſt be three *conformable ſentences* ere the deciſions of the judges can take effect.—The firſt degree of juriſdiction is in the biſhop's official: from him an appeal lies to the metropolitan; and from the metropolitan to the primate, or immediately to the pope. If the appeal come from the metropolitan to the pope, the pope is obliged to delegate judges *in partibus*; and then if the three *ſentences* paſſed in theſe three ſtages be *conformable*, there is no further appeal: but if one of them annul another, new judges are to be required of the pope for a fourth *ſentence*; and thus they ſometimes proceed to a ſixth, or ſeventh *ſentence*.—Such a number of juriſdictions is found infinitely prejudicial to the public, and vexatious to private perſons.

SENTENCE, in grammar, denotes a period; or a ſet of words comprehending ſome perfect ſenſe, or ſentiment of the mind. See PERIOD.

Every *ſentence* comprehends at leaſt three words. See PROPOSITION.

The buſineſs of pointing, is to diſtinguiſh the ſeveral parts and members of *ſentences*, ſo as to render the ſenſe thereof the cleareſt, apteſt and fulleſt poſſible. See PUNCTUATION.

In every *ſentence* there are two parts neceſſarily required; a noun for the ſubject, and a definite verb: whatever is found more than theſe two, affects one of them, either immediately, or by the intervention of ſome other, whereby the firſt is affected. See NOUN and VERB.

Again, every *ſentence* is either ſimple or conjunct: a *ſimple ſentence* is that conſiſting of one ſingle ſubject, and one finite verb.—A *conjunct ſentence* contains ſeveral ſubjects and finite verbs, either expreſly or implicitely.

A ſimple *ſentence* needs no point, or diſtinction; only a period to cloſe it: as, *A good man loves virtue for itſelf*.—In ſuch a *ſentence*, the ſeveral adjuncts affect either the ſubject or the verb in a different manner. Thus the word *good*, expreſſes the quality of the ſubject, *virtue* the object of the action, and, *for itſelf*, the end thereof.—Now none of theſe adjuncts can be ſeparated from the reſt of the *ſentence*: for if one be, why ſhould not all the reſt? And if all be, the *ſentence* will be minced into almoſt as many parts as there are words.

But if ſeveral adjuncts be attributed in the ſame manner either to the ſubject or the verb, the *ſentence* becomes conjunct, and is to be divided into parts.

In every conjunct *ſentence*, as many ſubjects, or as many finite verbs as there are, either expreſly, or implied, ſo many diſtinctions may there be. Thus, *My hopes*, *fears*, *joys*, *pains*, *all centre in you*: and thus Cicero, *Catilina abiit*, *exceſſit*, *evaſit*, *erupit*.—The reaſon of which pointing is obvious; for as many ſubjects or finite verbs as there are in a *ſentence*, ſo many members does it really contain. Whenever, therefore, there occur more nouns than verbs, or contrariwiſe, they are to be conceived as equal. Since, as every ſubject requires its verb, ſo every verb requires its ſubject, wherewith it may agree: excepting, perhaps, in ſome figurative expreſſions.

Indeed, there are ſome other kinds of *ſentences* which may be ranked amongſt the conjunct kind, particularly the abſolute *ablative*, as it is called: Thus, *Phyſicians*, *the diſeaſe once diſcovered*, *think the cure half wrought*: where the words, *diſeaſe once diſcovered*, are equivalent to, *when the cauſe of the diſeaſe is diſcovered*.—So alſo in nouns added by appoſition; as, *The Scots*, *a hardy people*, *endured it all*; ſo alſo in vocative caſes, and interjections; as, *This*, *my friend*, *you muſt allow me*: And, *What*, *for heaven's ſake! would he be at?*

The caſe is much the ſame, when ſeveral adjuncts affect either the ſubject of the *ſentence*, in the verb, in the ſame manner; or at leaſt ſomething, whereby one of them is affected: as, *A good*, *wiſe*, *learned man*, *is an ornament to the commonwealth*: where the ſeveral adjectives denoting ſo many qualities of the ſubject, are to be ſeparated from one another.—Again, when I ſay, *Your voice*, *countenance*, *geſture terrified him*: the ſeveral nominative caſes denote ſo many modes of the verb, which are likewiſe to be diſtinguiſhed from each other. The caſe is the ſame in adverbs; as, *He behaved himſelf modeſtly*, *prudently*, *virtuouſly*.—In the firſt example, the adjuncts immediately affect the ſubject; in the third, the verb; in the following one, another adjunct: as, *I ſaw a man loaden with age*, *ſickneſs*, *wounds*.

Now, as many ſuch adjuncts as there are, ſo many ſeveral members does the *ſentence* contain; which are to be diſtinguiſhed from each other, as much as ſeveral ſubjects, or finite verbs: and that this is the caſe in all conjunct *ſentences*, appears hence, that all theſe adjuncts, whether they be verbs or nouns, *&c.* will admit of a conjunction copulative, whereby they may be joined together.—But, where-ever there is a copulative, or room for it, there a new member of a *ſentence* begins.—For the other partitions, *&c.* of *ſentences*, ſee COLON, SEMICOLON, PERIOD.

SENTENCE, is alſo uſed in rhetoric and poetry, for a ſhort, pithy remark, or reflection, containing ſome ſentiment of uſe in the conduct of life. See APOPHTHEGM, ADAGE, PROVERB, *&c.*

Such are, *Diſcite juſtitiam moniti*, *&* *non temnere divos*; or, *A teneris aſſueſcere multum eſt*, &c.

Sentences, father Boſſu obſerves, render poems uſeful; and, beſides, add I know not what luſtre and ſpirit, which pleaſes. But there is no virtue which is not accompanied with ſome dangerous vice. Too many *ſentences* give a poem too philoſophical an air, and ſink it into a kind of gravity, that is leſs fit for the majeſty of a poem, than the ſtudy of a learned man, and the quaintneſs of a dogmatiſt. Such thoughts not only contain, but inſpire, a certain calm wiſdom, which is directly oppoſite to the paſſions; it cools them, both in the hearers and in the ſpeaker. Laſtly, the affectation of ſpeaking *ſentences*, leads a perſon to trifling and impertinent ones; inſtances whereof we have, in abundance, in Seneca's tragedies.—Petronius recommends it to authors, to diſguiſe their *ſentences*, that they may not ſtand glaring above the thread or ground of the diſcourſe. See ELLIPSIS.

SENTIMENTS, in poetry, and particularly dramatic, are the thoughts which the ſeveral perſons expreſs; whether they relate to matters of opinion, paſſion, buſineſs or the like. See THOUGHT.

The manners form the tragic action, and the *ſentiments* explain it; diſcovering its cauſes, motives, *&c.*—The *ſentiments* are to the manners, what thoſe are to the fable. See MANNERS.

In the *ſentiments*, regard is to be had to nature and probability; a madman, for inſtance, muſt ſpeak as a madman; a lover as a lover; a hero as a hero.—The *ſentiments*, in great meaſure, are to ſuſtain the character. See CHARACTER, DICTION, HERO, *&c.*

SENTINEL*, CENTINEL, or SENTRY, in war, a private ſoldier taken out of a corps de garde of foot, and placed in ſome poſt to watch any approach of the enemy, to prevent ſurprizes; and to ſtop ſuch as would paſs without orders, or without diſcovering who they are.

* The word is modern: it is not long ſince they ſaid, *To be on the ſcout*, in the ſame ſenſe as we now ſay, *To ſtand ſentry*, *&c.* Menage derives the word *à ſentiendo*, from perceiving.

Sentinel perdu, is a *ſentinel* placed at ſome very advanced and dangerous poſt, whence it is odds he never returns. See PERDU.

The *ſentinel*'s word, when he challenges, is, *Who is there? Qui vive*, or *Qui va la? Stand! Demeure la!*

SEPARABLE *modes*. See the article MODE.

SEPARATE *affection*. See the article AFFECTION.

Penultimate of the SEPARATE. See PENULTIMATE.

SEPARATION, in navigation, the ſame with what we more uſually call *departure*. See DEPARTURE.

SEPARATION *of man and wife*. See DIVORCE.

Waters of SEPARATION. See the article WATER.

SEPARATISTS, a religious ſect in England, denominated from their ſetting up a *ſeparate* church, in oppoſition to that eſtabliſhed by law. See DISSENTERS, *&c.*

At preſent, *ſeparatiſts*, is rather the name of a collection of ſects, than of any particular one; but nearer their original, there was that agreement among them, that one name ſerved them all. Their diviſion into preſbyterians, Anabaptiſts, independants, *&c.* is a modern thing. See NONCONFORMIST, PRESBYTERIAN, *&c.*

The *ſeparatiſts*, Hornius tells us, *Hiſt. Eccl.* are ſuch as under Edward VI. Elizabeth and James I. refuſed to conform to the church of England: and who were firſt called *puritans*, then *ſeparatiſts*, and laſtly *nonconformiſts*. See PURITAN.

The firſt leader of the *ſeparatiſts*, was Bolton; who, upon quitting the party he had formed, was ſucceeded by Robert Brown, from whom the *ſeparatiſts* were called *Browniſts*, a name they long retained: though Brown himſelf deſerted the ſect, and, in imitation of Bolton, abjured his errors. See BROWNIST.

He was ſucceeded by Barrow, who was hanged at the inſtigation of the biſhops: their fourth chief was Johnſon, who ſet up a church at Amſterdam; which afterwards divided into ſeveral ſects, at the head of one whereof was Johnſon's brother, who excommunicated him, and was reciprocally excommunicated by him. Soon afterwards, a fifth, named Smith, erected a like church at Leyden, but it dwindled away after his death: and *ſeparatiſm* was brought very low, when Robinſon appeared, and raiſed its head.—He ſoftened the dogma's of Brown, and ſet on foot a good underſtanding among them; but was not able to unite the whole ſect. Part of them ſtill adhered to the rigid opinions of their old maſter Brown, and part of them followed Robinſon. The firſt retained the old name of *ſeparatiſts*, the latter aſſumed that of *ſemi-ſeparatiſts*, and at length degenerated into *independants*, which is the name whereby they are now uſually called, both in New and Old England. See INDEPENDANTS.

Hornius mentions another order of *ſeparatiſts*, called *ſeſqui-ſeparatiſts*, that is, *ſeparatiſts and a half*. Some will have theſe to be a diſtinct ſect; others, the ſame with the *ſemi-ſeparatiſts*: for it is added, that the *ſemi-ſeparatiſts*, under pretence of taking a medium between the Browniſts and the church of England, went further even than the Browniſts themſelves, and under the name of *ſeparatiſts* degenerated into *ſeparatiſts and a half*.

SEPIUM, SEPIÆ *os*, or *teſta*, cuttlefiſh bone; is a white, ſpongy, teſtaceous ſubſtance, growing on the back of the cuttle-fiſh; and ſeeming almoſt to be calcined by the ſun. It is rough and abſterſive, and chiefly uſed in medicine as a dentrifice.

SEPTA, in antiquity, were incloſures, or rails, made of boards; through which they went in, to give their votes, in the aſſemblies of the Romans. See OVILIA.

SEPTEMBER, the ninth month of the year, reckoned from January; and the ſeventh, from March: whence its name, *viz.* from *ſeptimus*, ſeventh. See MONTH and YEAR.

The Roman ſenate would have given this month the name of *Tiberius*; but that emperor oppoſed it: the emperor Domitian gave it his own name *Germanicus:* the ſenate under Antoninus Pius gave it that of *Antoninus:* Commodus gave it his ſirname *Herculeus*; and the emperor Tacitus, his own name, *Tacitus.*—But theſe appellations are all gone into diſuſe.

SEPTEMVIR, in antiquity. See QUINQUEVIR, QUINDECIMVIR, EPULO, *&c.*

The Germans ſometimes uſe the word *ſeptemvirate*, for the ſeven electors of the empire. See ELECTOR.

SEPTENTRIO *, or SEPTENTRIONES, in aſtronomy, a nothern conſtellation of ſtars, more uſually called *urſa minor*, or the *little bear*; and by the people, *Charles's wain.* See URSA *minor.*

* The word is formed from the Latin, *ſeptem*, ſeven; and *triones*, bullocks, which, in the ancient conſtellation, were yoaked to the plough.

SEPTENTRIO, in coſmography, the ſame with *north*; thus called from the ancient conſtellation *ſeptentrio*, one of whoſe ſtars is the pole-ſtar. See NORTH, POLE-STAR, *&c.*

Hence alſo SEPTENTRIONAL, SEPTENTRIONALIS, ſomething belonging to the *north*; as *ſeptentrional ſings*, *ſeptentrional parallels*, &c. thoſe on the northern ſide of the equator.

SEPTIER or **SETIER**, a French meaſure, differing according to the ſpecies of the things meaſured. See MEASURE. For liquors, the *ſeptier* is the ſame thing with the chopine or half-pint. See CHOPINE.

For dry meaſure, the *ſeptier* is very different, in different places and different commodities; as not being any veſſel of meaſure, but only an eſtimation of ſeveral other meaſures. —At Paris, the *ſeptier* of wheat conſiſts of two mines, the mine of two minots, and the minot of three buſhels. See BUSHEL.

Twelve *ſeptiers* make the mine.—The *ſeptier* of oats is double that of wheat.

SEPTIZON, SEPTIZONIUM, in the ancient architecture, a term almoſt appropriated to a famous mauſoleum of the family of the Antonines; which Aur. Victor tells us, was built in the tenth region of the city of Rome: being a large inſulated building, with ſeven ſtages or ſtories of columns.

The plan was ſquare; and the upper ſtories of columns falling back much, rendered the pile of a pyramidal form; terminated a-top, with the ſtatue of the emperor Septimius Severus, who built it.

It had its name *ſeptizon*, *ſeptizonium*, from *ſeptem* and *zona*, *q. d.* ſeven zones or girdles, by reaſon of its being girt with ſeven rows of columns.

Hiſtorians make mention of another *ſeptizon*, more ancient than that of Severus, built near the Thermæ of Antoninus.

SEPTUAGESIMA *, in the calendar, denotes the third ſunday before lent; or before quadrageſima; as quinquageſima is the next before quadrageſima, then ſexageſima, and *ſeptuageſima:* being all days appropriated by the church to acts of penance and mortification, by way of preparation for the devotion of the lent enſuing. See QUADRAGESIMA.

* It is ſuppoſed by ſome to take its name from its being about 70 days before Eaſter: pope Teleſphorus firſt made it a feaſt day, and appointed lent to commence from it. See LENT.

The laws of king Canutus ordained a vacation from judicature, from *ſeptuageſima* to *quindena paſchæ.* See QUINQUAGESIMA. From *ſeptuageſima* to the octaves after Eaſter, marriage is forbidden by the canon-law.

SEPTUAGINT *, LXX, or *the* SEVENTY, a term famous among divines and criticks, for a verſion of the Old Teſtament, out of Hebrew into Greek, performed by ſeventy-two Jewiſh interpreters, in obedience to an order of Ptolemy Philadelphus. See BIBLE.

* The word is formed from the Latin, *ſeptuaginta*, ſeventy.

The ancients, till Jerom's time, univerſally believed, that the *ſeventy* were inſpired perſons, not mere tranſlators; grounding their belief on a fabulous hiſtory of this verſion, given by Ariſteas: who tells us, that the high-prieſt Eleazer, choſe ſix doctors out of each tribe for this office, which made the number of ſeventy-two; and that theſe being ſhut up, each in his ſeveral cell, each tranſlated the whole; and without ſeeing what any of the reſt had done, they were all found to agree to a letter.

Chronology of the SEPTUAGINT, or SEVENTY, is an account of the years of the world, very different from what is found in the Hebrew text, and the vulgate; making the world 1466 years older than it is found in theſe latter. See AGE, CHRONOLOGY, EPOCHA, *&c.*

The criticks are much divided, as to the point of preference. Baronius prefers the account of the *ſeventy:* and Iſ. Voſſius makes an apology for it.—The two lateſt and moſt ſtrenuous advocates, are father Pezron, a Bernardine, and father le Quien, a Dominican; the firſt of whom defends the chronology of the *ſeptuagint*, and the latter that of the Hebrew text.

SEPTUM, in anatomy, a term literally ſignifying an incloſure or partition; applied to ſeveral parts of the body, which ſerve to ſeparate one part from another.

SEPTUM *lucidum*, or *pellucidum*, is a partition ſeparating the two upper ventricles of the brain; thus called, as being tranſparent. See BRAIN.

SEPTUM *medium*, or *cordis*, is a ſeparation between the two ventricles of the heart.—It is about a finger thick, fleſhy, and of the ſame ſubſtance with the heart itſelf; conſiſting of muſcular fibres, which aſſiſt it in its motions. Some have imagined it to be perforated with a great number of holes; but miſtakenly. See HEART and VENTRICLE.

SEPTUM *tranſverſum*, is the ſeparation of the two bellies, or venters, called alſo *diaphragm.* See DIAPHRAGMA.

SEPTUM *narium*, the partition of the noſtrils. See NOSE.

SEPTUM *bulbi*, divides the bulb of the urethra lengthwiſe. See URETHRA.

SEPTUM *gallinaginis.* See CAPUT GALLINAGINIS.

SEPTUM *clitoridis*, a membranous partition running all along between the two corpora cavernoſa, from the glans to its divarication at the os pubis. See CLITORIS.

SEPTUM *auris.* See the article EAR.

SEPTUM *teſtium.* See the article TESTICLE.

SEPULCHRAL, SEPULCHRALIS, ſomething belonging to ſepulchres or tombs. See SEPULCHRE.

SEPULCHRAL *inſcriptions* are the ſureſt monuments we have of antiquity. See INSCRIPTION, EPITAPH, MONUMENT, *&c.*

SEPULCHRAL *lamps*, are thoſe ſaid to have been found burning in the tombs of ſeveral martyrs, and others. See LAMP.

SEPULCHRAL *column*, is a column erected over a tomb, with an inſcription on its ſhaft. See COLUMN.

SEPULCHRAL, or SEPULCHRALIS, is alſo the appellation of a ſect; thus called, from their principal error, which was, that by the word *hell*, whither the ſcripture tells us Jeſus Chriſt deſcended after his death, they underſtood his grave or ſepulchre. See HELL.

The *ſepulchrales*, or *ſepulchral* hereticks, maintained, that Jeſus Chriſt only deſcended into hell according to the fleſh; that this hell was nothing elſe but the grave where he was laid, and wherein his ſoul could not reſt. Prateolus.

SEPULCHRALIS *pecunia.* See the article PECUNIA.

SEPULCHRE, SEPULCHRUM, a tomb, or place deſtined for the interrment of the dead. See INTERRMENT.

The term is chiefly uſed in ſpeaking of the burying-places of the ancients: thoſe of the moderns we uſually call *tombs.* See TOMB, COEMETERIUM, *&c.*

Beſides the uſual *ſepulchres* for the interrment, either of the whole body, or of the aſhes of the body burnt, the ancients had a peculiar kind, called *cenotaphia*; being empty *ſepulchres*, made in honour of ſome perſon, who, perhaps, had no burial at all; from a ſuperſtitious opinion, that the ſouls of thoſe who wanted burial, wandered an hundred years, ere they were admitted to paſs into the Elyſian fields. See CENOTAPH, FUNERAL, *&c.*

The pyramids were built to ſerve as *ſepulchres* for the kings of Egypt. See PYRAMID. And the obeliſks had generally the ſame intention. See OBELISK.

Sepulchres were held ſacred, and inviolable; and the care taken thereof deemed a religious duty; grounded on the fear of God, and the belief of the ſoul's immortality. Thoſe who ſearched or violated them, were odious to all nations, and ſeverely puniſhed.

The Egyptians called their *ſepulchres*, *eternal houſes*, in contradiſtinction to their houſes and palaces, which they called *inns*; by reaſon of the ſhort ſojourn we have in the one, in compariſon of the long ſtay in the other.

The eaſtern pilgrimages are all made with deſign to viſit the holy *ſepulchre*, that is, the tomb of Jeſus Chriſt. Nobody enters here but bare-footed, and with a world of ceremonies. The Turks exact 24 crowns of each pilgrim, whom devotion carries to the holy *ſepulchre.* See PILGRIM.

St. SEPULCHRE, or the *holy* SEPULCHRE, gives the denomination to an order of regular canons, anciently inſtituted in Jeruſalem, in honour of the holy *ſepulchre.* See CANON.

They aſcribe their inſtitution to Godfrey of Boulogne; who, they ſay, upon his taking Jeruſalem in the year 1099, placed canons in the patriarchal church of the holy *ſepulchre*; which, indeed, is true; but then they were not regulars.—In effect, it was Arnoul, who, of archdeacon of the church of Jeruſalem, got himſelf elected patriarch thereof, that in 1114, firſt obliged his canons to live in community, and to follow the rule of St. Auguſtin.

From the holy land, numbers of theſe canons were brought into Europe, particularly into France by Louis the younger; into England by king Henry; into Poland by Jaxa, a Poliſh gentleman; and into Flanders by the counts thereof.

But the order was afterwards ſuppreſſed by Innocent VIII.

and its effects given to that of our lady of Bethlehem, which itſelf ceaſing, they were beſtowed in 1484, on that of the knights of St. John of Jeruſalem.—But the ſuppreſſion did not take place in Poland, nor in ſeveral provinces of Germany, where they ſtill ſubſiſt: their general is in Poland: their habit, father Helyot obſerves, was different in different places.

St. SEPULCHRE, or the *holy* SEPULCHRE, is alſo the name of a military order, eſtabliſhed in Paleſtine.

Moſt writers who mention this order, carry its inſtitution as far back as the time of the apoſtle St. James, biſhop of Jeruſalem, or at leaſt to that of Conſtantine; pretending that Godfrey of Boulogne, and Baldwin, were only the reſtorers thereof: but this antiquity is chimerical. It is not even certain, that it was founded ſo early as Godfrey of Boulogne, or his ſucceſſor Baldwin; though Favyn and de Belloy attribute it to this latter.

It is certain, there was nothing but canons in the church of St. *Sepulchre*, till the year 1114; and it is more than probable, the knights were only inſtituted upon the ruins of the canons 400 years after, and that by pope Alexander VI. in order to excite rich and noble perſons to viſit the holy places, by giving them the title of *knights of the holy ſepulchre*, and to this end, inſtituting an order under that name, whereof he reſerved the quality of maſter to himſelf and his ſucceſſors.—Leo X. and Clement VII. granted to the guardian of the religious of St. Francis, in the holy land, the power of making theſe knights; which power, firſt granted *viva voce*, was afterwards confirmed by a bull of Pius IV.

In 1558, the knights of this order in Flanders, choſe Philip II. king of Spain, their maſter; and afterwards his ſon; but the grand maſter of the order of Malta prevailed on him to reſign; and when afterwards the duke of Nevers aſſumed the ſame quality in France, the ſame grand maſter, by his intereſt and credit, procured a like renunciation of him, and a confirmation of the union of this order to that of Malta. See MALTA.

SEPULCHRI *pretium.* See the article PRETIUM.

SEQUEL, SEQUELA, in logic, a conſequence drawn from ſome preceding propoſition. See CONSEQUENCE and CONCLUSION.

As, if I ſay, *The human ſoul is immaterial*; *and therefore immortal*, the laſt member of the ſentence is a *ſequel* of the firſt.

SEQUENCE, in gaming, a ſeries or ſet of cards immediately following each other in the ſame ſuit, or colour.

We ſay, a *ſequence* of four cards, of five, &c.—At picquet, theſe are called tierces, quarts, quints, &c. See PICQUET.

SEQUESTRATION, SEQUESTRATIO, in common law, the act of ſeparating a thing in controverſy, from the poſſeſſion of both parties, till the right be determined by courſe of law.

This is of two ſorts; *voluntary* and *neceſſary*.

Voluntary SEQUESTRATION, is that which is done by conſent of both parties.

Neceſſary SEQUESTRATION, is that which the judge doth by his authority, whether the parties will, or not.

SEQUESTRATION, in the civil law, is the act of the ordinary, diſpoſing of the goods and chattels of one deceaſed, whoſe eſtate no man will meddle with.

A widow is alſo ſaid to *ſequeſter*, when ſhe diſclaims having any thing to do with the eſtate of her deceaſed huſband.

Among the Romaniſts, in queſtions of marriage, where the wife complains of impotency in the huſband, ſhe is to be *ſequeſtered* into a convent, or the hands of matrons, till the proceſs be determined.

SEQUESTRATION, is alſo uſed for the act of gathering the fruits of a benefice void, to the uſe of the next incumbent.

In the time of the civil wars, *ſequeſtration* was uſed for a ſeizing of the eſtates of delinquents, for the uſe of the commonwealth.

SEQUIN *, ZECHIN, ZECCHINO, a gold coin ſtruck at Venice, and in ſeveral parts of the grand ſeignior's ſtates, particularly Cairo; which laſt are called *Turkiſh ſequins*, or *cherifs*. See COIN and MONEY.

* Ablancourt derives the word from *cizicum*, or *cizicenicum*; as ſuppoſing the *ſequin* firſt ſtruck at *Cizicum*: Menage, from the Italian *zecchino*, of *zecca*, the name of the mint at Venice.

At Conſtantinople, the ducats ſtruck in ſeveral parts of Germany, are called *Hungarian ſequins*. See DUCAT.

The value of theſe *ſequins* is different; thoſe of Venice exceeding thoſe of Turkey and Germany, by one fifteenth. In the Eaſt-Indies the difference is ſtill more ſenſible: the Venetian *ſequin* being current for four rupees, and ſix peſſas, or 9s. 4d. ſterling, and the Turkiſh *ſequin*, only for four rupees, or 9s.

SERAGLIO, among the Levantines, the palace of a prince, or lord. See PALACE.

At Conſtantinople, they ſay, the *ſeraglio* of the embaſſador of England, of France, &c.—The word is originally Perſian, where it has the ſame ſignification.

The SERAGLIO is uſed by way of excellence for the palace of the grand ſeignior at Conſtantinople, where he keeps his court, and where his concubines are lodged, and where the youth are trained up for the chief poſts of the empire. It is a little triangle about two miles round, wholly within the city, at the end of the promontory Chryſoceras, now called the *ſeraglio* point.—The buildings run back to the top of the hill, from whence are gardens that reach to the edge of the ſea.—The outward appearance, du Loir tells us, is not beautiful, in regard the architecture is irregular, being cantoned out into ſeparate edifices and apartments, in manner of pavillions and domes. No ſtranger has ever yet been admitted to the inmoſt parts of the *ſeraglio*.

The old *ſeraglio* is the place where the emperor's old miſtreſſes are kept.

Balzac obſerves, that the *ſeraglio* at Conſtantinople, is only a copy of that which Solomon anciently built at Jeruſalem, for his wives and concubines.

SERAPH, or SERAPHIN, in the hierarchy of angles, a ſpirit of the firſt, or higheſt rank. See ANGEL and HIERARCHY.

The *ſeraphs*, or rather *ſeraphim*, make that claſs of angels ſuppoſed to be the moſt inflamed with divine love, by their nearer and more immediate attendance on the throne; and communicate their heat to the inferior, and remoter orders.—Hence their name, which is formed from the Hebrew root, שרף, to burn, inflame.

SERAPHICK, ſomething belonging to the ſeraphim. See SERAPH.

Mr. Boyle has a treatiſe of *ſeraphick* love, *i. e.* of divine love, or the love of God.

In the ſchools, St. Bonaventure is called *the ſeraphick doctor*, from his abundant zeal and fervour. See DOCTOR.

St. Francis, founder of the Cordeliers and Franciſcans, is called the *ſeraphick father*, in memory of a viſion he ſaw on mount Alverna, after a faſt of forty days, accompanied with many other ſeverities: when, falling into an ecſtaſy, he ſaw a ſeraph glide rapidly from heaven upon him; which impreſſed on him certain ſtigmata or marks, repreſenting the wounds which the nails and the ſpear made in our Saviour's body, at his crucifixion. See FRANCISCAN.

SERAPHIM. See the article SERAPH.

SERENADE, SERENATA, a kind of concert given in the night-time by a gallant, at his miſtreſs's door, or under her window.

Sometimes it conſiſts wholly of inſtrumental muſick; ſometimes voices are added; and the pieces compoſed or played on theſe occaſions, are alſo called *ſerenades*.

We do not know whence the word ſhould be derived, unleſs from the French, *ſerein*, the dew falling in the night-time.

SERENA *gutta*, in medicine, the ſame as *amauroſis*. See GUTTA *ſerena* and AMAUROSIS.

SERENE, SERENUS, a quality or title of honour given to certain princes, and chief magiſtrates of republicks. See TITLE and QUALITY.

The king of England is ſtiled, *the moſt ſerene*: the ſame term is alſo applied to the doge of Venice.—The pope, and the ſacred college writing to the emperor, to kings, or the doge, give them no other title but that of *moſt ſerene*. Indeed the Venetians ſet the title of *ſerenity* above that of highneſs. See HIGHNESS.

In 1646, Wicquefort obſerves, there was a claſhing between the courts of France and Vienna; becauſe the emperor refuſed the king of France any other title than that of *ſerene*.—Biſhops anciently were addreſſed under the title of *ſerene*.

The kings of France of the firſt and ſecond race, ſpeaking of themſelves, uſe no other quality, but *nôtre ſerenité*. The emperor gives no other title to the king of England, nor even to any other king, excepting the king of France. The king of Poland, and other kings, give it to the electors. The emperor, writing to the electors or other princes of the empire, only uſes the term *dilection*; but in treating with them, uſes *electoral ſerenity* to the electors; and *ducal ſerenity* to the other princes. See ELECTOR, &c.

SERGE, in commerce, a woollen quilted ſtuff, manufactured on a loom with four treddles, after the manner of rateens, and other ſtuffs, that have the whale. See RATEEN, &c.

The goodneſs of *ſerges* is known by the quilting, as that of cloths by the ſpinning. See CLOTH.

Of *ſerges* there are various kinds, denominated either from the different qualities thereof, or from the places where they are wrought.—The moſt conſiderable is the *London ſerge*, now highly valued abroad, particularly in France, where the manufacture is carried on with good ſucceſs, under the title of *ſerge façon de Londres*.

Manufacture of London SERGES.—For wool, the longeſt is choſen for the warp, and the ſhorteſt for the woof. Ere either kind is uſed, it is firſt ſcoured, by putting it in a copper of liquor, ſomewhat more than luke-warm, compoſed of three quarts of fair water, and one of urine. After having ſtayed long enough therein to diſſolve, and take off the greaſe, &c. it is ſtirred briſkly about with a wooden peel; taken out of the liquor; drained and waſhed in a running water; dried in the ſhade; beaten with ſticks on a wooden rack, to drive out the coarſer duſt and filth; and than picked clean with the hands.—Thus far prepared, it is greaſed with oil of olives, and the longeſt part, deſtined for the warp, combed with large combs, heated in a little furnace for the purpoſe.—To clear off the oil again, the wool is put in a liquor compoſed of hot water, with ſoap melted therein: whence being taken out, wrung, and dried, it is ſpun on the wheel.

As to the ſhorter wool, intended for the woof, it is only carded on the knee, with ſmall fine cards, then ſpun on the wheel, without being ſcoured of its oil.—Note, the thread for the warp is always to be ſpun much finer, and better twiſted, than that of the woof.

The wool, both for the warp, and the woof, being ſpun, and the thread divided into ſkains; that of the woof is put on ſpools (unleſs it have been ſpun upon them) fit for the cavity or eye of the ſhuttle; and that for the warp wound on a kind of wooden bobins, to fit it for warping. When warped, it is ſtiffened with a kind of ſize, whereof, that made of the ſhreds of parchment is held the beſt; and when dry, is put on the loom.

When mounted on the loom; the workman raiſing and falling the threads (which are paſſed through a reed) by means of four treadles placed underneath the loom, which he makes to act tranſverſly, equally, and alternately, one after another, with his feet, in proportion as the threads are raiſed and lowered, throws the ſhuttle acroſs from one ſide to the other; and each time that the ſhuttle is thrown, and the thread of the woof croſſed between thoſe of the warp, ſtrikes it with the frame to which the reed is faſtened through whoſe teeth the threads of the warp paſs; and this ſtroke he repeats twice, or thrice, or even more, till he judges the croſſing of the *ſerge* ſufficiently cloſe: thus he proceeds, till the warp is all filled with woof.

The *ſerge* now taken off the loom is carried to the fuller, who fulls, or ſcours it, in the trough of his mill, with a kind of fat earth, for the purpoſe, firſt purged of all ſtones and filth. After three or four hours ſcouring, the fuller's earth is waſhed out in fair water, brought, by little and little, into the trough, out of which it is taken when all the earth is cleared: then, with a kind of iron pincers, or plyers, they pull off all the knots, ends, ſtraws, &c. ſticking out on the ſurface, on either ſide: then return it into the fulling trough, where it is worked with water ſomewhat more than luke-warm, with ſoap diſſolved therein, for near two hours. It is then waſhed out, till ſuch time as the water becomes quite clear, and there be no ſigns of ſoap left: then it is taken out of the trough, the knots, &c. pulled off, and then put on the tenter to dry, taking care, as faſt as it dries, to ſtretch it out both in length and breadth, till it be brought to its juſt dimenſions. When well dried, it is taken off the tenter, dyed, ſhorn, and preſſed. See Dying, Preſſing, and Sheering.

SERGEANT, or Serjeant, a term in our law, applied to ſundry offices.—Sergeant *at law*, or *of the coif*, is the higheſt degree taken in the common law, as that of doctor is in the civil law. See Degree and Doctor.

Sergeants were anciently called *ſervientes ad legem*, and *ſervientes narratores*: Mr. Selden adds, that they were alſo called *doctores legis*; though others are of opinion, that the judges are, more properly, the *doctores legis*, and *ſergeants*, the bachelors of law.—Spelman obſerves, that however a *ſergeant* may be richer than all the doctors of the commons, yet a doctor is ſuperior in degree to a *ſergeant*; for the very name of a doctor is magiſterial, but that of a *ſergeant* miniſterial. Hence the doctors are ſeated and covered when they plead; but the *ſergeants* ſtand uncovered at the bar, excepting for their coif.

As theſe are ſuppoſed the moſt learned and experienced; there is one court appropriated to plead in by themſelves, which is the common-pleas, where the common law of England is moſt ſtrictly obſerved.—But they are not prohibited pleading in other courts, where the judges (who muſt firſt be *ſergeants*) call them *brothers*. See Court and Common-Pleas.

They are called by the king's mandate, or writ, directed to them; commanding them to take upon them that degree, by a day aſſigned.

Out of theſe, one is made the king's *ſergeant* (more may be) to plead for him in all cauſes, eſpecially treaſon.

Sergeant *at arms*, is an officer appointed to attend the perſon of a king, to arreſt traitors, and perſons of quality offending, and to attend the lord high-ſteward, when he ſits in judgment on any traitor.

Of theſe by ſtatute there are not to be above 30 in the realm.—There are now eight at court, at 100 l. *per annum* ſalary each: they are called the king's *ſergeants at arms*, to diſtinguiſh them from others: they are created with great ceremony; the perſon kneeling before the king, his majeſty lays the mace on his right ſhoulder, and ſays, *Riſe up, ſergeant at arms, and eſquire, for ever.*—They have, beſides, a patent for the office, which they hold for life.

They have their attendance in the preſence-chamber, where the band of gentlemen-penſioners wait; and receiving the king at the door, carry the maces before him to the chapel-door, whilſt the band of penſioners ſtand foremoſt, and make a lane for the king; as they alſo do when the king goes to the houſe of lords.

There are four others created in the ſame manner; one, who attends the lord chancellor; a ſecond, the lord treaſurer; a third, the ſpeaker of the houſe of commons, and a fourth, the lord mayor of London, on ſolemn occaſions.

They have a conſiderable ſhare of the fees of honour, and travelling charges allowed them, when in waiting, *viz.* five ſhillings *per* day, when the court is within ten miles of London, and ten ſhillings when twenty miles off London: they are in the lord chamberlain's gift.

Sergeant, or Serjeant, in war, is an inferior officer in a company of foot, or troop of dragoons; armed with a halbard, and appointed to ſee diſcipline obſerved, to teach the ſoldiers the exerciſe of their arms, to ſee due diſtances kept, to order, ſtraiten, form ranks, files, &c. See Officer.

SERGEANTY, or Serjeanty, a ſervice anciently due to the king for lands held of him; and which could not be due to any other lord. See Tenure and Service.

It is divided into *grand* and *petty ſergeanty*.

Grand **Sergeanty**, is where one holds land of the king by ſervice which he ought to do in his own perſon; as to bear the king's banner, or ſpear, aſſiſt at his coronation, or do ſome office in his court.

Petit **Sergeanty**, is where a man holds land of the king to yield him yearly ſome ſmall thing towards his wars; as a ſword, dagger, bow, ſpurs, &c.

Coke, on Littleton, tells us, that Sir Richard Rockeſly held lands at Seaton, by *grand ſergeanty*, to be *vantrarius regis*, *i. e.* the king's fore-footman, when he went into Gaſcogne, till he had worn out a pair of ſhoes of the price of fourpence.

By the ſtatute, 12 Car. II. all tenures of any honours, manors, lands, &c. are turned into free and common ſoccage; but the honorary ſervices of *grand ſergeanty* are thereby continued. See Tenure.

SERIES, a continued ſucceſſion of things in the ſame order, and which have ſome relation or connection with each other. See Class, Order, &c.

Medals are formed into *ſuites* or *ſeries's*, both with regard to the metal, and to the ſubject. The different metals of medals, conſtitute three different *ſeries's*, in the cabinets of the curious; we mean, as to the order and arrangement of the ſeveral medals.—The gold *ſeries*, for inſtance, of imperials, amounts to about 1000 or 1200; that of ſilver may amount to 3000; and that of copper, in all the three ſizes, great, middle, and ſmall, to 6 or 7000.—Of theſe, the *ſeries* of middle copper is the moſt compleat and eaſily formed, as it may be brought down to the fall of the empire in the weſt, and the time of the Palæologi in the eaſt.

The *ſeries's* of medals are uſually formed from the ſide called the *head*: in the firſt claſs, is diſpoſed the *ſeries* of kings: in the ſecond, that of Greek and Latin cities; in the third, the Roman conſular families; in the fourth, the imperial; in the fifth, the deities: to which may be added a ſixth *ſeries*, conſiſting of medals of illuſtrious perſons.

There are alſo *ſeries's* of modern medals: that of the popes only commences from Martin V. in 1430. From that time we have a *ſeries* of papal medals, tolerably compleat, to the number of 5 or 600.—One might likewiſe have a *ſeries* of emperors from Charlemaign; provided one took in the current coins: but, in practice they commonly commence with Frederick II. in 1463.—The *ſeries* of kings of France is the moſt numerous and moſt conſiderable of all the modern kings. See Medal.

Series, in algebra, denotes a rank or progreſſion of quantities, increaſing or decreaſing in ſome conſtant ratio; which, in its progreſs, approaching ſtill nearer and nearer ſome ſought value, is called a *converging ſeries*; and if infinitely continued, becomes equal to that quantity: whence its uſual appellation of *infinite ſeries*. See Converging, &c.

Thus $\frac{1}{2}\,\frac{1}{4}\,\frac{1}{8}\,\frac{1}{16}\,\frac{1}{32}\,\frac{1}{64}$, &c. make a *ſeries*, which always converges, or approaches to the value of 1, and infinitely continued, becomes equal thereto. See Infinite, Approximation, &c.

The doctrine and uſe of *infinite ſeries's*, one of the greateſt improvements of the preſent age, we owe to Nic. Mercator of Holſtein, who, however, ſeems to have taken the firſt hint of it from Dr. Wallis's arithmetick of *infinites*.—It takes place principally in the quadratures of curves; where, as we frequently fall upon quantities, which cannot be expreſſed by any preciſe definite numbers, ſuch as is the ratio of the diameter of a circle to the circumference; we are glad to expreſs them by a *ſeries*, which, infinitely continued, is the value of the quantity required. See Circle, Quadrature, &c.

Nature, origin, and uſe of infinite **Series's**.—Though arithmetic furniſh us with very adequate and intelligible expreſſions for all rational numbers, yet it is very defective as to irrational ones; which are infinitely more numerous than the other; there being, for inſtance, an infinity of them between 1 and 2. Were it now required to find a mean proportional between 1 and 2, in rational numbers, which alone are clearly intelligible, (the root of 2 being certainly a very obſcure idea) we could ſtill approach nearer and nearer to the juſt value of the quantity required, but without ever arriving at it: thus, if for the mean proportional between 1 and 2, or the root of 2, we firſt put 1, it is evident we have not put enough; if we add $\frac{1}{2}$ we put too much, for the ſquare of $1 + \frac{1}{2}$ is greater than two. If then we take away $\frac{1}{8}$, we ſhall find we have taken away too much, and if we return $\frac{1}{16}$, the whole will be too great: thus may we proceed, without ever coming at the juſt quantity ſought.—Theſe numbers thus found, and thoſe found after the ſame manner to infinity, being diſpoſed in their natural order, make what we call an *infinite ſeries*. See NUMBER and SURD.

Sometimes the *ſeries's* do not proceed by alternate additions and ſubtractions, but by ſimple additions, or an infinity of ſubtractions; according to the poſition of the firſt term. In all theſe *infinite ſeries's* it is viſible, that as all the terms are only equal to a finite magnitude, they muſt be ſtill decreaſing; and it is even convenient that they be ſo, as much as poſſible, that one may take only a certain number of the firſt terms for the magnitude ſought, and neglect all the reſt.

But it is not irrational numbers only, that are expreſſed in rational ones, by *infinite ſeries's*. Rational numbers themſelves may be expreſſed in the ſame manner: 1, for inſtance, being equal to the *ſeries* $\frac{1}{2}\ \frac{1}{4}\ \frac{1}{8}$, *&c.* but there is this difference between them, that whereas irrational numbers can only be expreſſed in rational numbers, by ſuch *ſeries*; rational ones need no ſuch expreſſion.

Among *infinite ſeries's*, there are ſome whoſe terms only make a finite ſum; ſuch is the geometrical progreſſion $\frac{1}{2}\ \frac{1}{4}\ \frac{1}{8}$, *&c.* and in general, all geometrical, decreaſing progreſſions: in others, the terms make an infinite ſum; ſuch is the harmonical progreſſion $\frac{1}{2}\ \frac{1}{3}\ \frac{1}{4}\ \frac{1}{5}$, *&c.* See HARMONICAL. It is not that there are more terms in the harmonical, than in the geometrical progreſſion, though the latter has no term which is not in the former, and wants ſeveral the former has; ſuch a difference would only render the two infinite ſums unequal, and that of the harmonical progreſſion the greateſt: the cauſe lies deeper.

From the received notion of infinite diviſibility, it follows, that any finite thing, *e. gr.* a foot is a compound both of finite and infinite: finite, as it is a foot; infinite, as it contains an infinity of parts, into which it is diviſible.—If theſe infinite parts be conceived, as ſeparated from one another, they will make an *infinite ſeries*, and yet their ſum only be a foot; only, no terms are to be here put, but ſuch as may, diſtinct from each other, be parts of the ſame finite whole: now this is the caſe in the geometrical, decreaſing *ſeries* $\frac{1}{2}\ \frac{1}{4}\ \frac{1}{8}$, *&c.* for it is evident, that if you firſt take $\frac{1}{2}$ of a foot, then $\frac{1}{2}$ of what remains, or $\frac{1}{4}$ of a foot, then $\frac{1}{2}$ of what remains, or $\frac{1}{8}$ of a foot; you may proceed to infinity, ſtill taking new decreaſing halves, all diſtinct from each other, and which all together only make a foot.

In this example, we not only take no parts but what were in the whole, diſtinct from each other; but we take all that were there; whence it comes to paſs, that their ſum makes the preciſe whole again: but, were we to follow the geometrical progreſſion $\frac{1}{3}\ \frac{1}{9}\ \frac{1}{27}$, *&c.* that is, at firſt take $\frac{1}{3}$ of a foot, and from what remains $\frac{1}{9}$ of a foot, and from what ſtill remains $\frac{1}{27}$ of a foot, *&c.* it is true, we ſhould take no parts but what were diſtinct from each other in the foot; but we ſhould not take all the parts that were there, ſince we only take the ſeveral thirds, which are leſs than the halves; of conſequence, all theſe decreaſing thirds, though infinite in number, could not make the whole; and it is even demonſtrated, that they would only make half.—In like manner, all the fourths decreaſing to infinity, would only make one third, and all the hundredths, only the ninety-ninth part: ſo that the ſum of the terms of an *infinite ſeries* decreaſing geometrically, is not only always finite, but may even be leſs than any finite quantity that can be aſſigned.

If an infinite decreaſing *ſeries* expreſs parts which cannot ſubſiſt in the whole, diſtinctly from each other; but ſuch, as to take their values, we muſt ſuppoſe the ſame quantity taken ſeveral times, in the ſame whole; then will the ſum of theſe parts make more than a whole, nay, infinitely more; that is, the *ſeries* will be infinite, if the ſame quantity be taken an infinity of times.—Thus, in the harmonical progreſſion $\frac{1}{2}\ \frac{1}{3}\ \frac{1}{4}$, *&c.* if we take $\frac{1}{2}$ of a foot, or 6 inches, then $\frac{1}{3}$ 4 inches, it is evident we cannot take further $\frac{1}{4}$ of a foot, or 3 inches, without taking 1 inch more than was left in the foot. Since then the whole is already exhauſted by the three firſt terms, we can take no more of the following terms, without taking ſomething already taken: and, ſince thoſe terms are infinite in number, it is very poſſible that the ſame finite quantity may be repeated an infinite number of times, which will make the ſum of the *ſeries* infinite.

We ſay poſſible; for though of two *infinite ſeries's*, the one may make a finite ſum, and the other an infinite; it is true, that there may be ſuch a *ſeries*, where the finites, having exhauſted the whole, the following ones, though infinite in number, ſhall only make a finite ſum; and, in effect, ſince it is demonſtrated, by the laws of geometrical progreſſion, that there are *ſeries's*, whoſe ſums are leſs than the whole, nay, infinitely leſs; it follows, that there muſt likewiſe be *ſeries's* which make infinitely more.

There are two further remarks neceſſary to be made on *ſeries's* in general. 1°. That there are ſome, wherein, after a certain number of terms, all the other terms, though infinite in number, become each a cypher. Now, it is evident, that the ſum of theſe *ſeries's* is finite, and eaſily found; they having only an appearance of infinity. 2°. That the ſame magnitude may be expreſſed by different *ſeries's*; and may be expreſſed both by a *ſeries*, whoſe ſum may be found, and by another, whoſe ſum cannot be found.

Geometry does not labour under the ſame difficulty as arithmetick: it expreſſes irrational numbers exactly in lines, and needs not have recourſe to *infinite ſeries's*. Thus the diagonal of a ſquare, whoſe ſide is 1, is known to be the ſquare root of 2.—But, in ſome other caſes, geometry itſelf is under the like embarraſs; there being ſome right lines, which cannot be expreſſed otherwiſe than by an *infinite ſeries* of ſmaller lines, whoſe ſum cannot be found: of which kind are the right lines equal to curves; ſo that in ſeeking, for inſtance, a right line equal to the circumference of a circle, we find, that the diameter being 1, the line ſought will be $\frac{4}{1}$, minus $\frac{4}{3}$, plus $\frac{4}{5}$, minus $\frac{4}{7}$, plus $\frac{4}{9}$, *&c.* See RECTIFICATION.

As to the finding of an *infinite ſeries* to expreſs quantities ſought; Mercator, the firſt inventor of the method, did it by diviſion: but Sir Iſ. Newton and M. Leibnitz, have improved the doctrine very conſiderably: the firſt finding his *ſeries* by the extraction of roots, and the ſecond by another *ſeries* preſuppoſed.

To find a SERIES *expreſſing a quantity ſought, by diviſion.*—Suppoſe a *ſeries* required to expreſs the quotient of b divided by $a + c$. Divide the dividend by the diviſor, as in common arithmetick; continuing the diviſion till the quotient ſhew the order of the progreſſion, or the law, according to which the terms proceed to infinity: ſtill obſerving the rules of ſubtraction, multiplication, and diviſion, about the changing of the ſigns.—The proceſs carried on, the quotient will be found $\frac{b}{a} - \frac{bc}{a^2} + \frac{bc^2}{a^3} - \frac{bc^3}{a^4}$ *&c. in infinitum.*

Theſe four or five terms thus found, both the quotient and manner of the diviſion ſhew, that the quotient conſiſts of an infinite *ſeries* of terms, whoſe numerators are the powers of c, whoſe exponents differ from the number of the order by unity, whoſe denominators are the powers of a, and their exponents equal to the number of the order of the terms.—*E. gr.* In the third term, the power of c is the ſecond in the numerator; and the power of a the third in the denominator.

Hence, 1°. If $b = 1$ and $a = 1$ ſubſtituting this value for that, we have, in that quotient $1 - c + c^2 - c^3$, *&c.* to infinity. Wherefore $\frac{1}{1+2} = 1 - c + c^2 - c^3$, *&c. in infinitum.*

If then, ſecondly, the terms in the quotient continually decreaſe, the *ſeries* will give a quotient as near the truth as poſſible.—*E. gr.* If $b = 1$, $c = 1$ and $a = 2$; theſe values ſubſtituted in the general *ſeries*, or the diviſion performed as in the general example; we ſhall find $\frac{1}{3} = \frac{1}{2+1} = \frac{1}{2} - \frac{1}{4} + \frac{1}{8} - \frac{1}{16} + \frac{1}{32} - \frac{1}{64} + \frac{1}{128}$, *&c.* Suppoſe then, the *ſeries* to be broke off in the fourth term; there will be a deficiency: but it will be leſs than $\frac{1}{32}$. If it be broke off in the ſixth, there will be a deficiency, but that leſs than $\frac{1}{128}$. The further therefore the *ſeries* is continued, the nearer it approaches to truth, but never arrives at it.

After the like manner we find $\frac{1}{4} = \frac{1}{3+1} = \frac{1}{3} - \frac{1}{9} + \frac{1}{27} - \frac{1}{81} + \frac{1}{243}$, *&c. in infinitum* $\frac{1}{5} = \frac{1}{4+1} = \frac{1}{4} - \frac{1}{16} + \frac{1}{64} - \frac{1}{256}$, *&c. in infinitum* $\frac{1}{6} = \frac{1}{5+1} = \frac{1}{5} - \frac{1}{25} + \frac{1}{125} - \frac{1}{625}$, *&c. in infinitum.* This is a conſtant law, whereby all fractions, whoſe numerator is unity, may be expreſſed by infinite *ſeries's*: thoſe *ſeries's* being all geometrical progreſſions, decreaſing in ſuch manner as that the numerator is always unity; and the denominator of the firſt term, which is alſo the exponent of the ratio, differs by unity from the denominator of the fraction to be reſolved.

If the terms of the quotient be continually increaſing, the *ſeries* recedes ſo much the farther from the quotient as it is continued longer; nor does it ever become equal to the quotient, unleſs it be terminated, and have the laſt remainder added under its ſign. *E. gr.* Suppoſe $\frac{1}{3} = \frac{1}{1+2}$; the quotient will be fonnd $1-2+4-8+16-64+128$, &c. One term, 1 exceeds $\frac{1}{3}$ by an exceſs of $\frac{2}{3}$; two terms comes ſhort by $\frac{4}{3}$; three terms exceed by $\frac{9}{3}$; four fall ſhort by $\frac{15}{3}$, &c. If the *ſeries* be ſuppoſed to terminate in -8; then will $\frac{1}{1+2} = 1-2+4-8+\frac{16}{3}$. But $1-2+4-8 = -5 = -\frac{15}{3}$. Therefore, $\frac{1}{1+2} = \frac{16}{3} - \frac{15}{3} = \frac{1}{3}$. Suppoſe the general *ſeries* to terminate in $-c^3$; then will $\frac{1}{1+c}$

$$= 1-c+c^2-c^3+\frac{c^4}{1+c} = \frac{1+c-c^2+c^2+c^3-c^3-c^4+c^4}{1+c} = \frac{1}{1+c}$$

To find an *infinite ſeries* by extracting of roots, } See { **Quadrature** *of the circle.*
To find an *infinite ſeries* by a preſuppoſed *ſeries*, } See { **Quadrature** *of the circle.*
To extract the roots of an *infinite ſeries*, } See { **Extraction** *of roots.*

Reverſion of **Series.** See the article **Reversion.**

SERMOLOGUS, **Sermologue,** an eccleſiaſtical book compoſed of ſermons, or homilies of popes, and other perſons of eminence and ſanctity, formerly read at the feaſts of the confeſſors, the Purification, All Saints, and on every day from Chriſtmas to the octave of the Epiphany. See **Homily.**

SERMON, *funeral.* See the article **Funeral.**

SERMONES, the title which Horace gives his ſatyrs. See the article **Satyr.**

Criticks are divided about the reaſon of the name: the opinion of father Boſſu ſeems beſt grounded. A mere obſervance of feet, and meaſure, ſuch as we find in Terence, Plautus, and in Horace's ſatyrs, he thinks, is not ſufficient to conſtitute verſe, to determine the work to be poetical, or to diſtinguiſh it from proſe: unleſs it have ſome further air, or character of poetry; ſomewhat of the fable, or the ſublime. See **Poetry.**

Hence it is, that Horace calls his ſatyrs, *proſe*, *ſermones.*—His odes have quite another air, and are therefore called, *poems*, *carmina.* See **Poem, Prose** and **Versification.**

SERMONIUM, in old records, a kind of interlude or hiſtorical play, which the inferior orders of clergy, aſſiſted by boys, &c. uſed to act in the body of the church, ſuitable to the ſolemnity of ſome feſtival or high proceſſion day.

This is ſuppoſed to have been the origin of the modern drama. See **Comedy.**

SERON *of almonds*, is the quantity of two hundred weight; of aniſe-ſeeds, from 3 to 400; of caſtle-ſoap, from 200 and a half, to 300 and 3 quarters.

SEROSITY, in medicine, an aqueous liquor, or lympha, found in the blood and other humours. See **Lympha.**

Degori defines it, a ſharp, bilious juice, approaching nearly the nature of blood; but which, being extravaſated, does not coagulate like the blood. See **Serum.**

Diſorders of the ſpleen are attended with *ſeroſities:* the kidneys help to purge off *ſeroſities.*

SERPENS, in aſtronomy, a conſtellation in the northern hemiſphere, called more particularly *ſerpens ophiuchi.*

The ſtars in the conſtellation *ſerpens*, in Ptolemy's catalogue are 17; in Tycho's 19; in the Britannic catalogue 59. The longitudes, latitudes, magnitudes, &c. whereof are as follow.

Names and ſituations of the ſtars.	Signs.	Longitude			Latitude North.			Magn.
		°	′	″	°	′	″	
	♏	7	38	45	16	00	52	7
		8	42	07	16	21	30	7
		10	33	31	22	10	00	6 7
Inform. preceding the neck and head of the ſerpent		12	04	08	17	50	23	6
		12	30	00	19	27	06	6
5								
		13	17	04	18	32	06	6
		10	01	04	29	59	11	7
		14	26	37	17	01	48	7
		9	57	20	32	58	55	6
		14	45	18	20	07	02	6
10								
		16	49	57	17	27	54	6
Firſt of three under the jaw		11	29	35	34	01	52	7
That in firſt bend of the neck		14	00	35	28	54	23	3
Preced. in 2d bend of the neck		17	35	18	18	17	38	6
		11	53	15	35	48	44	6
15								
		14	36	42	28	31	00	7
		13	00	57	33	24	38	6 7
Middle under the jaw		12	40	02	34	23	28	6
Third and ſubſequent		13	57	54	34	36	12	6
1ſt from the root of the neck		15	12	31	31	34	09	6
20								
Preced. in the □ of the head, or in extrem. of the cheek		12	51	05	38	08	21	5
		13	23	17	36	59	54	6
Preced. of 2 before the 2d bend		18	42	50	21	45	03	6
The lucid one of the neck		17	43	22	25	31	56	2
Poſterior in the 2d bend	♏	20	19	46	17	39	25	6
25								
That following the lucida to north, by Tycho reckon. the 16 oph.	♏	14	36	34	36	02	33	6
		18	04	56	26	34	53	4
South of □ in root of the neck		15	37	03	34	21	30	3
		21	31	46	15	51	00	6
A ſmall one under that		16	21	06	33	09	36	6
30								
Behind 2d bend before oph. hand		21	37	08	16	16	11	4
Subſequent before the 2d bend		20	27	05	21	47	38	6
In mouth, in middle of □ of head		15	26	47	37	08	50	4
Subſequent behind the 2d bend		21	57	13	16	41	49	6
That following the lucida to the ſouth		19	59	22	24	02	05	3
35								
North againſt the noſtrils in the □ of the head		15	11	21	40	01	39	4 3
		18	16	18	32	41	18	6
		19	58	18	28	15	34	7
In temples, 1 ſubſequent of □		18	23	04	35	19	32	3
That without the head to north		17	48	23	42	28	52	4
40								
		23	12	27	30	15	16	6
		23	45	58	28	58	33	7
		21	23	30	37	15	08	4
		22	29	59	37	03	33	6
That following preced. oph. hand		29	05	54	22	16	02	5
45								
		28	11	31	28	07	57	6
	♐	11	07	23	9	44	45	6
1ſt of 3, behind oph. hind thigh		15	57	39	10	18	11	4
Theſe 3 Tycho ranks am. thoſe of oph.		16	12	46	10	08	59	6
South of 2 following this		20	13	23	7	59	05	4
50								
North of theſe		21	07	05	10	32	52	5
In laſt bend, behind oph. hand		25	47	32	19	47	52	3
Laſt but one of the tail	♑	1	31	03	20	31	56	3
Of three ſmall ones following north		3	06	51	23	29	53	6
that ſouth		3	38	38	21	17	24	6
55								
Middle and ſubſequent		4	19	15	22	14	04	6
		11	31	28	29	19	27	6
In extremity of the tail		11	26	30	26	54	41	3
Small one adjacent to this	♑	11	31	48	25	13	45	6

SERPENT, a muſical inſtrument, ſerving as a baſs to the cornet, or ſmall ſhawm, to ſuſtain a chorus of ſingers in a large edifice.

It has its name *ſerpent*, from its figure; as conſiſting of ſeveral folds or wreaths, which ſerve to reduce its length, which would otherwiſe be ſix or ſeven feet.

It is uſually covered with leather; and conſiſts of three parts; a mouth-piece, a neck, and a tail.—It has ſix holes by means whereof it takes in the compaſs of two octaves.

SERPENTARIA, a medicinal plant, called by the ancients *piſtolochia*, and *dracunculus*; by us popularly, *ſnake-root*, and *dragon's wort.*

The ancients were only acquainted with two kinds of this plant; the *great* and the *ſmall:* but ſince the diſcovery of America, botaniſts have added ſeveral others; as, the *ſerpentaria Virginiana*, or *Virginia ſnake-root:* beſides that of Canada, and that of Braſil.

They are all ſuppoſed to be alexipharmicks, or counter-poiſons; and as ſuch are ingredients in Venice-treacle. The *great ſerpentaria*, called by the ancients *dracunculus major*, has its ſtem very ſtreight, ſmooth, and marked with red ſpots, like the ſkin of a ſerpent; whence, probably, as much as from its virtues, it is, that it takes its name.—Its root is big, round and white, covered with a thin ſkin.

The *ſmaller ſerpentaria* has its ſtalk much like that of the larger, only its leaves are like thoſe of ivy; whereas thoſe of the larger are folded in one another, after the manner of baſtard rhubarb.—Its root is round and bulbous.

The *ſerpentaria of Virginia*, called alſo *colubrina Virginiana*, *aſarum Virginianum*, *ſerpentaria nigra*, and *contrayerva of Virginia*, has its leaves green and large, almoſt in figure of a heart; its fruit round, and its root, which is of a very ſtrong aromatick ſmell, has, at bottom, an infinite number of long ſmall filaments, repreſenting a kind of beard.

It was firſt brought into Europe from Virginia by the Engliſh; where it is eſteemed a ſovereign antidote againſt the bite of the rattle ſnake.—We are told by travellers, that this root not only cures the bite of the rattle ſnake, but that that animal flies the ſmell thereof: for which reaſon the Indian, and other travellers, always carry it with them on the end of a ſtaff, to preſent towards the ſnake, when, by chance, they meet it.

SERPENTARIUS, in aſtronomy, a conſtellation of the northern hemiſphere, called alſo *Ophiuchus*, and anciently *Æſculapius.* See **Constellation.**

The ſtars in the conſtellation *ſerpentarius* in Ptolemy's catalogue are 29; in Tycho's 25; in the Britannic catalogue 69. The longitudes, latitudes, magnitudes, &c. whereof are as follow.

Names and ſituations of the ſtars.	Signs.	Longitude			Latitude.			Magn.
		°	′	″	°	′	″	
North in the preceding hand	♏	27	58	15	17	17	15N	3
South and ſubſequent		29	10	45	16	28	20N	3·4
North in the preceding knee	♐	0	58	20	13	00	18N	5

Names and ſituations of the ſtars.	Signs.	Longitude			Latitude			Magn.
		°	′	″	°	′	″	
South in the preceding leg	♐	3	14	18	1	36	09N	5
Under the ſoal of preceding foot		4	07	58	1	42	35 S	6
5								
	♏	28	53	05	26	22	14N	6
Middle in the preceding leg	♐	3	40	25	3	16	32N	4
North of theſe		4	21	26	5	14	41N	4
In preceding heel		5	19	53	0	28	40N	5
In the cubitus of preceding arm		1	15	38	23	35	38N	4
10								
		1	03	21	27	08	34N	6
	♏	29	53	43	33	00	52N	5
	♐	3	23	19	19	34	17N	6
South in preceding knee		4	53	55	11	25	27N	3
Informis between the legs		6	58	10	4	28	25N	5 6
15								
		3	30	28	26	10	57N	5 6
		4	17	45	23	12	34N	6
		5	20	03	23	11	30N	6
		4	12	41	30	41	18N	6
		5	38	12	24	17	04N	6
20								
		5	18	15	27	27	47N	5 6
		8	03	05	11	38	00N	5 6
		5	41	28	29	30	33N	5
		6	54	17	23	35	16N	6
		8	42	16	16	22	01N	6
25								
Preceding of 2 in fore ſhoulder		6	17	51	32	32	16N	4
Subſequent		7	30	12	31	52	20N	4
		10	09	14	18	28	18N	6
		8	12	21	36	42	00N	6
		8	38	08	36	15	20N	6
30								
		8	42	45	36	13	35N	6
Againſt the hind knee		13	39	28	7	14	12N	3
		15	28	32	3	56	17 S	6
In the toes of the hind foot		15	43	28	3	24	16 S	6 5
		15	55	15	3	20	08 S	6 7
35								
		16	12	46	3	29	39 S	6 7
In the back of the hind foot		16	06	17	1	08	53 S	6
Caput Herculis		11	48	47	37	18	55N	3
In the tibia of the hind leg		16	34	52	2	04	47N	4
		17	00	23	1	42	28 S	6 7
40								
Bright one in the ſoal of the foot		17	05	02	1	47	38 S	4 3
		17	34	53	4	54	52 S	4 5
		17	43	57	0	59	54 S	7
		18	31	16	6	34	12 S	6
Preceding in heel of hind foot		18	01	32	0	53	48 S	4 5
45								
In the middle of the back		16	15	52	27	20	39N	5
		19	00	57	0	31	20 S	7
Poſterior in the heel		19	09	46	0	38	18 S	6
		17	53	59	36	28	22N	7
Preceding of 2 following the foot		20	46	26	1	28	55N	6
50								
In ophiuchus's head		18	05	32	35	53	16N	2
		18	06	51	36	27	27N	7
In the cubitus of hind arm		20	02	33	15	15	23N	4
Laſt of thoſe that follow the foot		21	48	44	1	44	45N	5
North of 2 in poſterior ſhoulder		21	00	44	27	58	00N	3
55								
		21	22	46	26	01	24N	7
South in the hind ſhoulder		22	18	32	26	09	20N	3
		24	31	30	1	24	08 S	5
South in the hind hand		25	25	16	13	42	45N	5
		25	46	01	5	28	51N	7
60								
Of three informes behind the poſterior ſhoulder north		25	44	33	27	51	03N	4 5
middle		25	51	19	26	24	31N	4
ſouth		26	09	17	24	47	07N	4
North in the poſterior hand		26	27	33	15	18	06N	5
That following middle informis		27	09	16	26	03	54N	4
65								
North of thoſe following the head		27	47	41	32	11	53N	6
South and bright. of thoſe		27	49	43	33	01	25N	4
After 4 informes following the ſhould. preceding		28	21	39	27	26	14N	6
ſubſequent	♑	1	29	49	26	44	36N	6

SERPENTINE *verſes*, are ſuch as begin and end with the ſame word.—As,

Ambo florentes ætatibus, Arcades ambo.

Serpentine, in chymiſtry, a worm, or pipe of copper, or pewter, twiſted into a ſpiral, and aſcending from the bottom of the alembick to the capital, and ſerving as a refrigeratory in the diſtillation of brandy and other liquors. See Refrigeratory and Distillation.

Serpentine *marble*, or *ſtone*, a kind of marble called by the ancients *ophites*, from the Greek οφις, *ſerpent*, as being ſpeckled like a ſerpent's ſkin. See Marble and Stone.

The ground of the *ſerpentine* is blackiſh; but it is beſet with green and yellowiſh ſtains, ſtreaks, &c. being withal exceeding hard, precious and antique.

The ſcarceneſs of the *ſerpentine* is ſuch as only allows it to be uſed by way of incruſtation.—The largeſt pieces we know of, are ſome tables in the compartiments of the attic of the Pantheon; and two columns in the church of St. Laurence in Lucina at Rome.

There is alſo a ſoft kind of *ſerpentine* brought from Germany, uſed to make veſſels of, but not in building.

Serpentine *column*. See the article Column.

SERPI *grotta dei*. See the article Grotta.

SERPIGO, in medicine, a kind of herpes, popularly called a *tetter* or *ring-worm*. See Herpes.

It conſiſts of a number of very ſmall poſtules, riſing cloſe to each other, ſometimes in a circular form, with great pain and itching. It never comes to digeſtion, and is not cured without difficulty. For after it appears to have been quite extinguiſhed, it frequently breaks forth again at certain ſeaſons of the year.—The common people uſe to anoint it with ink: but where the diſeaſe is fixed, ſome univerſals ſhould be firſt applied. See Lichen, Impetigo, &c.

SERRATUS, in anatomy, a name given to ſeveral muſcles, from their reſemblance in ſhape, to a ſaw. Such are the

Serratus *anticus minor*, which ariſes thin and fleſhy from the ſecond, third, fourth, and fifth ſuperior ribs, and aſcending obliquely, is inſerted fleſhy into the proceſſus coracoides of the ſcapula, which it draws forward. It alſo helps in reſpiration.—See *Tab. Anat.* (Myol.) *fig.* 2. *n.* 10.

Serratus *anticus major*, comes from the whole baſis of the ſcapula, and is inſerted into the ſeven true ribs, and firſt of the falſe ribs, by ſo many diſtinct portions, repreſenting the teeth of a ſaw.—See *Tab. Anat.* (Myol.) *fig.* 7. *n.* 15. 15. *fig.* 1. *n.* 42. *fig.* 2. *n.* 26.

Serratus *poſticus ſuperior*, ariſes by a broad and thin tendon, from the two inferior ſpines of the vertebræ of the neck, and the three ſuperior of the back, and growing fleſhy, is inſerted into the ſecond, third, and fourth ribs, by ſo many diſtinct indentations.—See *Tab. Anat.* (Myol.) *fig.* 7. *n.* 31.

Theſe two help to draw the ribs upwards, and bring them to right angles with the vertebræ; and, conſequently, make the cavity of the thorax wider and ſhorter.

Serratus *poſticus inferior*, ariſes by a broad and thin tendon from the three inferior ſpines of the vertebræ of the back, and from the two ſuperior of the loins: its fibres, aſcending obliquely, grow fleſhy, and are inſerted by four indentations, into the four laſt ribs.

SERVAGE. See the article Service.

SERVANT, Servus, a term of relation, ſignifying a perſon who owes and pays a limited obedience for a certain time, to another, in quality of maſter. See Master.

The Romans, beſides their ſlaves, whom they alſo called *ſervi*; had another kind of *ſervants* whom they called *nexi* and *addicti*, who were ſuch as being in debt, were delivered up to their creditors by the prætor, to work out their debt; after which they were again at liberty. See Slave.

The pope, out of his wonderful humility, calls himſelf in his bulls, *the ſervant of the ſervants of God*, *ſervus ſervorum Dei*. The firſt who uſed the appellation, as Diaconus tells us, were pope Damaſus and Gregory the great; which laſt is ſaid to have uſed it to check, by his modeſty, the arrogance of John, patriarch of Conſtantinople, who took the title of *œcumenical*.—Du Cange adds, that the title *ſervant* has been aſſumed by ſome biſhops, ſome kings, and ſome monks.

SERVETISTS, the diſciples or followers of Michael Servetus, the ring-leader of the antitrinitarians of theſe laſt ages. See Antitrinitarian.

In reality, however, Servetus had not any diſciples; as being burnt, together with his books, at Geneva, in 1553, before his dogma's had time to take root.—But the name *Servetiſts* is given to the modern antitrinitarians, becauſe they follow the foot-ſteps he had marked out.

Sixtus Senenſis calls the anabaptiſts, *Servetiſts*, and ſeems to uſe the two terms indifferently. The truth is, in many things, the ancient anabaptiſts of Switzerland, &c. chimed in with Servetus. See Anabaptist.

As the books that he wrote againſt the trinity are very rare, his real ſentiments are but little known: M. Simon, who had a copy of the firſt edition, delivers them at large in his critical hiſtory.

Though Servetus uſes many of the ſame arguments againſt the trinity, as the Arians, yet he profeſſes himſelf very far from their ſentiments. He alſo oppoſes the Socinians in ſome things; and declares his diſſent from the opinions of Paulus Samoſatenus; though Sandius miſtakenly charges him with having the ſame ſentiments. In effect, he does not ſeem to have had any fixed regular ſyſtem of religion, at leaſt not in the firſt edition of his book againſt the trinity, publiſhed in 1531, under the title, *de trinitatis erroribus, libri ſeptem, per Michaelem Servetum, alias Reves, ab Arragonia Hiſpanum.*

The year following he publiſhed his dialogues on the myſtery of the trinity. In the preface to which laſt work, he declares himſelf diſſatisfied therewith.—It was on this account he undertook another on the ſame ſubject, of much greater extent; which did not appear till the year 1553, a little before his death. Thoſe of Geneva having ſeized the copies of this edition, had it burnt; nor were there above two or three that eſcaped; one of which was kept at Baſil, where the book was printed, but is now in the college library at Dublin.

It was lately put to the preſs, ſecretly, in England; but being diſcovered, the impreſſion was ſeized and deſtroyed.

SERVICE, or SERVAGE, SERVITIUM, in law, a duty which the tenant, by reaſon of his fee, owes to the lord. See FEE.

Ancient law-books make divers diviſions of *ſervice*, viz. into *perſonal*, *real* and *mixt*; *military* and *baſe*; *intrinſic* and *extrinſic*, &c. But ſince the ſtatute 12 Car. II. whereby all tenures are turned into free and common ſoccage; much of that learning is ſet aſide.—Yet it may not be amiſs to mention how the ſeveral kinds of *ſervice* are deſcribed in our ancient law-books.

Perſonal SERVICE, is that to be performed by the perſon.—Such is that due from a ſlave to his maſter.

Real SERVICE, is either *urbane* or *ruſtic*; which two kinds differ, not in the place, but the thing.—The firſt is that due from a building or houſe, in whatever place ſituate, whether city or country; as the keeping a drain, a viſta, or the like.

Ruſtic SERVICES, are thoſe due for grounds where there is no building; ſuch is the right of paſſage through ways, *&c.*

Mixt SERVICE, is that due from the perſon, by reaſon of the thing, as an uſu-fruit, *&c.* See SERGEANTY.

Our ancient law-books tell us of lands held of the king, by the tenant's letting a fart before the king on new year's-day; others, by furniſhing the king with whores whenever he travelled that way; others, by bringing the king a meſs of pottage at his coronation feaſt, *&c.*

There are alſo *natural* SERVICES.—For inſtance, if a man cannot gather the produce of his lands without paſſing through his neighbour's grounds, the neighbour is obliged to allow a paſſage, as a *natural ſervice*.

Forenſic, or *extrinſic* SERVICE, SERVITIUM *forenſicum*, &c. was a *ſervice* which did not belong to the chief lord, but to the king.

It was called *forenſic* and *extrinſic*, becauſe done *foris*, out of doors; and *extra ſervitium*.—We meet with ſeveral grants in the monaſticon, of all liberties, with the apurtenances, *ſalvo forenſi ſervitio*.

Intrinſic SERVICE, SERVITIUM *intrinſicum*, that due to the chief lord alone, from his vaſſals within his manor.

Frank SERVICE, SERVITIUM *liberum*, a *ſervice* done by the feudatory tenants, who were called *liberi homines*, and diſtinct from vaſſals: as likewiſe was their *ſervice*; for they were not bound to any baſe *ſervices*, as to plough the lord's lands, *&c.* but only to find a man and horſe to attend the lord into the army or court.

Baſe SERVICE,	See the articles	VILLENAGE,
Bord SERVICE,		BORD,
Foreign SERVICE,		FOREIGN,
Honorary SERVICE,		HONORARY,
Knights SERVICE,		KNIGHT,
Military SERVICE,		MILITARY,
Rent SERVICE,		RENT.
Ovelty of SERVICE,	See the articles	OVELTY,
Suit of SERVICE,		SUIT.

SERVIENTES *virgatores*. See VIRGATORES.

SERVITES, an order of religious, denominated from their vowing a peculiar attachment to the ſervice of the virgin.

The order was founded by ſeven Florentine merchants, who, about the year 1233, began to live in community on mount Senar, two leagues from Florence. In 1239, they received from the biſhop, the rule of St. Auguſtin; with a black habit, in lieu of a grey one which they had wore before.—In 1251, Bonfilio Monaldi, one of the ſeven, of ſimple prior of mount Senar, was named general.

The order was approved of by the council of Lateran, notwithſtanding the decree it had paſſed to prevent the multiplication of religious orders. And it was again approved by cardinal Raynerius, legat of pope Innocent IV; who put it under the protection of the holy ſee. The ſucceeding popes have granted it a great many favours, particularly Alexander IV. and Innocent VIII.—It has alſo undergone ſome reforms.

At preſent it conſiſts of twenty-ſeven provinces. It is become famous in Italy, by the hiſtory of the Council of Trent, of Fra. Paolo, a Venetian, who was a religious *ſervite*. M. Hermant gives this order the name of the *annunciate*, doubtleſs from this miſtake, that in ſome cities of Italy, they are called *religious of the annunciate*, becauſe in thoſe cities, their church is dedicated under that name. F. Archang. Giani derives the name *ſervites*, ſervants of the holy virgin, from hence; that when they appeared for the firſt time in the black habit given them by the biſhop, the ſucking children cried out; *Behold the ſervants of the virgin.*—There are alſo nuns of this order.

SERVITIA.—*Per quæ* SERVITIA. See the article PER.

SERVITIIS *conſuetudinibus*. See CONSUETUDINIBUS.

SERVITOR, in the univerſity of Oxford, a ſcholar or ſtudent, who attends or waits on another for his maintenance there.

SERVITORS *of bills*, denote ſuch ſervants or meſſengers of the marſhal of the king's-bench, as were ſent abroad with bills or writs, to ſummons men to that court.—They are now commonly called *tip-ſtaves*. See TIP-STAVES, MARSHAL, *&c.*

SERVITUDE, the condition of a ſervant, or rather ſlave. See SLAVE and SERVANT.

Under the declenſion of the Roman empire, a new kind of *ſervitude* was introduced, different from that of the ancient Romans: it conſiſted in leaving the lands of ſubjugated nations to the firſt owners, upon condition of certain rents, and ſervile offices, to be paid in acknowledgment.—Hence the names of *ſervi cenſiti*, *adſcriptitii* and *addicti glebæ*: ſome whereof were taxable at the reaſonable diſcretion of the lord; others at a certain rate agreed on; and others were mainmortable, who, having no legitimate children, could not make a will to above the value of five-pence, the lord being heir of all the reſt: others were prohibited marrying, or going to live out of the lordſhip. Moſt of which ſervices ſtill ſubſiſt in one province or other of France; though all aboliſhed in England.—Such was the original of our tenures, *&c.* See TENURE, VASSAL, VILLAIN, *&c.*

SERUM, a thin, tranſparent, watry liquor, ſomewhat ſaltiſh, which makes a conſiderable part in the maſs of blood. See HUMOUR and SEROSITY.

The blood conſiſts of two kinds of parts; the *cruor*, or red part; and the *ſerum*, or wheyiſh, limpid part. See BLOOD.

Mr. Boyle, and ſome others, have taken the *ſerum* to be more ponderous than the *cruor*; but Dr. Jurin, in the Philoſophical Tranſactions, from repeated experiments, aſſures us of the contrary. See CRUOR.

The *ſerum* is, in reality, the ſame with the lympha: it is carried by the arteries throughout the ſeveral parts of the body; whence it returns partly in the veins, and partly in the lymphatick veſſels. See LYMPHA.

The uſe of the *ſerum* is to nouriſh the parts of the body; and to render the chyle and blood more fluid. See NUTRITION.

Urine and ſweat, are nothing but *ſerum* drained of their nutritious parts, by repeated circulations, and ſecreted from the blood in the glands of the kidneys and ſkin. See URINE and SWEAT.

The redundancy and other vices in the *ſerum*, are the cauſe of various diſeaſes. See DISEASE.

SESAMOIDEA *oſſa*, in anatomy, ſeveral very ſmall bones, placed between the joints of the fingers and toes, to fortify them, and prevent diſlocations. See FINGER and TOE.

They have their name from their reſemblance in figure and ſize, to a grain of ſeſamum: from *ſeſamum*, and ειδος, *form*.

SESQUI, a Latin particle, ſignifying a whole and a half; which, joined with *altera*, *terza*, *quarta*, &c. is much uſed in the Italian muſick, to expreſs a kind of ratio's; particularly ſeveral ſpecies of triples. See RATIO.

The ratio expreſſed by *ſeſqui*, is the ſecond ratio of inequality, called alſo *ſuper-particular ratio*; and is, when the greater term contains the leſs, once, and ſome certain part, over: as 3 : 2; where the firſt term contains the ſecond once, and unity over; which is a quota part of two.

Now, if this part remaining, be juſt half the leſs term, the ratio is called *ſeſqui-altera*: if the remaining part be a third part of the leſſer term, as 4: 3, the ratio is called *ſeſquitertia*, or *ſeſqui-terza*: if a fourth part, as 5 : 4, the ratio is called *ſeſqui-quarta*; and thus to infinity, ſtill adding to *ſeſqui* the ordinal number of the ſmaller term.

In Engliſh, we ſometimes ſay, *ſeſqui-alteral*, or *ſeſqui-alterate*, *ſeſqui-third*, *ſeſqui-fourth*, &c.—Though this is a little hybrid.

As to the kinds of triples expreſſed by the particle *ſeſqui*, they are theſe.—The *greater perfect* SESQUI-ALTERATE, which is a triple, where the breve is three meaſures, or ſemi-breves, and that without having any point or dot annexed to it.

Greater imperfect SESQUI-ALTERATE, which is where the breve, when pointed, contains three meaſures, and without any point, two.

Leſſer perfect SESQUI-ALTERATE, which is where the ſemibreve contains three meaſures, and that without any point.

Leſſer imperfect SESQUI-ALTERATE, a triple, where the ſemi-breve, with a point, contains three meaſures, and two without.

According to Buontempi, one may likewiſe call the triples $\frac{6}{4}$ and $\frac{12}{8}$, *ſeſqui-alterates*.

SESQUI-OCTAVE, is a kind of triple, marked C $\frac{9}{8}$, called by the Italians, *nonuplá di crome*, where there are 9 quavers in every meaſure or bar, in lieu of 8.

Dupla SESQUI-QUARTA, is a kind of triple, marked C $\frac{9}{4}$, called by the Italians, *nonupla di ſemiminime*, where there are 9 crotchets in each meaſure, inſtead of 4; that is, three crotchets to each time.

SESQUI-ALTERATE, in geometry and arithmetic, is a ratio between two lines, two numbers, or the like, where one of them contains the other once, with the addition of an half. See RATIO.

Thus 6 and 9 are in a *ſeſqui-alterate* ratio; ſince 9 contains 6 once, and 3, which is half of 6, over: and 20 and 30 are in the ſame; as 30 contains 20, and half 20 or 10.

SESQUIDITONE, in muſic, a concord reſulting from the ſounds of two ſtrings, whoſe vibrations, in equal times, are to each other in the ratio of 5 to 6. See DITONE.

SESQUI-DUPLICATE *ratio*, is, when of two terms, the greater contains the leſs twice, with half another over: as 15 and 6; 50 and 20. See RATIO.

SESQUIQUADRATE, an aſpect, or poſition, of the planets, when at the diſtance of four ſigns and an half, or 135 degrees, from each other. See ASPECT.

SESQUIQUINTILE, an aſpect of the planets, when 108 degrees diſtant from each other. See QUINTILE and ASPECT.

SESSION, SESSIO, denotes each ſitting, or aſſembly, of a council. See COUNCIL.

In quoting councils, we ſay, in ſuch a *ſeſſion*, ſuch a canon, *&c.*

SESSION *of Parliament* is the ſeaſon, or ſpace, from its meeting to its prorogation, or diſſolution. See PROROGATION and PARLIAMENT.

SESSION, in law, denotes a ſitting of juſtices in court, upon their commiſſion.—As, the *ſeſſion of oyer and terminer*, &c.

Quarter-ſeſſions, called *general-ſeſſions*, or *open-ſeſſions*, ſtand oppoſite to *eſpecial*, otherwiſe called *privy-ſeſſions*, which are procured upon ſome ſpecial occaſion, for the more ſpeedy diſpatch of juſtice. See QUARTER-SESSIONS.

Petit-ſeſſions, or *ſtatute-ſeſſions*, are kept by the high-conſtable of every hundred, for the placing of ſervants. See STATUTE.

Kirk SESSIONS. See the article KIRK.

SESTERCE, SESTERTIUS, a ſilver coin, in uſe among the ancient Romans, called alſo *nummus*, and ſometimes *nummus ſeſtertius*. See COIN and NUMMUS.

The *ſeſterce* was the fourth part of the denarius, and originally contained two as's and an half; eſtimated in Engliſh money, at ſomewhat above one penny half-penny farthing.

The *ſeſterce* was at firſt denoted by L L S; the two L's ſignifying two libræ, and the S half. But the librarii, afterwards, converting the two L's into an H, expreſſed the *ſeſterce* by H S.

The word *ſeſtertius* was firſt introduced by way of abbreviation for *ſemiſtertius*, which ſignifies two, and a half of a third, or literally, only half a third; for in expreſſing half a third, it was underſtood, that there were two before.

Some authors make two kinds of *ſeſterces*; the *leſs*, called *ſeſtertius*, in the maſculine gender; and the *great* one, called *ſerſtertium* in the neuter: the firſt, that we have already deſcribed; the latter containing a thouſand of the other, or 8 *l.* 1 *s.* 1 *d.* ½ of our money.—Others will have any ſuch diſtinction of great and little *ſeſterces*, unknown to the Romans: *ſeſtertius*, ſay they, was an adjective, and ſignified *as ſeſtertius*, or two as's and a half: and when uſed plurally, as in *quinquaginta ſeſtertium*, or *ſeſtertia*, it was only by way of abbreviation, and there was always underſtood *millia* thouſands: this laſt is the more probable opinion.

To be qualified for a Roman knight, an eſtate of four hundred thouſand *ſeſterces* was required; and, for a ſenator, eight hundred thouſand.

Authors alſo mention a copper *ſeſterce*, worth about ⅓ of a penny Engliſh.

SESTERCE, SESTERTIUS, was alſo uſed in antiquity, for a thing containing two wholes and a half of another: as *as* was taken for any whole, or integer. See AS.

SESTUPLO, in muſic. See the article SEXTUPLE.

SETHIANS, or SETHINIANS, SETHIANI, or SETHINIANI, a branch of the ancient gnoſticks; thus called, becauſe of their pretending to fetch their origin from Seth, ſon of Adam, whom they called Jeſus and Chriſt; from an opinion, that Seth and Jeſus were the ſame perſon, who came down from heaven two ſeveral times.

As the *Sethians* had the ſame philoſophy with the other gnoſticks, they had numerous other fables in their ſyſtem. See GNOSTICKS.

They pretended to have ſeveral books of the ancient patriarchs; particularly, ſeven of their great maſter Seth: beſides one of Abraham, full of manifeſt falſities, which yet they called *apocalypſe*, or *revelation*. The book called the *little Geneſis*, anciently very common in the churches of the eaſt, was borrowed from them. From this book they learned the name of Seth's wife, who, they ſay, was called *Horæa*.—Some imagine, they borrowed a great many of their fictions from the Helleniſt Jews.

SETIER. See the article SEPTIER.

SETON, SETACEUM, in chirurgery, *&c.* a kind of topical remedy, uſed like a cautery, or an iſſue, to divert defluxions from the eyes; by making a wound in the ſkin of the hind-part of the neck, which is kept ſuppurating, by means of a little ſkain of ſilk, or cotton, paſſed through it.

Setons are alſo applied to ſuch as are apt to fall into epileptic fits.—They are of more efficacy than a common iſſue, but are preſcribed with much the ſame intention. See ISSUE.

The like operation is frequently practiſed on horſes, *&c.* and called, by the farriers, *rowelling*. See ROWEL.

Setons evacuate with a gentle pain; ſhake the nervous kind; diſcharge ſerum, and give vent to repletions and coacervations of humours.

SETTER, among farmers.—To *ſetter*, is to cut the dew-lap of an ox or cow, and into the wound to put helleboraſter, whereby an iſſue is made, for all humours to vent themſelves. See ISSUE and SETON.

SETTING, in aſtronomy, the withdrawing of a ſtar or planet; or its ſinking below the horizon. See RISING.

Aſtronomers and poets make three different kinds of *ſetting* of the ſtars: *coſmical*, *acronycal*, and *heliacal*.—The firſt, when the ſtar *ſets* with the ſun. See COSMICAL. The ſecond, when it *ſets* at the time the ſun riſes. See ACRONYCAL. The third, when it is immerged, and hid, in the ſun's rays. See HELIACAL.—To find the times of the *ſetting* of the ſun and ſtars. See GLOBE.

SETTING, in ſea language.—To *ſet the land or the ſun by the compaſs*, is to obſerve how the land bears on any point of the compaſs; or, on what point of the compaſs the ſun is.

Alſo, when two ſhips ſail in ſight of one another, to mark on what point the chaſed bears, is termed, *ſetting the chaſe by the compaſs*.

SEVENTH, SEPTIMA, in muſic, an interval, called by the Greeks *heptachordon*; whereof there are four kinds.

The firſt, the *defective* or *diminiſhed ſeventh*, conſiſting of three tones, and three greater ſemi-tones, as from *ut* ſharp to *ſi* flat.

The ſecond, called by Zarlin and the Italians, *ſemi-ditono con diapente*, or *ſettimo minore*; is compoſed diatonically of ſeven degrees, and ſix intervals, four whereof are tones, and the reſt greater ſemi-tones, as from *de* to *ut*; and chromatically of ten ſemi-tones, ſix whereof are greater, and four leſs: it takes its form from the *ratio quadripartiens quintas*, 9 to 5,

The third, called by the Italians, *il ditono con diapente*, or *ſettimo maggiore*, is compoſed diatonically, like the former, of ſeven degrees, and ſix intervals, ſix whereof are full tones, and a ſingle one a greater ſemi-tone; ſo that only one greater ſemi-tone is wanting of the octave: as from *ut* to *ſi*; and chromatically of eleven ſemi-tones, ſix whereof are greater, and five leſſer. It takes its origin from the ratio of 15 to 8.

The fourth, is the *redundant ſeventh*, compoſed of five tones, a greater ſemi-tone, and a leſſer; as from *ſi* flat to *la* ſharp: ſo that it only wants a comma of an octave; that is, ſo much as it wants to render its ſecond ſemi-tone a greater. Hence many confound it with the octave itſelf; maintaining, with good reaſon, that only the three firſt *ſevenths* can be of any uſe. See OCTAVE.

SEVENTH *pair of nerves*. See the article NERVE.

SEVERAL *tail*, in law, is that whereby land is given, and *entailed ſeverally* to two: *e. gr.* to two men and their wives, and the heirs of their bodies begotten. See TAIL.

The donees, here, have joint eſtate for their two lives, yet they have *ſeveral* inheritance; for the iſſue of the one ſhall have his moiety, and that of the other, the other.

SEVERANCE, in law, the *ſingling*, or *ſevering* two or more that join, or are joined, in the ſame writ, or action.

As if two join in a writ, *de libertate probanda*, and the one be afterwards non-ſuited; here, *ſeverance* is permitted, ſo, as notwithſtanding the non-ſuit of the one, the other may ſeverally proceed.

There is alſo *ſeverance of the tenants* in an aſſize; when one, two, or more diſſeiſees appear upon the writ, and not the other. And—*Severance in debt*, where two executors are named plaintiffs, and the one refuſes to proſecute.—We alſo meet with *ſeverance of ſummons*, *ſeverance in attaints*, &c.

SEVERIANS, SEVERIANI.—There were two ſects of hereticks thus called: the firſt, who are as old as the beginning of the third century, were an impure branch of gnoſticks; thus called from their chief, *Severus*. See GNOSTICK.

The ſecond, by ſome called *Severites*, were a ſect of acephali, or Eutychians: their leader, Severus, was preferred to the ſee of Antioch in 513, where he did his utmoſt to ſet aſide the council of Chalcedon. See EUTYCHIANS and MONOTHELITES.

SEWER*, in the houſhold, an officer who comes in before the meat of a king, or nobleman, to place and range it on the table.

* The word is formed from the French, *eſcuyer*, eſquire, gentleman or uſher. See ESQUIRE.

SEWERS, in building, are ſhores, conduits, or conveyances, for the ſuillage and filth of a houſe. See CLOACA.

Sir Henry Wotton adviſes, that art imitate nature in theſe ignoble conveyances, and ſeparate them from ſight (where there wants a running water) into the moſt remote, loweſt and thickeſt part of the foundation, with ſecret vents paſſing up through the walls, to the wide air, like tunnels; which all the Italian architects commend for the diſcharge of noiſom vapours, though elſewhere little practiſed.

Clerk of the SEWERS. See the article CLERK.

SEX, SEXUS, ſomething in the body, which diſtinguiſhes male from female. See MALE and FEMALE.

The number of perſons, of the two *ſexes*, are exceedingly well balanced; ſo that every man may have his wife, and every woman her huſband. See MARRIAGE.

Hermaphrodites have both the *ſexes* in one. See HERMAPHRODITE.

PHRODITE.—It is expreſly forbid by the law of Moſes, to diſguiſe the *ſex*.

SEXAGENARY, Sexagenarius, ſomething relating to the number ſixty: more particularly, a perſon arrived at the age of ſixty years.

Some caſuiſts diſpenſe with *ſexagenarians* for not faſting: the Papian law prohibits *ſexagenarii* from marriage; becauſe, at that age, the blood and humours are frozen.

Sexagenary *arithmetick*. See Sexagesimal and Arithmetic.

Sexagenary *tables*, are tables of proportional parts, ſhewing the product of two *ſexagenaries* that are to be multiplied; or the quotient of two to be divided.

SEXAGESIMA, the ſecond ſunday before lent, or the next to ſhrove-ſunday.—So called, as being about the ſixtieth day before Eaſter. See Lent.

Sexageſima, is that which follows ſeptuageſima, and precedes quinquageſima. See Septuagesima, &c.

SEXAGESIMAL, or Sexagenary *arithmetic*, a method of computation, proceeding by ſixties. See Arithmetic.

Such is that uſed, in the diviſion of a degree into 60 minutes; of the minute, into 60 ſeconds; of the ſecond, into 60 thirds, &c. See Degree.

SEXAGESIMALS, or Sexagesimal *fractions*, are fractions, whoſe denominators proceed in a ſexagecuple ratio; that is, a prime, or the firſt minute $= \frac{1}{60}$, a ſecond $= \frac{1}{3600}$, a third $\frac{1}{210000}$. See Degree.

Anciently there were no other than *ſexageſimals* uſed in aſtronomical operations, and they are ſtill retained in many caſes; though decimal arithmetic begins to grow in uſe now in aſtronomical calculations.

In theſe fractions, which ſome alſo call *aſtronomical fractions*, the denominator being always 60 or a multiple thereof, is uſually omitted, and the numerator only written down; thus, $4^{\circ}, 59', 32'', 50''', 16''''$, is to be read, 4 degrees, 59 minutes, 32 ſeconds of a degree, or 60th part of a minute, 50 thirds, 16 fourths, &c. See Fractions.

SEXTANS, Sextant, a *ſixth* part of certain things.

The Romans divided their *as*, which was a pound of braſs, into 12 ounces: the ounce was called *uncia*, from *unum*; and two ounces *ſextans*, as being the *ſixth* part of the pound. See the article As.

Sextans was alſo a meaſure, which contained two ounces of liquor, or two cyathi.—Hence, *Sextantes, Calliſte, duos infunde Falerni.*

SEXTANT, in mathematicks, denotes the *ſixth* part of a circle; or an arch, comprehending 60 degrees. See Arch and Degree.

Sextant is more particularly uſed for an aſtronomical inſtrument, made like a quadrant; excepting that its limb only comprehends 60 degrees.

The uſe and application of the *ſextant*, is the ſame with that of the quadrant. See Quadrant.

In the obſervatories of Greenwich, and Pekin, are very large and fine *ſextants*. See Observatory.

SEXTARIUS, an ancient Roman meaſure, containing two cotylæ, or two heminæ. See Measure, Cotyla and Hemina.

SEXTILE, Sextilis, the poſition or aſpect of two planets, when at 60 degrees diſtant; or at the diſtance of two ſigns from one another —It is marked thus (✳). See Aspect and Semisextile.

SEXTON, a church officer, thus called by corruption of the Latin *ſacriſta*, or Saxon *ſegerſtane*, which denotes the ſame. His office is to take care of the veſſels, veſtments, &c. belonging to the church; and to attend the miniſter, churchwardens, &c. at church.—He is uſually choſe by the parſon only.

The office of *ſexton of the pope's chapel* is appropriated to the order of the hermits of St. Auguſtin.—He is generally a biſhop, though ſometimes the pope only gives a biſhoprick, *in partibus*, to him he confers the poſt on.—He takes the title of *prefect of the pope's ſacriſty*; has the keeping of the veſſels of gold and ſilver, the relicks, &c.

When the pope ſays maſs, the *ſexton* always taſtes the bread and wine firſt. If it be in private he ſay maſs, his holineſs, of two wafers, gives him one to eat; and if in publick, the cardinal, who aſſiſts the pope in quality of deacon, of three wafers, gives him two to eat. When the pope dies, he adminiſters to him the ſacraments of extreme unction, &c. and enters the conclave, in quality of firſt conclaviſt.

SEXTUPLE, Sestuplo, in muſic, denotes a mixed ſort of triple time, which is beaten in double time. See Triple.

This, the Italians call *ſeſtuplo*; the French ſometimes call it *ſixth time, meſure a ſex temps*; though improperly: according to M. Broſſard it ought rather to be denominated *triple binary* time. See Time.

Authors uſually make mention of three ſpecies hereof; to which M. Broſſard adds two more, *viz.*

Sextuple *of the ſemi-breve*, by the French called *triple* of 6 for 1, as being denoted by thoſe two numbers, $\frac{6}{1}$; or becauſe here are required ſix ſemi-breves to a meaſure, in lieu of one, *viz.* three riſing and three falling.

Sextuple *of the minim*, called by the French triple of 6 for 2, as being denoted by $\frac{6}{2}$, which ſhew that ſix minims are here required to a meaſure, inſtead of 2.

Sextuple *of the crotchet*, called by the French triple of 6 for 4, becauſe denoted by C $\frac{6}{4}$, or $\frac{6}{4}$, which ſhew that there muſt be 6 crotchets to a meaſure, in lieu of 4.

Sextuple *of the chroma*, by the French called triple of 6 for 8, as being denoted by $\frac{6}{8}$; which ſhew that 6 quavers here make the meaſure or ſemi-breve, inſtead of 8.

Sextuple *of the ſemichroma*, or triple of 6 for 16; ſo called, becauſe denoted by $\frac{6}{16}$, which ſhews, that 6 quavers are here required to a meaſure, inſtead of 16.

SEXTUS, Sixth, in the canon law, denotes a collection of decretals, made by pope Boniface VIII. uſually thus called from the title, which is *liber ſextus*; as if it were a *ſixth* book added to the five books of decretals, collected by Gregory IX. See Decretal.

The *ſextus* is a collection of papal conſtitutions, publiſhed after the collection of Gregory IX. containing thoſe of the ſame Gregory, Innocent IV. Alexander IV. Urban IV. Clement IV. Gregory X. Nicholas III. and Boniface VIII. by whoſe order the compilation was made.—The perſons employed in making of it were Will. de Mandegot, archbiſhop of Ambrun; and Berenger, biſhop of Beziers, and Richard of Sienna. See Canon *law*.

SGRAFFIT, Sgraffiata, in painting, denotes *ſcratchwork*; a method of painting in black and white only, not in freſco, yet ſuch as will bear the weather.

Sgraffit performs both the deſign and the painting, all in one. —It is chiefly uſed to embelliſh the fronts of palaces, and other magnificent buildings. See Scratch-Work.

SHACK, in ancient cuſtoms, a liberty of winter-paſturage.

In the counties of Norfolk and Suffolk, the lord of the manor has *ſhack*, i. e. a liberty of feeding his ſheep at pleaſure upon his tenants lands, during the ſix winter months.

In Norfolk, *ſhack* alſo extends to the common for hogs, in all mens grounds, from the end of harveſt, till ſeed-time.—Whence, to go *a-ſhack*, is to feed at large.

SHADOW, Shade, a plane where the light is weakened by the interpoſition of ſome opake body before the luminary. See Light.

The *ſhadow* of yew, cypreſs, and wallnut-tree, are held dangerous to men: the *ſhadow* of aſh is deadly to ſerpents; for which reaſon ſerpents are never found under its *ſhade*.

The doctrine of *ſhadows* makes a conſiderable article in opticks and geography, and is the foundation of dialling. See Dial and Dialling.

Shadow, in opticks, is a privation of light, by the interpoſition of an opake body.

As nothing is ſeen but by light, a mere *ſhadow* is inviſible: when therefore we ſay, we ſee a *ſhadow*, we mean partly, that we ſee bodies placed in the *ſhadow*, and illuminated by light, reflected from collateral bodies; and partly, that we ſee the confines of the light. See Light.

If the opake body, that projects the *ſhadow*, be perpendicular to the horizon, and the place it is projected on, be horizontal; the *ſhadow* is called a *right ſhadow*.—Such are the *ſhadows* of men, trees, buildings, mountains, &c.

If the opake body be placed parallel to the horizon, the *ſhadow* is called a *verſed ſhadow*; as the arms of a man ſtretched out, &c.

Laws of the projection of Shadows *from opake bodies.*—1°. Every opake body projects a *ſhadow* in the ſame direction with its rays; that is, towards the part oppoſite to the light. Hence, as either the luminary, or the body changes place, the *ſhadow* likewiſe changes.

2°. Every opake body projects as many *ſhadows*, as there are luminaries to inlighten it.

3°. As the light of the luminary is more intenſe, the *ſhadow* is the deeper. Hence the intenſity of the *ſhadow* is meaſured by the degrees of light that ſpace is deprived of.

4°. If a luminous ſphere be equal to an opake one it illumines, the *ſhadow* this latter projects, will be a cylinder; and, of conſequence, will be propagated ſtill equal to itſelf, to whatever diſtance the luminary is capable of acting: ſo that, if it be cut in any place, the plane of the ſection will be a circle equal to a great circle of the opake ſphere.

5°. If the luminous ſphere be greater than the opake one, the *ſhadow* will be conical. If therefore the *ſhadow* be cut by a plane parallel to the baſe, the plane of the ſection will be a circle, and that ſo much the leſs, as it is at a greater diſtance from the baſe.

6°. If the luminous ſphere be leſs than the opake one, the *ſhadow* will be a truncated cone: conſequently it grows ſtill wider and wider: and therefore, if cut by a plane parallel to the ſection, that plane will be a circle ſo much the greater, as it is further from the baſe.

7°. To find the length of the *ſhadow*, or the axis of the ſhady cone, projected by a leſs opake ſphere, illumined by a larger; the ſemi-diameters of the two, as C G, and I M, *Tab. Opticks, fig.* 12. and the diſtances between their centers G M being given, Draw F M parallel to C H; then will $IM = CF$; and therefore F G will be the difference of the ſemi-diameters G C and I M. Conſequently, as F G, the difference of the ſemi-diameters is to G M, the diſtance of the centers; ſo is C F, the ſemi-diameter of the opake ſphere, to M H, the diſtance of the vertex of the ſhady cone, from the center of the opake ſphere. If then, the ratio of P M to M H be very ſmall; ſo that M H and P H do not differ very notably, M H may be taken for the axis of the *ſhadowy* cone: otherwiſe the part P M muſt be ſubtracted from it; which to find, ſeek the arch L K; for, this ſubtracted from a quadrant, leaves the arch I Q; which is the meaſure of the angle I M P. Since then, in the triangle M I P, which is rectangular at P, beſides the angle I M Q, we have the ſide I M; the ſide M P is eaſily found by plain trigonometry.

E. gr. If the ſemi-diameter of the earth $MI = 1$; the ſemi-diameter of the ſun, according to Ricciolus, will be $= 33$; and therefore $GF = 32$; and of conſequence $MH = 228\frac{1}{8}$; ſince then, M P is found by calculation to bear a very ſmall ratio to M H; P H may be taken to be $288\frac{1}{8}$ ſemi-diameters of the earth.

Hence, as the ratio of the diſtance of the opake body, from the luminous body G M, to the length of the *ſhadow* M H, is conſtant; if the diſtance be diminiſhed, the length of the *ſhadow* muſt be diminiſhed likewiſe. Conſequently, the *ſhadow* continually decreaſes as the opake body approaches the luminary.

8°. To find the length of the *ſhadow* projected by an opake body, T S, *fig.* 13; the altitude of the luminary, *e. gr.* of the ſun above the horizon, *viz.* the angle S V T, and that of the body being given.—Since, in the rectangle triangle S T V, which is rectangular at T, we have given the angle V, and the ſide T S; the length of the *ſhadow* T V is had by trigonometry. See TRIANGLE.

Thus, ſuppoſe the altitude of the ſun 37° 45′, and the altitude of a tower 187 feet; T V will be found $241\frac{1}{2}$ feet.

9°. The length of the *ſhadow* T V, and the height of the opake body T S, being given; to find the altitude of the ſun above the horizon.

Since, in the rectangle triangle S T V, rectangular at T, the ſides T V and T S, are given; the angle V is found thus: as the length of the *ſhadow* T V, is to the altitude of the opake body T S, ſo is the whole ſine to the tangent of the ſun's altitude above the horizon. Thus, if T S be 30 foot, and T V 45′; T V S will be found 33° 41′.

10°. If the altitude of the luminary, *e. gr.* the ſun above the horizon T V S, be 45°, the length of the *ſhadow* T V is equal to the height of the opake body.

11°. The lengths of the *ſhadows* T Z and T V of the ſame opake body T S, in different altitudes of the luminary, are as the co-tangents of thoſe altitudes.

Hence, as the co-tangent of a greater angle is leſs than that of a leſs angle; as the luminary riſes higher, the *ſhadow* decreaſes: whence it is, that the meridian *ſhadows* are longer in winter than in ſummer.

12°. To meaſure the altitude of any object, *e. gr.* a tower A B (*fig.* 14.) by means of its *ſhadow* projected on a horizontal plane.

At the extremity of the *ſhadow* of the tower C, fix a ſtick, and meaſure the length of the *ſhadow* A C; fix another ſtick in the ground of a known altitude D E, and meaſure the length of the *ſhadow* thereof E F. Then, as E F is to A C, ſo is D E to A B. If therefore, A C be 45 yards, and E D 5 yards; A B will be $32\frac{1}{7}$ yards.

13°. The *ſhadows* of equal opake bodies have their lengths proportionable to their diſtances from the ſame luminaries equally high. Hence, as the opake approaches to the luminary, or the luminary to the opake body, the length of the *ſhadow* is increaſed; and as either of them recedes, is diminiſhed. Hence, from the different lengths of *ſhadows* of the ſame opake bodies at the ſame height of the Sun, Moon, Jupiter, Venus, *&c.* we may gather their different diſtances from the earth; though not accurately enough for aſtronomical purpoſes. See DISTANCE.

14°. The right *ſhadow* is to the height of the opake body, as the co-ſine of the luminary, to the ſine.

15°. The altitude of the luminary being the ſame in both caſes, the opake body A C (*fig.* 15.) will be to the verſed *ſhadow* A D, as the right *ſhadow* E B, to its opake body D B. Hence, 1°. The opake body is to its verſed *ſhadow*, as the co-ſine of the altitude of the luminary to its ſine; conſequently, the verſed *ſhadow* A D is to its opake body A C, as the ſine of the altitude of the luminary to its co-ſine.—2°. If $DB = AC$; then will D B be a mean proportional between E B and A D; that is, the length of the opake body is a mean proportional between its right *ſhadow* and verſed *ſhadow*, under the ſame altitude of the luminary.—3°. When the angle C is 45°, the ſine and co-ſine are equal; and therefore the verſed *ſhadow* equal to the length of the opake body.

16°. A right ſine is to a verſed ſine of the ſame opake body, under the ſame altitude of the luminary, in a duplicate ratio of the co-ſine to the ſine of the altitude of the luminary.

Right and verſed *ſhadows*, are of conſiderable uſe in meaſuring; as by their means we can commodiouſly enough meaſure altitudes, both acceſſible and inacceſſible, and that too when the body does not project any *ſhadow*. The right *ſhadows* we uſe, when the *ſhadow* does not exceed the altitude; and the verſed *ſhadows*, when the *ſhadow* is greater than the altitude. On this footing, is made an inſtrument called the *quadrat*, or *line of ſhadows*, by means whereof the ratio's of the right and verſed *ſhadow* of any object, at any altitude, are determined. This inſtrument is uſually added on the face of the quadrant. Its deſcription and uſe, ſee under the article QUADRAT.

SHADOW, in geography.—The inhabitants of the globe are divided, with reſpect to their *ſhadows*, into *aſcii*, *amphiſcii*, *heteroſcii*, and *periſcii*. The firſt are ſuch as at a certain ſeaſon of the year have no *ſhadows* at all, while the ſun is in the meridian. See ASCII. The ſecond are ſuch, whoſe meridian *ſhadow*, at one ſeaſon of the year looks to the north, and at another to the ſouth. See AMPHISCII. The third are ſuch, whoſe *ſhadows* conſtantly tend either to the north or ſouth. See HETEROSCII. The laſt are thoſe, whoſe *ſhadows*, in one and the ſame day, ſucceſſively turn to all the points. See PERISCII.

SHADOW, in painting, denotes an imitation of a real *ſhadow*, effected by gradually heightening, and darkening the colours of ſuch figures as by their diſpoſition cannot receive any direct rays from the luminary ſuppoſed to enlighten the piece. The management of the *ſhadows* and lights, makes what painters call the *clair obſcure*: the laws whereof ſee under the article CLAIR-OBSCURE.

SHADOW, in perſpective.—The appearance of an opake body, and a luminous one, whoſe rays diverge (*e. gr.* a candle, lamp, *&c.*) being given; to find the juſt appearance of the *ſhadow* according to the laws of perſpective.—The method is this. From the luminous body, which is here conſidered as a point, let fall a perpendicular to the perſpective plane or table; *i. e.* find the appearance of a point upon which a perpendicular drawn from the middle of the luminary, falls on the perſpective plane; and from the ſeveral angles, or raiſed points of the body let fall perpendiculars to the plane. Theſe points whereon the perpendiculars fall, connect by right lines, with the point upon which the perpendicular let fall from the luminary, falls. And continue the lines to the ſide oppoſite to the luminary. Laſtly, through the raiſed points, draw lines through the center of the luminary, interſecting the former; the points of interſection are the terms or bounds of the *ſhadow*.

E. gr. Suppoſe it required to project the appearance of the *ſhadow* of a priſm, A B C F E D (*Tab. Perſpective*, *fig.* 8. N°. 2.) ſcenographically delineated: ſince A D, B E, and C F, are perpendicular to the plane, and L M is likewiſe perpendicular to the ſame; (for the luminary is given, if its altitude L M be given) draw the right lines G M and H M, through the points D and E. Through the raiſed points A and B, draw the right lines G L and H L, interſecting the former in G and H. Since the *ſhadow* of the right line A D terminates in G; and the *ſhadow* of the right line B E in H; and the *ſhadows* of all the other right lines conceived in the given priſm are comprehended within theſe terms; G D E H will be the appearance of the *ſhadow* projected by the priſm.

Geneſis of Curves by SHADOWS. See the article CURVE.

SHAFT, in building: the *ſhaft of a column*, is the body thereof; thus called from its ſtreightneſs: but by architects more frequently the *fuſt*.—See *Tab. Archit. fig.* 24, 26, 28, 30, 32. See alſo FUST and COLUMN.

SHAFT, is alſo uſed for the ſpire of a church-ſteeple.—And for the ſhank or tunnel of a chimney. See CHIMNEY, TUNNEL, *&c.*

SHAFT *of a mine*, is the hollow entrance or paſſage into a mine, ſunk or dug to come at the ore. See MINE and ADIT. In the tin-mines, after this is ſunk about a fathom, they leave a little, long, ſquare place, which is called a *ſhamble*.

SHAGREEN, or CHAGREEN, a kind of grained leather, chiefly uſed in the covers of caſes, books, *&c.* It is very cloſe and ſolid, and covered over with little roundiſh grains, or papillæ. It is brought from Conſtantinople, Tauris, Tripoli, Algiers, and ſome parts of Poland.

There is a diſpute among authors what the animal is whence the *ſhagreen* is prepared? Rauwolf aſſures us it is the onager, which according to him and Bellonius is a kind of wild aſs. V. Ray Synopſ. An. Quad. p. 63.

It is added, that it is only the hard part of the ſkin is uſed for this purpoſe. Borel ſays it is a ſea-calf; others a kind of fiſh called by the Turks *ſhagrain*, whoſe ſkin is covered with grains; and thoſe ſo hard that they will raſp and poliſh wood.

There is alſo a ſort of *ſhagreen* made of the ſkin of the ſquatina, in Engliſh the monk or angel fiſh. V. Willoughby Ichth. p. 80.

Manner of preparing SHAGREEN,—The ſkin being juſt flead off, is ſtretched out, covered over with muſtard-ſeed, and the ſeed bruiſed on it; and thus expoſed to the weather for ſome days; then tanned.

The beſt is that brought from Conſtantinople, of a browniſh colour; the white is the worſt. It is extremely hard, yet, when ſteeped in water, becomes very ſoft and pliable; whence it becomes of great uſe among caſe-makers. It takes any colour that is given it; red, green, yellow, black. It is frequently counterfeited by maroquin formed like *ſhagreen*; but this laſt is diſtinguiſhed by its peeling off, which the firſt does not. See MOROCCO.

SHALLOP, SHALLOOP, or SLOOP, is a ſmall light veſſel, with only a ſmall main-maſt, and fore-maſt, and lug-ſails, to hale up, and let down, on occaſion.

Shalloops are commonly good ſailers; and are therefore often uſed as tenders upon men of war.

SHAMADE, in war. See the article CHAMADE.

SHAMMY, or CHAMMY, CHAMOIS, a kind of leather, either dreſſed in oil, or tanned; much eſteemed for its ſoftneſs, pliancy, *&c.*

It is prepared from the ſkin of the *chamois*, or *ſhamois*, a kind of rupi-capra, or wild goat, called alſo *iſard*; inhabiting the mountains of Dauphine, Savoy, Piedmont, and the Pyreneans.

Beſides the ſoftneſs and warmneſs of the leather, it has the faculty of bearing ſoap without damage, which renders it very uſeful on many accounts.

In France, *&c.* ſome wear the ſkin raw, without any preparation: it is alſo uſed for the purifying of mercury; which is done by paſſing it through the pores of this ſkin, which are very cloſe. See MERCURY.

The true *chamoiſe leather* is counterfeited with common goat, kid, and even ſheep-ſkin; the practice of which makes a particular profeſſion, called by the French *chamoiſure.* The laſt, though the leaſt eſteemed, is yet ſo popular, and ſuch vaſt quantities prepared, eſpecially about Orleans, Marſeilles and Tholouſe, that it may not be amiſs to give the method of preparation.

Manner of SHAMOISING, *or of preparing ſheep, goat, or kid-ſkins in oil, in imitation of* SHAMMY.—The ſkins being waſhed, drained, and ſmeared over with quick-lime on the fleſhy ſide, are folded in two, length-wiſe, the wool outwards, and laid on heaps; and ſo left to ferment eight days; or, if they had been left to dry after fleaing, 15 days.

Then they are waſhed out, drained, and half dried; laid on a wooden leg, or horſe, the wool ſtripped off with a round ſtaff for the purpoſe, and laid in a weak pit, the lime whereof had been uſed before, and had loſt the greateſt part of its force.

After 24 hours they are taken out, and left to drain 24 more; then put in another ſtronger pit. This done, they are taken out, drained, and put in again, by turns; which begins to diſpoſe them to take oil: and this practice they continue for ſix weeks in ſummer, or three months in winter; at the end whereof they are waſhed out, laid on the wooden leg, and the ſurface of the ſkin on the wool-ſide peeled off, to render them the ſofter; then, made into parcels, ſteeped a night in the river, in winter more; ſtretched, ſix or ſeven over one another, on the wooden leg; and the knife paſſed ſtrongly on the fleſh ſide, to take off any thing ſuperfluous, and render the ſkin ſmooth.

Then they are ſtretched, as before, in the river; and the ſame operation repeated on the wool ſide; then thrown into a tub of water with bran in it, which is brewed among the ſkins till the greateſt part ſtick to them; and then ſeparated into diſtinct tubs, till they ſwell, and riſe of themſelves above the water.

By this means, the remains of the lines are cleared out: they are then wrung out, hung up to dry on ropes, and ſent to the mill, with the quantity of oil neceſſary to ſcour them: the beſt oil is that of ſtock-fiſh.

Here, they are firſt thrown in bundles into the river for 12 hours, then laid in the mill-trough and fulled without oil till they be well ſoftened; then oiled with the hand, one by one, and thus formed into parcels of four ſkins each, which are milled and dried on cords a ſecond time, then a third; then oiled again and dried.

This proceſs is repeated as often as neceſſity requires: when done, if there be any moiſture remaining, they are dried in a ſtove, and made up into parcels wrapped up in wool: after ſome time they are opened to the air, but wrapped up again as before, till ſuch time as the oil ſeems to have loſt all its force, which it ordinarily does in 24 hours.

The ſkins are then returned from the mill to the *chamoiſer*, to be ſcoured; which is done by putting them in a lixivium of wood-aſhes, working and beating them in it with poles, and leaving them to ſteep till the lye have had its effect; then they are wrung out, ſteeped in another lixivium, wrung again, and this repeated till all the greaſe and oil be purged out. When this is done, they are half dried, and paſſed over a ſharp-edged iron inſtrument, placed perpendicular in a block, which opens, ſoftens, and makes them gentle: laſtly, they are thoroughly dried, and paſſed over the ſame inſtrument again, which finiſhes the preparation, and leaves them in form of *ſhammy*.

Kid and goat-ſkins are *ſhamoiſed* in the ſame manner as thoſe of ſheep; excepting that the hair is taken off, without the uſe of any lime; and that when brought from the mill, they undergo a particular preparation, called *ramalling*; the moſt delicate and difficult of all the others.

It conſiſts in this, that as ſoon as brought from the mill, they are ſteeped in a fit lixivium; taken out, ſtretched on a round wooden leg, and the hair ſcraped off with the knife; this makes them ſmooth, and, in working, caſt a kind of fine nap. The difficulty is in ſcraping them evenly.

SHANKER, in medicine, a malignant ulcer, which gnaws and eats the fleſh; uſually occaſioned by ſome venereal diſorder. See CARCINOMA.

SHARP, in muſic, a kind of artificial note or character, (thus formed ♯) which being prefixed to a note, ſhews that it is to be ſung or played a ſemi-tone, or half a note higher than the natural note would have been without. See SEMI-TONE.

When the ſemi-tone takes the name of the natural note next above it, it is marked with a character called a *flat.* See FLAT.

It is indifferent, in the main, which of the two be uſed, though there are ſometimes particular reaſons for the one rather than the other.

The uſe of flats and *ſharps*, is by way of remedy to the deficiencies of the fixed ſcales of inſtruments. See SCALE.

SHARP *nails.* See the article NAIL.

SHARPING *corn*, a cuſtomary preſent of corn, which at every Chriſtmas, the farmers, in ſome parts of England, make to their ſmith, for ſharpening their ploughing-irons, harrow-tines, *&c.*

SHEADING, a riding, tything, or diviſion in the Iſle of Man: the whole iſland being divided into ſix *ſheadings*, in every one of which, is a coroner or chief conſtable, appointed by the delivery of a rod at the annual convention.

SHEARING. See the article SHEERING.

SHEATHING *of a ſhip*, is the caſing that part of her hull, which is to be under water, with ſomething to keep the worms from eating into her planks.

It is uſually done by laying tar and hair mixed together all over the old plank, and then nailing on thin new boards.—But this hinders a ſhip's ſailing; and therefore of late ſome have been *ſheathed* with milled lead, which is much ſmoother, and conſequently better for ſailing, and alſo more cheap and durable than the other way.—It was firſt invented by Sir Philip Howard, and major Watſon.

SHEER *hooks*, or SHEAR-*hooks*, are large iron hooks, uſed when a ſhip deſigns to board another.

SHEER-*ſhanks*, or SHEAR-*ſhanks*, a kind of knots by which they tie up and ſhorten a runner when it is too long.

SHEERING, or SHEARING, in the woollen manufactures, the cloth-worker or *ſheerman's* craft or office; or the cutting off, with large *ſheers*, the too long and ſuperfluous nap, or ſhag found on the ſurface of woollen ſtuffs, fuſtians, cottons, *&c.* in order to make them more ſmooth and even.—Stuffs are *ſhorn* more or fewer times, according to their quality and fineneſs. See CLOTH.

Some uſe the phraſe *ſheering of hats*, for the paſſing of hats made of wool, over the flame of a clear fire made of ſtraw, or ſpray, to take off the long hairs. Others call this *flaming*, and others *ſindging*. Other hats, as caſtors, ſemi-caſtors, *&c.* are *ſhorn*, by rubbing them over with pumice-ſtone. See HAT.

SHEERING, or SHEARING, is alſo a ſea term for the motion of a ſhip when ſhe goes in and out, and not right forward; either by reaſon ſhe is not ſteered ſteadily, or on account of the ſwift running of the tide, *&c.* in which caſe ſhe is ſaid to *ſheer*, or go *ſheering*.

When ſhe lies at anchor, near port, *&c.* by reaſon of the ſwift running of a tide-gate, *&c.* ſhe is ſaid to be in danger of *ſheering home her anchor*, or *ſheering a-ſhore*.

SHEETING *nails.* See the article NAIL.

SHEKEL, SHEKLE, SHECKLE, SICLUS, an ancient Hebrew coin, equal to four Attick drachms, to four Roman denarii, or to 2s. 3d. $\frac{1}{4}$ ſterling.

In the Bible, the *ſhekel* is ſometimes alſo rendered *ſolidus*, and ſometimes *ſtater*.

The Jewiſh doctors are in great doubt about the weight of the *ſhekel*; and it is only by conjecture, and by the weight of the modern *ſhekel* that the ancient one is judged equal to four Attick drachmas.

Father Souciet has deſcribed ſeveral of theſe *ſhekels*, in his diſſertation on the Hebrew medals. By the way he obſerves, that the third and fourth parts of a *ſhekel*, deſcribed by Waſerus *de Ant. Num. Heb.* are counterfeits of that author.

The Hebrew *ſhekel*, according to F. Merſenne, weighs 268 grains, and is compoſed of 20 oboli, each obolus weighing 16 grains of wheat. This, he ſays, is the juſt weight, as he found by weighing one in the French king's cabinet. He adds, that ſuch as come ſhort of this weight have been filed or clipped. Biſhop Cumberland tells us, he has weighed ſeveral, and always found them near the weight of a Roman ſemuncia, or half-ounce.

Some are of opinion, that the Hebrews had two kinds of *ſhekels*: the *common* or *prophane ſhekel*, called *didrachma*; and the *ſhekel of the ſanctuary*, which laſt they will have to be double the former.—By this expedient they think we may get clear of ſome difficulties occurring in ſcripture, where things are mentioned as of incredible weight; particularly that paſſage where it is ſaid, that every time Abſalom cut off his hair, the weight whereof uſed to incommode him, he cut off the weight of 200 *ſhekels*.

But Villalpandus will not hear of ſuch a diſtinction; nor does biſhop Cumberland, M. Morin, *&c.* take the opinion to have any foundation. The *prophane ſhekel*, or *ſhekel* of four drachmas, they agree, was the ſame with the *ſacred ſhekel*; and it was only called by this laſt name in regard the ſtandard thereof was kept in the ſanctuary, by the prieſts. See SANCTUARY.

It is maintained by ſeveral, that the Jews had alſo a gold *ſhekel*, *ſiclus aureus*, of the ſame weight with the ſilver one, and valued at 1l. 16s. 6d. ſterling.

The *ſhekel* is ſuppoſed to have been firſt ſtruck in the deſart, on the footing of 100 to the Attick mina, weighing 160 grains of wheat, and current for 10 geratis or oboli. But afterwards they were ſtruck of double that weight.

Some will have the *ſhekel* to be the oldeſt piece of money in the world, as being in uſe in Abraham's time; but this was not coined, or ſtamped; nor had any other value beſides its intrinſic worth. See MONEY.

Xenophon mentions *ſhekels*, as current in Arabia: Du Cange ſpeaks of others ſtruck and current in England.

SHELF, is what the miners, eſpecially in tin mines, call the *faſt-country*; by which they mean, an imaginary ſurface of the earth, which, at the concuſſion of the waters at the deluge, was never moved; and to the *ſhelf*, they think, all the loads or mineral veins at firſt lay even, and parallel; though after the flood, ſome were elevated, ſome depreſſed.

By *ſhelf*, they now mean that hard ſurface, or coat of the earth which lies under the mould, uſually about a foot deep; for they ſuppoſe, that ſince the flood, the earth hath gotten a new coat of vegetable earth, or ſuch as is made by the corruption of vegetables and animals. See DELUGE, STRATA, FOSSIL, MINE, *&c.*

SHELL, *Concha*, in natural hiſtory, a hard cruſt, ſerving to cover, and incloſe a kind of animals, hence called *teſtaceous*. See TESTACEOUS.

Naturaliſts have been generally miſtaken as to the manner of the formation of *ſhells*. The animal and its *ſhell* have been always ſuppoſed to ariſe from the ſame egg. But M. Reaumur has ſhewn the ſuppoſition to be falſe. He has found, by certain experiments, that the *ſhells* of garden ſnails are formed of a matter which perſpires from their bodies, and hardens and condenſes in the air.

It is certain, that all animals perſpire, and are encompaſſed with a kind of cloud or atmoſphere, which exhales from them, and, in all probability, aſſumes pretty nearly their external figure. Snails have nothing peculiar in this reſpect; unleſs that the atmoſphere of their perſpiration, condenſes and hardens about them, and forms a viſible cover, whereof the body is the mould or model; whereas that of other animals is evaporated and loſt in air. This difference ariſes from the different ſubſtance perſpired; that coming from ſnails, is viſcous and ſtony.—This is no ſuppoſition; but a matter of fact, which M. Reaumur has well proved by experiments.

On this principle, though the *ſhell* ſerve the animal as an univerſal bone, yet it does not grow like a bone, nor like any of the other parts, by vegetation; that is, by a juice circulating within itſelf; but by an external addition of parts laid one over another; as is commonly ſuppoſed of ſtones.

But, to conſider the thing more particularly; it is to be remembered, that the ſnail's head is always at the aperture of the *ſhell*, and its tail in the tip or point of the *ſhell*; and that its body is naturally turned into a ſpiral form, the different ſpires or circumvolutions whereof are in different planes.—This ſuppoſed: take the ſnail juſt hatched; as the matter it perſpires petrifies around it, there muſt be firſt formed a little cover, proportioned to the bigneſs of its body; and as its body is yet too little to make a circumvolution of a ſpiral, at leaſt a whole one; this cover will only be the centre, or, at moſt, the firſt beginning of a little circle of a ſpiral. But the animal grows: if, then, it ceaſed to perſpire, it is evident, all that is added to its body, would remain naked: but as it continues to perſpire, it makes itſelf a cover in proportion as it needs it.—Thus is an entire circumvolution of a ſpiral formed; and thus is a ſecond and a third; and ſtill every new ſpire is bigger than the laſt; in regard the animal grows in thickneſs, at the ſame time as it grows in length. When the animal ceaſes to grow, yet it does not ceaſe to perſpire; accordingly, the *ſhell* continues to grow thicker, though not longer.

SHELLS, *Conchæ* and *Cochleæ*, make a conſiderable article in the cabinets of the curious: the fineſt and rareſt are theſe that follow, *viz.*—The *papal crown*, *tiara pontificia*, which takes its name from its form, and which is all ſtreaked with red on a white ground.—The *feather*, *pluma*, whoſe whiteneſs, with its carnation ſtains, have an admirable effect.—The *Hebraica*, which, on a ground as white as ſnow, has ſpots as black as jet, much reſembling Hebrew characters.—The *Chineſe ſnail*, *limax Sinicus*, which has a green and black embroidery, on a dark brown ground.—The *cloth of gold*, *textile aureum*, remarkable for an admirable tiſſue of yellow, brown and black.—The *cloth of ſilver*, *textile argenteum*, which does not come behind that of gold in beauty.—The *leopard*, *pardus*, which is all ſpeckled.—The *tyger*, *tigris*, *ſeu concha cinericea*, whoſe ſpots exceed thoſe of the leopard.—The *hart's-horn*, *cornu cervinum*, which has black ſtains on a white ground.—The *purſe*, *crumena*, thus called from its figure; it is embroidered with three or four colours.—The *ſun-dial*, *ſolarium manuarium*.—The *caterpillar*, *eruca*, both denominated from their forms.—Add the *nerites*, *white nautilus*, *lepas*, *lepaſia*, *apporays*, *tuba*, *galea*, &c.

In Aldrovand, Geſner and Fabius Columna, we have all that the ancients have ſaid on the ſubject of *ſhells*.—In 1692, Dr. Liſter publiſhed a natural hiſtory of *ſhells*, in folio, full of cuts, repreſenting the various kinds of *ſhells*.—Under the firſt claſs, he ranges the terreſtrial or land *ſhells*: in the ſecond, the freſh-water *ſhells*, both thoſe called *turbinata*, and thoſe *bivalvia*: in the third he diſpoſes all the ſea *ſhells*, the *bivalvia* and *multivalvia*: and in the fourth, he divides, into ſeveral claſſes, the ſea *ſhells*, called *turbinata*. See BIVALVE, TURBINATED, *&c.*

SHELLS, are frequently found under ground, in places far remote from the ſea, in mines, and even on the tops of mountains: but how they ſhould come there, is a thing the naturaliſts are greatly divided about.—The moſt uſual and eaſy opinion is, that thoſe parts have been formerly ſea, or at leaſt have been overflown thereby; and many even go as high as the grand deluge. See DELUGE.

But others take theſe to be the natural places of their birth or formation; ſome of them being found little other than crude clay; others of the ſame texture with the rock whereto they grow; and others of as abſolute a *ſhelly* ſubſtance, as any in the ſea.—In effect, theſe may be only ſo many different gradations of nature, which can as well produce *ſhells* in mines, as in the ſea; there being no want of ſaline or earthy particles for the purpoſe; nor is there any great difference between ſome ſorts of ſpars, and ſea *ſhells*. See SPAR, PETRIFACTION, *&c.*

Dr. Liſter judges, that the *ſhells* found in ſtone-quarries, were never any part of an animal; and gives this reaſon for it, that quarries of different ſtone, yield quite different ſpecies of *ſhells*; different not only from one another, but from any thing in nature beſides, which either ſea or land does yield. See FOSSIL.

Littoral SHELLS. See the article LITTORAL.

SHELL *gold*. See the article GOLD.

SHELL *ſilver*. See the article SILVER.

Tortoiſe SHELL. See the article TORTOISE.

SHELL-FISH, a collective name for all fiſhes naturally incloſed in *ſhells*. See TESTACEOUS.

SHELTERS *horizontal*. See the article HORIZONTAL.

SHERIFF *, or SHIRE-REVE, an officer in each county of England, whoſe buſineſs is to ſee the execution of the king's orders, particularly of all writs directed to him out of the king's courts; to impannel juries; bring cauſes and criminals to trial; take care of the diſpatch of affairs both civil and criminal; collect the revenues, impoſts, fines, confiſcations, *&c.* ariſing in his county, for which he accounts to the exchequer; and to attend and aſſiſt the itinerant judges. See COUNTY, *&c.*

* The word is formed from the Saxon, *ſcir*, province, ſhire, and *geref*, grave, reve or prefect; or rather from *ſcyran*, to divide; the *ſheriff* being denominated from the firſt diviſion of the kingdom into counties. See GRAVE and REVE.—In Latin he is called *vice-comes*. See VISCOUNT.

The *ſheriff* is, as it were, the ſoul of the policy of the county, and the preſerver of the peace thereof. His office only laſts one year.

He was anciently choſe by the people in the county-court, as knights now are for parliament; but he is now nominated by the king: in order to which the itinerant judges every year nominate ſix perſons for each county; whereof the lord chancellor, treaſurer, privy-council, *&c.* aſſembled in the exchequer-chamber, make choice of three; out of which number, the king chuſes one.—Only the county of Middleſex has two *ſheriffs*, choſe, as anciently, by the citizens of London: and Durham, Weſtmoreland, and Cumberland, none.

The *ſheriff*, beſides his miniſterial office, of executing proceſſes and precepts of the courts, and making returns of the ſame, has a judicial office, whereby he holds two ſeveral kinds of courts; the one called the *ſheriff's turn*, held in divers places of the county, to enquire of all offences againſt common law not prohibited by any ſtatute.—The other called the *county court*, wherein he hears and determines all civil cauſes of the county, under forty ſhillings. See COURT and TURN.

Appoſal of SHERIFFS. See the article APPOSAL.

SHEWAGE. See the article SCAVAGE.

SHIDES. See the article SHINGLES.

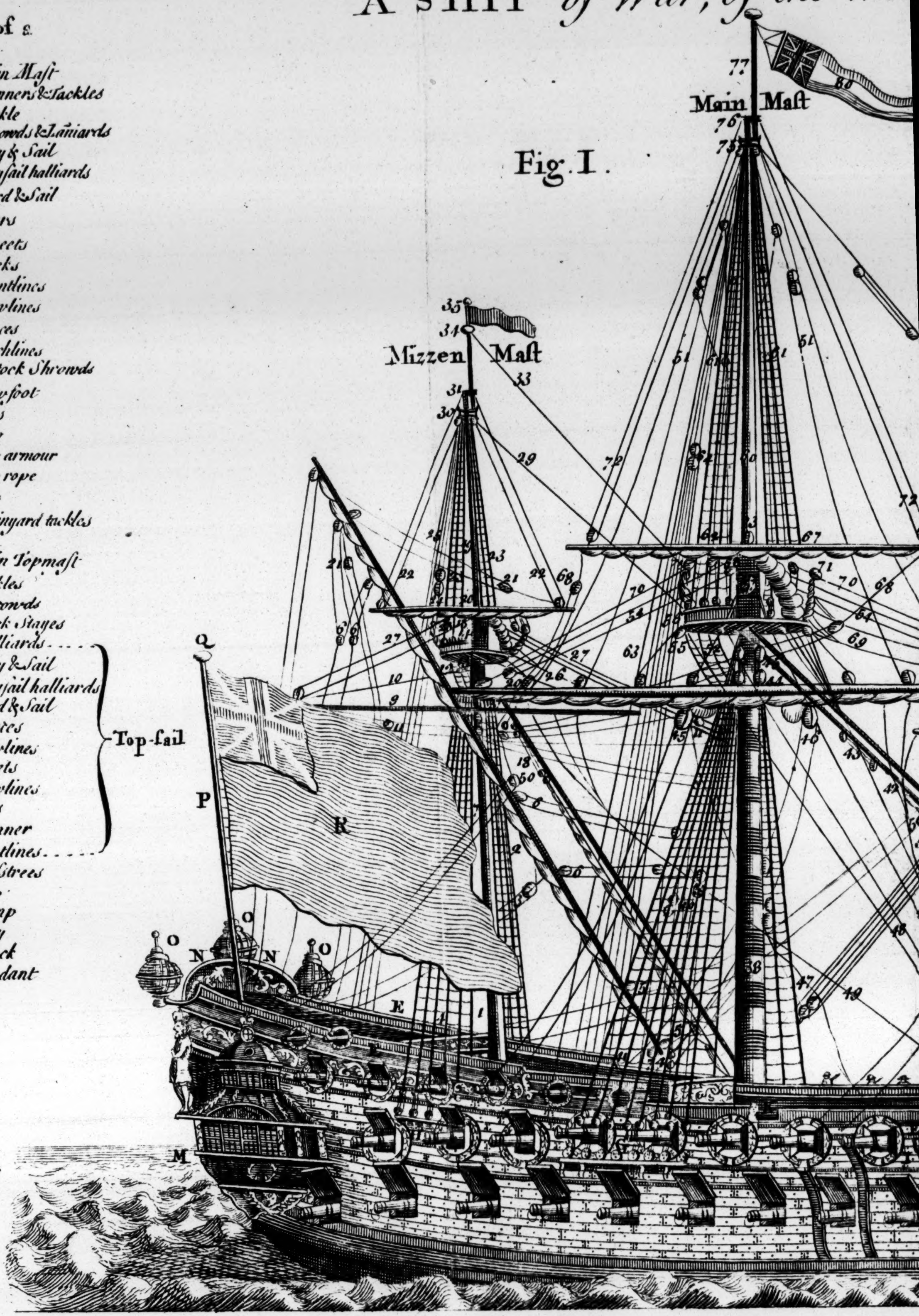
SHIELD, an ancient weapon of defence, in form of a light buckler; born on the arm to fend off lances, darts, *&c.* See BUCKLER.

The form of the *ſhield* is repreſented by the eſcutcheon in coats of arms. See ESCUTCHEON.

SHIELD, in heraldry, denotes the eſcutcheon or field whereon the bearings of an armory are placed. See FIELD.

A SHIP *of War, of the thi*

Fig. I.



Parts, Members &c. of a SHIP.

Mizzen Mast and Rigging
1 Mizzen Mast
2 Yard & Sail
3 Sheet
4 Shrowds & Laniards
5 Bowlines
6 Brayles
7 Jeer
8 Peak Hallyards
9 Cross jack Yard
10 Lifts
11 Braces
12 Puttock Shrouds
13 Mizzen top
14 Top Armour
15 The Capp
16 Crowfoot
17 Stay & Sail
18 Halliards

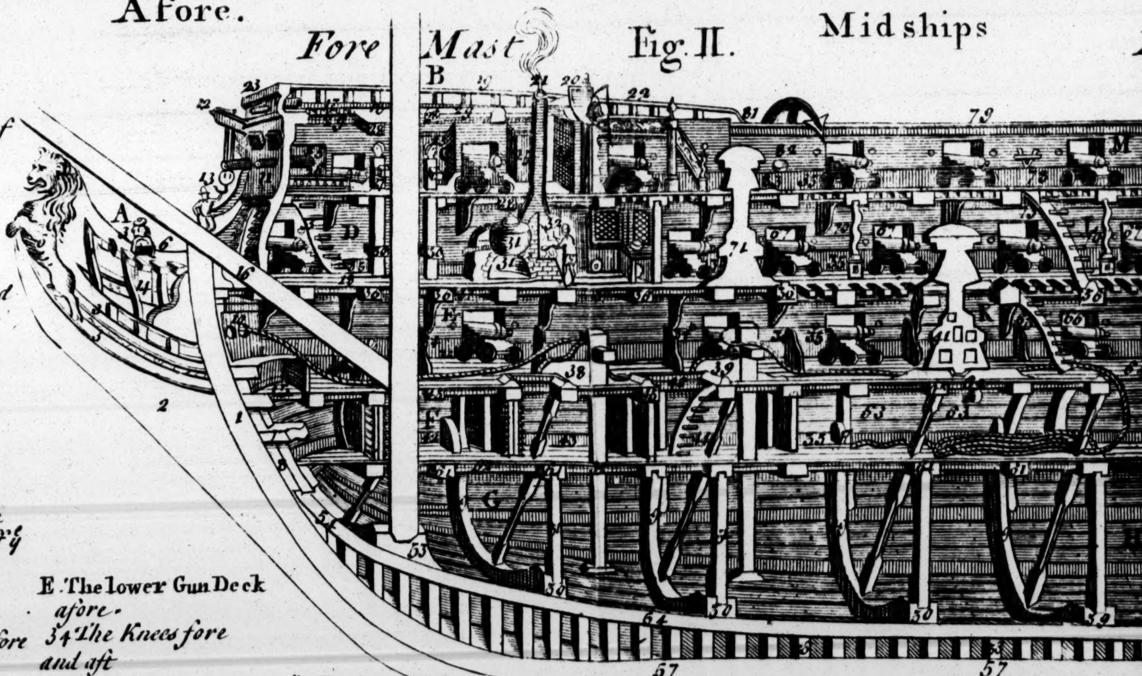
Mizzen Top Mast and Rigging
19 Topmast
20 Yard & Sail
21 Braces
22 Lifts
23 Shrowds
24 Halliards
25 Back stays
26 Bowlines
27 Sheets
28 Clewlines
29 Stay
30 Crosstrees
31 Cap
32 Stump
33 Stay
34 Truck
35 Spindle
36 Vane
37 Slings of the Crossjack Yard

Main Mast and Rigging
38 Main Mast
39 Runners & Tackles
40 Tackle
41 Shrowds & Laniards
42 Stay & Sail
43 Staysail halliards
44 Yard & Sail
45 Jeers
46 Sheets
47 Tacks
48 Buntlines
49 Bowlines
50 Braces
51 Leachlines
52 Puttock Shrowds
53 Crowfoot
54 Lifts
55 Top
56 Top armour
57 Top rope
58 Cap
59 Mainyard tackles

Main Top Mast and Rigging
60 Main Topmast
61 Tackles
62 Shrowds
63 Back Stayes
64 Halliards
65 Stay & Sail
66 Staysail halliards
67 Yard & Sail
68 Braces
69 Bowlines
70 Sheets
71 Clewlines
72 Lifts
73 Runner
74 Buntlines
(64–74: Top-sail)
75 Crosstrees
76 Cap
77 Stump
78 Stay
79 Truck
80 Pendant

Section *of a* SHIP *of War, of yᵉ Firs*

Fig. II.



Parts, Members &c. Withinside

A. The Head, *Containing*
1 The Main Stem
2 The Knee of the Head, or Cutwater
3 The Lower and Upper Cheek
4 The Trail Board
5 The Figure
6 The Gratings
7 The Brackets
8 The false Stem
9 The Brest hooks
10 The Hawse-hole out of which runs the Cable
11 The Bulk head afore
12 The Cat-Head
13 The Cat Hook
14 Necessary Seat
15 The Manger within Board
16 The Bowsprit

B. Upon the Fore-Castle.
17 The Gratings
18 The Partners of the Foremast
19 The Gunwale
20 The Belfry
21 The Funnel for Smoak
22 The Gangway going off yᵉ Fore-Castle
23 The Fore Castle Guns

C In the Fore Castle
24 The door of yᵉ Bulk head afore
25 The Officers Cabbins
26 The Stair Case
27 The Fore top sail-Sheet Bits
28 The Beams
29 The Carlines

D. Middle Gun Deck afore
30 The Fore Jeer Bits
31 The Oven and Furnace of Copper
32 The Captains Cook Room
33 The Ladder or way up into the Fore Castle

E. The lower Gun Deck afore.
34 The Knees fore and aft
35 The Spirketings yᵉ first Streak next to each Deck. yᵉ next under yᵉ Beams being call'd Clamps
36 The Beams of yᵉ Midᵉ Gun Deck Fore and Aft
37 The Carlines of yᵉ Middle Gun Deck fore and aft
38 The fore Bits
39 The After or Main Bits
40 The Hatch way to the Gunners & Boatswains store-Rooms
41 The Jeer Capston

F. The Orlop.
42 The Gunners, 43 Boatswains, 44 Carpenters: Store Rooms
45 The Beams of the Lower Gun Deck
46 The Pillars, 47 The Riders: Fore & Aft.
48 The Bulk Head of the Store Rooms

G. The Hold.
49 The Foothook Rider, 50 The Floor Rider, 51 The Standirt: Fore & Aft.
52 The Pillers
53 The Step of yᵉ Fore Mast
54 The Kelson or false Keel and Dead Rising
55 The Dead Wood

H. A Midships in yᵉ Hold
56 The Floor Timber
57 The Keel
58 The Well
59 The Chain Pumps
60 The Step of yᵉ Main Mast
61 Beams, 62 Carlines: of the Orlop Fore & Aft.

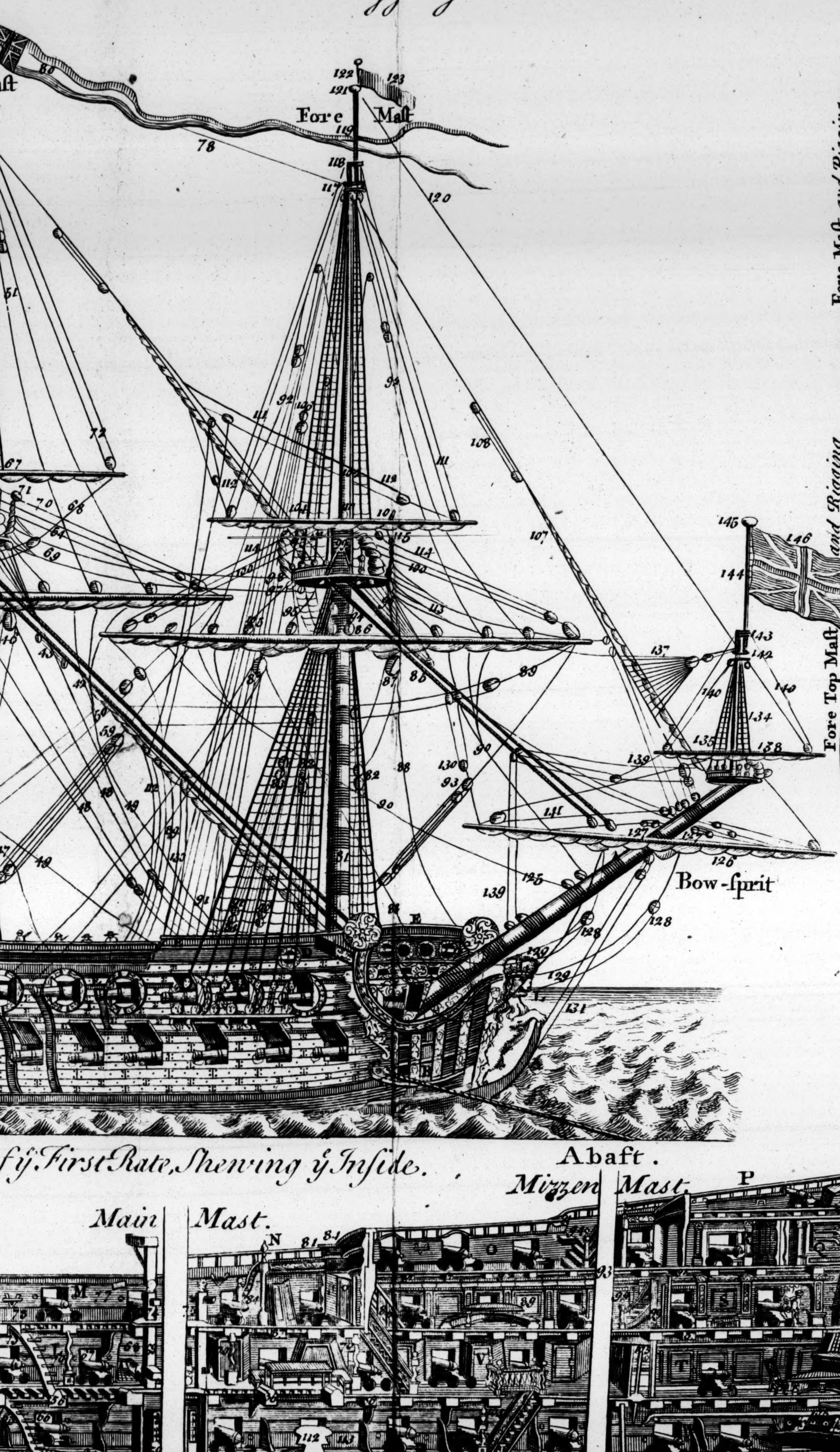
I. The Orlop A Midships
63 The Cable Tyre
64 The Main Hatch Way

K. The lower Gun Deck A Midships.
65 The Ladder leading up to the Middle Gun Deck
66 the Lower Tyre Ports

L. The Middle Gun Deck A Midships.
67 The M
68 The F
69 The M
70 Twiste
71 The Ca
72 The G
73 The L Upper D

M. The U A M
74 Main
75 The l of the M

he third Rate, With Rigging &c. at Anchor:



Parts, Members &c. of a SHIP

Fore Maſt and Rigging
- 81 Foremaſt
- 82 Runner & Tackles
- 83 Tackle
- 84 Shrouds & lanniards
- 85 Stay
- 86 Yard & Sail
- 87 Sheets
- 88 Tack's
- 89 Braces
- 90 Bowline
- 91 Buntlines
- 92 Leachlines
- 93 Yard Tackle
- 94 Jeers
- 95 Puttock Shrowds
- 96 Crowfoot
- 97 Top
- 98 Top Armour
- 99 Top Rope
- 100 Lifts
- 101 Cap

Fore Top Maſt and Rigging
- 102 Fore Topmaſt
- 103 Tackles
- 104 Shrowds
- 105 Back Stays
- 106 Halliards
- 107 Stay & Sail
- 108 Halliards
- 109 Yard & Sail
- 110 Runner
- 111 Lifts
- 112 Braces
- 113 Bowlines
- 114 Sheets
- 115 Clewlines
- 116 Buntlines
- 117 Croſstrees
- 118 Cap
- 119 Stump
- 120 Stay
- 121 Truck
- 122 Spindle
- 123 Vane

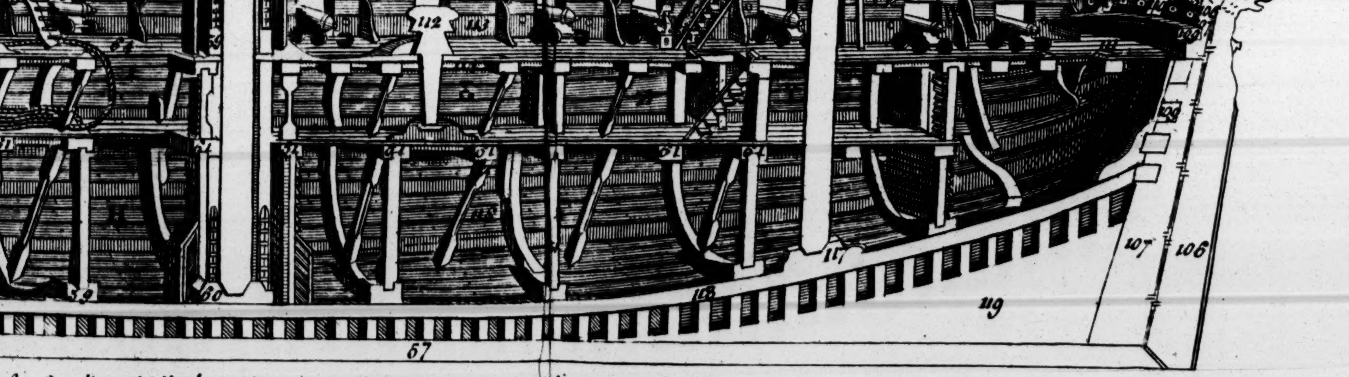
Bowſprit & Rigg:
- 124 Bow ſprit
- 125 Horſe
- 126 Yard & Sail
- 127 Lifts
- 128 Sheets
- 129 Clewlines
- 130 Braces
- 131 Bobſtay
- 132 Top
- 133 Top Armour

(126–131: Sprit ſail)

Sprit-Sail Top Sail & Rigging.
- 134 Topmaſt
- 135 Shrowds
- 136 Halliards
- 137 Craneline
- 138 Yard & Sail
- 139 Braces
- 140 Lifts
- 141 Sheets
- 142 Croſstrees
- 143 Cap
- 144 Jackſtaff
- 145 Truck
- 146 Jack
- 147 Beſt Bower Buoy
- 148 Cable

Hull
- A The Cutwater
- B Stem
- C Haſsholes
- D Catthead
- E Waſtcloths
- F Fore Channel
- G Main Channel
- H Mizzen Channel
- I Cheſtree
- K Entring Port
- L Head
- M Gallery
- N Taffarell
- O Poop Lanthorns
- P Enſign Staff
- Q Truck
- R Enſign

f ye First Rate, Shewing ye Inside.



Parts, Members &c. Withinſide

103 The Whipſtaff comanding the Tillar.
104 The After Stair Caſe down to ye lower Gun Deck
V. Several Officers Cabins Abaft ye Main Maſt in which Place comonly the Soldiers Make their Guard from the Entring Port.
W. The Gun Room
105 The Tillar comanding the Rudder
106 The Rudder
107 The Stern Poſt
108 The Tillar Tranſom
109 The ſeveral Tranſoms viz 1.2.3.4.5
110. The Gun Room Port or Stern Chaſe.
111 Bread Room Scuttle down out of the Gun Room
112 The main Capſton
113 The Pall of the Capſton or Stopper of Iron
114 The Partners
X. The Bread Room
115 The Bulk Head of the Bread Room
Y. The Stewards Room Where all Proviſions are weighed and Served out
Z. The Cock Pit. where are Subdiviſions for the Purſer and Chirurgeons & Mates
&. The Platform or Orlop where Proviſion is made in time of Service for the wounde
116. The Hold abaſt the Main Maſt
117. Step of ye Mizzen Maſt
118. The Keelson or Falſe Keel.
119. Dead Wood or Riſing

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67 The Middle Tyre of Ports
68 The Entring Ports
69 The Main Jeer Bits
70 Twiſted Pillers or Stantions
71 The Capſton
72 The Gratings
73 The Ladder up to the Upper Deck
M. The Upper Gun Deck A Midſhips.
74 Main top ſail Sheet Bits
75 The Upper Partners of the Main Maſt
76 The Gallows, on which Spare Top Maſts are laid
77 The Fore Sheet Blocks
78 The Kennets
79 The Gun Wale
80 The Upper Gratings
81 The Drift Brackets
82 The Piſs Deal
83 The Capſton Pall
N. A Baft the Main Maſt
84 The Gang Way of the Quarter Deck.
85 The Bulk head of the Coach
86 The Stair Caſe down to the Middle Gun Deck
87 The Beams of ye Uppr. Deck
88 The Gratings A:Baſt the Main Maſt.
89 The Coach or Council Chamber
90 The Stair Caſe up to the Quarter Deck
O the Quarter Deck
91 The Beams
92 The Carlines
93 The Partners of ye Mizzen Maſt
94 The Gang Way up to the Poop
95 Bulk head of ye Cuddy
P. The Poop
96 The Trumpeters Cabbins
97 The Taffarel
Q. The Capt. Lieut. Cabbn.
R. The Cuddy which is commonly divided for ye Maſter & Secretaries Officers
S. The State Room out of which is made ye Bed Chamber and other Conveniences for the Commander in Chief
98 Entrance into ye Gallery
99 Bulk head of the Great Cabbin
100 Stern Light and after Gallery
T. The Ward Room. Allotted for Voluntiers and Land Officers
101 The Lower Gallery
102 The Steerage and Bulk head of ye Ward Room

No. XVII

SHILLING*, an Engliſh ſilver coin, equal to twelve-pence, or the 20th part of a pound. See POUND and PENNY.

* Freherus derives the Saxon *ſcilling*, whence our *ſhilling*, from a corruption of *ſiliqua*; proving the derivation by ſeveral texts of law, and among others by the XXI. law, *de annuis legatis*. Skinner with more probability deduces it from the Saxon *ſcild*, ſhield; by reaſon of the eſcutcheon of arms thereon. See COIN.

It is obſerved, there were no *ſhillings* or twelve-penny-pieces coined in England till the year 1504; and theſe, Stow calls *groats*, though Fabian mentions them under the name of *ſhillings*, 34 Hen. VIII.

The Dutch, Flemiſh, and Germans have likewiſe their *ſhilling*; called *ſchelin*, *ſchilling*, *ſchelling*, *ſcalin*, &c. But theſe not being of the ſame weight or fineneſs with the Engliſh *ſhilling*, are not current on the ſame foot.—The Engliſh *ſhilling* is worth about 23 French ſols; thoſe of Holland and Germany about eleven ſols and a half. Thoſe of Flanders about nine. The Dutch *ſhillings* are alſo called *ſols de groſs*, becauſe equal to 12 groſs. The Danes have copper *ſhillings*, worth about ¼ of a farthing ſterling.

SHINGLES, or SHIDES, in building, ſmall pieces of wood, or quartered oaken boards, ſawed to a certain ſcantling, or more uſually cleft to about an inch thick at one end, and made like wedges, four or five inches broad, and eight or nine inches long. They are uſed in covering, eſpecially churches and ſteeples, inſtead of tiles, or ſlates.

This covering is dear; yet where tiles, &c. are very ſcarce, and a light cover required, is preferable to thatch. If made of good oak, and cleft, not ſawed, and well ſeaſoned, *ſhingles* make a ſure, light, and durable covering.

The building is firſt to be covered all over with boards, and the *ſhingles* nailed thereon. See COVERING.

SHINGLES, in medicine, a kind of herpes, called alſo the *miliary herpes*. See HERPES and MILIARY.

It conſiſts of innumerable little puſtules breaking out in various parts of the body, *viz.* the neck, breaſt, loins, thighs, &c.—The place affected is ſomewhat inflamed, and the patient a little feveriſh.—White puſtules ariſe and ſuppurate, and are ſucceeded by little round ſcabs reſembling millet-ſeeds.

It is to be attacked with diſcutients; and the higher puſtules cut off with ſciſſars, and a cerate of oil and wax to be applied.

Wiſeman obſerves, that the *ſhingles* come near the nature of a pſora, and are therefore to be cured with mercurial cathartics. See PSORA.

SHIP, a general name for all great veſſels with ſails, fit for navigation on the ſea; excepting galleys, which go with oars and ſmack-ſails.—See *Tab.* SHIP, *fig.* 1 and 2. See alſo the articles GALLEY, VESSEL, BOAT, &c.

The Sieur Aubin, defines a *ſhip*, a timber-building, conſiſting of various parts and pieces, nailed and pinned together with iron and wood, in ſuch form as to be fit to float, and to be conducted by wind and ſails, from ſea to ſea. See SAIL, SAILING, &c.

The invention of *ſhips* is very ancient, and, at the ſame time very uncertain: mythologiſts attribute it to Dædalus; and pretend, that the wings he invented to ſave himſelf withal from the labyrinth of Crete, were nothing but ſails, which he firſt gave to veſſels, and wherewith he eluded the vigilance and purſuit of Minos. Others give the honour to Janus, on the credit of ſome ancient Greek and Latin coins, on one ſide whereof is repreſented his double face, and on the reverſe a *ſhip*. Laſtly, others, and thoſe who go on the ſureſt grounds, look on Noah as the firſt *ſhip-builder*. See ARK and NAVIGATION.

SHIPS are uſually divided into three claſſes: *ſhips of war*, *merchant ſhips*, and an intermediate kind, half war, half merchant; being ſuch, as though built for merchandize, yet take commiſſions for war.

Ships of war are again divided into ſeveral orders, called *rates*. See RATE.

Merchant *ſhips* are eſtimated by their burthen, that is, by the number of tuns they bear; each tun reckoned at two thouſand pounds weight.—The eſtimate is made by gauging the hold, which is the proper place of loading. See BURDEN.

The moſt celebrated *ſhips* of antiquity are, that of Ptolemy Philopater, which was 280 cubits long, 38 broad, and 48 high; it carried 400 rowers, 400 ſailors, and 3000 ſoldiers. That which the ſame prince made to ſail on the Nile, we are told, was half a ſtadium long.—Yet theſe were nothing in compariſon with Hiero's *ſhip*, built under the direction of Archimedes; on the ſtructure whereof, Moſchion, as we are told by Snellius, wrote a whole volume. There was wood enough employed in it to make fifty gallies. It had all the variety of apartments of a palace; banqueting-rooms, galleries, gardens, fiſh-ponds, ſtables, mills, baths, a temple of Venus, &c. It was incompaſſed with an iron rampart, eight towers, with walls and bulwarks, furniſhed with machines of war; particularly one, which threw a ſtone of 300 pounds, or a dart 12 cubits long, the ſpace of half a mile; with many other particulars related by Athenæus.

Among modern *ſhips*, one of the moſt conſiderable is a firſt rate *ſhip* of war, built at Woolwich in 1701; the dimenſions whereof, whence thoſe of other rates may be deduced, are as follow: the length 210 foot; number of guns 110: number of men 1250: number of tuns 2300: draught of water 22 foot; the main-ſail in length 54 yards, depth 19: main-maſt in length 39 foot; in diameter 38 inches: weight of the anchor 82 hundred, 1 quarter, 14 pound: cable in length 200 yards: diameter of the cable 22 inches.—The expence of building a common firſt rate *ſhip*, with guns, tackling and rigging, is computed at 60,000l. ſterling. See NAVY, FREIGHT, CHARTER-PARTY, POLICY *of aſſurance*, &c.

To give the reader an idea of the ſeveral parts and members of a *ſhip*, both internal and external, with their reſpective denominations in the ſea language (the principal whereof are explained in the reſpective places of this dictionary) we here give him two draughts: the one, a ſection of the body of a firſt rate; to ſhew its conſtruction, the diſpoſition of its inſide, &c.—The other, the ſame *ſhip* entire, with the ſails, rigging, &c.

For the moſt convenient form of SHIPS; or that wherein they ſhall meet with the leaſt reſiſtance from the water; ſee VESSEL and RESISTANCE.

Bulk of a SHIP,	See the articles	BULK.
Burden of a SHIP,		BURDEN.
Captain of a SHIP,		CAPTAIN.
Clerk of a SHIP,		CLERK.
Corporal of a SHIP,		CORPORAL.
Company of SHIPS,		COMPANY.
Grounding a SHIP,		GROUNDING.
Maſter of a SHIP,		MASTER.
Rigging of a SHIP,		RIGGING.
Run of a SHIP.		RUN.
Sheathing of a SHIP,		SHEATHING.
Squadron of SHIPS,		SQUADRON.
Stay a SHIP,		STAY.
Steward of a SHIP,		STEWARD.
Warp a SHIP,		WARP.
Waſhing of a SHIP,		WASHING.
Way of a SHIP,		WAY.

Flag SHIP,	See the articles	FLAG.
Mine SHIPS,		MINE.
Regiſter SHIPS,		REGISTER.
Tranſport SHIP,		TRANSPORT.

SHIP-MONEY, an impoſition anciently charged upon the ports, towns, cities, boroughs, and counties of the realm; by writs commonly called *ſhip-writs*, under the great ſeal of England, for the providing and furniſhing certain ſhips for the king's ſervice.

This impoſition was revived by king Charles I. in the years 1635 and 1636; but by ſtat. 17. Car. I. it was declared to be contrary to the laws and ſtatutes of the realm, claim of right, liberty of the ſubject, &c.

SHIPPER, SKIPPER, or SCHIPPER, a Dutch term, ſignifying the maſter of a ſhip. See MASTER.

We alſo uſe the word popularly for any common ſeamen.

SHIPWRACK. See the article WRECK.

SHIRE*, SCYRA, a part or portion of the land, called alſo *county*. See COUNTY.

* The word is originally Saxon, *ſcir* or *ſcire*, formed from *ſcyran*, to divide.

King Alfred firſt divided the land into *ſatrapias*, which we now call *ſhires*, and thoſe into *centurias*, which we now call *hundreds*. See HUNDRED. And thoſe again into *decennias*, which we call *tithings*. See TITHING.

The aſſizes of the *ſhire*, or aſſembly of the people of a county, was called by the Saxons, *ſcyrgemot*. See SCYRGEMOT.

SHIRE *reve*,	See the articles	SHERIFF.
Knights of the SHIRE,		KNIGHT.

SHOAL, in the ſea phraſe, is the ſame as *ſhallow*, and is applied to flats in the water.

They ſay, it is *good ſhoaling*, when a ſhip ſailing towards ſhore, they find by her ſounding, it grows ſhallower and ſhallower by degrees, and not too ſuddenly; for then the ſhip goes in ſafety.

SHOALED, the miners term in the tin mines, for thoſe fragments of ore, which by rains, currents of water, &c. are torn off from the load, or veins of ore.—Theſe are waſhed down from the mountains; and by finding them, they gueſs where to look for a load of ore. Sometimes it is called *ſquad*, and *ſquod*. Harris.

SHOAR, or SHORE, a prop or counterfort, ſet up to ſupport any thing of weight, which leans on one ſide. See BUTTRESS.

SHOE, a covering for the foot, uſually of leather.

Its ſtructure, though the object of a particular art, is too popular to need explaining. See CORDWAINER.

Its hiſtory is more obſcure: Bened. Baudoin, a *ſhoe-maker* by profeſſion, has a learned treatiſe of the ancient *ſhoe*, *de ſolea veterum*; where the origin, matter, form, &c. thereof, are particularly enquired into.

Baudoin maintains, that God, in giving Adam ſkins of beaſts to cloath him, did not leave him to go bare-footed; but gave him *ſhoes* of the ſame matter. That after raw ſkins, men came to make their *ſhoes* of ruſhes, broom, paper, flax, ſilk, wood, iron, ſilver, gold: ſo different has their matter been.—Nor was their form more ſtable, with regard either to the ſhape, colour, or ornaments: they have been ſquare, high, low, long, and quite even, cut, carved, *&c.*

Pliny, lib. 7. c. 56. tells us, that one Tychius of Bœotia was the firſt who uſed *ſhoes*.—M. Nilant, in his remarks on Baudoin, obſerves, that he quotes Xenophon in vain, to ſhew, that even in his time they ſtill wore *ſhoes* of raw ſkins. Xenophon relates, that the ten thouſand Greeks, who had followed the young Cyrus, wanting *ſhoes*, in their retreat, were forced to cover their feet with raw ſkins, which occaſioned them great inconveniencies. Nilant will not even allow, that the *ſhoes* of the country people, called *carbatinæ*, and *peroneæ*, were of crude ſkin, without any preparation.

The patricians among the Romans, wore an ivory creſcent on their *ſhoes*: Heliogabalus had his *ſhoes* covered over with a very white linen; in conformity to the prieſts of the ſun, for whom he profeſſed a very high veneration: this kind of *ſhoe* was called ȣδων, *udo*, or *odo*. Caligula wore *ſhoes* enriched with precious ſtones. The Indians, like the Egyptians, wore *ſhoes* made of the bark of the papyrus. The Turks put off their *ſhoes*, and leave them at the doors of the moſques.

Horſe SHOE,	See the articles	HORSE.
Horſe SHOE *head*,		HORSE-SHOE *head*.

SHOE *houſing*. See the article HOUSING.

SHOOTING. See GUNNERY and PROJECTILE.

SHOOTING *of bombs*,	See the articles	BOMB.
SHOOTING *with air*,		WIND-GUN.

SHOOTS.—*Hot* SHOOTS,	See the articles	HOT.
Water SHOOT,		WATER.

SHOP-LIFTER, a perſon, who on pretence of buying goods, or otherwiſe, takes an opportunity to ſteal them.

SHORE, or *common* SHORE, a corruption of *ſewer*. See SEWERS and CLOACA.

SHORN *velvet*. See the article VELVET.

SHORT *accent*, in grammar, a mark which ſhews, that the time of pronouncing a ſyllable is to be *ſhort*.—It is wrote thus (˘). See ACCENT.

SHORT-*ſails*, in a man of war, are the ſame with *fighting-ſails*; being the fore-ſail, main-ſail, and foretop-ſail, which are all that are uſed in fight, leſt the reſt ſhould be fired, and ſpoiled; beſides the trouble of managing them when a ſhip gives chaſe to another.

If a chaſe have a mind to fight, they ſay, the chaſe *ſtrips into her ſhort-ſails*, *i. e.* puts out her colours in the poop, her flag at the main-top, and her ſtreamers, or pendants, at the yard's arms; furls her ſprit-ſail, peeks her mizzen, and ſlings her main-yard.

SHORT-SIGHTEDNESS, *myopia*, a fault in the conformation of the eye, wherein the cryſtallin, *&c.* being too convex, the rays reflected from different objects are refracted too much, and made to converge too faſt, ſo as to unite ere they reach the retina; by which means the viſion is rendered dim, and confuſed. See MYOPIA.

The ordinary remedy, for *ſhort-ſightedneſs*, is a concave lens, held before the eye; which making the rays diverge, or at leaſt, diminiſhing much of their convergency, makes amends for the too great convexity of the cryſtallin. See LENS.

Dr. Hook ſuggeſts another remedy: finding, that many *ſhort-ſighted* perſons are but little helped by concaves; he recommends a convex glaſs, placed between the object and the eye; by means whereof the object may be made to appear at any diſtance from the eye, and conſequently, all objects may be thereby made to appear at any required diſtance from the eye; ſo that the *ſhort-ſighted* eye ſhall contemplate the picture of the object, in the ſame manner, as if the object itſelf were in the place.—It is true, the image will appear inverted; but we have expedients to remedy this too: for, in reading, there needs nothing but to hold the book upſide down.—To write, the beſt will be for the perſon to learn to read upſide down. For diſtant objects, the doctor aſſerts, from his own experience, that, with a little practice in contemplating inverted objects, one gets as good an idea of them, as if ſeen in their natural poſture.

SHOT, in the military art, includes all ſorts of ball or bullets for fire-arms, from the cannon to the piſtol. See BULLET, FIRE-ARM, CANNON, *&c.*

Thoſe for cannon are of iron; thoſe for muſquets, carabines and piſtols, are of lead.

SHOT, for ordnance, eſpecially in the ſea ſervice, are of ſeveral ſorts; as—*Round* SHOT, bullets fitted to the bore of the piece.

Bar SHOT, is two bullets, or rather half bullets, joined together by an iron bar; ſerving to cut down maſts, ſails, *&c.*

Caſe SHOT,	See the articles	CASE *ſhot*.
Chain SHOT,		CHAIN *ſhot*.
Langrel SHOT,		LANGREL *ſhot*.
Random SHOT,		RANDOM *ſhot*.
Trundle SHOT,		TRUNDLE *ſhot*.

SHOT, for fowling, is otherwiſe called *hail*, by reaſon of its figure and ſize.

The method of caſting it is as follows. The lead being melted, ſtirred, and ſkimmed, a quantity of powdered yellow orpiment is ſtrewed in it; as much as will lie on a ſhilling, to 12 or 15 pounds of lead. The whole being well ſtirred, the orpiment will flame. To judge whether there be orpiment enough in, a little of the lead is dropped into a glaſs of water, and if the drops prove round, and without tails, there is orpiment enough, and the degree of heat is as it ſhould be.

This done, a copper-plate, hollow in the middle, and three inches in diameter, bored through with 30 or 40 ſmall holes, according to the ſize of the *ſhot*, is placed on an iron frame, over a tub of water, four inches above the water: the hollow part is to be very thin. On this plate are laid burning coals, to keep the melted lead in fuſion. The lead is now poured gently, with a ladle, on the middle of the plate, and it will make its way through the holes in the bottom of the plate into the water, in round drops.—Great care is taken to keep the lead on the plate in its proper degree of heat: if too cold it will ſtop the holes; and if too hot, the drops will crack and fly.

The *ſhot*, thus made, are dried over a gentle fire, always ſtirring them that they do not melt: this done, the greater are ſeparated from the ſmaller, by paſſing them through ſieves for that purpoſe.

Freſh SHOT,	See the articles	FRESH *ſhot*.
Hip SHOT,		HIP *ſhot*.
Water SHOT,		WATER *ſhot*.

SHOT-FLAGON, a ſort of *flagon* ſomewhat bigger than ordinary; which in ſome counties, particularly Derbyſhire, it is the cuſtom for the hoſt to ſerve his gueſts in, after they have drank above a ſhilling.

SHOTTEN *herrings*,	See the articles	HERRING.
Blood SHOTTEN,		BLOOD *ſhotten*.

SHOULDER-BLADE, a bone of the ſhoulder, of a triangular figure, covering the hind part of the ribs; called by anatomiſts, *ſcapula* and *omoplata*. See SCAPULA.

SHOULDER-BONE. See the article HUMERUS.

SHOULDERING, in fortification. See EPAULEMENT.

SHOULDERING-PIECE, in building. See BRACKET.

SHOULDER-PITCHT, is a diſeaſe in a horſe, when the pitch or point of the ſhoulder is diſplaced, which makes the horſe halt downright.

SHOULDER-SPLAIT, or SHOULDER-TORN, is a hurt which befals a horſe by ſome dangerous ſlip, whereby the ſhoulder is parted from the breaſt.

SHOULDER-WRENCH, is a ſtrain in the ſhoulder.

SHOWER, a cloud reſolved into rain, and diſcharged on a certain tract of ground. See RAIN.

In natural hiſtory we meet with abundance of inſtances of extraordinary and præternatural *ſhowers*: as, *ſhowers of blood*, mentioned by Gaſſendus, and others; a *brimſtone ſhower*, mentioned by Wormius; *ſhowers of frogs*, mentioned by Pliny, and even Dr. Plott; a *ſhower of millet-ſeed*, in Sileſia, mentioned in the Ephem. German. *ſhowers of aſhes*, frequent in the Archipelago: a *ſhower of wheat*, in Wiltſhire: a *ſhower of whitings*, mentioned in the Philoſophical Tranſactions.—The natural reaſons of many whereof may be ſeen under the article RAIN.

SHRINE *, a caſe to hold the relicks of ſome ſaint. See RELICKS.

* The word is formed from the Latin *ſcrinium*, a deſk or cabinet.

SHROUDS. See the article SHROWDS.

SHROVE-TIDE, the time immediately before lent; thus called by our anceſtors, becauſe employed in *ſhriving*, that is, in confeſſing their ſins to the prieſt; in order to a more devout keeping the enſuing lent faſt.

Shrove-tueſday is the day next before the firſt of lent. See LENT.

SHROWDING *of trees*, the cutting or lopping off the top branches; only practiſed to trees that are not fit for timber, but deſigned for fuel, or ſome other preſent uſe. See PRUNING.

Such trees the huſbandmen find much preferable to copſe; as they need no fence to ſecure them, becauſe ſtanding in no danger of the browzings and rubbings of cattle, which too, have the benefit of grazing under them.

For the time of *ſhrowding*, it is not to be practiſed till the trees have ſtood three or four years; either at the beginning of the ſpring, or the end of autumn.

The harder ſort are not to be lopped above once in ten or twelve years, and that at any time in the winter. The pithy and ſofter woods are beſt *ſhrowded* in the ſpring.—The ſtumps left, ſhould always be cut aſlope, and ſmooth, in order to caſt the water off, and prevent its ſinking in and rotting the tree.

SHROWDS or SHROUDS, are great ropes in a ſhip, which go up on both ſides of all maſts, except the bowſprit. See MAST, *&c.*

They are faſtened below by chains to the ſhip's ſides, and aloft, over the head of the maſt; their pennants, fore-tackle, and ſwifters, being firſt put under them; and they are ſerved there, to prevent their galling the maſt.—The top-maſt *ſhrouds* are faſtened to the puttocks, by plates of iron, and by dead-men's eyes, and lanniers alſo, as the others are.—See *Tab. Ship, fig.* 1. *n.* 4, 12, 23, 41, 52, 62, 84, 104 and 135.

The terms are, *Eaſe the ſhrouds*; that is, ſlacken them.

Set taught the ſhrouds; that is, ſet them faſter.

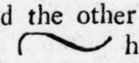
SHRUB, *frutex*, a little, low, dwarf tree; or a woody plant, of a ſize leſs than a tree; and which, beſides its principal ſtem, and branches, frequently, from the ſame root, puts forth ſeveral other conſiderable ſets, or ſtems. See TREE and PLANT.

Such are privet, phyllirea, holley, box, honey-ſuckle, *&c.* *Shrubs* and trees put forth in autumn, a kind of buttons, or gems, in the axis of the leaves: theſe buttons are as ſo many little ova, which coming to expand by the warmth of the following ſpring, open into leaves, and flowers.—By this, together with the height, ſome diſtinguiſh *ſhrubs* from *ſuffrutices*, or *under-ſhrubs*; which are low buſhes, that do not put forth any of theſe buttons; as roſemary, thyme, *&c.* See SUFFRUTICES.

SHUTTING *the mouth*. See the article MOUTH.

SHUTTLE, in the manufactures, an inſtrument uſed by the weavers, which, with a thread it contains either of woollen, ſilk, flax, or other matter, ſerves to form the woofs of ſtuffs, cloths, linens, ribbands, *&c.* by throwing the *ſhuttle* alternately from left to right, and from right to left, a-croſs between the threads of the warp, which are ſtretched out lengthwiſe on the loom. See LOOM and WEAVING.

In the middle of the *ſhuttle* is a kind of cavity, called the *eye* or *chamber* of the *ſhuttle*; wherein is incloſed the ſpoul, which is a part of the thread deſtined for the woof; and is wound on a little tube of paper, ruſh, or other matter.

The ribband-weaver's *ſhuttle* is very different from that of moſt other weavers, though it ſerve for the ſame purpoſe: it is of box, ſix or ſeven inches long, one broad, and as much deep: ſhod with iron at both ends, which terminate in points, and are a little crooked, the one towards the right, and the other towards the left, repreſenting the figure of an  horizontally placed.

SI, in muſic, a ſeventh note, added within this ſixty years, by one le Maire, to the ſix ancient notes invented by Guido Aretin, *ut*, *re*, *mi*, *fa*, *ſol*, *la*, *ſi*: by means whereof, the embarraſs of the ancient gamut is avoided. See SCALE and GAMMUT.

So buſy a thing is jealouſy, that, for a matter of thirty years, that le Maire kept preaching to the muſicians of his time, in behalf of the new note; not a man would allow it: but he was no ſooner dead, than all the world came into it. See NOTE.

SIBYLS *, SIBYLLÆ, in antiquity, virgin-propheteſſes, or maids ſuppoſed to be divinely inſpired; and who, in the height of their enthuſiaſm, gave oracles, and foretold things to come. See PROPHECY.

* The word is ſuppoſed formed of an aſſemblage of the two Greek words, σιȣ, for θεȣ, *Dei*, and βȣλη, council.

Authors do not agree about the number of the *ſibyls*: Capella reckons but two, *viz.* Erophyle of Troy, called *ſibylla Phrygia*; and Sinuachia of Erythræa, called *ſibylla Erythræa*. Solinus mentions three, *viz.* Cumæa, Delphica, and Erythræa. Ælian makes their number four: and Varro increaſes it to ten, denominating them from the places of their birth; the Perſian, Lybian, Delphic, Cumæan, Erythræan, Samian, Cumane, Helleſpontic or Trojan, Phrygian, and Tiburtin.—Of theſe, the moſt celebrated are, the Erythræan, Delphic, and Cumæan *ſibyls*.

The *ſibylline* oracles were held in great veneration by the more credulous among the ancients; but were much ſuſpected by many of the more knowing. The books wherein they were written, were kept by the Romans with infinite care, and nothing of moment undertaken without conſulting them. Tarquin firſt committed them to the cuſtody of two partrician prieſts, inſtituted for that purpoſe. See ORACLE.

SICILIAN *meaſures*,	See the articles	MEASURE.
SICILIAN *money*,		MONEY.
SICILIAN *ſilk*,		SILK.
SICILIAN *veſpers*,		VESPERS.

SICILIAN, in muſic, denotes a kind of gay ſprightly air, or dance; ſomewhat of the nature of an Engliſh jig: uſually marked with the characters $\frac{6}{8}$ or $\frac{12}{8}$.

SICK *herrings*,	See the articles	HERRING.
Iron SICK,		IRON *ſick*.

SICKNESS,	See the articles	DISEASE.
Green SICKNESS,		CHLOROSIS.
Sweating SICKNESS,		SUDOR *Anglicanus*.
Falling SICKNESS,		EPILEPSY.

SICUT *alias*, a writ ſent out in the ſecond place, where the firſt writ was not executed. See WRIT.

It is thus called from its beginning, which is in this form: *Georgius D. G.* &c. *Vice-comiti Heref. ſalutem. Præcipimus tibi* (ſicut alias) *præcepim'*, &c.

SIDE, *latus*, in geometry.—The SIDE *of a figure*, is a line making part of the periphery of any ſuperficial figure. See FIGURE.

In triangles, the *ſides* are alſo called *legs*. In a rectangle triangle, the two *ſides*, including the right angle, are called *catheti*; and the third the *hypotenuſe*. See CATHETUS and HYPOTENUSE.

SIDE *of a polygonal number*, is the number of the terms of the arithmetical progreſſion, that are ſummed up. See POLYGONAL *number*.

SIDE *of a power*, is what we otherwiſe call the *root*, or *radix*. See ROOT.

SIDES *of horn-works*, *crown-works*, *double tenailles*, and the like *out-works*, are the ramparts and parapets which incloſe them on the right and left, from the gorge to the head. See HORNWORK, TENAILLE, *&c.*

Right SIDE,	in conicks. See	LATUS *rectum*.
Tranſverſe SIDE,		LATUS *tranſverſum*.

SIDE *grafting*. See the article ENGRAFTING.

SIDE *lays*, is a term made uſe of by huntſmen, when dogs are placed in the way, to be let ſlip at a deer, as he paſſes by.

SIDERATION, SIDERATIO, in chirurgery, a mortification of ſome part of the body; called alſo *ſphacelus*, and *necroſis*. See MORTIFICATION and SPHACELUS.

SIDERATION is alſo uſed for a being ſuddenly benumbed, and deprived of the uſe of one's limbs, ſenſes, *&c.* which the people call being *planet-ſtruck*. See APOPLEXY, PALSY, *&c.*

SIDERATION alſo denotes the blaſting or blighting of trees, plants, *&c.* by eaſtern winds, exceſſive heat, drought, or the like. See BLIGHT and DISEASES *of plants*.

SIDERIAL *year*. See the articles YEAR and SOLAR.

SIDERITES, a name which ſome authors give the loadſtone. See MAGNET.

SIDES-MEN, properly called *ſynods-men* or *queſt-men*, perſons, who in larger pariſhes are appointed to aſſiſt the church-wardens, in enquiring into the manners of inordinate livers, and in preſenting offenders at viſitations. See QUESTMEN and SYNODALES.

SIEGE *, in war, the encampment of an army around a place, with deſign to take it, either in the way of diſtreſs and famine, by making lines all around it, to prevent any relief from without; or by main force, as by digging trenches, and making formal attacks. See LINE, TRENCH, APPROACH, *&c.*

* The word is French, and, ſignifies, literally, *ſeat*; alluding to the army's taking its ſeat here till the reduction of the place.

The moſt celebrated *ſieges* of antiquity, are thoſe of Troy, Tyre, Alexandria, Numantium, *&c.* Among the moderns, thoſe of Oſtend, Candia, Grâve, *&c.*

SIEVE, or SEARCE, an inſtrument ſerving to ſeparate the fine from the coarſe parts of powders, liquors, and the like; or to cleanſe pulſe from duſt, light grains, *&c.*

It is made of a rim of wood; the circle, or ſpace whereof is filled with a tiſſue of ſilk, tiffany, hair, linen, wire, or even thin ſlices of wood.

The *ſieves* which have large holes, are ſometimes alſo called *riddles*; ſuch is the coal or lime *ſieve*, garden *ſieve*, &c.

When drugs, apt to evaporate, are to be paſſed through the *ſieve*, it is uſual to have it covered with a lid.

SIEUR, a title of honour, or quality among the French; chiefly uſed among the lawyers, and in publick acts, and other writings of that kind. See SIRE.

They ſay, I plead for the *ſieur* ſuch an one, the *ſieur* abbot, the *ſieur* marquis, *&c.* See MONSIEUR.

The title *ſieur* is properly given by a ſuperior to an inferior, in his letters and other private writings.—As, Tell the *ſieur* Hubert, that he proceed, *&c.*

In this ſenſe, authors ſometimes uſe it, by way of modeſty, in ſpeaking of themſelves: thus, at the heads of books, we ſee, *Traduction du* ſieur *d' Ablancourt*; *O Euvres du* ſieur *d' Eſpreaux*, &c.

SIEUR, is alſo a term expreſſing *ſeigneury*, or lordſhip: as *ecuyer* or *ſieur* of ſuch a place. See LORD and ESQUIRE.

SIGHT, the exerciſe, or act of the ſenſe of ſeeing. See SENSE, SEEING, VISION, VISIBLE, *&c.*

Our *ſight*, the nobleſt and moſt uſeful of all our ſenſes, father Malebranche ſhews, deceives us in abundance of inſtances; nay, almoſt in all: particularly with regard to the magnitude, and extent of things; their figures, motions, *&c.* Our eyes do not ſhew us any thing leſs than a mite: half a mite is nothing, if we believe their report. A mite is only a mathematical point, with regard thereto; and we cannot divide it without annihilating it. In effect, our *ſight* does not repreſent extenſion, ſuch as it is in itſelf; but only the relation and proportion it has to our body. Hence, as half a mite has no relation to our bodies, and that it cannot either preſerve or deſtroy us, our *ſight* hides it intirely. Were our eyes made like microſcopes, or were we ourſelves as ſmall as mites, we ſhould judge very differently of the magnitude of bodies.

It may be added, that our own eyes are really no other than a kind of natural ſpectacles; that their humours do the ſame office as the lens's in ſpectacles; and that, according to the figure of the cryſtallin, and its diſtance from the retina, objects are ſeen very differently; inſomuch, as we are not ſure, that there are any two perſons in the world, who ſee them equally big.—It is even very rare, that the ſame perſon ſees the ſame object equally big with both eyes; as both eyes are very ſeldom perfectly alike: on the contrary, we generally ſee things bigger with the left than the right eye; of which we have ſome very good obſervations in the journal of the learned at Rome, for the year 1669. See VISION.

Short SIGHT,	See the articles	MYOPIA.
Second SIGHT,		SECOND *ſight*.
Point of SIGHT,		VIEW and POINT.

SIGHTS, in mathematicks, denote two thin pieces of braſs raiſed perpendicularly on the two extremes of an alidade or index of a theodolite, circumferentor, or other like inſtrument: each whereof has an aperture or ſlit up the middle, through which the viſual rays paſs to the eye, and diſtant objects are ſeen.—Their uſe is for the juſt direction of the index to the line of the object. See TELESCOPE, CIRCUMFERENTOR, ALHIDADE, *&c.*

Sometimes the ſlits or apertures have glaſſes, or lenſes fitted into them; in which caſe they are called *teleſcopic ſights*: by way of diſtinction from the former, which in reſpect hereof are denominated *plain ſights*. See TELESCOPE, LENS, *&c.*

Mr. Flamſteed and Dr. Hook, abſolutely explode the uſe of *plain ſights* in aſtronomical obſervations. The errors in Tycho's latitudes of the ſtars, Mr. Flamſteed aſcribes wholly to his uſing *plain ſights*; and ſuſpects, that Hevelius uſing the ſame kind of *ſights*, will fall into the like errors.—Hevelius, on the contrary, in a paper in the Philoſophical Tranſactions, vindicates the uſe of *plain ſights*, and prefers them to *teleſcopic* ones: the main objection he makes to the latter, is, that no obſervation can be ſafely taken with them, without firſt examining and rectifying them: in which examination, many and groſs miſtakes are liable to be committed.—To which he adds, that in ſextants, octants, azimuth quadrants, *&c.* he does not ſee how ſuch examination can be made, at all times, without much loſs of time. See ASTRONOMICAL.

SIGILLARIA, a ſolemn feaſt held among the ancient Romans; thus called from a cuſtom which obtained therein, of ſending little preſents from one to another, conſiſting of ſeals, little figures, and ſculptures, made of gold, ſilver, braſs, or even earthen ware, and of devoting them to Saturn as an atonement for themſelves and friends.

The *ſigillaria* followed immediately after the ſaturnalia, and held two days; which, with the five days of the ſaturnalia, made a ſolemnity of ſeven days. See SATURNALIA.

Some derive the origin of *ſigils* and figures in this ſolemnity from the argei or ruſhan figures of men thrown annually into the Tiber, from the Pons Sublicius, by the veſtals, on the ides of March. Vid. Macrob. Saturn. l. 1. c. 7, 10 and 11. See alſo ARGEA.

SIGILLATA *terra*, a kind of earth, or bole, dug in the iſle of Lemnos; and thence alſo called *Lemnian* earth; of conſiderable uſe in painting, and medicine. See LEMNIAN *earth*.

It is of different colours, but moſt commonly red; heavy, ſoft, and friable; held very aſtringent, and, as ſuch, uſed in hæmorrhages; as alſo againſt the plague and poiſons.—Pliny attributes ſeveral other virtues, which experience does not juſtify; nor is it in that eſteem it anciently was; yet it is ſtill an ingredient in Venice-treacle.

It was anciently found in a mountain, in the neighbourhood of the city Hephæſtia; where Diana's prieſts went at certain times, with great ceremony, to dig it up. After a little preparation, they made it up into troches, and ſealed them with Diana's ſeal; whence the appellation of *ſigillata*, *ſealed*.

It is now brought from Conſtantinople in little flat cakes, round on one ſide, flat and ſealed on the other. See BOLE.

SIGILLUM, a ſeal or ſignet. See SEAL and SIGNET.

SIGN, SIGNUM, a ſenſible mark or character, denoting ſomething abſent, or inviſible. See CHARACTER and MARK.

Anciently, the monks, in all religious houſes, were not allowed to ſpeak; nor to expreſs their minds otherwiſe than by *ſigns*, which they learned in their novitiate. C. Rhodiginus and Porta have wrote of the ancient *ſigns*, and ciphers, uſed in ſpeaking, and writing.

SIGN, in algebra, denotes a ſymbol, or character. See CHARACTER, ALGEBRA, *&c.*

Like SIGNS,	See the articles	LIKE.
Radical SIGNS,		RADICAL.

SIGN, in medicine, denotes ſome appearance in the body, diſtinguiſhable by the ſenſes; whence, by juſt reaſoning, is inferred the preſence, nature, ſtate, event of health, a diſeaſe, or death. See INDICATION.

Thoſe which denote the preſent condition of a body, whether ſick or well, dying or the like, are called *diagnoſtic ſigns*. See DIAGNOSTIC.

Thoſe which foretel the future ſtate thereof, are called *prognoſtic ſigns*. See PROGNOSTIC.

That *ſign* which is peculiar to the diſeaſe, and inſeparable from it, as ariſing from the nature thereof, is called a *pathognomonic ſign*. See PATHOGNOMONIC.

As all *ſigns* are effects produced by the cauſe of the diſeaſe, the diſeaſe itſelf, and its ſymptoms; they uſually note the preſent condition of the matter which firſt produced the diſeaſe, and even of that produced by the diſeaſe: on which footing, the *ſigns* are all reducible to theſe three claſſes, *viz.* *ſigns* of the crudity and coction of the diſeaſe; of its event, whether in health, ſickneſs, or death; and of its ſecretion and excretion: which laſt *ſigns* are called *critical* ones. See CRUDITY, DIGESTION, *&c.* each under its proper article. See alſo HEALTH and DISEASE.

Antecedent SIGN. See the article ANTECEDENT.

SIGN, in aſtronomy, a twelfth part of the ecliptic, or zodiac; or a portion containing thirty degrees thereof. See ZODIAC.

The zodiac was divided by the ancients into twelve ſegments, called *ſigns*; commencing from the point of interſection of the ecliptic and equinoctial: which *ſigns* they denominated from the twelve conſtellations which, in Hipparchus's time poſſeſſed thoſe ſegments.—But, the conſtellations have ſince ſo changed their places, by the preceſſion of the equinox, that aries is now got out of the *ſign* called *aries*, into taurus, taurus into gemini, *&c.* See PRECESSION, ECLIPTIC, EQUINOX, *&c.*

The names of the twelve *ſigns*, and their order, are as follow; *aries*, *taurus*, *gemini*, *cancer*, *leo*, *virgo*, *libra*, *ſcorpio*, *ſagittarius*, *capricornus*, *aquarius*, *piſces*: each of which, with the ſtars thereof, ſee under its proper article, ARIES, TAURUS, *&c.*

The *ſigns* are diſtinguiſhed with regard to the ſeaſon of the year, when the ſun is in them, into *vernal*, *æſtival*, *autumnal*, and *brumal*. See AUTUMNAL and VERNAL.

The *vernal*, or *ſpring* SIGNS, are aries, taurus, gemini.

The *æſtival*, or *ſummer* SIGNS, are cancer, leo, and virgo.

The *autumnal* SIGNS, are libra, ſcorpio, and ſagittarius.

The *brumal*, or *winter* SIGNS, are capricornus, aquarius, and piſces.

The *vernal* and *ſummer ſigns*, are alſo called *northern ſigns*.—And the *autumnal* and *brumal ſigns*, *ſouthern ſigns*. See NORTHERN, *&c.*

Aſcending SIGNS,	See the articles	ASCENDING.
Fixt SIGNS,		FIXT.
Maſculine SIGNS,		MASCULINE.

SIGN *manual*, the ſetting one's hand and ſeal to a writing. See SIGNATURE.

Among the Saxons, before the invention of ſeals, a ✝ was a common *ſign* or *ſignum*, prefixed to the names of moſt ſubſcribing witneſſes in charters and other deeds; as ✝ *ſignum Roberti Epiſcop. Lond.* &c.

SIGNAL, a certain ſign agreed upon for the conveying of intelligence whither the voice cannot reach. See SIGN.

Signals are given for the beginning of a battle, or an attack; uſually with drums, and trumpets: at ſea, they are given by cannon or muſket-ſhot, by lights, ſails, flags, *&c.* See SALUTATION.

Signals have been in uſe in all ages. The ancients who had no regular couriers or poſts, made uſe thereof to convey intelligence of what paſſed at a great diſtance. For which purpoſe they placed centinels on the eminences, from ſpace to ſpace; ſome mention whereof, we find made by Homer himſelf. Iliad. Θ. v. 553, *&c.* Odyſſ. Ξ. v. 261. Thoſe people thus diſpoſed, lighted fires, or flambeaux in the night-time. In the Agamemnon of Æſchylus, that prince at his departure for Troy, promiſes Clytemneſtra, that the very day the city ſhould be taken, he would apprize her of his victory by fires lighted expreſs. He keeps his word, and tidings are brought the princeſs, that Troy is taken, and that Agamemnon's *ſignals* are ſeen. Frontinus obſerves, they were in uſe among the Arabs; and Bonaventura Vulcanius, in his Scholia on Ariſtotle's book *de mundo*, adds, that while the Moors were maſters of the greateſt part of Spain, they built on the tops of the mountains, an infinity of turrets, or watch-houſes, called in the Arabic, *atalayas*, a word the Spaniards ſtill retain; whence, by fires, they could immediately alarm the whole kingdom. Indeed the cuſtom was much more ancient than the Moors in Spain. Q. Curtius obſerves, it was very frequent among the Aſiaticks, in the time of Alexander. Livy and Cæſar both mention it as uſed among the Romans. Polydore Virgil ſhews it of great antiquity in England; and Boethius adds, that in ſeveral places in England, there are the remains of huge poles that have ſerved for this purpoſe. See BEACON.

SIGNALS *at ſea*, are ſigns made by the admiral or commander in chief of a ſquadron of ſhips, either in the day or by night, whether for ſailing, for fighting, or for the better ſecurity of the merchant ſhips, under their convoy.

Theſe *ſignals* are very numerous and important; being all appointed and determined by order of the lord high admiral, or lords of the admiralty; and communicated in the inſtructions ſent to the commander of every ſhip of the fleet or ſquadron before their putting out to ſea.

SIGNALS *by day*.—When the commander in chief would have them prepare for ſailing, he firſt looſes his fore-top-ſail, and then the whole fleet are to do the ſame. When he would have them unmoor, he looſes his main-top-ſail, and fires a gun, which in the royal navy is to be anſwered by every flag-ſhip. When he would have them weigh, he looſes his fore-top-ſail, and fires a gun, and ſometimes hawls home his ſheats: the gun is to be anſwered by every flag-ſhip, and every ſhip to get to ſail as ſoon as it can. If with the leeward-ſide, the ſtern-moſt ſhip is to weigh firſt. When he would have the weather-moſt, and head-moſt ſhips to tack firſt, he hoiſts the union-flag at the fore-top-maſt-head, and fires a gun, which each flag-ſhip anſwers; but if he would have the ſtern-moſt and leeward-moſt ſhips to tack firſt, he hoiſts the union-flag at the mizen-top-maſt-head, and fires a gun; and when he would have all the whole fleet tack, he hoiſts an union, both on the fore, and mizen-top-maſt-heads, and fires a gun. When in bad weather, he would have them wear, and bring to the other tack, he hoiſts a pendant on the enſign-ſtaff, and fires a gun: and then the leeward-moſt and ſtern-moſt ſhips are to wear firſt, and bring on the other tack, and lie by, or go on with an eaſy ſail, till he comes a-head: every flag is to anſwer with the ſame *ſignal*. If they are lying by, or ſailing by a wind, and the admiral would have them bear up and ſail before the wind, he hoiſts his enſign, and fires a gun, which the flags are to anſwer: and then the leeward-moſt ſhips are to bear up firſt, and to give room for the weather-moſt to wear, and ſail before the wind with an eaſy ſail, till the admiral comes a-head. But if it ſhould happen when the admiral hath occaſion to wear and ſail before the wind, that both jack and enſign be abroad, he will hawl down the jack, before he fires the gun to wear, and keep it down till the fleet is before the wind. When they are ſailing before the wind, and he would have them bring to, with the ſtar-board tacks aboard, he hoiſts a red flag at the flag-ſtaff, on the mizen-top-maſt-head, and fires a gun. But if they are to bring to, with the lar-board tack, he hoiſts a blue flag at the ſame place, and fires a gun, and every ſhip to anſwer the gun. When any ſhip diſcovers land, he is to hoiſt his jack and enſign, and keep it abroad, till the admiral or commander in chief anſwer him, by hoiſting his; on ſight of which, he is to hawl down his enſign. If any diſcovers danger, he is to tack and bear up from it, and to hang his jack abroad from the main-top-maſt croſs-trees, and fire two guns: but if he ſhould ſtrike or ſtick faſt, then, beſides the ſame *ſignal* with his jack, he is to keep firing, till he ſees all the fleet obſerve him, and endeavour to avoid the danger. When any ſees a ſhip or ſhips more than the fleet, he is to put abroad his enſign, and there keep it, till the admiral's is out, and then to lower it, as often as he ſees ſhips, and ſtand in with them, that ſo the admiral may know which way they are, and how many; but if he be at ſuch a diſtance, that the enſign cannot well be diſcovered, he is then to lay his head towards the ſhip or ſhips ſo deſcryed, and to brail up his low ſails, and continue hoiſting and lowering his top-ſails, and making a waſt with his top-gallant ſails, till he is perceived by the admiral. When the admiral would have the vice-admiral, or he that commands in the ſecond poſt of the fleet, to ſend out ſhips to chaſe, he hoiſts a flag, ſtriped white and red on the flag-ſtaff, at the fore-top-maſt-head, and fires a gun. But if he would have the rear admiral do ſo, he then hoiſts the ſame *ſignal* on the flag-ſtaff, at the mizen-top-maſt-head, and fires a gun. When the admiral would have any ſhip to chaſe to windward, he makes a *ſignal* for ſpeaking with the captain, and he hoiſts a red flag in the mizen ſhrowds, and fires a gun: but if to chaſe to leeward, a blue flag; and the ſame *ſignal* is made by the flag, in whoſe diviſion that ſhip is. When he would have them give over chaſe, he hoiſts a white flag on his flag-ſtaff at the fore-top-maſt-head, and fires a gun: which *ſignal* is to be made alſo by that flag-ſhip which is neareſt the ſhip that gives chaſe, till the chaſing ſhip ſees the *ſignal*. In caſe of ſpringing a leak, or any other diſaſter, that diſables their ſhip from keeping company, they are to hawl up their courſes, and fire two guns. When any ſhip would ſpeak with the admiral, he muſt ſpread an Engliſh enſign, from the head of his main, or fore-top-maſt, downwards on the ſhrowds, lowering his main, or fore-top-ſail, and firing guns, till the admiral obſerve him; and if any ſhip perceive this, and judgeth the admiral doth not, that ſhip muſt make the ſame *ſignal*, and make the beſt of his way to acquaint the admiral therewith, who will anſwer by firing one gun. When the admiral would have the fleet to prepare to anchor, he hoiſts an enſign, ſtriped red, blue, and white on the enſign-ſtaff, and fires a gun, and every flag-ſhip makes the ſame *ſignal*. If he would have the fleet moor, he hoiſts his mizen-top-ſail, with the clew-lines hawled up, and fires a gun. If he would have the fleet cut or ſlip, he looſes both his top-ſails, and fires two guns; and then the leeward ſhips are to cut or ſlip firſt, to give room to the weathermoſt to come to ſail. So if he would have any particular ſhip to cut or ſlip, and to chaſe to windward, he makes the *ſignal* for ſpeaking with that ſhip, hoiſts a red flag in the mizen ſhrowds, and fires a gun: but if the ſhip is to chaſe to leeward, he hoiſts a blue flag as before. If he would have the fleet exerciſe their ſmall arms, he hoiſts a red flag on the enſign-ſtaff, and fires a gun; but if the great guns, then he puts up a pendant over the red flag.

SIGNALS *by night*.—To be obſerved at an anchor, weighing anchor, and ſailing, are as follow. When the admiral would have the fleet to unmoor, and ride ſhort, he hangs out three lights, one over another in the main-top-maſt ſhrowds, over the conſtant light in the main-top, and fires two guns, which are to be anſwered by flag-ſhips; and each private ſhip hangs out a light in the mizen-ſhrowds. Note, That all guns, fired for *ſignals* in the night, muſt be fired on the ſame ſide, that they may make no alteration in the ſound. When he would have them weigh, he hangs a light in the main-top-maſt ſhrowds, and fires a gun, which is to be anſwered by all the flags, and every private ſhip muſt hang out a light in his mizen-ſhrowd. When he would have them tack, he hoiſts two flags on the enſign-ſtaff, one over another, above the conſtant light in his poop, and fires a gun, which is to be anſwered by all the flags; and every private ſhip is to hang out a light extraordinary, which is not to be taken in, till the admiral takes in his. After the *ſignal* is made, the leeward-moſt, and ſtern-moſt ſhips muſt tack as faſt as they can, and the ſtern-moſt flag-ſhip, after he is about on the other tack, is to lead the fleet, and him they are to follow, to avoid running through one another in the dark. When he is upon a wind, and would have the fleet veer, and bring to on the other tack, he hoiſts up one light at the mizen-peek, and fires three guns, which is to be anſwered by all the flag-ſhips, and every private ſhip muſt anſwer, with one light at the mizen-peek. The ſtern-moſt, and leeward-moſt ſhips, are to bear up ſo ſoon as the *ſignal* is made. When he would have them, in blowing weather, to lie a try, ſhort, or a hull, or with the head-ſails braced to the maſt, he will form lights of equal height, and fire five guns, which are to be anſwered by the flag-ſhips, and then every private ſhip muſt ſhew four lights: and after this, if he would have them to make ſail, he then fires ten guns, which are to be anſwered by all the flags, and then the head-moſt and weather-moſt ſhips, are to make ſail firſt. When the fleet is ſailing large, or before the wind, and the admiral would have them bring to, and lie by with their ſtar-board tacks aboard, he puts out four lights in the fore-ſhrowds, and fires ſix guns; but if with the lar-board tacks aboard, he fires eight guns, which are to be anſwered by the flag-ſhips; and every private ſhip muſt ſhew four lights. The wind-moſt ſhips muſt bring to firſt. Whenever the admiral alters his courſe, he fires one gun, (without altering his lights) which is to be anſwered by all the flag-ſhips. If any ſhip hath occaſion to lie ſhort, or by, after the fleet hath made ſail, he is to fire one gun, and ſhew three lights in his mizen-ſhrowds. When any one firſt diſcovers land, or danger, he is to ſhew as many lights as he can, to fire one gun, and to tack, or bear away, from it: and, if any one happen to ſpring a leak, or any be diſabled from keeping company with the fleet, he hangs out two lights of equal height, and fires guns till he is relieved by ſome ſhip of the fleet. If any one diſcovers a fleet, he is to fire guns, make falſe fires, put one light out on the main-top, three on the poop, to ſteer after them, and to continue firing of guns, unleſs the admiral call him off, by ſteering another courſe, and fire two or three guns; for then he muſt follow the admiral. When the admiral anchors, he fires two guns, a ſmall ſpace of time one from the other, which are to be anſwered by the flag-ſhips; and every private ſhip muſt ſhew two lights. When the admiral would have the fleet to moor, he puts a light on each top-maſt-head, and fires a gun, which is to be anſwered by the flag-ſhips, and every private ſhip is to ſhew one light. If he would have them lower their yards and top-maſts, he hoiſts one light upon his enſign-ſtaff, and fires one gun; which is to be anſwered by the flag-ſhips; and every private ſhip muſt ſhew one light. And when he would have them hoiſt their yards and top-maſts, he puts out two lights, one under the other, in the mizen-top-maſt-ſhrowds, and fires one gun; which is to be anſwered by the flag-ſhips; and each private ſhip muſt ſhew one light in the mizen-ſhrowds. If any ſtrange ſhip be diſcovered coming into the fleet, the next ſhip is to endeavour to ſpeak with her, and bring her to an anchor, and not ſuffer her to paſs through the fleet. And if any one diſcovers a fleet, and it blow ſo hard that he cannot come to give the admiral notice timely, he is to hang out a great number of lights, and to continue firing gun after gun, till the admiral anſwers him with one. When the admiral would have the fleet to cut or ſlip, he hangs out four lights, one at each main-yard-arm, and at each fore-yard-arm, and fires two guns, which are to be anſwered by the flag-ſhips, and every private ſhip is to ſhew one light.

SIGNALS *uſed, when a fleet ſails in a fog*.—If the admiral would have them weigh, he fires ten guns; which every flag-ſhip is to anſwer. To make them tack, he fires four guns, which are to be anſwered by the flag-ſhips; and then the leeward-moſt, and ſtern-moſt ſhips muſt tack firſt, and after they are about, to go with the ſame ſail they tacked with, and not to lie by, expecting the admiral to come a-head: and this is to avoid the danger of running through one another in thick weather.

When the admiral brings to, and lies with his head-ſails to the maſt; if with the ſtar-board tack aboard, he fires ſix guns; but if with the lar-board tack, he fires eight guns, which the flag-ſhips are to anſwer. And after this, if he makes ſail, he fires ten guns, which the flag-ſhips muſt anſwer, and then the head-moſt and weather-moſt ſhips are to make ſail firſt. If it grow thick and foggy weather, the admiral will continue ſailing, with the ſame ſail ſet, that he had before it grew foggy, and will fire a gun every hour, which the flag-ſhips muſt anſwer, and the private ſhips muſt anſwer, by firing of muſkets, beating of drums, and ringing of bells. But if he be forced to make either more or leſs ſail than he had, when the fog began, he will fire a gun every half hour, that the fleet may diſcern, whether they come up with the admiral, or fall a-ſtern of him; and the flags and private ſhips are to anſwer as before. If any one diſcovers danger, which he can avoid, by tacking and ſtanding from it, he is to make the *ſignal* for tacking in a fog; but if he ſhould chance to ſtrike and ſtick faſt, he is to fire gun after gun, till he thinks the reſt have avoided the danger. When the admiral would have the fleet to anchor, he fires two guns, which the flags are to anſwer; and after he hath been half an hour at an anchor, he will fire two guns more, to be anſwered by the flags, as before; that all the fleet may know it.

SIGNALS *for calling officers on board the admiral.*—When the admiral puts aboard an union-flag in the mizen-ſhrowds, and fires a gun, all the captains are to come aboard him: and if, with the ſame *ſignal*, there be alſo a waft made with the enſign, then the lieutenant of each ſhip is to come on board. If an enſign be put aboard in the ſame place, all the maſters of the ſhips of war are to come on board the admiral. If a ſtandard on the flag-ſtaff be hoiſted at the mizen-top-maſt-head, and a gun fired, then all the flag-officers are to come aboard the admiral. If the Engliſh flags only; then a ſtandard in the mizen-ſhrowds; and fire a gun: if the flags, and land general officers; then the admiral puts aboard a ſtandard at mizen-top-maſt-head, and a pendant at mizen-peek, and fires a gun. If a red flag be hoiſted in the mizen-ſhrowds, and a gun fired; then the captains of his own ſquadron are to come aboard the admiral; and if, with the ſame *ſignal*, there be alſo a waft with the enſign, the lieutenant of each ſhip muſt come aboard. If he hoiſts a white flag, as before, then the vice-admiral, or he that commands in the ſecond poſt, and all the captains of his ſquadron, are to go on board the admiral: if a blue flag, *&c.* then the rear-admiral, and the captains of his ſquadron, muſt come on board; and if a waft, as before, the lieutenants. When a ſtandard is hoiſted on the enſign-ſtaff, and a gun fired, the vice and rear-admirals muſt come on board the admiral's ſhip. When the admiral would ſpeak with the captains of his own diviſion, he will hoiſt a pendant on the mizen-peek, and fire a gun; and if with the lieutenants, a waft is made with the enſign, and the ſame *ſignal:* for whenever he would ſpeak with the lieutenants of any particular ſhip, he makes the *ſignal* for the captain, and a waft alſo with the enſign. When the admiral would have all the tenders in the fleet come under his ſtern, and ſpeak with him; he hoiſts a flag, yellow and white, at the mizen-peek, and fires a gun. But if he would ſpeak with any particular ſhip's tender, he makes a *ſignal* for ſpeaking with the captain ſhe tends upon, and a waft with the jack. If all the pinnaces and barges are to come on board, manned and armed, the *ſignal* is a pendant on the flag-ſtaff, hoiſted on the fore-top-maſt-head, and a gun fired; and if he would have them chaſe any ſhip, veſſel, or boat, in view, he hoiſts the pendant, and fires two guns. The *ſignal* for the long-boats to come on board him, manned and armed, is the pendant hoiſted on the flag-ſtaff, and the mizen-top-maſt-head, and a gun fired; and if he would have them chaſe any ſhip, veſſel, or boat, in open view, without coming on board him, he hoiſts the pendant, as aforeſaid, and fires two guns. When the admiral would have all the boats in the fleet come on board him, manned and armed, he hoiſts a pendant on the flag-ſtaff, both on the fore-top-maſt, and mizen-top-maſt-head, and fires one gun; but if he would have them chaſe, he hoiſts his pendants, as before, and fires two guns. When the admiral would ſpeak with the victualler, or his agent, he puts an Engliſh enſign in the mizen-top-maſt ſhrowds; and when with him that hath the charge of the gunner's ſtores, he will ſpread an enſign at his main-top-ſail-yard-arm.

SIGNALS *for managing a ſea-fight.*—When the admiral would have the fleet form a line of battle, one ſhip a-head of another, he hoiſts an union flag at the mizen-peek, and fires a gun; and every flag-ſhip does the like. But when they are to form a line of battle, one a-breaſt of another, he hoiſts a pendant with the union-flag, *&c.* When he would have the admiral of the white, or he that commands in the ſecond poſt, to tack, and endeavour to gain the wind of the enemy, he ſpreads a white flag under the flag at the main-top-maſt-head, and fires a gun; and when he would have the vice-admiral of the blue do ſo, he doth the ſame with the blue flag. If he would have the vice-admiral of the red do ſo, he ſpreads a red flag from the cap, on the fore-top-maſt-head, downward on the back-ſtay: if the vice-admiral of the blue, he ſpreads a blue flag, *&c.* and fires a gun. If he would have the rear-admiral of the red do ſo, he hoiſts a red flag at the flag-ſtaff, at the mizen-top-maſt-head; if the rear-admiral of the white, a white flag; if the rear-admiral of the blue, a blue flag, and under it a pendant of the ſame colour, with a gun. If he be to leeward of the fleet, or any part of it, and he would have them bear down into his wake or grain, he hoiſts a blue flag at the mizen-peek, and fires a gun. If he would be to leeward of the enemy and his fleet, or any part of it be to leeward of him; in order to bring theſe ſhips into the line, he bears down with a blue flag at the mizen-peek, under the union-flag (which is the *ſignal* for battle) and fires a gun; and then thoſe ſhips, that are to leeward of him, muſt endeavour to get into his wake or grain, according to their ſtation in the line of battle. When the fleet is ſailing before the wind, and he would have him, who commands in the ſecond poſt, and the ſhip of the ſtar-board quarter, to clap by the wind, and come to the ſtar-board tack, he hoiſts a red flag at the mizen-top-maſt-head: but a blue one, if he would have ſhips of the lar-board quarter, come to the lar-board tack, with a gun. If the van are to tack firſt, he ſpreads the union-flag at the flag-ſtaff, on the fore-top-maſt-head, and fires a gun, if the red flag be not abroad; but if it be, then he lowers the fore-top-ſails a little; and the union-flag is ſpread from the cap of the fore-top-maſt downwards; and every flag-ſhip doth the ſame. If the rear be to tack firſt, he hoiſts the union-flag on the flag-ſtaff, at the mizen-top-maſt-head, and fires a gun; which all the flag-ſhips are to anſwer. If all the flag-ſhips are to come into his wake or grain, he hoiſts a red flag at his mizen-peek, and fires a gun; and all the flag-ſhips muſt do the ſame. If he would have him that commands in the ſecond poſt of his ſquadron to make more ſail (though he himſelf ſhorten ſail) he hoiſts a white flag on the enſign-ſtaff. But if he that commands in the third poſt be to do ſo, he hoiſts a blue flag, and fires a gun, and all the flag-ſhips muſt make the ſame *ſignal.* Whenever he hoiſts a red flag on the flag-ſtaff at the fore-top-maſt-head, and fires a gun; every ſhip in the fleet muſt uſe their utmoſt endeavour to engage the enemy, in the order preſcribed them. When he hoiſts a white flag at his mizen-peek, and fires a gun; then all the ſmall frigates of his ſquadron, that are not of the line of battle, are to come under the ſtern. If the fleet be ſailing by a wind in the line of battle, and the admiral would have them brace their head-ſails to the maſt, he hoiſts up a yellow flag, on the flag-ſtaff, at the mizen-top-maſt-head, and fires a gun; which the flag-ſhips are to anſwer: and then the ſhips in the rear muſt brace firſt. After this, if he would have them fall their head-ſails, and ſtand on, he hoiſts a yellow flag on the flag-ſtaff of the fore-top-maſt-head, and fires a gun, which the flag-ſhips muſt anſwer, and then the ſhips in the van, muſt fall firſt, and ſtand on. If, when this *ſignal* is made, the red flag at the fore-top-maſt-head be abroad, he ſpreads the yellow flag under the red. If the fleets being near one another, the admiral would have all the ſhips to tack together, the ſooner to lie in a poſture to engage the enemy; he hoiſts an union-flag on the flag-ſtaves at the fore and mizen-top-maſt-heads, and fires a gun; and all the flag-ſhips are to do the ſame. The fleet being in a line of battle, if he would have the ſhip that leads the van, hoiſt, lower, ſet, or hawl up any of his ſails, he ſpreads a yellow flag, under that at his main-top-maſt-head, and fires a gun, which *ſignal* the flag-ſhips are to anſwer; and then the admiral will hoiſt, lower, ſet, or hawl up the ſail, which he would have the ſhip that leads the van, do; which is to be anſwered by the flag-ſhips of the fleet. When the enemies run, and he would have the whole fleet follow them, he makes all the ſail he can after them himſelf, takes down the *ſignal* for the line of battle, and fires two guns out of his fore-chaſe, which the flag-ſhips anſwer; and then every ſhip is to endeavour to come up with, and board the enemy. When he would have the chaſe given over, he hoiſts a white flag at the fore-top-maſt-head, and fires a gun. If he would have the red ſquadron draw into a line of battle, one a-breaſt of another, he puts abroad a flag, ſtriped red and white, on the flag-ſtaff at the main-top-maſt-head, with a pendant under it, and fires a gun: if the white or ſecond ſquadron is to do ſo, the flag is ſtriped red, white and blue: if the blue or third ſquadron is to do ſo, the flag is a Genoeſe enſign and pendant: but if they are to draw into a line of battle, one a-head of another, the ſame *ſignals* are made without a pendant. If they are to draw into the line of battle one a-ſtern of another, with a large wind, and he would have the leaders go with the ſtar-board tacks, aboard by the wind; he hoiſts a red and white flag at the mizen-peek, and fires a gun: but if they ſhould go with the lar-board tacks aboard, by the wind, he hoiſts a Genoeſe flag at the ſame place; which *ſignals*, like others, muſt be anſwer'd by the flag-ſhips.

SIGNATURE, Signatura, *ſigning*, a ſubſcription or putting of one's name at the bottom of an act, or deed, in one's own hand-writing. See Subscription.

Anciently, when very few people could write, they diſpenſed with the uſe of *ſignatures*; and contented themſelves with the party's ſeal. See Seal.

Signature *of the court of Rome*, is a ſupplication anſwered by the pope, whereby he grants a favour, diſpenſation, or collation to a benefice, by putting the *fiat* at the bottom thereof, in his own hand; or the *conceſſum eſt* wrote in his preſence.—This *ſignature*, at the bottom of the ſupplication, gives the name to the whole inſtrument.

The *ſignature* contains the clauſes, derogations, and diſpenſations wherewith the pope grants the favour, or the benefice; with a commiſſion for the execution thereof, either in forma dignum, or in gracious form.

A *ſignature* of the pope's own hand, whereby he anſwers, *fiat ut petitur*, is preferred to another anſwered by the preſect, in his preſence, in theſe words, *conceſſum uti petitur in præſentia D. N. papæ*. Sometimes in *ſignatures* with the *fiat*, the pope adds, *proprio motu*; which clauſe gives them ſtill further force.

There are three kinds of *ſignatures*; one in *forma gratioſa*, diſpatched on an atteſtation of the ordinary; another in *forma dignum antiqua*, diſpatched for canonicates; the third in *forma dignum noviſſima*, which is a kind of ſecond *ſignature*, or executorial letter granted where, upon the ordinary's failing to execute the firſt within thirty days, the neareſt other ordinary is enjoined to execute it.

Signature, in printing, denotes a mark at the bottom of each ſheet, to facilitate the gathering and binding of the book; and to ſhew the order and number of the quires and ſheets. See Printing.

The *ſignatures* conſiſt of the capital letters of the alphabet; and change in every ſheet. If there be more ſheets than letters in the alphabet; to the capital letter, they add a ſmall one of the ſame ſort, *i. e.* a little a after a great A, *&c.* which they repeat, as often as is neceſſary.

Signature, Signattra, is alſo uſed by ſome naturaliſts for the reſemblance a vegetable or mineral bears to any part of the human body; ſuppoſed to afford an indication of its virtues and uſe.

SIGNET, one of the king's ſeals, uſed for ſealing his private letters, and ſigning all grants which paſs his majeſty's hand by bill. See Seal.

The *ſignet* is always in the cuſtody of the king's ſecretaries: on whom attend four clerks of the *ſignet-office*. See Secretary and Clerk.

SIGNIFICATION, the ſenſe or meaning of a ſign, word, phraſe, emblem, deviſe or the like; that is, the thing denoted by ſuch ſign, word, figure, *&c.* See Sign, Word, Emblem, Devise, *&c.*

We are perfectly at a loſs as to the *ſignification* of the hieroglyphic characters of the ancients. See Hieroglyphic.

Signification, in law, is the notification of an act, *&c.* made to the oppoſite party, by a copy, *&c.* thereof, given and atteſted by a proper officer.

Some *ſignifications* are to be made to the perſon himſelf; or, at leaſt, at his houſe: for others, it is enough they be made to the party's attorney, or agent.

SIGNIFICAVIT, a writ which iſſues out of chancery, upon a certificate given by the ordinary, of a man that ſtands obſtinately excommunicate for the ſpace of forty days; for the laying him up in priſon, without bail or mainprize, till he ſubmit himſelf to the authority of the church. See Excommunication.

SIGNING. See Signature and Counter-*ſigning*.

SILENCIARY, Silentiarius, an officer among the ancient Roman ſlaves; being, according to ſome authors, a ſlave placed over the reſt, to prevent any noiſe and din, and keep them ſilent.

Seneca, in his epiſtles, mentioning the great care taken to keep the ſlaves mute, has given occaſion to Lipſius, Popma, and ſome others, to ſuppoſe, that the *ſilenciary* was eſtabliſhed in his time: but others, as Pignorius, think no ſuch concluſion can be drawn from Seneca's words; nor any thing, but that they were, even then, very ſevere in preventing any noiſe among the ſlaves.—As to the name and office of the *ſilenciary*, it was not eſtabliſhed till about the time of Salvian; who is the firſt author that mentions it.

There were alſo *ſilentiarii* eſtabliſhed in the emperor's court, called *quietis miniſtri*, and *ſilentiarii palatii*; and honoured with the further titles of *clariſſimi*, *ſpectabiles*, *devotiſſimi*, and in Greek, θαυμασιωτατοι, *q. d.* moſt admirable.

There were a great number of them; but only thirty ordinarily officiated; who were divided into three bands, each whereof had its *decurio*.—The council of Chalcedon, call the body of *ſilentiaries*, *ſchola devotiſſimorum ſilentiariorum*.

SILENI, in antiquity, a ſort of heathen demi-gods, the ſame with *ſatyrs*, which were called *ſileni* when they came to be advanced in age. See Satyr.

Yet was there one principal *Silenus* elder than any of the reſt.—Diod. Siculus ſays, he was the maſter, or tutor of Bacchus, whom he diſciplined nobly, and followed him to the wars. He quotes an ancient poet named Thymætas, who relates, that the *ſileni* aſſiſted Bacchus in the war he waged againſt the Titans; adding, that the firſt *Silenus* reigned in an iſland made by the river Triton in Lybia.—He is repreſented, as having a long tail hanging behind; which is likewiſe an attribute of all his poſterity.—The poets always mount him on an aſs.

Nonnus makes *Silenus* a ſon of Tellus; and gives him three ſons, Aſtræus, Maron and Lenæus. Servius, on Virgil's eclogue, makes *Silenus* * the ſon of Mercury; others, the ſon of Pan, and a nymph: others will have him born of the drops of the blood of Cœlus, father of Saturn.

* Bochart, in his Canaan, will have *Silenus* to take his name from שלח; or שיל, *Silo*; whence שילן, *Silan*, the name of the Meſſiah. He adds, that all attributed to this imaginary deity, is taken from what the prophets have foretold of Jeſus Chriſt.—Thus, whereas it is ſaid, the Meſſiah ſhall be the inſtructor of the people; *Silenus* is made preceptor of Bacchus. Becauſe it is ſaid, that our Savicur ſhall bind his aſs to the vine, and his colt to the young vine; *Silenus* is made to ride on an aſs. Becauſe our Saviour waſhed his garments in blood, as thoſe who trod the wine-preſs; *Silenus* was made to preſide over thoſe who preſſed the vintage. Becauſe, it is added, his eyes were red by reaſon of wine; *Silenus* was made always fuddled. Bochart, however, advances all this with a deal of diſtruſt, as he has reaſon; it having no warrant: he adds, that the devil invented the fable of *Silenus*, to turn the myſteries of our religion into ridicule. But it muſt be a very ignorant devil, to take *rubent illi oculi ex vino, & dentes ejus ex lacte albeſcunt*, in the ſenſe he has done; as if the words ſignified any thing more, in the propriety of the Hebrew tongue, than; His eyes are redder than wine; his teeth whiter than milk. We may add, that no-body, before Bochart, neither chriſtian nor idolater, ever ſaw any thing of Jeſus Chriſt in the fable of *Silenus*.

SILIQUA, in botany, the ſeed-veſſel, huſk, pod, or ſhell of a plant of the leguminous kind.—Whence

Siliquous *plants*, thoſe which produce *ſiliquæ*, or ſeed-pods. See Plant and Seed.

SILK, Sericum, a very ſoft, fine, bright, delicate thread; the work of an inſect, called *bombyx*, or the *ſilk-worm*.

The ancients were but little acquainted with the uſe and manufacture of *ſilk*: they took it for the work of a ſort of ſpider, or beetle, who ſpun it out of its entrails, and wound it with its feet about the little branches of trees.—This inſect they called *ſer*, from *Seres*, a people in Scythia, who kept it; whence the *ſilk* itſelf they called *ſericum*.—But the *ſer* has very little affinity with our *ſilk-worm*, *bombyx*: the former living five years; but the latter dying annually, enveloped in a yellowiſh bag, or ball; which, wound out into little threads, makes what we call *ſilk*.

It was in the iſle of Cos, that the art of manufacturing *ſilk* was firſt invented; and Pamphila, daughter of Platis, is honoured as the inventor.—The diſcovery was not long unknown to the Romans. *Silk* was brought them from Serica, where the worm was a native. But ſo far were they from profiting by the diſcovery, that they could not be induced to believe ſo fine a thread ſhould be the work of a worm; and thereupon formed a thouſand chimerical conjectures of their own.

This temper rendered *ſilk* a very ſcarce commodity among them for many ages: it was even ſold weight for weight with gold; inſomuch, that Vopiſcus tells us, the emperor Aurelian, refuſed the empreſs, his ſpouſe, a ſuit of *ſilk*, which ſhe ſolicited of him with much earneſtneſs; merely on account of its dearneſs.—At length, two monks, coming from the Indies to Conſtantinople in 555, brought with them great quantities of *ſilk-worms*, with inſtructions for the hatching of their eggs, rearing and feeding the worms, drawing out the *ſilk*, ſpinning and working it. Upon this, manufactures were ſet up at Athens, Thebes and Corinth.

About the year 1130, Roger king of Sicily, eſtabliſhed a *ſilk* manufactury at Palermo, and another in Calabria; managed by workmen, who were part of the plunder brought from Athens, Corinth, *&c.* whereof that prince made a conqueſt in his expedition to the holy land.—By degrees, Mezeray adds, the reſt of Italy and Spain learned from the Sicilians and Calabrians, the management of the *ſilk-worms*, and the working of *ſilk*: and at length the French, by right of neighbourhood, a little before the reign of Francis I. began to imitate them.

The great advantage the new manufacture turned to, made our King James I. very earneſt for its being introduced into England: accordingly, it was recommended ſeveral times from the throne, and in the moſt earneſt terms, to plant mulberry-trees, *&c.* for the propagation of *ſilk-worms*; but, unhappily, without effect: though from the various experiments we meet withal in the Philoſophical Tranſactions, and other places, it appears, that the *ſilk-worm* thrives and works as well, in all reſpects, in England, as in any other part of Europe.

The *ſilk-worm* is an inſect, not more remarkable for the precious matter it furniſhes for divers ſtuffs, than for the many forms it aſſumes, before and after its being inveloped in the rich cod or ball it weaves itſelf. From a ſmall egg about the ſize of a pin's head, which is its firſt ſtate, it becomes a pretty big worm, or maggot, of a whitiſh colour, inclining to yellow. In this ſtate it feeds on mulberry-leaves, till being come to maturity, it winds itſelf up into a *ſilken* bag, or caſe, about the ſize and ſhape of a pidgeon's egg; and becomes metamorphoſed into an aurelia: in this ſtate it remains without any ſigns of life, or motion: till at length it awakes, to become a butter-fly; after making itſelf a paſſage out of its *ſilken* ſepulchre. And, at laſt, dying indeed, it prepares itſelf, by an egg, or ſeed it caſts, for a new life; which the warmth of the ſummer-weather aſſiſts it in reſuming. See INSECT.

As ſoon as the *ſilk-worm* is arrived at the ſize and ſtrength neceſſary for beginning his cod; he makes his web: for it is thus they call that ſlight tiſſue, which is the beginning, and ground of this admirable work. This is his firſt day's employment. On the ſecond, he forms his folliculus or ball, and covers himſelf almoſt over with *ſilk*. The third day, he is quite hid; and the following days employs himſelf in thickening and ſtrengthening his ball: always working from one ſingle end, which he never breaks by his own fault; and which is ſo fine, and ſo long, that thoſe who have examined it attentively, think they ſpeak within compaſs, when they affirm, that each ball contains *ſilk* enough to reach the length of ſix Engliſh miles.

In ten days time, the ball is in its perfection; and is now to be taken down from the branches of the mulberry-tree, where the worms have hung it.—But this point requires a deal of attention; for there are ſome worms more lazy than others; and it is very dangerous waiting till they make themſelves a paſſage, which uſually happens about the fifteenth day of the month.

The firſt, fineſt and ſtrongeſt balls, are kept for the grain; the reſt are carefully wound: or, if it is deſired to keep them all, or if there be more than can be well wound at once; they lay them for ſome time in an oven moderately hot, or elſe expoſe them, for ſeveral days ſucceſſively, to the greateſt heats of the ſun, in order to kill the inſect; which, without this precaution, would not fail to open itſelf a way to go and uſe thoſe new wings abroad, it has acquired within.

Ordinarily, they only wind the more perfect balls. Thoſe that are double, or too weak, or too coarſe, are laid aſide; not as altogether uſeleſs, but that, being improper for winding, they are reſerved to be drawn out into ſkains.

The balls are of different colours; the moſt common are yellow, orange-colour, iſabella, and fleſh-colour.—There are ſome alſo of a ſea-green; others of a ſulphur-colour, and others white: but there is no neceſſity for ſeparating the colours and ſhades to wind them apart; as all the colours are to be loſt in the future ſcouring and preparing of the *ſilk*.

To wind the SILK *from off the balls.* Two machines are neceſſary; the one a furnace, with its copper; the other a reel, or frame, to draw the *ſilk*.—The winder, then, ſeated near the furnace, throws into the copper of water over the furnace (firſt heated and boiled to a certain degree, which cuſtom alone can teach) a handful or two of balls, which have been firſt well purged of all their looſe furry ſubſtance. He then ſtirs the whole very briſkly about with birchen rods, bound and cut like bruſhes; and when the heat and agitation have detached the ends of the *ſilks* of the pods, which are apt to catch on the rods, he draws them forth; and joining ten or twelve, or even fourteen of them together, he forms them into threads, according to the bigneſs required to the works they are deſtined for: eight ends ſufficing for ribbands, and velvets, *&c.* requiring no leſs than fourteen. The ends thus joined into two or three threads, are firſt paſſed into the holes of three iron rods, in the fore-part of the reel, then upon the bobbins, or pullies, and at laſt are drawn out to the reel itſelf, and there faſtened; each to an end of an arm or branch of the reel. Thus diſpoſed, the workman, giving motion to the reel, by turning the handle, guides his threads; ſubſtitutes new ones, when any of them break, or any of the balls are wound out; ſtrengthens them where neceſſary, by adding others; and takes away the balls wound out, or that having been pierced, are full of water.

In this manner, two workmen will ſpin and reel three pounds of *ſilk* in a day; which is an otherguiſe diſpatch than is made by the ſpinning-wheel, or diſtaff.—Indeed, all *ſilks* cannot be ſpun and reeled after this manner: either by reaſon the balls have been perforated by the *ſilk-worms* themſelves, or becauſe they are double, or too weak to bear the water; or becauſe they are coarſe, *&c.* Of all theſe together, they make a particular kind of *ſilk* called *floretta:* which being carded, or even ſpun on the diſtaff, or the wheel, in the condition it comes from the ball, makes a tolerable *ſilk*.

As to the balls, after opening them with ſciſſars, and taking out the inſects (which are of ſome uſe for the feeding of poultry) they are ſteeped three or four days in troughs, the water whereof is changed every day to prevent their ſtinking. When they are well ſoftened by this ſcouring, and cleared of that gummy matter, the worm had lined the inſide withal, and which renders it impenetrable to the water, and even to air itſelf, they boil them half an hour in a lye of aſhes, very clear and well ſtrained: and after waſhing them out in the river, and drying them in the ſun, they card and ſpin them on the wheel, *&c.* and thus make another kind of floretta, ſomewhat inferior to the former.

The ſeveral preparations which *ſilks* undergo, to fit them to be uſed in the manufacture of *ſilken* ſtuffs, are the ſpinning, reeling, milling, bleaching and dying.—The two firſt we have already ſpoke of, as they are concerned in drawing the *ſilk* from off the balls.—As to the ſpinning and reeling of raw *ſilks* off the balls, ſuch as they are brought hither from Italy, the Levant, *&c.* the firſt is chiefly performed on the ſpinning-wheel; and the latter, either on hand-reels, or on reels mounted on machines, which ſerve to reel ſeveral ſkains at the ſame time.—As to the milling, they uſe a mill compoſed of ſeveral pieces, which may mill two or three hundred bobbins at once, and make them into as many ſkains. See MILLING. For the bleaching and dying, ſee BLEACHING and DYING.

Silk is diſtinguiſhed by different names according to its different ſtates.—Thus,

Raw SILK, is that taken from the ball, without fire, and wound without any coction: ſuch as is moſt, if not all, that is brought into England from the Levant.

In the French *ſilk-works*, the greateſt part of this *raw ſilk* paſſes for little better than a kind of fine floretta; yet, when ſpun, it makes a bright thread, and ſerves for the manufacture of ſtuffs of moderate value and luſtre. But the *raw ſilks* of the Levant, whence moſt of ours come, are exceeding fine and beautiful.—This difference ariſes hence, that in France the beſt balls are ſpun and wound in boiling water, and only the refuſe made into *raw ſilk:* whereas, in the Levant, there is no ſuch thing as ſpinning or winding on the fire; but the *ſilks* are all ſent in bales or packs, as they are drawn from off the balls: ſo that they are only diſtinguiſhed by their quality of fine, middling, and coarſe.

Boiled SILK, is that which has been boiled in water, to facilitate the ſpinning and winding.—This is the fineſt of all the ſorts of *ſilk* manufactured in France, and is ſeldom uſed, but in the richeſt ſtuffs; as velvets, taffaties, damaſks, brocades, *&c.*

There is alſo another kind of *boiled ſilk*, which is prepared by boiling, to be milled; and which cannot receive that preparation, without being firſt paſſed through hot water.

By the laws of France, it is prohibited to mix raw with *boiled ſilk*; both as ſuch a practice ſpoils the dying, and as the raw *ſilk* corrupts and cuts the boiled.

Throwed or *twiſted* SILKS are ſuch, as, beſide their ſpinning and winding, have received their milling or throwing.

This they receive in a different degree, as they are paſſed oftener, or ſeldomer, over the mill: properly, however, *throwed ſilks*, are thoſe wherein the threads are pretty thick throwed, and are twiſted ſeveral times.

Slack SILKS are ſuch as are not twiſted, but are prepared, and dyed, for tapeſtry, and other works, with the needle.

Eaſtern, or *Eaſt-Indian* SILK.—That particularly thus called, is not the work of the *ſilk-worms*, but comes from a plant that produces it, in pods, much like thoſe of the cotton-tree. The matter this pod contains is extremely white, fine, and moderately gloſſy: it ſpins eaſily, and is made into a kind of *ſilk*, that enters the manufacture of ſeveral Indian and Chineſe ſtuffs.

French SILKS.—It is only in the moſt ſouthern provinces of France, that *ſilk* is cultivated, mulberry-trees planted, and worms bred. The principal are thoſe of Languedoc, Dauphine, Provence, Avignon, Savoy and Lyons.—This laſt place, indeed, furniſhes very few *ſilks* of its own growth; but is the great ſtaple whence the merchants of Paris and the other cities are to fetch them: at leaſt, they are obliged to have them paſs through Lyons, if they bring them from elſewhere, either by land or ſea.

There are computed to enter Lyons, *communibus annis*, 6000 bales; the bale valued at 160 pound weight: of which 6000 bales, there are 1400 from the Levant, 1600 from Sicily, 1500 from Italy, 300 from Spain, and 1200 from Languedoc, Provence and Dauphine.

At the time when the manufactures of Lyons were in their proſperity, there were reckoned 18000 looms employed in the *ſilk* manufacture; but they are ſo fallen, that even in 1698, there were not reckoned 4000.—The decay is not leſs notable at Tours: they had formerly 700 mills for winding and preparing the *ſilks*; 8000 looms to weave them, and 40,000 perſons employed in the preparation and manufacturing thereof; which are now reduced to 70 mills, 1200 looms, and 4000 perſons.

Sicilian SILKS.—The commerce of the *ſilks* of Sicily is very conſiderable; and the Florentines, Genoeſe and Luccеſe, are the people who chiefly make it. Great quantities are yearly brought thence, eſpecially from Meſſina; part whereof they uſe in their own manufactures, and ſell the reſt to their neighbours, the French, *&c.* with profit.—The Italians have this advantage, eſpecially the Genoeſe, over other people, that having large eſtabliſhments in the iſland, they are reputed as natives, and pay no duty for the export.

Part of the *Sicilian ſilks* are raw; the reſt ſpun and milled; of which laſt kind, thoſe of St. Lucia and Meſſina, are the moſt valued.—The raw, unwrought *ſilks* are always ſold for ready money; the others, ſometimes, in exchange for other goods.

Italian Silks.—The *ſilks* brought from Italy are partly wrought, and partly raw, and unwrought. Milan, Parma, Lucca and Modena, furniſh none but the latter kind; Genoa moſt of the former; Boulogna affords both kinds.

Spaniſh Silks, are all raw; and are ſpun, milled, *&c.* in England, according to the ſeveral works they are to be uſed in.

Turky Silks, are all raw.—One advantage we have in the commerce of the Levant, in *ſilks*, wanting in thoſe of Sicily, is, that the latter are confined to a particular ſeaſon of the year; whereas the former are bought at all times. They are brought from Aleppo, Tripoli, Sayda, from the iſle of Cyprus, Candia, *&c.*—But the principal place of commerce, eſpecially for the *ſilks* of Perſia, is Smyrna. The *ſilks* are brought hither in caravans, from the month of January to September. The caravans in January, are loaden with the fineſt *ſilks*; thoſe of February and March bring indifferent ones; the reſt, the coarſeſt.

They all come from the ſeveral Provinces of Perſia, chiefly thoſe of Quilan and Schiruvan, and the city of Schamachia, ſituate near the edge of the Caſpian ſea; from which three places, a Dutch author aſſures us, there do not come leſs than 30,000 bales of *ſilk* in a year.—Ardeuil or Ardebil, another city of Perſia, not far diſtant from theſe *ſilk* countries, is the place where the *ſilks* are laid up, and whence the caravans ſet out for Smyrna, Aleppo and Conſtantinople; and it is this city, with Schamachia, that have always been eſteemed the centre of the *ſilk* trade; which has been ſeveral times attempted to be removed from Smyrna and the Mediterranean, in favour of Archangel and the White ſea, by carrying them acroſs Muſcovy, by the Volga and Dwina, two rivers that traverſe the principal provinces of that vaſt empire.

This new courſe of the Perſian *ſilks* into Europe, was firſt propoſed by Paolo Centurio, a Genoeſe, to the czar Baſil, under the pontificate of Leo X. The French had the ſame deſign in 1626. The duke of Holſtein, in 1633, ſent ambaſſadors to the court of Perſia purely with the ſame view: and in 1668, the czar Alexis Michael attempted the thing himſelf; but was diſappointed by the rebellion of the Coſſacks, and the ſurprize of Aſtracan.

In 1688, the commerce of Perſian *ſilks* had like to have been removed from Smyrna, by an earthquake, which almoſt overturned the whole city: and, doubtleſs, the removal had been effected, but for the vigorous means uſed by the Turks to prevent it.—Smyrna, however, ſtill remains in her ancient poſſeſſion; and the ſeveral nations of Europe continue every year to ſend their fleets, to fetch away the *ſilks*; and matters are like to remain ſo, unleſs the conqueſts made by the late czar, along the Caſpian ſea, enable his ſucceſſors, as it is certain he himſelf had ſuch a thing in view, to put this great deſign in execution.

China, *Japan* and *Indian* Silks.—Several provinces of China are ſo fertile in mulberry-trees, and their climate ſo agreeable to the nature of *ſilk-worms*, that the quantity of *ſilk* here produced is incredible: the ſingle province of Tchekiam might ſupply all China, and even a great part of Europe, with this commodity. The *ſilks* of this province are the moſt eſteemed, though thoſe of Nanquin and Canton be excellent.

The *ſilk* trade is the principal in China, and that which employs the moſt hands: but the European merchants, who deal in it, eſpecially in wrought *ſilks*, are to be careful of the ſpinning, *&c.* the waſte being uſually very great, as the French Eaſt-India company lately found to their coſt.

Japan would not afford fewer *ſilks* than China; but that the Japaneſe, a barbarous and diſtruſtful people, have interdicted all commerce with ſtrangers, eſpecially with Europeans; excepting with the Dutch; who are ſaid to be admitted on certain impious terms, related by Tavernier, but which we muſt own we cannot credit. Accordingly, the Dutch have endeavoured to vindicate themſelves by the pens of ſeveral famous writers.

The *ſilks* of the ſtates of the great mogul, are brought almoſt wholly from Kaſem-bazar, a mediterranean place, whence they are conveyed by a canal of fifteen leagues into the Ganges, by which, they are forwarded fifteen leagues further, to the mouth of the famous river of Indoſtan.—The *ſilk* of Kaſem-bazar is yellowiſh; as are alſo thoſe of Perſia and Sicily; there being none, that we know of, naturally white, but that of Paleſtine. The Indians, however, whiten it with a lye made of the aſhes of a tree, called *Adam's fig-tree*; but as the tree is pretty ſcarce, the Europeans are forced to take the greateſt part of their *ſilks* in the native yellow.

Kaſem-bazar alone, is computed to furniſh every year twenty-two thouſand bales of *ſilk*, each bale weighing 100 pounds. The Dutch buy it almoſt all up; not to bring it into Europe, no more than they do that of Japan; but to exchange it for other rich merchandizes; particularly bars of ſilver, *&c.*

Spider Silk.—Within a few years the ſecret has been found in France, of procuring and preparing *ſilk* of the webs of ſpiders; and uſing it in ſeveral manufactures. This diſcovery is owing to M. Bon, in 1710, who publiſhed a diſſertation on the ſubject; whence what follows is extracted. See *Spider*-Web.

Spiders are uſually diſtinguiſhed, either with regard to their colour; as, into black, brown, yellow, white, *&c.* or with regard to the number, or arrangement, of their eyes; ſome having 6, others 8, others 10.—But with regard to the *ſilk-ſpider*, M. Bon reduces them all to two kinds, thoſe with long legs, and thoſe with ſhort: which laſt, are thoſe which furniſh the raw *ſilk*.

The *ſilk-ſpider* makes a *ſilk*, every whit as beautiful, gloſſy, and ſtrong as the *ſilk-worm*: it ſpins it out of the anus, around which are five papillæ, or ſmall nipples, and behind theſe, two others; all muſculous, and furniſhed with ſphincters.—Theſe nipples ſerve, as ſo many wire-drawing-irons, to form and mould a viſcous liquor, which, when dried in the air, after being drawn through them, makes the *ſilk*.

Each of theſe nipples, M. Reaumur obſerves, conſiſts of a number of leſſer and inſenſible ones; which one may be convinced of, by preſſing a ſpider's belly between the fingers, to oblige the liquor to flow into the nipples; for by this means, applying the finger againſt the anus, ſeveral diſtinct threads will be drawn out through the ſeveral perforations of the nipples.—The threads are too fine to be told with any certainty; but M. Reaumur reckons, each larger nipple may ſend forth ſix or ſeven.

Hence we ſee, how the ſpiders make their threads bigger, or ſmaller: for as, before they begin to ſpin, they always apply more or fewer of theſe ſix nipples, againſt the body whence the web is begun; or as they apply each more or leſs ſtrongly, ſo as more or fewer of the minuter nipples come to take; the thread thus ſpun, will be a compound of more or fewer of the ſingle threads. Indeed, as the threads come from the anus, all joined together, they appear to be ſingle; but M. Bon has diſtinguiſhed one of the ſingle ones to conſiſt of 15 or 20 diſtinct threads.

The threads are of two kinds: the firſt is weak, and only ſerves for that kind of web wherewith they catch flies.—The ſecond is much ſtronger, and ſerves to wrap up their eggs in; which, by this means, are ſheltered from the cold, as well as from inſects, which might otherways gnaw and ſpoil them. Theſe threads they wind very looſely round the eggs, reſembling the balls or bags of *ſilk-worms*, that have been prepared and looſened for the diſtaff.

The ſpider-bags are of a grey colour when new; but turn blackiſh when long expoſed to the air: indeed, one might find other ſpider-bags of other colours, and which would afford a better *ſilk*, but their ſcarcity would render the experiment difficult; for which reaſon we confine ourſelves to the bags of the commoneſt ſpiders, which are the ſhort-legged kind.—Theſe always find out ſome place ſecure from the wind and rain, to make their bags; as, hollow trees, the corners of windows, or vaults, or under the eaves of houſes.

By collecting a quantity of theſe bags, a new *ſilk* is made, inferior in nothing to the common *ſilk*. It takes all kinds of dyes, and may be made into all kinds of ſtuffs.—M. Bon had ſtockings and gloves made of it, which he preſented to the academy; and others to the royal ſociety.

For the manner of preparing the bags to get the *ſilk*, it is thus: after having gathered 12 or 13 ounces of theſe bags, M. Bon had them well beaten for ſome time, with the hand, and a ſtick, to get out all the duſt: he then waſhed them, in luke-warm water, till they left the water very clean: after this, he laid them to ſteep, in a large veſſel, with ſoap and ſalt-petre, and gum-arabic. The whole was left to boil over a gentle fire, for three hours. The bags were next waſhed, in warm water, to get out the ſoap; and, after all, laid to dry ſome days, to fit them for carding; which was performed by the common *ſilk-carders*, but with cards much finer than ordinary.—By this means, he had a *ſilk*, of a very particular aſh-colour, which was eaſily ſpun, and the thread ſpun from it, both ſtronger and finer than that of common *ſilk*; which ſhews, that all ſorts of works may be made of it: nor is there any reaſon to fear, but it will ſtand any trials of the loom, after having paſſed that of the ſtocking-weavers.

The only difficulty, now, is in procuring a ſufficient quantity of ſpiders bags to make any conſiderable work of it: which M. Bon obſerves, would be no difficulty at all, had we but the art of breeding them as they do *ſilk-worms*. For they multiply much more; every ſpider laying 6 or 700 eggs, whereas the *ſilk-worms* do not lay above 100; yet are theſe laſt ſo tender, *&c.* that one half die without making any bags, or are hindered by ſome little accident, from making their bags: whereas the ſpiders hatch of themſelves, without any care, in the months of Auguſt and September, in fifteen or ſixteen days after they are laid; the old ſpiders that lay them, dying ſoon after. The young ones thus bred, live ten or twelve months without eating, and continue in their bags without growing, till the hot weather putting their viſcid juices in motion, forces them to come forth, ſpin, and run about to ſeek food.—Were a way, therefore, found of breeding young ſpiders in rooms, they would, doubtleſs, furniſh a much greater quantity of bags than *ſilk-worms* do. For of ſeven or eight hundred young ſpiders, which M. Bon kept, ſcarce one died in a year; whereas of one hundred *ſilk-worms*, not forty lived to make their bags. M. Bon having ordered all the ſhort-legged ſpiders that could be found in the months of Auguſt and September, to be brought to him, ſhut them up in paper coffins, and pots; covering the pots with papers, which he pricked full of pin-holes, as well as the coffins, to give them air. He fed them with flies, and found ſometime afterwards the greateſt part of them had made their bags.—The ſame excellent perſon found that ſpiders bags, with regard to their weight, afford much more *ſilk* than thoſe of the *ſilk-worms*: as a proof hereof, he obſerves, that thirteen ounces yield near four ounces of clear *ſilk*, two ounces whereof will make a pair of ſtockings; whereas ſtockings of common *ſilk* weigh ſeven or eight ounces.

Nor is there any venom in the *ſilk*, or even in the ſpider, as many have imagined. M. Bon has been bit by them ſeveral times, without any manner of harm; and as for the *ſilk* it is uſed with very good ſucceſs, to ſtop bleeding and cure wounds, the natural gluten thereof acting as a kind of balſom.—It likewiſe yields, by diſtillation, ſeveral ſpecific medicines, particularly great quantities of ſpirit, and volatile ſalt, which being prepared after the ſame manner as that drawn from the bags of *ſilk-worms*, in making the guttæ Anglicanæ, or Engliſh drops, ſo famous over all Europe; may ſerve to make other drops of greater efficacy, which M. Bon calls *drops of Montpellier*, to be uſed in all ſleepy diſeaſes. See GUTTÆ.

M. Reaumur being appointed by the royal academy, to make a further enquiry into this new *ſilk-work*, has raiſed ſeveral objections and difficulties againſt it; which are found in the memoirs of the academy for the year 1710. The ſum of what he has urged, amounts to this.—The natural fierceneſs of the ſpiders, renders them unfit to be bred and kept together: four or five thouſand being diſtributed into cells, 50 in ſome, 100 or 200 in others; the big ones killed and eat the leſs, ſo that in ſhort time, there were ſcarce left one or two in each cell: and to this inclination of mutually eating one another, M. Reaumur aſcribes the ſcarcity of ſpiders, conſidering the vaſt number of eggs they lay.

But this is not all: he even affirms, that the ſpider's bag is inferior to that of the *ſilk-worm*, both in luſtre and ſtrength; and that it produces leſs matter to be manufactured. The thread of the ſpider's web only bears a weight of two grains without breaking; that of the bag bears 36. The latter, therefore, in all probability, is eighteen times thicker than the former; yet is it weaker than that of the *ſilk-worm*, which bears a weight of two drams and a half. So that five threads of the ſpider's bag muſt be put together to equal one thread of the *ſilk-worm's* bag.

Now, it is impoſſible theſe ſhould be applied ſo juſtly over one another, as not to leave little vacant ſpaces between them, whence the light will not be reflected; and of conſequence, a thread thus compounded, muſt fall ſhort of the luſtre of a ſolid thread. Add to this, that the ſpider's thread cannot be wound off, as that of the *ſilk-worm* may; but muſt, of neceſſity, be carded; by which means being torn in pieces, its evenneſs, which contributes much to its luſtre, is deſtroyed. In effect, this want of luſtre was taken notice of by M. de la Hire, when the ſtockings were preſented to the academy.

Again, ſpiders furniſh much leſs *ſilk* than the worms: the largeſt bags of theſe latter, weigh four grains; the ſmaller three grains; ſo that 2304 worms, produce a pound of *ſilk*. The ſpiders bags do not weigh above one grain: yet, when cleared of their duſt and filth, loſe two thirds of their weight. The work of 12 ſpiders, therefore, only equals that of one *ſilk-worm*; and a pound of *ſilk* will require at leaſt 27648 ſpiders. But, as the bags are wholly the work of the females, who ſpin them to depoſit their eggs in; there muſt be kept 55296 ſpiders, to yield a pound of *ſilk*. Yet will this only hold of the beſt ſpiders; thoſe large ones ordinarily ſeen in gardens, &c. ſcarce yielding a twelfth part of the *ſilk* of the others. 280 of theſe, he ſhews, would not do more than one *ſilk-worm*; and 663552 of them would ſcarce yield a pound.

SILLON, in fortification, an elevation of earth made in the middle of the moat, to fortify it, when too broad. See DITCH.

The *ſillon* is more uſually denominated *envelope*. See ENVELOPE.

SILVER, a white, rich ſort of metal; being the fineſt, pureſt, moſt ductile, and moſt precious of all metals, except gold. See METAL.

There are *ſilver mines* in all the four quarters of the world. Europe has its ſhare; nor is our own iſland quite deſtitute thereof, though it has none of much value.

The mines of Peru, and ſome other parts of America, are much the richeſt, and moſt abundant; they appear almoſt inexhauſtible; particularly thoſe of Potoſi, which continue to be dug with equal advantage as when firſt diſcovered; with this only difference, that the veins which were then almoſt in the ſurface of that famous mountain, are now ſunk to prodigious depths, the workmen going into them by a painful deſcent of four or five hundred ſteps.—Many millions of Indians have periſhed in them; and prodigious numbers continue to be deſtroyed yearly.

The ores, or mineral ſtones they dig, are not all of the ſame quality, conſiſtence, or colour: ſome are white, or aſh-coloured, ſpotted with red, or blue: and called *plata blancha*: others are black, and called *plomo-ronco*: theſe laſt are the richeſt, and the eaſieſt wrought; no mercury being here needed; nor any thing, but to put them in the fire: where the lead evaporating, leaves the *ſilver* pure. The Indians, who, till the arrival of the Spaniards, knew nothing of the uſe of mercury, melted none but of this kind of mineral.—The *roſſicler*, is another black mineral diſtinguiſhed by whetting and rubbing it againſt iron, which turns it red. It is very rich, and the metal it yields, of the beſt ſort. The *zoroche* burns like talc, and looks as if *ſilvered*; though it does not yield much. The *paco* is a yellow red, very ſoft, and found almoſt broke in pieces; it is not rich. The *cobriſſo* is green, and half friable. Though the *ſilver* of this be viſible, yet it is exceedingly difficultly drawn from it, by reaſon of the copper wherewith it is intermixed. Laſtly, the *arannea*, which is only found in Potoſi, and that only in the mine of Cotamito, conſiſts of threads of pure *ſilver*, interwove like a *ſilver* galoon, that has been burnt to get out the ſilk.

The *ſilver veins*, of what quality ſoever, are uſually richer in the middle, than towards the extremes: but the richeſt places are thoſe where the veins interſect.—It is reckoned a great addition to the richneſs of a mine to be near a river, for the advantage of mills to grind ore. At Lipes and Potoſi, for inſtance, the caxon of ore muſt yield ten marks to defray expences; whereas, at Tanava, there need not above five.

The moſt uſual way of ſeparating the *ſilver* from the ore, is by what they call *pinea's*. See PINEA.—Sometimes, however, they uſe nothing but fire frequently repeated: or aqua fortis.

What renders the working of the mines exceedingly dangerous, is the exhalations ariſing from them; which are even felt on the out-ſide; and make an impreſſion on animals grazing in the neighbourhood; but in the in-ſide, ſtupify the miners, none of whom can bear ſo poiſonous an air above a day together. Sometimes it is ſo fatal, that it kills on the ſpot; and obliges them to ſtop up the veins again, whence it exhales.—The mines of Potoſi, are much the leaſt ſubject to them; and yet, without the herb paraguay, the infuſion whereof is taken by the miners, as we do that of tea, thoſe mines muſt be ſoon abandoned.

Though the mines of Potoſi and Lipes, ſtill keep up their reputation, yet are there ſeveral diſcovered within theſe few years, that exceed them much in richneſs: ſuch are the mines of Oruro, eight leagues from Arica, and thoſe of Ollachea, near Cuſco, opened in 1712.—It is remarkable, that moſt of the mines in America, are found in cold and barren places.

The method of ſeparating *ſilver* from the ore, in Europe, is the ſame as that of gold: that is, by means of quick-ſilver; with this difference, that for *ſilver*, to every fifty hundred weight of ore, is added one hundred weight of rock-ſalt, or ſome other natural ſalt.—That curious operation may be ſeen at length under the article GOLD.

To ſeparate the *ſilver* from the mercury, wherewith it is amalgamated; they have a furnace open a-top; and the aperture covered with a kind of capital made of earth, of a cylindrical form; that may be clapped on, or taken off at pleaſure.—The maſs of *ſilver*, and mercury, being laid in the furnace, the capital applied, and the fire lighted underneath; the quick-ſilver raiſed by the action of the fire, in form of vapour, is caught in the capital, and taken thence, to be uſed in a ſecond operation.

The ſtandard of fine *ſilver* is 12 penny-weights, each conſiſting of 24 grains. When it is below this, it muſt be raiſed to it by refining; which is uſually performed by means of lead.—In order to this, a coppel is filled with a mixture of brick-aſhes, and aſhes of a bullock's or other bones. It is ſet on the fire, and heated red hot; in which ſtate the lead is put in, and when this is melted, the *ſilver*, in the proportion of a pound of lead to four or five ounces of *ſilver*, and even ſomewhat more lead, if the *ſilver* be very coarſe. As theſe two metals melt together, the copper, before mixed with the *ſilver*, diſſipates in ſmoak, or goes away with the ſcum and litharge; and ſo does the lead itſelf; leaving the *ſilver* alone in the coppel, in its proper degree of fineneſs. See LITHARGE.

In this method of refining, wherein 6 or 7000 pounds may be refined at once; the metal is drawn out of the coppel two ways; the one by plunging in it, while ſtill liquid, a thick bar of iron, round which, the *ſilver* ſticks in form of a ſhell, or cruſt; repeating this again and again: the other, is by letting the coppel ſtand till it be cold; in the bottom whereof, the *ſilver* fixes in form of a cake.

Beſides the refining of *ſilver* with lead, there is another manner of doing it with ſalt-petre; which ſee under the article REFINING.

But both the one and the other are tedious and troubleſome; when performed on large quantities. This occaſioned M. Homberg to endeavour to ſhorten the operation; which he effected with good ſucceſs.—His method is; to calcine the *ſilver* with half its weight of common ſulphur; and after melting the whole together, to caſt a quantity of ſteel filings upon it at ſeveral times: upon this, the ſulphur quits the *ſilver*, and joins itſelf to the iron, and both are converted into ſcoria, which ſwim on the *ſilver*; and the metal itſelf is found pure at the bottom of the crucible.

The eſſay of *ſilver* is alſo made by the coppel, in the ſame manner as the refining by lead. If the *ſilver*, after this eſſay, preſerve its weight, it is ſtandard; if it loſe, the grains, or even penny-weights of its diminution, are accounted. See ESSAY. See alſo STANDARD.

SILVER *wire*, is *ſilver* drawn through the holes of a wire-drawing-iron, and by this means reduced to the fineneſs of a thread or hair.—The manner of drawing it, ſee under the article GOLD-WIRE. See alſo WIRE and DRAWING.

SILVER *leaf*, is that which the gold-beaters have reduced into fine, thin leaves, to be uſed by gilders, &c. See GOLD-LEAF.

Shell SILVER, is made of the ſhreads of *ſilver* leaves, or of the leaves themſelves: uſed in painting, and *ſilvering* certain works.—It is prepared after the ſame manner as ſhell-gold. See GOLD.

SILVER, in chymiſtry, is called *luna*, moon; and ſeveral preparations are made from it: particularly, a

Tincture of SILVER, made by diſſolving thin *ſilver* plates, or *ſilver* ſhot in ſpirit of nitre; and pouring the diſſolution in another veſſel full of ſalt-water. By this means, the *ſilver* is immediately precipitated in a very white powder, which they waſh ſeveral times in ſpring-water. This powder they put in a matraſs; and pour rectified ſpirit of wine, and volatile ſalt of urine upon it. The whole is left to digeſt in a moderate heat for fifteen days; during which, the ſpirit of wine aſſumes a beautiful ſky-blue colour, and becomes an ingredient in ſeveral medicines.—This is alſo called *potable ſilver*, *argentum potabile*.

Silver is likewiſe converted into cryſtals, by means of the ſame ſpirit of nitre; and it is this is called *vitriol of ſilver*. See CRYSTAL.

The *lapis infernalis argenteus* is nothing but the cryſtals of *ſilver* melted with a gentle heat in a crucible; and then poured into iron moulds.

Ale SILVER, See ALE *ſilver*.
Herring SILVER, See HERRING.
King's SILVER, See KING'S *ſilver*.
Rep SILVER, See REP *ſilver*.
White hart SILVER, See WHITE HART *ſilver*.

Quick SILVER. See the article MERCURY.

SILVERING, the covering of any work with ſilver-leaf. See SILVER-*leaf*.

It is uſual to ſilver metals, wood, paper, &c. which is performed either with fire, oil, or ſize. Metal-gilders ſilver by the fire: painter-gilders, all the other ways. See GILDING.

SILVESTRIS, or SYLVESTRIS, a red grain or ſeed uſed by ſome to dye in ſcarlet. See DYING and SCARLET.

The tree that produces it, is peculiar to the province of Guatimala in New Spain: it is not unlike that which produces the cochineel, only in this, that the fruit containing the grain is ſomewhat longer than that of the cochineel-tree.—When the fruit of the former is ripe, it opens of itſelf, and caſts out its ſeed upon a gentle ſhaking; and the Indians gather it in earthen plates ſet under the tree for the purpoſe.

Eight or ten of theſe fruits do not yield above an ounce of ſeed; whereas four of the cochineel fruits yield an ounce of inſects.—The two drugs are much like one another, as to the eye, but prove very different; the tincture of cochineel being infinitely more beautiful than that of the *ſilveſtris*. See COCHINEEL.

SIMA, or CYMA, in architecture, a term uſed by Wolfius, and ſome other writers, for what we otherwiſe call *cymatium* or *ſimatium*. See CYMA and CYMATIUM.

SIMATIUM, or SIMAISE, in architecture. See CYMATIUM.

Simatium and *cymatium*, are generally confounded together; yet they ought to be diſtinguiſhed: the latter being the genus and the former the ſpecies.—*Simatium* of *ſima*, camous, according to Felibien, is the laſt and uppermoſt member of grand corniches, called particularly the great *doucine*, or *gula recta*; and by the Greeks, *epititheta*.

In the antique buildings, the *ſimatium*, a-top of the Doric corniche, is generally in form of a cavetto, or ſemi-ſcotia; as we ſee particularly in the theatre of Marcellus.—This, ſome modern architects have imitated; but in the Ionic order, the *ſimatium* is always a doucine.

The *ſimatium*, or doucine, then, is diſtinguiſhed from the other kinds of *cymatia*, by its being camous, or flat-noſed. See DOUCINE.

SIMELIUM *, a Latin term, uſed by ſome to ſignify a table, with ranges of little cavities therein, for the diſpoſing of medals in chronological order. See MEDAL and SERIES.

* The word is but ill wrote: it ſhould rather be *cimelium*; as being formed of the Greek κειμηλιον, curioſities, or a cabinet of precious things.

We more uſually ſay, a cabinet of medals, than a *ſimelium*.

SIMILAR, in arithmetic and geometry, the ſame with *like*. See LIKE.

Thoſe things are ſaid to be *ſimilar*, or *like*, which cannot be diſtinguiſhed but by their com-preſence; that is, either by immediately applying the one to the other, or ſome other third to them both. So that there is nothing found in one of the *ſimilar* things, but is equally found in the other.

Thus, if you note all the things in A, which may be diſcerned and conceived, without aſſuming any other; and, in like manner, note all the things in B, which may be thus conceived: and A be *ſimilar* to B; all things in A will be the ſame with thoſe in B.

Since a quantity cannot be underſtood, otherwiſe, than by aſſuming ſome other quantity to refer it to; *ſimilar* things, notwithſtanding their ſimilitude, may differ in quantity: and ſince, in *ſimilar* things, there is nothing wherein they differ, beſide the quantity; quantity itſelf is the internal difference of *ſimilar* things. See SIMILITUDE.

In mathematicks, *ſimilar* parts, as A a, have the ſame ratio to their wholes B b; and if the wholes have the ſame ratio to the parts, the parts are *ſimilar*.—*Similar parts* A a, are to each other as their wholes B b. See PART.

SIMILAR *angles*, are alſo equal angles.—In ſolid angles, when the planes, under which they are contained, are equal both in number, and magnitude, and are diſpoſed in the ſame order; they are *ſimilar*, and conſequently equal. See ANGLE.

SIMILAR *rectangles*, are thoſe which have their ſides about the equal angles, proportional. See RECTANGLE.

Hence 1°. All ſquares muſt be *ſimilar rectangles*. See SQUARE.—2°. All *ſimilar rectangles* are, to each other, as the ſquares of their homologous ſides.

SIMILAR *triangles*, are ſuch as have all their three angles reſpectively equal to each other. See TRIANGLE.

Hence 1°. All *ſimilar triangles* have their ſides about the equal angles, proportional.—2°. All *ſimilar triangles* are, to each other, as the ſquares of their homologous ſides.

In *ſimilar triangles*, and parallelograms, the altitudes are proportional to the homologous ſides; and the baſes are cut proportionably by thoſe ſides. See TRIANGLE, &c.

SIMILAR *polygons* are thoſe, whoſe angles are ſeverally equal, and the ſides about thoſe angles proportional.

And the like of other *ſimilar* rectilinear figures. See POLYGON and RECTILINEAL *figure*.

Hence, all *ſimilar polygons* are, to each other, as the ſquares of the homologous ſides.

In all *ſimilar figures*, the homologous angles are equal; and the homologous ſides proportional. All regular figures, and *ſimilar* irregular ones, are in a duplicate ratio of their homologous ſides. Circles, and *ſimilar* figures, inſcribed in them, are, to each other, as the ſquares of the diameters. See FIGURE.

SIMILAR *arches*, are ſuch as contain like, or equal parts of their reſpective circumferences. See ARCH.

SIMILAR *ſegments of circles*, are ſuch as contain equal angles. See SEGMENT.

SIMILAR *conic-ſections*, are thoſe where the ordinates to a diameter in one are proportional to the correſpondent ordinates to the *ſimilar* diameter in the other; and where the parts of *ſimilar* diameters between the vertices and ordinates in each ſection are *ſimilar*. See CONIC.

The ſame definition alſo agrees to *ſimilar* ſegments of conic ſections. See SEGMENT.

SIMILAR *plain numbers*, are thoſe which may be ranged into *ſimilar* rectangles; *i. e.* into rectangles, whoſe ſides are proportional: as 6 multiplied by 2, and 12 by 4; the product of one whereof is 12, and the other 48, are *ſimilar numbers*.

SIMILAR *ſolid numbers*, are thoſe whoſe little cubes may be ſo ranged, as to make *ſimilar* and rectangular parallelepipeds.

SIMILAR *diſeaſe*, in medicine, denotes a diſeaſe of ſome ſimple, ſolid part of the body.—As of a fibre, with regard to its tenſion, or flaccidity; of a membrane; a nervous canal, or the like. See DISEASE.

SIMILAR *parts*, in anatomy, are thoſe parts of the body which, at firſt ſight, appear to conſiſt of like parts, or parts of the ſame nature, texture, and formation. See PART.

Of theſe we uſually reckon ten, *viz.* the bones, cartilages, ligaments, membranes, fibres, nerves, arteries, veins, fleſh, and ſkin: each of which ſee under its proper article.

Dr. Grew, in his anatomy of plants, obſerves, that theſe have, likewiſe, their *ſimilar*, and organical parts. See PLANT, *&c.*

SIMILE, or SIMILITUDE, in rhetoric, a compariſon of two things, which, though different in other reſpects, yet agree in ſome one.—As, He ſhall be like a tree planted by the water-ſide, *&c.*

The difference between a *ſimile* and a *compariſon*, conſiſts in this; that the *ſimile* properly belongs to what we call the quality of the thing, and the compariſon to the quantity. See COMPARISON.

SIMILITUDE, in arithmetic, geometry, *&c.* denotes the relation of two things ſimilar to each other; or which are only diſtinguiſhable by com-preſence. See SIMILAR.

The notion of *ſimilitude*, which now makes ſome figure in geometry, *&c.* is owing to M. Leibnitz: it will be rendered eaſy by the following inſtance.—Suppoſe two watches perfectly alike; the one belonging to Caius, the other to Gracchus. If, now, Caius pull out his watch in preſence of Gracchus; the latter will be ſurprized, and fancy it his own; but he will perceive it different from his own, upon pulling out his own: that is, Gracchus diſtinguiſhes Caius's watch from his own, by their com-preſence; or, by applying the one immediately to the other.

Euclid, and after him moſt other authors, demonſtrate every thing in geometry from the ſole principle of congruity.—Wolfius, in lieu hereof, ſubſtitutes that of *ſimilitude*; which, he tells us, was communicated to him by M. Leibnitz, and which he finds of very notable uſe in geometry, as ſerving to demonſtrate many things directly, which are only demonſtrable from the principle of congruity, by an ambages. See CONGRUITY.

SIMONIACAL, is applied to a perſon guilty of ſimony; that is, of purchaſing a benefice, or other ſacred matter, with money. See SIMONY.

A *ſimoniacal* perſon convict, is infamous, and incapable of holding any benefice. See BENEFICE, DISABILITY, *&c.*

SIMONIANS, a ſect of ancient hereticks, the firſt that ever diſturbed chriſtianity; if they might be ſaid to do ſo, who were little more than mere philoſophers, and chiefly made profeſſion of magic. See HERESY and MAGIC.

Simon Magus, ſo often mentioned in the Acts, was their leader, and died under the emperor Nero; St. Peter ſtill ſurviving: ſo that Clemens Alexandrinus is miſtaken, when he makes Simon poſterior to Marcion.

St. Epiphanius ſays expreſly, that the firſt hereſy was ſet on foot by Simon the magician, born in a little city of Samaria, who pretended to be the great virtue and power of God, ſent from heaven to earth. Among the Samaritans he made himſelf paſs for God the Father; and among the Jews, for the Son.—He patched up a kind of medley ſyſtem, out of the philoſophy of Plato, the religious fables of the heathens, and chriſtianity: particularly, from the Platoniſts he borrowed abundance of things relating to the worſhip of angels, which he perverted to magical uſes; pretending, there was no ſalvation, but by the invocation of angels, who were, as it were, the mediators between God and man: to which ſuperſtitious worſhip of angels it is that St. Paul ſeems to allude in his epiſtle to the Coloſſians.

The gnoſticks, whereof the ſame Simon was the father, adopted the ſame practice of worſhipping angels, and even improved on it. See GNOSTICKS.

SIMONY *, SIMONIA, the crime of trafficking with ſacred things; particularly of purchaſing a benefice with money. See BENEFICE.

* The word is borrowed from Simon Magus, who is mentioned in the Acts of the apoſtles, as offering to buy the power of working miracles with money.

By the Engliſh canons, Anno 1229, *ſimony* is not only committed by an agreement for money in hand, or to be paid yearly; but by any other profit or emolument; any reward, gift, or benefit, directly or indirectly; or by reaſon of any promiſe, grant, bond, *&c.* and this, either in the acceptance of a living, or in an exchange or reſignation.

The penalty, by our laws, is, that the corrupt patron ſhall forfeit the next preſentation to the king, and two years value of the living; and the corrupt incumbent, be for ever diſabled to hold the living.

SIMONY is alſo committed by buying, or ſelling the ſacrament, baptiſm, ordination, or abſolution; as well as by the nomination and collation to a benefice, a place in a monaſtery, or the like.

Some have pretended it to be ſufficient to avoid the charge of *ſimony*, if only the ordination were gratuitous, though the revenues were bought and ſold as a temporal thing.—But the canons of ſeveral councils have condemned this ſubtile diſtinction; ſince the revenues are attached to an eccleſiaſtical office purely ſpiritual.

Caſuiſts diſtinguiſh three kinds of *ſimony*, viz.

Mental SIMONY, is that which ſticks in the mere will, and inclination, without ever breaking forth into act.—As when a preſent is made to a collator, without taking any notice that we expect a benefice from him.—This kind of *ſimony* is only puniſhable *in foro conſcientiæ*.

Conventional SIMONY is where there is an expreſs act, and a formal bargain, though it never come to an execution.

Real SIMONY, is where the convention is executed on both ſides; which laſt is the moſt criminal of all.—The canonical penalty of *ſimony* is depoſition in a clerk, and excommunication in a layman.

It is a maxim among the Romiſh canoniſts, that there is no *ſimony* in the court of Rome; in regard, the pope acts there as an abſolute ſovereign: they alſo ſay, that reſignations *in favorem*, are not to be admitted but by the pope, as favouring a little of *ſimony*. On theſe occaſions, however, the parties ſwear, that there has been no deceit, colluſion, *ſimony*, or other illegal covenant.

Peter Damian diſtinguiſhes three kinds of *ſimony*: that *of money*, that *of the tongue*, and that *of ſervices*.

SIMONY *of money*, or *per munus a manu*, is where money is really paid down for a benefice: he adds, that the ſame is likewiſe committed, by expending money to live at court to obtain a benefice.

SIMONY *of the tongue*, or *per munus a lingua*, conſiſts in flattering the collator, or making one's ſelf agreeable by complaiſance and commendation.

SIMONY *of ſervices*, or *per munus ab obſequio*, conſiſts in the doing them good offices to obtain a benefice.

It was agreed, by all the Juſtices, *Trin. oct. Jac. primi*, that if the patron preſented any perſon to a benefice with cure, for money; ſuch preſentation, *&c.* is void, though the preſentee were not privy to it: and the ſtatute gives preſentation to the king; but this is now repealed.

SIMPLARY, SIMPLARIS, in antiquity, a Roman ſoldier, who had only ſingle pay.—Thus called, in oppoſition to the *duplares*, or ſuch as had double pay.

SIMPLE, SIMPLEX, ſomething not mixed, or compounded: in which ſenſe it ſtands oppoſed to *compound*. See COMPOUND.

The elements are *ſimple* bodies, from the compoſition whereof all mixed bodies reſult. See ELEMENT and BODY.—Hence alſo

SIMPLE *affection*,	See the articles	AFFECTION.
SIMPLE *form*,		FORM.
SIMPLE *modes*,		MODE.
SIMPLE *neceſſity*,		NECESSITY.
SIMPLE *oppoſition*,		OPPOSITION.
SIMPLE *taſte*,		TASTE.
SIMPLE *viſion*,		VISION.

In geometry we ſay, the moſt *ſimple* demonſtrations are the beſt: the *ſimpleſt* machines are the moſt eſteemed. See MACHINE, *&c.*

In pharmacy there are *ſimple* remedies, and compounds; the former of which are uſually preferable to the latter. See REMEDY and MEDICINE.

SIMPLE *diachylon*,	See the articles	DIACHYLON.
SIMPLE *diacodium*,		DIACODIUM.
SIMPLE *diamorum*,		DIAMORUM.
SIMPLE *diaprunum*,		DIAPRUNUM.
SIMPLE *dropax*,		DROPAX.
SIMPLE *fomentations*,		FOMENTATION.
SIMPLE *hydromel*,		HYDROMEL.
SIMPLE *oxymel*,		OXYMEL.
SIMPLE *waters*,		WATER.

In grammar, we have *ſimple* words, or primitives; and compounds, which have ſome particle added to them. See WORD, PRIMITIVE, *&c.* See alſo SENTENCE.

In juris-prudence, they ſay, a *ſimple* donation, in oppoſition to a mutual or reciprocal one: a *ſimple* ſale, in oppoſition to that made with a reſervation of the faculty of redemption: *ſimple* homage, in oppoſition to liege homage. See HOMAGE, *&c.*

SIMPLE *average*,	See the articles	AVERAGE.
SIMPLE *benefice*,		BENEFICE.
SIMPLE *charter*,		CHARTA.
SIMPLE *church*,		CHURCH.
SIMPLE *depoſit*,		DEPOSIT.
SIMPLE *eſtate*,		ESTATE.
SIMPLE *fee*,		FEE.
SIMPLE *force*,		FORCE.
SIMPLE *reſignation*,		RESIGNATION.
SIMPLE *vaſſalage*,		VASSALAGE.

SIMPLE, in botany, is a general name given to all herbs and plants; as having each its particular virtue, whereby it becomes a *ſimple* remedy.

The *ſimples* brought from the Levant, and the Eaſt-Indies, were not known among us till about the year 1200.

SIMPLE *flowers*. See the article FLOWER.

SIMPLE *anomaly*,	See the articles	ANOMALY.
SIMPLE *foſſils*,		FOSSIL.
SIMPLE *glands*,		GLAND.
SIMPLE *ulcer*,		ULCER.

SIMPLE *equation*, in algebra, is an equation where the unknown quantity is only of one dimenſion.—*E. gr.* $x = (a+b):2$. See EQUATION.

SIMPLE *flank*,	See the articles	FLANK.
SIMPLE *fraction*,		FRACTION.
SIMPLE *motion*,		MOTION.
SIMPLE *pendulum*,		PENDULUM.

SIMPLE *quadratics*. See the article QUADRATIC.

SIMPLE *quantities*, in algebra, are ſuch as have but one ſign: as, 2 *a*, or—2 *b*.

By which they ſtand oppoſed to compound quantities, which have ſeveral ſigns: as, $a+b$; or $d-a+b$. See COMPOUND.

SIMPLE *ſurd*,	See the articles	SURD.
SIMPLE *tenaille*,		TENAILLE.
SIMPLE *wheel*,		WHEEL.

SIMPLE, in muſic, is chiefly uſed in oppoſition to *double*; ſometimes to a compound of ſeveral parts, or figures of different values, *&c.* See DOUBLE and COMPOUND.

SIMPLE *cadence*, is that where the notes are all equal through all the parts. See CADENCE.

SIMPLE *concords*, are thoſe, wherein we hear at leaſt two notes in conſonance; as a third and a fifth; and of conſequence, at leaſt three parts. See CONCORD.—This is either done immediately, and called the *harmonical triad*; or in a more remote manner; that is, when the ſounds, that are not baſs, are one or two octaves higher.—This diſtance has no ill effect in the third; but in the fifth it has; and, generally ſpeaking, the nearer or more immediate the concords are, the better.

They alſo ſay, C *ſimple* or plain, in oppoſition to c accented.

SIMPLE *counter-point*, is a harmonical compoſition, wherein note is ſet againſt note; in oppoſition to figurative counter-point. See COUNTER-POINT.

SIMPLE *dieſis*. See the article DIESIS.

SIMPLE *fugue*, or SIMPLE *imitation*, is, when one part imitates the ſinging of another for ſome meaſures. See IMITATION and FUGUE.

SIMPLE *harmony*,	See the articles	HARMONY.
SIMPLE *interval*,		INTERVAL.
SIMPLE *ſounds*,		SOUND.
SIMPLE *triple*,		TRIPLE.

SIMPLE *fencing*,	See the articles	FENCING.
SIMPLE *hiſtory*,		HISTORY.
SIMPLE *ſtyle*,		STYLE.

SIMPLIFYING, in eccleſiaſtical matters, is the taking away of a cure of ſouls from a benefice, and diſpenſing the beneficiary from reſidence. See BENEFICE and CURE.

Several benefices, which have been *ſimplified*, now require reſidence; and an infinity of others, which required reſidence, have been *ſimplified*.

Some uſe the word in a more extenſive ſignification, *viz.* for the ſhortening a relation, *&c.* or retrenching every thing not preciſely neceſſary: when the matter or fact ſhall be *ſimplified*, and ſtripped of its vain circumſtances, the court will ſee, *&c.*

SIMPLUDIARIA *, in antiquity, a kind of funeral honours paid to the deceaſed at their obſequies. See FUNERAL.

* The word is formed from the Latin *ſimplex* and *ludus*, whence *ſimpludiaria* or *ſimpliludaria*, q. d. ſimple games.

Some will have *ſimpludiaria* to be the funerals, at which games were exhibited: ſuch is the ſentiment of Paulus Diaconus. Feſtus ſays, they were thoſe, in the games whereof nothing was ſeen but dancers, and leapers, called *corvitores*; who, according to M. Dacier, were perſons who run along the maſts and yards of veſſels or boats, called *corbes*.

In other reſpects, thoſe two authors agree as to the kind of funerals, called *ſimpludiaria*, *viz.* that they were oppoſite to thoſe called *indictiva*; wherein, beſides the dancers and leapers, obſerved in the *ſimpludiaria*, there were deſultores, or people who vaulted on horſes; or, perhaps, horſe-races, wherein the cavaliers leaped from horſe to horſe at full ſpeed. See GAME, DESULTOR, *&c.*

SIN, a breach, or tranſgreſſion of ſome divine law, or command. See LAW and TRANSGRESSION.

Plato defines *ſin* to be ſomething void, both of number, and meaſure: by way of contradiction to *virtue*, which he makes to conſiſt in muſical numbers, *&c.* See VIRTUE, RHYTHMUS, NUMBER, MEASURE, *&c.*

Agreeably hereto, Suarez obſerves, that an action becomes ſinful, by its wanting a due commenſuration; for as every thing meaſured refers to ſome rule, from which if it deviate, it becomes incommenſurate; and as the rule of man's will is the law of God: ſo, *&c.*—Suarez adds, that all evil actions are prohibited by ſome divine law; and that this is required to the perfection of the divine providence.

Simplicius, and, after him, the ſchoolmen aſſert, that evil is not any poſitive thing, contrary to good; but a mere defect and accident. See EVIL.

Sins are diſtinguiſhed into *original* and *actual*. See ORIGINAL and ACTUAL.

The Romiſh caſuiſts again diſtinguiſh *actual ſins* into *mortal*, which are ſuch as make us loſe the grace of God; and *venial*, which alone are pardoned, as being only *ſins* of infirmity, not of malice. See VENIAL.

Divines are not yet agreed what the *ſin* againſt the Holy Ghoſt is.

SINAI, *knights of.* See CATHARINE.

SINAPISM *, ΣΙΝΑΠΙΣΜΟΣ, in pharmacy, an external medicine, in form of a cataplaſm; compoſed chiefly of muſtard-ſeed pulverized, and mixed up with the pulp of figs; or with briony, garlick, onion, naſturtium, euphorbium, ranunculi, or the like.

* The word is formed from the Latin, *ſinapi*, or Greek σιναπι, muſtard-ſeed.

Sinapiſms excite a redneſs, heat, itching tumour, and ſometimes a bliſter on the place they are applied to.

They were anciently in great requeſt; and ſtill continue in uſe for inveterate diſeaſes of the head; long continued defluxions, *&c.*

SINCIPUT, or SYNCIPUT, is the fore-part of the head, reaching from the fore-head to the coronal ſuture.—See *Tab. Anat.* (Oſteol.) *fig.* 2. *lit. a. fig.* 7. *n.* 1. See alſo BREGMA and CRANIUM.

SINDON, in chirurgery, a little round piece of linen or ſilk, or lint, uſed in dreſſing the wound after trepanning. See TREPANNING.

The firſt thing uſually done after the operation of trepanning, is to pour a few drops of white balm on the dura mater: then a ſpoonful of mel-roſatum, being warmed with a little balſam, a *ſindon* is dipt in it, of fine linen cloth; this is immediately applied upon the dura mater; and, being greater than the hole in the ſkull, its circumference is thruſt all round between the cranium and the membrane: then pledgits of lint are applied, and the hole quite ſtopped therewith. The next morning, when the dreſſing is taken off, the brain is never left bare; but as ſoon as the former *ſindon* and lint are removed, new ones are clapped in their room.

SINE, or *Right* SINE, in trigonometry, a right line drawn from one extremity of an arch, perpendicularly upon the radius drawn from the other extremity; or, the *ſine* is half the chord of twice the arch. See ARCH.

Thus the line AD (*Tab. Trigonom. fig.* 1.) which is half the chord AB, of the double arch, AEB, is the right *ſine*; or, ſimply, the *ſine* of the arch AE.

Whole SINE, *ſinus totus*, is the *ſine* of the quadrant HE, or of 90 degrees; that is, the whole *ſine* is the ſame with the radius HC. See radius.

Verſed SINE, is a part ED of the whole *ſine* or radius, intercepted between the right *ſine* AD, and the arch AE. See VERSED and COVERSED.

It is demonſtrated, 1°. That the right *ſine* AD, being perpendicular to the radius EC; all *ſines* drawn to the ſame radius, are parallel to each other.

2°. Since the arch AE is the meaſure of the angle ACE, and AI the meaſure of the contiguous angle ACI; and the quadrant HE the meaſure of the right angle; AD is alſo the right *ſine*, and ED the verſed *ſine* of the angles ACE and ACI; and the whole *ſine* is the *ſine* of the right angle.

3°. Two angles contiguous, as ACE and ACI, have the ſame *ſine*.

4°. The *ſines* of obtuſe angles are the ſame with thoſe of their complements to two right angles.

5°. All *ſines* of ſimilar arches have the ſame ratio to their radii.

SINE-*complement*, or CO-SINE, is the *ſine* of an arch AE, which is the complement of another arch AH, to a quadrant. See CO-SINE.

Thus alſo the *ſine* of the arch AH, is called the *ſine-complement* of the arch AE.

In eſtimating the quantity of *ſines*, *&c.* we aſſume radius for unity; and determine the quantity of the *ſines*, tangents, and ſecants in fractions thereof.—From Ptolemy's Almageſt, we learn, that the ancients divided the radius into 60 parts, which they called degrees, and thence determined the chords in minutes, ſeconds, and thirds; that is, in ſexageſimal fractions of the radius, which they likewiſe uſed in the reſolution of triangles. See SEXAGESIMAL, DEGREE, *&c.*—The *ſines*, or half chords, for ought appears, were firſt uſed by the Saracens. See CHORD.

Regiomontanus, at firſt, with the ancients, divided the radius into 60 degrees; and determined the *ſines* of the ſeveral degrees in decimal fractions thereof. But he afterwards found it would be more commodious to aſſume radius for 1; and thus introduced the preſent method into trigonometry.

In the common tables of *ſines* and tangents, the radius is conceived, divided into 10000000 parts; beyond which we never go in determining the quantity of the *ſines* and tangents.—Hence, as the ſide of a hexagon ſubtends the ſixth part of a circle, and is equal to radius; the *ſine* of 30° is 5000000.

1°. *The* SINE AD *being given*; *to find the* ſine-complement.—From the ſquare of the radius AC ſubtract the ſquare of the *ſine* AD: the remainder will be the ſquare of the *ſine-complement* AG: whence, the ſquare root being extracted, gives the *ſine-complement*. *E. gr.* Suppoſing AC, 10000000, and AD 5000000, AG will be found 8660254, the *ſine* of 60°.

2°. *The* SINE AD *of the arch* AE *being given*; *to find the* ſine *of the half arch, or half of* AE.—Find the chord of the arch AE (ſee CHORD:) for half of this is its *ſine*. Thus, ſuppoſing D G and A D, as in the preceding problem; we ſhall find the *ſine* of the half arch A E, or the *ſine* of 15° = 2588190.

3°. *The* SINE DG, *of the arch* DF *being given; to find the* ſine DE, *of the double arch* DB (*fig.* 7.)—Since the angles at E and G are right angles; and the angle B is common to each triangle BCG and DEB; we ſhall have BC : CG :: BD : DE: wherefore CG being found by the ſecond problem, and BD being double of DG; DE is found by the rule of proportion.

4°. *The* SINES FG and DE (*fig.* 8.) *of the arches* FA *and* DA, *whoſe difference* DF *is greater than* 45 *minutes, being given; to find any intermediate* ſine, *as* IL.—To the difference FD of the arches, whoſe *ſines* are given; the difference of the arch IF, whoſe *ſine* is required, and the difference of the given *ſines* DH; find a fourth proportional: this added to the leſs given *ſine* FG; the aggregate will be the *ſine* required.

5°. *To find the* SINE *of* 45 *degrees.*—Let HI (*fig.* 1.) be a quadrant of a circle; then will HCI be a right angle: conſequently the triangle, rectangular; therefore $HI^2 = HC^2 + CI = 2HC^2$; wherefore, ſince HC the whole *ſine*, is 10000000; if from $2HC^2$ ſquared, 200000000000000, be extracted the ſquare root 14142136; we ſhall have the chord HI, whoſe half 7071068 is the *ſine* of 45° required.

6°. *The* SINE *of a minute or* 60″ FG (*fig.* 8.) *being given; to find the* ſine *of one or more ſeconds* MN.—Since the arches AM and AF are very ſmall; AMF may be taken for a right line, without any ſenſible error in the decimal fractions of the radius wherein the *ſine* is expreſſed; that is, the arches AM and AF may be taken proportional to their chords. Wherefore, ſince MN is parallel to FG; we ſhall have AF : FG :: AM : MN: Therefore AF, FG and AM being given, MN is eaſily had.

To conſtruct a canon of SINES.—The *ſines* of 30° [illegible] 45° and 36° (which we have already ſhewn how to find) being had; we can thence conſtruct a canon of all the *ſines* to every minute, or every ſecond. For from the *ſine* of 36° we find thoſe of 18° 9° 4° 30′ and 2° 15′, by the ſecond problem: the *ſines* of 54° 72° 81° 85° 30′ and 87° 45′, &c. by the firſt problem. Again, from the *ſine* of 45°, find the *ſine* of 22° 30′ 11° 15′, &c. From the *ſines* of 30°, and the *ſines* of 54°, find the *ſine* of 12°. From the *ſine* of 12°, find the *ſines* of 6° 3° 1° 30′ 35′ 78°, &c. From the *ſine* of 15°, find the *ſine* of 7° 30′ 45′, &c. till you have 120 *ſines* ſucceeding each other orderly, at an interval of 45 minutes. Between theſe, find the intermediate *ſines* by the fifth problem: thus will the canon be compleat.

From the SINE of an arch given; to find the tangent and ſecant. See TANGENT and SECANT.

To find the logarithm of a given SINE, ſee LOGARITHM.

In every triangle, the ſides are as the *ſines* of the oppoſite angles. See TRIANGLE.

The SINE BC (*fig.* 9.) *and the verſed* ſine AB, *being given in common meaſure, not in parts of the radius; to find the arch* FC *in degrees.*—Find the ſemi-diameter AD. Then in the triangle DBC, beſides the right angle B, by the ſides AC and DC, we find the angle ADC, which ſhews the number of degrees in the arch; the double whereof is the arch FC.—This problem is of uſe in finding the ſegment of a circle. See SEGMENT.

Artificial SINE, denotes the logarithm of a *ſine*. See LOGARITHM.

Line of SINES, a line on the ſector, Gunter's ſcale, &c. the deſcription and uſe whereof ſee under the articles SECTOR and GUNTER'S *ſcale*.

SINE-CURES, are eccleſiaſtical benefices without cure of ſouls. See BENEFICE and CURE.

No church, where there is but one incumbent, can properly be a *ſine-cure:* and though the church being down, or the pariſh being become deſtitute of pariſhioners, the incumbent may be thereby neceſſarily acquitted from the actual performance of publick duty, yet he is ſtill under an obligation to do it, whenever a church ſhall be built, and there are a competent number of inhabitants: and in the mean while, if the church be preſentative, as moſt ſuch churches are, the incumbent is inſtituted into the cure of ſouls.—Such benefices are rather depopulations than *ſine-cures*, and it will be proper for the new incumbent to read the 39 articles, and the liturgy in the church-yard, &c. and to do what other incumbents uſually do.

But a rectory, or portion of it, may properly be a *ſine-cure*, if there be a vicar under him endowed and charged with the cure: in which caſe it does not come within the ſtatute of pluralities, 21 Hen. VIII. c. 13.

Here therefore no diſpenſation is neceſſary to hold the *ſine-cure* with a former living: nor need the incumbent read the articles or divine ſervice, as required by 13 Eliz. c. 12. which extends only to a benefice with cure.

A *ſine-cure* donative wants no inſtitution and induction; but one preſentative muſt have both; eſpecially if it conſiſt in glebe and tythes, and not in a portion of money; but the inſtitution muſt not run *in curam animarum*, but *in rectoriam, ſive portionem rectoriæ de* AB, &c.

By the above-mentioned ſtatute 21 Hen. VIII. not only prebends, and rectories with vicarages endowed, but deaneries and archdeaconries, are declared to be benefices *without cure.*

SINE-DIE, in law.—When judgment is given againſt the plaintiff, he is ſaid to be *in miſericordia pro falſo clamore ſuo;* and for the defendant, it is ſaid, *eat inde ſine die*, i. e. he is diſmiſſed the court.

The phraſe is alſo uſed in parliament, for the adjournment of any debate, without fixing the day when it ſhall come on again; which is looked upon as a genteeler diſmiſſion of the thing in queſtion.

SINEW, properly denotes what we call a *nerve;* though in common ſpeech it is rather uſed for a *tendon.* See NERVE, TENDON, &c.

SINGING, the act of making divers inflexions of the voice, agreeable to the ear, and even correſpondent to the notes of a ſong or piece of melody. See SONG and MUSIC.

The firſt thing done in learning to *ſing*, is to raiſe a ſcale of notes by tones and ſemi-tones, to an octave; and deſcend again by the ſame notes; and then to riſe and fall by greater intervals, as a 3d, 4th, and 5th; and to do all this by notes of different pitch. See NOTE, SCALE and GAMMUT.

Then theſe notes are repreſented by lines and ſpaces, to which the ſyllables *fa*, *ſol*, *la*, *mi*, are applied, and the pupil taught to name each line and ſpace thereby; whence this practice is uſually called *ſol-fa-ing.* The nature, reaſon, defects, &c. whereof, ſee under the article SOL-FA-ING.

SINGLE *echo*,	See the articles	ECHO.
SINGLE *ſine*,		FINE.
SINGLE *poſition*,		POSITION.
SINGLE *propoſition*,		PROPOSITION.
SINGLE *rafters*,		RAFTER.
SINGLE *tenaille*,		TENAILLE.

SINGLES. See the article PETTY *ſingles.*

SINGULAR *number*, in grammar, the firſt manner of declining nouns, and conjugating verbs; uſed when we only ſpeak of a ſingle perſon, or thing. See NUMBER.

The Latins, French, Engliſh, &c. have no numbers but the *ſingular*, and plural; the Greeks and Hebrews have likewiſe a dual. See PLURAL, DUAL, &c.

SINGULAR *hiſtory.* See the article HISTORY.

SINGULTUS, in medicine, a convulſive motion of the midriff, commonly called *hickup.* See HICKUP.

SINICAL *quadrant*, a kind of quadrant furniſhed with an index, and two ſights to take altitudes, &c. by; and, beſides, its ſide, or face, covered over with ſines, drawn from each ſide, interſecting each other; whereby the ſeamen can ſolve, by inſpection, any problem in plain ſailing. See SAILING.—Its conſtruction and uſe, ſee under the article QUADRANT.

SINISTER *, ſomething on, or towards, the left-hand. See HAND and DEXTER.

* Hence ſome derive the word *ſiniſter*, *a ſinendo;* becauſe the gods, by ſuch auguries, permit us to proceed in our deſigns. See AUGURY.

SINISTER is ordinarily uſed among us for unlucky.—Though in the ſacred rites of divination, the Romans uſed it in an oppoſite ſenſe.—Thus *avis ſiniſtra*, or a bird on the left-hand, was eſteemed a happy omen: whence in the law of the twelve tables, *Ave ſiniſtra populi magiſter eſto.*

SINISTER, in heraldry. The *ſiniſter* ſide of an eſcutcheon is the left-hand ſide. See ESCUTCHEON and POINT.

SINISTER *chief*, is the left angle of the chief. See CHIEF.

SINISTER *baſe*, is the left-hand part of the baſe. See BASE.

SINISTER *bend.* See the article BEND.

SINISTER *aſpect*, among aſtrologers, is an appearance of two planets, happening according to the ſucceſſion of the ſigns: as, Saturn in Aries, and Mars in the ſame degree of Gemini. See ASPECT.

SINISTRI, a ſect of ancient hereticks; thus called, becauſe they held the left hand in abhorrence, and made it a point of religion, not to receive any thing therewith.

What in us, is a piece of civility; in them was a ſuperſtition.—Balſamon obſerves, that they were likewiſe called *ſabbathians* and *novatians.* See SABBATHIANS and NOVATIANS, &c.

SI NON OMNES, a writ of aſſociation, whereby, if all in commiſſion cannot meet at the day aſſigned; it is permitted, that two, or more of them may finiſh the buſineſs. See ASSOCIATION.

SINOPER, SINOPIS, in natural hiſtory, a native red ſtone or ruddle. See RUDDLE.

SINOPLE *, or SENOPLE, in heraldry, denotes *vert*, or the green colour in armories.—Thus called by the ancient heralds; though Pliny and Iſidore, by *color praſinus*, or *ſinople*, mean a browniſh red, ſuch as that of our ruddle. See VERT.

* F. Meneſtrier derives the word from the Greek, *praſina hopla*, green armories; by corruptedly retrenching the firſt ſyllable, *pra;* which is no new thing among oriental words, witneſs Salonica for Theſſalonica.

Sinople is ſuppoſed to ſignify love, youth, beauty, rejoicing and liberty; whence it is, that letters of grace, abolition, legitimation,

timation, *&c.* are uſed to be ſealed with green wax. See Green.

SINOVIA. See the article Synovia.

SINUOSITY, a ſeries of bends, and turns in arches or other irregular figures; ſometimes jetting out, and ſometimes falling in.—Such is the motion of a ſerpent, *&c.*

It is the *ſinuoſity* of the ſea coaſts that forms bays, ports, capes, *&c.* Du Loir obſerves, that the courſe of the river Meander, creeping in a thouſand agreeable *ſinuoſities*, ſerved Dædalus as a model to form his labyrinth by. See Labyrinth.

SINUOUS *ulcers.* See the article Ulcer.

SINUS, in chirurgery, a little cavity or ſacculus, frequently formed by the ſide of a wound, or ulcer; wherein pus is collected. See Pus.

A *ſinus* is properly a cavity in the middle of a fleſhy part, formed by the ſtagnation and putrefaction of the blood or humours, and which has wrought itſelf ſome vent or exit.

Deep *ſinus's* that ſlope downwards, Scultetus obſerves, are difficult to heal: yet that ſurgeon undertakes to cure any *ſinus* in a week, by the medicaments he deſcribes, page 338, and an agglutinative bandage. He adds, that he never comes to the inciſion, till he finds that the pharmaceutic applications are ineffectual; and that for the dilatation of *ſinus's*, he does not uſe the deceitful ſcalpel; as being more apt to deceive the operator than the patient.

Sinus, in anatomy, denotes a cavity in certain bones, and other parts, the entrance whereof is very narrow, and the bottom wider and more ſpacious. See Bone.

Of theſe *ſinus's*, we find ſeveral in the divers parts of the body; particularly in the baſis of the ſkull, on the oſſa petroſa, where the ancients imagined their uſe was to render the bones more light.—In ſeveral of the joints of the body, they ſerve to receive the epiphyſes of the other bones.

Sinus is alſo an appellation given to the duplicatures of the dura mater. See Dura *mater.*

Theſe *ſinus's*, Dr. Drake obſerves, are venous channels, formed for the re-conveyance of the blood. There are four chiefly conſiderable, *viz.* the *ſinus longitudinalis*, which running along the middle of the convex part of the brain, ſends out a branch on each ſide, between the brain and cerebellum, called the *lateral ſinus's*, and the torcular herophili, formed out of a concourſe of the *lateral ſinus's*, and pineal gland.—They are all formed of the ſeveral venous branches, which return the blood from the brain and cerebellum, and deliver their contents into the jugular veins; whereof they are, as it were, the roots. Their coats are furniſhed with ſtrong fibres, by means whereof, they are dilated by the influx of the venal blood, and again contracted with a reciprocal motion, like the pulſe of an artery.—See *Tab. Anat.* (Oſteol.) *fig.* 4. *lit. b b. c c.* See alſo the article Brain.

SION COLLEGE. See the article College.

SIPHON, or Syphon, in hydraulicks, a crooked tube, one leg or branch whereof is longer than the other; uſed in the raiſing of fluids, emptying of veſſels, and in various hydroſtatical experiments.

The word in the original Greek, σιφων, ſignifies, ſimply, *tube*; whence ſome apply it to common tubes or pipes.—Wolfius, particularly deſcribes two veſſels under the name of *ſiphons*; the one cylindrical in the middle, and conical at the two extremes; the other globular in the middle, with two narrow tubes fitted to it, axis-wiſe; both ſerving to take up a quantity of water, *&c.* and to retain it when up.

But the moſt uſeful and celebrated *ſiphon* is that which follows.—A crooked tube A B C (*Tab. Hydraulicks, fig.* 2.) is provided, of ſuch a length, and with ſuch an angle, as that when the orifice A, is placed on an horizontal plane, the height of A B, may not exceed 30 foot. For common uſes, a foot, or half a foot high, ſuffices.—If, now, the leſs arm A B, be immerged in water, or any other liquid, and the air be ſucked out of it by the aperture C, till the liquor follow; the liquor will continue to flow out of the veſſel, through the tube B C; as long as the aperture A is under the ſurface of the liquor.

Note, inſtead of ſucking out the air, the event will be the ſame, if the *ſiphon* be at firſt filled with the fluid, and the aperture C ſtopped with the finger, till the aperture A be immerged.

The truth of the phænomenon is known by abundance of experiments: nor is the reaſon of part of it far to ſeek. In ſucking, the air in the tube is rarified, and the equilibrium deſtroyed; conſequently the water muſt be raiſed into the leſſer leg A B, by the preponderating preſſure of the atmoſphere.

The *ſiphon* being thus filled, the atmoſphere preſſes equally on each extremity thereof; ſo as to ſuſtain an equal quantity of water in each leg: but the air not being able to ſuſtain all the water in the longer leg, unleſs it exceed 32 feet in height; it will be more than able to ſuſtain that in the ſhorter leg: with the exceſs of force, therefore, it will raiſe new water into the ſhorter leg; which new water cannot make its way, but by protruding the firſt before it. By this means is the water continually driven out at the longer leg, as it is continually raiſed by the ſhorter. See Fluid.

But Wolfius, and ſome other authors aſſert, that the water continues to flow through the *ſiphon*, even when placed under a receiver, and the air exhauſted from it. The reaſon of this, if it be true, is very difficult to account for.

Some will have it, that there is ſtill air enough left in the evacuated receiver, to raiſe the water to an inch or two. But as both mercury and water are found to fall entirely out of the Torricellian tube, *in vacuo*; the preſſure of the thin remaining air, can never be the cauſe of the aſcent, both of mercury and water, in the leſs leg of the *ſiphon*.

Hence, as the height of the *ſiphon* is limited to 31 foot; for this only reaſon, that air cannot raiſe water higher; it does not appear, whether or no we are in the right in rejecting Hero's method of carrying water, by means of a *ſiphon*, over the tops of mountains, into an oppoſite valley.—For Hero only orders the apertures of the *ſiphon* to be ſtopped, and water to be poured through a funnel into the angle or meeting of the legs, till the *ſiphon* be full; when, ſhutting the aperture in the angle, and opening the other two, the water will continue to flow.—Now, if there only need air for the firſt riſe of the water into the leſs leg, not for the continuation of the motion; it were poſſible to raiſe the water much higher than the height of the atmoſphere would carry it.

The real cauſe, therefore, of this extraordinary, though well-known phænomenon, needs ſome further diſquiſition: this is certain, that a *ſiphon* once ſet a running, will perſiſt in its motion, though removed into the moſt perfect vacuum our air-pumps will make: or, if the lower orifice of a full *ſiphon* be ſhut, and the whole be thus placed in a receiver, with a contrivance for opening the orifice when the air is exhauſted; the water will be all emptied out of the veſſel, as if it had been in open air. See Vacuum, Air-*pump*, &c.

This, too, is remarkable enough, that the figure of the *ſiphon* may be varied at pleaſure (ſee *fig.* 3, *&c.*) provided only the orifice C be below the level of the ſurface of the water to be drawn up; but, ſtill, the further it is diſtant from it, the faſter will the fluid be carried off.—And if, in the courſe of the flux, the orifice A be drawn out of the fluid; all the liquor in the *ſiphon* will go out at the lower orifice C: that in the leg C B, dragging, as it were, that in the ſhorter leg A B after it.

If a filled *ſiphon* be ſo diſpoſed, as that both orifices A and C be in the ſame horizontal line: the fluid will remain pendant in each leg; how unequal ſoever the length of the legs may be.—Fluids, therefore, in *ſiphons*, ſeem, as it were, to form one continued body; ſo that the heavier part deſcending, like a chain, pulls the lighter after it.

Laſtly, it muſt be obſerved, that the water will flow out, even through a *ſiphon* that is interrupted, by having the legs A D and F C joined (*fig.* 4.) together, by a much bigger tube full of air.

The **Sipho** *Wurtembergicus*, is a very extraordinary machine of this kind, performing divers things which the common *ſiphon* will not reach.—*E. gr.* In this, though the legs be in the ſame level, yet the water riſes up the one, and deſcends through the other: the water riſes, even though the aperture of the leſs leg be only half immerged in water: the *ſiphon* has its effect after continuing dry a long time: either of the apertures being opened, the other remaining ſhut for a whole day, and then opened, the water flows out as uſually. Laſtly, the water riſes and falls indifferently through either leg.

The project of this *ſiphon*, was laid by Jordanus Pelletier, and executed at the expence of prince Frederick Charles, adminiſtrator of Wirtemberg, by his mathematician, Schahackard, who made each branch 20 feet long, and 18 feet apart: the deſcription thereof was publiſhed by Reiſelius, the duke's phyſician.

This gave occaſion to M. Papin to invent another, that did the ſame things, deſcribed in the Philoſophical Tranſactions; and which Reiſelius, in another paper in the Tranſactions, ingenuouſly owns to be the very ſame with that of Wirtemberg.—Its ſtructure will appear from its figure; which is repreſented, *Tab. Hydraulicks, fig.* 5.

SIRE *, a title of honour in France, now given to the king only, as a mark of ſovereignty.—In all placets and petitions, epiſtles, diſcourſes, *&c.* to the king, he is addreſſed under the title of *ſire*.

* Some derive the word from the Latin, *herus*, maſter: of which opinion ſeems Budæus, who, in ſpeaking to king Francis I. always calls him *here*, q. d. maſter, or *ſire*: others derive it from the Greek, κυριος, lord; of which opinion is Paſquier, who adds, that the ancient Franks gave the ſame title to God, calling him *beau ſire diex*: others fetch the word from the Syriac, and maintain, it was firſt given to the merchants who traded to Syria: Menage will have it come from *ſenior*, elder; whence *ſeigneur*, then *ſeignor*, and *ſire*.

Sire was likewiſe anciently uſed in the ſame ſenſe with *ſieur*, and *ſeigneur*; and applied to barons, gentlemen and citizens. See Sieur.

The *ſire* de Joinville has wrote the hiſtory of St. Louis.

SIREN, ΣΕΙΡΗΝ, in antiquity, *mermaid*; a name given to a kind of fabulous beings repreſented by Ovid, *&c.* as ſea-monſters, with womens faces and fiſhes tails; and by others decked with a plumage of various colours. See Mermaid. They are ſuppoſed to have been the three daughters of the river Achelous; and called *Parthenope*, *Ligea*, and *Leucoſia*. Homer only makes mention of two *ſirens*; but others reckon five. Virgil places them on rocks, where veſſels are in danger of ſplitting. Pliny makes them inhabit the promontory of Minerva, near the iſland Capreæ. Others fix them in Sicily, near Cape Pelorus. Claudian ſays, they inhabited harmonious rocks; that they were charming monſters; and that ſailors were wrecked on their rocks without regret, and even expired in raptures: *dulce malum pelago ſiren.*

This deſcription is, doubtleſs, founded on a literal explication of the fable, that the *ſirens* were women who inhabited the ſhores of Sicily, and who, by all the allurements of pleaſure, ſtopped paſſengers, and made them forget their courſe. Some interpreters of the ancient fables, will have the number and the names of the three *ſirens*, to have been taken from the triple pleaſure of the ſenſes; wine, love and muſick; which are the three moſt powerful means of ſeducing men: and hence ſo many exhortations to avoid the *ſirens* fatal ſong.

Probably it was hence, that the Greeks fetched their etymology of *ſiren*, *viz.* from σειρα, a chain, as if there was no getting free of their enticement.

Others, who do not look for ſo much myſtery in the fable, maintain, that the *ſirens* were nothing but certain ſtreights in the ſea, where the waves whirling furiouſly around, ſeized and ſwallowed up veſſels that approached them too near.

Laſtly, others hold the *ſirens* to have been certain ſhores and promontories, where the winds, by the various reverberations and echo's, cauſe a kind of harmony that ſurprizes and ſtops paſſengers.—This, probably, might be the origin of the *ſirens* ſong; and the occaſion of giving the name of *ſirens* to theſe rocks.

Sculptors and painters uſually follow Ovid's deſcription of the *ſirens*; but on ſome medals, we find them repreſented with the upper parts of women, and the lower of birds.

SIRIUS, ΣΕΙΡΙΟΣ, in aſtronomy, the *dog-ſtar*; a very bright ſtar of the firſt magnitude in the mouth of the conſtellation *canis major*, or the great dog. See Canis.

The Arabs call it *aſchere*, *elſchecre*, *ſcera*; the Greeks, *ſirius*; and the Latins, *canicula*, or *canis candens*. See Canicula and Canicular.

Its longitude, according to Mr. Flamſteed, is 9° 49′ 1″; its latitude 39° 32′ 8″ ſouth.

SIRNAME. See the article Surname.

SISTROID *angle*. See the article Angle.

SISTRUM, or Cistrum, an ancient kind of muſical inſtrument uſed by the prieſts of Iſis, and Oſiris. See Music.

Spon deſcribes it as of an oval form, in manner of a racket, with three ſticks traverſing it breadth-wiſe, which playing freely, by the agitation or beating of the inſtrument, yielded a kind of ſound, which to the ancients ſeemed melodious.

Mr. Malcolm takes the *ſiſtrum* to have been no better than a kind of rattle.—Jer. Boſius has an expreſs treatiſe on the *ſiſtrum*, intitled, *Iſiacus de ſiſtro.*

Oiſelius obſerves, that the *ſiſtrum* is found repreſented on ſeveral medals; and alſo on Taliſmans.—Oſiris on ſome medals, is painted with a dog's head and a *ſiſtrum* in his hand.

SITE, or Scite, Situs, denotes the ſituation of a houſe, meſſuage, &c.—And ſometimes the ground-plot, or ſpot of earth it ſtands on.

Site, Situs, in logic, one of the predicaments, declaring a ſubject to be ſo and ſo placed. See Place and Situs.

SITOPHYLAX *, ΣΙΤΟΦΥΛΑΞ, in antiquity, an Athenian magiſtrate, who had the ſuper-intendance of the corn, and was to take care that no body bought more than was neceſſary for the proviſion of his family.

* The word is formed from the Greek, σῖτος, corn, and φυλαξ, keeper.

By the Attic laws, particular perſons were prohibited buying more than fifty meaſures of wheat a man; of thoſe meaſures, we mean, called φορμαι: and the *ſitophylax* was to look to the obſervation of this law.—It was a capital crime to prevaricate in it.

There were fifteen of theſe *ſitophylax's*; ten for the city, and five for the Pyræus.

SITUS, in geometry and algebra, denotes the ſituation of lines, ſurfaces, &c.—See Position, &c.

Wolfius gives us ſome things in geometry, which are not deduced from the common analyſis; particularly matters depending on the *ſitus* of lines, and figures.—M. Leibnitz has even invented a particular kind of analyſis, called *analyſis ſitus*, and built a peculiar kind of calculus thereon, called *calculus ſitus*. See Analysis and Calculus.

SIXAIN *, Sixth, Sexagena, in war, an ancient order of battle, wherein ſix battalions being ranged in one line, the ſecond and fifth are made to advance, to form the vanguard; the firſt and ſixth to retire, to form the rear-guard; the third and the fourth remaining on the ſpot, to form the corps, or body of the battle.

* The word is French, where it ſignifies the ſame thing.

SIX-CLERKS, officers in chancery of great account, next in degree below the twelve maſters; whoſe buſineſs is to enrol commiſſions, pardons, patents, warrants, &c. which paſs the great ſeal. See Clerk and Chancery.

They were anciently *clerici*, and forfeited their places if they married: they are alſo attornies for parties in ſuits depending in the court of chancery.

Under them were formerly 60 clerks, who with the under-clerks, did the buſineſs of the office; which number was afterwards increaſed to 90.—At preſent the number is indefinite; an order having been made, for reducing them to their ancient number of 60; by not filling up the vacancies that may happen by death, &c. till they are fallen to that ſtandard.

SIXHINDEMEN. See the article Syxhindemen.

SIXTH, Sexta, in muſic, one of the ſimple original concords, or harmonical intervals. See Concord.

The *ſixth* is of two kinds; *greater* and *leſſer*; and hence it is eſteemed one of the imperfect concords; though each of the two ſpecies ariſes from a diviſion of the octave. See Octave and Scale.

The *greater* Sixth, called by the Greeks *hexachordon majus*, is the concord reſulting from a mixture of the ſounds of two ſtrings that are to each other as 5 to 3.

The *leſſer* Sixth, *hexachordon minus*, reſults from two ſtrings, which are to each other as 8 to 5. See Scale.

The *leſſer ſixth* is compoſed diatonically of ſix degrees, whence its name; and of five intervals, three whereof are tones, and two ſemi-tones; chromatically of eight ſemi-tones; five whereof are greater, and three leſs.—It has its form or origin from the *ratio ſuper-tri-partiens quintas*; as of 8 to 5.

The *greater ſixth* is compoſed diatonically, like the *leſs*, of ſix degrees and five intervals; among which are four tones, and a ſemi-tone: and chromatically of nine ſemi-tones; five whereof are greater, and four leſs; of conſequence it has a leſſer ſemi-tone more than the former.—It has its origin from the *ratio ſuper-bi-partiens tertias*; as 5 to 3.

Anciently the *ſixth* had only one repetition, which was the 13th; but in the modern ſyſtem, it has ſeveral, as the 20th, 27th, &c. all marked indifferently in the thorough baſs, by the figure 6. And even the *ſixth* itſelf, both greater and leſſer, when natural, is not expreſſed any otherwiſe than by a ſimple 6. But when it is greater or leſs by accident; to the 6 is added the mark of a ſharp, or a flat: as may be ſeen in M. Broſſard.

Beſides the two kinds of *ſixths* here deſcribed, which are both good concords; there are two others that are vicious and diſſonant.

The firſt is the *defective* Sixth, compoſed of two tones and three ſemi-tones, or of ſeven ſemi-tones, five whereof are greater, and two leſs.

The ſecond is the *redundant* Sixth, compoſed of four tones, a greater ſemi-tone, and a leſs. Whence ſome call it *pentatonon*, as comprehending five tones.

Theſe two being both diſcords, ſhould never be uſed in melody, and very rarely in harmony.

As to the two conſonant *ſixths*, they were anciently uſed very ſparingly: at preſent they are allowed to be uſed as often as one pleaſes; as is the caſe with thirds; the *ſixths* being in reality, no other than inverted thirds: but care is uſually taken, that the firſt *ſixth* that occurs be a leſſer, and the laſt a greater; and that from the greater, we riſe to the octave, and from the leſs, fall to the fifth.

Sixth, in the military art. See the article Sixain.

Sixth *pair of nerves*, } See the articles { Nerve.
Sixth *rates*, } { Rate.

SIZE, an inſtrument uſed to find the weight of fine round pearls withal. See Pearl.

It conſiſts of five thin pieces or leaves, about two inches long, and half an inch broad; faſtned together at one end by a rivet. In each of theſe, are ſeveral round holes drilled, of different diameters. Thoſe in the firſt leaf ſerve for weighing pearls from $\frac{1}{2}$ a grain to ſeven grains. Thoſe of the ſecond, for pearls from eight grains or two carats, to five carats, &c. and thoſe of the fifth, for pearls from $6\frac{1}{2}$ to $8\frac{1}{2}$.

SKELETON *, ΣΚΕΛΕΤΟΝ, in anatomy, an aſſemblage or arrangement of all the bones of a dead animal, dried, cleaned, and diſpoſed in their natural ſituation; and kept in that diſpoſition by means of wiars, &c.—See *Tab. Anat.* (Oſteol.) *fig.* 3, 7.

* The word is formed from the Greek, σκελλω, I dry.

Skeletons ſerve to good purpoſe, in learning the oſteology. See Osteology.—For the ſeveral bones a *skeleton* conſiſts of, ſee Bone.

SKIFF, or Squiff, the leſs of two ſhip-boats; ſerving chiefly to go aſhore in, when the ſhip is in harbour. See Boat.

SKIN, in anatomy, a large thick membrane, ſpread over the whole body, ſerving as the external organ of feeling, and as a cover and ornament of the parts underneath.

The *skin* conſiſts of three parts; the external one, called the *cuticle*, *epidermis*, or *skarf-skin*. See Cuticle.—The middle-moſt is called the *corpus reticulare*, becauſe pierced through with a great number of holes, like a net or ſieve. See Reticulare *corpus*.—The innermoſt, called the *cutis*, is a fibrous ſubſtance, wove out of the extremities of arteries, veins, nerves, tendons, &c. Whence alſo ariſe abundance of little eminences, called *papillæ pyramidales*.—See *Tab. Anat.* (Myol.) *fig.* 8. See alſo CUTIS and PAPILLÆ.

It is likewiſe ſet with an infinity of glands, called *miliary glands*, each whereof has its excretory duct paſſing along with the pyramidal papillæ, through the holes of the corpus reticulare, and terminating at the cuticle.

The papillæ are held by the moderns to be the organ of feeling; and the excretory veſſels ſerve to carry off the matter of perſpiration, which is ſeparated from the blood in the miliary glands. See MILIARY *glands*, PERSPIRATION and FEELING.

Nutrition, M. Perrault obſerves, is ſometimes taken in throughout the whole body of animals, at the pores of the *ſkin*. The ſubtle ſubſtances of nutritious matters applied externally to thoſe bodies, are found to penetrate them, to mix with the blood and juices, and are there aſſimilated. On this account, he adds, it is, that butchers dogs, turnſpit-dogs, &c. are generally very fat, and even butchers, cooks, &c. themſelves. M. Dodart takes it, that plants receive a great part of their food by the external bark, not all by the root. See ROOT.

SKIN, in commerce, is particularly uſed for this membrane ſtripped off the animal, to be prepared by the tanner, ſkinner, currier, parchment-maker, &c. and converted into leather, &c. See TANNING, CURRYING, &c.

The uſe of *ſkins* is very ancient; the firſt garments in the world being made thereof. The Danes and other northern nations, have a long time dreſſed in *ſkins*.—Morocco's are made of the *ſkins* of a kind of goats. See MOROCCO.

Parchment is uſually made of ſheep *ſkins*; ſometimes of goat *ſkins*. See PARCHMENT.—Velom is a kind of parchment made of the *ſkin* of an abortive calf, or at leaſt of a ſucking calf. See VELOM.

The true ſhammy, is made of the *ſkin* of an animal of the ſame name; though frequently counterfeited with common goats and ſheep *ſkins*. See SHAMMY.

Shagreen is prepared at Conſtantinople, of the hind-part of the *ſkin* of a mule, or rather aſs of that country, prepared and tanned, and when ſoft and manageable, ſtretched on a frame, and expoſed to the ſun.—This done, they ſprinkle muſtard-ſeed on the *ſkin*; taking care to rub it ſeveral times over with the hand. By means hereof, and the heat of the ſun, the grain of the leather is raiſed up, and there hardened. See SHAGREEN.

SKINKER, a cup-bearer or butler. See ARCH-*butler*.

SKIPPER. See the article SCHIPPER.

SKIRMISH*, in war, a diſorderly kind of combat, or encounter, in preſence of two armies between ſmall parties, or perſons who advance from the body for that purpoſe, and introduce, or invite to a general, regular fight.

* The word ſeems formed from the French, *eſcarmouche*, which ſignifies the ſame, and which Nicod derives from the Greek χαρμη; which ſignifies at the ſame time, both light, combat and joy: Menage derives it from the German, *ſchirmen* or *ſkermen*, to fence or defend: De Cange, from *ſcaramuccia*; a light engagement, of *ſcara* and *muccia*, a body of ſoldiers hid in ambuſh; in regard moſt *ſkirmiſhes* are performed by perſons in ambuſcade.

SKULL, in anatomy. See the article CRANIUM.

SKY, the blue expanſe of air or atmoſphere. See AIR, ATMOSPHERE, and HEAVEN.

The azure colour of the *ſky*, Sir Iſaac Newton attributes to vapours beginning to condenſe therein, which have got conſiſtence enough to reflect the moſt reflexible rays, *viz.* the violet ones; but not enough to reflect any of the leſs reflexible ones. See REFLEXIBILITY.

M. de la Hire attributes it to our viewing a black object, *viz.* the dark ſpace beyond the regions of the atmoſphere, through a white or lucid one, *viz.* the air illumined by the ſun: a mixture of black and white always appearing blue. See BLUE.—But this account is not originally his; it is as old as Leonardo da Vinci. See COLOUR, &c.

SKY *rocket*. See the article ROCKET.

SLAB, an outſide ſappy plank or board ſawed off from the ſides of a timber-tree.

SLATE, a blue fiſſile ſtone, very ſoft when dug out of the quarry, and on that account eaſily cut or ſawed into thin long ſquares or eſcallops, to ſerve in lieu of tiles for the covering of houſes: ſometimes alſo to make tables of, and to pave withal. See COVERING, &c.

The ancients were unacquainted with the uſe of *ſlate*, and inſtead thereof covered their houſes with ſhingle, as we read in Pliny. Beſides the blue *ſlate*, we have in England a greyiſh *ſlate*, called alſo *Horſham ſtone*, from a town in Suſſex of that name, where the greateſt quantities of it are found.

The blue *ſlate* is a very light, laſting, and beautiful covering, but chargeable withal, in regard the roof muſt be firſt boarded over, the *ſlates* hung on tacks, and laid with finer mortar than tiles. The grey *ſlate* is chiefly uſed in the covering of churches, chapels, chancels, &c.

It is dearer than tiles, but far more durable. The timber of the roof needs to be very ſtrong for theſe grey *ſlates*, it being almoſt double the weight of tiles. See TYLE.

To judge of the goodneſs of *ſlate*, Mr. Colepreſs, in the Philoſophical Tranſactions, orders it to be knocked againſt any hard body, to make it yield a ſound; if the ſound be good and clear, the ſtone is firm and good; otherwiſe, it is crazy.

Another method of proving its goodneſs, is, by weighing it exactly, then letting it lie ſix or eight hours under water, and wiping it very clean; if it weighs now more than it did before, it is of that kind that ſoaks in water, and therefore will not long endure, without rotting the lath or timber.

Another method of trial is, by placing a *ſlate* half a day perpendicularly in a veſſel of water, ſo as to reach a conſiderable height above the level thereof: if the *ſlate* be firm and cloſe, then it will not draw water, that is, the water will not have aſcended above half an inch above the level of that in the veſſel, nor that perhaps any where but at the edges, the texture whereof might be looſened by hewing; but a bad ſtone will have drawn the water to the very top, be it as high as it will.

There are *ſlates* in ſeveral places, which the moſt experienced *ſlaters*, or coverers, conjecture to have continued on houſes ſeveral hundreds of years, and are yet as firm as when firſt put up.

M. Leibnitz informs us, in the hiſtory of the French academy; that in ſeveral parts of the dutchy of Brunſwick, particularly about Oſteroda, &c. there are horizontal veins of *ſlate*, wherein are found very exact and finiſhed repreſentations of various kinds of fiſhes and plants, appearing in their natural breadth and length, but without any thickneſs.—The ſame impreſſions are alſo frequently found even in a mixture of copper and ſilver.

M. Leibnitz accounts for this appearance, by ſuppoſing the lakes and meadows of theſe places to have been covered over with a kind of earth, which has buried the fiſhes and plants; or that ſome very muddy water, much impregnated with earth, has covered them up, or carried them away.—This earth he takes to have ſince hardened into *ſlate*; and length of time, or ſome other cauſe, to have conſumed the delicate matter of the fiſh, &c. much as the bodies of flies or ants, which are found encloſed in amber, are quite diſſipated, and nothing left but a mere delineation.

The matter of the fiſh, or plant, thus conſumed, has left its form impreſſed in the *ſlate*, by means of the cavity remaining therein; which cavity has been at length filled up with a metallic matter: whether by reaſon that the ſubterranean fire, in baking the earth into *ſlate*, has ſeparated a metal therefrom; or that a metallic vapour penetrating the *ſlate*, has become fixed in theſe cavities.

SLAVE*, a perſon in the abſolute power of a maſter, either by war or conqueſt. See SERVANT.

* Menage, and Voſſius derive the word from *Sclavus*, the name of a Scythian people, whom Charlemagne condemned to perpetual impriſonment; whence the Italians made their *ſchlavo*, the Germans their *ſchlave*, the French their *eſclave*, and we *ſlave*: the Italians, and other nations uſed to buy theſe *Sclavi* or *Sclavonians* to make drudges of; whence the proper name of a nation, in time, became the name of a ſtate or condition. See SCLAVONIC.

The Romans called their *ſlaves*, *ſervi*, from *ſervare*, to keep, ſave; as being ſuch as were not killed, but ſaved, to yield money either by ſale, or by their work. Though other authors are of opinion, that the Roman name *ſervi* might come from that of *Serbi*; as that of *ſlaves*, from *Sclavi*, a people.

We find no mention of *ſlaves* before the deluge; but immediately after, *viz.* in the curſe of Canaan, Gen. ix. 25. whence it is eaſily inferred, that ſervitude commenced ſoon after that time: for in Abraham's days we find it generally eſtabliſhed.—Some will have it to have commenced under Nimrod, becauſe it was he who firſt began to make war, and of conſequence to make captives; and to bring ſuch as he took either in his battles, or irruptions, into ſlavery.

Among the Romans, when a *ſlave* was ſet at liberty, he changed his name into a ſurname; took the nomen or prænomen of his maſter; to which he added the cognomen or nick-name he had been called by when a *ſlave*. See NAME.

By the civil law, the power of making *ſlaves* is eſteemed a right of nations, and follows as a natural conſequence of captivity in war. The Lacedæmonians, ſay ſome, or as others ſay, the Aſſyrians, firſt introduced the practice; which the Romans not only approved of, but even invented new manners of making *ſlaves*: for inſtance, a man born free, among them, might ſell his freedom, and become a *ſlave*.—This voluntary *ſlavery* was firſt introduced by a decree of the ſenate, in the time of the emperor Claudius, and at length abrogated by Leo.

The Romans had power of life and death over their *ſlaves*, which no other nations had: but this ſeverity was afterwards moderated by the laws of the emperors; and by one of Adrian, it was made capital to kill a *ſlave* without a cauſe.—The *ſlaves* were eſteemed the proper goods of their maſters, and all they got belonged to them: but, if the maſter were too cruel in his domeſtick corrections, he was obliged to ſell his *ſlave* at a moderate price.

As *ſlavery* was not aboliſhed by the goſpel, the cuſtom of keeping *ſlaves* laſted a long time in Chriſtendom.—In the time of Louis the Groſs they were ſo numerous in Egypt, that it was found a difficult matter to quell a body of them who had made head againſt their maſters: yet Bartolus, who lived in 1300, obſerves, there were none left in his days.

Slavery is abſolutely aboliſhed in England, and France, as to perſonal ſervitude: our ſervants are not *ſlaves*, but only ſubject to certain determinate ſervices. It is ſaid, that the moment a *ſlave* ſteps on Engliſh ground, he becomes free. See SERVANT.

SLAVES make a very conſiderable article of the traffick in America. The Engliſh South-Sea company have the ſole privilege of furniſhing the Spaniſh Weſt-Indies with *ſlaves*, by treaty. See NEGRO.

SLAUGHTER. See MANSLAUGHTER, HOMICIDE, MURTHER, BUTCHER, *&c.*

SLEASY *holland*, a kind of holland thus called, becauſe made in Sileſia in Germany; and which, from its ſlightneſs, occaſions all thin, ſlight, ill-wrought hollands to be called *ſleaſy*. See HOLLAND.

SLEDGE, a kind of carriage, without wheels, for the conveyance of very weighty things, as huge ſtones, bells, *&c.* See CARRIAGE.

The Dutch have a kind of *ſledge*, whereon they can carry a veſſel of any burthen by land. It conſiſts of a plank a foot and a half broad, and the length of the keel of a moderate ſhip, raiſed a little behind, and hollow in the middle; ſo that the ſides go a little aſlope, and are furniſhed with holes to receive pins, *&c.* The reſt is quite even.

SLEEP, that ſtate wherein the body appearing perfectly at reſt, external objects move the organs of ſenſe as uſually, without exciting the uſual ſenſations. See WAKEFULNESS.

Sleep, according to Rohault, conſiſts in a ſcarcity of ſpirits; which occaſions that the orifices or pores of the nerves in the brain, whereby the ſpirits uſed to flow into the nerves, being no longer kept open by the frequency of the ſpirits, ſhut of themſelves. For this being ſuppoſed, as ſoon as the ſpirits, now in the nerves, ſhall be diſſipated, the capillaments of thoſe nerves, having no ſupplement of new ſpirits, will become lax, and cohere as if cemented together; and ſo be unfit to convey any impreſſion to the brain: beſides, the muſcles being now void of ſpirits, will be unable to move, or even ſuſtain the members: thus will ſenſation, and motion, be both deſtroyed. See SENSATION, MUSCULAR *motion*, SPIRITS, *&c.*

Sleep is broke off unnaturally, when any of the organs of ſenſe are ſo briſkly acted on, that the action is propagated to the brain: for upon this, the few ſpirits remaining in the brain, are all called together, and unite their forces to unlock the pores of the nerves, *&c.* But if no object ſhould thus affect the organ, yet *ſleep* would in ſome time be broke off naturally; for the quantity of ſpirits generated in *ſleep*, would at length be ſo great, that, ſtretching out the orifices of the nerves, they would open themſelves a paſſage.

With regard to medicine, *ſleep* is defined, by Boerhaave, to be that ſtate of the medulla of the brain, wherein the nerves, do not receive ſo copious, nor ſo forcible an influx of ſpirits, from the brain as is required to enable the organs of ſenſe, and voluntary motion, to perform their offices.

The immediate cauſe hereof appears to be the ſcarcity of animal ſpirits, which being ſpent, and requiring ſome time to be recruited, the minute veſſels, before inflated, become flaccid and collapſe: or elſe, it is owing to ſuch a preſſure of the thicker blood againſt the cortex of the brain, as that the medulla, becoming likewiſe compreſſed by its contiguity with the cortex, the paſſage of the ſpirits is obſtructed.

The natural cauſe of *ſleep*, then, is any thing that may contribute to theſe two.—And hence its effects may be underſtood: for in *ſleep* ſeveral functions are ſuſpended, their organs and muſcles are at reſt, the ſpirits ſcarce flow through them, therefore there is a leſs conſumption of them; but the ſolid villi and fibres of the nerves are but little changed, and an equilibrium obtains throughout; there is no difference of preſſure on the veſſels, nor of velocity in the humours: the motion of the heart, lungs, arteries, viſcera, *&c.* is increaſed. The effects of which are, that the vital humours circulate more ſtrongly and equably through the canals, which are now freer, laxer, and opener, as not being compreſſed by the muſcles. Hence the blood is driven leſs forcibly, indeed, into the lateral veſſels, but more equably; through the greater veſſels, both more ſtrongly, and more equably. Thus are the lateral fibres ſenſibly filled, as being leſs traverſed, and at length remain at reſt, with the juices they have collected: hence the lateral adipoſe cells become filled and diſtended with an oily matter.

By this means the circulation, being almoſt wholly performed in the larger blood-veſſels, becomes gradually ſlower, and at length ſcarce ſenſible, if the *ſleep* be too long continued: thus, in moderate *ſleep*, is the matter of the chyle beſt converted into ſerum; that, into thinner humours; and thoſe, into nouriſhment. The attrition of the ſolid parts is leſs conſiderable; the cutaneous ſecretion is increaſed, and all the reſt diminiſhed. The parts wore off are now beſt ſupplied, as an equable, continual repletion, reſtores the humours, and repairs the ſolids, the preventing and diſturbing cauſes being then at reſt. In the mean time, while the nutritious matter is beſt prepared; there is an aptitude in the veſſels to receive, and in the humours to enter, and the means of application, and conſolidation, are at liberty: hence, a new production, and accumulation of animal ſpirits, in all the humours, as to matter, and in the minuteſt veſſels as to repletion: the conſequence of which is, an aptitude for waking, and an in-aptitude for *ſleep*; ſo that upon the firſt occaſion the man awakes. See NUTRITION, *&c.*

Some of the more extraordinary phænomena of *ſleep*, yet to be accounted for, are: that when the head is hot, and the feet cold, *ſleep* is impracticable: that ſpirituous liquors firſt bring on drunkenneſs, then *ſleep*: that perſpiration, during the time of *ſleep*, is twice as great as at other times: that upon *ſleeping* too long, the head grows heavy, the ſenſes dull, the memory weak, with coldneſs, pituitouſneſs, an indiſpoſition of the muſcles for motion, and a want of perſpiration. That much *ſleeping* will ſuſtain life a long time, without either meat or drink: that upon a laudable *ſleep*, there always follows an expanſion of all the muſcles, frequently a repeated yawning, and the muſcles and nerves acquire a new agility; that fœtus's always *ſleep*; children often; youth more than grown perſons, and they more than old men; and that people, recovering from violent diſtempers, *ſleep* much more than when perfectly at health.

SLEEVE *Hippocrates's*. See the article HIPPOCRATES.

SLIDING, in mechanicks, *ſuperinceſſus radens*, is, when the ſame point of a body, moving along a ſurface, deſcribes a line on that ſurface. See MOTION, FRICTION, *&c.*

Such is the motion of a parallelepiped, protruded along a plane. See ROLLING, RESISTANCE, *&c.*

SLIDING *rule*, a mathematical inſtrument, ſerving to work queſtions in gauging, meaſuring, *&c.* without the uſe of compaſſes; merely by the *ſliding* of the parts of the inſtrument one by another, the lines and diviſions whereof give the anſwer, by inſpection. See RULE.

This inſtrument is variouſly contrived, and applied by various authors; particularly Everard, Coggeſhal, Gunter, Hunt, and Partridge; but the moſt uſual and uſeful ones, are thoſe of Everard and Coggeſhal; the deſcription, and uſes whereof, are as follow.

Everard's SLIDING *rule* is principally uſed in gauging; being ordinarily made of box, a foot long, an inch broad, and $\frac{4}{10}$ of an inch thick.—In conſiſts of three parts: a rule, on each ſide whereof, *a b*, and *c d* (*Tab. Surveying*, *fig.* 17.) is a groove; and two ſmall ſcales, or *ſliding* pieces, *m*, *n*, *ſlide* in the grooves.—When both theſe pieces are drawn out to their full extent, the inſtrument is three foot long.

On the firſt broad face of the inſtrument *a b*, are four lines of numbers; for the properties, *&c.* whereof, ſee GUNTER's *line*. The firſt marked A, conſiſting of two radius's numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; and then 2, 3, 4, 5, *&c.* to 10. On this line are four braſs centre-pins, two in each radius; one in each whereof is marked M B, to ſignify that the number it is ſet againſt, 2150.42 is the cubic inches in a malt-buſhel; the other two are marked with A, to ſignify that the numbers they are ſet againſt, *viz.* 282, are the cubic inches in an ale-gallon.—The ſecond and third lines of numbers, are on the *ſliding* pieces, and are exactly the ſame with the firſt. Cloſe to the figure 7, in the firſt radius, is a dot marked *S i*, ſet exactly over .707, denoting .707 to be the ſide of a ſquare inſcribed in a circle, whoſe diameter is unity. Cloſe to 9 is another dot, marked *S e*, ſet over .886, which is the ſide of a ſquare, equal to the area of a circle, whoſe diameter is unity. Another dot, nigh W, is ſet over 231, the number of cubic inches in a wine-gallon; and another near C, is ſet over 3.14 the circumference of a circle, whoſe diameter is unity.—The fourth line of numbers, marked M D, to ſignify *malt depth*, is a broken line of two radius's numbered 2, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 9, 8, 7, *&c.* the number 1 being ſet directly againſt M B on the firſt radius.

On the ſecond broad face, marked *c d*, are 1°. A line of numbers of one radius, numbered 1, 2, 3, *&c.* to 10, noted by the letter D. On this are four centre-pins; the firſt, marked WG, is the gauge-point for a wine-gallon, *i. e.* the diameter of a cylinder, whoſe height is an inch, and content 231 cubic inches, or a wine-gallon, which is 17.15 inches: the ſecond centre-pin AG ſtands at the guage-point for an ale-gallon, which is 18.95 inches. The third MS ſtands at 46.3 the ſide of a ſquare, whoſe content is equal to the inches in a ſolid buſhel. The fourth MR is the gauge-point for a malt-buſhel, which is 52.32 inches.—2°. Two lines of numbers on the *ſliding* piece, which are exactly the ſame as thoſe on the *ſliding* piece on the other ſide. Cloſe to the diviſion 8 is a dot marked *c*, which is ſet to .795, the area of a circle whoſe diameter is unity; and another marked *d*, ſtands at .785, the area of a circle, whoſe diameter is unity. —3°. Two lines of ſegments, each numbered 1, 2, 3, to 100; the firſt, for finding the ullage of a caſk, taken as the middle fruſtum of a ſpheroid, lying with its axis parallel to the horizon; and the other, for finding the ullage of a caſk ſtanding.

Again, on one of the narrow ſides, noted *e*, are 1°. A line of inches, numbered 1, 2, 3, *&c.* to 12, each ſub-divided into ten equal parts. 2°. A line, by which, with that of inches, we find a mean diameter for a caſk, in the figure of a middle fruſtum of a ſpheroid: it is numbered 1, 2, 3, *&c.* to 7, and marked *ſpheroid.* 3°. A line for finding the mean diameter of a caſk, in the figure of the middle fruſtum of a parabolic ſpindle, which gaugers call the *ſecond variety of caſks*; it is numbered 1, 2, 3, *&c.* and noted *ſecond variety.* 4°. A line, by which we find the mean diameter of a caſk of the third variety, *i. e.* of a caſk in the figure of two parabolic conoids, abutting on a common baſe; it is numbered 1, 2, 3, *&c.* and noted *third variety.*

On the other narrow face, marked *f*, are 1°. A foot divided into 100 equal parts, marked F M. 2°. A line of inches, like that before-mentioned, noted I M. 3°. A line for finding the mean diameter for the fourth variety of caſks, which is the middle fruſtum of two cones, abutting on a common baſe. It is numbered 1, 2, 3, *&c.* and noted F C, ſignifying fruſtum of a cone.

On the backſide of the two *ſliding* pieces are a line of inches, from 13 to 36, when the two pieces are put endwiſe; and againſt that, the correſpondent gallons, or hundred parts, that any ſmall tub, or the like open veſſel (from 13 to 36 inches diameter) will contain at one inch deep.

Uſe of Everard's SLIDING *rule.*—1°. To multiply one number by another. Suppoſe 4 required to be multiplied by 6: ſet 1 on the line of numbers B, to 4 on the line A; then, againſt 6 upon B is 24, the product ſought upon A. Again, to multiply 26 by 68, ſet 1 on B to 26 on A; then, againſt 68 on B is 1768 on A, the product ſought.

2°. To divide one number by another. Suppoſe 24 to be divided by 4: ſet 4 on B to 1 on A; then againſt 24 on B is 6 on A, which is the quotient. Again, to divide 952 by 14; ſet 14 on A to 1 on B, and againſt 952 on A you have on B, 68, which is the quotient.

3°. To work the rule of three. If 8 give 20, what will 22 give? ſet 8 on B to 20 on A, then againſt 22 on B ſtands 55 on A; the number ſought.

4°. To find a mean proportional between two numbers, ſuppoſe between 50 and 72: ſet 50 on C to 72 on D; then againſt 72 on C you have 60 on D, which is the mean required.

5° To extract the ſquare root of a number. Apply the lines C and D to one another, ſo as 10 at the end of D be even with 10 at the end of C; then are theſe two lines a table, ſhewing the ſquare root of any number leſs than 1000000 by inſpection: for againſt any number on C, the number anſwering to it on D, is the ſquare root thereof. Note, If the given number conſiſt of 1, 3, 5, or 7 places, ſeek it on the firſt radius, on the line C, and againſt it is the root required at D.

6°. Either the diameter, or circumference of a circle, being given; to find the other. Set 1 on the line A againſt 3, 141 (to which is writ C) on the line B; and againſt any diameter on the line A, you have the circumference on B; and contrariwiſe: thus, the diameter being 20 inches, the circumference will be 62.831 inches; and the circumference being 94, 247, the diameter will be 30.

7°. The diameter of a circle given, to find the area in inches, or in ale or wine-gallons. Suppoſe the diameter 20 inches, what is the area? ſet 1 upon D, to .785 (noted *d)* on C; then againſt 20 on D is 314.159 the area required. Now to find that circle's area in ale-gallons, ſet 18.95 (marked A G) upon D, to 1 on C; then againſt the diameter 20 upon D, is the number of ale-gallons on C, *viz.* 1.11. The ſame may ſerve for wine-gallons, regard only had to the proper gauge-point.

8°. The two diameters of an ellipſis being given, to find the area in ale-gallons. Suppoſe the tranſverſe diameter 72 inches, and the conjugate 50; ſet 359.05 the ſquare of the gauge-point on B, to one of the diameters (ſuppoſe 50) on A; then againſt the other diameter 72 on B, you will have the area on A, *viz.* 10.02 gallons, the content of this ellipſis at one inch deep. The like may be done for wine-gallons, if inſtead of 359.05 you uſe 249.11 the ſquare of the gauge-point for wine-gallons.

9°. To find the area of a triangular ſurface in ale-gallons. Suppoſe the baſe of the triangle 260 inches, and the perpendicular let fall from the oppoſite angle 110 inches: ſet 282 (marked A) upon B to 130, half the baſe on A: then againſt 110 on B is 50.7 gallons on A.

10°. To find the content of an oblong in ale-gallons. Suppoſe one ſide 130 inches, and the other 180; ſet 282 on B to 180 on A; then againſt 130 upon B is 82.97 ale-gallons, the area required.

11°. To find the content of a regular polygon in ale-gallons, one of the ſides being given. Find the length of the perpendicular let fall from the centre to one of the ſides: this multiplied by half the ſum of the ſides, gives the area. For an inſtance: ſuppoſe a pentagon, whoſe ſide is 1 inch; here, the perpendicular will be found .837, by ſaying, as the ſine of half the angle at the centre, which in this polygon is 36°, is to half the given ſide .5, ſo is the ſine of the complement of 36°, *viz.* 54° to the perpendicular aforeſaid. Whence the area of a pentagon, whoſe ſide is unity, will be found 1.72 inches, which divided by 282, give .0061, the ale-gallons in that polygon.

12°. To find the content of a cylinder in ale-gallons. Suppoſe the diameter of the baſe of the cylinder 120 inches, the perpendicular height 36 inches: ſet therefore the gauge-point (A G) to the height, 36 on C; then againſt 120, the diameter on D, is found 1443.6, the content in ale-gallons.

13°. The bung and head-diameters, of any caſk, together with its length, being given; to find its content in ale, or wine-gallons.—1°. Suppoſe the length of a caſk taken (as the middle fruſtum of a ſpheroid, which is the firſt caſe or variety) be 40 inches, its head-diameter 24 inches, and bung-diameter 32 inches: ſubtract the head-diameter from that of the bung; the difference is 8. Look, then, for 8 inches on the line of inches, on the firſt narrow face of the rule; and againſt it, on the line *ſpheroid* ſtands 5.6 inches, which added to the head-diameter 24, gives 29.6 inches for that caſk's mean diameter: ſet therefore the gauge-point for ale (marked A G) on D, to 40 on C; and againſt 29.6 on D, is 97.45, the content of the caſk in ale-gallons. If the gauge-point for wine (marked W G) be uſed inſtead of that for ale; you will have the veſſel's content in wine-gallons.—2°. If a caſk, of the ſame dimenſions as the former be taken (as the middle fruſtum of a parabolic ſpindle, which is the ſecond variety) ſee what inches, and parts, on the line marked ſecond variety, ſtand againſt the difference of the bung and head-diameters, which in this example is 8; and you will find 5.1 inches, which added to 24, the head-diameter makes 29.1 inches, the mean-diameter of the caſk: ſet therefore the rule, as before, and againſt 29.1 inches, you will have 94.12 ale-gallons, for the content of the caſk.—3°. If the caſk taken be the middle fruſtum of two parabolic conoids, which is the third variety; againſt 8 inches, the difference of the head and bung-diameters, on the line of inches, you will find 4.57 inches on the line called *third variety*; this added as before to 24, gives 28.57 for the caſk's mean-diameter: proceeding as before, you will find the content 90.8 gallons.—4°. If the caſk taken be the fruſtums of two cones, which is the *fourth variety*, againſt 8 inches on the line of inches, you will find on the line marked F C, 4.1 inches to be added to 24 inches: the reſt, carried on as before, gives the content of the caſk 87.93 ale-gallons.

14°. A caſk partly empty, lying with its axis parallel to the horizon; to find the quantity of liquor therein. Find its whole content, as above; which ſuppoſe 97.455 gallons, and ſuppoſe the inches left dry, 8, and the bung-diameter 32: then, as the bung-diameter on C is to 100 on the line of ſegments L, ſo are the dry inches on C to a fourth number on the line of ſegments: and as 100 upon B is to the caſk's whole content on A, ſo is that fourth number to the liquor wanting to fill up the caſk; which, ſubtracted from the whole contents of the caſk, gives the liquor remaining therein. *E. gr.* Set 32, the bung-diameter on C, to 100 on the ſegment line L; then againſt 8, the dry inches on C, ſtands 17.6 on the ſegment line: ſet therefore 100 on B, to the caſk's whole content on A; and againſt 17.6 on B, you have 16.5 gallons on A; ſubtracting therefore the ſaid gallons from 97.45, the veſſel's whole content; the liquor in the caſk will be 80.95 gallons.

15°. A caſk ſtanding upright, or with its axis perpendicular to the horizon, to find the liquor therein. Suppoſe the length of the caſk 40 inches, and 10 of them dry; ſet 40 inches, on the line C, to 100 on the ſegment line S; and againſt 10, the dry inches on the line C, ſtands 24.2 on S the ſegment line. Set, then, 100 on B, to 97.455, the caſk's whole content on A; and againſt 24.2 on B, you will have 23.5 gallons, which is what is wanting to fill up the caſk: this, therefore, ſubtracted from the whole content 97.455, gives 73.955 gallons, for the quantity of liquor remaining in the caſk.

16°. To find the content of any right-angled parallelepiped (*e. gr.* a ciſtern, uting-fat, or the like) in malt-buſhels. Suppoſe the length of the baſe 80 inches, the breadth 50, and depth 9 inches: ſet the breadth 50 on B, to the depth 9 on C; then againſt the length 80 on A, ſtand 16.8 buſhels on B, the number required.

Coggeſhal's SLIDING *rule* is principally uſed in meaſuring of the ſuperficies, and ſolidity of timber, *&c.* See MEASURING, *&c.*

It conſiſts of two rulers, each a foot long, which are framed, or put together, various ways; ſometimes they are made to *ſlide* by one another, like glazier's rules: ſometimes a groove is made in the ſide of a common two-foot joint-rule, and a thin *ſliding* piece put in, and Coggeſhal's lines added on that ſide: but the moſt uſual and commodious way, is to have one of the rulers *ſlide* along a groove made along the middle of the other, as it is repreſented in *Table Surveying, fig.* 18.

On the *ſliding* ſide of the rule are four lines of numbers, three whereof are double, that is, are lines to two radius's, and one, a ſingle broken line of numbers: the three firſt, marked A, B, C, are figured 1, 2, 3, *&c.* to 9; then 1, 2, 3, *&c.* to 10. Their conſtruction, uſe, *&c.* are the ſame as thoſe on Everard's *ſliding* rule. The ſingle line, called the *girt-line*, and noted D, whoſe radius is equal to the two radius's of any of the other lines, is broke for the eaſier meaſuring of timber, and figured 4, 5, 6, 7, 8, 9, 10, 20, 30, *&c.* from 4 to 5. It is divided into ten parts, and each 10th ſubdivided into 2, and ſo on from 5 to 10, *&c.*

On the back-ſide of the rule, are, 1°. A line of inch-meaſure, from 1 to 12; each inch being divided and ſubdivided. 2°. A line of foot-meaſure; conſiſting of one foot, divided into 100 equal parts, and figured 10, 20, 30, *&c.* The back-ſide of the ſliding piece is divided into inches, halves, *&c.* and figured from 12 to 24; ſo that when ſlid out, there may be a meaſure of two foot.

Uſe of Coggeſhal's SLIDING *rule, in meaſuring plain ſuperficies.*—1. To meaſure a ſquare. Suppoſe, *e. gr.* the ſides be each 5 feet: ſet 1 on the line B, to 5 on the line A; then againſt 5 on the line B, is 25 feet; the content of the ſquare on the line A.

2. To meaſure a long ſquare. Suppoſe the longeſt ſide 18 foot, and the ſhorteſt 10: ſet 1 on the line B, to 10 on the line A; then againſt 18 foot, on the line B, is 180 feet, the contents on the line A.

3. To meaſure a rhombus. Suppoſe the ſide 12 feet, and the length of a perpendicular let fall from one of the obtuſe angles, to the oppoſite ſide, 9 feet: ſet 1, on the line B, to 12, the length of the ſide, on the line A; then againſt 9, the length of the perpendicular on the line B, is 108 feet, the content.

4. To meaſure a triangle. Suppoſe the baſe ſeven feet, and the length of the perpendicular let fall from the oppoſite angle to the baſe, 4 feet: ſet 1 on the line B, to 7 on the line A: then againſt half the perpendicular, which is 2, on the line B, is 14 on the line A, for the content of the triangle.

5. To find the content of a circle, its diameter being given. Suppoſe the diameter 3.5 feet: ſet 11 on the girt-line D, to 95 on the line C; then againſt 3.5 feet on D is 9.6 on C, which is the content of the circle in feet.

6. To find the content of an oval or ellipſis. Suppoſe the longeſt diameter 9 feet, and the ſhorteſt 4. Find a mean proportional between the two, by ſetting the greater 9 on the girt-line, to 9 on the line C; then, againſt the leſs number 4, on the line C, is 6; the mean proportional ſought. This done, find the content of a circle, whoſe diameter is 6 feet; this, when found, by the laſt article, will be equal to the content of the ellipſis ſought.

Uſe of Coggeſhal's SLIDING *rule, in meaſuring timber.*—1°. To meaſure timber the uſual way. Take the length in feet, half feet, and, if required, quarters; then meaſure half way back again; there girt the tree with a ſmall cord or line; double this line twice, very evenly, and meaſure this fourth part of the girt or perimeter, in inches, halves, and quarters. The dimenſions thus taken, the timber is to be meaſured as if ſquare, and the fourth of the girt taken for the ſide of the ſquare, thus; ſet 12 on the girt-line D, to the length in feet on the line C, then againſt the ſide of the ſquare, on the girt-line D, taken in inches, you have, on the line C, the content of the tree in feet.

For an inſtance: ſuppoſe the girt of a tree, in the middle, be 60 inches, and the length 30 feet, to find the content: ſet 12 on the girt-line D, to 30 feet on the line C; then againſt 15, one fourth of 60, on the girt-line D, is 46.8 feet; the content on the line C. If the length ſhould be 9 inches, and the quarter of the girt 35 inches; here, as the length is beneath a foot, meaſure it on the line of foot-meaſure, and ſee what decimal part of a foot it makes, which you will find .75. Set 12, therefore, on the girt-line to 75 on the firſt radius of the line C, and againſt 35 on the girt-line is 6.4 feet on C, for the content.

2°. To meaſure round timber the true way. The former method, though that generally in uſe, is not quite juſt. To meaſure timber accurately, inſtead of the point 12 on the girt-line, uſe another, *viz.* 10.635; at which there ſhould be placed a centre-pin. This 10.635 is the ſide of a ſquare equal to a circle, whoſe diameter is 12 inches. For an inſtance: ſuppoſe the length 15 feet, and ¼ of the girt 42 inches: ſet the point 10.635 to 15 the length; then againſt 42 on the girt-line is 233 feet for the content ſought; whereas by the common way, there ariſes only 184 feet. In effect, the common meaſure is only to the true meaſure, as 11 to 14. See TIMBER.

3°. To meaſure a cube. Suppoſe the ſides to be 6 feet each; ſet 12 on the girt-line D, to 6 on C; then againſt 72 inches (the inches in 6 feet) on the girt-line, is 216 feet on C, which is the content required.

4°. To meaſure unequally-ſquared timber; that is, where the breadth and depth are not equal. Meaſure the length of the piece, and the breadth and depth (at the end) in inches: then find a mean proportional between the breadth and depth of the piece. This mean proportional is the ſide of a ſquare, equal to the end of the piece; which found, the piece may be meaſured as ſquare timber. For an inſtance: let the length of the piece of timber be 13 feet; the breadth 23 inches, and the depth 13 inches: ſet 23 on the girt-line D, to 23 on C; then againſt 13 on C is 17.35 on the girt-line D, for the mean proportional. Again, ſetting 12 on the girt-line D, to 13 feet, the length on the line C; againſt 17.35 on the girt-line, is 27 feet, the content.

5°. To meaſure taper timber. The length being meaſured in feet, note one third of it; which is found thus: ſet 3 on the line A, to the length on the line B; then againſt 1 on A, is the third part on B: then if the ſolid be round, meaſure the diameter at each end in inches, and ſubtract the leſs diameter from the greater; add half the difference to the leſs diameter; the ſum is the diameter in the middle of the piece. Then ſet 13.54 on the girt to the length of the line C, and againſt the diameter in the middle, on the girt-line, is fourth number on the line C. Again, ſet 13.54 on the girt-line to the third part of the length on the line C; then againſt half the difference on the girt-line, is another fourth number on the line C; theſe two fourth numbers added together, give the content. For an inſtance: let the length be 27 feet (one third whereof is 9) the greater diameter 22 inches, and the leſſer 18; the ſum of the two will be 40, their difference 4, and half the difference two, which added to the leſs diameter, gives 20 inches for the diameter in the middle of the piece. Now ſet 13.54 on the girt-line, to 27 on the line C, and againſt 20 on D, is 58.9 feet. Again, ſet 13.54 of the girt-line to 9 on the line C; and againſt 2 on the girt-line (repreſented by 20) is .196 parts; therefore, by adding 58.9 feet to .196 feet, the ſum is 59.096 feet the content.

If the timber be ſquare, and have the ſame dimenſions; that is, the length 27 feet, the ſide of the greater end 22 inches, and that of the leſſer 18 inches, to find the content: ſet 12 on the girt-line to 27, the length on the line C, and againſt 20 inches, the ſide of the mean ſquare on the girt-line, is 75.4 feet. Again, ſet 12 on the girt-line to 9 feet, one third of the length, on the line C, and againſt 2 inches, half the difference of the ſides of the ſquares of the ends on the girt-line, is .25 parts of a foot, both together make 75.65 feet, the content of the ſolid.

The girt or circumference of a tree, or round piece of timber given; to find the ſide of the ſquare within, or the number of inches of a ſide, when the round timber is ſquared. Set 10 on A to 9 on B, then againſt the girt on A, are the inches for the ſide of the ſquare on the line B.

SLING, *funda*, a ſtring-inſtrument, ſerving for the caſting ſtones with the greater violence.

Pliny, *l.* 76. *c.* 5. attributes the invention of the *ſling* to the Phœnicians: Vegetius aſcribes it to the inhabitants of the Balearic iſlands, who were famous in antiquity, for the dextrous management thereof. Florus and Strabo ſay thoſe people bore three kinds of *ſlings*; ſome longer, others ſhorter, which they uſed according as their enemies were nearer or more remote. Diodorus adds, that the firſt ſerved them for a head-band, the ſecond for a girdle, and that the third they conſtantly carried with them in the hand.

SLINGING, is uſed variouſly at ſea; but chiefly for the hoiſting up caſks, or other heavy things, with ſlings, *i. e.* contrivances of ropes ſpliced into themſelves at either end, with one eye big enough to receive the caſk, or other thing to be ſlung,

SLIPPING, among gardeners, the pulling off a ſprig from a branch, or a branch from an arm of the tree.—And ſo a *ſlip* may have its rents double and treble *ſlipped*, or its ſtalk ragged.

SLIT *grafting*. See the article ENGRAFTING.

SLOOP, a ſort of floating veſſel, otherwiſe called *ſhallop*. See VESSEL and SHALLOP.

In our navy, *ſloops* are tenders on the men of war; and are uſually about 60 ton, and carry about 30 men. See NAVY.

SLOPING *alley*. See the article ALLEY.

SLOT.—*Drawing on the* SLOT. See DRAWING.

SLOUGH, a deep muddy place.—The caſt ſkin of a ſnake, the damp of a coal-pit, and the ſcar of a wound, are alſo called by the ſame appellation.

SLOUGH *of a wild boar*, is the bed, ſoil, or mire, wherein he wallows, or in which he lies in the day-time.

SLOUTH, or SLOUGHT, in hunting, is uſed for a company of ſome ſorts of wild-beaſts.—As, a *ſlout* of bears.

SLOW *fevers*, } See the articles { FEVER.
SLOW *pulſe*, } { PULSE.

SLUICE, a frame of timber, ſtone, or other matter, ſerving to retain and raiſe the water of a river, *&c.* and, on occaſion, to let it paſs.

Such is the *ſluice* of a mill, which ſtops and collects the water of a rivulet, *&c.* to let it fall, at length, in the greater plenty upon the mill-wheel: ſuch alſo are thoſe uſed as vents or drains to diſcharge water off land.—And ſuch are the *ſluices* of Flanders, *&c.* which ſerve to prevent the waters of the ſea overflowing the lower lands, except when there is occaſion to drown them.

Sometimes there is a kind of canal incloſed between two gates or *ſluices*, in artificial navigations, to ſave the water, and render the paſſage of boats equally eaſy, and ſafe, upwards and downwards; as in the *ſluices* of Briare in France, which are a kind of maſſive walls built parallel to each other, at the diſtance of 20 or 24 feet, cloſed with ſtrong gates, at each end, between which is a kind of canal or chamber, conſiderably longer than broad, wherein a veſſel being incloſed, the water is let out at the firſt gate, by which the veſſel is raiſed 15 or 16 foot, and paſſed out of this canal into another much higher. By ſuch means a boat is conveyed out of the Loire into the Seyne, though the ground between them riſe above 150 feet higher than either of thoſe rivers.

The word *ſluice* is formed of the French, *eſcluſe*, which Menage derives from the Latin, *excluſa*, found in the Salic law in the ſame ſenſe.—But this is to be reſtrained to the *ſluices* of mills, *&c.* for as to thoſe ſerving to raiſe veſſels, they were unknown to the ancients.

SMACK, is a ſmall veſſel with but one maſt. See VESSEL and MAST.

Sometimes they are employed as tenders on a man of war; and are alſo uſed for fiſhing upon the coaſts, *&c.*

SMALL *apparatus*, } See the articles { APPARATUS.
SMALL *inteſtine*, } { INTESTINE.

SMALL-POX, *variolæ*. See POX and VARIOLÆ.

SMALL *repeat*. See the article REPEAT.

SMALT, a kind of mineral matter, prepared and purified abroad, and brought hither, ſometimes in form of a blue powder, and ſometimes in cakes; chiefly uſed along with ſtarch, to give linens the finer and clearer caſt; and beſt known by the name of *ſtone* or *powder-blue*. See BLUE.

The preparation of *ſmalt*, as practiſed in Hermanduria, we find deſcribed in the Philoſophical Tranſactions by Dr. Krieg; who tells us, that the matter it is made of, is the mineral ſtone, called cobalt or cadmia, which being pulverized, and the lighter ſtuff waſhed away, the remainder is laid on a furnace, and by a fire, underneath and aſide it, the flames whereof are reverberated over it, a matter is ſeparated from it in form of a ſmoak, which ſticking to the walls, makes what we call *arſenic*. See ARSENIC.

When the cobalt has done ſmoaking, it is cooled, mixed with pot-aſhes and powder of white flint-ſtones, the mixture put in pots, and melted for five or ſix hours in a furnace. By this means, the matter is formed into a blue glaſs, which being put in cold water, cracks and grows tender, and is at length powdered by an engine, the fineſt part ſeparated by a ſieve, put into a mill, and ground in water, into the fineſt powder, which by waſhing is ſtill further ſeparated from the coarſer, then dried in warm chambers, barrelled up, and ſent away.

SMARAGD, ΣΜΑΡΑΓΔΟΣ, a precious ſtone of a green colour, very beautiful, and brilliant, but brittle: called alſo *emerald*. See EMERALD.

The oriental *ſmaragds* are the moſt in eſteem, as being the hardeſt, and their ſplendor the moſt vigorous; ſo as even to tinge the ambient air with their greenneſs.

Great virtues are aſcribed to the *ſmaragd*, or emerald: Cardan and others ſay, it reſiſts plagues, poiſons and dyſenteries; that it refreſhes the ſpirits, *&c.* See GEM.

SMECTYMNUUS, a term that made ſome figure in the time of the civil wars, and during the inter-regnum.—It was formed of the initial letters of the names of five eminent preſbyterian miniſters of that time, *viz.* Stephen Marſhal, Edmund Calamy, Thomas Young, Matthew Newcomen, and William Spurſtow, who, together, wrote a book againſt epiſcopacy, in the year 1641; whence they and their retainers, were called *ſmectymnuans*.

SMELL, *odor*, with regard to the organ, is an impreſſion made on the noſe, by little particles continually exhaling from odorous bodies. See NOSE, *&c.*

SMELL, with regard to the object, is the figure and diſpoſition of odorous effluvia, which ſticking on the organ, excite the ſenſe of *ſmelling*. See SMELLING.

SMELL, with regard to the ſoul, is the perception of the impreſſion of the object on the organ; or the affection in the ſoul reſulting therefrom. See SENSE.

The chymiſts teach, that ſulphur is the principle of all *ſmells*, and that theſe are more or leſs ſtrong, as the ſulphur in the odorous body, is more or leſs dried and exalted. Sulphur, they ſay, is the foundation of odours, as ſalt is of ſavours, and mercury of colours. See SMELLING.

Smell, like taſte, conſiſts altogether in the arrangement, compoſition and figure of the parts; as appears from the following experiments of Mr. Boyle:

1°. From a mixture of two bodies, each whereof is, of itſelf, void of all *ſmell*; a very urinous *ſmell* may be drawn: that is, by the grinding of quick-lime with ſal-ammoniac.

2°. By the admixture of common water, which of itſelf is void of *ſmell*, or inodorous; another inodorous body may be made to emit a very rank *ſmell*.—Thus camphor diſſolved in oil of vitriol, is inodorous; yet mixed with water, immediately exhales a very ſtrong *ſmell*.

3°. Compound bodies may emit *ſmells*, which have no ſimilitude to the *ſmells* of the ſimples they conſiſt of.—Thus oil of turpentine, mixt with a double quantity of oil of vitriol, and diſtilled; after diſtillation, there is no *ſmell* but of ſulphur; and what is left behind in the retort, being again urged by a more violent fire, yields a *ſmell* like oil of wax.

4°. Several *ſmells* are only to be drawn forth by motion, and agitation.—Thus glaſs, ſtones, *&c.* which even when heated, yield no *ſmell*, yet when rubbed and agitated in a peculiar manner, emit a ſtrong *ſmell*; particularly beechwood in turning, yields a kind of roſy *ſmell*.

5°. A body that has a ſtrong *ſmell*, by being mixed with an inodorous one, may ceaſe to have any *ſmell* at all.—Thus if aqua-fortis, not well dephlegmated, be poured on ſalt of tartar, till it ceaſe to ferment; the liquor, when evaporated, will yield inodorous cryſtals, much reſembling ſalt of nitre: yet when burnt, will yield a moſt noiſom *ſmell*.

6°. From a mixture of two bodies, one whereof *ſmells* extremely ill, and the other not well; a very pleaſant aromatic odor may be gained, *viz.* by a mixture of aqua-fortis, or ſpirit of nitre, with an inflammable ſpirit of wine.

7°. Spirits of wine, by mixing with an almoſt inodorous body, may gain a very pleaſant, aromatic *ſmell*.—Thus inflammable ſpirits of wine, and oil of Dantzic vitriol, mixed in equal portions, then digeſted, and at laſt diſtilled, yield a ſpirit of a very fragrant *ſmell*.

8°. A moſt fragrant body may degenerate into a fœtid one, without the admixture of any other body.—Thus, if the ſpirit, mentioned in the former experiment, be kept in a well-cloſed receiver, it will ſoon turn to the rankneſs of garlic.

9°. From two bodies, one whereof is inodorous, and the other fœtid; a very pleaſant *ſmell* may ariſe, much reſembling muſk, *viz.* by putting pearls into ſpirit of vitriol: for when diſſolved, they yield a very agreeable *ſmell*.

SMELLING, the act whereby we perceive *ſmells*, or whereby we become ſenſible of odorous bodies, by means of certain effluvia thereof, which ſtriking on the olfactory organ, briſkly enough to have their impulſe propagated to the brain, excite a ſenſation in the ſoul. See SENSE, SENSATION, and SMELL.

The principal organs of *ſmelling*, are the noſtrils, and the olfactory nerves; the minute ramifications of which latter are diſtributed throughout the whole concave of the former: their deſcriptions, ſee under their proper heads.

Smelling is performed by the odorous effluvia floating in the air, being drawn into the noſtrils, in inſpiration, and ſtruck with ſuch force againſt the fibrillæ of the olfactory nerves, which the figure of the noſe, and the ſituation of the little bones, render oppoſite thereto, as to ſhake them, and give them a vibratory motion; which action being communicated thence to the common ſenſory, occaſions an idea of a ſweet, or fœtid, or ſour, or an aromatic, or a putrified object, *&c.*

The matter in animals, vegetables, foſſils, *&c.* which chiefly affects the ſenſe of *ſmelling*, Boerhaave obſerves, is that ſubtile ſubſtance inherent in the oily parts thereof, called *ſpirit*: for that when this is taken away from the moſt fragrant bodies, what remains, has ſcarce any *ſmell* at all; but this poured on the moſt inodorous bodies, gives them a fragrancy. *Inſtit. cap. de Olfac.*

Willis obſerves, that brutes have, generally, the ſenſe of *ſmelling* in much greater perfection than man; as by this, alone, they diſtinguiſh the virtues and qualities of bodies unknown before; hunt out their food at a great diſtance, as hounds, and birds of prey; or hid among other matters, as ducks, *&c.*

Man having other means of judging of his food, *&c.* did not need ſo much ſagacity in his noſe: yet have we inſtances of a great deal, even in man.—In the *Hiſtoire des Antilles*, we are aſſured, there are negroes who, by the *ſmelling* alone, can diſtinguiſh between the foot-ſteps of a Frenchman and a negro.

It is found that the laminæ, wherewith the upper-part of the noſtrils is fenced, and which ſerve to receive the divarications of the olfactory nerves, are always longer, and folded up together in greater number, as the animal has this ſenſe more accurate: the various windings and turnings of theſe laminæ, detain and fetter the more of the odoriferous particles.

SMELTING, among metalliſts, the melting of a metal in the ore, in a *ſmelting* furnace; in order to ſeparate the metallic from the earthy and other parts. See METAL, FURNACE, *&c.*

Smelting, in propriety, is reſtrained to large works, wherein ores from the mines are melted down and ſeparated.—In ſpeaking of works in a leſſer way, we do not ſay *ſmelting*, but melting. See FUSION, REFINING, *&c.*

SMINTHEAN, SMINTHEUS, ΣΜΙΝΘΕΥΣ, in antiquity, an epithet given to Apollo, from the Greek, σμινθος, a rat. There are two different accounts of the origin of this appellation: the firſt, that in the city of Chryſa in Myſia, was a prieſt of Apollo, called *Crinis*, with whom that god being offended, ſent a herd of rats to ſpoil all his lands. But Crinis appeaſing the deity, he came in perſon to his aſſiſtance, took up his lodgings with Crinis's ſhepherd, told him who he was, and deſtroyed all the rats with his arrows: in memory whereof, Crinis built a temple to his deliverer, under the name of *Apollo Smintheus*.

Clemens Alexandrinus, in his exhortation to the Greeks, gives us a different ſtory: the Cretans, ſays he, intending to ſend out a colony, conſulted the oracle of Apollo as to the place: the anſwer was, that they ſhould fix their colony where thoſe born of the earth ſhould oppoſe them.—Upon their arrival in the Helleſpont, the rats, in the night-time, gnawed aſunder all the ſtrings of their bows: this they deemed an accompliſhment of the oracle, and built a city called *Smintha*.

SMOKE, or SMOAK, *fumus*, a humid matter, exhaled in form of vapour, by the action of heat, either external or internal. See FIRE, VAPOUR, *&c.*

Smoke, Sir Iſaac Newton obſerves, aſcends in the chimney by the impulſe of the air it floats in: for that air being rarified by the fire underneath, has its ſpecific gravity diminiſhed; thus, being determined to aſcend itſelf, it carries up the *ſmoke* along with it.—The tail of a comet, that great author takes to aſcend from the nucleus after the ſame manner. See COMET.

Smoke of fat unctuous woods, as fir, beech, *&c.* makes what we call *lamp-black*. See BLACK.

There are various inventions for preventing, and curing *ſmoking* chimneys; as the æolipiles of Vitruvius, the ventiducts of Cardan, the wind-mills of Bernard, the capitals of Serlio, the little drums of Paduanus, and ſeveral artifices of de Lorme, *&c.* See CHIMNEY.

In the Philoſophical Tranſactions, we have the deſcription of an engine invented by Monſieur Daleſme, which conſumes the *ſmoke* of all ſorts of wood, and that ſo totally as the moſt curious eye cannot diſcover it in the room, nor the niceſt noſe ſmell it, though the fire be made in the middle of the room.—It conſiſts of ſeveral iron hoops, four or five inches diameter, which ſhut into one another; and is placed on a trevet.—A brand taken out of the fire *ſmokes* inſtantly; but ceaſes as ſoon as returned. The moſt fœtid things, as a coal ſteeped in cat's-piſs, which ſtinks abominably when taken out of the fire, yet in it makes not the leaſt ill ſcent; no more than red herrings broiled, *&c.*

SMOKE *farthings*, were the pentecoſtal or cuſtomary oblations offered by the inhabitants within any dioceſs, when they made their proceſſions to the cathedral church; which came by degrees into an annual, ſtanding rent, called *ſmoke-farthings*. See PENTECOSTAL, *&c.*

SMOOTHING *plane*. See the Article PLANE.

SMUGGLING, a cant term for the running of goods; or the clandeſtine landing them without paying cuſtom. See CUSTOM, DUTY, *&c.*

SMUT, a diſeaſe in corn, whereby the pulp or meal thereof is damaged, and its natural taſte, colour, *&c.* altered. See DISEASES *of plants*.

The *ſmut* is uſually aſcribed by the huſbandmen to the exceſſive fatneſs and rankneſs of the ſoil; to the manuring the land with rotten vegetables, as ſtraw, hawm and fern; and to the ſowing *ſmutty* ſeed.

Mr. Bradley makes no doubt to call the *ſmut* a *blight*, and to account for it on the ſame principle as the blights befalling other plants, particularly fruit trees, *viz.* from innumerable inſects, brought, or at leaſt hatched by the eaſtern winds, which prey on and devour the native juices of the corn, and poiſon them with a mixture of their own. See BLIGHT.

An approved method to prevent the *ſmut*, the ſame Mr. Bradley gives us, as follows: the wheat, for ſeed, to be waſhed in three or four waters, ſtirring it well round, and with great force, each time, and ſkimming off all the light wheat ſwimming a-top. This done, it is to be ſteeped in a liquor thus prepared: into a ſufficient quantity of water, put as much ſalt, as, when ſtirred about, will make an egg ſwim; and to this add as much more ſalt; ſtir the whole well, and to the brine, put two or three pound of alum beaten fine. In this mixture, lay the wheat to ſteep, at leaſt, thirty or forty hours. Take it out the night before it is to be ſown, and ſift ſome ſlacked lime on it; this dries and fits it for ſowing.

Note, many ſteep their wheat in brine, yet have plenty of *ſmutty* corn: the reaſon is, that they do not either make their brine ſtrong enough, or do not let the wheat ſtay long enough therein. It is a common notion among them, that ſteeping it ſo long, rots the grain; but experience ſhews the contrary.

SNAKE *root*. See SERPENTARIA *radix*.

SNEEZING, *ſternutation*, a convulſive motion of the muſcles of the breaſt uſed in expiration; wherein, after ſuſpending the inſpiration begun, the air is repelled from the mouth and noſe with a momentary violence and noiſe. See RESPIRATION.

The cauſe, is an irritation of the upper membrane of the noſe, which communicates with the intercoſtal nerve by means of the twigs that it detaches to it.

This irritation is performed either externally, by ſtrong ſmells, as marjoram, roſes, *&c.* or by duſt floating in the air, and taken in by inſpiration; or by ſharp, pungent medicines, as creſſes and other ſternutatories, which vellicate the membrane of the noſe; or internally, by the acrimony of the lympha or mucus, which naturally moiſtens that membrane. See STERNUTATIVE, PTARMIC, ERRHINE, *&c.*

The matters caſt forth in *ſneezing*, come primarily from the noſe and throat; the pituitary membrane continually exuding a mucus thither; and, ſecondarily, from the breaſt, the trachea, and the bronchia of the lungs.

F. Strada, in an expreſs treatiſe on *ſneezing*, has diſcovered the original of the cuſtom of ſaluting thoſe who *ſneeze*. He ſhews it to be a relick of paganiſm; though he owns it was in uſe among the Jews as well as among the Romans.—From an epigram in the anthology, it appears, that among the ancients, a perſon after *ſneezing*, made a ſhort prayer to the gods; as Ζευ σωζε, *Jupiter ſave me.*

SNOW, *nix*, a meteor formed in the middle region of the air, of vapour raiſed by the action of the ſun or ſubterraneous fire; there congealed, its parts conſtipated, its ſpecifick gravity increaſed, and thus returned to the earth in form of little white villi, or flakes. See METEOR and VAPOUR.

The *ſnow* we receive, may properly enough be aſcribed to the coldneſs of the atmoſphere, through which it falls. When the atmoſphere is warm enough to diſſolve the *ſnow* before it arrives at us, we call it *rain:* if it preſerve itſelf undiſſolved, it makes what we call *ſnow*. See RAIN.

Dr. Grew, in a diſcourſe of the nature of *ſnow*, obſerves, that many parts thereof are of a regular figure, for the moſt part ſo many little rowels or ſtars of ſix points, and are perfect and tranſparent ice, as any we ſee on a pond, *&c.* Upon each of theſe points are other collateral points, ſet at the ſame angles, as the main points themſelves: among which there are divers other irregular, which are chiefly broken points, and fragments of the regular ones. Others alſo, by various winds, ſeem to have been thawed, and froze again into irregular cluſters; ſo that it ſeems as if the whole body of *ſnow* were an infinite maſs of icicles irregularly figured.—That is, a cloud of vapours being gathered into drops, the ſaid drops forthwith deſcend; upon which deſcent, meeting with a freezing air as they paſs through a colder region, each drop is immediately froze into an icicle, ſhooting itſelf forth into ſeveral points; but theſe ſtill continuing their deſcent, and meeting with ſome intermitting gales of warmer air, or in their continual waftage to and fro, touching upon each other, ſome of them are a little thawed, blunted, and again froze into cluſters, or intangled ſo as to fall down in what we call flakes.

The lightneſs of *ſnow*, although it is firm ice, is owing to the exceſs of its ſurface, in compariſon to the matter contained under it; as gold itſelf may be extended in ſurface, till it will ride upon the leaſt breath of air. See ICE and FREEZING.

The uſes of *ſnow* muſt be very great, if all be true Bartholin has ſaid in its behalf, in an expreſs treatiſe, *de nivis uſu medico:* he there ſhews, that it fructifies the earth, (which, indeed, is a very old and general opinion) preſerves from the plague, cures fevers, cholicks, tooth-aches, ſore eyes, and pleuriſies (for which laſt uſe, his countrymen of Denmark uſe to keep *ſnow-water* gathered in March.) He adds, that it contributes to the prolongation of life; giving inſtances of people in the Alpine mountains that live to great ages: and to the preſerving of dead bodies; inſtances whereof, he gives in perſons buried under the *ſnow* in paſſing the Alps, which are found uncorrupted in the ſummer when the *ſnow* is melted.

He obſerves, that in Norway, *ſnow-water* is not only their ſole drink in the winter; but *ſnow* even ſerves for food; people having been known to live ſeveral days, without any other ſuſtenance.

Indeed the generality of theſe medicinal effects of *ſnow*, are not to be aſcribed to any ſpecific virtue in *ſnow*; but to other cauſes. It fructifies the ground, for inſtance, by guarding the corn or other vegetables, from the intenſer cold of the air, eſpecially the cold, piercing winds. And it preſerves dead bodies, by conſtipating and binding up the parts, and thus preventing all ſuch fermentations or internal conflicts of their particles, as would produce putrefaction. See COLD.

It is a popular error, that the firſt *ſnow* that falls in the year, has particular virtues. In Italy, they cool their wines all the ſummer with *ſnow-water*.

Signior Sarotti, in the Philoſophical Tranſactions, mentions a *red* or *bloody ſnow*, which fell on the mountains la Langhe, near Genoa, on St. Joſeph's day.—This *ſnow* when ſqueezed, yielded a liquor of the ſame red colour.

SNUFF, a preparation of tobacco, made by reducing it into a powder, fit to be taken at the noſe; in order to purge or clear the head of pituita. See TOBACCO, STERNUTATIVE, ERRHINE, *&c.*

Ordinarily, tobacco is the baſis of *ſnuff*; other matters being only added to give it a more agreeable ſcent, *&c.* The kinds of *ſnuff*, and their ſeveral names, are infinite; and new ones are daily invented; ſo that it would be difficult, not to ſay impoſſible, to give a detail of them. We ſhall only ſay, that there are three grand ſorts; the firſt granulated; the ſecond an impalpable powder; and the third the bran or coarſe part remaining after ſifting the ſecond ſort.

SOAP, or Sope, a kind of paſte, ſometimes hard and dry, and ſometimes ſoft and liquid; much uſed in waſhing, and whitening linens, and for various other purpoſes, by the dyers, perfumers, hatters, fullers, *&c.* See Bleaching, Hat, Fulling, *&c.*

The principal *ſoaps* of our manufacture, are the *ſoft*, the *hard*, and the *ball ſoap.*—The *ſoft ſoap*, again, is either *white* or *green:* the proceſs of making each kind, is as follows.

Green ſoft Soap.—The chief ingredients uſed in making this, are lyes drawn from pot-aſh and lime, boiled up with tallow and oil.—Firſt, the lye and tallow are put into the copper together, and when melted, the oil is put to it, and the copper made to boil; then the fire is dampt or ſtopt up, while the ingredients lie in the copper to knit or incorporate; which done, the copper is ſet on boiling, being fed or filled with lyes as it boils, till there be a ſufficient quantity put therein: then it is boiled off with all convenient ſpeed, and put into caſks.

White ſoft Soap.—One ſort of white *ſoap* is made after the ſame manner as *green ſoft ſoap* is, oil excepted, which is not uſed in white.—The other ſort of *white ſoft ſoap*, is made from lyes of aſhes of lime boiled up at twice with tallow.

Firſt, a quantity of lyes and tallow are put into the copper together, and kept boiling; being fed with lyes as it boils, until it grains, or is boiled enough; then the lyes are ſeparated or diſcharged from the tallowiſh part, which part is removed into a tub, and the lyes thrown away: this is called the firſt *half boil.*—Then the copper is charged again with freſh tallow and lyes, and the firſt half boil put out of the tub into the copper a ſecond time; where it is kept boiling with freſh lyes and tallow, till it comes to perfection.—It is then put out of the copper into the ſame ſort of caſks as are uſed in green ſoft *ſoap.*

Hard Soap is made with lyes from aſhes and tallow, and moſt commonly boiled at twice: the firſt, called a *half-boiling*, hath the ſame operation as the firſt half-boil of ſoft white *ſoap.*—Then the copper is charged with freſh lyes again, and the firſt half-boil put into it, where it is kept boiling, and fed with lyes as it boils, till it grains, or is boiled enough; then the lye is diſcharged from it, and the *ſoap* put into a frame to cool and harden.

Note, There is no certain time for bringing off a boiling of any of theſe ſorts of *ſoap:* it frequently takes up part of two days.

Ball Soap, commonly uſed in the north, is made with lyes from aſhes and tallow.—The lyes are put into the copper, and boiled till the watery part is quite gone, and there remains nothing in the copper but a ſort of nitrous matter (the very ſtrength or eſſence of the lye) to this the tallow is put, and the copper kept boiling and ſtirring for above half an hour, in which time the *ſoap* is made; and then it is put out of the copper into tubs or baſkets with ſheets in them, and immediately (whilſt ſoft) made into balls.—Note, it requires near twenty-four hours to boil away the watery part of the lye.

Soaps, both *dry* and *liquid*, are held of ſome uſe in medicine: the *liquid* againſt fevers; to be applied by rubbing the ſoals of the patient's feet therewith: and the *dry*, diſſolved with ſpirit of wine, in the cure of cold humours.—Beſides its being uſed in ſuppoſitories, and in the compoſition of a kind of plaiſter, commonly called *emplaſt. de ſapone.*

SOAP-EARTH, *ſteatites*, a ſmooth unctuous kind of earth, found in the Levant, and uſed as a *ſoap.* See Earth.

The *ſoap-earth*, Dr. Smith tells us, is only had in two places near Duraclea, ſix leagues to the eaſt of Smyrna. It is, in effect, of itſelf, a fine *ſoap*, boiling and ſhooting up out of the earth.

It is gathered always before ſun-riſe, and in mornings when there falls no dew; ſo that a ſtock muſt be laid up in the ſummer months, to ſerve all the year.

In ſome places, it comes up an inch or two above the ſurface of the ground: but the ſun riſing on it, makes it fall again. Every morning there returns a freſh crop.

SOC, or Sok, Soka, in law, denotes juriſdiction; or a power or privilege to adminiſter juſtice, and execute laws.

The word is alſo uſed for the ſhire, circuit, or territory wherein ſuch power is exerciſed by him endued with ſuch juriſdiction. See Jurisdiction.

Hence alſo the law Latin *ſoca*, uſed for a ſeignory or lordſhip, infranchiſed by the king, with liberty of holding a court of his *ſoc-men* or *ſocagers*, that is, his tenants, whoſe tenure is hence called *ſocage.* See Socage.

This kind of liberty ſtill ſubſiſts in ſeveral parts of England, under the name of *ſoke*, or *ſoken.*—Skene defines *ſok* to be *ſecta de hominibus ſuis in curia ſecundum conſuetudinem regni.*—Brady makes mention of theſe liberties: *ſoc*, *ſac*, *tol*, *team*, *infangthef* and *utfangthef.* See Sac, *&c.*

In the laws of Henry I. *ſoca* is alſo uſed as ſynonymous with franchiſe, for a privileged place, refuge, aſylum or ſanctuary, *&c.* From the Saxon, *ſocn* or *ſocne.* See Franchise, Sanctuary, Asylum, *&c.*

SOCAGE *, or Soccage, a tenure, by which men held their lands on condition of ploughing thoſe of their reſpective lords, with their own ploughs, and doing other inferior offices of huſbandry at their own charges. See Service, Vassal, Tenure, *&c.*

This ſlaviſh tenure was afterwards, by the mutual agreement of lord and tenant, turned into the payment of a certain ſum of money, which is hence called *liberum ſocagium*, free or common *ſocage.* Whereas the other was *villanum ſocagium*, or *baſe ſocage:* inaſmuch as thoſe who held lands by this tenure, were not only bound to plough their lords lands, but took the oath of fealty to them, *ſicut villani.* See Fealty and Villain.

Socage was a tenure of that extent, that Littleton tells us, all the lands in England, which were not held by knight's-ſervice, were held in *ſocage:* ſo that it ſeems the land was divided between the two tenures, which, as they were of different natures, ſo the deſcent of the land was in a different manner. For the lands held in knight's-ſervice, deſcended to the eldeſt ſon; but thoſe held in *villano ſocagio*, equally among all the ſons. Yet if there was but one meſſuage, the eldeſt ſon was to have it; but ſo, as that he was to pay the reſt the value of their ſhares.

Skene defines *ſocage*, a tenure of lands, whereby a man is infeoffed freely, without wardſhip and marriage, paying to his lord ſome ſmall rents, *&c.* which is called *free ſocage*, &c.

Several diviſions of *ſocage* we meet withal in law-writers, as *ſocage in capite*, &c.—But by ſtat. 12. *Car.* II. all tenures from and after the 24th of February, 1645, ſhall be adjudged and taken for ever, to be turned into *free* and *common ſocage.* See Tenure.

SOCCUS, Sock, in antiquity, a kind of high ſhoe, reaching above the ankle, worn by the actors in the ancient drama, in repreſenting of comic perſons. See Comedy.

The *ſoccus* was much lower than the cothurnus; and was the diſtinguiſhing wear of the comedians; as the cothurnus was of the tragedians: hence *ſoccus* is frequently uſed for comedy itſelf. Comedy, ſays M. Fenelon, muſt talk in an humbler ſtile than tragedy; the *ſock* is lower than the buſkin. See Buskin.

SOCIETY, Societas, an aſſemblage, or union of ſeveral perſons in the ſame place, for their mutual aſſiſtance, ſecurity, intereſt, or entertainment. See Community, Corporation, College, Company, Academy, *&c.*

Of *ſocieties* we have a great many kinds, diſtinguiſhed by the different ends propoſed by them: *civil ſocieties*, *trading ſocieties*, *religious ſocieties*, *literary ſocieties*, &c.

Society, in trade, is a contract or agreement between two or more perſons, whereby they bind themſelves together for a certain time, and agree to ſhare equally in the profits or loſſes which ſhall accrue in the affairs for which the *ſociety* or co-partnerſhip is contracted.

We have ſeveral very conſiderable *ſocieties* of this kind; as the Merchant Adventurers, the Turkey, Eaſt-India, Muſcovy, Eaſtland, Greenland, Spaniſh, African, South-Sea and Hudſon's Bay companies. The inſtitutions, policies, *&c.* whereof, ſee under the article Company.

By the Roman law, the ſocial contract needs no other ſolemnity, but the ſole conſent of parties, without any writing at all: but among us, articles of co-partnerſhip are required.—There is no contract wherein probity is more required than in *ſociety*; inaſmuch as the laws pronounce thoſe null, that are made contrary to equity, and with deſign to deceive.

The French diſtinguiſh three kinds of mercantile *ſociety: ordinary ſociety*, called alſo *collective* and *general: ſociety in commendam* or *commandity:* and *anonymous ſociety*, called alſo *momentary* and *inconnue.*

The firſt is, where ſeveral merchants act alike in the affairs of the *ſociety*, and do all under their collective names, which are publick and known to every body.

Society in *commendam*, &c. is that between two perſons, one of whom only puts his money into ſtock, without doing any other office of a co-partner; the other, who is called the *complementary* of the *ſociety*, diſpatching all the buſineſs under his own name.—This *ſociety* is very uſeful to the ſtate; inaſmuch as all kinds of perſons, even nobles and men of the robe, may contract it; and thus make their money of ſervice to the publick: and thoſe who have no fortune of their own to trade withal, hereby find means of eſtabliſhing themſelves in the world, and of making their induſtry and addreſs ſerviceable.

Anonymous Society, is that, where all the members are employed, each particularly, in the common intereſt, and each accountable for profits, *&c.* to the reſt; but without the publick's being informed thereof; ſo that the ſeller has only an action againſt the particular buyer, no other name appearing.

It is alſo called *momentary*, becauſe frequently made on particular occaſions, and ceaſing with them; as in the making a purchaſe, the ſelling any commodity, *&c.*

Of this they diſtinguiſh four kinds: *ſociety by participation*, which is uſually formed by letters from one city to another, where a merchandiſe is to be bought or ſold.—The ſecond is, when two or three perſons go together to fairs to buy goods. —The third, when two or three perſons agree to buy up the whole of ſome commodity, in any country; to ſell it again at their own price.—And the fourth is, when three or four perſons make a journey together, to buy and ſell the ſame commodity. Beſide merchants, people of quality, &c. are admitted into theſe anonymous *ſocieties*.

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* Bracton thus deſcribes it: *dici poterit* ſocagium *a* ſocco *& inde tenentes* ſockmanni, *eo quod deputati ſunt, ut videtur, tantummodo ad culturam, & quorum cuſtodia & maritagia ad propinquiores parentes jure ſanguinis pertinebunt*, &c.

Religious SOCIETIES, are parties of perſons formed, either to live regularly together; or to promote the intereſt of religion; or to cultivate it in themſelves.

Of the firſt kind, are all congregations of religious; particularly the Jeſuits, who are called the *ſociety* of Jeſus; though they more uſually call themſelves the *company* of Jeſus. See JESUITS.—The *ſociety* of the Sorbonne. See SORBONNE. —The *ſociety* of St. Thomas de Villeneuve, inſtituted in 1660, by F. Ange le Prouſt.—The *ſociety* of St. Joſeph, inſtituted in 1638.—The *ſociety* of Bretagne, a reform of Benedictins in 1606.—And the *ſociety* of Jeſus, a religious military order, inſtituted by Pius II.

Of the ſecond kind are, the

SOCIETY *for reformation of manners*, and putting in execution the laws againſt immorality and prophaneneſs.—It was ſet on foot above forty years ago, by five or ſix private perſons in London; but is ſince exceedingly increaſed, by numbers of members of all denominations: a particular body of the moſt conſiderable hereof, bear the expences of proſecutions, &c. without any contribution from the reſt: theſe chiefly apply themſelves to the proſecuting perſons for ſwearing, drunkenneſs, and prophaning the ſabbath.—Another body of about 50 perſons, apply themſelves to the ſuppreſſing lewdneſs; and by them above 500 lewd houſes have been actually ſuppreſſed.—A third body conſiſts of conſtables.—A fourth, of informers.

Beſides theſe, are eight other regular, mixed bodies of houſekeepers, and officers, who inſpect the behaviour of conſtables and other officers, aſſiſt in ſearching diſorderly houſes, &c. ſeizing offenders, giving information, &c.

There are ſeveral other *ſocieties* of this kind at Briſtol, Canterbury, Nottingham, &c.

SOCIETY *for propagating the goſpel in foreign parts*, was inſtituted by king William, in 1701, for ſecuring a maintenance for an orthodox clergy, and making other proviſions for the propagation of the goſpel in the plantations, colonies, factories, &c.—To that end, he incorporated the archbiſhops, ſeveral biſhops, and other of the nobility, gentry and clergy, to the number of 90, into a body, with privilege to purchaſe two thouſand pounds a year inheritance, and eſtates for lives or years, with other goods, to any value.

They meet yearly on the third Friday in February, to chuſe a preſident, vice-preſident and other officers; and the third Friday in every month to tranſact buſineſs, depute fit perſons to take ſubſcriptions for the ſaid uſes; and of all monies ſo received, to give account to the lord chancellor, &c.—They have a ſtanding committee at the Chapter-houſe, to prepare matters for the monthly meeting, which is held at St. Martin's library.

SOCIETY *for propagating chriſtian knowledge*, was begun in 1699 by ſome perſons of worth, &c. Its original deſign was to propagate religion in the plantations, to ſecure the pious education of the poor at home, and to reclaim thoſe that err in the fundamentals of chriſtianity.

In the year 1701, they had procured conſiderable charities, and had tranſmitted the ſame to the plantations, in libraries, bibles, catechiſms, &c. with a voluntary maintenance for ſeveral miniſters, to be employed in the plantations.—But the *ſociety* for propagating the goſpel in foreign parts, being then inſtituted, they were incorporated, by charter, into the ſame; and thus diſcharged, as a particular *ſociety*, from the further purſuit of that branch of their original deſign: whereupon they wholly turned themſelves to the other; and are now very conſiderable, by great acceſſions from among the clergy and laity.

They meet weekly, to concert meaſures for raiſing charity for education of poor children, and ſetting up ſchools for that purpoſe; as alſo for the more regular diſpoſal of pious books and catechiſms; for inſtruction of the ignorant, erroneous, &c.—By the aſſiſtance of members of other religious *ſocieties*, they have procured ſubſcriptions for the education of above three thouſand children, who are placed out in ſchools about London, and taught reading, writing, pſalmody, &c.—They have diſperſed great numbers of books among the poor, in the fleet, army, &c. and have procured ſeveral to be tranſlated into Welch and other foreign languages, and diſperſed accordingly. See CHARITY *ſchool*.

Of the third kind, are divers religious *ſocieties*, properly thus called; firſt ſet on foot in London about the year 1678, by a few young men, who agreed to meet weekly, for prayer, pſalmody and ſpiritual conference.—They are now increaſed to forty diſtinct bodies, who have ſet up publick prayers in many churches where it was not, procured frequent adminiſtrations of the ſacrament; and maintain lectures on that ſubject, in one church or another almoſt on every ſunday-evening.

SOCIETY *of the cord*. See the article CORD.

Royal SOCIETY. See the article ROYAL *ſociety*.

SOCINIANS, a modern ſect of antitrinitarians, who, in theſe ages, have revived ſome of the errors of Paulus Samoſatenus, Photinus and Arius; whence they are alſo occaſionally called *Arians*, *Photinians*, &c. though in many reſpects different from them all. See ARIAN, PHOTINIAN, ANTITRINITARIAN, &c.

Fauſtus *Socinus*, a gentleman of Sienna, whence they take their name, was not the firſt author of the ſect: he himſelf affirms, in his letter to Martin Vodau, wrote in 1548, that he advances no dogma but what had been publiſhed by others before him, even in Poland, ere he came to ſettle there. The truth is, he may be rather ſaid to have refined, by his ſubtilties, on the notions that already prevailed there in his time, than to have invented a new ſyſtem.

In his life, wrote by a Poliſh knight, we read, that he had not applied himſelf to the ſtudy of philoſophy and divinity, nor had ſtudied any thing but logick, till 35 years of age: but had ſpent the greateſt part of his life at the court of the great duke of Tuſcany. Upon his retiring thence, he began to think of religion; and, prepoſſeſſed as he was with the writings of his unkle Lælius Socinus, he formed a ſyſtem thereon.—Lælius had explained the firſt words in the goſpel of St. John, *in principio erat ſermo*; by theſe, *in principio evangelii erat ſermo*; as if the beginning, there ſpoke of, were only the beginning of the goſpel.

This interpretation, never heard of in all antiquity, is followed by Fauſtus, in his comment on the fourteen firſt verſes of that goſpel.—He adds, that he who is called *Word*, had not been from all eternity, nor even before the creation of the world; but that by Word, muſt be meant the man Jeſus Chriſt, God born of the virgin, under the emperor Auguſtus. But this is a paradox, which all his followers do not equally come into.—However, they all deny, not only the divinity of Jeſus Chriſt, but the exiſtence of the Holy Ghoſt, the myſtery of the incarnation, original ſin, and grace.

Their ſentiments are explained at large, in their catechiſm, printed ſeveral times, under the title of *Catecheſis eccleſiarum Polonicarum, unum Deum patrem illiuſque filium unigenitum, una cum ſancto ſpiritu ex ſacra ſcriptura confitentium.* See UNITARIAN.

The *Socinians* are divided on ſeveral articles: ſome of them leave Socinus, as to what regards the worſhip offered to Jeſus Chriſt; not being able to conceive how divine worſhip ſhould be given a mere man.

The hereſy of the *Socinians* ſpread exceedingly in Poland, Lithuania, Tranſilvania, and the neighbouring places. Racow was their chief ſchool; and there all their firſt books were publiſhed.—But they were exterminated out of Poland in 1655: ſince which time they have chiefly ſheltered in Holland; where, however, their publick meetings have been prohibited: but they find means to conceal themſelves under the names of Arminians, and Anabaptiſts. See ARMINIAN, ANABAPTIST, &c.

SOCK. See the article SOCCUS.

SOCKET.—Ball and *ſocket*. See the article BALL.

SOCLE*, or ZOCLE, in architecture, a flat, ſquare member under the baſes of pedeſtals, of ſtatues, vaſes, &c. which it ſerves as a foot, or ſtand. See PEDESTAL, STATUE, ZOCLE, &c.

* The word is French, formed from the Italian *zoccolo*, or the Latin *ſoccus*, the ſhoe of the ancient comic actors.—Vitruvius calls it *quadra*; we frequently, *plinth*. See PLINTH.

Continued SOCLE, is a kind of continued ſtand, or pedeſtal, without either baſe, or cornice, ranging round the whole building; called by Vitruvius, *ſtereobata*, and the French, *ſoubaſſement*. See STEREOBATA.

SOCOME, in our law-books, &c. a cuſtom of grinding corn at the lord's mill. See MILL.

There is *bond ſocome*, where the tenants are bound to it; and *love ſocome*, where they do it freely, out of affection to the lord. See MOLTA.

SOCRATIC *philoſophy*, the doctrines and opinions, with regard to morality and religion, maintained, and taught by Socrates. See PHILOSOPHY and PHILOSOPHER.

By the character of Socrates, left us by the ancients, particularly his ſcholar Plato, Laertius, &c. he appears to have been one of the beſt, and the wiſeſt perſons in all the heathen world.—To him is aſcribed the firſt introducing of moral philoſophy; which is what is meant by that popular ſaying, *Socrates firſt called philoſophy down from heaven to earth*; that is, from the contemplation of the heavens and heavenly bodies, he led men to conſider themſelves, their own paſſions, opinions, faculties, duties, actions, &c. See MORALITY, ETHICKS, &c.

While young, he was exceedingly fond of natural knowledge, as he witneſſes of himſelf in Plato: but in his older age, he caſt aſide this part of philoſophy as obſcure, uncertain, impracticable, and even uſeleſs and impertinent; and applied himſelf wholly to moral or active philoſophy.

It was he, firſt, who when all the other philoſophers boaſted they knew all things, owned, ingenuouſly, he knew nothing, but this, that he knew nothing. Which Pyrrho, the father of the ſceptic philoſophy, improved on, when he ſaid he knew nothing; not even this, that he knew nothing. Yet in an anſwer of the oracle, it was pronounced; Ανδρων απαντων Σωκρατης σοφωτατος. That Socrates was the wiſeſt of all men. See **Pyrrhonian**, **Academy** and **Sceptic**.

He was accuſed by Anytus, Melitus and Lycon, three perſons, whoſe hatred he had incurred, by his ſevere declamations againſt the poets, of which number two of the firſt were, and the third an actor. His accuſation was, that he corrupted the Athenian youth, and broached new ſuperſtitions. He was condemned to drink cicuta, by 281 votes, as we are told by Quintilian.

After his death, his fellow-citizens repented to that degree, that the gymnaſia, courts of juſtice, *&c.* were all ſhut up; Melitus put to death, Anytus baniſhed, and a ſtatue erected to Socrates.

He wrote nothing himſelf; yet almoſt all the Grecian ſects of philoſophers refer their origin to his diſcipline; particularly the Platoniſts, Peripateticks, Academicks, Cyrenaicks, Stoicks, *&c.*—But the greateſt part of his philoſophy, we have in the works of Plato. See **Platonism**; ſee alſo **Academic**, **Peripatetic**, **Stoic**, *&c.*

SODALES *Auguſtales.* See the article **Augustales.**

SODDER, or **Soder**, } See the articles { **Solder.**
SODDERING, } { **Soldering.**

SODOMY, the unnatural crime of buggery; thus called from the city of *Sodom*, which was deſtroyed by fire for the ſame. See **Buggery.**

The Levitical laws adjudged thoſe guilty of this execrable evil to death, Lev. xviii. 22, 23. xx. 15, 16; and the civil law aſſigns the ſame puniſhment. Our laws alſo make it felony.

SOFA, in the eaſt, a kind of alcove, raiſed half a foot above the floor of a chamber, or other apartment; and eſteemed the place of ſtate, where viſitors of diſtinction are received.

Among the Turks, the whole floor of their ſtate-rooms is covered with a kind of tapeſtry, and on the window-ſide is raiſed a *ſofa* or *ſopha*, laid with a kind of matraſs, covered with a carpet much richer than the other.—On this carpet the Turks are ſeated, both men and women, like the taylors in England, croſs-legged, leaning againſt the wall which is bolſtered with velvet, ſattin or other ſtuff, ſuitable to the ſeaſon. Here they eat their meals; only laying a ſkin over the carpet, to ſerve as a table-cloath, and a round wooden board over all, covered with plates, *&c.*

The ambaſſadors of France ſtood out a long while, and refuſed to viſit the grand vizier, unleſs he would receive them on the *ſofa*: at length he granted them the *ſofa*.

SOFEE. See the article **Sophi.**

SOFFITA *, **Soffit**, or **Sofit**, in architecture, any timber cieling, formed of croſs beams, or flying cornices; the ſquare compartiments, or pannels whereof are inriched with ſculpture, painting, or gilding.

* The word is Italian, and ſignifies the ſame with the Latin, *lacunar* and *laquear*; with this difference, that *lacunar* is uſed for any cieling with ſquare, hollow pannels, called *lacus*; and *laquear* for compartiments interlaced with platbands, after the manner of knots or *laquei*.

Such are thoſe we ſee in the baſilics and palaces of Italy, in the apartments at Luxembourg, at Paris, *&c.*—See *Tab. Archit. fig.* 10. See alſo **Cieling.**

Soffita, or **Soffit**, is alſo uſed for the under ſide or face of an architrave; and more particularly for that of the corona or larmier, which the ancients called *lacunar*, the French *plafond*, and we uſually, *drip*. See **Plafond**, **Larmier**, *&c.*

It is inriched with compartiments of roſes; and in the Doric order has 18 drops, diſpoſed in three ranks, ſix in each, placed to the right of the guttæ, at the bottom of the triglyphs. See **Guttæ**, **Doric**, **Architrave**, *&c.*

SOFI, or **Sophi.** See the article **Sophi.**

SOFIT. See the article **Soffit.**

SOFT *pulſe*, } { **Pulse.**
Soft *roe*, } See the articles { **Roe.**
Soft *ſoap*, } { **Soap.**

SOFTENING, in painting, the mixing and diluting of colours with the bruſh, or pencil. See **Colour.**

To *ſoften* deſigns in black and white, made with the pen, *&c.* ſignifies to weaken the teint.

To *ſoften* a portrait, according to Felibien, is to change ſome of the ſtroaks, and give a greater degree of ſweetneſs and *ſoftneſs* to the air thereof, which before had ſomething rough and harſh in it.

SOIL, **Solum**, in agriculture and gardening, denotes earth, or ground, conſidered with regard to the quality of its mould, for the production and growth of vegetables. See **Earth**, **Mould**, **Vegetable**, *&c.*

Mr. Bradley reduces all *ſoils* to three heads, or kinds, *viz. ſand*, *loam*, or *mother-earth*, and *clay*.

Gravels and all the open *ſoils*, till we come at loam, are of the ſandy race; and the binding earths, from loam down to the ſtiffneſs of chalk, may be ranged under the clay kind. See **Sand** and **Clay.**

Loam or mother-earth, is the medium between the two, and includes all the intermediate kinds. See **Loam.**

Each of theſe *ſoils* tends alike to vegetation; and each has its ſalts proper thereto; but in different proportions: a peck of clay having twice as much ſalts in it as the ſame quantity of loam; and four times as much as ſand.

Now, it is found to be the ſalts or juices of the *ſoil*, not the earth itſelf, that plants are fed and ſubſiſted by. For in many experiments of vegetation, where plants of fifteen or twenty pound weight have been produced, there has been no ſenſible diminution in the weight of the earth. See **Vegetation.**

Hence, at firſt ſight, it might ſeem, that clay were the moſt proper, and ſand the leaſt proper *ſoil* to promote the growth of plants; which is contrary to experience. The reaſon is, that the parts of clay being cloſe wrought together, do not ſo eaſily give out their ſalts; nor can the tender fibres of many plants make their way through it, in ſearch of their food. But if its parts be well opened, by digging and breaking it into very ſmall pieces, and thoſe parts be kept open by a mixture of ſome ſharp ſand, or other like matter, that author adds, we ſhall ſee the effects of its vigour. Sand, on the other hand, giving its ſalts readily, puts forth its plants very early, and will make them germinate a full month ſooner than clay; but as it is haſty, it is ſoon ſpent. The ſun's warmth calls up all its ſalts early in the ſpring, and there is but little left for them to ſubſiſt long on, if the heat continue.

Each kind has its peculiar plants, which will not grow in the other; but the peculiar plants of both the other two will grow in loam, as partaking equally of the qualities of both.

Loam, then, muſt be allowed the beſt and moſt beneficial *ſoil*, where it can be had: and where it cannot, if, by a mixture of other earths, we can make a compoſt to reſemble it; we have more to expect from it, eſpecially in plantations of durable trees, than from a compoſition of dung or other forcing ingredients, which, like exceſs of high intemperate foods and liquors, though they give a haſty growth, yet make the thing ſhort-lived. The compoſition or *ſoil* here meant, is equal quantities of ſand and clay well mixed. See **Compost**; ſee alſo **Hot-Bed.**

Generally, a mixture of two or three *ſoils*, is better than any ſimple *ſoil*; eſpecially where the hot and dry are mixed with the cold and moiſt. Clay laid on ſand or gravel, or ſand on clay, is the better manure. See **Manuring.**

But it is not the nature of the *ſoil* alone; but its depth is alſo to be regarded, and what *ſoil* is underneath. For the beſt *ſoil*, if it be not above a foot deep, and lie on a ſtiff clay, or hard cold ſtone, is not ſo fertile as a leaner *ſoil* of greater depth, or lying on a warm lime-ſtone, ſand or gravel, through which the ſuperfluous moiſture may deſcend, and not ſtagnate on the clay or ſtone, to chill the roots of plants. Indeed, regard is to be had to the climate; for even in England, cold, moiſt clays are more fruitful in the ſouth than the north.

Some general rules with reſpect to *ſoils*, are as follow.

1°. All land that moulders to duſt with froſt, with all ſorts of warm lands, black mould, yellow clay, (if not too wet) and that turns black after rain, are good for corn.

2°. Lands bringing forth large trees and weeds, black-thorn, thiſtles, rank graſs, *&c.* generally prove fruitful.

3°. Straw-berries, betony, thyme, *&c.* give indication to wood, and camomile to a mould diſpoſed for corn.

4°. All land that binds after froſt and rain, and turns white and full of worms, that is extreamly moiſt, bears holly, yew, box, broom, heath, moſs, *&c.* is of a cold temperature.

5°. Black, dun and yellow ſand, and hot, ſtony gravel, are generally unfruitful. See **Garden**, **Orchard**, *&c.*

SOIT *fait comme il eſt deſiré*, be it done as it is deſired: a form uſed when the king gives the royal aſſent to a private bill preferred in parliament. See **Assent** and **Parliament.**

SOK, **Soke**, **Soc**, in ancient cuſtoms. See **Soc.**

The word is ſometimes alſo uſed for the privilege of tenants excuſed from cuſtomary impoſitions.

Alſo, for a quit-rent, or payment made to the lord by his tenant, for acting in quality of *ſoc-man* or freeholder. See **Socage.**

The rent-gatherer in the *ſok*, or *ſoken*, was called *ſokereeve.* See **Reeve.**

SOL, in muſic, the fifth note of the gammut: ut, re, mi, fa, *ſol*, la. See **Note**, **Gammut** and **Music.**

Sol *, or **Sou**, *ſhilling*, a French coin, of billon, *i. e.* copper with a little ſilver mixed; equal to twelve deniers, or French pence; and the 20th part of the livre, or pound. See **Shilling**; ſee alſo **Denier** and **Livre.**

* The word is formed from the Latin, *ſolidus*, ſhilling. Bodin is miſtaken, when he derives it *à ſole*, by reaſon of the ſun ſtruck on it.

The French *ſol* is now worth upwards of an Engliſh halfpenny, or the 23d part of an Engliſh ſhilling. See **Coin**, **Penny**, *&c.*

The *ſol* was firſt ſtruck on the foot of 12 deniers tournois, whence it was alſo called *douzain*, a name it ſtill retains, though its ancient value be changed; the *ſol* having been ſince augmented by three deniers, and ſtruck with a punchion of a flower de lys, to make it current for 15 deniers. —Soon after, the old *ſols* were coined over again, and both old and new indifferently made current for 15 deniers.—In 1709, the value of the ſame *ſols* was raiſed to 18 deniers. —Towards the latter end of the reign of Louis XIV. the *ſols* of 18 deniers were again lowered to 15, where they now ſtand.

The Dutch have alſo two kinds of *ſols:* the one of ſilver, called *ſols de gros*, and likewiſe *ſchelling:* the other of copper, called alſo *ſtuyver*.

In old authors we read of gold *ſols*, which were different at different times. In the time of the Salic law, the gold *ſol* was forty deniers; and thus it continued till the time of king Pepin, when it was reduced to twelve.—Some have alſo imagined, that the French had anciently ſilver *ſols*.

SOL, in aſtrology, *&c.* ſignifies the ſun.—*Sol* in aries, *&c.* See SUN.

SOL, *ſun*, in chymiſtry, is gold; thus called from an opinion, that this metal is, in a particular manner, under the influence of that luminary. See GOLD.

What ſhould have been the principal inducement of torturing this metal, with ſo much violence, to obtain from it ſome medicinal virtues, Dr. Quincy obſerves, is not eaſy to be gueſſed; unleſs it was to keep up the authority of an ill-deſerved regard, and a jealouſy, that they could not be well in the common opinion for phyſicians, who could not do extraordinary things in their profeſſion with a metal, which had ſuch a prodigious influence on other accounts. Many, indeed, there have been, who have honeſtly oppoſed this artifice; but the contrary ſide has a long time prevailed, and to ſuch a degree, that this metal itſelf has not only been transformed into all the ſhapes imaginable for medicinal purpoſes; but even its name has been transferred to do honour to, and enhance the price of many other worthleſs preparations, that bore any reſemblance to its ſenſible qualities.

Hence many tinctures of a yellow colour, are preſently the golden tincture of ſomething or other.

Moſt, indeed, acknowledge, that gold in ſubſtance, or reduced into the ſmalleſt particles by the hammer, as in the leaf-gold, is not digeſtible in the ſtomach, ſo as to be tranſmitted into the blood, and be of any efficacy there. But there are nevertheleſs, many, who are confident of its doing extraordinary matters, if reduced into a powder, by amalgamation with mercury, and by evaporating the mercury afterwards.

Zacutus Luſitanus, is one of the ſmarteſt pleaders on this ſide the controverſy, againſt Muſa, Picus Mirandola and Platerus; who, beſides many inſtances of its efficacy, urges the authority of Avicen, Serapion, Geber and many of the Arabian phyſicians, with thoſe of other countries, and of later date. Quercetan, Schroder, Zwelfer and Etmuller, with many other more modern, practical phyſicians, fell into the ſame opinion. But which ſide ſoever is in the right, the preſent practice rejects all pretenſions to medicine from it.

SOL, in the hermetical philoſophy ſignifies *ſulphur*. See SULPHUR.

SOL, in heraldry, denotes *or*; the golden colour in the arms of ſovereign princes. See OR and METAL.

SOLAR, ſomething belonging to the ſun. See SUN.

Thus we ſay, SOLAR *fire*, in contradiſtinction to *culinary fire*. See FIRE.

SOLAR *civil month*, } See the articles { MONTH.
SOLAR *cycle*, } { CYCLE.

SOLAR *eclipſe*, is a privation of the light of the ſun, by the interpoſition of the opake body of the moon. See ECLIPSE.

SOLAR *month*, } { MONTH.
SOLAR *riſing*, } See the articles { RISING.
SOLAR *ſpots*, } { SPOTS.

SOLAR *ſyſtem*, the order and diſpoſition of the ſeveral heavenly bodies, which revolve round the ſun as the centre of their motion, *viz.* the planets, primary and ſecundary, and the comets.—For a ſcheme of the *ſolar ſyſtem*, ſee SYSTEM.

The SOLAR *year*, conſiſts of 365 days, 5 hours, 49 minutes; in oppoſition to the *lunar year*, which only conſiſts of 354 days. See YEAR.

The *ſolar year*, is either *tropical*, or *ſiderial*.

SOLAR *tropical year*, is the ſpace of time, wherein the ſun returns again to the ſame equinoctial or ſolſtitial point; which is always equal to 365 days, 5 hours, and about 49 minutes.

SOLAR *ſiderial year*, is the ſpace wherein the ſun comes back to any particular, fixed ſtar; which is about 365 days, 8 hours, and 9 minutes. See SIDERIAL, *&c.*

SOLDAN. See the article SULTAN.

SOLDER *, SODDER, or SODER, a metallic or mineral compoſition, uſed in *ſoldering* or joining together other metals. See SOLDERING.

* The word is formed from the French, *ſoudure*, of the Latin, *ſolidare*, to ſtrengthen.

Solders are made of gold, ſilver, copper, tin, biſmuth, and lead; always obſerving, that in the compoſition, there be ſome of the metal to be *ſoldered*, mixed with ſome higher and finer metals.

Goldſmiths uſually make four kinds of *ſolder*, viz. *ſolder* of eight; where, to ſeven parts of ſilver there is one of braſs or copper. *Solder* of ſix, where only a ſixth part is copper. *Solder* of four: and *ſolder* of three.—It is the mixture of copper in the *ſolder* that makes raiſed plate always come cheaper than flat.

The *ſolder* uſed by plumbers, is made of two pounds of lead to one of block-tin. Its goodneſs is tried by melting it, and pouring the bigneſs of a crown-piece on a table; for, if good, there will ariſe little, bright, ſhining ſtars therein. See PLUMBERY.

The *ſolder* for copper is made like that of the plumbers; only, with copper and tin: for very nice works, inſtead of tin, they ſometimes uſe a quantity of ſilver. See COPPER.

Solder for tin, is made of two thirds of tin, and one of lead; but where the work is any thing delicate, as in organ-pipes, where the juncture is ſcarce diſcernible, it is made of one part of tin glaſs, and three parts of pewter. See TIN.

The duke of Florence's nail, anciently ſo much admired, as being half iron and half gold, when as thoſe two metals were deemed irreconcileable; was joined by a kind of *ſolder*, made by Turneiſſer, an ingenious chymiſt of Venice: the ſecret whereof, was never diſcovered till publiſhed by Tachenius. The *ſolder* is nothing but a little copper or cyprus vitriol put between the gold and the iron. For, naturally, the great acidity of the gold, reduces the iron into a ſcoria or ruſt, when the two are applied immediately over one another; but this inconvenience is removed, by the interpoſition of a little copper, be it in the ſmalleſt quantity imaginable.

SOLDERING, or SODDERING, among mechanicks, the joining and faſtening together of two pieces of the ſame metal, or of two different metals, by the fuſion and application of ſome metallic compoſition on the extremities of the metals to be joined. See SOLDER.

Goldſmiths *ſolder* with gold, ſilver and braſs or copper mixed together: plumbers with lead and tin. See PLUMBERY, *&c.* Copper is uſually *ſoldered* with tin; ſometimes, according to the work, with a mixture of copper and ſilver.—In the *ſoldering* of all theſe metals, they generally uſe borax in powder, and ſometimes roſin.

As to iron, it is ſufficient that it be heated red-hot; and the two extremities, in this ſtate, hammered together.—By this means they become incorporated together. See BRAZING.

SOLDIER *, a military man, liſted to ſerve a prince or ſtate, in conſideration of a certain daily pay. See MILITARY.

* The word is formed from the Italian, *ſoldato*, and that from the Latin, *ſolida*, or *ſolidata*, of *ſolidus*, the ſolde, or pay: though Paſquier chuſes to derive it from the old Gauliſh *ſouldoyer*, a *ſoldier*; and Nicod from *ſoldurius*. See SOLDURII.

The *ſoldier* is he who takes pay; the vaſſal he who is obliged to ſerve at his own expences; the volunteer he who ſerves at his own expence, and of his own accord. See VASSAL, CADET, *&c.*

Du Cange obſerves, that the ancient *ſoldiers* were not to be ſhort of five foot and a half; and that this meaſure was called *incoma*, or *incomma*.

Band of SOLDIERS. See the article BAND.

SOLDURII, in antiquity, a kind of military clients, or retainers to the great men in Gaul, particularly Aquitania; mentioned by Cæſar. See SOLDIER.

The *ſoldurii* were people, who ſhared all the good and ill fortune of their patrons; to whom, if any diſaſter happened, they either underwent the very ſame, or killed themſelves: and Cæſar aſſures us, that no one had ever been known to refuſe the alternative, *Lib.* III. *de Bel. Gal.*

Vegenere takes them to have been more than common ſoldiers; and even Gentlemen in penſion, or appointment.—Athenæus calls them συναποθνησκοντες, *q. d.* dying together, or with their maſters.

SOLECISM *, SOLOECISMUS, in grammar, a groſs impropriety in ſpeech, contrary to the uſe of language, and the rules of grammar, either in reſpect of declenſion, conjugation, or ſyntax.

* The word is Greek, σολοικισμος, derived from the *Soli*, a people of Attica, who being tranſplanted to Cilicia, loſt the purity of their ancient tongue, and became ridiculous to the Athenians for their improprieties therein.

An actor on the Roman theatre having made a wrong geſture, the audience immediately cried out, he had committed a *ſoleciſm* with his hand. Ablanc.

Soleciſms, on ſome occaſions, are pardonable: *impetratum eſt a ratione ut peccare ſuavitatis cauſa liceret:* Vaugelas is frequently repeating that of Quintilian; *aliud eſt Latine, aliud grammaticè loqui.*—Balthaſar Stolberg has a Latin treatiſe of the *ſoleciſms* and barbariſms falſely attributed to the New Teſtament. See BARBARISM.

SOLEIL.—*Ombre de* SOLEIL. See the article OMBRE.

SOLEMN, SOLENNIS, ſomething performed with much pomp, ceremony and expence.—Thus we ſay, *ſolemn feaſts*, *ſolemn funerals*, *ſolemn games*, &c. See FEAST, GAME, FUNERAL, *&c.*

SOLEMN, in law, ſignifies ſomething authentic, or that is cloathed in all its formalities. See AUTHENTIC.

SOLEMN *teſtament*, in the civil law, is to be atteſted by ſeven perſons, and ſealed with their ſeals. See TESTAMENT.

SOLEMN *marriage*, is that performed in one's own pariſh-church, after publication of the bans, and in preſence of witneſſes. See MARRIAGE.

SOLEMN *acceptance*. See the article ACCEPTANCE.

SOLE-TENANT, in law, he or ſhe, who holds lands only in his or her own right, without any other perſon joined. See TENANT.

E. gr. If a man and his wife hold land for their lives, the remainder to their ſon; here, the man dying, the lord ſhall not have heriot, becauſe he dies not *ſole-tenant*.

SOLEUS, in anatomy, a muſcle called alſo *gaſtrocnemius internus.*—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 67. *fig.* 2. *n.* 49. *fig.* 6. *n.* 42. See alſo GASTROCNEMIUS.

SOL-FA-ING, in muſick, the naming and pronouncing of the ſeveral notes of a ſong, by the ſyllables *ſol*, *fa*, *la*, &c. in learning to ſing it. See NOTE and MUSIC.

Of the ſeven notes in the ſcale, *ut*, *re*, *mi*, *fa*, *ſol*, *la*, *ſi*; only four are in uſe among us, *viz.* *fa*, *ſol*, *la*, *mi*. Their office is principally in ſinging: that by applying them to every note of the ſcale, it may not only be pronounced more eaſily; but chiefly, that by them, the tones and ſemi-tones of the natural ſcale, may be better marked out and diſtinguiſhed. See SCALE and GAMMUT.

This deſign is obtained by the four ſyllables, *fa*, *ſol*, *la*, *mi*; thus, from *fa* to *ſol* is a tone; alſo from *ſol* to *la*, and from *la* to *mi*, without diſtinguiſhing the greater or leſſer tone; but from *la* to *fa*, alſo from *mi* to *fa*, is a ſemi-tone.

If, then, theſe be applied in this order, *fa*, *ſol*, *la*, *fa*, *ſol*, *la*, *mi*, *fa*, &c. they expreſs the natural ſeries from *c*; and if that be to be repeated to a ſecond or third octave, we ſee by them how to expreſs all the different orders of tones and ſemi-tones in the diatonic ſcale; and ſtill above *mi*, will ſtand *fa*, *ſol*, *la*; and below it, the ſame reverſed, *la*, *ſol*, *fa*; and one *mi* is always diſtant from another by an octave; which cannot be ſaid of any of the reſt, becauſe after *mi* aſcending, comes always *fa*, *ſol*, *la*, *fa*, which are repeated invertedly, deſcending.

To conceive the uſe of this: it is to be remembered, that the firſt thing in teaching to ſing, is to make one raiſe a ſcale of notes by tones and ſemi-tones to an octave, and deſcend again by the ſame notes; and then to riſe and fall by greater intervals, at a leap, as a third, fourth, fifth, &c. And to do all this, by beginning at notes of different pitch.—Then, theſe notes are repreſented by lines and ſpaces, to which thoſe ſyllables are applied, and the learner taught to name each line and ſpace, by its reſpective ſyllable; which makes what we call *ſol-fa-ing*; the uſe whereof is, that while they are learning to tune the degrees and intervals of ſound, expreſſed by notes ſet on lines and ſpaces; or learning a ſong, to which no words are applied; they may do it the better, by means of an articulate ſound: but, chiefly, that by knowing the degrees and intervals expreſſed by theſe ſyllables, they may more readily know the true diſtance of notes. See SINGING.

Mr. Malcolm obſerves, that the practice of *ſol-fa-ing*, common as it is, is very uſeleſs and inſignificant, either as to the underſtanding or practiſing of muſic; yet exceedingly perplexing: the various applications of the ſeveral names, according to the various ſignatures of the clef, are enough to perplex any learner: there being no leſs than 72 different ways of applying the names *ſol*, *fa*, &c. to the lines and ſpaces of a particular ſyſtem. See SCALE.

SOLID, in phyſicks, a body whoſe minute parts are connected together, ſo, as not to give way, or ſlip from each other upon the ſmalleſt impreſſion. See SOLIDITY.

The word is uſed in this ſenſe, in contradiſtinction to *fluid*. See FLUID, FLUIDITY, and FIRMNESS.

Atmoſphere of SOLID *bodies*. See ATMOSPHERE.

For the laws of gravitation of SOLIDS immerged in fluids ſpecifically either lighter or heavier than the *ſolids*; ſee GRAVITY and FLUID.

To find the ſpecific gravity of SOLIDS, and its ratio to that of fluids; ſee SPECIFIC *gravity*.

For the laws of the reſiſtance of SOLIDS moving in fluids; ſee RESISTANCE.

SOLID, in geometry, is a magnitude endued with three dimenſions; or extended in length, breadth and depth. See DIMENSION.

Hence, as all bodies have theſe three dimenſions, and nothing but bodies; *ſolid* and body are frequently uſed indiſcriminately. See BODY.

A *ſolid* is terminated, or contained under one or more planes or ſurfaces; as a ſurface is under one or more lines. See SURFACE and LINE.

From the circumſtances of the terminating lines, *ſolids* become divided into *regular* and *irregular*.

Regular SOLIDS, are thoſe terminated by regular and equal planes. See REGULAR.

Under this claſs come the tetraëdron, hexaëdron or cube, octaëdron, dodecaëdron and icoſiëdron. See TETRAEDRON, CUBE, &c.

Irregular SOLIDS, are all ſuch as do not come under the definition of regular ones.—Such are the ſphere, cylinder, cone, parallelogram, priſm, pyramid, parallelepiped, &c. See SPHERE, CYLINDER, CONE, &c.

The geneſes, properties, ratio's, conſtructions, dimenſions, &c. of the ſeveral *ſolids*, regular and irregular, ſpherical, elliptical, conical, &c. ſee under each reſpective article.

Meaſure of a SOLID. See the article MEASURE.

Cubature, or *cubing of a* SOLID, is the meaſuring of the ſpace comprehended under a *ſolid*, i. e. the ſolidity or *ſolid* content thereof. See CUBATURE and SOLIDITY.

SOLID *of the leaſt reſiſtance*. See RESISTANCE.

SOLID *angle*, is that formed by three or more plain angles meeting in a point. See ANGLE.—Or more ſtrictly, a *ſolid angle*, as B, (*Tab. Geometry*, *fig.* 30.) is the inclination of more than two lines, A B, B C, B F, which concur in the ſame point B, and are in different planes.

Hence, for *ſolid angles* to be equal, it is neceſſary they be contained under an equal number of equal planes, diſpoſed in the ſame manner.

And as *ſolid angles* are only diſtinguiſhable by the planes under which they are contained; and as planes thus equal, are only diſtinguiſhable by compreſence, they are ſimilar; and conſequently ſimilar *ſolid* angles are equal, and *vice verſa*. See SIMILAR.

The ſum of all the plain angles conſtituting a *ſolid angle*, is always leſs than 360°; otherwiſe they would conſtitute the plane of a circle, and not a *ſolid*. See ANGLE.

Like SOLID *figures*. See the article LIKE.

SOLID *baſtion*, } See the articles { BASTION.
SOLID *place*, } { LOCUS.

SOLID *foot*. See the article FOOT.

SOLID *numbers*, are thoſe which ariſe from the multiplication of a plain number, by any other whatſoever.

Thus 18 is a *ſolid number* made of 6 (which is plain) multiplied by 3; or of 9 multiplied by 2. See NUMBER and SIMILAR.

SOLID *problem*, in mathematicks, is one which cannot be geometrically ſolved, but by the interſection of a circle, and a conic ſection; or by the interſection of two other conic ſections, beſides the circle.

Thus, to deſcribe an iſoſceles triangle on a given right line, whoſe angle at the baſe, ſhall be triple to that at the vertex; is a *ſolid problem*, reſolved by the interſection of a parabola and a circle. See PROBLEM.

SOLID *theorem*. See the article THEOREM.

SOLID *phoſphorus*, } See the articles { PHOSPHORUS.
SOLID *ſulphur*, } { SULPHUR.

SOLIDITY, in phyſicks, a property of matter or body, whereby it excludes every other body from the place itſelf poſſeſſes. See SOLID.

Solidity is a property common to all bodies, whether ſolid, or fluid. See MATTER.—It is uſually called *impenetrability*; but *ſolidity* expreſſes it beſt; as carrying ſomewhat more of poſitive with it than the other, which is a negative idea. See IMPENETRABILITY.

The idea of *ſolidity*, Mr. Locke obſerves, ariſes from the reſiſtance we find one body make to the entrance of another into its own place.—*Solidity*, he adds, ſeems the moſt extenſive property of body; as being that whereby we conceive it to fill ſpace: it is diſtinguiſhed from mere *ſpace*, by this latter not being capable of reſiſtance or motion. See SPACE.

It is diſtinguiſhed from *hardneſs*, which is only a firm cohesion of the ſolid parts, ſo as they may not eaſily change their ſituation. See HARDNESS.

The difficulty of changing ſituation, gives no more *ſolidity* to the hardeſt body than the ſofteſt; nor is a diamond a jot more ſolid than water.—By this we diſtinguiſh the idea of the extenſion of body, from that of the extenſion of ſpace: that of body, is the continuity or coheſion of ſolid, ſeparable, moveable parts; that of ſpace, the continuity of unſolid, inſeparable, immoveable parts. See EXTENSION.

The Carteſians, however, will, by all means, deduce *ſolidity*, or, as they call it, *impenetrability*, from the nature of extenſion; and contend, that the idea of the former, is contained in that of the latter; and hence argue againſt a vacuum.—Thus, ſay they, one cubic foot of extenſion cannot be added to another, without having two cubic feet of extenſion; for each has in itſelf, all that is required to conſtitute that magnitude. And hence they conclude, that every part of ſpace is ſolid, or impenetrable; inaſmuch as of its own nature it excludes all others. But the concluſion is falſe, and the inſtance they give follows from this, that the parts of ſpace are immoveable; not from their being impenetrable or ſolid. See VACUUM, PLENUM, &c.

SOLIDITY, in geometry, the quantity of ſpace contained in a ſolid body; called alſo the *ſolid content*, and the cube thereof. See CUBATURE.

The *ſolidity* of a cube, priſm, cylinder, or parallelepiped, is had by multiplying its baſis into its height. See CUBE, PRISM, CYLINDER, &c.

The *ſolidity* of a pyramid or cone, is had by multiplying either the whole baſe into a third part of the height; or the whole height into a third part of the baſe. See PYRAMID and CONE.

To find the SOLIDITY *of any irregular body.*—Put the body in a hollow parallelepiped, and pour water or ſand upon it, and note the height of the water or ſand A B (*Tab. Geometry, fig.* 32.) then, taking out the body, obſerve at what height the water (or ſand when levelled) ſtands, as A C. Subtract A C from A B; the remainder will be B C. Thus is the irregular body reduced to a parallelepiped, whoſe baſe is F C G E; and altitude B C. To find the *ſolidity* whereof, ſee PARALLELEPIPED.

Suppoſe, *e. gr.* A B to be 8, and A C, 5; then will B C be 3: ſuppoſe again, D B, 12, D E, 4; then will the *ſolidity* of the irregular body be found 144.

If the body be ſuch, as that it cannot be well laid in ſuch a kind of channel; *e. gr.* if it be required to meaſure the *ſolidity* of a ſtatue, as it ſtands; a quadrangular priſm or parallelepiped is to be framed over it: the reſt as before.

To find the SOLIDITY *of a hollow body.*—If the body be not comprized in the number of regular bodies; its *ſolidity* is found as in the preceding problem. If it be a parallelepiped, priſm, cylinder, ſphere, pyramid or cone; the *ſolidity*, firſt of the whole body, including the cavity, then that of the cavity, which is ſuppoſed to have the ſame figure with the body itſelf, is to be found, according to the reſpective methods delivered under PARALLELEPIPED, PRISM, *&c.*—For the latter being ſubtracted out of the former, the remainder is the *ſolidity* of the hollow body required.

SOLIDITY, in architecture, is applied both to the conſiſtence of the ground whereon the foundation of a building is laid; and to a maſſive of maſonary, of extraordinary thickneſs, without any cavity within.—The *ſolidity* of the Egyptian pyramids is inconceivable. See PYRAMID.

SOLIDS, in anatomy, *&c.* denote all the continuous, and continent parts of the body; thus called, in oppoſition to the *fluids* or parts contained therein. See BODY, PART and FLUID.

Of the *ſolid* kind, are the bones, cartilages, ligaments, membranes, fibres, muſcles, tendons, arteries, veins, nerves, glands, lymphæducts and lacteals. See BONE, CARTILAGE, LIGAMENT, *&c.*

Notwithſtanding the great number and appearance of the *ſolids* of the body; we find from the microſcope, injections, veſicatories, atrophies, *&c.* that the *ſolid* parts are exceedingly ſmall and inconſiderable, in compariſon of the fluids. Nay, it is almoſt demonſtrable, from a conſideration of the riſe and generation of the veſſels, and the reſolution of the greateſt veſſels into their ſmalleſt conſtituent ones, that the whole maſs of *ſolids* in the body, conſiſts merely of fibres, as their common elements. See FIBRE and STAMINA.

In effect, the whole maſs of *ſolids* as well as fluids, a minute ſtamen or animalcule only excepted, aroſe from a very ſubtile fluid colliquament, not unlike the nervous juice; as is ſhewn by Malpighi, in his treatiſe *de Ovo Incubato*. See EGG.

The white of the egg never nouriſhes, till, from its natural thickneſs, it have been brought, by incubation, through innumerable degrees of fluidity, to become ſubtile enough to enter the minute veſicles of the ſtamen or ſeed. The firſt, ſoft, tender *ſolids* ariſing from this ſubtile humour paſs through infinite, intermediate degrees, ere they arrive at their utmoſt *ſolidity*. See GENERATION.

All the *ſolids*, therefore, in our bodies (unleſs any one will be ſo nice as to except the firſt ſtamen) only differ from the fluids, out of which they ariſe, by their reſt, cohesion and figure; and a fluid particle will become fit to form a part of a *ſolid*, as ſoon as there is a force ſufficient to effect its coheſion with the other *ſolid* parts. See NUTRITION.

SOLIDUS. See the article AUREUS.

SOLILOQUY, SOLILOQUIUM, a reaſoning or diſcourſe, which a man holds with himſelf. See MONOLOGUE.

Papias ſays, that *ſoliloquy* is properly a diſcourſe by way of anſwer to a queſtion that a man has propoſed to himſelf.

Soliloquies are become very common things on the modern ſtage; yet can nothing be more inartificial or more unnatural, than an actor's making long ſpeeches to himſelf, to convey his intentions, *&c.* to the audience.

Where ſuch diſcoveries are neceſſary to be made, the poet ſhould rather take care to give the dramatic perſons ſuch confidants, as may neceſſarily ſhare their inmoſt thoughts; by which means, they will be more naturally conveyed to the audience.—Yet is even this a ſhift, an accurate poet would not be found to have occaſion for.

The uſe and abuſe of *ſoliloquies*, is well delivered by the duke of Buckingham, in the following lines:

> Soliloquies *had need be very few,*
> *Extremely ſhort, and ſpoke in paſſion too.*
> *Our lovers talking to themſelves, for want*
> *Of others, make the pit their confidant:*
> *Nor is the matter mended yet, if thus*
> *They truſt a friend, only to tell it us.*—

SOLIS *via*. See the article VIA.

SOLITARY, SOLITARIUS, ſomething retired, or in private; remote from the company, or commerce of others of the ſame ſpecies. See MONK, HERMIT, ANACHORET, RECLUSE, *&c.*

SOLITARY *column*, is a column that ſtands alone in any publick place; as the Trajan column. See COLUMN.

SOLITARY *worm*, SOLIUM, *tænia*, or *lumbricus latus*, is a worm ſometimes found in the inteſtines, and which is always the only one of the kind; as commencing from the pylorus, and extending thence, the whole length of the inteſtines; ſo that there is no room for another. See WORM.

SOLITARIES, is alſo a denomination of the nuns of St. Peter of Alcantara, inſtituted in 1676, by cardinal Barberini, when abbot of Notre dam de Farſa, in that city.

The deſign of their inſtitute is to imitate the ſevere, penitent life of St. Peter of Alcantara; keep a continual ſilence, never open their mouths to any body but themſelves; employ their time wholly in ſpiritual exerciſes, and leave the temporal concerns to a number of maids, who have a particular ſuperior in a ſeparate part of the monaſtery.—They always go bare-footed, without ſandals, gird themſelves with a thick cord, and wear no linen.

SOLITAURILIA, in antiquity. See SUOVETAURILIA.

SOLICITOR, or SOLLICITOR, SOLICITATOR, a perſon employed to follow, and take care of other perſons ſuits depending in courts of law, or equity; formerly allowed only to nobility, whoſe menial ſervants they were; but now frequently uſed to others, to the great increaſe of champarty, and maintenance. See ATTORNEY.

The king has a SOLICITOR *general*, who holds his office by patent, during the king's pleaſure.—The attorney general, and he, had anciently a right to their writs of ſummons, to ſit in the lords houſe on ſpecial occaſions, till the 13 Car. II. ſince which, they have almoſt conſtantly been choſen members of the houſe of commons.

The *ſolicitor* general has the care and concern of managing the king's affairs, and hath fees for pleading, beſides other fees ariſing by patents, *&c.* He hath his attendance on the privy council; and the attorney general, and he, were anciently reckoned among the officers of the exchequer: they have audience, and come within the bar in all other courts.

SOLICITATION *of gravity*, } See { PARACENTRIC.
SOLICITATION *of levity*,

SOLSTICE, SOLSTITIUM, in aſtronomy, the time when the ſun is in one of the *ſolſtitial* points; that is, when he is at his greateſt diſtance from the equator, which is 23 degrees and a half: thus called, becauſe he then appears to *ſtand ſtill*, and not to change his place in the degrees of the zodiac, any way: an appearance owing to the obliquity of our ſphere, and which thoſe who live under the equator are ſtrangers to. See SOLSTITIAL and POINTS.

The *ſolſtices* are two, in each year; the *æſtival* or *ſummer ſolſtice*, and the *hyemal* or *winter ſolſtice*.

The *ſummer* SOLSTICE, is when the ſun is in the tropic of cancer; which is on the 11th of June; when he makes the longeſt day. See TROPIC and DAY.

The *winter* SOLSTICE, is when he enters the firſt degree of capricorn; which is on the 11th of December; when he begins to return towards us, and makes the ſhorteſt day.

This is to be underſtood, as in our northern hemiſphere; for in the ſouthern, the ſun's entrance into capricorn, makes the *ſummer ſolſtice*, and that into cancer, the *winter ſolſtice*. See ECLIPTIC, SUMMER, WINTER, *&c.*

SOLSTITIAL *points*, are thoſe points of the ecliptic, whereby the ſun's aſcent above the equator, and his deſcent below it, are terminated. See ECLIPTIC, SUN, *&c.*

The firſt point, which is in the beginning of the firſt degree of cancer, is called the *æſtival* or *ſummer point*; and the latter, which is in the beginning of the firſt point of capricorn, the *winter point*. See SOLSTICE.—The *ſolſtitial points* are diametrically oppoſite to each other. See POINT.

SOLSTITIAL *colure*, is that which paſſes through the *ſolſtitial* points. See COLURE.

SOLUBLE, in medicine, *looſe*, or apt to go to ſtool. See LAXATIVE, STOOL, *&c.*

SOLUBLE *tartar*, is a kind of ſalt chymically prepared, by boiling eight ounces of cream of tartar, with four of fixed ſalt of tartar. See TARTAR.

SOLVENT, the ſame with *diſſolvent*. See DISSOLVENT.

SOLUTIO *continui*, or SOLUTION *of continuity*, a term uſed by phyſicians, *&c.* to expreſs a diſorder common to the ſolid parts of the body, wherein their natural coheſion is ſeparated: as by a wound, or other cauſe. See CONTINUUM, *&c.*

If this happen to a ſimple, ſimilar part of the body; it is called, ſimply, *ſolutio continui*.—If to a compound, or organical part, it acquires a particular denomination, from the nature of the part, the difference of the cauſe, or the manner of application; as, a *wound*, *rupture*, *fracture*, *puncture*, *fiſſure*, *contuſion*, *ulcer*, *corroſion*, *dilaceration*, *exfoliation*, *caries*, &c. See WOUND, RUPTURE, FRACTURE, *&c.*

SOLUTION, SOLUTIO, in algebra and geometry, is the anſwering of a queſtion; or reſolving any problem propoſed. See RESOLUTION, PROBLEM, *&c.*

The *ſolution* of the problem of the quadrature of the circle, and that of the duplicature of the cube, by right lines, are held impoſſible. See QUADRATURE and DUPLICATURE.

Solution *of continuity*, in chirurgery. See Solutio *continui.*

Solution, in phyſicks, the reduction of a ſolid, or firm body, into a fluid ſtate, by means of ſome menſtruum. See Menstruum.

Solution is frequently confounded with what we otherwiſe call *diſſolution*; but there is a difference. See Dissolution.

Solution, in chymiſtry, is ſometimes uſed for the analyſis, or reduction of a natural body into its chymical principles. See Principle and Analysis.

In this ſenſe, *ſolution* is the ſame with what we otherwiſe call *reſolution.* See Resolution.

SOLUTIVE, *looſening*, or *laxative.* See Laxative.

Solutive *diaprunum.* See the article Diaprunum.

SOMNAMBULI*, or Somnambulones, an appellation given to people, who walk in their ſleep; more uſually called *noctambuli.* See Noctambuli.

* The word is formed from the Latin, *ſomnus*, ſleep, and *ambulo*, I walk.

SOMNIFEROUS. See the article Soporiferous.

SOMNOLENTUM *coma.* See the article Coma.

SON, a relative term, applied to a male child, conſidered in the relation he bears to his parents. See Father.

The children of the king of England, are called *ſons* and *daughters* of *England.* See King. The eldeſt *ſon* is born duke of Cornwal, and created prince of Wales. See Prince.

The younger *ſons* are called *cadets.* See Cadet.

The king of France's children were anciently called *fils*, and *filles de France*, *ſons* and daughters of France; and the grand-children, *petits fils*, and *petites filles de France.* At preſent, the daughters are called *mes-dames*, and the grand-daughters, *mes-demoiſelles de France.*

Natural Son, } See the articles { Bastard.
Adoptive Son, } { Adoptive.

Son *of God*, is a term uſed in various ſenſes, in holy ſcripture, as, 1°. For the Word, or ſecond perſon in the bleſſed trinity; who is thus called, with reſpect to the manner of his generation: as being begotten of the Father. See Generation, &c.

Him, the orthodox believe to be co-eternal, and co-equal with the Father; and to have been with him, the eternal principle and ſource of the Holy Spirit. See Trinity, &c.

The appellation *Son*, is applied to him, both before and after his incarnation.—Thus we ſay, The *Son* of God created the world; the *Son* of God was incarnate, and lived 33 years on earth, &c.

2°. Several creatures are alſo called Sons *of God*; not as being ſo by nature and generation, but on divers other accounts.—Thus the angels are called *ſons of God* by Job; in reſpect of their creation, adoption, &c. And great men are called *ſons of God* in the Pſalms; as being his lieutenants; or, the depoſitaries of his authority. Good men, and particularly the elect, are alſo called *ſons of God*, in various places of the ſacred writings.

Son *of man*, is frequently uſed in ſcripture, to ſignify *man*; as expreſſing not only the nature of man, but his frailty.

The expreſſion is very uſual among the Hebrews and Chaldeans: Daniel, Ezekiel, and Jeſus Chriſt, are particularly thus called; the firſt once, and the two latter frequently.

Sometimes, the phraſe *ſon of man*, is alſo uſed for the wicked and reprobate: in contradiſtinction to thoſe called *ſons of God.*

SONATA, Suonata, in muſic, a piece or compoſition of muſic, wholly executed by inſtruments; and which is, with regard to the ſeveral kinds of inſtruments, what the *cantata* is in reſpect of voices. See Cantata.

The *ſonata*, then, is properly a grand, free, humorous compoſition, diverſified with a great variety of motions and expreſſions, extraordinary and bold ſtrokes, figures, &c. And all this purely according to the fancy of the compoſer; who, without confining himſelf to any general rules of counter-point, or to any fixed number or meaſure, gives a looſe to his genius, runs from one mode, meaſure, &c. to another, as he thinks fit.

We have *ſonata's* of 1, 2, 3, 4, 5, 6, 7, and even 8 parts; but uſually they are performed by a ſingle violin, or with two violins and a thorough baſs for the harpſicord, and frequently a more figured baſs for the baſs-viol, &c.

There are a thouſand different ſpecies of *ſonata's*: but the Italians uſually reduce them to three kinds.

Suonate da chieſa, that is, *ſonata's* proper for church-muſic, which uſually begin with a grave, ſolemn motion, ſuitable to the dignity and ſanctity of the place and the ſervice; after which they ſtrike into a briſker, gayer and richer manner.—Theſe are what they more peculiarly call *ſonata's.*

Suonate da camera, or *ſonata's* for the chamber, are properly ſeries's of ſeveral little pieces, for dancing; only compoſed to the ſame tune.—They uſually begin with a prelude, or little *ſonata*, ſerving as an introduction to all the reſt: afterwards come the allemand, pavane, courant, and other ſerious dances; then jigs, gavots, minuets, chacons, paſſecailles and other gayer airs: the whole compoſed in the ſame tone or mode.

SONG, in poetry, a little compoſition, conſiſting of ſimple, eaſy, natural verſes, ſet to a tune, in order to be ſung. See Singing.

Each ſtanza of a *ſong*, is called a *couplet.* See Stanza and Couplet.

The *ſong* bears a deal of reſemblance to the madrigal; and more to the ode, which is nothing but a *ſong* according to the ancient rules. See Madrigal and Ode.

Its object is uſually either wine or love; whence M. le Brun defines a modern *ſong*, to be either a ſoft and amorous, or a briſk and bacchic thought, expreſſed in a few words.

Indeed, this is to reſtrain it to too narrow bounds; for we have devout *ſongs*, ſatyrical *ſongs*, and panegyrical *ſongs.*

But, be the *ſong* what it will, the verſes are to be eaſy, natural, flowing, and to contain a certain harmony, which neither ſhocks the reaſon nor the ear; and which unites poetry and muſic agreeably together.

Anciently, the only way of preſerving the memory of great and noble actions, was, by recording them in *ſongs*; and in America there are ſtill people, who keep their whole hiſtory in *ſongs.* See Druid.

Song, in muſic, is applied in the general, to any ſingle piece of muſic, whether contrived for a voice, or inſtrument. See Music and Composition.

A *ſong*, Mr. Malcolm obſerves, may be compared to an oration: for, as in this latter, there is a ſubject, *viz.* ſome perſon or thing the diſcourſe is referred to, and which is always to be kept in view throughout the whole; ſo, in every truly regular and melodious *ſong*, there is one note which regulates all the reſt; wherein the *ſong* begins, and at laſt ends, and which is, as it were, the principal matter, or muſical ſubject, to be regarded in the whole courſe of the *ſong.*—And, as in the oration, there may be ſeveral diſtinct parts, which refer to particular ſubjects, yet muſt they have an evident connection with the principal ſubject, which regulates the whole; ſo in melody, there may be ſeveral ſub-principal ſubjects, to which the different parts of the *ſong* may belong: but theſe are, themſelves, under the influence of the principal ſubject, and muſt have a ſenſible connection with it.—This principal or fundamental note, is called the *key of the ſong.* See Key.

Reſponſary Song. See the article Responsary.

SONNA*, a book of Mahometan traditions, wherein all the orthodox muſſulmen are required to believe. See Mahometanism, Tradition, &c.

* The word ſignifies, in Arabic, the ſame with *miſhna* in the Hebrew, that is, *ſecond law*, or, as the Jews call it, *oral law.* See Mishna.

The adherents to the *ſonna* are called *ſonnites*: and as among the Jews, there is a ſect of Caraites, who reject the traditions as fables invented by the rabbins; there are alſo ſectaries among the Mahometans, called *Shiites*, who reject the traditions of the *Sonnites*; as being only founded on the authority of an apocryphal book, and not derived to them from their legiſlator. See Caraite, Rabbinist, &c.

There is the ſame enmity between the *Sonnites* and Shiites, as between the rabbiniſt Jews and the Caraites. The Shiites reproach the *Sonnites* with obtruding the dreams of their doctors, for the word of God: and the *Sonnites*, in their turn, treat the Shiites as hereticks, who refuſe to admit the divine precepts, have corrupted the Alcoran, &c.

SONNET, Sonetto, in poetry, a kind of compoſition, contained in fourteen verſes, *viz.* two ſtanza's or meaſures of four verſes each, and two of three; the eight firſt verſes being all in two rhymes.

The *ſonnet* is of Italian origin, and Petrarch is allowed to be the father: it is held the moſt difficult and artful of all poetical compoſitions; as requiring the laſt accuracy, and exactneſs. It is to end with ſome pretty, ingenious thought: the cloſe to be particularly beautiful, or the *ſonnet* is naught.

In Malherb, and ſome other French poets, we meet with *ſonnets*, where the two firſt ſtanza's are not in the ſame rhyme; but they are held irregular; and, in effect, great part of the merit of theſe pieces, conſiſts in a ſcrupulous obſervation of the rules.

Ronſard, Malherb, Maynard and Gombaut, have compoſed abundance of *ſonnets*; but among two or three thouſand, there are ſcarce two or three worth much.

Paſquier obſerves, that du Bellai was the firſt who introduced *ſonnets* into France. But du Bellai himſelf ſays, that Melin de S. Gelais, firſt converted the Italian *ſonnets* into French.

SOOP. See the article Soup.

SOOT, an earthy, volatile matter, ariſing from wood, coals, and other fuel, along with the ſmoak, by the action of fire; or, rather, it is the ſmoak itſelf, fixed and gathered on the ſides of the chimney. See Smoak and Fire.

Soot is found an excellent manure for corn lands, eſpecially where the ſoil is cold. See Manuring.

The dyers make conſiderable uſe of *ſoot*, for a kind of dun colour; which, it is true, has no agreeable ſmell; but in return has the property of ſaving cloaths and other ſtuffs, from moths. See Dying.

Soot *of frankincenſe*, is the ſmalleſt and fineſt part of the incenſe, called *olibanum*, or *male incenſe*; burnt after the manner of roſin to make lamp-black. See Frankincense.

Dioſcorides ſhews how to make a *ſoot* of butter, which has ſeveral uſes in medicine.—The *ſoot* found in the furnaces of glaſs-houſes, is uſed by painters.

SOPE. See the article SOAP.

SOPHI *, or SOFI, a title or quality given to the emperor of Perſia; importing as much as wiſe, ſage or philoſopher.

* The title is by ſome ſaid to have taken its riſe from a young ſhepherd thus named, who attained to the crown of Perſia in 1370: others derive it from the *ſophoi* or ſages, anciently called *magi*.—Voſſius gives a different account of the word: *ſophi*, in Arabic, he obſerves, ſignifies *wool*; and adds, that it was applied by the Turks out of deriſion to the kings of Perſia, ever ſince Iſhmael's time, becauſe, according to their ſcheme of religion, he is to wear no other covering on his head, but an ordinary, red, woollen ſtuff; whence the Perſians are alſo called *kezelbaſchs*, q. d. *red-heads*.—But Bochart aſſures us, that *ſophi*, in the original Perſian language, ſignifies one that is pure in his religion, and who prefers the ſervice of God in all things; and derives it from an order of religious, called by the ſame name. See SOPHI'S.

The *ſophi's* value themſelves, and with ſome reaſon, of their illuſtrious extraction; the race being ſecond to none in the eaſt. They are deſcended in a right line from Houſſein, ſecond ſon of Ali, Mahomet's couſin, and Fathima, Mahomet's daughter.

There is no prince in the world, whoſe authority is more abſolute than that of the *ſophi* of Perſia: his power is not even limited by any laws he himſelf can make; but he ſuſpends, changes, and annuls them at pleaſure.

SOPHI'S *, or SOFEES, a kind of order of religious among the Mahometans in Perſia, anſwering to what are otherwiſe called *derviſes*, and among the Arabs and Indians, *faquirs*. See DERVISE and FAQUIR.

* Some will have them called *ſofi's*, from a kind of coarſe camblet which they wear, called *Souf*, from the city *Souf* in Syria, where it is principally manufactured.

The more eminent of thoſe *ſophi's* are complemented with the title *ſcheik*, that is reverend; much as in Romiſh countries, religious are called *reverend fathers*.

Scheic *Sophi*, who laid the firſt foundation of the grandeur of the royal houſe of Perſia, was the founder, or rather the reſtorer of this order: Iſhmael, who conquered Perſia, was, himſelf, a *ſophi*, and valued himſelf on his being ſo. He choſe all the guards of his perſon from among the religious of this order; and would have all the great lords of his court *ſophi's*. The king of Perſia is ſtill grand maſter of the order; and the lords continue to enter into it, though it be now fallen under great contempt.

The vulgar *ſophi's* are now chiefly employed as uſhers, and attendants of the court; and even as executioners of juſtice; the emperor laſt reigning, would not allow them, according to cuſtom, to gird the ſword on him.

This neglect, into which the *ſophi's* are ſunk, has occaſioned the late emperors to diſuſe the title of *ſophi*, or *ſofi*: however, M. de la Croix is miſtaken, when he ſays, that they never bore it.

SOPHISM, ΣΟΦΙΣΜΑ, in logic, a captious, and fallacious reaſoning; or an argument, which with ſome ſubtilty, carries much appearance of truth, but little ſolidity. See FALLACY.

A *ſophiſm* is, properly, an argument falſe at bottom, and only invented to amuſe and embarraſs the perſon to whom it is uſed. See SOPHIST and ELENCHUS.

SOPHISMS, or SOPHISTICAL *arguments*, among logicians, are more particularly ſuch as are not in form, or are founded on equivocals.

As: *You have every thing you have not loſt; but you have not loſt horns: therefore you have horns.*

SOPHIST *, ΣΟΦΙΣΤΗΣ, a perſon who frames ſophiſms; that is, uſes ſubtile arguments, with deſign to deceive thoſe he would perſuade or convince. See SOPHISM and GYMNOSOPHIST.

* The word is formed from the Greek, σοφος, wiſe; or rather from σοφιϛης, impoſtor, deceiver.

The term *ſophiſt*, which is now reproachful, was anciently honourable; and carried a very innocent idea. St. Auguſtin obſerves, it ſignified a rhetor, or profeſſor of eloquence: ſuch as were Lucian, Athenæus, Libanius, *&c.*

Suidas, and after him, Olar. Celſius, in an expreſs diſſertation on the Greek *ſophiſts*, tells us, that the appellation was applied indifferently to all who excelled in any art, or ſcience; whether divines, lawyers, phyſicians, poets, orators, or muſicians.—But this ſeems to be ſtretching the ſenſe of the word without all meaſure: it is poſſible a rhetor might have made verſes, *&c.* but that it was on account of his poetical talent, that he was denominated *ſophiſt*, is what we ſee no reaſon to apprehend.—However, Solon is the firſt who appears to have ever bore the appellation; which is given him by Iſocrates: afterwards, it was ſcarce ever given, but to philoſophers, and declaimers.

The title *ſophiſta* was in great credit among the Latins in the XIIth century, and in the time of St. Bernard; but it began to loſe ground in Greece, as early as Plato's time; on account of Protagoras and Gorgias, who made a ſordid traffic thereof, by ſelling eloquence for money.—Hence Seneca calls the *ſophiſts*, *quacks* or *empirics*.

Cicero ſays, that the title *ſophiſta* was given to ſuch as profeſſed philoſophy with too much oſtentation, in order to make a trade of it, by running from town to town, to retail their deceitful ſcience.—A *ſophiſt*, therefore, was then, as now, a rhetor, or logician, who makes it his buſineſs to enſnare and perplex people, by frivolous diſtinctions, vain reaſonings and captious diſcourſes.

Nothing has conduced more to the increaſing of the number of *ſophiſts*, than the contentious ſchool philoſophy: people are there taught to puzzle and obſcure the truth, by barbarous, unintelligible terms; as antipredicaments, great and little logicals, quiddities, *&c.*

The title *ſophiſt* was given to Rabanus Maurus, by way of eminence.—John Hinton, a modern Engliſh ſcholaſtic writer, endeavoured alſo to procure the ſplendid title of *ſophiſt*.

SOPHISTICATION, in chymiſtry, alchymy, *&c.* a term particularly applied to the counterfeit works of fraudulent alchymiſts, who uſe indirect means of whitening copper, gilding ſilver, and giving other ſuperficial tinctures; as alſo of making augmentations, by divers mixtures, and other illegal operations, to delude thoſe, at whoſe expence they are employed. See ALCHYMY, ALCHYMIST, TRANSMUTATION, PROJECTION, PHILOSOPHER'S *ſtone*, &c.

Hence the term is alſo applied to merchandizes, and other goods adulterated, mixed or altered by the deceit of the ſeller. See ADULTERATION.

Muſc, at preſent, is almoſt all *ſophiſticated*, as well as Bezoard, balm of Gilead, lapis lazuli, and other valuable drugs. —Canary wines are *ſophiſticated* on the place, before ever they come near our ports.

SOPORIFIC *, or SOPORIFEROUS, a medicine that has the faculty of procuring ſleep. See SLEEP.—Such are opium, laudanum, *&c.* See OPIUM, LAUDANUM, *&c.*

* The word is formed from the Latin, *ſopor*, ſleep.—The Greeks, in lieu hereof, uſe the word *hypnotic*. See HYPNOTIC.

SOPOROUS, *ſleepy*, or *drowſy diſeaſes*, are the coma or cataphora, lethargy and carus, which rather appear to differ in reſpect of more or leſs, than as to their eſſence.—In this they all agree, that they induce a morbific ſweat. See COMA, CARUS, LETHARGY, *&c.*

SORBON, or SORBONNE, the houſe or college of the faculty of theology, eſtabliſhed in the univerſity of Paris. See UNIVERSITY, FACULTY, *&c.*

It was founded in 1252, by St. Louis, or rather by Robert de *Sorbon* his confeſſor and almoner; firſt, canon of Cambray, and afterwards of the church of Paris; who gave his own name to it; which he himſelf took from the village of *Sorbon*, or *Serbon*, near Sens, where he was born.

The foundation was laid in 1250; queen Blanche, in the abſence of her huſband, furniſhing him with a houſe which had formerly been the palace of Julian the apoſtate, whereof ſome remains are ſtill ſeen.—Afterwards, the king gave him all the houſes he had in the ſame place, in exchange for ſome others in another.

The college has been, ſince, magnificently rebuilt by the cardinal de Richelieu. The deſign of its inſtitution, was for the uſe of poor ſtudents in divinity.

There are lodgings in it for 36 doctors, who are ſaid to be of the *ſociety of the Sorbonne*. Thoſe admitted into it without being doctors, are ſaid to be of the *hoſpitality of the Sorbonne*.—Six regent doctors hold lectures every day, for an hour and half each: three in the morning, and three in the afternoon. See DOCTOR.

SORBON is alſo uſed in the general, for the whole faculty of theology at Paris; in regard the aſſemblies of the whole body are held in the houſe of the *Sorbon*: and that the bachelors of the other houſes of the faculty, as the houſe of Navarre, *&c.* come here to hold their *ſorbonnique*, or act, for being admitted doctor in divinity. See FACULTY.

SORCERY, the crime of witchcraft, or divination by the aſſiſtance of evil ſpirits. See MAGIC, WITCHCRAFT and DIVINATION.

Some hold *ſorcery* to be properly what the ancients call *ſortilegium*, or divination by means of *ſortes* or *lots*. See SORTES.

My lord Coke, 3d *Inſt. fol.* 44, deſcribes a *ſorcerer*, *qui utitur ſortibus & incantationibus dæmonum*. *Sorcery* is felony, by ſtat. 1° Jac. In the mirror, *ſorcery* is ſaid to be a branch of hereſy; and by ſtat. 12. Car. II. it is excepted out of the general pardons.

Sorcery was a thing formerly very common; at leaſt the credulity of thoſe ages made it paſs for ſuch; and people ſuffered frequently for it. In a more knowing and leſs believing age, it is out of doors.

In effect, the moſt probable opinion is, that the ſeveral glaring inſtances of *ſorcery* we meet withal, in our old lawbooks and hiſtorians, if well enquired into, would be found, at bottom, no other than artful poiſonings. See FASCINATION.

SORDID *ulcers*. See the article ULCER.

SORITES *, ΣΩΡΕΙΤΗΣ, in rhetoric, *&c.* a kind of argument, wherein a number of propoſitions are gradually, and minutely laid together; and ſomething inferred from the whole.—Whence, Cicero calls it *ſyllogiſmus acervatus*, an accumulative ſyllogiſm.

* The word is formed from the Greek σωρος, cumulus, heap.

Such was that merry argument of Themiſtocles, to prove, that his little ſon, under ten years old, governed the whole world.—Thus: my ſon governs his mother; his mother me; I the Athenians; the Athenians the Greeks; Greece commands Europe; Europe the whole world: therefore my ſon commands the whole world.

This method of diſputing, prevailed much among the ſtoicks; eſpecially with Zeno, and Chryſippus. But it is very captious, and ſophiſtical.

SORRANCES, among farriers, ſignify two things, *viz.* either an ill ſtate or habit of a horſe's body, ariſing from ſome part diſeaſed: or, a looſening and ſolution of the continuity of the parts, which according to the various circumſtances thereof, acquires various names, as *fracture*, *wound*, *ulcer*, *rupture*, *convulſion*, *cramp*, *excoriation*, &c.

SORTES, in antiquity, *lots*; a method of deciding dubious caſes, where there appears no ground for a preference, by referring the deciſion to chance: as in caſting of dice, drawing of tickets, *&c.* See CHANCE.

The ancient *ſortes* or *lots*, were inſtituted by God himſelf; and in the books of the Old Teſtament, we meet with divers ſtanding and perpetual laws, and divers particular commands, preſcribing and regulating the uſe thereof. Thus the ſcripture informs us, that the *lot* fell on St. Matthias, when a ſucceſſor to Judas in the apoſtolate was to be choſen. And our Saviour's garment itſelf, was caſt *lots* for. *Sortiti ſunt Chriſti veſtem.*

The SORTES *Prænestinæ*, were famous among the Greeks. The method of theſe was to put a great number of letters, or even whole words into an urn; to ſhake them together, and throw them out; and whatever ſhould chance to be made out in the arrangement of the letters, *&c.* compoſed the anſwer of this oracle.

In what repute ſoever, this method of divination might, anciently, have been, M. Dacier obſerves, that in Cicero's time its credit was low; inſomuch that none but the credulous populace had recourſe to it.

In lieu of this, another kind of *ſortes* was introduced into Greece and Italy, which was to take ſome celebrated poet, as Homer, or Euripides, or Virgil, to open the book, and whatever firſt preſented itſelf to the eye upon opening, was taken for the ordinance of heaven. This made what they called the *ſortes Homericæ*, and *ſortes Virgilianæ*; which ſucceeded to the uſe of the *ſortes Prænestinæ*.

This ſuperſtition paſſed hence into chriſtianity; and the Chriſtians took their *ſortes* out of the books of the Old and New Teſtament. The firſt paſſage that preſented itſelf, upon opening a book of ſcripture, was eſteemed the anſwer of God himſelf.

If the firſt paſſage did not happen to be any thing to the purpoſe for which the *ſortes* were conſulted, another book was opened; till a paſſage were met withal, that might be taken for an anſwer. This was called *ſortes ſanctorum.*

St. Auguſtin does not diſapprove of this method of learning futurity, provided it be not uſed for worldly purpoſes; and owns he has practiſed it himſelf.

Gregory of Tours adds, that the cuſtom was, firſt to lay the Bible on the altar, and to pray the Lord, that he would diſcover by it what was to come to paſs.

Inſtances of the uſe of the *ſortes ſanctorum* are very frequent in hiſtory. Heraclius, Mr. Fleury tells us, in his war againſt Coſroes, to learn where he ſhould take up his winter-quarters, purified his army for three days, and then opened the goſpels, and found the place appointed for his winter-quarters, was in Albania.

Gilbert of Nogent, informs us, that in his time, that is, about the beginning of the XIIth century, the cuſtom was at the conſecration of biſhops, to conſult the *ſortes ſanctorum*, to learn the ſucceſs, fate, *&c.* of their epiſcopate.

The practice is founded on a ſuppoſition, that God preſides over the *ſortes*; and on Prov. xvi. 33. *The lot is caſt into the lap; but the diſpoſing thereof is of the Lord.*

In effect, many divines hold, that the *lot* is conducted in a particular manner by providence; that it is an extraordinary manner wherein God declares his will by a kind of immediate revelation.—The *ſortes ſanctorum*, however, were condemned by the council of Agda in 506, at the time they were beginning to take footing in France, *&c.*

SORTILEGE, SORTILEGIUM, a kind of divination by ſortes, or lots. See SORCERY and SORTES.

SOTERIA*, in antiquity, ſacrifices offered to the gods, in gratitude for their having delivered a perſon from danger. See SACRIFICE.

* The word is formed from the Greek, σωτηρ, ſaviour.

The term is alſo applied to poetical pieces compoſed for the ſame end. Orpheus is the firſt, who appears to have compoſed *ſoteria*.

Our Latin poets give the ſame name to poems in Latin verſe, wrote to give thanks to God or the ſaints, for having preſerved them on any occaſion: F. Petavius being delivered from a dangerous diſeaſe, by the interceſſion, as he ſuppoſed, of St. Genevieve, compoſed that fine piece in honour of that ſaint, ſtill extant under the title of *ſoteria.*

SOU. See the article SOL.

SOVERAIGN, *ſupreme*; the chief and higheſt Being; or the Almighty: a term, in ſtrictneſs, only applicable to God. The word is French *ſoverain*, which Paſquier derives further from the Latin, *ſuperior*, the firſt in any thing, or he who is ſuperior to the reſt.—Hence,

In the ancient French cuſtoms, we meet with *ſoveraign* maſter of the houſhold; *ſoveraign* maſter of the foreſts; *ſoveraign* maſter of the treaſury.—Under Charles VI. the title *ſoveraign* was given to bailiffs and ſeneſchals, with regard to their ſuperiority over prevots, and chatelains.

SOVERAIGN, with regard to men, is applied to kings, and princes who are ſupreme and independent, and hold of none but God, and their ſword. See KING, PRINCE, *&c.*

The authority of a *ſoveraign* is only bounded by the laws of God, of Nature, and the fundamental laws of the ſtate.

SOVERAIGN is alſo a title given to ſuch as are inveſted with certain rights and prerogatives, which belong only to *ſoveraigns*: as, the power of coining money; ſending agents to diets, to treat of war and peace, *&c.*

In which ſenſe, the feudatories of the empire, and the tributaries of the grand ſeignior, are called *ſoveraigns.*

SOVERAIGN is alſo applied to courts and judges, who have a power from a prince, to decide the proceſſes of his ſubjects without appeal, or in the laſt reſſort.

At Paris there are five *ſoveraign* companies; the parliament, the chamber of accompts, the court of aids, the grand council, and the court of monies.

In England, we have but one *ſoveraign* court; the houſe of lords. See COURT, PEER, *&c.*

SOUL, *anima*, a ſpirit incloſed in an organized body. See SPIRIT and BODY.

Many of the ancient philoſophers aſſerted an *anima mundi*, a *ſoul* which moved and animated the machine of the univerſe, and gave action to all natural cauſes. This doctrine, Plato handles very fully in his Timæus. See ANIMA MUNDI.

Others have given particular *ſouls* to all the heavenly bodies, the ſun, ſtars, earth, *&c.* to regulate their motions. See ANIMAL, SUN, STAR, PLANET, EARTH, *&c.*

The philoſophers, many of them, allow of two, and others of three kinds of *ſouls*, viz. a

Rational SOUL, which they hold to be divine, and infuſed by the breath of God. See REASON.

Irrational or *Senſitive* SOUL, which man has in common with brutes, and which is formed out of the elements. See SENSITIVE.

Vegetative SOUL, which we have in common with plants; and which, as the firſt is the principle of reaſon and underſtanding, or that in us which thinks and underſtands; and the ſecond, the principle of life; ſo this third is the principle of growth, nutrition and vegetation. See VEGETATIVE, *&c.*

The Epicureans took the ſubſtance of the *ſoul*, we mean of the rational *ſoul*, to be a ſubtile air, compoſed of their atoms, or primitive corpuſcles. See ATOM.

The ſtoicks held it to be a flame or portion of heavenly light. See FIRE, LIGHT, FLAME, HEAT, *&c.*

Spinoſa and his followers, allowing only of one kind of ſubſtance, *viz.* matter, mantain the *ſoul* to be of the ſame ſubſtance with the body, *viz.* material. See SUBSTANCE and SPINOSISM.

The Carteſians make thinking the eſſence of the *ſoul*; and from this principle, deduce its immateriality and immortality.—But the principle is falſe; nor is there any need to define the *ſoul* a ſubſtance that thinks, to prove it immortal. It is enough, that the *ſoul* be capable of thinking; and that it produce its own thoughts, without making thinking its eſſence. It is no more eſſential to the *ſoul* to think than to will: for a thing I can conceive the *ſoul* without, cannot be its eſſence. See THOUGHT, *&c.*

Again, if thought be the eſſence of the *ſoul*; as a thing cannot produce itſelf, its own being, or eſſence; the *ſoul* does not produce its own thoughts, nor its own will: and thus is it brought to the condition of brutes, or even of inanimate bodies, without any action, any liberty, *&c.*

If the Carteſians only mean this of the faculty of thinking; they do wrong even to call this the eſſence of the *ſoul.* It is no more its eſſence, than the faculty of willing is. And we conceive ſomething in the *ſoul*, prior to both thoſe faculties. See THINKING and CARTESIAN.

The *ſoul* is a ſpiritual ſubſtance, proper to inform, or animate a human body, and by its union with this body, to conſtitute a reaſonable animal, or man. This is its eſſence; and this its definition.

It muſt be owned, the Carteſians prove the ſpirituality and immortality of the *ſoul*, from its thinking, exceedingly well: but they are not to have the honour of this proof, as their own invention. All the great philoſophers uſed it before them, and uſe it ſtill. See IMMORTALITY.

The philoſophers are not at all agreed, as to the manner wherein the *ſoul* reſides in the body. Some hold it equally diffuſed throughout

hroughout every part thereof. Others ſay it influences, and acts on every part of the body, though it has its principal reſidence in ſome particular part, called the *ſenſory*. See SENSORY.

This principal part, Des Cartes maintains, is the pineal gland of the brain, where all the nerves terminate, *&c.* See PINEAL *gland*.

Borri, a Milaneſe phyſician, in a letter to Bartholine, *de ortu cerebri & uſu medico*, aſſerts, that in the brain is found a certain, very ſubtile, fragrant juice, which is the principal ſeat or reſidence of the reaſonable *ſoul*; and adds, that the ſubtilty and fineneſs of the *ſoul*, depends on the temperature of this liquor, rather than on the ſtructure of the brain, to which it is uſually aſcribed. This liquor, we conceive, muſt be the ſame with what is uſually called the *nervous juice*, or *animal ſpirits*. The conſtitution whereof, is, doubtleſs, of great importance, with regard to the faculties of the *ſoul*. See SPIRIT.

Mr. Locke diſtinguiſhes two principal faculties or powers of the rational or human *ſoul*, viz. *perception* and *willing*. See POWER and FACULTY.

To theſe, other philoſophers add others; as *ſenſation*, *liberty*, *memory*, *imagination*, and *habit*. See UNDERSTANDING, WILL, SENSATION, LIBERTY, *&c.*

The myſtic divines diſtinguiſh two principal parts in the *ſoul:* the *ſuperior part*, which comprehends the underſtanding and the will; and the *inferior part*, which comprehends imagination and ſenſation. Thus, ſay they, Jeſus Chriſt was happy on the croſs in his *upper part*, and ſuffered in his *lower part*. The lower part did not communicate to the upper, either its troubles, or its failings; nor the upper to the lower, its peace or beatitude. From this diſtinction, the quietiſts take in hand to maintain, that whatever paſſes contrary to good morals, in the lower part of the *ſoul*, is not contrary to the purity of the upper part, inaſmuch as the will has no ſhare therein.

As to the *ſoul* of brutes, the Carteſians, and ſome others, deny its exiſtence, in the common ſenſe of the word *ſoul*; that is, they ſtrip it of all the properties or faculties of the human *ſoul:* and the Peripateticks, on the contrary, inveſt it with the greateſt part of them.

In man, a particular agitation of the fibres of the brain is accompanied with a ſenſation of heat; and a certain flux of animal ſpirits towards the heart, and viſcera, is followed by love or hatred.

Now the Peripateticks maintain, that brutes feel the ſame heat, and the ſame paſſions, on the ſame occaſions: that they have the ſame averſion for what incommodes them, and, in the general, are capable of all the paſſions, and all the ſenſations we feel.

The Carteſians deny they have any perceptions or notices at all; that they feel any pain or pleaſure; or love or hate any thing. The ground of their opinion is, that they allow of nothing in brutes, but what is material, and that they deny ſenſations, and paſſions to be any properties of matter. Some of the Peripateticks, on the other hand, maintain matter, when ſubtilized, framed, ranged and moved in a certain manner, to be capable of ſenſation and paſſion; that beaſts may feel and perceive, by means of the animal ſpirits, which are a matter thus modified; and that the human *ſoul* itſelf, only becomes capable of ſenſation and paſſion, by means thereof. See SENSATION and PASSION.

But we muſt own it very difficult, to reconcile the idea we have of matter, with that we have of thought; to conceive that matter figured in any manner, whether in a ſquare, a ſphere, or an oval, ſhould be pleaſure, pain, heat, colour or ſmell; or to conceive that matter, however agitated, whether in a circle, a ſpiral, parabola or ellipſis, ſhould be love, hatred or joy, — ſurpaſſes our endeavours.

The maintainers of the contrary opinion, urge that appearance of ſenſe, of fear, caution, love for their young, admirable ſagacity, both for their own preſervation and that of their ſpecies, viſible through the whole brute creation. And, it is true, all the actions of beaſts plainly expreſs an underſtanding; for every thing that is regular, expreſſes it; even a machine or watch expreſſes it: and a plant much more; the radicle of the ſeed turning downwards, and the ſtem upwards, whatever ſituation the ſeed is ſown in: the young plant, knitting from ſpace to ſpace, to ſtrengthen it; its putting forth prickles, *&c.* to defend it, *&c.* mark a great underſtanding. All the motions of plants and brutes plainly diſcover an intelligence; but the intelligence does not reſide in the matter thereof: it is as diſtinct from the beaſt or plant, as that which ranged the wheels of the watch, is diſtinct from the watch itſelf. See UNDERSTANDING, *&c.*

For, in effect, this intelligence appears infinitely great, infinitely wiſe, infinitely powerful; and the ſame which formed us in our mother's womb, which gave us our growth, *&c.*

Thus, in brutes, there is not either underſtanding or *ſoul*, in the ſenſe we generally uſe the word: they eat without pleaſure, cry without pain, grow without knowing it. They fear nothing; know nothing; and if they act in ſuch manner, as ſhews underſtanding; it is becauſe God having made them, to preſerve them, has formed their bodies ſo as to avoid whatever might hurt them, mechanically.

Otherwiſe, it might be ſaid, that there is more underſtanding in the vileſt inſect, nay, in the ſmalleſt grain, than in the moſt knowing of men; for it is evident, either of them contains more parts, and produces more regular motions and actions, than we are capable of underſtanding. Thus does the great F. Malebranche argue againſt the *ſouls* of brutes. *Recherche de la verite, liv.* 6.

Cure of SOULS, } See the articles { CURE.
Migration of SOULS, } See the articles { MIGRATION.

SOUL'S *cheat*, a legacy anciently bequeathed at their deaths, by our ſcrupulouſly pious anceſtors, to the pariſh prieſt, to compenſate for any tithes that might have been forgot in their lives. See TITHE.

SOUND, SONUS, a perception of the ſoul, communicated by means of the ear; or, the effect of a colliſion of bodies, and a tremulous motion conſequent thereon, communicated thence to the circumambient fluid, and propagated through it to the organs of hearing. See EAR and HEARING.

To illuſtrate the cauſe of *ſound*; we obſerve, firſt, that a motion is neceſſary in the ſonorous body, for the production of *ſound*. Secondly, that this motion exiſts, firſt, in the ſmall and inſenſible parts of the ſonorous bodies, and is excited in them by their mutual colliſion, and percuſſion againſt each other, which produces that tremulous motion ſo obſervable in bodies that have a clear *ſound*, as bells, muſical chords, *&c.* Thirdly, that this motion is communicated to, or produces a like motion in the air, or ſuch parts of it, as are fit to receive and propagate it; inaſmuch as no motion of bodies at a diſtance, can affect our ſenſes, without the mediation of other bodies which receive thoſe motions from the ſonorous body, and communicate them immediately to the organ. Laſtly, that this motion muſt be communicated to thoſe parts that are the proper and immediate inſtruments of hearing.

Further, that motion of a ſonorous body, which is the immediate cauſe of *ſound*, may be owing to two different cauſes; either the percuſſion between it and other hard bodies: as in drums, bells, chords, *&c.* or the beating and daſhing of the ſonorous body and the air, immediately againſt each other: as in wind inſtruments, as in flutes, trumpets, *&c.*

But in both caſes, the motion, which is the conſequence of the mutual action, and the immediate cauſe of the ſonorous motion which the air conveys to the ear, is an inviſible, tremulous or undulating motion in the ſmall and inſenſible parts of the body.

To explain this; all ſenſible bodies are ſuppoſed to conſiſt of a number of ſmall and inſenſible parts or corpuſcles, which are of the ſame nature in all bodies, perfectly hard and incompreſſible. See CORPUSCLE.

Of theſe, are compoſed others, ſomewhat greater, but ſtill inſenſible; and theſe different, according to the different figures and union of their component parts. Theſe, again, conſtitute other maſſes bigger and more different than the former; and of the various combinations of theſe laſt, are thoſe groſs bodies compoſed, that are viſible, tangible, *&c.* The firſt and ſmalleſt parts, we have obſerved, are abſolutely hard; the others are compreſſible, and united in ſuch manner, that being compreſſed by an external impulſe, they have an elaſtic or reſtitutive power, whereby they reſtore themſelves to their natural ſtate. See ELASTICITY.

A ſhock, then, being made by one body upon another, the ſmall particles, by their elaſtic principle, move to and again with a very great velocity, in a tremulous, undulating manner, ſomewhat like the viſible motions of groſſer ſprings; as we eaſily obſerve in the chords of muſical inſtruments. And this is what we may call the *ſonorous motion*, which is propagated to the ear: but obſerve, that it is the inſenſible motion of thoſe particles next the ſmalleſt, which is ſuppoſed to be the immediate cauſe of *ſound*; and of theſe, only thoſe next the ſurface, communicate with the air: the motion of the whole, or of the greater parts, being no further concerned, than as they contribute to the other.

To apply this theory; ſtrike a bell with any hard body, and you eaſily perceive a ſenſible tremor in the ſurface, ſpreading itſelf over the whole; and that more ſenſibly, as the ſhock is greater. Upon touching it in any other part, the motion and the *ſound* too, are ſtopped. Now this is apparently a motion of the ſmall and inſenſible parts, changing their ſituations, with reſpect to one another, which being ſo many, and ſo cloſely united, we cannot perceive their motions ſeparately and diſtinctly; but only a trembling, which we reckon to be the effect of the confuſion of an infinite number of little particles, cloſely joined, and only moving in infinitely little lines.

Mr. Perrault adds, that the viſible motion of the parts, contributes no otherwiſe to *ſound*, than as it cauſes the inviſible motion of the ſmaller parts, which he calls *particles*, to diſtinguiſh them from the ſenſible ones, which he calls *parts*, and from the ſmalleſt of all, which we call *corpuſcles*.

This he ſupports from the inſtance of a chord, which being ſtruck, and the *ſound*, and ſenſible undulations at reſt again, if you approach the chord ſoftly with the finger, you will find a ſmall tremulous motion, which is the remains of the vibrations of the whole chord, and the parts. Now the parts vibrate without any *ſound*; but no ſooner is the vibration felt by the finger, than the *ſound* is heard again; which he aſcribes to this, that the motion of the parts being inſufficient to move the particles, whoſe motion is the firſt that ceaſes, requires ſome aſſiſtance from daſhing againſt the finger, whereby to become enabled to give the particles the motion neceſſary for the producing of *ſound*. He finiſhes his proof, by the inſtance of flutes; which when made of different matters, as wood, metal, *&c.* whoſe parts are very different, but their particles nearly the ſame, if their lengths and bores be the ſame; there is very little ſenſible difference in their *ſounds*.

The ſonorous body having made its impreſſion on the contiguous air, that impreſſion is propagated from one particle to another, according to the laws of pneumaticks.

A few particles, for inſtance, driven from the ſurface of the body, drive their neighbouring particles into a leſs ſpace; and the medium, as it is thus rarified in one place, becomes condenſed in the other: but the air thus compreſſed in the ſecond place, is, by its elaſticity, returned back again, both to its former place, and its former ſtate; and the air, contiguous to that, is compreſſed: and the like obtains, when the air leſs compreſſed expanding itſelf, a new compreſſion is generated. From each agitation of the air, therefore, there ariſes a motion of the air, analogous to the motion of a wave on the ſurface of the water; which we call a *wave* or *undulation* of air. See UNDULATION.

In each wave, the particles go and return back again, through very ſhort, but equal ſpaces; the motion of each particle is analogous to the motion of a vibrating pendulum, while it performs two oſcillations; and moſt of the laws of the pendulum, with very little alteration, are applicable thereto. See PENDULUM.

Sounds are as various, as are the means that concur to their production.—The principal varieties reſult from the figure, conſtitution, quantity, *&c.* of the ſonorous body, the manner of percuſſion, with the velocity, *&c.* of the vibrations conſequent thereon; the ſtate and conſtitution of the medium; the diſpoſition, diſtance, *&c.* of the organ; the obſtacles between the organ and the ſonorous object, and the adjacent bodies.—The moſt notable diſtinctions of *ſounds*, ariſing from the various degrees and combinations of the conditions mentioned, are into *loud* and *low* (or ſtrong and weak) into *grave* and *acute* (or ſharp and flat, or high and low) and into *long* and *ſhort*. The management whereof, makes the office of muſic. See SOUND *in muſic*.

The velocity of *ſound* is the ſame, with that of the aerial waves; and does not differ much, whether it go with the wind or againſt it. By the wind, indeed, a certain quantity of air is carried from one place to another; and the *ſound* is accelerated, while its waves move through that part of the air, if their direction be the ſame as that of the wind. But as *ſound* moves vaſtly ſwifter than wind, the acceleration it will hereby receive, is inconſiderable. In effect, the moſt violent winds we know of, have their celerity to that of *ſound*, only as 1 to 33; and all the effect we can perceive from the wind, is, that it increaſes and diminiſhes the ſpace of the waves; ſo that by help hereof the *ſound* may be heard to a greater diſtance than otherwiſe it would.

That the air is the ordinary medium of *ſound*, appears from various experiments, in rarified and condenſed air.—In an unexhauſted receiver, a ſmall bell may be heard ſome diſtance; but when exhauſted, it can ſcarce be heard at the ſmalleſt diſtance. If the air be condenſed, the *ſound* will be louder proportionably to the condenſation, or quantity of air crouded in: of which we have many inſtances in Mr. Hauksbee's experiments; and this does not only ſucceed in forced rarefactions, *&c.* but in ſuch alſo, as are natural; as is evident from Fredlicius's ſtory of his journey to the top of mount Carpates in Hungary.

But it is not the air alone, that is capable of the impreſſions of *ſound*; but water alſo; as is manifeſt, by ſtriking a bell under water, the *ſound* of which may plainly enough be heard, only not ſo loud, and alſo a fourth deeper, by the ear of ſome good judges in muſical notes. Indeed Merſenne ſays, a *ſound* made under water, is of the ſame tone or note, as if made in air, and heard under water.

The velocity of *ſound* is variouſly reported by various authors.—Sir Iſaac Newton makes its progreſs, in a ſecond of time, to be 968 feet; the honourable Mr. Francis Roberts 1300 feet; Mr. Boyle 1200 feet; Dr. Walker 1338 feet; Merſenne 1474 feet; Mr. Flamſteed and Dr. Halley 1142 feet; the Florentine academy 1148 feet; the royal academy of Paris, 1172. The reaſon of which variety, Mr. Derham aſcribes partly to ſome of thoſe gentlemen uſing ſtrings and plummets inſtead of regular pendulums; partly to there not being diſtance enough between the ſonorous body and the place of obſervation; and partly, to there being no regard had to the winds.

Some of the moſt conſiderable queries, relating to the laws of *ſounds*, the ſame author propoſes; and anſwers ſeveral of them accurately, from experiments made for that purpoſe by himſelf, as follows:

How far does a *ſound* move in a ſecond of time?—*Sound* moves 1142 ſeconds in a ſecond, which is juſt an Engliſh mile in $9\frac{1}{4}$ or 9.25 half ſeconds; two miles in $18\frac{1}{2}$; three miles in $27\frac{3}{4}$, *&c.*

Does the report of a gun, diſcharged with its mouth towards us, come ſooner than when the muzzle is from the obſerver?—By repeated experiments, it appears, there is no difference in the *ſound*, from this different direction.

Do *ſounds* move in the ſame time, the ſame ſpaces, in all ſtates of the atmoſphere, and heights of the barometer, by day and by night, in ſummer and in winter, in ſnowy and in clear weather, in this or that climate?—By repeated experiments, it does not appear there ariſes any difference from any of theſe different circumſtances.

Do the winds affect the motion of *ſounds*?—By repeated experiments, it appears, there is ſome, though a very ſmall difference in the velocity of *ſounds*, with or againſt the wind; which is alſo augmented, or diminiſhed, by the ſtrength or weakneſs of the wind.

Do a great and intenſe *ſound*, and a ſmall or languid one, move with the ſame velocity?—It appears that they do.

Does the *ſound* of a gun move equally ſwift at all elevations of the gun?—It does.

Do different quantities or ſtrengths of gun-powder, occaſion any difference, as to the velocity of the *ſound*?—None.

Does *ſound* move in a right line, the neareſt way; or does it ſweep along the earth's ſurface? And is there any difference in the time, if the piece be diſcharged in an acclive and a declive poſition?—*Sound* moves the neareſt way; and the velocity appears to be the ſame in acclivities as in declivities.

Have all kinds of *ſounds*, as thoſe of guns, bells, *&c.* the ſame velocity? And are *ſounds* equally ſwift in the beginning of their motion, and in the end?—There appears no inequality in either of theſe reſpects.

For the *reflection*, *refraction*, *&c.* of SOUND; ſee ECHO and PHONICKS.

Articulate SOUNDS. See the article ARTICULATE.

SOUND, in muſic, denotes a quality in the ſeveral agitations of the air, conſidered as their diſpoſition, meaſure, *&c.* may make muſic or harmony. See MUSIC and HARMONY.

Sound is the object of muſic; which is nothing but the art of applying *ſounds*, under ſuch circumſtances of tone and time, as to raiſe agreeable ſenſations. See TUNE, *&c.*

The principal affection of *ſound*, whereby it becomes fitted to have this end; is that, whereby it is diſtinguiſhed into *acute*, and *grave*. See GRAVITY, *&c.*

This difference depends on the nature of the ſonorous body; the particular figure and quantity thereof; and even, in ſome caſes, on the part of the body where it is ſtruck; and is that which conſtitutes what we call *different tones*. See TONE.

The cauſe of this difference appears to be no other than the different velocities of the vibrations of the *ſounding* body. In effect, the tone of a *ſound*, is found, by abundance of experiments, to depend on the nature of thoſe vibrations, whoſe differences we can conceive no otherwiſe, than as having different velocities: and ſince it is proved, that the ſmall vibrations of the ſame chord, are all performed in equal time; and that the tone of a *ſound*, which continues for ſome time after the ſtroak, is the ſame from firſt to laſt: it follows, that the tone is neceſſarily connected with a certain quantity of time in making each vibration, or each wave; or that a certain number of vibrations or waves, accompliſhed in a given time, conſtitute a certain and determinate tone.—From this principle, are all the phænomena of *tune* deduced. See TUNE.

From the ſame principle, ariſe what we call *concords*, &c. which are nothing but the reſults of frequent unions and coincidences of the vibrations of two ſonorous bodies, and conſequently of the waves and undulating motions of the air, occaſioned thereby. See CONCORD.

On the contrary, the reſult of leſs frequent coincidences of thoſe vibrations, is what we call a *diſcord*. See DISCORD.

Another conſiderable diſtinction of SOUNDS, with regard to muſic, is that, whereby they are denominated *long* and *ſhort*; not with regard to the ſonorous body's retaining a motion once received, a longer or a leſs time, though gradually growing weaker; but to the continuation of the impulſe of the efficient cauſe on the ſonorous body, for a longer or a ſhorter time, as in the notes of a violin, *&c.* which are made longer or ſhorter, by ſtrokes of different length or quickneſs.

This continuity, is, properly, a ſucceſſion of ſeveral *ſounds*, or the effect of ſeveral diſtinct ſtrokes, or repeated impulſes on the ſonorous body, ſo quick, that we judge it one continued *ſound*; eſpecially if it be continued in the ſame degree of ſtrength: and hence ariſes the doctrine of *meaſure* and *time*. See TIME.

Sounds, again, are diſtinguiſhed, with regard to muſic, into *ſimple* and *compound*; and that two ways.—In the firſt, a *ſound*

ſound is ſaid to be *compound*, when a number of ſucceſſive vibrations of the ſonorous body and the air, come ſo faſt upon the ear, that we judge them the ſame continued *ſound*; as in the phænomenon of the circle of fire, cauſed by putting the fired end of a ſtick in a quick, circular motion: where, ſuppoſing the end of the ſtick in any point of the circle, the idea we receive of it there, continues till the impreſſion is renewed by a ſudden return.

A *ſimple* Sound, then, with regard to this compoſition, ſhould be the effect of a ſingle vibration, or of ſo many vibrations as are neceſſary to raiſe in us the idea of *ſound*.—In the ſecond ſenſe of compoſition, a *ſimple ſound* is the product of one voice, or one inſtrument, *&c.*

A *compound* Sound, conſiſts of the *ſounds* of ſeveral diſtinct voices or inſtruments all united in the ſame individual time and meaſure of duration, that is, all ſtriking the ear together, whatever their other differences may be.—But in this ſenſe, again, there is a two-fold compoſition; a natural and artificial one.

The natural compoſition, is that proceeding from the manifold reflexions of the firſt *ſound* from adjacent bodies, where the reflexions are not ſo ſudden, as to occaſion echo's; but are all in the ſame tune with the firſt note. See Resonance.

The artificial compoſition, which alone comes under the muſician's province, is, that mixture of ſeveral *ſounds*, which being made by art, the ingredient *ſounds* are ſeparable, and diſtinguiſhable from one another.—In this ſenſe, the diſtinct *ſounds* of ſeveral voices or inſtruments, or ſeveral notes of the ſame inſtrument, are called *ſimple ſounds*; in contradiſtinction to the *compound* ones, wherein, to anſwer the end of muſic, the ſimples muſt have ſuch an agreement in all relations, chiefly as to acuteneſs and gravity, as that the ear may receive the mixture with pleaſure. See Composition.

Another diſtinction of Sounds, with regard to muſic, is that, whereby they are ſaid to be *ſmooth* and *even*, or *rough* and *harſh*, alſo *clear* and *hoarſe*; the cauſe of which differences, depends on the diſpoſition and ſtate of the ſonorous body, or the circumſtances of the place: but the ideas of the differences muſt be ſought from obſervation.

Smooth and *rough ſounds* depend, principally, on the *ſounding* body; of theſe we have a notable inſtance in ſtrings that are uneven, and not of the ſame dimenſion or conſtitution throughout.

M. Perrault, to account for roughneſs and ſmoothneſs, maintains, there is no ſuch thing as a ſimple *ſound*; but that the *ſound* of the ſame chord or bell, is a compound of the *ſounds* of the ſeveral parts of it; ſo that where the parts are homogeneous, and the dimenſions, or figure uniform, there is always ſuch a perfect mixture and union of all the *ſounds*, as makes one uniform and ſmooth *ſound*: contrary conditions, produce harſhneſs. In effect, a likeneſs of parts and figure, makes an uniformity of vibrations, whereby a great number of ſimilar and coincident motions conſpire to fortify and improve each other, and unite, for the more effectual producing of the ſame effect.

This account he confirms, from the phænomenon of a bell, which differs in tone, according to the part it is ſtruck in; and yet ſtrike it any where, there is a motion over all the parts. Hence, he conſiders the bell as compoſed of an infinite number of rings, which, according to their different dimenſions, have different tones; as chords of different lengths have; and when ſtruck, the vibrations of the parts immediately ſtruck, ſpecify the tone, being ſupported by a ſufficient number of conſonant tones in other parts. This muſt be allowed, that every note of a ſtringed inſtrument, is the effect of ſeveral ſimple *ſounds*: for there is not only the *ſound* reſulting from the motion of the ſtring; but that from the motion of the parts of the inſtrument, which has a conſiderable effect in the total *ſound*, as is evident from hence, that the ſame ſtring on different violins, *ſounds* very differently.

But Perrault affirms the ſame of every ſtring in itſelf, and without conſidering the inſtrument. Every part of the ſtring, he ſays, has its particular vibrations, different from the groſs and ſenſible vibrations of the whole; and theſe are the cauſes of different motions and *ſounds* in the particles, which uniting, compoſe the whole *ſound* of the ſtring, and make an uniform compoſition, wherein the tone of the particular part ſtruck, prevails; and all the others mix under a due ſubordination with it, ſo as to make the compoſition ſmooth and agreeable. If the parts be unevenly, or irregularly conſtituted, the *ſound* is harſh; which is the caſe in what we call *falſe ſtrings*, and various other bodies; which, for this reaſon, have no certain and diſtinct tone, but a compoſition of ſeveral tones, which do not unite and mix, ſo as to have one predominant, to ſpecify the total tone.

As to *clear* and *hoarſe ſounds*, they depend on circumſtances that are accidental to the ſonorous body: thus a voice or inſtrument will be hollow and hoarſe, if raiſed within an empty hogſhead; that yet is clear and bright out of it: the effect is owing to the mixture of other and different *ſounds*, raiſed by reflexion, which corrupt and change the ſpecies of the primitive *ſound*.

For *ſounds* to be fit to obtain the end of muſic, they ought to be ſmooth and clear, eſpecially the firſt; ſince without this, they cannot have one certain and diſcernible tone, capable of being compared to others, in a certain relation of acuteneſs, of which the ear may judge; and of conſequence can be no part of the object of muſic.

Upon the whole, then, with Mr. Malcolm, we call that an *harmonic* or *muſical ſound*, which being clear and even, is agreeable to the ear, and gives a certain and diſcernible tune; (hence called *tunable ſound*) which is the ſubject of the whole theory of harmony. See Harmony.

Harmonical Sound. See the article Harmonical.

Sound, in geography, denotes a ſtreight, or inlet of the ſea, between two capes or head-lands. See Streight.

The Sound is uſed, by way of eminence, for that famous ſtreight, which joins the German ſea to the Baltic.

It is ſituate between the iſland of Zealand and the coaſt of Schonen. It is about ſixten leagues long, and generally five broad, excepting againſt the caſtle of Cronenberg, where it is but one: ſo that there is no paſſage for veſſels, but under the cannon of the fortreſs.

This has given occaſion to the Danes to ſettle a toll on all veſſels, which is ſaid to be one of the beſt revenues of the crown of Denmark; and to forbid all pilots from paſſing through the great and little belt, which are two other inlets into the Baltic, though ſomewhat leſs commodious than the former.

All nations who traffic into this part of the North, are ſubject to this right; the Swedes, indeed, were exempted from it by the treaty of 1644; but by the treaty of 1720, they are excluded the privilege; and put on the ſame footing with their neighbours.

By the treaty of Spire made between the Danes and Charles V. the toll for this paſſage was fixed at 2 roſe nobles for a ſhip of 200 tuns: yet in the year 1640 the ſame was riſen to upwards of 500 rix dollars.

The connivance of our K. James I. who had married a daughter of Denmark, and the wars which the Hollanders had been long engaged in for their liberty, furniſhed the occaſion for ſo grievous an exaction.—Of late years the toll has been reduced to an eaſier footing.

Cromwell was bent on extorting this paſſage from the Danes; and had, probably, effected it, but that ere the fleet he ſent for the purpoſe arriv'd there, he died.

The origin and progreſs of this impoſition (which from an eaſy contribution voluntarily paid by merchants for maintaining lights on certain places of the coaſt, and whereof the K. of Denmark was only treaſurer or truſtee, grew at length to be a heavy burthen on trade, as well as a kind of ſervile acknowledgment of his ſovereignty of theſe ſeas) is given in the account of Denmark, c. 3. p. 11 *ſeqq.*

SOUND-BOARD, the principal part of an organ, and that which makes the whole machine play. See Organ.

The *ſound-board* or *ſummer*, is a reſervoir, into which the wind drawn in by the bellows, is conducted by a port-vent, and hence diſtributed into the pipes placed over the holes of its upper part. This wind enters them by valves, which open by preſſing upon the ſtops or keys, after drawing the regiſters, which prevent the air from going into any of the other pipes, but thoſe it is required in.

Organs, whoſe longeſt blind pipes are four foot, have their *ſound-board* from five to ſix feet. Organs of 16 feet have two *ſound-boards*, which communicate the wind from one to the other, by a pewter port-vent.

SOUNDING, in navigation, the act of trying the depth of the water, and the quality of the bottom, by a line and plummet, or other artifice.

There are two kinds of lines occaſionally uſed in *ſounding* the ſea; the *ſounding line* and the *deep ſea line.* See Deep *ſea line.*

The Sounding *line*, is the thickeſt and ſhorteſt, as not exceeding 20 fathom in length; and marked at two, three, and four fathoms, with a piece of black leather between the ſtrands; and at five, with a piece of white leather.

The *ſounding line* may be uſed when the ſhip is under ſail, which the deep ſea-line cannot.—The plummet is uſually in form of a nine-pin, and weighs 18 pounds; the end is frequently greaſed, to try whether the ground be ſandy or rocky, *&c.*—Near banks, ſhores, *&c.* they are to be *ſounding* continually.

Dr. Hook has invented a manner of *ſounding* the depth of the deepeſt ſea, without any line; only by a wooden globe, lighter than water, to which, at a little diſtance is a piece of lead or ſtone fixed, by means of a ſpringing wire in the firſt, fitted into a ſtaple in the ſecond. The whole being let gently down, with the ſtone or lead foremoſt, as ſoon as that arrives at the bottom, it will ſtop; but the ball, by the impetus it has acquired in deſcending, will be carried a little lower after the weight is ſtopped; by which means the ſpringing wire will be enabled to fly back, and diſingaging itſelf, will re-aſcend.—By obſerving, then, the time of the ball's ſtay under water by a watch or pendulum, and the help of ſome tables, the depth of the ſea is found.

In ſome experiments made in the Thames with a maple globe, $5\frac{11}{15}$ inches in diameter, and weighing 4 pound and a half, lined with pitch; and a conical weight 11 inches long, the ſharp end downwards; at the depth of 19 feet, there paſſed ſix ſeconds; and at the depth of 10 feet $3\frac{1}{2}$ ſeconds between the immerſion and emerſion of the ball. From theſe numbers given, the depths, at any other ſtays, may be computed by the rule of three.

SOUP *, or SOOP, a kind of potage made of bread, and broth, or the juice of fleſh, or other matters; uſually ſerved at the beginning of a meal.

* The word is French, formed from the Italian, *zuppa* or *ſuppa*, of the Latin, *ſapa*, wine boiled away to a third part. Others derive it from the Celtic, *ſouben*, which ſignifies the ſame.

Soup is eſteemed eſſential to a French dinner. Sometimes they heighten the reliſh by the addition of onions, or leeks, or cabbage or turnips, *&c.*

SOURCE. See the article SPRING.

SOUTH *direct dials*. See the article DIAL.

SOUTH *ſea company*. See the article COMPANY.

SOUTHERN *hemiſphere*, } See { HEMISPHERE.
SOUTHERN *ocean*, } See { OCEAN.

SOUTHERN *ſigns*. See the article SIGN.

SOWING. See SEMINATION and SEMBRADOR.

SOWNE, a term uſed in the exchequer; ſeeming to be a corruption from the French *ſouvenu*, remembred.

Such eſtreats and caſualties as the ſheriff by his induſtry cannot get or levy, are ſaid to be eſtreats that *ſowne* not, that is, are not to be remembred, or are not in demand.—On the contrary, eſtreats that *ſowne*, are ſuch as he may gather. See ESTREAT.

SPA, a town in the biſhoprick of Liege in Germany, famous for its mineral waters. Thoſe of the Pouhon ſpring in *Spa* are preferr'd, by our chief phyſicians *, to any others in or near the country of Liege; particularly to the waters of Bru; which they complain have been impoſed on the public, to their and their patients frequent diſappointment.

* Broxholme, Burton, Hawys, Hollings, Lee, Mead, Pellet, Robinſon, Shadwel, Sloane, Stuart, Weſt: who were pleaſed to recommend Mr. Eyre, for his integrity, as a proper perſon to be entruſted with the patent granted him by the prince and biſhop of Liege, impowering him to impreſs his highneſs's arms in glaſs on the neck of each flaſk, which he ſhould fill with the true Pouhon water.

SPAAD, or SPALT, SPATUM, a ſpecies of Engliſh talc or gypſum; being a white, fibrous, ſcaly, ſhining ſtone, ſometimes uſed to promote the fuſion of metals. See TALC.

It is found pretty frequently in England and Germany; and ſometimes brought from the Levant: the beſt is in long ſcales, very ſoft, and eaſily pulverized.—The Engliſh *ſpalt* it generally very hard.

SPACE, SPATIUM, a ſimple idea, the modes whereof, are diſtance, capacity, extenſion, duration, *&c.* See MODE, EXTENSION, DURATION, *&c.*

Space, conſidered barely in length between any two bodies, is the ſame idea which we have of diſtance. See DISTANCE.

If it be conſidered in length, breadth, and thickneſs, it is properly called *capacity*. See CAPACITY.

When conſidered between the extremities of matter, which fills the capacity of *ſpace* with ſomething ſolid, tangible and moveable, it is then called *extenſion*. See EXTENSION.

So that extenſion is an idea belonging to body only; but *ſpace*, it is plain, may be conſidered without it. See BODY and VACUUM.

Space, therefore, in the general ſignification, is the ſame thing with diſtance conſidered every way, whether there be any ſolid matter in it, or not.

Each different diſtance is a different modification of *ſpace*; and each idea of any different *ſpace*, is a ſimple mode of this idea. Such are an inch, foot, yard, *&c.* which are the ideas of certain ſtated lengths, which men ſettle in their minds for the uſe, and by the cuſtom of meaſuring.—When theſe ideas are made familiar to mens thoughts, they can in their minds repeat them as often as they will, without joining to them the idea of body, and frame to themſelves the ideas of feet, yards, and fathoms, beyond the utmoſt bounds of all bodies; and by adding theſe ſtill to one another, enlarge their idea of *ſpace*, as much as they pleaſe.

From this power of repeating any idea of diſtance, without being ever able to come to an end, we come by the idea of immenſity. See IMMENSE and INFINITE.

Another mode, or modification of *ſpace*, is taken from the relation of the parts of the termination of extenſion, or circumſcribed *ſpace* amongſt themſelves; and this is what we call *figure*.—This, the touch diſcovers in ſenſible bodies, whoſe extremities come within our reach; and the eye takes, both from bodies and colours whoſe boundaries are within its view; where, obſerving how the extremities terminate, either in ſtreight lines, which meet at diſcernible angles; or in crooked lines, wherein no angles can be perceived; by conſidering theſe as they relate to one another in all parts of the extremities of any body or *ſpace*, it acquires the idea we call *figure*: which affords to the mind infinite variety. See FIGURE.

Another mode belonging to this head, is that of *place*. Our idea of place is nothing but the relative poſition of any thing, with reference to its diſtance from ſome fixed and certain points: whence we ſay, that a thing has, or has not changed place, when its diſtance either is, or is not altered with reſpect to thoſe bodies, with which we have occaſion to compare it. That this is ſo, we may eaſily gather from hence; that we can have no idea of the place of the univerſe: though we can of all its parts. See PLACE.

Another mode of *ſpace*, is the idea which we get from the fleeting, and perpetually periſhing parts of ſucceſſion, which we call *duration*. The ſimple modes of it are any different lengths of it, whereof we have diſtinct ideas, as hours, days, years, *&c.* time, and eternity. The idea of ſucceſſion is got by reflecting on that train of ideas, which conſtantly follow one another in our minds, as long as we are awake. See SUCCESSION.

The diſtance between any parts of this ſucceſſion is what we call *duration*: and the continuation of the exiſtence of ourſelves, or any thing elſe commenſurate to the ſucceſſion of any ideas in our minds, is what we call *our own duration*, or that of another thing co-exiſting with our thinking.

A man having once got this idea of duration, can apply it to things which exiſt while he does not think: and thus we meaſure the time of our ſleep, as well as that wherein we are awake. See DURATION.

Space is uſually divided into *abſolute* and *relative*.

Abſolute SPACE, is that conſidered in its own nature, without regard to any thing external; which always remains the ſame, and is infinite and immoveable.

Relative SPACE, is that moveable dimenſion, or meaſure of the former, which our ſenſes define by its poſitions to bodies within it; and this the vulgar uſe for immoveable *ſpace*.

Relative *ſpace*, in magnitude and figure, is always the ſame with abſolute; but it is not neceſſary it ſhould be ſo numerically: as if you ſuppoſe a ſhip to be, indeed, in abſolute reſt, then the places of all things within her, will be the ſame abſolutely and relatively, and nothing will change its place: but, ſuppoſe the ſhip under ſail, or in motion, and ſhe will continually paſs through new parts of abſolute *ſpace*: but all things on board, conſidered relatively, in reſpect to the ſhip, may be, notwithſtanding, in the ſame places, or have the ſame ſituation and poſition, in regard to one another.

Proper and abſolute motion, is defined to be the application of a body to different parts of abſolute, that is, of infinite and immoveable *ſpace*. See PLACE, MOTION and REST.

The Carteſians, who make extenſion the eſſence of matter, aſſert, that the *ſpace* any body takes up, is the ſame thing with the body itſelf; and that there is no ſuch thing as mere *ſpace*, void of all matter, in the univerſe: but this ſee diſproved under the article VACUUM.

SPACE, in geometry, denotes the area of any figure; or that which fills the interval or diſtance between the lines that terminate it. See AREA and FIGURE.

The *parabolic ſpace*, is that included in the whole parabola. See PARABOLA and PARABOLIC.

The *conchoidal ſpace*, and the *ciſſoidal ſpace*, are what are included within the cavities of the conchoid and ciſſoid.

By the new methods now introduced, of applying algebra to geometry, it is demonſtrated, that the conchoidal and ciſſoidal *ſpaces*, though infinitely extended, are yet finite magnitudes. See CONCHOID and CISSOID.

Cycloidal SPACE, } See the articles { CYCLOIDAL.
Elliptical SPACE, } See the articles { ELLIPTICAL.

SPACE, in mechanicks, the line a moveable body, conſidered as a point, is conceived to deſcribe by its motion. See MOTION.

SPADE.—*Turfing* SPADE, } See the articles { TURFING.
SPADING, } See the articles { SPAYING.

SPAGYRIC *, an epithet given to chymiſtry; which is called the *ſpagyric art*, or *medicina ſpagyrica*; and to chymical phyſicians, who are alſo called *ſpagyriſts*. See CHYMISTRY and CHYMIST.

* Voſſius derives the word from the Greek, *σπαν*, to extract, and *αγειρειν*, *congregare*, to collect; which are the two principal offices of chymiſts.—Paracelſus firſt introduced the word.

SPAGYRICAL *phyſicians*. See the article PHYSICIAN.

SPAHI'S, horſe-men in the Ottoman army; chiefly raiſed in Aſia.

The great ſtrength of the grand ſeignior's army conſiſts in the janizaries, who are the foot, and the *ſpahi's*, who are the horſe. See JANIZARY, *&c.*

The aga or commander of the *ſpahi's*, is called *ſpahi agaſi*. See AGA.

SPAN, a meaſure taken from the ſpace between the thumb's end, and the tip of the little finger, when both are ſtretched out. See PALM.

The *ſpan* is eſtimated at three hand's-breadths, or nine inches. See MEASURE.

SPANISH, or SPANISH *language*. See LANGUAGE.

SPANISH *black*,	See the articles	BLACK.
SPANISH *coinage*,		COINAGE.
SPANISH *coins*,		COIN.
SPANISH *epocha*,		EPOCHA.
SPANISH *flies*,		CANTHARIDES.
SPANISH *inquiſition*,		INQUISITION.
SPANISH *meaſures*,		MEASURE.
SPANISH *money*,		MONEY.
SPANISH *order*,		ORDER.
SPANISH *plough*,		PLOUGH.
SPANISH *academy*,		ACADEMY.
SPANISH *ſilks*,		SILK.
SPANISH *wax*,		WAX.
SPANISH *white*,		WHITE.

SPAR, in natural hiſtory, a ſhining, ſtony, mixt ſubſtance, compounded of cryſtal, incorporated with lac lunæ, or other mineral, earthy, ſtony, or metallic matter; frequently found in caves and grotto's, and in the clefts of rocks, lead-mines, *&c.* See STONE, GROTTO, MINERAL, CRYSTAL, *&c.* Mr. Beaumont, in the Philoſophical Tranſactions, endeavours to account for the origin and growth of *ſpar*; which he makes to be a kind of rock-plant.

Spar, he obſerves, may be formed three ways; either from ſteams alone; or from ſteams coagulating dew, as it falls on the ground, or waters iſſuing from the joints of rocks: or, it may grow from earths and clays. To ſay nothing of the account we have from Switzerland, *viz.* that ſnow, by long lying and continual froſts, becomes hardened into *ſpar*.

We have inſtances of the firſt kind in many grotto's where *ſpars* produced from ſteams, hang like icicles; lead ore being often found to grow in the ſame manner. And as this *ſpar* grows downwards; ſo in many places, from the ſides of it, iſſue little plants of *ſpar*, ſhooting upwards, contrary to the tendency of the others. An inſtance of the ſecond, we have in a certain place in Italy, where cryſtals (which are a ſort of *ſpars*) are produced in clear evenings, from a coagulation of dew falling on nitrous ſtones. But hereof we have inſtances enough nearer home. See STALACTITES.

For the third kind of generation of *ſpar*, never before taken notice of by naturaliſts; Mr. Beaumont gives us inſtances of it in Mendip hills, and other mines, wherein are ſubterraneous vaults or grotto's. In the bottoms of ſome of theſe, is a ſteam incumbent thereon. From this earth, ſhoot up ſpires of various heights, *&c.* from the firſt buddings out of it, till it become as high as a man's finger; the biggeſt ordinarily an inch in diameter. Theſe ſpires have all irregular ridges and furrows; and ſome ſooner, ſome later, begin on the tops to be congealed into *ſpar*; and ſo gathering a cruſt downwards by degrees, are all at laſt, turned into an abſolute white *ſpar* or ſtone. See PETRIFACTION.

SPARADRAP, SPARADRAPUM, in pharmacy, *&c.* an ancient name for a kind of ſear-cloth; or a linen cloth ſmeared on both ſides with ſome kind of plaiſter, or unguent. See SEAR-CLOTH and CERATE.

The *ſparadrap* is ſometimes alſo called *tela Gualteriana*, or *tela Gualteri*; ſometimes, *tela emplaſtica*.

It is prepared by melting a ſufficient quantity of ſome plaiſter or unguent, and dipping a linen cloth therein, till ſuch time as it have imbibed its fill. It is then taken out, cooled and poliſhed on a marble.

There are as many different kinds of *ſparadraps*, as there are of plaiſters for the cloth to be dipped in.

SPARRING, among cock-fighters, is the fighting a cock with another to breathe him.—In *ſparring*, they put hots on their ſpurs, that they may not hurt one another.—To *ſpar the cock*, imports in general, to breathe him, in order to embolden him to fight.

SPASM, SPASMA, or SPASMUS, ΣΠΑΣΜΑ, or ΣΠΑΣΜΟΣ, a Greek term, of equal import with the Latin, *convulſio*, and Engliſh, *convulſion*. See CONVULSION.

A *ſpaſmus* happening after the taking of hellebore, or any other violent purgative, is mortal.—There are *ſpaſms* peculiar to certain members, and diſtinguiſhed by particular names: that of the mouth is called *ſpaſmus cynicus*; that of the penis, *ſatyriaſis*, &c. See PRIAPISMUS, CYNICUS, *&c.*

Cardan diſtinguiſhes two kinds of *ſpaſms*: the firſt conſiſting in a conſtant contraction of the muſcles, which renders the members rigid, and inflexible. The ſecond, in ſudden, unnatural motions and palpitations, frequently intermitting and beginning again.

Accidental *ſpaſms* are of ſhort continuance: there are ſome ariſing from flatulencies; others from bites of venomous beaſts, from the puncture of a nerve, the acrimony of the humours vellicating the ſtomach, exceſſive cold, hyſteric vapours, *&c.*

SPASMODIC, ſomething belonging to a *ſpaſm*, or convulſion; as a *ſpaſmodic medicine*, *ſpaſmodic diſeaſe*, &c. See SPASM and CONVULSIVE.

Hunger, according to M. Hecquet, is a *ſpaſmodic* affection of the fibres of the ſtomach; unleſs it ariſe from the fibres being too much moiſtened by the liquor thereof, ſo as to incapacitate them for their office. See HUNGER.

SPATULA *, or SPATHULA, an inſtrument uſed by ſurgeons, and apothecaries; made flat at one end, and round at the other: ſerving to ſpread their plaiſters, and unguents withal.

* The word is formed from the Latin, *ſpatha*, of the Greek, σπαθιον, which ſignifies the ſame.

The ſurgeons have little ſteel *ſpatula's*.—The apothecaries have alſo large ones of wood, to ſtir their drugs in diluting, tempering, or boiling them.

SPAVIN *, a diſeaſe in a horſe; being a ſwelling, or ſtiffneſs uſually in the ham, which cauſes him to halt.

* The word is formed from the French, *eſparvin*, which ſignifies the ſame.

There are two kinds of *ſpavins*, viz. the

Ox-SPAVIN, which is a callous tumour, at the bottom of the ham, on the inſide; hard as a bone, and very painful.—While it is yet young, ſome horſes only halt with it, at the firſt coming out of the ſtable.

Dry-SPAVIN, which is more eaſily perceived, by the horſe's raiſing one of his hind-legs, with a twitch, higher than the other: ſometimes it is found on both legs.

This kind, which ſome alſo call *ſtring-halt*, frequently degenerates into the *ox-ſpavin*; for which there is no remedy, but to apply the fire; which, however, is not always ſucceſsful. See STRINGHALT.

There are two other kinds of *ſpavin*, which have their ſeat in the hoof, *viz.* the

Blood SPAVIN, a ſoft tumour which grows through a horſe's hoof, and is uſually full of blood.

Bone SPAVIN, a cruſty ſubſtance growing on the inſide of the hoof under the joint.

SPAWS, mineral waters ariſing out of the earth; tinged with nitre, ſulphur, allum, bitumen, copperas, or other mineral matter in paſſing through the ſtrata thereof; and hence endued with ſome medicinal qualities, cathartic, diuretic, emetic, alterant, or the like. See SPA, WATER, SPRING, MINERAL, *&c.*

SPAYING, or SPADING, the operation of caſtrating the females of ſeveral kinds of animals, as ſows, bitches, *&c.* to prevent any further conception, and promote their fattening. See CASTRATION.

It is performed, by cutting them in the mid flank, on the left ſide, with a ſharp knife or lancet, taking out the uterus and cutting it off, and ſo ſtitching up the wound, anointing the ſore with tar, and keeping the animal warm for two or three days.

The uſual way, is to make the inciſion a-ſlope, two inches and a half long, that the fore-finger may be put in towards the back, to feel for the ovaries, which are two kernels as big as acorns on both ſides the uterus, one of which is drawn to the wound, the ſtring thereof cut, and thus both taken out.

SPEAKER *of the houſe of commons*, a member of the houſe elected by a majority of the votes thereof, to act as chairman, or preſident, in putting queſtions, reading briefs or bills, keeping order, reprimanding the refractory, adjourning the houſe, *&c.* See COMMONS.

The firſt thing done by the commons upon the firſt meeting of a parliament, is to chuſe a *ſpeaker*; who is to be approved of by the king; and who upon his admiſſion, begs his majeſty, that the commons, during their ſitting, may have *free acceſs to his majeſty*; *freedom of ſpeech in their own houſe*, and *ſecurity from arreſts*.

The *ſpeaker* is not allowed to perſuade or diſſuade, in paſſing of a bill; but only to make a ſhort and plain narrative; nor to vote, unleſs the houſe be equally divided. See PARLIAMENT.

The lord chancellor, or keeper, is uſually *ſpeaker of the houſe of lords*. See CHANCELLOR.—The *ſpeaker of the convocation*, is called the *prolocutor*. See PROLOCUTOR.

SPEAKING, the art or act of expreſſing one's thoughts in articulate ſounds or words. See WORD and VOICE; ſee alſo SPEECH and GRAMMAR.

Pliny, Ælian, Plutarch and other authors, make mention of ſeveral beaſts that have *ſpoke*: and Pliny himſelf, ſpeaks with aſſurance, in his hiſtory, of an ox that *ſpoke*. Philoſtratus, in his life of Apollonius, gives the like privilege to an elm, and even to ſhips. Homer makes Xanthos, one of Achilles's horſe's, ſpeak; wherein he has been followed by Oppian. But theſe are all fabulous: we have much better authority for a ſerpent, and an aſs's *ſpeaking*. See LANGUAGE.

SPEAKING-*trumpet*. See TRUMPET and STENTOROPHONIC.

SPECIAL, ſomething that is particular, or has a particular deſignation; from the Latin, *ſpecies*.—In oppoſition to *general*, of *genus*. See GENERAL, PARTICULAR, SPECIES and GENUS.

The king in his letters, frequently ſays, of our *ſpecial grace*, full power and royal authority.

SPECIAL *aſſiſe*,	See the articles	ASSISE.
SPECIAL *attorney*,		ATTORNEY.
SPECIAL *fee tail*,		FEE *tail*.
SPECIAL *iſſue*,		ISSUE.

SPECIAL *tail.* See the article TAIL.

SPECIAL *verdict*, &c. See the article VERDICT, *&c.*

SPECIALTY, in law, is moſt commonly taken for a bond, bill, or other the like inſtrument in writing. See DEED, WRITING, *&c.*

Sometimes it is alſo uſed for a ſpecial or particular acquaintance.

SPECIES, an idea, which relates to ſome other more general one; or is comprized under a more univerſal diviſion of a genus. See GENUS.

The word is Latin, formed from the ancient verb, *ſpecio*, I ſee; as if a *ſpecies* of things were a collection of all the things ſeen at one view.

Species is a mere term of relation: and the ſame idea may be a *ſpecies*, when compared to another more general one; and a genus, with regard to a more particular one.—Thus body is a genus, with regard to an animate and inanimate body; and a *ſpecies*, with regard to ſubſtance.

The laſt *ſpecies*, is that which can only be divided into individuals. See INDIVIDUAL.

Animal is a *ſpecies*, with regard to body; and man is a *ſpecies* with regard to animal. God deſtroyed mankind by the deluge; but he preſerved the *ſpecies*. See DELUGE.

SPECIES, in logic, is one of the five words, called by Porphyry, *univerſals*. See UNIVERSAL.

SPECIES, in rhetoric, is a particular thing, contained under a more univerſal one.

The orators alſo call it *hypotheſis*: *E. gr.* virtue is to be loved, is the *genus* or *theſis*. Temperance is to be preſerved here, at this time, is the *ſpecies* or *hypotheſis*. See THESIS.

SPECIES, in the ancient muſic, denotes a ſub-diviſion of one of the genera. See GENUS.

The genera of muſic were three, the *enharmonic*, *chromatic*, and *diatonic*; the two laſt of which were variouſly ſubdivided into *ſpecies*: nor was the firſt without *ſpecies*, though thoſe had not particular names as the *ſpecies* of the other two had.—Theſe *ſpecies* were alſo called the *chroai*, colours of the genera.

SPECIES, in opticks, the image painted on the retina by the rays of light reflected from the ſeveral points of the ſurface of an object, received in at the pupilla, and collected, in their paſſage through the cryſtallin, *&c.* See VISION.

Philoſophers have been in great doubt, whether the *ſpecies* of objects, which give the ſoul an occaſion of ſeeing, are an effuſion of the ſubſtance of the body; or a mere impreſſion which they make on all ambient bodies, and which theſe all reflect, when in a proper diſtance and diſpoſition; or, laſtly, whether they are not ſome other more ſubtile body, as light, which receives all theſe impreſſions from bodies, and is continually ſent and returned from one to another, with the different figures and impreſſions it has taken.—But the moderns have decided this point by their invention of artificial eyes, wherein the *ſpecies* of objects are received on a paper or linen cloth in the ſame manner as they are received in the natural eye. See EYE.

The ancients have diſtinguiſhed the *ſpecies*, whereby objects become viſible, into *impreſſæ* and *expreſſæ*.

Impreſſed SPECIES, are ſuch, as come from without; or are ſent from the object to the organ: ſuch are thoſe we have already been ſpeaking of.

Expreſſed SPECIES, are thoſe, on the contrary, which proceed from within; or that are ſent from the organ to the object.

Le Clerc, in his ſyſtem of viſion, by one of thoſe revolutions very frequent in philoſophical opinions, has called upon the ſtage again the *ſpecies expreſſæ*, of the ancient philoſophers. For, according to him, it is not by *ſpecies* or images impreſſed on the optic nerve, that the ſoul ſees objects; but by rays, which ſhe herſelf directs to them, and which ſhe uſes as a blind man does his ſtaff, to grope out objects.

The Peripateticks account for viſion, from a kind of *intentional* SPECIES, thus: every object, ſay they, expreſſes a perfect image of itſelf on the air next to it. This expreſſes another leſſer one on the air next to that; and this a third ſtill leſs. Thus are the images continued from the object to the cryſtallin, which theſe philoſophers hold the principal organ of ſeeing. Theſe they call *ſpecies intentionales*; and to account the better for their generation, affirm, that objects exhibit them in the ſame manner, as mirrors do a man's face. See VISION.

SPECIES, in theology, denote the appearances of the bread and wine in the ſacrament, after conſecration.—Or, as the Romaniſts define them, the accidents remaining in the bread and wine, whereby they become ſenſible to us, after their ſubſtance is deſtroyed. See TRANSUBSTANTIATION.

The *ſpecies* of the bread, *&c.* are its whiteneſs, quantity, figure, friableneſs, *&c.*—Of wine, its flavour, quickneſs, ſpecific gravity, *&c.*

The generality of Romiſh divines, hold, that the *ſpecies* are abſolute accidents.—And the Carteſians, who are bound to deny any ſuch things as abſolute accidents, are greatly puzzled to explain the *ſpecies*, without incurring the cenſure of hereſy. F. Magnan is forced to aſſert, that the *ſpecies* are mere deluſions and appearances, which God impreſſes on our ſenſes. See *abſolute* ACCIDENT.

SPECIES, in commerce, are the ſeveral pieces of gold, ſilver, copper, *&c.* which having paſſed their full preparation, and coinage, are current in public. See COIN.

SPECIES *decried*, or *cried down*, are ſuch as the ſoveraign has forbidden to be received in payment.

Light SPECIES, are thoſe which fall ſhort of the weight preſcribed by law.

Falſe SPECIES, are thoſe of different metal or alloy from what they ſhould be, *&c.*

SPECIES, in algebra, are the ſymbols, or characters, whereby quantities are repreſented. See CHARACTER.

SPECIFIC, in philoſophy, that which is proper and peculiar to any thing; or that characterizes it, and diſtinguiſhes it from every other thing. See PROPER, *&c.*

Thus the attracting of iron is *ſpecific* to the load-ſtone, or a *ſpecific* property of the load-ſtone: a juſt definition ſhould contain the *ſpecific* notion of the thing defined, or that which ſpecifies and diſtinguiſhes it from every thing elſe. See DEFINITION.

SPECIFIC, in medicine, a remedy, whoſe virtue and effect is peculiarly adapted to ſome certain diſeaſe; is adequate thereto; and exerts its whole force immediately thereon.

Thus quinquina, or the Jeſuits bark, is held a *ſpecific* for intermitting fevers or agues; mercury for the venereal diſeaſe, *&c.* See QUINQUINA.

Authors make mention of three kinds of *ſpecific* medicines.—1°. Such as are eminently and particularly friendly to this or that part; as to the heart, the lungs, the brain, the ſtomach, *&c.*

2°. Such as ſeem to attract, expel, or evacuate ſome determinate humour, by a kind of ſpecific power they are endowed withal; as jalap is ſuppoſed to purge watery humours; rhubarb, bile, *&c.* See PURGATIVE.

3°. Such as remove the cauſe of a diſeaſe, by ſome ſudden property, without our knowing how or why; or the manner of whoſe operations we are entirely ignorant of, and have only learnt their effects by experience.

In the uſe of theſe laſt, there is no enquiry into the nature of the diſeaſe; no regard had to the ſymptoms or phænomena: nor is the medicine to be at all adapted to the particular circumſtances thereof. All that we regard, is the name of the diſeaſe, and that of the remedy: as, immediately, upon finding an intermitting fever, we preſcribe the bark; to aſſuage pain, opium; to expel poiſon, ſome particular antidote.

On this footing, a *ſpecific* medicine ſeems to ſtand in oppoſition to a *ſcientific*, or *methodic* medicine. See MEDICINE.

The mild operation of ſome alterant medicines by inſenſible perſpiration, ſweat and urine, may have led ſome men into this notion of *ſpecific* alteratives, or the tranſmutation of poiſonous into innocent juices. Phyſicians are apt to think they cure diſeaſes ſpecifically, when they do not bleed, purge, vomit, or ſalivate. But it is certain, mercury when it cures the lues without ſalivation, does not act ſpecifically any more than when the higheſt ſalivation is raiſed by it; when it does not ſalivate, it infallibly and ſenſibly paſſes off by the cutaneous and venal glands.

Several mineral and metalline ſubſtances, eſpecially the compoſitions of ſulphur and mercury, as the æthiops and cinnabar, may indeed cure many diſeaſes; but then they do it by acting as evacuants, by attenuating, diſſolving, and carrying off the viſcid concretions and foulneſſes of the ſtomach and inteſtines, and thus cleanſing the foul paſſages, and reſtoring them to their natural action: not by any alterative or *ſpecific* operation.

SPECIFIC *waters*. See the article WATER.

SPECIFIC *gravity*, in hydroſtaticks, denotes that gravity, or weight peculiar to each ſpecies, or kind of natural body; and whereby it is diſtinguiſhed from all other kinds. See WEIGHT.

In this ſenſe, a body is ſaid to be *ſpecifically heavier* than another, when under the ſame bulk it contains a greater weight than that other; and that other, is ſaid to be *ſpecifically lighter* than the firſt.—Thus, if there be two equal ſpheres, each a foot in diameter; only the one wood, the other lead: ſince the leaden one is found heavier than the wooden one, it is ſaid to be *ſpecifically* or in *ſpecie*, *heavier*; and the wooden one, *ſpecifically lighter*.

This kind of gravity, ſome call *relative*; in oppoſition to *abſolute gravity*, which increaſes in proportion to the quantity or maſs of the body. See GRAVITY.

Laws of the SPECIFIC *gravity and levity of bodies.*—1. If two bodies be equal in bulk, their *ſpecific gravities* are, to each other, as their abſolute gravities. Thus a body is ſaid to be twice as heavy, *ſpecifically*, as another, if it have twice its gravity under the ſame bulk.

Hence, the *ſpecific* gravities of equal bodies, are as their denſities. See DENSITY.

2. The *ſpecific* gravities of bodies of the ſame weight, are in the reciprocal ratio of their bulks. Hence, the maſſes of two bodies of the ſame weight, are in a reciprocal ratio of their bulks.

3. The *ſpecific* gravities of two bodies are, in a ratio, compounded of the direct ratio of the abſolute gravities, and the

reciprocal one of their bulks.—Hence, again, the *ſpecific* gravities are as the denſities.

4. A body *ſpecifically* heavier than a fluid, loſes ſo much of its weight therein, as is equal to a quantity of the fluid of the ſame bulk.

For, ſuppoſe a cubic inch of lead immerged in water: a cubic inch of water will, thereby, be expelled from its place: but the weight of this water was ſuſtained by the reſiſtance of the ambient water. Therefore, ſuch a part of the weight of the leaden cube, muſt be ſuſtained by the reſiſtance of the ambient water, as is equal to the weight of the water expelled. The gravity of the body immerged, therefore, muſt be diminiſhed by ſo much.

Hence, 1°. Since a fluid *ſpecifically* heavier, has a greater weight, in the ſame bulk, than a lighter; the ſame body will loſe a greater part of its weight in a fluid, *ſpecifically* heavier, than in a lighter: and therefore it weighs more in a lighter than a heavier.

2°. Equal homogeneous bodies weighing equally in air, loſe their equilibrium if one of them be immerged in a heavier fluid; the other in a lighter.

3°. Since the *ſpecific* gravities are as the abſolute gravities under the ſame bulk; the *ſpecific* gravity of the fluid, will be to the gravity of the body immerged, as the part of the weight loſt by the ſolid, to the whole weight.

4°. Two ſolids equal in bulk, loſe the ſame weight in the ſame fluid: but the weight of the *ſpecifically* heavier body, is greater than that of the *ſpecifically* lighter; therefore, the *ſpecifically* lighter, loſes a greater part of its weight, than the *ſpecifically* heavier.

5°. Since the bulks of bodies equal in weight, are reciprocally as the *ſpecific* gravities; the *ſpecifically* lighter, loſes more weight in the ſame fluid than the heavier; wherefore, if they be in *equilibrio* in one fluid, they will not be ſo in another; but the *ſpecifically* heavier, will preponderate, and that the more, as the fluid is denſer.

6°. The *ſpecific* gravities of fluids, are as the weights loſt by the ſame ſolid immerged in the ſame.

To find the SPECIFIC *gravity of a fluid.*—On one arm of a balance ſuſpend a leaden globe; and to the other, faſten a weight, which is in *equilibrium* therewith in the air. Immerge the globe ſucceſſively in the ſeveral fluids, whoſe *ſpecific* gravities are to be determined, and obſerve the weight which balances it in each. Theſe ſeveral weights, ſubtracted, ſeverally, from the firſt weight, the remainders are the parts of the weight loſt in each fluid. Whence the ratio of the *ſpecific* gravity of the fluids is ſeen. See HYDROSTATICAL *balance.*

Hence, as the denſities are as the *ſpecific* gravities; we find the ratio of the denſities of the fluids at the ſame time.

This problem is of the utmoſt uſe; as by it, the degree of purity or goodneſs of fluids, is eaſily found; a thing, not only of ſervice in natural philoſophy; but alſo in common life, and in the practice of phyſic.

At different ſeaſons of the year, the *ſpecific* gravities of the ſame fluids, are found different. *Joan. Caſp. Eiſenſchmidius*, in his *Diſquiſitio nova de ponderibus*, &c. gives us variety of experiments relating hereto: the principal whereof, to ſave the trouble of too frequent experiments, we ſhall here ſubjoin.

Table of SPECIFIC *gravities of ſeveral fluids.*

A cubic inch Paris meaſure.	In ſummer			In winter		
	O.	*D.*	*G.*	*O.*	*D.*	*G.*
Of mercury	7	1	66	7	2	14
Oil of vitriol		7	59		7	71
Spirit of vitriol		5	33		5	38
Spirit of nitre		6	24		6	44
Spirit of ſalt		5	49		5	55
Aquafortis		6	23		6	35
Vinegar		5	15		5	21
Diſtilled vinegar		5	11		5	15
Burgundy wine		4	67		4	75
Spirit of wine		4	32		4	42
Pale ale		5	1		5	9
Brown ale		5	2		5	7
Cows milk		5	20		5	25
Goats milk		5	24		5	28
Urine		5	14		5	19
Spirit of urine		5	45		5	53
Oil of tartar		7	27		7	43
Oil of olives		4	53	Is froze in winter		
Oil of turpentine		4	39		4	46
Sea water		6	12		6	18
River water		5	10		5	13
Spring water		5	11		5	14
Diſtilled water		5	8		5	11

That the *ſpecific* gravity may be found the more accurately; the weight of the thread not immerged in the fluid, is to be ſubtracted from the weight of the ſolid in air; and the force neceſſary to make the thread ſubſide (if it be *ſpecifically* lighter) is to be added to the weight loſt. But if the thread that ſuſtains the ſolid be heavier than the fluid; the whole weight of the thread in the air is to be ſubtracted from the weight of the ſolid in air; and the weight the thread loſes from the weight loſt in the fluid. Indeed, this precaution may be ſpared, if in examining the *ſpecific* gravity of ſeveral fluids, care be taken that the ſame thread be immerged to the ſame depth in each.

6. To determine the ratio which the *ſpecific* gravity of a fluid has to the *ſpecific* gravity of a ſolid that is ſpecifically heavier than the fluid.

Weigh any maſs of the ſolid in a fluid, and note the juſt weight therein: the *ſpecific* gravity of the fluid will be to that of the ſolid, as the part of the weight loſt by the ſolid, is to its whole weight.

7. The *ſpecific* gravities of equally heavy bodies, are reciprocally as the quantities of weight loſt in the ſame fluid. Hence we find the ratio of the *ſpecific* gravities of ſolids, by weighing maſſes thereof, that are equal in air, in the ſame fluid; and noting the weights loſt by each.

The *ſpecific* gravities of various ſolids, have been determined by many authors. Marin Ghetaldus, particularly tried the *ſpecific* gravities various bodies had, eſpecially metallic ones; which were borrowed thence by Oughtred. In the Philoſophical Tranſactions, we have ample tables of *ſpecific* gravities, by various authors.

It will be ſufficient for us to give thoſe of ſome of the more uſual bodies, as determined with great care and accuracy by M. Petit; and publiſhed by F. Merſenne; and from him by ſeveral others.

Table of the SPECIFIC *gravities of ſeveral ſolids.*

An hundred pound weight of gold is equal in bulk to

71 ½	of mercury	38 ¼	of fine tin
60 ½	of lead	26	of load-ſtone
54 ½	of ſilver	21	of marble
47 ⅓	of copper	14	of ſtone
45	of braſs	12 ½	of ſulphur
42	of iron	5	of wax
39	of tin	5 ⅓	of water.

8. A body *ſpecifically* heavier, deſcends in a fluid *ſpecifically* lighter, with a force equal to the exceſs of its weight, over that of an equal quantity of the fluid.

Hence, 1°. The force which ſuſtains a *ſpecifically* heavier body in a fluid, is equal to the exceſs of the abſolute gravity of the body, above that of the fluid, under the ſame bulk: *e. gr.* 47 ⅓ pound of copper loſes 5 ⅓ pounds of its weight in water; therefore a power of 42 pounds is able to ſuſtain it.

2°. Since the exceſs of the weight of a ſolid over the weight of a fluid ſpecifically heavier, is leſs than that over the weight of a ſpecifically lighter fluid under the ſame bulk; it will deſcend with leſs force in a ſpecifically heavier fluid than in a lighter; and, conſequently, will deſcend more ſlowly in the former than in the latter.

9. A ſpecifically lighter body, ſinks in a heavier fluid, till the weight of a quantity of the fluid, equal in bulk to the part immerſed, be equal to the weight of the whole body.

Hence, 1°. Since the *ſpecific* gravities of bodies of the ſame weight, are reciprocally as their bulks; and the bulks of fluids equal in weight, are as the parts of the ſame ſolid immerged therein; the *ſpecific* gravities of fluids are reciprocally as the parts of the ſame body immerged therein.

2°. A ſolid, therefore, immerges deeper in a lighter fluid than a heavier; and deeper as the proportion of the *ſpecific* gravity of the ſolid to that of the fluid is greater.

3°. If a body be of the ſame *ſpecific* gravity with a fluid; the whole body will be immerged; and it will remain in any given place of the fluid.

4°. If a *ſpecifically* lighter body be wholly immerged in a fluid; it will be urged by the collateral columns of the fluid, to aſcend with a force equal to the exceſs of the weight of the fluid, bulk for bulk, over the weight of the ſolid.

5°. A body, therefore, *ſpecifically* lighter, lying on the bottom of a veſſel, will not be raiſed up, unleſs the heavier fluid riſe above ſuch a part, as is equal in bulk to a quantity of the fluid of the ſame weight with the whole ſolid.

10. The *ſpecific* gravity of a ſolid is to the *ſpecific* gravity of a lighter fluid, wherein it is immerged, as the bulk of the part immerged, is to the whole bulk.

11. The *ſpecific* gravities of equal ſolids, are as their parts immerged in the ſame fluid.

12. The weight and bulk of a *ſpecifically* lighter body, and the weight of the *ſpecifically* heavier fluid, being given, to find the force required, to keep the ſolid wholly immerged under the fluid.

As this force is equal to the exceſs of the weight of the fluid, beyond that of an equal bulk of the ſolid; from the given bulk of the ſolid, and the weight of a cubic foot of water, find, by the rule of three, the weight of a bulk of water, equal to that of the body. From this, ſubtract the weight of the ſolid; the remainder is the force required. *E. gr.* Suppoſe the force neceſſary to detain a ſolid eight feet in bulk, and 100 pounds in weight, under water, required: ſince a cubic foot of water is found to weigh 70 pound, the weight of water under the bulk of eight feet, is 560; whence, 100 pound, the weight of the ſolid, being ſubtracted; the remainder 460 pound, is the force neceſſary to detain the ſolid under water.

Hence, ſince a *ſpecifically* lighter body aſcends in a heavier fluid, with the ſame force that would prevent its aſcent: by the preſent problem, we can likewiſe find the force wherewith a *ſpecifically* lighter body aſcends in a heavier.

13. The weight of a veſſel, to be made of a *ſpecifically* heavier matter; and that of a *ſpecifically* lighter fluid, being given: to determine the cavity the veſſel muſt have, to ſwim on the fluid.

The weight of a cubic foot of the fluid being given; the bulk of the fluid equal to the weight of the veſſel, is found by the rule of three. If, then, the cavity be made a little bigger than this, the veſſel will have leſs weight under the ſame bulk, than the fluid, and will therefore be *ſpecifically* lighter than the ſame, and conſequently, will ſwim. *E. gr.* Suppoſe it required to make an iron ball of 30 pounds weight, ſo as it ſhall ſwim upon water. Since the weight of a cubic foot of water is 70 pound, the quantity of water equal to 30 pounds, will be found $728''\ 571'''$; and therefore the cube of the diameter of the ſphere $1392174'''$, whence the cube root being extracted $1'\ 1''\ 1'''$ is the diameter of a ſphere of water of 30 pounds. If, therefore, the diameter of the cavity be made a little bigger, *e. gr.* $1\frac{1}{2}$ or 2 feet; ſo much leſs of the ball will be immerged as the diameter is increaſed.

14. The force employed to retain a *ſpecifically* lighter ſolid, under a heavier fluid; and the weight loſt by a heavier ſolid in a lighter fluid, are each added to the weight of the fluid, and weigh together with it.

The ſeveral theorems here delivered, are not only all demonſtrable from the principles of mechanicks; but are conformable to experiment. In effect, experience is here found to anſwer exactly to calculation, as is abundantly evident from the courſes of philoſophical experiments, now frequently exhibited; where the laws of *ſpecific* gravitation are well illuſtrated.

SPECILLUM, or SPECULUM, an inſtrument, wherewith ſurgeons ſearch and dilate wounds, *&c.* See SPECULUM.

SPECIOUS *arithmetic*, is that branch which is converſant in quantities denoted by *ſpecies*, that is, by the letters of the alphabet.—In contradiſtinction to that, where the quantities are expreſſed by numbers, which is called *numerous arithmetic.* See ARITHMETIC and CHARACTER.

Specious arithmetic, is what we more uſually call *algebra.* See ALGEBRA and CALCULUS.

SPECTACLE, SPECTACULUM, *ſhew*; ſome extraordinary object, which draws the view and attention; and is not beheld without ſome emotion, or paſſion of the mind.

The term is chiefly uſed by the ancients, for theatrical and amphitheatrical performances: for comedies, combats of gladiators, of beaſts, and even for ſolemn proceſſions, as thoſe of the circus, *&c.* See GAME, THEATRE, AMPHITHEATRE, SCENE, GLADIATOR, *&c.*

The people of Rome were extreamly fond of *ſpectacles*; and the Roman hiſtorians obſerve, there was no ſurer way of gaining their affections, and making parties to introduce tyranny and oppreſſion, than by the uſe of *ſpectacles.*

SPECTACLES, an optic machine, conſiſting of two lens's ſet in horn, or other matter; and applied on the noſe; to aſſiſt in defects of the organ of ſight. See LENS.

Old people and all preſbytæ, uſe *ſpectacles* of convex lens's, to make amends for the flatneſs of the eye, which does not make the rays converge enough to have them meet in the retina. See PRESBYTÆ.

Short-ſighted people, or myopes, uſe concave lens's, to keep the rays from converging ſo faſt, through the great roundneſs of the eye, as to make them meet ere they reach the retina. See MYOPS and MYOPIA.

In Spain, and at Venice eſpecially, *ſpectacles* are uſed with a different view: all the people of note and faſhion there, have them continually on their noſes; a folly, that has its ſource in the natural pride of thoſe people, who value themſelves on a profound wiſdom; and affect to ſtare very near at every thing; as if their eyes were weakned, and wore out with exceſs of attention. *Vign. de Marv.*

F. Cherubin, a capuchin, deſcribes a kind of *ſpectacle* teleſcopes, for the viewing of remote objects with both eyes; hence called *binoculi.* Though F. Rheita had mentioned the ſame before him, in his *Oculus Enoch* and *Eliæ.* See TELESCOPE.—The ſame author invented a kind of *ſpectacles*, with three or four glaſſes, which performed extraordinarily.

Spectacles were certainly unknown to the ancients; yet are they not of ſo late a date as the teleſcope. Franciſco Redi, in a very learned treatiſe on *ſpectacles*, will have them to have been invented in the 13th century, between the years 1280 and 1311; and adds, that Alexander Deſpina, a monk of the order of Predicants of St. Catherine at Piſa, firſt communicated the ſecret, which was of his own invention; upon learning, that another perſon had it as well as himſelf. This hiſtory is wrote in the chronicles of that convent.

The ſame author tells us, that in an old manuſcript ſtill preſerved in his library, compoſed in 1299, *ſpectacles* are mentioned as a thing invented about that time: and that a famous Jacobin, one Jourdon de Rivalto, in a treatiſe compoſed in 1305, ſays, expreſly, that it was not yet 20 years, ſince the invention of *ſpectacles.* He likewiſe quotes Bernard Gordon in his *Lilium medicinæ*, wrote the ſame year, where he ſpeaks of a collyrium, good to enable an old man to read without *ſpectacles.*

Du Cange, however, carries the invention of *ſpectacles* farther back; aſſuring us, that there is a Greek poem in manuſcript in the French king's library, which ſhews, that *ſpectacles* were in uſe in the year 1150: nevertheleſs, the dictionary of the academy *della cruſca*, under the word *occhiale*, inclines to Redi's ſide; and quotes a paſſage from Jourdon's ſermons, which ſays, that *ſpectacles* had not been 20 years in uſe: now Salviati has obſerved, that thoſe ſermons were compoſed between the years 1330 and 1336.

SPECTATOR, a perſon preſent at a ſpectacle. See SPECTACLE.

Among the Romans, SPECTATORS, SPECTATORES, more particularly denoted a kind of gladiators, who had received their diſcharge; and were frequently hired to be preſent, as *ſpectators*, at the combats of gladiators, *&c.* the people were entertained withal. See GLADIATOR.

SPECULARIA, the art of preparing, and making *ſpecula*, or mirrours.—Or, the laws of mirrours, their phænomena, cauſes, *&c.* called alſo *catoptricks.* See CATOPTRICKS, MIRROUR, *&c.*

SPECULARIS *lapis*, in natural hiſtory, is a kind of fiſſile ſtone, clear as glaſs; whence it is alſo called *Muſcovy glaſs*; and uſed in ſeveral countries where it is found, for window-lights, *&c.* See GLASS.

The *lapis ſpecularis* is a ſpecies of talc; ſplits eaſily into thin laminæ or plates; and is ſometimes calcined to make a fine plaiſter. See TALC.

SPECULATION.—*Certitude of* SPECULATION. See CERTITUDE.

SPECULATIVE *geometry*, See GEOMETRY.
SPECULATIVE *mathematics*, See MATHEMATICS.
SPECULATIVE *muſic*, See MUSIC.
SPECULATIVE *philoſophy*, See PHILOSOPHY.

SPECULUM, *mirrour*, in opticks, any poliſhed body, impervious to the rays of light: ſuch as water in wells and deep rivers, poliſhed metals, and glaſſes lined with mercury or other opake matter, popularly called *looking-glaſſes.* See LOOKING-*glaſs.*

For the ſeveral kinds and forms of *ſpecula*, *plain*, *concave*, and *convex*, with their theory, and phænomena, and the methods of preparing, grinding them, *&c.* ſee MIRROUR, GRINDING, *&c.*

For the laws and effects of *ſpecula* of various forms, ſee REFLECTION, BURNING-*glaſs*, &c.

SPECULUM, among ſurgeons, the ſame with *ſpecillum.* See SPECILLUM.—More particularly,

SPECULUM *ani*, is an inſtrument, wherewith they dilate the fundament, examine ſores, extract bones, or let out any peccant matter that may be there lodged.

SPECULUM *matricis*, is an inſtrument uſed to examine and dreſs corrupted places in the privy parts of women.—Its form is the ſame with that of the *ſpeculum ani.*

SPECULUM *oris*, is an inſtrument ſerving to examine diſorders in the mouth.—There are two kinds: the one common; the other bigger and ſtronger, fit not only to keep down the tongue; but alſo the lower jaw; while the mouth is ſurveyed, to the very extremity of the throat, and the neceſſary remedies applied.

SPEECH, the act, or art of expreſſing a man's thoughts, by certain ſigns invented for that purpoſe. See SIGN.

Theſe ſigns are principally ſounds made by the voice, and letters. See VOICE, SOUND and LETTER.

SPEECH, in grammar, denotes an aſſemblage of ſeveral words ranged in order. See LANGUAGE.

The grammarians generally make *eight parts of ſpeech*; i. e. eight kinds of words uſed in diſcourſe, *viz. noun*, *pronoun*, *verb*, *participle*, *adverb*, *conjunction*, *prepoſition*, and *interjection*; each of which ſee under its proper article, ADVERB, NOUN, PRONOUN, *&c.* See alſo PART.

F. Buffier, one of the laſt and beſt writers on grammar, only admits of three parts of ſpeech, *viz. noun*, *verb* and *modificative*; which laſt includes the *adverb*, *conjunction* and *prepoſition.* See MODIFICATIVE.

SPELL, a kind of charm, to drive away a diſeaſe, by hanging a word or ſentence on a paper about the neck. See CHARM and PHYLACTERY.

SPELL, in the ſea language. To SPELL, is to let go the ſheat and bowlings of a ſail, and brace the weather-brace, that the ſail may lie looſe in the wind.

To do a SPELL, is to do any thing by turns, for a ſhort time, and then leave it.

To give a SPELL, is to be ready to work in ſuch a one's room.

Freſh SPELL, is when freſh men come to work; eſpecially when the rowers are relieved with another gang. See FRESH.

SPELLING, that part of grammar properly called *orthography.* See ORTHOGRAPHY.

Dr. Jones gives the following rules, or maxims of *ſpelling.*

1°. That all words were originally pronounced, as *ſpelt.*

2°. That in all words, whoſe ſounds have been ſince altered (the origin of the difficulty of *ſpelling*) the alteration was made for the ſake of eaſe, and pleaſure.

And hence, 3°. All words that can be written ſeveral ways, muſt be *ſpelt* according to the hardeſt, harſheſt, and moſt unuſual ſound. See PRONUNCIATION.

SPELTER, or SPELTRE, *zink*; a kind of imperfect metal, which ſome miſtakenly confound with biſmuth, and others with ſpaat: others making it a ſort of antimony ore. See Bismuth, Spaat, &c.

Spelter is a kind of crude, mineral lead, very hard, white and brilliant; which though not perfectly malleable, yet ſtretches a little under the hammer: and is otherwiſe called *zink*, and ſometimes *tutanag*. See Zink.

It is found in great quantity in the mines of Goſſelaar in Saxony; and is ordinarily ſold in large, ſquare, thick cakes, whence one would judge it to have been melted as it came out of the mines, and caſt into that figure.

It is uſed to purge and whiten tin, in making of pewter; much as lead is uſed to purify gold and ſilver. See Tin and Pewter.

Thoſe who imagine that the *ſpelter* is put in to increaſe the weight, are miſtaken; ſince in melting five or ſix hundred weight of tin, they ſcarce put in a pound of *ſpelter*, and that mixed with turmeric. See Zink.

SPERM, Sperma, ΣΠΕΡΜΑ, the ſeed whereof an animal is formed. See Seed.

SPERMA-CETI, or *parma-ſitty*, in pharmacy, is a whitiſh, flaky ſubſtance, prepared from an oil found in the head of a cetaceous fiſh, called by ſome, the *male whale*, by others *cachelot*, and by the Latins *orca*; diſtinguiſhed from the common whale, by its having teeth, in lieu of whale-bone; and by a bunch on its back. See Whale.

The ancients were great ſtrangers to the nature of this preparation; inſomuch, that Schroder ſeems in doubt, whether to reckon it an animal, or mineral ſubſtance.

It had its name *ſperma-ceti*, ſeed or ſperm of whale, given it, no doubt, to raiſe its value, by a notion of its ſcarcity: the oil it is made from, is found in a large trunk four or five foot deep, and ten or twelve long, filling almoſt the whole cavity of the head, and ſeeming to ſupply the office of brain and cerebellum.

The method of preparing it, is a ſecret in the hands of a very few: the proceſs is ſaid to be thus.—The oil or brain being taken out of the animal, is melted over a gentle fire, and put into moulds, like thoſe wherein ſugar-loaves are formed. When cold, and drained, it is taken out and melted over again; and this they continue to do till it be well purified, and become white. It is then cut with a knife for the purpoſe, and reduced into flakes, ſuch as we have it from the druggiſts.

It muſt be choſen white, clear, and tranſparent, of a ſweetiſh ſmell, which ſome fancy to partake of that of the violet: ſome ſophiſticate it with wax; but the deceit is diſcovered, either by the ſmell of the wax, or by the dulneſs of the colour. Some alſo ſell a preparation of oil gained from the tail of the whale, inſtead of that from the brain; which laſt kind turns yellow, as ſoon as opened to the air. In the general, there is no merchandiſe that ſhould be kept cloſer from the air than *ſperma-ceti*.

Sperma-ceti is of great uſe in medicine. Dr. Quincy ſays, it is a noble remedy in the aſthma, &c. though chiefly uſed in bruiſes, inward hurts, and after delivery. But it is certain, its greateſt property, and that which makes it ſo much in vogue, is its ſoftning the ſkin, and reſolving tumours of the breaſt. Whence it comes to be uſed by the ladies in paſtes, waſhes, &c.

Sperma-ceti candles, are of modern manufacture: they are made ſmooth, with a fine gloſs, free from rings and ſcars, ſuperior to the fineſt wax-candles in colour and luſtre; and, when genuine, leave no ſpot or ſtain on the fineſt ſilk, cloth, or linen.

SPERMATIC, ΣΠΕΡΜΑΤΙΚΟΣ, in anatomy, ſomething belonging to the ſperm or ſeed. See Seminal.

The ancients made a general diviſion of the parts of the animal body into *ſpermatic*, and *ſanguineous*.—*Spermatic parts*, are thoſe, which by their colour, &c. bear ſome reſemblance to ſeed; and were ſuppoſed to be formed thereof: ſuch are the nerves, membranes, bones, &c.—*Sanguineous* are thoſe ſuppoſed to be formed of the blood, after conception.

But the moderns, with much better reaſon, hold all the parts to be *ſpermatic* in this ſenſe, and either formed of the ovum of the female, or of the ſemen of the male. See Generation.

M. Andry ſpeaks of *ſpermatic worms* in the human body. See Worms.

Spermatic *veſſels*, called alſo *vaſa præparantia*, are certain veſſels appointed for bringing the blood to the teſticles, &c. to be ſecreted and prepared into ſeed; and for carrying back again the blood, remaining after the ſecretion is effected. See Seed, Testicle, &c.

The *ſpermatic veſſels* are two arteries, and as many veins.

The Spermatic *arteries* ariſe from the fore-part of the trunk of the aorta, below the emulgents.—*V. Tab. Anat.* (Angeiol.) *fig.* 1. *n.* 51. (Splanch.) *fig.* 1. *lit. p. p.* &c.

Their ſtructure is very ſingular, in that, contrary to the fabric of all other arteries, which are largeſt at their exit from the trunk, theſe are ſmalleſt at their origin, and grow bigger in their progreſs towards the teſtes. By this means, the blood receives a check at its firſt going off for thoſe parts, which diſpoſes it for the future changes, &c. it is to paſs.—The ſame end is anſwered in quadrupeds, by having theſe arteries curled and contorted in their paſſage like a ſcrew.

The reaſon why nature has taken another method in man, Mr. Cowper obſerves, is, that in that caſe, the abdominal muſcles muſt have been larger than they are; by which means, the inteſtines would have been frequently let down into the ſcrotum; an inconvenience which quadrupeds are ſecured from, by the horizontal poſition of their bodies.

The *ſpermatic arteries*, in their progreſs, meeting with the *ſpermatic veins*, enter together with them the inner lamella of the peritonæum, where, inſinuating into the duplicature of the proceſs, and being cloathed therewith, they paſs on to within three or four fingers breadth of the teſticles, where they divide into two unequal branches; the biggeſt of which goes to the teſticle, and is diſtributed therein (ſee Testicle.) And the leſs in the paraſtata or epididymis. See Parastata.

The Spermatic *veins* take the ſame courſe with the arteries; only a little above the teſticles, they ſplit into ſeveral branches, which uniting, form a plexus, called *corpus varicoſum pampiniſorme*, or *pyramidale*. The blood returned by the *ſpermatic veins*, is delivered on the right ſide to the cava, and on the left, into the emulgent vein.—See *Tab. Anat.* (Angeiol.) *fig.* 6. *n.* 2.

SPERMATOCELE, in medicine, a kind of rupture, occaſioned by a diſtention of the ſeminal veſſels, whereby they are let fall into the ſcrotum.

SPHACELUS *, or Sphacelismus, in medicine, a total corruption or mortification of any part, occaſioned by an interception of the blood, and ſpirits. See Mortification.

* The word is Greek, σφακελος, formed, perhaps, of σφαττω, I kill.—It is ſometimes, alſo, called *necroſis*, and ſometimes *ſideratio*. See Necrosis and Sideratio.

Sphacelus is diſtinguiſhed from *gangrene*, which is only a mortification begun, and, as it were, the road to a *ſphacelus*, which is the ſtate, and perfection thereof. See Gangrene.

The *ſphacelus* is diſtinguiſhed by the lividneſs or blackneſs of the part affected; its ſoftneſs, inſenſibility, and cadaverous ſmell.

Other cauſes of the *ſphacelus*, are cloſe ligatures, exceſſive colds, great inflammations, bites of mad dogs, &c.

A *ſphacelous* foot, according to Aquapendente, ought to be cut off in the mortified part, near the live part. When the foot is off, the dead fleſh left behind, is to be conſumed by the application of an actual cautery, repeated ſeveral times, till the patient feel the heat of the fire. Scultet.

SPHÆRISTERIUM, ΣΦΑΙΡΙΣΤΗΡΙΟΝ, in antiquity, the ſeventh part of the ancient gymnaſium; being that wherein the youth practiſed tennis-playing. See Gymnasium and Gymnasticks.

The *ſphæriſterium* or tennis-court, was between the place, named *palæſtra*, and that where they run races, which was between the portico's and the outer wall: though Vitruvius does not make mention of it in the deſcription he gives of the ancient gymnaſium.

The exerciſe here performed was called σφαιριϛικη, *ſphæriſtica*, and σφαιρομαχια, *ſphæromachia*, which ſome will have to have differed from the modern tennis; but it is not known wherein the difference conſiſted.

The Mileſians were particularly averſe to this exerciſe; and the Athenians as remarkably fond of it.—Theſe latter frequently gave the freedom of their city to the *ſphæriſtæ*, or maſters in this art, by way of compliment.

SPHENOIDAL *ſuture*, in anatomy, a *ſuture* thus called, from its encompaſſing the os ſphenoides, which it ſeparates from the os frontis, the os petroſum and os occipitis. See Suture, Cranium, Sphenoides, &c.

SPHENOIDES, in anatomy, os cuneiforme; a bone of the head, common to the cranium, and upper jaw. See Cranium and Maxilla.

It is ſituate in the lower part of the ſkull, whereof it is, as it were, the baſis, and is connected to all the other members thereof, by the *ſphenoidal ſuture*.—See *Tab. Anat.* (Oſteol.) *fig.* 7. *n.* 5.

Its form is irregular, and not eaſy to be deſcribed; whence ſome have called it *multiforme*.

It has its name *ſphenoides*, from the Greek, σφην, *cuneus*, wedge; by reaſon of the manner of its inſertion into the other bones of the ſkull.

In adults, it is one continued bone; but in young children, ſometimes conſiſts of three, and ſometimes of four diſtinct pieces.

Sphenoides *ſella*. See the article Sella.

SPHENOPHARYNGÆUS, in anatomy, a pair of muſcles, called alſo *pterygopharyngæus*, *cephalopharyngæus*, &c. See Pterygopharyngæus.

SPHENOSTAPHYLINUS, in anatomy, a muſcle of the larynx. It deſcends from a round, fleſhy origination, near the root of a proceſs of the os ſphenoides, and is implanted into the poſterior part of the uvula, where it joins its partner.—It ſerves to draw the uvula upwards and backwards; and hinders the maſticated aliment from paſſing into the foramina narium in deglutition.

SPHERE, Sphæra, ΣΦΑΙΡΑ, in geometry, a ſolid body contained under one ſingle ſurface, and having a point in the middle, called the *centre*, whence all lines drawn to the ſurface, are equal. See SOLID, *&c.*

The *ſphere* is ſuppoſed to be generated by the revolution of a ſemi-circle, A B C (*Tab. Geometry, fig.* 34.) about its diameter A C, which is alſo called the *axis of the ſphere*, and the extream points of the axis, A and C, the *poles of the ſphere*. See CENTER, CIRCUMFERENCE, AXIS, POLE, *&c.* See alſo HEMISPHERE and PLANISPHERE.

Properties of the SPHERE.—1°. A *ſphere* is equal to a pyramid, whoſe baſe is equal to the ſurface, and its height to the radius of the *ſphere*.

Hence a *ſphere* being eſteemed ſuch a pyramid, its cube or ſolid content, is found like that of a pyramid. See PYRAMID.

2°. A *ſphere* is to a cylinder, ſtanding on an equal baſis, and of the ſame height, as 2 to 3. Hence, alſo, may the cube or content of the *ſphere* be found. See CYLINDER.

3°. The cube of the diameter of a *ſphere*, is to the ſolid content of the *ſphere*, nearly as 300 to 157: and thus, alſo, may the content of the *ſphere* be meaſured.

4°. The ſurface of a *ſphere* is quadruple the area of a circle deſcribed with the radius of the *ſphere*.—For ſince a *ſphere* is equal to a pyramid, whoſe baſe is the ſurface, and its altitude the radius of the *ſphere:* the ſurface of the *ſphere* is had, by dividing its ſolidity by a third part of its ſemi-diameter. If, now, the diameter of the circle be 100, the area will be 7850; conſequently, the ſolidity 1570000; which divided by a third of the ſemi-diameter, 100, the quotient is the ſurface of the *ſphere* 31400; which is manifeſtly quadruple the area of the circle.

The diameter of a SPHERE *being given, to find its ſurface and ſolidity.*—Find the periphery of the circle deſcribed by the radius of the *ſphere*. See PERIPHERY.

Multiply this, found, into the diameter; the product is the ſurface of the *ſphere*. Multiply the ſurface by a ſixth part of the diameter, the product is the ſolidity of the *ſphere*.

Thus, ſuppoſing the diameter of the *ſphere* 56, the periphery will be found 175; which multiplied by the diameter, the product 9800 is the ſurface of the *ſphere*; which multiplied by one ſixth part of the diameter, gives the ſolidity 919057. Or, thus;

Find the cube of the diameter 175616; then to 300157, and the cube found, find a fourth proportional, 919057. See PROPORTIONAL. This is the ſolidity of the *ſphere* required.

For ſegments and ſectors of *ſpheres*, see SEGMENT and SECTOR.

Doctrine of the SPHERE, } See the articles { SPHERICKS.
Projection of the SPHERE, } { PROJECTION.

SPHERE *of activity* of any body, is that determinate ſpace or extent, all round about it, to which, and no farther, the effluvia continually emitted from that body, do reach, and where they operate according to their nature. See EFFLUVIA, ATMOSPHERE, *&c.* See alſo ACTIVITY.

Thus we ſee the magnetical effluvia have certain bounds and limits, beyond which they will have no influence to turn, or attract the needle: but where-ever a needle is placed, ſo as it may be moved by a load-ſtone, it may be ſaid to be within the *ſphere* of activity of the ſtone. See MAGNET.

SPHERE, in aſtronomy, that concave orb or expanſe, which inveſts our globe, and in which the heavenly bodies, ſun, ſtars, planets and comets, appear to be fixed, at an equal diſtance from the eye. See HEAVENS.

This is alſo called the *ſphere of the world*; and is the ſubject of the ſpherical aſtronomy. See SPHERICAL *aſtronomy*.

This *ſphere*, as it includes the fixed ſtars, whence we alſo occaſionally call it, the *ſphere of the fixed ſtars*, is vaſtly great. The diameter of the earth's orbit is ſo ſmall, in reſpect of the diameter hereof, that the centre of the *ſphere* is not ſenſibly changed by any alteration of the ſpectator's place in the ſeveral parts of the orbit: but ſtill, in all the points of the earth's ſurface, and at all times, the inhabitants have the ſame appearance of the *ſphere*; that is, the fixed ſtars ſeem to poſſeſs the ſame points in the ſurface of the *ſphere*.—For our way of judging of the places, *&c.* of the ſtars, is to conceive right lines drawn from the eye or the centre of the earth, through the centres of the ſtars, and continued thence, till they cut the foreſaid *ſphere*; the points where theſe lines terminate therein, are the apparent places of thoſe ſtars. See PLACE and PARALLAX.

The better to determine the places of the heavenly bodies in the *ſphere*, ſeveral circles are imagined to be deſcribed in the ſurface thereof; hence called *circles of the ſphere*. See CIRCLE *of the ſphere*.

Of theſe, ſome are ſaid to be *greater*, as the ecliptic, meridian, equator, *&c.* others *leſs*, as the tropicks, parallels, *&c.* See GREAT, *&c.*

Of theſe, again, ſome are moveable, or owe their origin to the motion of the earth, *&c.* ſuch are the ecliptic, ſecondaries of the ecliptic, *&c.* See each circle under its proper head; as EQUATOR, ECLIPTIC, HORIZON, *&c.*

SPHERE, in geography, *&c.* denotes a certain diſpoſition of the circles on the ſurface of the earth, with regard to one another; which varies in various parts thereof. See EARTH.

The circles originally conceived on the ſurface of the *ſphere* of the world, are almoſt all transferred, by analogy, to the ſurface of the earth; where they are conceived to be drawn directly underneath thoſe of the *ſphere*, or in the ſame planes therewith; ſo that were the planes of thoſe of the earth continued to the *ſphere*, they would coincide with the reſpective circles thereon.—Thus it is we have a horizon, meridian, equator, *&c.* on the earth. See HORIZON, *&c.*

As the equator in the heavens divides the *ſphere* into two equal parts; the one north and the other ſouth; ſo does the equator on the ſurface of the earth, divide the globe in the ſame manner. See EQUATOR.

And as the meridians in the heavens, paſs through the poles of the horizon; ſo do thoſe on the earth, *&c.* See MERIDIAN.

With regard, then, to the poſition of ſome of theſe circles in reſpect of others, we have a *right*, a *parallel*, and an *oblique ſphere*.

Right SPHERE, is that where the equator cuts the horizon of the place at right angles: for the particular phænomena, *&c.* whereof, ſee RIGHT *ſphere*.

Parallel SPHERE, is where the equator is parallel to the ſenſible horizon, and in the plane of the rational. See PARALLEL *ſphere*.

Oblique SPHERE, is where the equator cuts the horizon obliquely. See OBLIQUE *ſphere*.

Armillary, or *artificial* SPHERE, is an aſtronomical inſtrument, repreſenting the ſeveral circles of the *ſphere*, in their natural order; ſerving to give an idea of the office and poſition of each thereof, and to ſolve various problems relating thereto.

It is thus called, as conſiſting of a number of faſciæ or rings of braſs, or other matter, called by the Latins, *armillæ*, from their reſembling of bracelets, or rings for the arm.

By this, it is diſtinguiſhed from the *globe*, which, though it have all the circles of the *ſphere* on its ſurface; yet is not cut into armillæ or rings, to repreſent the circles ſimply and alone; but exhibits alſo the intermediate ſpaces, between the circles. See GLOBE.

Armillary ſpheres, are of different kinds, with regard to the poſition of the earth therein; whence they become diſtinguiſhed into *Ptolemaic* and *Copernican ſpheres:* in the firſt whereof, the earth is in the centre; and in the latter near the circumference, according to the poſition which that planet obtains in thoſe ſyſtems. See SYSTEM.

The *Ptolemaic* SPHERE, is that commonly in uſe, and is repreſented (*Tab. Aſtronomy, fig.* 21.) with the names of the ſeveral circles, lines, *&c.* of the *ſphere*, inſcribed thereon. See PTOLEMAIC.

In the middle, upon the axis of the *ſphere*, is a ball, T, repreſenting the earth; on whoſe ſurface are the circles, *&c.* of the earth. The *ſphere* is made to revolve about the ſaid axis, which remains at reſt: by which means, the ſun's diurnal and annual courſe about the earth, are repreſented according to the Ptolemaic hypotheſis: and even by means hereof all problems relating to the phænomena of the ſun and earth, are ſolved, as upon the cœleſtial globe; and after the ſame manner; which ſee deſcribed under the article GLOBE.

The *Copernican* SPHERE, repreſented (*fig.* 22.) is very different from the Ptolemaic, both in its conſtitution and uſe; and more intricate in both. Indeed the inſtrument is in the hands of ſo few people, and its uſe ſo inconſiderable, except what we have in the other more common inſtruments, particularly the globe and Ptolemaic *ſphere*, that we ſhall be eaſily excuſed the not filling up room, with any deſcription thereof.

Harmony of the SPHERES, } { HARMONY.
Obliquity of the SPHERE, } See the articles { OBLIQUITY.
Rectifying of the SPHERE, } { RECTIFYING.

Dialling SPHERE. See the article DIALLING.

SPHERICAL *angle*, is the mutual inclination of two planes, whereby a ſphere is cut. See PLANE and ANGLE.

Thus the inclination of the two planes, C A F and C E F (*Tab. Trigonometry, fig.* 9.) forms the *ſpherical angle* A C E. See SPHERE.

The meaſure of a *ſpherical angle*, A C E, is an arch of a great circle A E, deſcribed from the vertex C, as from a pole, and intercepted between the legs C A and C E.

Hence, 1°. Since the inclination of the plane C E F, to the plane C A F, is every where the ſame; the angles in the oppoſite interſections C and F, are equal.

2°. Hence the meaſure of a *ſpherical angle* ACE, is deſcribed with the interval of a quadrant A C or E C, from the vertex C between the legs C A, C E.

If a circle of the ſphere, A E B F (*fig.* 8.) cut another CEDF, the adjacent angles, A E C and A E D are equal to two right ones; and the vertical angles A E C and D E B equal to one another. The former likewiſe holds of ſeveral angles formed on the ſame arch CED, at the ſame point E. Hence, any number of *ſpherical angles*, as AEC, AED, DEB, BEC, *&c.* made on the ſame point E, are equal to four right angles. See SPHERICAL *triangle*.

SPHERICAL *triangle*, a triangle comprehended between three arches of great circles of a ſphere, interſecting each other in the ſurface thereof. See TRIANGLE.

Properties of SPHERICAL *triangles.*—1. If in two *ſpherical triangles*, (*Tab. Trigonometry*, *fig.* 10.) ABC and abc, $A=a$, $BA=ba$ and $CA=ca$: then will B and the ſides, including the angles, be reſpectively equal, the whole triangles are equal: that is, $BC=bc$, $B=b$ and $C=c$.

Again, if in two *ſpherical triangles* $A=a$, $C=c$, and $AC=ac$; then will $B=b$, $AB=ab$ and $bc=BC$. Laſtly, if in two *ſpherical triangles* $AB=ab$, $AC=ac$, and $BC=bc$, then will $A=a$, $B=b$ and $C=c$; the demonſtrations whereof, coincide with thoſe of the like properties in plain triangles. The theorems of the congruency of rectilinear triangles, extending to all other curvilinear, circular, parabolical, &c. provided their ſides be ſimilar. See TRIANGLE.

2. In an equicrural triangle ABC (*fig.* 11.) the angles at the baſe, B and C, are equal; and if in any triangle, the angles B and C, at the baſe B C, are equal; the triangle is equicrural.

3. In every *ſpherical triangle*, each ſide is leſs than a ſemicircle: any two ſides taken together are greater than the third; and all the three ſides together are leſs than the periphery of a great circle: and a greater ſide is always oppoſed to a greater angle, and a leſs ſide to a leſs angle.

4. If in a *ſpherical triangle* BAC (*fig.* 12.) two legs AB and BC taken together, be equal to a ſemi-circle; the baſe A C being continued to D; the external angle B C D will be equal to the internal oppoſite one B A C.

If the two legs together, be leſs than a ſemi-circle, the external angle BCD, will be greater than the internal oppoſite one A: and if the legs be greater than a ſemi-circle, the external angle BCD, will be leſs than the internal oppoſite one A; and the converſe of all theſe holds, *viz.* if the angle BCD be equal to, greater, or leſſer than A; the ſides A B and B C are equal to, greater, or leſſer than a ſemi-circle.

5. If in a *ſpherical* triangle A B C, two ſides A B and B C, be equal to a ſemi-circle; the angles at the baſe A and C, are equal to two right ones: if the ſides be greater than a ſemi-circle, the angles are greater than two right ones; and if leſs, leſs. And, converſely.

6. In every *ſpherical triangle*, each angle is leſs than two right ones; and the three together, leſs than ſix right angles, and greater than two.

7. If in a *ſpherical* triangle B A C (*fig.* 13.) the ſides A B and A C be quadrants; the angles at the baſe, B and C, will be right angles. And, if the intercepted angle A be a right angle, B C will be a quadrant: if A be obtuſe, B C will be greater than a quadrant; and if acute, leſs. And, converſely.

8. If in a *ſpherical* rectangular triangle, the ſide BC (*fig.* 14.) adjacent to the right angle B, be a quadrant; the angle A will be a right angle; if B E be greater than a quadrant, the angle A will be obtuſe; and if B D be leſs than a quadrant, the angle A will be acute. And, converſely.

9. If in a *ſpherical* rectangular triangle, each leg be either greater or leſſer than a quadrant; the hypotenuſe will be leſs than a quadrant. And, converſely.

10. If in a *ſpherical triangle* ABC (*fig.* 15.) rectangular only at B, one ſide C B be greater than a quadrant, and the other ſide A B leſs; the hypotenuſe A C will be greater than a quadrant. And, converſely.

11. If in a *ſpherical* obliquangular triangle A C B (*fig.* 16.) both angles at the baſe, A and B, be either obtuſe or acute; the perpendicular C D let fall from the third angle C to the oppoſite ſide AB, falls within the triangle; if one of them, A, be obtuſe; and the other, B, acute; the perpendicular falls without the triangle.

12. If in a *ſpherical triangle* A C B, all the angles A, B and C be acute; the ſides are each leſs than a quadrant. Hence, if in an obliquangular *ſpherical triangle*, one ſide be greater than a quadrant, one angle is obtuſe, *viz.* that oppoſite to this ſide.

13. If in a *ſpherical triangle* A C B, two angles A and B, be obtuſe, and the third C acute; the ſides A C and C B oppoſite to the obtuſe ſides, are greater than a quadrant; and that oppoſite to the acute ſide A B, leſs than a quadrant. Hence, if the two ſides be leſs than a quadrant, the two angles are acute.

14. If in a *ſpherical triangle*, the ſeveral ſides be each greater than a quadrant; or only two of them greater, and the third equal to a quadrant; the ſeveral angles are obtuſe.

15. If in an obliquangular *ſpherical triangle*, two ſides be leſs than a quadrant, and the third greater; the angle oppoſite to the greateſt will be obtuſe, and the reſt acute.

Reſolution of SPHERICAL *triangles.* See TRIANGLE.

SPHERICAL *aſtronomy*, that part of aſtronomy which conſiders the univerſe, ſuch as it appears to the eye. See ASTRONOMY.

Under *ſpherical aſtronomy*, then, come all the phænomena and appearances of the heavens and heavenly bodies, ſuch as we perceive them; without any enquiry into the reaſon, the theory, or the truth thereof.—By which it is diſtinguiſhed from *theorical aſtronomy*, which conſiders the real ſtructure of the univerſe, and the cauſes of thoſe phænomena.

In the *ſpherical aſtronomy*, the world is conceived to be a concave, *ſpherical* ſurface, in whoſe centre is the earth, or rather the eye, about which the viſible frame revolves, with ſtars and planets fixed in the circumference thereof. And on this ſuppoſition all the other phænomena are determined.

The *theorical aſtronomy* teaches us, from the laws of opticks, &c. to correct this ſcheme, and reduce the whole to a juſter ſyſtem. See SYSTEM.

SPHERICAL *compaſſes.* See the article COMPASSES.

SPHERICAL *geometry*, the doctrine of the ſphere; particularly of the circles deſcribed on the ſurface thereof, with the method of projecting the ſame on a plane; and meaſuring their arches and angles when projected. See SPHERICKS and PROJECTION.

SPHERICAL *trigonometry*, the art of reſolving ſpherical triangles, *i. e.* from three parts of a ſpherical triangle given, to find the reſt.—*E. gr.* From two ſides and one angle; to find the other two angles, and the third ſide. See SPHERICAL *triangle* and TRIGONOMETRY.

SPHERICITY, the quality of a ſphere; or that whereby a thing becomes ſpherical or round. See SPHERE.

The *ſphericity* of pebbles, fruits, berries, &c. alſo of drops of water, quick-ſilver, &c. and of bubbles of air under water, &c. Dr. Hook takes to ariſe from the incongruity of their particles with thoſe of the ambient fluid, which prevents their coaleſcing; and by preſſing on them, and encompaſſing them all round equally, turns them into a round form. See DROP.

This, he thinks, appears evidently, from the manner of making ſmall round ſhot of ſeveral ſizes, without caſting the lead into any moulds; from drops of rain being formed, in their fall, into round hail-ſtones; and from drops of water falling on ſmall duſt, ſand, &c. which ſtrait produce an artificial round ſtone; and from the ſmall, round, red-hot balls, formed by the colliſion or fuſion of flint and ſteel, in ſtriking fire.

But all theſe caſes of *ſphericity* ſeem better accounted for, from the great principle of attraction; whereby the parts of the ſame fluid drop, &c. are all naturally ranged as near the centre as poſſible, which neceſſarily induces a ſpherical figure: and, perhaps, a repelling force between the particles of the drop, and of the medium, contribute not a little thereto. See ATTRACTION and REPULSION.

SPHERICKS, the *doctrine of the ſphere*, paticularly of the ſeveral circles deſcribed on the ſurface thereof; with the method of projecting the ſame in plano. See SPHERE, GEOMETRY, CIRCLE, &c.

The principal matters ſhewn herein, are as follow:

1. If a ſphere be cut in any manner, the plane of the ſection will be a circle, whoſe centre is in the diameter of the ſphere.

Hence, 1°. The diameter H I (*Tab. Trigonometry*, *fig.* 17.) of a circle, paſſing through the centre C, is equal to the diameter A B of the generating circle; and the diameter of a circle, as FE, that does not paſs through the centre, is equal to ſome chord of the generating circle.

Hence, 2°. As the diameter is the greateſt of all chords, a circle paſſing through the centre, is the greateſt circle of the ſphere; and all the reſt are leſſer than the ſame.

Hence alſo, 3°. All great circles of the ſphere are equal to one another.

Hence alſo, 4°. If a great circle of the ſphere paſs through any given point of the ſphere, as A; it muſt alſo paſs through the point diametrically oppoſite thereto, as B.

Hence alſo, 5°. If two great circles mutually interſect each other, the line of ſection is the diameter of the ſphere, and therefore two great circles interſect each other in points diametrically oppoſite.

Hence alſo, 6°. A great circle of the ſphere, divides it into two equal parts or hemiſpheres.

2. All great circles of the ſphere, cut each other into two parts; and, converſely, all circles, that thus cut each other, are great circles of the ſphere.

3. An arch of a great circle of the ſphere, intercepted between another arch HIL (*fig.* 18.) and its poles A and B, is a quadrant.

That intercepted between a leſs circle D E F, and one of its poles A, is greater than a quadrant; and that between the ſame, and the other pole B, leſs than a quadrant; and, converſely.

4. If a great circle of the ſphere paſs through the poles of another, that other paſſes through the poles of this. And if a great circle paſs through the poles of another, the two cut each other at right angles; and, converſely.

5. If a great circle, as A F B D, paſs through the poles A and B of a leſſer circle D E F, it cuts it into equal parts; and at right angles.

6. If two great circles A E B F and C E D F (*fig.* 19.) interſect each other in the poles E and F of another great circle A C B D; that other will paſs through the poles H and h, I and i of the circles A E B F and C E D F.

7. If two great circles A E B F and C E D F, cut each other mutually; the angle of obliquity A E C, will be equal to the diſtance of the pole H I.

8. All circles of the ſphere, as G F and L K (*fig.* 20.) equally diſtant from its centre C, are equal; and the further they are removed from the centre, the leſs they are. Hence, ſince of all parellel chords, only two, D F and E K, are equally diſtant from the centre; of all the circles parallel to the ſame great circle, only two are equal.

9. If the arches F H and K H, and G I and I L, intercepted between a great circle I M H, and the leſſer circles G N F and L O K, be equal, the circles are equal.

10. If the arches F H and G I of the ſame great circle A I B H, intercepted between two circles G N F and I M H, be equal, the circles are parallel.

11. An arch of a parallel circle I G (*fig.* 9.) is ſimilar to an arch of a great circle A E; if each be intercepted between the ſame great circles C A F and C E F.

Hence, the arches A E and I G, have the ſame ratio to their peripheries; and, conſequently, contain the ſame number of degrees. And hence the arch I G is leſs than the arch A E.

12. The arch of a great circle, is the ſhorteſt line which can be drawn from one point of the ſurface of the ſphere to another: and the lines between any two points on the ſame ſurface, are the greater, as the circles whereof they are arches, are the leſs.

Hence, the proper meaſure, or diſtance of two places on the ſurface of the ſphere, is an arch of a great circle intercepted between the ſame.

SPHEROID *, SPHÆROIDES, ΣΦΑΙΡΟΕΙΔΗΣ, in geometry, a ſolid approaching to the figure of a ſphere, though not exactly round, but oblong; as having one of its diameters bigger than the other; and generated by the revolution of a ſemi-ellipſis about its axis.

* The word is formed from σφαιρα, *ſphæra*, and ειδος, ſhape.

When it is generated by the revolution of the ſemi-ellipſis about its greater axis, it is called an *oblong ſpheroid.*—And when generated by the revolution of an ellipſis about its leſs axis, an *oblate ſpheroid.*

The contour of a dome, Daviler obſerves, ſhould be half a *ſpheroid*. Half a ſphere, he ſays, is too low to have a good effect below. See DOME.

For the ſolid dimenſions of a *ſpheroid*, it is $\frac{2}{3}$ of its circumſcribing cylinder: or it is equal to a cone, whoſe altitude is equal to the great axis, and the diameter of the baſe to four times the leſs axis of the generating ellipſis.

Or a *ſpheroid* is to a ſphere deſcribed on its greater axis, as the ſquare of the leſs axis to the ſquare of the greater: or it is to a ſphere deſcribed on the leſſer axis, as the greater axis to the leſs.

SPHINCTER *, in anatomy, a term applied to a kind of circular muſcles, or muſcles in form of rings, which ſerve to cloſe and draw up ſeveral orifices of the body, and prevent the excretion of the contents. See MUSCLE.

* The word is formed from the Greek, σφιγκτηρ, *ſtrictor*, or *conſtrictor*, ſomething that binds and conſtringes a thing very cloſely; theſe muſcles having an effect much like that of a purſe-ſtring.

SPHINCTER *ani*, is a circular muſcle, ſerving to ſhut the anus, and keep the excrements from coming away involuntarily. See ANUS and EXCREMENTS.

It is near two inches broad, and hangs down below the rectum, near an inch. It is faſtened on the ſides to the bones of the coxendix, and behind to the os ſacrum: before, in men, to the accelerator urinæ, and in women, to the vagina uteri. Some would have it to be two muſcles, and ſome three; but without much reaſon.

SPHINCTER *gulæ*, } See the articles { OESOPHAGÆUS.
SPHINCTER *labiorum*, } { CONSTRICTOR.

SPHINCTER *vaginæ*, a conſtrictory muſcle, ſerving to hinder the reflux of the blood from the clitoris, *&c.* in coition. See VAGINA and CLITORIS.

SPHINCTER *veſicæ*, is a muſcle conſiſting of circular fibres, placed at the exit of the bladder, to prevent the perpetual dripping of the urine.—See *Tab. Anat.* (Splanch.) *fig.* 9. *lit. k.* See alſo URINE and BLADDER.

It keeps the bladder conſtantly ſhut; and is only opened, when by the contraction of the abdominal muſcles, the bladder is compreſſed, and the urine forced out.

SPHINX, ΣΦΙΓΞ, in ſculpture, *&c.* a figure or repreſentation of a monſter of that name, famed among the ancients; now moſtly uſed as an ornament in gardens, terraces, *&c.*

It is repreſented with the head and breaſts of a woman, the wings of a bird, the claws of a lion, and the reſt of the body like a dog.

It is ſuppoſed to have been engendered by Typhon, and ſent by Juno, to be revenged on the Thebans. Its office was to propoſe dark, enigmatical queſtions to all paſſers-by, and if they did not give the explication thereof, to devour them.

It made horrible ravages on a mountain near Thebes, and could not by any means be deſtroyed, till after Oedipus had ſolved the following riddle: What animal is it, that in the morning walks on four legs, at noon on two, and at night on three? See ÆNIGMA.

Among the Egyptians, the *ſphinx* was the ſymbol of religion, by reaſon of the obſcurity of its myſteries. And on the ſame account, the Romans placed a *ſphinx* in the pronaos or porch of their temples. See MYSTERY.

SPICA *virginis*, a ſtar of the firſt magnitude in the conſtellation virgo. See VIRGO.

Its place is in the more ſoutherly hand. Its longitude, according to Mr. Flamſteed, is 19° 31′ 22″; its latitude 2° 1′ 59″ ſouth.

SPICE, any kind of aromatic drug, that has hot and pungent qualities: ſuch are pepper, nutmeg, ginger, cinnamon and cloves. See AROMATIC, PEPPER, NUTMEG, *&c.*

Some alſo apply the word to divers medicinal drugs brought from the eaſt; as ſenna, caſſia, frankincenſe, *&c.* See each under its proper article, SENNA, CASSIA, *&c.*

Garbler of SPICES. See the article GARBLER.

SPIDERS *ſilk*, } See the articles { SILK.
SPIDERS *web*, } { WEB.

SPIKENARD, *nardus*, or SPICA *nardi*, a kind of vegetable ear growing even with the ground, and ſometimes in the ground; warm, ſpicy, cordial and alexipharmic; and as ſuch uſed in the compoſition of venice-treacle. See THERIACA.

The ear or *ſpica*, is about the length and thickneſs of a finger; very light, covered with long, reddiſh hairs, of a ſtrong ſmell, and a bitteriſh, ſharp taſte. There riſe ſeveral of theſe ears from the ſame root. The ſtem is ſmall, and the root the thickneſs of a quill.

The *ſpica-nardi*, is uſually reckoned in the number of roots. —It is alſo called *nardus Indica*; becauſe brought from the Eaſt-Indies.

It is accounted a ſtomachic, nephritic and carminative, proper to ſtrengthen the ſtomach, promote the diſcharge of urine, and diſperſe flatulencies.

There is alſo another kind, called *ſpica-celtica*, growing in the Pyreneans, and the mountains of Tirol: it has much the ſame virtues with valerian; and is by no means of equal eſteem with the former.

SPIKING *up the ordnance*, a ſea phraſe, uſed for faſtening a quoin with *ſpikes* to the deck, cloſe to the breech of the carriages of great guns; that they may keep cloſe and firm to the ſhip's ſides, and not get looſe when the ſhip rolls, and by that means endanger the breaking out of the butt-head of a plank. See QUOIN.

SPINA *ventoſa*, in medicine, *&c.* denotes a caries or rottenneſs of a bone. See CARIES.

SPINAL *marrow*. See the article MEDULLA *ſpinalis*.

In the hiſtory of the royal academy of ſciences, for the year 1714, we have an inſtance of a fœtus born without either brain, cerebel, or *ſpinal marrow*, though perfectly well formed in other reſpects. It had gone its natural time; lived two hours; and even gave ſigns of life, upon ſprinkling the baptiſmal water on its head.—Inſtances of this kind, as this is not the only one we meet withal, furniſh a terrible objection againſt the exiſtence of the animal ſpirits, which ſhould be generated in the brain, or at leaſt in the cerebel or *ſpinal marrow*; and which are generally allowed of ſuch abſolute neceſſity in the animal œconomy. See SPIRIT.

SPINAL *nerves*. See the article NERVE.

SPINALIS, in anatomy, a muſcle on the ſide of the neck, ariſing from the five ſuperior proceſſes of the vertebræ of the thorax, and the inferior of the neck; and which in its aſcent, becoming more fleſhy, is inſerted into the inferior part of the vertebræ of the neck, laterally. It ſerves to draw the neck backwards.

Medulla SPINALIS. See the article MEDULLA.

SPINDLE, in the ſea language, is the ſmalleſt part of a ſhip's capſtan, which is betwixt the two decks.

The *ſpindle* of the jeer capſtan hath whelps to heave the viol. See CAPSTAN.

The axis of a wheel of a watch or clock, is alſo called the *ſpindle*, and its ends the *pevets*. See CLOCK, *&c.*

SPINE *, SPINA *dorſi*, in anatomy, the ſeries or aſſemblage of vertebræ, or bones of the back, which ſuſtain the reſt of the body, and to which are connected the ribs.—See *Tab. Anat.* (Oſteol.) *fig.* 3. *lit. A A. fig.* 7. *lit. A A.* See alſo the article VERTEBRÆ.

* It has its name *ſpine*, by reaſon the hind part thereof is edged, or *ſpiny.*—Some call it the *canalis ſacer.*

The *ſpine* is uſually divided into four parts; the neck, which contains ſeven vertebræ; the back twelve; the loins five; and the os ſacrum four. See NECK, LOINS, *&c.*

The *ſpine* includes a kind of medulla, much reſembling that of the brain, hence called *medulla ſpinalis*, or *ſpinal marrow*. See MEDULLA.

SPINET, or SPINNET, a muſical inſtrument, ranked in the ſecond or third place among harmonious inſtruments. See MUSIC.

It conſiſts of a cheſt or belly, made of the moſt porous and reſinous wood to be found; and a table of fir glued on ſlips of wood called *ſummers*, which bear on the ſides. On the table is raiſed a little prominence, wherein are placed as many pins as there are ſtrings to the inſtrument.

The inſtrument is played by two ranges of keys, the foremoſt range being in the order of the diatonic ſcale; and the other range ſet backwards in the order of the artificial notes or ſemi-tones. See SCALE.

The keys are ſo many long, flat ſlips of wood, which when touched and preſſed down at one end, make the other raiſe a jack, which ſounds the ſtrings by means of the end of a crow's quill, wherewith it is armed. The thirty firſt ſtrings are of braſs, the other more delicate ones of ſteel or iron wiars. They are all ſtretched over two bridges glued to the table.

The figure of the *ſpinet* is a long ſquare, or parallelogram a foot and half broad.—Some call it a *harp couched*, and the harp, an *inverted ſpinet.*

The *ſpinet* is generally tuned by the ear; which method of the practical muſicians, is founded on this ſuppoſition, that the ear is a perfect judge of an octave and fifth. The general rule, is to begin at a certain note, as *c*, taken towards the middle of the inſtrument, and tuning all the octaves up and down, and alſo the fifths, reckoning ſeven ſemi-tones to each fifth, by which means the whole is tuned. Sometimes to the common or fundamental play of the *ſpinet*, which is the great octave, is added another ſimilar one in uniſon, and a third in octave to the firſt; to make the harmony the fuller. They are played either ſeparately or together, which is called the *double* or *triple ſpinet.* Sometimes a play of violins is added, by means of a bow, or a few wheels parallel to the keys, which preſs the ſtrings, and make the ſounds laſt as long as the muſician pleaſes; and heighten and ſoften them, as they are more or leſs preſſed. The harpſicord is a kind of *ſpinet*, only with another diſpoſition of the keys. See HARPSICORD.

The inſtrument takes its name from the little quills ends, wherewith the ſtrings are drawn, which are ſuppoſed to reſemble *ſpinæ*, thorns.

SPINIS.—*Attachiamenta de* SPINIS *&* *boſco.* See ATTACHIAMENTA.

SPINNING, in commerce, the act or art of reducing ſilk, flax, hemp, wool, hair, or other matter into thread. See FLAX, HEMP, WOOL, *&c.*

Spinning, is either performed on the wheel, or with a diſtaff and ſpindle, or with other machines proper for the ſeveral kinds of working.—Hemp, flax, nettles and other like plants are to be wet in *ſpinning:* ſilks, wools, cottons, *&c.* are *ſpun* dry, and do not need water; yet there is a way of *ſpinning* ſilk as it comes off the caſes or balls, where hot, and even boiling water is to be uſed. See SILK.

SPINOSISM. See the article SPINOZISM.

SPINOUS *fiſh.* See the article FISH.

SPINOZISM, or SPINOSISM, the doctrine of *Spinoza*; or, atheiſm and pantheiſm propoſed after the manner of *Spinoza.* See ATHEIST.

The great principle of *Spinoziſm* is, that there is nothing properly and abſolutely exiſting, but matter, and the modifications of matter; among which are even comprehended, thoughts, abſtract and general ideas, compariſons, relations, combinations of relations, *&c.* See MATTER, SUBSTANCE, *&c.*

Benedict *Spinoza*, or *Eſpinoza*, was a man well known in Holland. He was born a Jew at Amſterdam; but did not make profeſſion of any religion, either the Jewiſh or Chriſtian.—He compoſed ſeveral books in Latin; the moſt celebrated whereof, is his *Tractatus Theologico-Politicus*, wherein he overturns the foundation of all religion: the book, accordingly, was condemned by a publick decree of the ſtates; though it has ſince been ſold publickly, and even reprinted, both in Latin and French, in that country, and lately in Engliſh at London.

Spinoza, here, inſinuates, that all religions are only political engines, calculated for the publick good; to render the people obedient to magiſtrates, and to make them practiſe virtue and morality.

He does not here lay down his notion of the Deity openly; but contents himſelf with ſuggeſting it.—In his *Ethicks*, publiſhed among his poſthumous works, he is more open and expreſs; maintaining, that God is not, as we imagine him, an infinite, intelligent, happy and perfect Being; nor any thing, but that natural virtue, or faculty, which is diffuſed throughout all creatures. See NATURE.

Numbers have undertaken to refute *Spinoza*'s doctrine; but all very weakly, except what we have in Dr. Clarke's ſermons at Boyle's lecture.—Witſius in Holland, Majus in Germany, and de la Mothe in England, wrote againſt his *Tractatus:* but Bredenbourg, according to M. Bayle, ſucceeded beſt on the ſubject; who, however, is ſaid to have afterwards been a convert to *Spinoziſm*, and to have written a demonſtration of the truth of it.—The writers againſt *Spinoza*'s *Ethicks*, are Velthuyſius, in his *Tractatus de cultu naturali & origine moralitatis:* de Verſe, in *l'Impie convaincu, ou diſſertation contre Spinoza:* Poiret in *Fundamenta atheiſmi everſa:* Wittichius in *Anti-Spinoza*; Lami in *Nouvel atheiſme renverſé*; Jaquelot in *Diſſertations ſur l'exiſtence de Dieu:* Jens in *Examen Philoſophicum ſextæ definitionis partis primæ Ethicæ Bened. Spinozæ.* Beſides many others enumerated in Colerus's life of *Spinoza*, p. 132. Jenichen's *Hiſtor. Spinoziſmi Leenhofian*, p. 58. ſeqq. Buddeus's *Theſes de Atheiſmo & Superſtitione*, cap. 1. §. 26. and Fabricius's *Syllab. Script. de veritate religionis chriſtianæ*, p. 357. ſeqq.

Spinoza, in his *Tractatus* above-mentioned, is very full on the ſubject of the authors of the ſcriptures; and endeavours to ſhew, that the Pentateuch is not the work of Moſes; contrary to the common opinion, both of the Jews, and Chriſtians. He has alſo his particular ſentiments, as to the authors of the other books.—This part of the work has been anſwered by M. Huet, in his *Demonſtratio Evangelica*; and by M. Simon, in his *Hiſt. Crit. du vieux Teſt.* See PENTATEUCH.

Spinoziſm is a ſpecies of naturaliſm, or pantheiſm, or hylotheiſm, as it is ſometimes called, *i. e.* of the dogma which allows of no other God but nature, or the univerſe; and, therefore, makes matter to be God.—Accordingly, Buddeus, in a diſſertation *de Spinoziſmo ante Spinozam*, proves at large, that *Spinoza*'s doctrine of God and the world, is far from being his own invention, but that it had been held by many philoſophers of different ſects, both among the Chaldeans and Greeks.—It is certain, the opinion of the Stoicks, and thoſe who held an *anima mundi*, was not far from it. See ANIMA *mundi.* Lucan introduces Cato diſcourſing thus:

> *Eſtne Dei ſedes niſi terra, & pontus, & aër,*
> *Et cœlum, & virtus? ſuperos quid quærimus ultra!*
> *Jupiter eſt quodcunq; vides, quocunq; moveris.*
>
> Luc. Pharſ. l. 9. v. 578.

Strato likewiſe, and others among the Peripateticks, maintained ſomething very like it; and what is more, though no ancient ſect ſeems farther removed from *Spinoziſm* than the Platonic, as they attributed the greateſt freedom to God, and carefully diſtinguiſhed him from matter; yet Gundlingius has proved at large, that Plato gave matter much the ſame origin with *Spinoza.*—But the ſect that approached neareſt to *Spinoziſm*, was that which taught that all things were one, as Xenophanes the Colophonian, Parmenides Meliſſus, and eſpecially Zeno Eleates, whence it obtained the name of the *Eleatic ſyſtem of atheiſm.*—To the ſame may alſo be reduced the opinion of thoſe, who held the firſt matter for God, as Almaricus and David of Dinantum. Add that the ſect of Foe in China and Japan, that of the Soufi in Perſia, and that of the Zindikites in Turky, are found to philoſophize much after the manner of *Spinoza.*

The chief articles in *Spinoza*'s ſyſtem are reducible to theſe. —That there is but one ſubſtance in nature; and that this only ſubſtance is endued with an infinite number of attributes, among which are extenſion and cogitation.—That all the bodies in the univerſe are modifications of this ſubſtance conſidered as it is extended; and that all the ſouls of men are modifications of the ſame ſubſtance conſidered as cogitative.—That God is a neceſſary and infinitely perfect being, and is the cauſe of all things that exiſt, but is not a different being from them.—That there is but one being and one nature; and that this nature produces within itſelf, by an immanent act, all thoſe which we call creatures.—And that this being is at the ſame time both agent and patient, efficient cauſe and ſubject; but that he produces nothing but modifications of himſelf.

Thus is the Deity made the ſole agent as well as patient in all evil, both phyſical and moral, that called *malum pœnæ*, as well as *malum culpæ:* a doctrine fraught with more impieties than all the heathen poets have publiſhed concerning their Jupiter, Venus, Bacchus, *&c.*—What ſeems to have led *Spinoza* to frame this ſyſtem, was the difficulty of conceiving, either that matter is eternal, and different from God, or that it could be produced from nothing, or that an infinite and free being could have made a world ſuch as this is.—A matter that exiſts neceſſarily, and which nevertheleſs is void of activity, and ſubject to the power of another principle, is an object that ſtartles our underſtanding; as there ſeems no agreement between the three conditions.—A matter created out of nothing is no leſs inconceivable, whatever efforts we make to form an idea of an act of the will that can change what before was nothing, into real ſubſtance. Beſides its being contrary to that known maxim of philoſophers, *ex nihilo nihil fit.*—In fine, that an infinitely good, holy, free Being, who could have made his creatures good, and happy, ſhould rather chuſe to have them wicked, and eternally miſerable, is no leſs incomprehenſible; and the rather as it ſeems difficult to reconcile the freedom of man with the quality of a being made out of nothing.

Theſe appear to have been the difficulties which led *Spinoza* to ſearch for a new ſyſtem, wherein God ſhould not be diſtinct from matter, and wherein he ſhould act neceſſarily, and to the extent of all his power, not out of himſelf [*ad extra*] but within himſelf.—But it is certain, if the new ſyſtem reſcue us from ſome difficulties, it involves us in others much greater.—For,

1°. It is impoſſible the univerſe ſhould be but one ſubſtance; ſince every thing that is extended muſt neceſſarily have parts; and what has parts muſt be compounded. And as the parts of extenſion do not ſubſiſt in each other, it follows, either that extenſion in the general is not ſubſtance, or that every part of extenſion is a different ſubſtance. Now, according to *Spinoza*, extenſion in general is an attribute of ſubſtance. And he allows, with other philoſophers, that the attributes of ſubſtance do not differ really from the ſubſtance itſelf. He muſt therefore allow, that extenſion in general is ſubſtance: whence it will follow, that every part of extenſion is a particular ſubſtance: which overturns the whole ſyſtem.

If it be objected, that *Spinoza* does not conſider different bodies, as different parts of extenſion, but as different modifications of it: the diſtinction between *part* and *modification*, we doubt will hardly ſave him. For let him avoid the word *part* as much as he pleaſe, and ſubſtitute that of *modality* or *modification* for it, the doctrine will amount to much the ſame: the characters of diverſity are not leſs real and evident, when matter is divided into modifications, than when it is divided into parts. The idea of the univerſe will ſtill be that of a compound being, or an aggregate of ſeveral ſubſtances.

For proof of this, it may be obſerved, that modalities are beings which cannot exiſt without the ſubſtance which modifies them; whence it follows, that the ſubſtance muſt be found where-ever its modalities are found; and even that the ſubſtance muſt be multiplied in proportion as the number of incompatible modifications is multiplied: ſo that where-ever there are five or ſix of theſe modifications, there muſt be five or ſix ſubſtances. It is evident, that a ſquare figure, and a circular figure are incompatible in the ſame piece of wax. Whence it follows, that the ſubſtance modified by the ſquare figure cannot be the ſame ſubſtance with that modified by the round figure. So when I ſee a round and a ſquare table in a room, I may ſafely aſſert, that the extenſion which makes the ſubject of the round table is a diſtinct ſubſtance from the extenſion which is the ſubject of the ſquare table: ſince otherwiſe it would follow, that the ſquare and round figures might be found in the ſame ſubject at the ſame time. —The ſubject, therefore, that is modified by two figures, muſt be two ſubſtances.

2°. If it be abſurd to make God extended, as this robs him of his ſimplicity, and makes him be compoſed of parts; it is ſtill worſe to reduce him to the condition of matter, the loweſt of all beings, and that which moſt of the ancient philoſophers ranked immediately above nothing: matter! the theatre of all ſorts of changes, the field of battle of contrary cauſes, the ſubject of all corruptions and generations; in a word, the being moſt incompatible with the immutability of the Deity!

The *Spinoziſts*, indeed, maintain, that it is not ſuſceptible of any diviſion; but the argument they alledge in proof of it, we have elſewhere ſhewn to be falſe: it is, that for matter to be divided, it is neceſſary that one of the parts be ſeparated from the other by a void ſpace, which is impoſſible: ſince there is no vacuum in nature. See VACUUM.

3°. If *Spinoziſm* appear extravagant when we conſider God as the ſubject of all the mutations, corruptions and generations in bodies; it will be found ſtill worſe, when we conſider him as the ſubject of all the modifications of thinking. It is no ſmall difficulty, to unite extenſion and thinking in the ſame ſubſtance; ſince it is not an union like that of two metals, or of water and wine, that will ſerve the purpoſe: theſe laſt require only juxta-poſition; whereas to combine thinking and extenſion requires an identity; thinking and extended are two attributes identified with the ſubſtance; and conſequently are identified with each other, by the fundamental rule of all logic.

Again, when we ſay, that a man *denies this*, *affirms that*, *likes that*, &c. we make all thoſe attributes fall on the ſubſtance of his mind, not on his thoughts, which are only accidents or modifications of it. If therefore what *Spinoza* advances be true, that men are modalities of God; it would be falſe to ſay, *Peter denies*, *likes*, *wills*, &c. ſince in reality, on this ſyſtem, it is God that denies, wills, *&c.* and conſequently all the denominations which ariſe from the thoughts, deſires, *&c.* of men, fall properly and phyſically on the ſubſtance of God. From whence it alſo follows, that God affirms and denies, loves and hates, wills and nills the ſame thing, at the ſame time, and under the ſame conditions: contrary to the great principle of reaſoning: *oppoſita ſunt quæ & neq; de ſe invicem, neq; de eodem tertio ſecundum idem, ad idem, eodem modo atq; tempore verè affirmari poſſunt*; which muſt be falſe, if *Spinoziſm* be true: ſince it cannot be denied but ſome men love and affirm what others hate and deny, under all the conditions expreſſed in the rule.

4°. But if it be phyſically abſurd, to ſay the ſame ſubject is modified at the ſame time with all the different thoughts of all men; it is horrible when we conſider it in a moral light. Since it will follow, that the infinite, the all-perfect Being is not conſtant, is not the ſame one moment, but is eternally poſſeſſed even with contrary paſſions; all the uniformity in him in this reſpect, will be, that for one good and wiſe thought he will have twenty fooliſh and wicked ones. He will not only be the efficient cauſe of all the errors, iniquities and impurities of men, but alſo the paſſive ſubject of them, the *ſubjectum inhæſionis*. He muſt be united with them in the cloſeſt manner that can be conceived, even by a penetrative union, or rather an identity, ſince the mode is not really diſtinct from the ſubſtance modified.

SPINSTER, in law, an addition uſually given to all unmarried women, from the viſcount's daughter downwards. See ADDITION.

Yet Sir Edward Coke ſays, *generoſa* is a good addition for a gentlewoman; and that if ſuch a perſon be named *ſpinſter* in any original writ, appeal or indictment, ſhe may abate and quaſh the ſame. See GENTLEMAN.

Spelman ſays, that anciently, even queens uſed the diſtaff and ſpindle; whence *ſpinſter* became a common appellation for all women. See WOMAN.

SPIRACLE. See the article VENT.

SPIRAL, in geometry, a curve line, of the circular kind, which in its progreſs recedes from its centre; as in winding from the vertex, down to the baſe of a cone. See SPIRE.

It is called from its inventor, *Archimedes's ſpire*, or *helix*; and is thus deſcribed.—Divide the periphery of a circle APpA (*Tab. Geometry*, *fig.* 39.) into any number of equal parts, by a continual biſſection in the points p. Into the ſame number of parts divide the radius CA, and make CM equal to one part, C *m* to two parts, *&c.*—Then will the points M *m*, *m*, *&c.* be points in the *ſpiral*, which connected, will give the *ſpiral* itſelf.

This is more particularly called the *firſt ſpiral*, and the *ſpace* included between its centre, and the point A, the *ſpiral ſpace*.

This firſt *ſpiral* may be continued to a *ſecond ſpiral*, by deſcribing another circle with double the radius of the firſt; and the ſecond may be continued to a *third*, by a third circle, *&c.*

Hence 1°. AP is to the periphery, as C *m* to the radius. Wherefore, if the periphery be called p, the radius $AC=r$, $AP=x$, $PM=y$; then will $CM=r-y$: conſequently as $p:r::x:r-y$, we ſhall have $pr-py=rx$.

2°. If $CM=y$; then will $rx=py$. Which equation the *ſpiral* has in common with the quadratrix of Dinoſtrates, and that of Tſchirnhauſen; and therefore $r^n x^m=p^n y^m$ will ſerve for infinite *ſpirals* and quadratrices. See QUADRATRIX.

3°. The lines M *m*, M *m*, *&c.* are to one another as the arches of the circle, intercepted between M A and thoſe lines: and, when continued, making equal angles with the firſt and ſecond *ſpiral*, are in arithmetical proportion.

4°. Lines drawn from M to the ſecond *ſpiral*, are to each other as the ſaid arches, together with the whole periphery added on both ſides.

Quadrature of SPIRALS, } See { QUADRATURE.
Logiſtic SPIRAL, } See { LOGISTIC.

SPIRAL, in architecture and ſculpture, denotes a curve that aſcends, winding about a cone or ſpire; ſo as all the points thereof continually approach the axis. See AXIS.

By this it is diſtinguiſhed from the *helix*, which winds after the ſame manner, around a cylinder.—Ignorant architects confound the two: but the more knowing diſtinguiſh them carefully. See HELIX.

The *ſpiral* line may be conceived to be thus generated.—If a right line, as AB (*Tab. Geometry*, *fig.* 40.) having one end fixed at B, be equally moved round, ſo as with the other end A, to deſcribe the periphery of a circle; and at the ſame time, a point be conceived to move forward, equally from B towards A in the right line AB, ſo as that the point deſcribes that line, while the line generates the circle: Then will the point, with its two motions, deſcribe the curve B, 1, 2, 3, 4, 5, *&c.* which is called a *ſpiral line*, and the plain ſpace contained between the *ſpiral line*, and the right line B A, is called the *ſpiral ſpace*.

Again, if the point B be conceived to move twice as ſlow as the line A B; ſo that it ſhall get but half way along B A, when that line ſhall have formed the circle; and if then, you imagine a new revolution to be made of the line carrying the point, ſo that they ſhall end their motion at laſt together; there will be formed a double *ſpiral line*; as in the figure: from the manner of which, may be eaſily drawn theſe corollaries.

1. That the lines B 12, B 11, B 10, *&c.* making equal angles with the firſt and ſecond *ſpiral* (as alſo B 12, B 10, B 8, *&c.*) are in arithmetical proportion.

2. The lines B 7, B 10, *&c.* drawn any how to the firſt *ſpiral*, are to one another as the arches of the circle intercepted betwixt B A, and thoſe lines: becauſe whatever parts of the circumference the point A deſcribes, as ſuppoſe 7, the point B will alſo have run over 7 parts of the line A B.

3. Any lines drawn from B to the ſecond *ſpiral*, as B 18, B 22, *&c.* are to each other, as the aforeſaid arches, together with the whole periphery added on both ſides: for at the ſame time that the point A runs over 12, or the whole periphery, or perhaps 7 parts more, ſhall the point B have run over 12, and 7 parts of the line A B, which is now ſuppoſed to be divided into 24 equal parts.

Proportional SPIRALS, are ſuch *ſpiral* lines as the rhumb lines on the terreſtrial globe, which, becauſe they make equal angles with every meridian, muſt alſo make equal angles with the meridians in the ſtereographick projection on the plane of the equator; and therefore will be, (as Dr. Halley obſerves) *proportional ſpirals* about the polar point.—From whence he demonſtrates, that the meridian line, is a ſcale of log-tangents of the half meridian complements of the latitudes. See RHUMB and LOXODROMIC.

SPIRAL *ſtairs*, in building. See STAIRS.

SPIRATION. See EXPIRATION, INSPIRATION, PERSPIRATION, RESPIRATION and TRANSPIRATION.

SPIRE *, Spira, in the ancient architecture, is ſometimes uſed for the baſe of a column; and ſometimes for the aſtragal or tore. See Base, Astragal and Tore.

* The word is formed from the Latin, *ſpiræ*, the folds of a ſerpent, which when laid, bear ſome reſemblance thereto; or from the Greek, σπειρα, the coil of a rope.

SPIRIT, Spiritus, in medicine, the moſt ſubtile and volatile part, or juice of the body; by means whereof, all the functions, and operations thereof are ſuppoſed to be performed. See Body, Part, Fluid, *&c.*

The ancients made a four-fold diviſion of *ſpirits*; into *vital*, *animal*, *natural* and *genital:* whereof, the firſt they placed in the heart; the ſecond in the brain; the third in the ſtomach and liver; and the laſt in the teſticles: but as this diviſion is founded on a falſe hypotheſis, it is now deſervedly ſet aſide.

The moderns uſually divide *ſpirits* into *vital* and *animal.*

Vital Spirits, are only the fineſt, and moſt agitated parts of the blood; whereon its motion, and heat depend. See Blood and Vital.

Animal Spirits, are an exceedingly thin, ſubtile, moveable fluid juice or humour ſeparated from the blood in the cortex of the brain, hence received into the minute fibres of the medulla, and by them diſcharged into the nerves, by which it is conveyed through every part of the body, to be the inſtrument of ſenſation, muſcular motion, *&c.* See Sensation, Muscular *motion*, &c. See alſo Animal.

The *animal ſpirits*, called alſo *nervous ſpirits* and *nervous juice*, only differ from the *vital ſpirits*, in that theſe laſt are ſtill mixed and blended with the groſſer parts of the blood, and circulate along with it: whereas, the *animal ſpirits* are ſecreted thence by the glands whereof the cortical ſubſtance is compoſed; and have a motion, circulation, *&c.* peculiar to themſelves. See Circulation.

Dr. Willis conceives, that the *animal ſpirits* are prepared by a proper diſtillation of the ſubtileſt part of the arterial blood, brought by the carotides into the cortex of the brain; and ſhews, that the blood contained in the ſinus's of the dura mater, acts in this diſtillation in the ſame manner as fire does in the chymical diſtillations performed by defluxion, where being placed over the matter to be diſtilled, it makes the ſubtileſt parts thereof deſcend.

The exiſtence of the *animal ſpirits* is controverted: but the infinite uſe they are of in the animal œconomy, and the exceedingly lame account we ſhould have of any of the animal functions without them, will ſtill keep the greateſt part of the world on their ſide. And, in effect, the learned Boerhaave has gone a good way towards a demonſtration of their reality.

The blood brought to the brain by the carotides, and vertebral arteries, he ſhews, is wonderfully prepared, ſecreted, elaborated and changed from its natural ſtate, ere it arrives there; inſomuch as, contrary to the nature of the reſt, inſtead of cohering by fire, it immediately reſolves wholly into a thin vapour, without any fæces behind. And is thus exceedingly well fitted for the formation of ſo extraordinary a fluid.

He ſhews, further, that the *animal ſpirits* are not formed from the cruor, but the ſerum of the blood, which Malpighi's hiſtory of the growth of the fœtus in an incubated egg, ſhews to be diviſible into parts or corpuſcles inconceivably ſmaller than the cruor.

He adds, that the nature of this juice is ſuch, as that no ſalts or oils in the body can contribute any thing to it; and that in all appearance, t is only a moſt ſubtile, pure water; which liquor is found to reſemble theſe *ſpirits* in its extraordinary miſcibility, mobility, ſolidity, ſoftneſs, ſimplicity and want of elaſticity.

The ſame author ſhews, further, from the magnitude of the carotides and vertebrals, their ſtreight uninterrupted courſe, the great quantity of blood they bring, the bulk of the cortex, *&c.* that there muſt be a very great quantity of this liquor; that there is freſh prepared every moment of life; and that it is driven, every moment, by the action of heat, *&c.* from the brain and cerebel, to all the parts of the body furniſhed with nerves; which motion, he ſhews from the exceeding fineneſs, crookedneſs, *&c.* of the ramifications, muſt be very gentle, equable and conſtant, one part continually driving before it another.

Upon the whole, it is no wonder this fluid eſcapes the notice of our ſenſes; and that no ligatures, wounds, punctures, injections or the like, make either it or the apertures of the nerves through which it flows, viſible: nor does it avail, what ſome who allow the exiſtence of the *animal ſpirits*, urge againſt their being any coherent juice or liquor, *viz.* that we ſhould find it ooze out and wet the adjacent parts, upon cutting a nerve, as we do in cutting a lymphatic, *&c.* or that upon binding a nerve, the upper-part would ſwell; that the agitations which objects make on the filaments, would be deadened, *&c.* that it is impoſſible a liquor ſhould have two oppoſite motions at the ſame time; and that the velocity of the ſenſations, and rapidity of the motions of man, prove, that the *animal ſpirits* are rather an aura or even light than a liquor. *Mem. de Trev.*

For the ſecretion of the *animal* Spirits from the blood, and the apparatus in order thereto. See Brain and Secretion.—For the courſe of the *animal* Spirits, and the veſſels through which they are carried, ſee Nerve and Circulation.—For the office of the *animal* Spirits in muſcular motion and ſenſation, ſee Muscular and Sensation.

Spirit, Spiritus, in the Newtonian phyſicks, denotes a moſt ſubtile, penetrative ſubſtance, which pervades all, even the denſeſt bodies, and lies hid therein; by the force and action whereof, the particles of bodies attract each other, at very ſmall diſtances, and when contiguous, cohere: and by which electrical bodies act at greater diſtances, both attracting and repelling the neighbouring corpuſcles; and light is emitted, reflected, and inflected, and warms bodies; and all ſenſation is excited; and the members of animals moved at the inſtance of the will, *viz.* by vibrations of this *ſpirit*, propagated through the ſolid capillaments of the nerves, from the external organs of ſenſe to the brain, and from the brain to the muſcles. See Medium, Newtonian, Heat, Light, Vacuum, Attraction, Sensation, *&c.*

Spirit, in chymiſtry, is one of the principles of natural bodies; called alſo *mercury.* See Principle and Mercury.

The chymical principle *ſpirit*, is a fine, ſubtile, volatile, penetrating, pungent liquor, which riſes ordinarily before the phlegm or water, and ſometimes after it.

The great properties of this liquor are, that it penetrates and opens ſolid bodies, corrodes, breaks, and even diſſolves certain mixt bodies, coagulates others, and produces an infinity of other effects, many of them even contrary to one another.

In the general, the chymiſts give the denomination *ſpirits* to all the fine, ſubtile, not-aqueous particles, raiſed from bodies by heat, and reduced into liquors by diſtillation.—Such are *ſpirit* of vitriol, of nitre, of ſalt, *&c.*

They alſo apply the name *ſpirits*, to thoſe aqueous liquors which are drawn by liquefaction, when they are impregnated with ſalts, or other active principles, raiſed, together with them, by the violence of the fire.

Theſe, when they excite any ſenſation of heat on the tongue, are particularly called *acid*, or *ſharp ſpirits.* See Acid.

When they make any eroſion on the tongue, they are called *corroſive ſpirits.* See Corrosive.

Such as taſte ſomewhat like common ſalt, are called *ſaline ſpirits.* See Salt.

Such as partake of the taſte of common ſulphur, *ſulphurous ſpirits.* See Sulphur.

And when this taſte is very ſtrong, *urinous ſpirits.* See Urinous.

Such as take fire readily, *inflammable* or *ardent ſpirits.* See Inflammable and Ardent.

Such where the acid predominates, though qualified with a little ſulphur, *&c.* are called *mixt ſpirits.*

In this ſenſe, the chymiſts are ſaid to draw a *ſpirit* from ſulphur, ſalt and other bodies, when they extract the eſſence, or the ſubtileſt part thereof, by diſtillation or otherwiſe. See Distillation, *&c.*

Spirits, is alſo a general name among diſtillers, for all diſtilled liquors that are neither oil, nor phlegm. See Distillation, *&c.*

Spirit *of wine*, is only brandy rectified once or more times, by repeated diſtillations. See Brandy and Rectified.

One may likewiſe make a perfect rectification of brandy into *ſpirit of wine*, at one ſingle diſtillation, by uſing a chymical inſtrument conſiſting of ſeveral cucurbites, deſcribed by Glaſer. See Rectification.

Spirit of wine is uſed in dying, as a non-colouring drug, and though giving no colour itſelf, ſerving to prepare the ſtuffs to receive other colours. See Dying.—Its conſumption is alſo very conſiderable in ſeveral other works and manufactures; particularly the making of varniſh. See Varnish.

Ætherial Spirit *of wine*, (called by ſome *vegetable æther*, or the *æther of plants*) is a denomination given, by ſome modern chymiſts, to a liquor endued with very extraordinary properties; prepared from ſpirit of wine, and oil of vitriol.

Dr. Frobenius, who firſt brought it into England, deſcribes it as the pureſt fire, yet at the ſame time a moſt fluid water. Being poured on the hand, it feels cold; yet is ſo inflammable, that it catches fire and kindles even at a conſiderable diſtance from a candle. It is extremely light, and miſcible with water, yields an aromatic ſmell, and is ſo volatile, and evaporates ſo faſt, that it ſcarce ſeems to wet the finger dipped in it. *Vid. Phil. Tranſ. n.* 413, *p.* 283, *Mem. Acad. R. an.* 1734, *p.* 56

Phoſphorus being diſſolved in this liquor, and the ſolution poured into a tub of warm water, a blue flame is produced, with ſmoke, and a ſmall degree of warmth.

Some of this *ætherial ſpirit of wine*, being poured into a tub of cold water, is ſet on fire and yields a copious flame by the touch of the point of the operator's ſword *.—After the deflagration, the water is found cold. *Vid. Phil. Tranſ. n.* 428, *p.* 55, 58.

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* But it muſt be obſerved, that the ſword is firſt privately warmed,

ed, and in applying it, the point is dextrouſly rubbed againſt a bit of phoſphorus lodged for the purpoſe on the ſide of the tub.—What pity to ſee chymiſtry debaſed with legerdemain!

SPIRIT *of ſulphur*, is a *ſpirit* drawn from ſulphur ſet on fire; the moſt ſubtile part whereof, is converted into a liquor, by ſticking to a glaſs bell ſuſpended over it, whence it falls drop by drop, into a trough, in the middle whereof is placed the ſtone pot wherein the ſulphur is burnt. See SULPHUR.

This *ſpirit* is held ſpecific for the ſame diſeaſes as *ſpirit* of vitriol. See SPIRIT *of vitriol.*

SPIRIT *of ſalt*, is a yellow liquor drawn, by chymiſtry, from ſea ſalt. See SALT.

The beſt, is that prepared in England. It is much uſed in medicine; but has not, perhaps, all the virtues aſcribed to it. The common *ſpirit of ſalt*, being very corroſive, may be dulcified, by letting it digeſt three days in a gentle ſand heat, with an equal quantity of *ſpirit* of wine mixed therewith. See DULCIFYING, FRESH-*water*, &c.

SPIRIT *of vitriol*, is vitriol dried in the ſun, or in defect thereof, by the fire, and then diſtilled by chymical operations ſeveral times repeated; firſt by a reverberatory fire, and then in balneo Mariæ. See VITRIOL.

It is held excellent againſt the epilepſy, as well as againſt burning and malignant fevers.—The laſt *ſpirit* drawn from vitriol, and which is improperly called *oil of vitriol*, is uſed in the diſſolution of metals and minerals.

SPIRIT *of amber*, } See the articles { AMBER.
SPIRIT *of ſal armoniac*, } { ARMONIAC.

SPIRIT, is alſo uſed for any incorporeal being, or intelligence.—In which ſenſe, God is ſaid to be a *ſpirit*: angels are *ſpirits*; the devil, an *evil ſpirit*. See GOD, ANGEL, DEVIL, *&c.*

In this ſenſe, the human ſoul is alſo called a *ſpirit*, from its thinking and reflecting powers, which cannot be conceived to reſide in any thing material. See SOUL.

F. Malebranche obſerves, it is extremely difficult to conceive what it is, ſhould make the communication between the body and the *ſpirit*; for if the *ſpirit* have no material parts, it cannot move the body: but the argument muſt be falſe ſome how or other; for we believe that God can move bodies, and yet do not attribute any material parts to him.

SPIRIT, in theology, is uſed by way of eminence, for the third Perſon in the holy trinity: called *the Spirit*, *Holy Spirit*, or *Holy Ghoſt*. See TRINITY and PERSON.

The Macedonians, *&c.* deny the divinity of the *Spirit*: the Socinians his exiſtence: the Arians his co-equality with the Father. See ARIANS, SOCINIANS, *&c.*

Divines expreſs the manner wherein the *Spirit* was produced, by an active ſpiration or breathing of the Father and the Son; whence the denomination *ſpiritus*, q. d. breath.

Order of the holy SPIRIT. See HOLY *Ghoſt.*

SPIRIT, is alſo uſed among divines, for the divine power, and virtue; and the communication thereof to men.

In this ſenſe, the *Spirit* is ſaid to have gone out on the face of the deep, Gen. i. 2. And the prophets to have been poſſeſſed with the *Spirit* of God.—Providence, in this ſenſe, is that univerſal *Spirit* whereby God makes all nature to act. Thus the holy virgin is ſaid to have conceived of the *Spirit*.

Private SPIRIT, is a term that made a great figure in the controverſies of the two laſt centuries. It ſignifies the particular ſenſe or notion each perſon has of the dogmata of faith, and the truths of religion, as ſuggeſted by his own thoughts, and the perſuaſion he is under with regard thereto.

The firſt reformers denying ſtrenuouſly any infallible interpreter of the ſcripture, or any ſettled judge of controverſies; maintained, that every perſon was to interpret and judge of revealed truths, by his own light, aſſiſted by the grace of God; and this was what they called *private ſpirit* or *judgment*. Againſt this, the arguments uſed by the Romaniſts are, that revealed truths being one and the ſame for all believers; the rule God has given us for judging of them, ought to repreſent them to us uniformly and the ſame; but the *private ſpirit* informs Luther one way, and Zuinglius another. It divides Oecolompadius, Bucer, Oſiander, *&c.* And the doctrine it diſcovers to the Confeſſioniſtes, is quite different from that it ſhews the Anabaptiſts and Mennonites, in the very ſame paſſage of ſcripture.

SPIRIT, *Spiritus*, is alſo uſed in proſody, to ſignify the greater, or leſs degree of breath employed in the pronunciation of the initial Greek vowels, and of the letter ϱ. See ASPERATE.

In ſounding the vowels we may obſerve, every vowel has its ſound by a ſimple conformation of the mouth; wherein the breath has little or no concern, as being confined in the arteria aſpera: The *ſpirits* or breaths, which are placed on the initial vowels in words, are to denote the force this initial vowel is to have from the breath, when the word is pronounced. If the ſound of this vowel be ſmooth, as all the ſounds of the vowels naturally are, this is termed *ſpiritus lenis*, a *mild breath*; but, if this vowel be to be pronounced with a more vehement expulſion of the air, this is termed *ſpiritus aſper*, or a rough breath or aſperate; and when the aſperate and acute are in the ſame ſyllable, the mark of the breath in this initial vowel only ſignifies that the vowel is to be pronounced with a ſtronger breath than the initial mild vowels; for aſperates do not alter the tone of any ſyllable, but only ſtrengthen, increaſe and ſwell the tone.

Art of SPIRITS, } See the articles { ART.
Modes of SPIRIT, } { MODE.

SPIRITUALITIES of a biſhop, are ſuch profits as ariſe to him from the benefit of his juriſdiction in his dioceſe, and not as a baron of parliament. See BISHOP and TEMPORALITIES.

Such are thoſe of his viſitations, inſtitutions, ordinations, preſentation money, *&c.* See VISITATION, *&c.*

Guardian of the SPIRITUALITIES. See GUARDIAN.

SPIRITUALIUM *cuſtos*. See the article CUSTOS.

SPIRITUALIZATION, in chymiſtry, the action of extracting ſpirits from natural bodies. See SPIRIT.

Spiritualization, is an operation that belongs principally to fermented ſalts; then to fermented juices and liquors; the fermentation rendring the ſpirits volatile and inflammable. See FERMENTATION.

Spirit of wine is ſometimes *ſpiritualized* to that degree, that upon throwing a quantity into the air, not a drop ſhall fall down; but the whole evaporate and be loſt.

SPIRITUS *aceti*. See the article ACETUM.

SPITTLE. See the article SALIVA and SPUTUM.

SPITTLE, a corruption of the word *hoſpital*. See HOSPITAL.

SPLAIT *ſhoulder*; ſee the article SHOULDER.

SPLANCHNOLOGY *, in anatomy, a diſcourſe, or explication of the viſcera.—See *Tab. Anat.* p. 3. where the object of this branch is repreſented; ſee alſo VISCERA.

* The word is formed from the Greek, σπλαγχνον, *viſcus*, inteſtine, and λογος, diſcourſe.

Sarcology is divided into three parts, *viz. ſplanchnology*, *myology*, and *angeiology*. See SARCOLOGY.—*Splanchnology*, is that which treats of the internal parts, and particularly the viſcera.

SPLEEN, ΣΠΛΗΝ, *lien*, in anatomy, a ſoft, ſpungy, viſcus, of a darkiſh red, or rather livid, colour, ordinarily reſembling the figure of a tongue, though ſometimes triangular, and ſometimes roundiſh.—See *Tab. Anat.* (Splanch.) *fig.* 1. *lit. m.*

The *ſpleen* is uſually ſingle, though ſometimes there are two, and ſometimes three found. It is ſituate in the left hypochondrium, between the ſpurious ribs and the ſtomach; is ſomewhat convex on the ſide towards the former, and concave towards the latter. Its ordinary length is ſix inches; breadth three, and thickneſs one. It is connected to the omentum, and, by means of that and the blood veſſels, to the ſtomach and left kidney, and ſometimes to the diaphragm.

It is covered with two tunics; the external derived from the peritonæum, and connected to the internal only by intervention of the blood veſſels. The inner conſiſts of fibres very curiouſly interwoven. From this, probably, are derived thoſe innumerable cells or little bladders, which make up the main bulk of the *ſpleen*: though Malpighi rather takes them to ariſe from the venous duct. The cells communicate with each other, and diſcharge themſelves into the trunk of the ſplenic vein. Their inſide, according to Malpighi, is furniſhed with various minute glands adhering together; ſix, ſeven, or eight whereof form a kind of ſmall conglomerate glands, wherein the arteries and veins ſeem to terminate.

Its blood veſſels are the ſplenic artery, which furniſhes it with blood, from the cœliac; and the ſplenic vein, which carries it thence, by the porta, to the liver. See SPLENIC.

Its nerves come from the plexus lienaris, near the bottom of the ſtomach. The veſſels are all, as ſoon as they enter the *ſpleen*, wrapt up in one common capſula or membrane, and plentifully diſtributed together throughout the ſubſtance of the *ſpleen*. Beſides theſe, are lymphatics in great abundance.

The anaſtomaſes between the arteries and veins of the *ſpleen*, are more apparent than in any other part of the body. And this viſcus is obſerved to be furniſhed with a greater proportion of blood than any other parts. See ANASTOMASIS.

The uſe of the *ſpleen* has been diſputed in all ages; both, as no immediate uſe thereof appears from diſſection, and as we find, that animals from whom it has been cut, live very well without it. All the effects, *e. gr.* following the cutting it from a dog, are, that the animal grows more ſalacious than uſual; that it urines more frequently; is more hungry than ordinary; and for the firſt days is troubled with a vomiting and nauſea. It is added, that it is neceſſary the part be taken away to make a good runner.

Hence ſome have imagined that the *ſpleen* only ſerved to make a balance in the weight of the body; others, that it was only intended for the ſake of ſymmetry; others hold it an uſeleſs load, and one of nature's redundances; others, a pit, or common-ſhore, to diſcharge the fæces of the blood into; others a fire, by the heat whereof, the action of the ſtomach is animated.

Many of the ancients took it to be the receptacle of the atrabilis, or melancholic humour; for which reaſon, ſome of them call it the *organ of laughter*. See LAUGHTER, HYPOCHONDRIAC, &c.

Mr. Cowper, from the great quantity of blood, and the apparent inoſculations of the *ſpleen*, draws a very natural conjecture of the uſe thereof; at leaſt of the peculiar mechaniſm. He takes, then, the *ſpleen* to be only a ſubordinate organ, miniſtring to the circulation; and thinks, that by this congreſs of the arterial and venal blood, an impetus is communicated to the latter; by which its progreſs through the ramifications of the porta to the cava, is promoted, which would otherwiſe be ſo broke by the double ramifications of the porta, as to want ſtrength ſufficient to carry to the heart. See CIRCULATION.

The action or effect of the *ſpleen*, according to Dr. Boerhaave, is to receive the freſh arterial blood, prepare it in its glands, and pour it into its cells; to return what blood is left from this action, to the little veins, and thence to the ſplenic vein; to mix the humour thus prepared, with the nervous juice, and to prepare, attenuate, and more intimately unite them together into one humour.

Malpighi, and afterwards Dr. Keil, and ſome others, take the *ſpleen* to be a viſcus aſſiſtant to the liver, in the ſecretion, *&c.* of the bile. We have obſerved, that by reaſon of the nearneſs of the liver and heart, and the ſwift motion of the blood in the aorta, a humour conſiſting of particles that combine ſo ſlowly as thoſe of the bile do, could not be prepared but by bringing the blood round about through the ſtomach, inteſtines and omentum, *&c.* to the liver, to abate its velocity.

Now Dr. Keil conjectures, that thoſe parts were not ſufficient to receive all the blood neceſſary to be ſent to the liver; therefore nature framed the *ſpleen*, into whoſe cavities the blood being poured from a ſmall artery, moves at leaſt as ſlowly as any that paſſes otherwiſe to the liver; by which means the particles that compoſe the bile in the blood which paſſes through the ramus ſplenicus, by ſo long and ſlow a circulation, have more chances for uniting than otherwiſe they would, had they been carried by the branches of the cœliac directly to the liver; conſequently without the *ſpleen*, ſuch a quantity of bile as is now ſecerned, that is, as nature requires, could not have been ſeparated by the liver. See BILE; ſee alſo LIVER.

SPLEEN is alſo uſed for a diſeaſe, by phyſicians more uſually called the *hypochondriac diſeaſe*. See HYPOCHONDRIAC, and VAPOURS; ſee alſo SPLENETIC.

SPLENETIC, ΣΠΛΗΝΙΚΟΣ, a perſon affected with opilations and obſtructions of the ſpleen. See SPLEEN.

In *ſplenetic* people, the ſpleen is ſwelled beyond the natural bulk, or hardened, ſo as to ſhew a ſcirrhous tumour thereon.

Splenetic people are diſtinguiſhed by a livid, lead-coloured complexion; their character is to be very prone to laughter; which is an expedient nature is ſuppoſed to make uſe of, to evacuate the too redundant humour the ſpleen is charged withal: whence it is that the ancients made the ſpleen the organ of laughter; and hence that popular ſaying of a perſon laughing heartily, that he *vents his ſpleen*. See LAUGHTER.

SPLENETIC *waters*; ſee the article WATER.

SPLENIC *veſſels*, a large artery, and vein of the ſpleen. See SPLEEN.

The SPLENIC *artery*, *arteria* SPLENICA, is a trunk of the left cœliac, ſerving to bring the blood from that artery to the ſpleen, to be there ſecreted, prepared, *&c.* Its progreſs is very much contorted; and after its arrival at the ſurface of the ſpleen, it is diffuſed through the ſubſtance thereof in ſmall branches, which ſeem to terminate in the cells.

The SPLENIC *vein*, *vena* SPLENICA, is formed out of the ſeveral minute veins of the ſpleen, uniting as they quit the ſurface thereof. It carries the blood ſecreted, *&c.* in the ſpleen, to the left branch of the vena porta, to be thence conveyed to the liver, there to be further prepared and converted into bile. See LIVER, and BILE.

The *ſplenic vein* and *artery* manifeſtly communicate with each other: for water being poured into one of them, preſently diſcharges itſelf by the other. See SPLEEN.

SPLENII, in anatomy, a pair of muſcles, called alſo from their form *triangulares*.—See *Tab. Anat.* (Myol.) fig. 2. *. fig. 6. n. 5. fig. 7. n. 6.

They ariſe from the four upper ſpines of the vertebræ of the back, and from the two lower of the neck, and aſcending obliquely, adhere to the upper tranſverſe proceſſes of the vertebræ of the neck, and are inſerted into the upper part of the occiput. They pull the head backwards to one ſide, and are called *ſplenii*, from a ſuppoſed reſemblance to an ox's ſpleen.

SPLENT, or SPLINT, among farriers, a callous, inſenſible excreſcence, or griſtle, that ſometimes ſticks to an horſe's ſhank bone; generally on the inſide, below the knee.

If there be one oppoſite thereto on the outſide, it is called a *pegged*, or *pinned ſplent*, becauſe it does, as it were, pierce the bone, and is extreamly dangerous: ſome call this a *double ſplent*, and others a *thorough ſplent*.

SPLENTS, in ſurgery, pieces of wood uſed in binding up broken limbs. See FERULA.

The word is alſo uſed for the pieces of a fractured bone.

SPLICE, at ſea.—They ſay, a cable or rope is *ſpliced*, when the ends of two pieces being untwiſted, the ſeveral ſtrands are wrought into one another by a fidd.

Alſo, when an eye is to be made at the end of a rope, the ends of the ſtrands, are, by a fidd, drawn into the ends of the other rope ſtrands; and this is called a *ſplice*.

To SPLICE, among gardeners, is to graft the top of one tree into the ſtock of another, by cutting them ſloping, and faſtening them together. See ENGRAFTING.

SPLINT. See the article SPLENT.

SPODIUM, in pharmacy, a kind of metalline calx, or aſhes, eſteemed cardiac, and by ſome held to have the ſame virtues with coral. See CORAL.

The *ſpodium* of the ancient Greeks was a greyiſh kind of recrement, found in form of aſhes on the hearths of furnaces wherein braſs was made; called by them σποδιον, which literally ſignifies *aſhes*.

Spodium is a metalline powder, nearly a-kin, both in origin and uſe, to tutia and pompholyx; only heavier than either. See TUTTY, and POMPHOLYX.

The *ſpodium* of the Arabian phyſicians, as Avicenna and others, was made of the burnt roots of ruſhes, and reeds. Some moderns alſo make a *ſpodium* of ivory burnt and calcined to a whiteneſs.—It is ſometimes counterfeited, by burning bullocks or dogs bones; but theſe are of no value.

The *anti* SPODIUM, which the ancients ſubſtituted for their *ſpodium*, was made of myrtle leaves, galls, and ſome other ingredients, calcined.

SPOILS, SPOLIA, whatever is taken from an enemy in war.

Among the Greeks, the *ſpoils* were divided in common among the whole army; only the general's quota was the biggeſt.

By the military diſcipline of the Romans, the *ſpoils* belonged to the republic; particular perſons had no title to them; and ſuch of the generals, as valued themſelves on their probity, always carried them to the public treaſury.—Sometimes, indeed, the pillage was diſtributed by the general among the ſoldiery, to encourage them, or to reward them: but this was not done without a world of prudence and reſervedneſs, otherwiſe it came under the crime of Peculate.

The conſuls Romulus and Veturius, were condemned for having ſold the *ſpoils* taken from the Æqui. Livy, lib. 8.

SPONDAULA *, ΣΠΟΝΔΑΥΛΗΣ, in antiquity, a player of the flute, or other wind inſtrument of that kind, who, during the offering of ſacrifice, performed ſome ſuitable air in the prieſt's ear to prevent his hearing any thing that might diſtract him, or leſſen his attention. See SACRIFICE.

* The word is formed from the Greek σπονδη, *libation*, and αυλος, *flute*.

SPONDEE, SPONDÆUS, in the Greek and Latin proſody, a foot of verſe, conſiſting of two long ſyllables.—As, *vertunt*. See FOOT, QUANTITY, and DISPONDEE.

The *ſpondee* is a grave meaſure: all Greek and Latin hexameters regularly end with a *ſpondee*. See VERSE, and MEASURE.

There are alſo *ſpondaic verſes*; that is, verſes compoſed wholly of *ſpondees*, or at leaſt that end with two *ſpondees*, as,

Conſtitit atque oculis Phrygia agmina circumſpexit.

SPONDYLUS, ΣΠΟΝΔΥΛΟΣ, a term anciently uſed for a vertebra of the ſpina dorſi. See VERTEBRA, *&c.*

SPONGE. See the article SPUNGE.

SPONGIOSA, in anatomy, an epithet given to ſeveral parts of the body, by reaſon of their texture, which is porous and cavernous, like that of the ſpunge: as

Corpora SPONGIOSA *penis*, called alſo *corpora cavernoſa* and *nervoſa*. See CAVERNOSA *corpora*.

Oſſa SPONGIOSA of the noſe, called alſo *oſſa turbinata* and *cribriformia oſſa*. See CRIBRIFORME.

SPONTANEOUS *, SPONTANEUS, in the ſchools, a term applied to ſuch motions of the body, and mind, as we perform of ourſelves, without any conſtraint. See VOLUNTARY, and MOTION.

* The word is formed from the Latin adverb, *ſponte*, of one's own accord.

Thus, in morality, thoſe actions performed from an inward and natural principle, conformable to our own inclinations, excluding all conſtraint, but not excluding neceſſity; are called *ſpontaneous actions*. See NECESSITY.

In medicine, an evacuation effected without any application for that purpoſe, is called a *ſpontaneous evacuation*.—And a laſſitude or wearineſs, not occaſioned by any preceding fatigue, is called a *ſpontaneous wearineſs*.

It is held a grievous and dangerous error, with regard both to religion and morality, to hold that human liberty only conſiſts in *ſpontaneity*: M. le Clerc has been very harſhly treated, for making St. Auguſtin of this opinion. See LIBERTY, and FREEDOM.

SPONTANEOUS *generation*. See EQUIVOCAL *generation*.

SPONTANEOUS *precipitation*. See PRECIPITATION.

SPOONING, or SPOOMING, in the ſea language. When a ſhip being under ſail, in a ſtorm at ſea, cannot bear it; but is forced to put right before the wind; the ſeamen ſay, ſhe *ſpoons*.

And when in ſuch a caſe, there is danger leſt ſhe ſhould bring her maſts by the board, with her rolling about, or ſeel under water, and ſo founder, they uſually ſet up the fore-ſail to make her go the ſteadier, eſpecially if there be ſea-room enough: this they call *ſpooning with the fore-ſail*.

SPORADES, in aſtronomy, a name which the ancients gave to ſuch ſtars as were not included in any conſtellation. See STAR.

Theſe, the moderns more uſually call *informes* or *extraconſtellary ſtars*. See INFORMES, and CONSTELLATION.

Many of the *ſporades* of the ancients have been ſince formed into new conſtellations: *e. gr.* of thoſe between leo and urſa major, Hevelius has formed a conſtellation, called *leo minor*; of thoſe between urſa minor and auriga, the ſame perſon has formed another conſtellation called *lynx*: of thoſe under the tail of urſa major, another called *canis venaticus*, &c. See CONSTELLATION.

SPORADIC*, ΣΠΟΡΑΔΙΚΟΣ, in medicine, an epithet given to ſuch diſeaſes as have ſome ſpecial or particular cauſe, and are diſperſed here and there, affecting only particular conſtitutions, ages, &c. See DISEASE.

* The word is formed from the Greek σπορας, diſperſed, ſpread, of σπειρω, I ſow, ſtrew, &c.

Sporadic ſtand in oppoſition to *epidemic* diſeaſes, which are thoſe ariſing from a general cauſe, and that are common to all kinds of perſons, of what complexion and quality ſoever. See EPIDEMIC and ENDEMIC.

SPORTULA, in antiquity, a dole or largeſs, either of meat or money, given by princes or great men, to the people or poor. See ALMS.

The *ſportula* was properly the panier, or baſket wherein the meat was brought; or wherewith the poor went to beg it: thence the word was transferred to the meat itſelf; and thence to money ſometimes given in lieu of it.

Sportula was alſo frequently uſed in oppoſition to *recta cœna*, a formal or plentiful meal; as in Martial—*promiſſa eſt nobis* ſportula, *recta data*.

St. Cyprian gives the denomination, *ſportulantes fratres*, to ſuch clergymen as then received gifts, or gratuities, for their maintenance, like our prebends. See ALMS, &c.

SPOTS, in aſtronomy, dark places obſerved on the diſks or faces of the ſun, moon, and planets. See SUN, MOON, &c.

The *ſpots* in the ſun are only viſible through a teleſcope: ſome diſtinguiſh them into *maculæ* or dark *ſpots*, and *faculæ* or bright *ſpots*; but there ſeems little foundation for any ſuch diviſion. See MACULÆ and FACULÆ.

The *ſolar ſpots* have not been long obſerved. They are very changeable, as to number, form, &c. are ſometimes in a multitude, and ſometimes none at all.

Some imagine they may become ſo numerous, as to hide the whole face of the ſun; at leaſt the greateſt part of it; and to this aſcribe what Plutarch tells us, *viz.* that in the firſt year of the reign of Auguſtus, the ſun's light was ſo faint and obſcure, that one might look ſteadily at it with the naked eye. See ECLIPSE.

To which Kepler adds, that in 1547, the ſun appeared reddiſh, as when viewed through a thick miſt; and hence conjectures, that the *ſpots* in the ſun are a kind of dark ſmoke or clouds floating on the ſurface thereof.

Others will have them ſtars or planets tranſiting the body of the ſun.—But it is much more probable they are opake bodies, in manner of cruſts, formed like the ſcums on the ſurface of liquors. See SUN.

The *lunar ſpots* are fixed. Some will have them the ſhadows of the mountains, or uneven places of the moon's body; but their conſtancy diſcredits this opinion.—The more general and probable opinion is, that the *ſpots* in the moon, are ſeas, lakes, moraſſes, &c. which abſorbing part of the ſun's rays, reflect the fewer to us; ſo as to appear in form of dark *ſpots*: whereas the earthy parts, by reaſon of their ſolidity, reflect all their light, and thus appear perfectly bright.—M. Hartſoeker has another opinion, and takes the *ſpots* in the moon, many of them at leaſt, for foreſts, groves, &c. the leaves and branches whereof, intercept the rays reflected from the ground, and ſend them elſewhere.

The aſtronomers reckon about forty-eight *ſpots* on the moon's face; to each whereof they have given names. The twenty-firſt is one of the moſt conſiderable, and is called *Tycho*.

Planetary ſpots.—Aſtronomers find that the planets are not without their *ſpots*. Jupiter, mars, and venus, when viewed through a teleſcope, ſhew ſeveral very remarkable ones; and it is by the motion of theſe *ſpots*, that we conclude the rotation of the planets round their axes, in the ſame manner as that of the ſun is deduced from the motion of his maculæ. See PLANET, SUN, PHASES, &c.

SPOUT, or *Water*-SPOUT, in natural hiſtory, an extraordinary meteor, or appearance at ſea, and ſometimes at land, very dangerous to ſhips, &c. ofteneſt obſerved in hot, dry weather; called by the Latins, *typho*, and *ſipho*; by the French, *trompe*, &c. See METEOR.

Its firſt appearance is in form of a deep cloud, the upper part whereof is white, and the lower black. From the lower part of this cloud hangs, or rather falls down, what we properly call the *ſpout*, in manner of a conical tube, biggeſt at top. Under this tube is always a great boiling, and flying up of the water of the ſea, as in a jet d'eau. For ſome yards above the ſurface of the ſea, the water ſtands as a column or pillar; from the extremity whereof it ſpreads and goes off, as in a kind of ſmoke. Frequently, the cone deſcends ſo low, as to touch the middle of this column, and continue for ſome time contiguous to it; though ſometimes it only points to it, at ſome diſtance, either in a perpendicular or oblique line. See *Tab. Nat. Hiſt. fig.* 20.

Frequently it is ſcarce diſtinguiſhable, whether the cone or the column appear the firſt, both appearing all of a ſudden againſt each other. But ſometimes the water boils up from the ſea to a great height, without any appearance of a *ſpout* pointing to it, either perpendicularly or obliquely. Indeed, generally, the boiling or flying up of the water, has the priority, this always preceding its being formed into a column. Generally, the cone does not appear hollow, till towards the end; when the ſea-water is violently thrown up along its middle, as ſmoke up a chimney. Soon after this, the *ſpout* or canal breaks and diſappears; the boiling up of the water, and even the pillar, continuing to the laſt, and for ſome time afterwards; ſometimes till the *ſpout* form itſelf again, and appear a-new; which it ſometimes does, ſeveral times in a quarter of an hour.

M. de la Pyme, from a near obſervation of two or three *ſpouts* in Yorkſhire, deſcribed in the *Philoſophical Tranſactions*, gathers, that the *water-ſpout*, is nothing but a gyration of clouds by contrary winds, meeting in a point or centre; and there, where the greateſt condenſation and gravitation is, falling down into a pipe or great tube, ſomewhat like Archimedes's ſpiral ſcrew; and in its working and whirling motion, abſorbing and raiſing the water, in the ſame manner as the ſpiral ſcrew does; and thus deſtroying ſhips, &c.

Thus, June the 21ſt, he obſerved the clouds mightily agitated above, and driven together; upon which they became very black, and were hurried round, whence proceeded a moſt audible whirling noiſe, like that ordinarily heard in a mill. Soon after, iſſued a long tube or *ſpout*, from the center of the congregated clouds, wherein he obſerved a ſpiral motion, like that of a ſcrew; by which the water was raiſed up. Again, Auguſt 15, 1687. the wind blowing at the ſame time out of ſeveral quarters, created a great vortex and whirling among the clouds; the center whereof, every now and then, dropt down, in ſhape of a long, thin, black pipe, wherein he could diſtinctly behold a motion like that of a ſcrew, continually drawing upwards, and ſcrewing up, as it were, wherever it touched. In its progreſs it moved ſlowly over a grove of trees, which bent under it like wands in a circular motion. Proceeding, it tore off the thatch from a barn, bent a huge oak tree, broke one of its greateſt branches, and threw it to a great diſtance. He adds, that whereas it is commonly ſaid, the water works and riſes in a column, before the tube comes to touch it; this is doubtleſs a miſtake, owing to the fineneſs and tranſparency of the tubes, which do moſt certainly touch the ſurface of the ſea, before any conſiderable motion can be raiſed therein; but which do not become opake and viſible, till after they have imbibed a conſiderable quantity of water.

The diſſolution of *water-ſpouts*, he aſcribes to the great quantity of water they have glutted; which by its weight impeding their motion, whereon their force, and even exiſtence, depends, they break and let go their contents; which uſe to prove fatal to whatever is found underneath.

A notable inſtance hereof, we have in the *Philoſophical Tranſactions*, related by Dr. Richardſon. A *ſpout* in 1718, breaking on Emott-moor, nigh Coln, in Lancaſhire, the country was immediately overflowed; a brook, in a few minutes, roſe ſix feet perpendicularly high; and the ground whereon the *ſpout* fell, which was ſixty-ſix feet over, was tore up to the very rock, which was no leſs than ſeven feet deep; and a deep gulf made for above half a mile; the earth, being raiſed on either ſide in vaſt heaps.

In Pliny's time, the ſeamen uſed to pour vinegar into the ſea, to aſſuage and lay the *ſpout*, when it approached them: our modern ſeamen think to keep it off, by making a noiſe with filing and ſcratching violently on the deck; or, by diſcharging great guns to diſperſe it.

SPOUTING *fountain*. See the article FOUNTAIN.

SPRAIN. See the article STRAIN.

SPRING, *fons*, in natural hiſtory, a fountain, or ſource of living water ariſing out of the ground. See WATER and FOUNTAIN.

The origin of *ſprings* or fountains, is a thing much controverted among our lateſt naturaliſts.—Meſſ. Mariotte and Perrault aſcribe it to rains: their doctrine is, that the rain-water penetrates the earth till ſuch time as it meets a clayey ſoil or ſtratum; which proving a ſufficient ſolid bottom, to ſuſtain and ſtop their deſcent, they glide along it that way to which the earth declines, till they meet with a place or aperture in the ſurface, through which they may eſcape, and make the head of a river. See STRATUM.

Now, that the rain is ſufficient for this effect, appears hence; that upon calculating the quantity of rain and ſnow which falls yearly on the tract of ground, that is to furniſh, for in ſtance, the water of the Seine; it is found, that river does not take up above one ſixth part of it. See RAIN.

Springs ordinarily ariſe at the feet of mountains: the reaſon, ſay they, is, that mountains collect the moſt waters, and give them the greateſt deſcent the ſame way: and that if we ſometimes ſee ſprings on high grounds, and even on the tops of mountains; they muſt be brought from other remoter places, conſiderably higher, along beds of clay or clayey ground, as in their natural channels.—If then, there happen to be a valley between a mountain, on whoſe top is a *ſpring*, and the mountain that is to furniſh it with water, the *ſpring* muſt be looked on as a water conducted from a reſervoir of a certain height through a ſubterraneous channel, to make a jet of an equal or ſomewhat leſs height. See RAIN.

This theory M. de la Hire has taken under examination, in its moſt eſſential article, and that where the authors ſeem to have been the leaſt diſtruſtful.—He has endeavoured to find, by experiment, whether rain or ſnow water could penetrate the earth as low as the clayey ſtratum: the reſult of his enquiry, is, that they do not penetrate even ſixteen inches deep, in a quantity ſufficient to form the ſmalleſt collection of water on a ſolid bottom. Nay, this he found when the earth he made his experiment on, was quite naked of all herbs and plants; but as ſoon as ever any of theſe came up, and were grown to any bulk, ſo far was the rain that fell, from being able to gather itſelf at the depth of ſixteen inches, that it was not ſufficient even to feed the plants, but there was a neceſſity for watering them. For the quantity of water expended in the ordinary ſupport of plants, ſee VEGETATION.

Dr. Halley refers the origin of *ſprings* merely to vapours raiſed by the heat of the ſun, or of ſubterraneous fires, from the ſea, lakes, rivers, &c. Theſe vapours thus raiſed, he ſuppoſes, are by the winds, carried over the low-lands, to the ſeveral mountains and ridges of mountains, and are there compelled, by the ſtream of air, to mount with it to the tops, where the atmoſphere being very rare and cold, retains but a ſmall part of them; the reſt is condenſed into dew, which preſently precipitates, gleeting down by the crannies of the ſtones; and part of it entering the caverns of the hills, is gathered therein, as in an alembic; which being once full, the overplus muſt run down at the loweſt part of the reſervoir, and breaking out by the ſide of the hills, form ſingle *ſprings*, many of which running down by the vallies or guts between the ridges of the hills, and at length uniting, form rivulets, and many of theſe meeting in a common channel form rivers. See RIVER.

Now to ſhew that vapour is a ſufficient fund, to ſupply all our *ſprings*, rivers, &c. the ſame excellent author makes an eſtimate of the quantity of vapour raiſed from the ſea, by the action of the ſun: the reſult of an experiment he made to that purpoſe was, that the thickneſs of water evaporated from the ſurface of the ſea, in the ſpace of two hours, in ſummer-time, is one fifty-third part of an inch; which for the eaſe of calculation, being only ſuppoſed to be $\frac{1}{60}$; the quantity of $\frac{1}{10}$ of an inch will be found exhaled in twelve hours.—On this principle, every mile ſquare will be found to evaporate, in twelve hours, 6914 tuns of water, and every ſquare degree, thirty-three millions of tuns. The area of the Mediterranean then being eſtimated at 160 ſquare degrees, it will loſe in vapour, in a ſummer's day 5280 millions of tuns.

Yet the quantity of vapour thus raiſed, great as it is, is only the remains of what is raiſed another way, *viz.* by the winds, which ſometimes ſweep the water off faſter than the ſun takes it up. See EVAPORATION.

To find now, the quantity of water the Mediterranean receives, allow the moſt conſiderable rivers it receives, *viz.* the Iberus, Rhone, Tyber, Po, Danube, Neiſter, Boriſthenes, Tanais, and the Nile, each to furniſh ten times as much water as the Thames; not that any of them are, in reality ſo great, but ſo to allow for the leſſer rivulets: but the Thames is found, by calculation, to evacuate 20300000 tuns of water daily. All the nine rivers abovementioned, therefore, will only evacuate 1827 millions of tuns in a day, which is little more than a third of what is raiſed in that time in vapour. See VAPOUR.

After all that can be ſaid in favour, both of rain and vapour, it muſt be owned, they are both ſtill preſſed with great difficulties; and there is ſtill room to look out for a better theory. The perpetuity of divers *ſprings*, always yielding the ſame quantity of water, when the leaſt rain or vapour is afforded, as well as when the greateſt, is a ſtrong objection to both. Mr. Derham mentions one in his own pariſh of Upminſter, which he could never perceive by his eye to be diminiſhed in the greateſt droughts, even when all the ponds in the country, as well as an adjoining brook, have been dry for ſeveral months together; nor ever to be increaſed in the moſt rainy ſeaſons, excepting, perhaps, for a few hours, or at moſt for a day, from ſudden and violent rains. Had this *ſpring* its origin from rain or vapour, there would be found an increaſe and decreaſe of its water correſponding to thoſe of its cauſes; as we actually find in ſuch temporary *ſprings*, as have undoubtedly their riſe from rain and vapour: add to this, another conſiderable thing in this Upminſter *ſpring*, and thouſands of others, *viz.* that it breaks out of ſo inconſiderable a hillock or eminence, as can have no more influence in the condenſation of the vapours or ſtopping the clouds, than the lower lands about it have. The very higheſt ground in the country, he finds is not above 133 yards above the level of the ſea; and what is ſuch an inconſiderable riſe of land, to a perennial condenſation of vapours, fit to afford ſo conſiderable a *ſpring*? or the high-lands of the whole country, to the maintaining all its fountains and rivulets?

Other naturaliſts, therefore, have recourſe to the ſea, and derive the origin of *ſprings* immediately thence; but how the ſea-water ſhould be raiſed up to the ſurface of our earth, and even to the tops of the mountains, is a difficulty they cannot agree upon. See MOUNTAIN.

Some fancy a kind of hollow, ſubterranean rocks to receive the watery vapours from the bottom of the earth, and to act the part of alembics, in condenſing and converting them into water.—Others, as M. de la Hire, &c. ſet aſide the neceſſity of alembics, and think it enough that there be large ſubterranean reſervoirs of water at the height of the ſea, whence the warmth of the bottom of the earth, or even the central fire (if there be ſuch a thing) may raiſe vapours, which pervading not only the intervals and fiſſures of the ſtrata, but the bodies of the ſtrata themſelves, at length arrive near the ſurface; where, being condenſed by the cold, they glide along on the firſt bed of clay they meet withal, until an aperture in the ground lets them out. M. de la Hire adds, that the ſalts of ſtones and minerals may contribute to the detaining and fixing the vapours, and converting them into water.

But we have a ſtill more natural and eaſy way of exhibiting the riſe of the ſea-water up into mountains, &c. by putting a little heap of ſand, aſhes, a loaf of bread, or the like, in a baſon of water: in which caſe, the ſand, &c. will repreſent the dry land, or an iſland; and the baſon of water, the ſea about it.—Here, the water in the baſon will riſe to, or near the top of the heap, in the ſame manner, and from the ſame principle, as the water of the ſea, lakes, &c. riſe in the hills.—The principle of aſcent in both, is, doubtleſs, the ſame with that of the aſcent of liquids in capillary tubes, or between contiguous planes, or in a tube filled with aſhes; all which are now generally accounted for from the doctrine of attraction. See ASCENT, CAPILLARY, ATTRACTION, &c.

SPRING, *Ver*, in coſmography, denotes one of the ſeaſons of the year; commencing, in the northern parts of the world, on the day the ſun enters the firſt degree of aries, which is about the 10th day of March, and ending when the ſun leaves gemini. See SEASON.

Or, more ſtrictly and generally, the *ſpring* begins on the day, when the diſtance of the ſun's meridian altitude from the zenith, being on the increaſing hand, is at a medium between the greateſt and leaſt.—The end of the *ſpring* coincides with the beginning of ſummer. See SUMMER.

SPRING, *Elater*, in phyſics, denotes a natural faculty, or endeavour of certain bodies to return to their firſt ſtate, after having been violently put out of the ſame by compreſſing, bending them, or the like.

This faculty, the philoſophers uſually call *elaſtic force*, or *elaſticity*. See ELASTIC and ELASTICITY.

Fleas only jump to thoſe exceſſive heights, by means of a *ſpringy* membrane, eaſily viſible by a microſcope, and whereof we have a curious figure in Dr. Hook's Micrography. By the elaſtic force of this *ſpring*, they are enabled to leap 200 times the height of their own body. See FLEA.

Nature has provided for the regular ſowing of the ſeeds of ſeveral kinds of plants, by furniſhing them with a *ſpring*, which is wound ſometimes round the outſide, and ſometimes round the inſide of the caſe wherein the ſeeds are contained. This *ſpring*, when ſtretched to a certain pitch by the full growth and maturity of the ſeed, ſuddenly, either breaks in two, as when on the outſide, and tears the caſe along with it; or elſe, by its vehement effort to unbend itſelf, as when in the inſide, it burſts the caſe into two parts like cups, and diſperſes the ſeeds. See SEMINATION.

SPRING, is more particularly uſed in the mechanic arts for a piece of tempered ſteel put in ſeveral machines to give them motion, by the endeavour it makes to unbend itſelf. See MACHINE, and AUTOMATON.

In watches, it is a fine piece of well-beaten ſteel, coiled up in a cylindrical caſe or frame, which by ſtretching itſelf forth, puts the wheels and the whole movement in motion. See WATCH.

The *ſpring* of a lock, piſtol or the like, is a piece of ſteel violently bent, which beats back the bolt, or ſtrikes down the cock, when ſet at liberty. See LOCK.

SPRING *compaſſes*. See the article COMPASSES.

SPRING *of the air*, or its elaſtic force. See AIR and ELASTICITY.

SPRING *a maſt*.—So the ſeamen call it, when a maſt is cracked, but not quite broken, in any part. See MAST.

SPRING-*tide*, is the increaſing of a *tide* after a dead neap. See TIDE.

The *ſpring-tides* happen about three days before the full or change of the moon; but the top or higheſt of the *ſpring-tides*, is three days after the full or change; then the water runs higheſt with the flood, and loweſt with the ebb, and the tides run more ſtrong and ſwift, than in the neaps. See NEAP, FLUX, &c.

SPRINGE, a ſnare or device made of twiſted wire, to catch birds or ſmall beaſts.

SPRINGY, or *elaſtic* bodies, are ſuch, as having had their figure changed by the ſtroke or percuſſion of another body, can recover again their former figure; which bodies, that are not elaſtic, will not do. See RESTITUTION.

Thus if a piece of ſteel be bent any way, it will recover again its former ſtraightneſs; but a piece of lead will ſtand bent in any form. See ELASTIC *bodies*.

SPUNGE, or SPONGE, SPONGIA, a kind of ſea fungus, or muſhroom found adhering to rocks, ſhells, &c. on the ſea-ſhore. See MUSHROOM.

The ancients diſtinguiſhed two kinds, *male* and *female*: but the moderns make only one kind; which, however, they diſtinguiſh with regard to its texture, into *coarſe* and *fine*.

Naturaliſts have been embaraſſed in all ages, whether to range *ſpunge* in the animal, mineral or vegetable family? Some would have it a concretion formed of the ſea-mud; and others an animal, at leaſt a zoophyte from its motion of contraction and dilatation. See ZOOPHYTE.

The greateſt part of our *ſpunges* are brought from the Mediterranean, eſpecially from Nicaria, an iſland thereof, near the coaſt of Aſia.

The diving or fiſhing for *ſpunges* is there reckoned the top qualification in the youth, who all get the better wives as they excel more herein. To this proof, the maids refer the preference among ſeveral ſuitors; placing themſelves on the brink of the ſea, to be witneſſes of the addreſs of each; and giving themſelves as a prize to the conqueror. See DIVING.

The fine or ſmall *ſpunges* are the moſt eſteemed; and uſually come to us from Conſtantinople. Their goodneſs conſiſts in their being very white, light, and the holes ſmall and cloſe; the larger and coarſer come from the coaſts of Barbary, particularly Tunis and Algier.

The *ſpunge* is a very uſeful matter in the arts. In phyſic it ſerves to foment parts inflamed. By analyſis, it yields a deal of volatile, ſharp ſalts, like other ſea-plants. Taken inwardly it choaks; and is for that reaſon cut ſmall, and fried or dipped in honey, and given to quadrupeds to kill them, which it ſeldom fails to do, by ſwelling and preventing the paſſage of the food into the inteſtines.

In *ſpunges* are found a kind of ſtones called *cyſtiolithi*, held good for the worms in young children, and taken in powder.

Pyrotechnical SPUNGES, are made of the large muſhrooms or fungous excreſcences growing on old oaks, aſhes, firs, &c. which being boiled in common water, then dried and well beaten, are put in a ſtrong lye, prepared with ſalt-petre, and again dried in an oven.

Theſe make the black match or tinder brought from Germany, uſed to receive and ſuſtain the fire ſtruck from a flint and ſteel, &c.

SPUNGE, is alſo uſed in gunnery, for a long ſtaff or rammer, with a piece of ſheep or lamb-ſkin wound about its end, to ſerve for ſcouring great guns when diſcharged, before they be charged with freſh powder. See SPUNGING, ORDNANCE, &c.

SPUNGING, in gunnery, the clearing a gun's inſide with a ſpunge, in order to prevent any ſparks of fire from remaining in her, which would endanger the life of him who ſhould load her again. See CANNON, SPUNGE, CHARGE, &c.

SPUN-YARN, among ſailors, the yarn of untwiſted ropes, whoſe ends are ſcraped and beaten thin, in order to be let into the ends of other ropes, and ſo made long as occaſion ſhall require.

SPUR *, was anciently a piece of the armour of a cavalier, faſtened to the talary, that is, the hind-part of that piece of a compleat armour, which covers the legs and feet.

* The word is derived from the German, *ſpohr*, or rather the Saxon *ſpora*, or Daniſh *ſpor*, which all ſignify the ſame.

At preſent, the *ſpur* is a piece of iron, or other metal, conſiſting of two branches incompaſſing the cavalier's heel, and a rowel in form of a ſtar, advancing out behind, to prick the horſe.

Louis le Debonnaire forbad eccleſiaſtics the profane faſhion of wearing *ſpurs*.—Anciently the difference between the knight and eſquire was, that the knight wore gilt *ſpurs*, whence the appellation of *eques auratus*, and the eſquire ſilvered ones. See KNIGHT and ESQUIRE.

SPURIOUS *diſeaſes*, are ſuch as in ſome ſymptoms cannot be brought under any diſtinct head, and therefore are called by the name of others, with which they moſt agree.—Whence, alſo, they are often denominated *baſtards*, *nothi*.

As, a *ſpurious* or baſtard pleuriſy, a *ſpurious* peripneumony, a baſtard quinſy; and the like. See PLEURISY, PERIPNEUMONY, &c.

SPURIOUS *fleſh*, is an appellation by ſome given to the fleſh of the lips, gums, glands, &c. See FLESH, GINGIVA, GLANDS, &c.

SPURIOUS *medals*, } See the articles { MEDALS.
SPURIOUS *ribs*, } See the articles { RIBS.
SPURIOUS *ſuture*, } See the articles { SUTURE.

SPUR-WAY, a horſe-way through a man's grounds, through which one may ride, by right or cuſtom.

SPUTUM, in medicine, &c. the ſpittle or excrement voided at the mouth. See SALIVA.

An examen of the *ſputum*, is of great conſequence in phthiſical caſes, and Bennet in his *Theatrum tabidorum*, applies himſelf in a particular manner thereto.—The *ſputum ſanguinis*, is a very dangerous ſymptom in that diſeaſe. See PHTHISIS.

SPY, a perſon paid to watch the actions, motions, &c. of another; particularly as to what paſſes in an army.

When a *ſpy* is found in a camp, he is immediately hanged.—Wicquefort ſays, an embaſſador is an honourable *ſpy*, under protection of the law of nations. See EMBASSADOR.

SQUADRON *, a body of horſe, whoſe number of men is not fixed, but is uſually from one hundred to two hundred. See ARMY.

* The word is formed from the Italian *ſquadrone*, of the Latin *ſquadro*, uſed by corruption for *quadro*: in regard, at firſt, the *ſquadrons* were always ſquare, and called alſo by the Latins, *agmina quadrata*.

The *ſquadron* uſually conſiſts of three troops; and each troop of fifty men: it never exceeds two hundred, becauſe a greater number cannot be advantageouſly poſted, nor have room to act in narrow grounds, woods, marſhes, defiles, &c. See TROOP.

The eldeſt troop takes the right of the *ſquadron*, and the ſecond the left, the youngeſt being in the centre.

A *ſquadron* is always drawn up three deep, or in three ranks, with the length of an horſe between each rank.—The ſtandard is always bore in the centre of the firſt rank. See DEPTH.

SQUADRON *of ſhips*, a diviſion, or part of a fleet, commanded by a vice or rear admiral, or ſome other commander or commodore. See FLEET, ADMIRAL, &c.

The number of ſhips in a *ſquadron* is not fixed: a ſmall number of veſſels, if they be in a body, and have the ſame commander, may make a *ſquadron*.

If there be a great number, they are uſually divided into three *ſquadrons*. And if the *ſquadrons* be numerous, each *ſquadron* is divided into three diviſions, diſtinguiſhed by their flags and colours.

SQUAMMOUS, SQUAMMOSUS, in anatomy, an epithet given to the ſpurious or falſe ſutures of the ſkull; becauſe compoſed of *ſquammæ*, or ſcales, like thoſe of fiſhes, or like tiles laid ſo as to reach over one another. See SUTURE.

The *ſuturæ ſquammoſæ*, are alſo called *mendoſæ*, and *temporales* from their terminating the temples, or oſſa temporis.

SQUARE, *Quadratum*, in geometry, a quadrilateral figure, both equilateral and equiangular. See FIGURE, QUADRILATERAL, EQUIANGULAR, &c.

To find the area of a SQUARE: ſeek the length of one ſide; multiply this by itſelf; the product is the area of the *ſquare*. See AREA.

Thus, if the length of a ſide be 345, the area will be 119025: and if the ſide of a *ſquare* be 10, the area will be 100.

Since, then, a decempeda contains 10 feet, a foot 10 digits, &c. a *ſquare* decempeda contains 100 *ſquare* feet, a *ſquare* foot 100 *ſquare* digits, &c.

The Properties of a SQUARE, are, that its angles are all right, and, conſequently, its ſides perpendicular; that it is divided into two equal parts, by a diagonal; that the diagonal of a *ſquare* is incommenſurable to the ſide. See DIAGONAL, &c.

For the ratio of SQUARES: they are to each other in the duplicate ratio of their ſides.—*E. gr.* a *ſquare* whoſe ſide is double another, is quadruple of that other *ſquare*.

SQUARE *of the cube*, } See the article { POWER.
SQUARE *of the ſurdeſolid*, } See the article { POWER.

SQUARE *number*, the product of a number multiplied by itſelf. See NUMBER.

Thus 4, the product of 2 multiplied by 2; or 16 the product of 4 multiplied by 4, are *ſquare* numbers.

Such number is called a *ſquare number*, becauſe it may be ranged into the form of a *ſquare*, by making the root, or factor the ſide of the *ſquare*. See ROOT.

The difference of two *ſquare* numbers, whoſe roots are not unity, is an uneven number, equal to double the root of the leſs, increaſed by unity.

Hence we have an eaſy method of conſtructing *ſquare* numbers for a number of roots proceeding in the natural ſeries; the double of the root of the antecedent increaſed by unity, being continually to be added to the preceding *ſquare*.

Thus, if $n=1$; $2n+1=3$: if $n=2$; then will $2n+1=5$: if $n=3$; then will $2n+1=7$: if $n=4$; then will $2n+1=9$, &c. Thus, by a continual addition of the uneven numbers, ariſe the *ſquare* numbers.

SQUARE *root*, a number conſidered as the root of a ſecond power or ſquare number; or a number by whoſe multiplication into itſelf, a *ſquare* number is generated. See ROOT.

Thus the number 2, being that by whoſe multiplication into itſelf, the *ſquare* number 4 is produced; is, in reſpect hereof, called a *ſquare root*, or the *ſquare root* of 4.

Since, as unity is to the *ſquare* root, ſo is the root to the *ſquare* number; the root is a mean proportional between unity and the *ſquare* number.

A *ſquare* root conſiſting of two parts, is called a *binomial*; as 20+4. See BINOMIAL.

If it conſiſts of three, a *trinomial*, as 6+2—1. See TRINOMIAL.

Now, every *ſquare* number of a binomial root, is demonſtrated to be compounded of the *ſquare* of the firſt part, the product of double the firſt into the ſecond, and of the *ſquare* of the other part.

To extract the SQUARE *root out of any given number*; ſee EXTRACTION *of roots*.

SQUARE, *norma*, is alſo an inſtrument made of wood or metal, ſerving to deſcribe and meaſure right angles withal; ſuch is LEM, (*Tab. Geom.* fig. 42.)

It conſiſts of two rules or branches faſtened perpendicularly at one of their extremes.—When the two branches are moveable on a joint, it is called a *bevel*. See BEVEL.

To examine whether or no a *ſquare* be exact, deſcribe a ſemicircle AEF, of any length, at pleaſure; and therein, from each extreme of the diameter A and F, draw right lines to a point taken at pleaſure in the periphery, as E: to the ſides of the angle AEF, apply the *ſquare*, ſo as its vertex may fall on F. If this be poſſible, that *ſquare* is juſt.

Geometrical SQUARE, a compartiment frequently added on the face of the quadrant, called alſo *line of ſhadows*, and *quadrat*. See QUADRAT.

Magic SQUARES. See MAGIC *ſquare*.

SQUARE *battle*, or *battalion* of men, is one that hath an equal number of men in rank and file. See BATTALION.

To form any number of men into a *ſquare* battle, as ſuppoſe 500, extract the neareſt *ſquare* root of 500, which is in integers 22, and that will give the number of men for rank and file.—There will be a remainder of 16 men, who may be diſpoſed of, as the commander thinks beſt.

Hollow SQUARE, in the military art, is a body of foot drawn up with an empty ſpace in the middle, for the colours, drums and baggage; faced and covered by the pikes every way to keep off horſe.

SQUARE *cap*,	See	CAP.
SQUARE *character*,		HEBREW.
SQUARE *foot*,		FOOT.
SQUARE *nails*,		NAIL.
SQUARE *niche*,		NICHE.
SQUARE *pedeſtal*,		PEDESTAL.
SQUARE *pillar*,		PILLAR.
SQUARE *roof*,		ROOF.
SQUARE *winding ſtairs*,		STAIRS.
SQUARING,	See	QUADRATURE.
SQUIF,		SKIFF.
Wine of SQUILLS,		SCILLÆ.
SQUILLÆ,	See	WINE.
SQUILITIC,		SCILLITIC.
SQUINANCY, or *eſquinancy*,		QUINZY.
SQUINTING,		STRABISMUS.

ST, an indeclinable term, chiefly uſed to command ſilence.

The Romans had theſe two characters wrote over the doors of their eating rooms, as who ſhould ſay, *ſed tace*, or *ſilentium tene*.

Porphyry obſerves, the ancients made a point of religion of it, not to ſpeak a ſingle word in paſſing in or out of the doors.

STABLESTAND, in the foreſt law, is when a perſon is found at his ſtand in the foreſt, with a croſs-bow, or long-bow, ready to ſhoot at a deer, or elſe ſtanding cloſe by a tree with greyhounds ready to ſlip.

This is one of the four evidences, or preſumptions, by which a man is convicted of intending to ſteal the king's deer; the other three being back-berond, bloody-hand, and dog-draw. See FOREST, &c.

STACK *of wood*, among huſbandmen, is a pile of wood three foot long, as many broad, and twelve foot high.

STACTE, ΣΤΑΚΤΗ in pharmacy, a fatty reſinous liquid matter, drawn from freſh myrrh, pounded or preſſed with a little water. See MYRRH.

This liquor is very odoriferous, and held mighty precious; making, alone, the perfume, called by Dioſcorides, *ſtacte*, and which ſmells finely, though very bitter to the taſte.

We have none of it now, but what is ſophiſticated; and what the apothecaries call *ſtacte*, is no more than liquid ſtorax. See STORAX.

STADIUM*, ΣΤΑΔΙΟΝ, an ancient Greek long meaſure, containing 125 geometrical paces, or 625 Roman feet; correſponding to our furlong. See MEASURE and FURLONG.

> * The word is formed from the Greek, ϛασις, ſtation; and it is ſaid, on this occaſion, that Hercules, after running ſo far at one breath, ſtood ſtill.—The Greeks meaſured all their diſtances by *ſtadia*, which they call ϛαδιαζειν.

Eight *ſtadia* make a geometrical or Italian mile; and 20, according to M. Dacier, a French league: according to others, 24 make the league. See MILE and LEAGUE.

Guilletiere obſerves, that the *ſtadium* was only 600 Athenian feet, which amount to 625 Roman, 566 French royal feet, or 604 Engliſh feet: ſo that the *ſtadium* ſhould only have been 113 geometrical paces.—It muſt be obſerved however, that the *ſtadium* was different in different times, and places.

STADIUM was alſo the courſe or career, wherein the Greeks run their races. See GYMNASIUM.

Vitruvius deſcribes it as an open ſpace 125 paces long, terminated at the two extremes with two poſts, called *carcer* and *meta*. See PALÆSTRA.

Along it was built a kind of amphitheatre, where the ſpectators were placed to ſee the athletæ exerciſe running, wreſtling, &c.

There were *ſtadia* likewiſe, covered over, and encompaſſed with colonnades and porticoes, ſerving for the ſame exerciſes in ill weather.—Captive children uſed to run the *ſtadium*. Ablanc. See GYMNASTIC.

A more natural derivation of the word *ſtadium*, from ϛασις, *ſtation*, than that popular one mentioned in the laſt article, may be brawn from the athletæ ſtopping and reſting, when at the end of this courſe: whence the name might be applied to the ſame diſtance, meaſured in any other place.

STADTHOLDER*, STADTHOUDER, or STATHOLDER, a governor, or lieutenant of a province, in the United Netherlands; particularly that of Holland: where the word is moſt uſed, by reaſon of the ſuperior importance of the government of that province.

> * Menage derives the word from *ſtadt*, ſtate; and *houlder*, holding, *q. d.* lieutenant of the ſtates: others will have it compounded of *ſtad*, or *ſtede*, *ſtead*, or place, and *houder*, holding, in regard this officer held the place of the counts, and repreſented them in their abſence.

The *ſtadtholder*, i. e. the *ſtadtholder* of Holland, is the firſt member of the republic: he is chief of all the courts of juſtice; and may preſide therein when he pleaſes. All ſentences, judgments, &c. are diſpatched in his name.—When an office becomes vacant in any of the courts, the ſtates propoſe three perſons to the *ſtadtholder*, who is to chuſe one of them.

He can even pardon criminals, which is a ſovereign prerogative; and has the choice of ſcabines, or chief magiſtrates in each city; to which end the council of the city preſent him two perſons, one of which he appoints.

In ſeveral cities, he has the ſame right of nominating the burgo-maſters, and counſellors; as at Rotterdam, Dort, &c. He has alſo a power to caſheer the magiſtrates, and put others in their room, when he finds it neceſſary for the public good; upon giving a reaſon for the ſame.

By article VI. of the union of Utrecht, the ſtates conſtitute him arbiter of all the differences that may ariſe between the ſtates of the ſeveral provinces; or between the cities and the members of the ſtates of the province. See STATES.

To the dignity of *ſtadtholder*, is inſeparably annexed, that of captain, and admiral-general of the province; in which quality, he names all the officers, and diſpoſes of all military poſts.—It is he takes care of the execution of the ordinances of the ſtates; and his authority gives him a right to receive and give audience to embaſſadors from foreign princes, and even to ſend embaſſadors on his own private affairs.

The office of *ſtadtholder* is very ancient: the counts not being able to reſide in Holland, appointed *ſtadtholders* to command in their abſence, in the ſeveral provinces; beſides a governor general of all the ſeventeen provinces of the Netherlands.

William I. prince of Orange, was *ſtadtholder* of Holland and Zeeland, at the time when the Dutch ſhook off the Spaniſh yoke; which enabled him to contribute greatly to that happy event.

In 1567, the ſtates thought fit to ſuppreſs the office of *ſtadtholder*, by edict; and reſolved it ſhould never be conferred on any perſon for the future: but in 1672, William III. prince of Orange, afterwards king of England, being elected captain and admiral-general by the ſtates; ſome months afterwards they revoked the edict of ſuppreſſion in favour of that prince, who was declared *hereditary ſtadtholder*; an honour never conferred before.

STAFF, *baculus*, an inſtrument ordinarily uſed to reſt on, in walking.—Card. Bona obſerves, in his treatiſe of liturgies, that anciently, thoſe who uſed a *ſtaff* in the church to lean on, were obliged to lay it by, and to ſtand alone, firm and upright, while the goſpel was a reading; to teſtify their reſpect, by their poſture, and to ſhew they were ready to obey Jeſus Chriſt, and to go whereſoever he ſhould command them.

The *ſtaff* is alſo frequently uſed as a kind of natural weapon, both of offence and defence.—The Lacedæmonians never wore any ſwords in time of peace; but contented themſelves with a thick, crooked *ſtaff*, which was peculiar to them.

Among the Romans, M. St. Evremond obſerves, blows with a *ſtaff* were the gentleſt correction they gave their ſlaves; inaſmuch as they received them over their cloaths.

Among the maſters of honour and arms, it is held a greater affront to be beaten with a *ſtaff*, than with a ſword; becauſe the ſword is the inſtrument of war, the *ſtaff* the inſtrument of outrage.

Blows with a *ſtaff* are very ſeverely puniſhed by the French laws: by a regulation of the marſhals of France, in 1653, for reparations and ſatisfactions of honour, it is adjudged, that a perſon who ſhall ſtrike another with a *ſtaff*, ſhall be impriſoned a whole year; unleſs ſix months be moderated, upon paying 3000 livres, applicable to the neareſt hoſpital; beſide which, the offender is to aſk pardon of the offended on his knees, *&c.* ready to receive from him a like number of blows with a *ſtaff*; which, on ſome occaſions, the latter may be obliged to give; if he have too much generoſity not to do it of himſelf.

By another regulation of the marſhals in 1679, he who ſtrikes with a *ſtaff*, after receiving blows with the fiſt in the heat of a fray, is condemned to two years impriſonment; and to four, if he ſtruck firſt with the fiſt.

Almacantars STAFF,	See	ALMACANTAR.
Augural STAFF,		LITUUS.
Back STAFF,		BACK *ſtaff*.
Paſtoral STAFF,		CROSIER.
Whip STAFF,		WHIP.
Croſs STAFF,		
Fore STAFF,		FORE *ſtaff*.
Jacob's STAFF,		RADIUS *aſtronomicus*.

STAFF, in muſic, five lines, on which, with the intermediate ſpaces, the notes of any ſong or piece of muſick are marked. See MUSIC.

Guido Aretin, the great improver of the modern muſic, is ſaid to be the firſt who introduced the *ſtaff*; marking his notes, by ſetting points (.) up and down them, to denote the riſe and fall of the voice; and each line and ſpace he marked at the beginning of the *ſtaff*, with Gregory's ſeven letters, a, b, c, d, e, f, g. See NOTE.

But others will have the artifice of an older date; and Kircher particularly affirms, that in the Jeſuits library at Meſſina, he found an old Greek MS. book of hymns, above ſeven hundred years old; wherein ſome hymns were written on a *ſtaff* of eight lines, marked at the beginning with eight Greek letters. The notes or points were on the lines, but no uſe made of the ſpaces. See SCALE, GAMMUT, SOL-FAING. *&c.*

STAFF, in heraldry. See the article BATTOON.

STAFF, in ſurveying, a kind of ſtand, whereon to mount a theodolite, circumferentor, plain table, or the like, for uſe. It conſiſts of three legs of wood, joined together at one end, whereon the inſtrument is placed; and made peeked at the other, to enter the ground.—Its upper end is uſually fitted with a ball and ſocket. See BALL, *and ſocket*, and THREE-LEGGED.

Field STAFF,	See	FIELD.
Quarter STAFF,		QUARTER.
STAFF *officers*,		OFFICER.
Ward STAFF,		WARD.

STAGE, in the modern drama, the place of action and repreſentation; included between the pit, and the ſcenes.

The *ſtage* anſwers to the proſcenium or pulpitum of the ancient theatre. See THEATRE, PULPITUM, PROSCENIUM, *&c.*

Laws of the STAGE, are the rules and decorums to be obſerved, with regard to the oeconomy and conduct of a dramatic performance to be exhibited on the *ſtage*.—Theſe relate, principally, to the unities, the diſpoſition of the acts and ſcenes, the unravelling, *&c.* See UNITY, ACT, SCENE, CATASTROPHE.

STAGGERS, or STAVERS, in the manage. See STAVERS.

STAIRCASE, an aſcent incloſed between walls, or a balluſtrade, conſiſting of *ſtairs* or ſteps, with landing places and rails; ſerving to make a communication between the ſeveral ſtories of a houſe. See STAIR.

The conſtruction of a compleat *ſtaircaſe*, is one of the moſt curious works in architecture. The common rules to be obſerved therein are as follow,

1°. That it have a full, free light, to prevent accidents of ſlipping, falling, *&c.*

2°. That the ſpace over head be large and airy, which the Italians call *un bel ſfocato*, good ventilation, in regard a man ſpends much breath in mounting.

3°. That the half paces, or landing places, be conveniently diſtributed for repoſing in the way.

4°. That to prevent rencounters, *&c.* the *ſtaircaſe* be not too narrow; but this laſt is to be regulated by the quality of the building.

5°. That care be taken in placing the *ſtaircaſe*, ſo as the ſtairs may be diſtributed, without prejudice to the reſt of the building.

The kinds of *ſtaircaſes* are various: in ſome, the ſtairs are *ſtraight*, in others *winding*; in others both ways, or *mixt*.

Again, of *ſtraight ſtairs*, called alſo *flyers*, ſome fly directly forwards; others are ſquare; others triangular; others called *French flights*.

Of *winding ſtairs*, called alſo *ſpiral*, or *cockle ſtairs*, ſome are ſquare, ſome circular, and ſome elliptical.—And theſe again, are various; ſome winding round a ſolid, and others an open newel.

Laſtly, of *mixed ſtairs*, ſome are called *dog legged*: others both wind about a ſolid newel, and fly about a ſquare open newel.

Straight STAIRS, are ſuch as always fly, that is, proceed in a right line; and never wind: whence their denomination. See FLYERS.—Of theſe there are ſeveral kinds; as,

Direct flyers, or *plain flyers*, which proceed directly from one floor to another, without turning either to the right or left; ſeldom uſed, except for garret or cellar *ſtairs*.

Square flyers, which fly round the ſides of a ſquare newel, either ſolid or open; having at every corner of the newel, a ſquare half ſtep, taking up $\frac{1}{4}$ of a circle. So that they fly from one half ſtep to another, and the length of the *ſtairs* is perpendicular to the ſide of the newel.

Triangular flyers, which fly round by the ſides of a triangular newel, either ſolid or open, having at each corner of the newel a trapezial half ſtep, taking up $\frac{2}{3}$ of a circle: ſo that they fly from one half ſtep to another; and their length is perpendicular to the ſide of the newel.

French flyers, which fly, firſt directly forwards, till they come within the length of a *ſtair* of the wall; and then have a ſquare half pace, from which you immediately aſcend to another half pace, from which the *ſtairs* fly directly back again, parallel to their firſt flight.

Winding STAIRS, are ſuch as always wind, and never fly; of theſe there is great variety; as,

Circular winding STAIRS, whereof there are four kinds, *viz.* ſuch as wind about a ſolid newel, the fore edge of each being in a right line, pointing to the centre of the newel; commonly uſed in church ſteeples, and great old houſes: ſuch as wind round an open newel, the fore ſide of each being in a right line, pointing to the centre of the newel; as thoſe in the Monument, London: ſuch as wind round a ſolid newel, only the fore ſide of each, an arch of a circle, either concave or convex, pointing near to the circumference of the newel: and ſuch as reſemble the laſt, in all other reſpects, ſave that they have an open newel.—Any of theſe winding *ſtairs* take up leſs room than other kinds.

In *ſtairs* that wind round a ſolid newel, architects make the diameter of the newel either $\frac{1}{6}$ or $\frac{1}{4}$ or $\frac{1}{3}$ or $\frac{2}{7}$ of that of the *ſtaircaſe*, according as that is in bigneſs.—If very ſmall, the newel is but $\frac{1}{6}$, and if large $\frac{2}{7}$, *&c.*

In *ſtairs* that wind round an open newel, Palladio orders the newel to be $\frac{1}{2}$ the diameter of the *ſtaircaſe*; though there does not appear any reaſon why the newel here ſhould not be proportioned to the *ſtaircaſe*, as in the former.

As to the number of *ſtairs* in each revolution; Palladio orders, that in a *ſtaircaſe* of 6 or 7 foot diameter, the *ſtairs* in each revolution be 12; if the diameter be 8, the *ſtairs* to be 16; if 9 or 10, the *ſtairs* to be 20; and if 18, to be 24.

Elliptical winding STAIRS, whereof there are two kinds: the one winding round a ſolid, the other round an open newel, they are much of the ſame nature as circular ſtairs, excepting, that in the one, the newel is a circle, and in the other an ellipſis.

Square winding STAIRS, are ſuch as wind round a ſquare newel, either ſolid or open; the fore ſide of each ſquare being in a right line, pointing to the center of the newel.

Triangular winding STAIRS, are ſuch as wind round a triangular newel; the fore ſide of each being a right line, pointing to the centre of the newel.

Columinated winding STAIRS: Palladio mentions a *ſtaircaſe* in Pompey's portico at Rome, ſet on columns, ſo, as that the light they receive from above may diſtribute itſelf to all parts alike.

Double winding STAIRS: Scamozzi mentions a *ſtaircaſe* in this form, made by Piedro del Bergo, and Jean Coſſin, at Sciamburg in France, in the king's palace.—It is ſo contrived, as that two perſons, the one aſcending, and the other deſcending, ſhall never meet.

Dr. Grew deſcribes a model of this kind of *ſtaircaſe*, kept in the muſæum of the Royal Society. The foot of one of the *ſtaircaſes*, he ſays, is oppoſite to that of the other, and both make a parallel aſcent, and within the ſame cylinder. The newel in the middle is hollow, and built with long apertures, to convey light from candles placed at the bottom, and on the ſides of the newel, into both caſes.

Quadruple winding STAIRS: Palladio mentions a *ſtaircaſe* of this form, in the caſtle of Chambor near Bloys. It conſiſts of four *ſtaircaſes*, carried up together, having each its ſeveral entrance, and going up one over another, in ſuch manner, as that being in the middle of the building, the four ſerve to lead to four apartments: ſo that the people of the one need not go up and down the *ſtairs* of the other; yet being open in the middle, they all ſee each other paſs.

Mixt STAIRS, are ſuch as partly *fly*, and partly *wind*; whence ſome call them *flyers and winders*.—Of theſe there are ſeveral kinds, as,

Dog legged STAIRS, which firſt fly directly forwards, then wind a ſemi-circle, and then fly directly backwards, parallel to that.

Square flyers and winders, have a ſquare newel, either ſolid or open, and fly by the ſides of the newel, winding a quadrant of a circle at each corner.

Solid and open newelled flyers and winders, are of two kinds; the one winds a quadrant of a circle about a ſolid newel, then flies by the ſide of a ſquare open newel; then winds again, by the ſide of a ſolid newel, then flies again, and ſo alternately.—The other flies firſt, then winds, and then flies again, alternately.

STAIRS, in building, the ſteps whereby we aſcend and deſcend, from one ſtory of a houſe to another. See BUILDING.

The dimenſions of *ſtairs* are differently aſſigned by different authors: in this however they agree, that they muſt not be more than ſix, nor leſs than four inches high; nor more than eighteen, nor leſs than twelve inches broad; nor more than ſixteen, nor leſs than ſix foot long, each *ſtair*.—But theſe meaſures have only regard to fine buildings; ordinary houſes are excepted: yet even in theſe, the *ſtairs* are not to exceed eight inches in height; nor be leſs than nine inches in breadth; nor three feet in length.

To reduce the dimenſions of *ſtairs* to ſome natural, or at leaſt geometrical ſtandard, Vitruvius borrows the proportions of the ſides of a rectangle triangle, which the ancient ſchool expreſſed by the numbers 3, 4, and 5. The firſt for the perpendicular height; the ſecond for the horizontal breadth; and the third for the whole ſlope or inclination, from the edge of one *ſtair* to that of another.

But this rule is ſet aſide, and with good reaſon, by the modern builders. For, on this principle, the lower the *ſtairs*, the narrower they muſt be; and *ſtairs*, for inſtance, four inches high (ſuch as we find mentioned in ancient architects) muſt be but 5 ⅓ inches broad.

One rule to be regarded in the making of *ſtairs*, is, that they be laid according to the Italian phraſe, *con un tantino da ſcarpa*, i. e. ſomewhat ſloping, or a little higheſt behind, that the foot may, as it were, both aſcend and deſcend at once; which, though obſerved by few, is found a ſecret and delicate deception of the pains in mounting.

STALACTITES, STALAGMITES, or STAGONITES, in natural hiſtory, a ſtony, ſparry ſort of icicles, which hang down from the tops or arches of grotto's, and ſubterranean caverns; and from the roofs of buildings, and capitals of pillars of ſuch places as are built over hot ſprings, *&c.* See STONE, and SPAR.

Of this kind are the *ſal*, *alumen*, and *vitriolum ſtalacticum*; the *minera ferri ſtalactica*, the *vitriolum capillare*, the *alumen capillare*, &c.

The *ſtalactites* which incruſtrate, or line the tops and ſides of caves, *&c.* are manifeſtly formed of exſudations or exſtillations of petrifying juices out of the neighbouring rocky grounds. Thoſe in the cave on the top of Bredon hill, Mr. Derham fancies, might be formed by the rains ſoaking through, and carrying with it impregnations from the ſtones; the hill, there, being all rocky.

STALE, the urine of cattle. See URINE.

STALE alſo denotes a living fowl, put in any place to allure and bring others where they may be taken. See DECOY.

For want of theſe, a lark, or any other bird, ſhot, his entrails taken out, and dried in an oven, in his feathers, with a ſtick thruſt through to keep him in a convenient poſture, may ſerve as well as a live one.

STALK, in botany, the ſtem, or ſtock of a plant. See STEM.

Stalks are diſtinguiſhed into ſeveral kinds, *viz.* the *naked ſtalk*, which has no leaves on.—*Creſted ſtalk*, which has furrows, or ridges.—*Winged ſtalk*, which has leaves on both ſides.—*Striped ſtalk*, which is of two or more colours, *&c.*

Fruticoſe STALK. See the article FRUTICOSE.

STALKING, a term of conſiderable import in fowling; applied to a kind of ſcreen, or device to hide the fowler, and amuſe the game, while he gets within ſhot.

Of ſuch devices there are ſeveral kinds, *viz.*

A STALKING *hedge*, which is an artificial hedge, two or three yards long, and a yard and half high, made with ſmall wands, to be light and portable, yet buſhed out like a real hedge, with ſtakes to ſupport it, while the fowler takes his aim.

STALKING *horſe*, is an old jade trained up for the purpoſe, which will gently walk up and down as you would have him, in water, *&c.* beneath whoſe fore-ſhoulder, the ſportſman ſhelters himſelf and gun. When thus got within ſhot, he takes aim from before the fore-part of the horſe; which is much better than ſhooting under his belly.

To ſupply the defect of a real *ſtalking* horſe, an artificial one is frequently made, of old canvas, ſhaped in form of a horſe, with his head bent down, as if grazing; ſtuffed with any light matter, and painted.—In the middle it is fixed to a ſtaff ſhod at the foot, to ſtick into the ground while aim is taken.—For change, when the fowls begin to be uſed to the *ſtalking* horſe, and to know it, ſome *ſtalk* with an ox, cow, deer or the like.

Others uſe a *ſtalking-tree*, and others a *ſtalking-buſh*.

STAMINA *, in botany, thoſe fine threads, or capillaments growing up within the flowers of tulips, lilies and moſt other flowers, around the ſtyle or piſtil. See FLOWER and PISTIL.

* The word is Latin, and literally ſignifies threads.

On the tops of the *ſtamina*, or chives, grow thoſe little captulæ or knobs, called *apices*, which M. Tournefort makes eſſential to the *ſtamina*; whence M. Reaumur, who aſſures us in the memoirs of the French academy, that he could never diſcover any apices on the threads of the fucus marinus, refuſes to call them *ſtamina*; though he adds, one may ſuppoſe that the apices fall as ſoon as the threads or *ſtamina* begin to be unfolded. See APICES.

In ſome tubular flowers, as the narciſſus, digitalis, *&c.* M. Geoffroy obſerves the *ſtamina* are exceedingly ſhort; and in ſome flowers there are no *ſtamina* at all, as in the long ariſtolochia, wherein the apices are immediately faſtened on the capſula which incloſes the fruit. In ſome other flowers, as thoſe of thiſtles, lettice, chicory, *&c.* the apices are incloſed in the *ſtamina*; ſeveral of which uniting form a little tube in manner of a ſcabbard, in the inſide whereof are the apices furniſhed with their farina; the reſt of the cavity being taken up by the piſtil; which is a little thread placed on the embryo of the ſeed.

M. Tournefort takes the uſe of the *ſtamina* to be, as it were, ſo many excretory canals, for diſcharging the growing embryo of its redundant juices; and of theſe excrements of the fruit, he takes that farina or duſt, found in the apices, to be formed. See FARINA.

But M. Geoffroy, Mr. Bradley, and other late writers on plants, as well as ſome former, aſſign the *ſtamina* a nobler uſe. Theſe authors, explaining the generation of plants, in a manner analogous to that of animals, maintain the uſe of the *ſtamina* to be to ſecrete, in their fine capillary canals, a juice, which being collected, hardened and formed into a farina or duſt in the tips or apices, is thence, when the plant arrives at maturity, diſcharged, by the burſting of the apices, upon the top of the piſtil; whence is a paſſage for it to deſcend into the uterus, where being received, it impregnates and fecundifies the plant.

On this principle, it may be ſaid, that the ſame flower contains both ſexes, which contribute each their part to the generation: that the *ſtamina* are the male part; and the farina, which is always found of an oily, glutinous nature, the ſeminal liquor; and that the piſtil is the female part, which conducts the ſemen to the ova or embryo's. See GENERATION *of plants*.

STAMINA, in the animal body, are thoſe ſimple, original parts, which exiſted firſt in the embryo, or even in the ſeed; and by whoſe diſtinction, augmentation, and accretion by additional juices, the human body, at its utmoſt bulk is ſuppoſed to be formed. See EMBRYO, BODY, *&c.*

All that is eſſential to the animal, are the *ſtamina*, which exiſt *in ovo*; the reſt being foreign, additional and even accidental.

The *ſtamina* ſeem to coincide with the ſolids, which are ſurprizingly ſmall in quantity. See SOLID.

STAMINEOUS *flowers*, among botaniſts, are ſuch as are ſo far imperfect, as to want thoſe coloured leaves, we call *petala*; and which only conſiſt of a piſtil ſurrounded by ſtamina. See FLOWER, STAMINA, *&c.*

Such plants as bear *ſtamineous* flowers, Mr. Ray makes to conſtitute a large genus which he calls *herbæ flore imperfecto*, *ſive apetalo*, *ſtamineove*.—And theſe he divides into ſuch as,

1. Have their fruit or ſeed totally divided from the flower; which are ſuch plants as are ſaid to be of different ſexes; the reaſon of which is, that from the ſame ſeed, ſome plants ſhall ariſe with flowers, and no fruit; and others, with fruit, and no flowers: as hops, hemp, ſtinging-nettles, ſpinach, mercurialis and phyllon.

2. Such as have their fruit only a little disjoined from their flowers; as the ambroſia, bardana minor, ricinus, and the heliotropium tricoccon.

3. Such as have their fruit immediately contiguous, or adhering to their flower: and the ſeed of theſe is either, 1. Triangular; of which ſort, ſome are lucid and ſhining; as the lapathum, rhabarbarum, and biſtorta, to which alſo may be added the perſicaria: others are rough and not ſhining; as the helleborus albus, fegopyrum, convolvulus niger, and the polygonum. 2. Such as have a roundiſh ſeed, a little flatted or compreſſed, or of any other figure but the former triquetrous or triangular one; and theſe have their flower, or the calyx of the flower, adhering to the bottom or baſis of the ſeed or fruit; as the potamogiton, blitum ſylveſtre, parietaria, atriplex, blitum ſativum, amuranthes hoclocerieus, and the ſaxifraga aurea. 3. Such whoſe flowers adhere to the top of the ſeed; as the beta, aſarum, archimilla. And to theſe kind of plants, Mr. Ray reduces alſo the kali geniculatum, ſedum fruticoſum, the ſcoparia or belvidere of the Italians.

STAMPING-*mill*, or *knocking-mill*, an engine uſed in the tin-works, to bruiſe the ore ſmall. See TIN.

STANCHEONS, in building. See PUNCHION.

STAND, *Stable* STAND. See STABLESTAND.

STANDARD *, in war, a ſort of banner or flags, bore as a ſignal for the joining together of the ſeveral troops belonging to the ſame body. See FLAG, *&c.*

* Du Cange derives the word from *ſtandarum* or *ſtantarum*, *ſtandardum* or *ſtandale*, words uſed in the corrupt Latin, to ſignify the principal *flag* of an army. Menage derives it from the German, *ſtander*, or the Engliſh, *ſtand*.

The *ſtandard* is uſually a piece of ſilk, a foot and half ſquare, on which is embroidered the arms, device, or cypher of the prince, or the colonel.—It is fixed on a lance, eight or nine foot long, and carried in the centre of the firſt rank of a ſquadron of horſe. See SQUADRON.

The *ſtandard* is uſed for any martial enſign of horſe; but more particularly for that of the general; or the royal *ſtandard*.—Thoſe born by the foot are rather called *colours*. See COLOUR, FLAG, and ENSIGN.

The ancient kings of France bore St. Martin's hood for their *ſtandard*. The Turks preſerve a green *ſtandard* born by Mahomet, with a world of devotion; as believing it to have been brought down by the angel Gabriel. Every time it is diſplayed, all who profeſs the Mahometan faith, are obliged to take arms; thoſe who refuſe, are to be deemed as infidels.

STANDARD, in commerce, the original of a weight, meaſure, or coin, committed to the keeping of the magiſtrate, or depoſited in ſome public place, to regulate, adjuſt, and try the weights uſed by particular perſons in traffic. See MEASURE, WEIGHT, &c.

The juſtneſs of weights and meaſures, is of that conſequence to the ſecurity and good order of trade, that there is no civilized nation but makes it part of their policy to preſerve the equality thereof by means of *ſtandards*. The Romans and Jews even ſeem to have affixed a kind of religious worſhip to theſe *ſtandards*, by laying them up in their temples, as it were under the eye of their deities.

The *ſtandards* of weights and meaſures in England, are appointed by Magna Charta, to be kept in the Exchequer, by a ſpecial officer, called the *clerk*, or *comptroller of the market*. See CLERK *of the market*.

The *ſtandard* of gold coin is 22 carats of fine gold, and 2 carats of alloy in the pound weight troy; and the French, Spaniſh, and Flemiſh gold, are nearly of the ſame fineneſs. —The pound weight is cut into forty-four parts and a half, each current for 21 ſhillings. See GUINEA, COINAGE, ALLOY, CARAT, &c.

The *ſtandard* of ſilver is 11 ounces and two penny weight of ſilver, and 18 penny weight of alloy of copper. Whether gold or ſilver be above or below *ſtandard*, is found by aſſaying. See ASSAY.

STANDARDS, or **STANDELS**, in huſbandry, are young trees, reſerved at the felling of woods, for growth of timber.

STANNARIES, STANNARIA, the mines and works, where tin is dug, and purified; as in Cornwall, Devonſhire, &c. See TIN.

There are four courts of the *ſtannaries* in Devonſhire, and as many in Cornwall; and ſeveral liberties granted to them by ſeveral acts of parliament, in the time of Edward I. &c. though ſomewhat abridged under Edward III. and 17 Car. I. c. 15.

STANZA *, in poetry, a certain ſtated number of grave verſes, containing ſome perfect ſenſe, terminated with a reſt, or pauſe.

* The word is Italian, and literally ſignifies a ſtand or ſtation, becauſe of the pauſe to be made at the end of each *ſtanza* or complete ſenſe.

What the *couplet* is in ſongs, and the *ſtrophe* in odes, the *ſtanza* is in the greater and graver pieces, as epic poems, &c. See COUPLET and STROPHE.

Indeed the Italians ſcarce write any poems, but they divide them into *ſtanza's*.—There are *ſtanza's* of four, ſix, eight, ten, twelve verſes, and ſometimes of an uneven number of verſes, as five, ſeven, &c. but theſe laſt are ſomewhat more difficult to execute, by reaſon of the three verſes to one rhyme.

The French lay it down as a rule, that if the firſt *ſtanza* begin with a maſculine, or a feminine verſe, the ſecond is to begin and end with the ſame.

Every *ſtanza* ought not only to contain a perfect ſenſe, but to be terminate with ſome lively and ingenious thought, or ſome juſt and pertinent reflexion.

Stanza's were firſt introduced from the Italian into the French poetry, about the year 1580, and thence tranſferred into the Engliſh.

The uſe of *ſtanza's* in tragedy, or comedy, is condemned by all the beſt critics: for though we ſpeak verſe on the ſtage, it is ſtill preſumed we are ſpeaking proſe. *Stanza's* ſhew a degree of ingenuity on the part of the poet, which has nothing of nature in it on the part of the actor. Add to this, that *ſtanza's* are not fit to expreſs every thing: wrath, threatning, &c. fit very ill on a regular *ſtanza*: though irreſolution, reveries, and every thing that leads the actor to think on what he is to reſolve, agrees well enough with the unequal cadence of the *ſtanza*.

STAPES, in anatomy, a little bone ſituate in a cavity of the feneſtra ovalis; thus called from its reſembling a ſtirrop. See EAR.

The *ſtapes* is one of the four little bones faſtened to the tympanum of the ear, firſt diſcovered and publiſhed, as Fallopius tells us, by Jo. Phil. ab Ingraſſia, a phyſician of Sicily. Its uſe is in ſtretching, or relaxing the membrana tympani. See TYMPANUM; ſee alſo HEARING and EAR.

STAPHYLINUS. See PALATOSTAPHYLINUS, PERISTAPHYLINUS, PTERYGOSTAPHYLINUS, and SPHENOSTAPHYLINUS.

STAPLE *, STAPULA, primarily ſignifies a public place, or market, whither merchants, &c. are obliged to bring their goods to be bought by the people: as the Greve, or the places along the Seine, for the wines and corns at Paris; whither the merchants of other parts are obliged to bring thoſe commodities. See MARKET.

* Voſſius and Menage derive the word from *ſtaplus*, which is found in the Ripuary laws, ſignifying a place where juſtice is adminiſtred. Others derive it from the German *ſtapel*, or Latin *ſtapula*, which Boxhornius derives further, from the German *ſtapelen*, to put in a heap.

STAPLE, alſo ſignifies a city or town, where merchants jointly agree to carry certain commodities, as wool, cloth, lead, tin, &c. in order to their being commodiouſly ſold by the great. In England, *ſtaples* were ſettled and appointed to be conſtantly kept at York, Lincoln, Newcaſtle upon Tyne, Norwich, Weſtminſter, Canterbury, Chicheſter, Wincheſter, Exeter, and Briſtol; to which places merchants and traders were to carry goods to ſell in thoſe parts.

The *ſtaple* commodities of England, were chiefly wool, leather, cloth, tin, lead, &c. though by *ſtaple goods*, is now generally meant any proper ſaleable commodities, not eaſily ſubject to periſh. See WOOL, &c.

The principal *ſtaples* now exiſting, are Amſterdam for all goods from the Eaſt-Indies, Spain, the Mediterranean, and the Baltic: Fluſhing for thoſe of the Weſt-Indies; Middleburgh for French wines; Dort for Rheniſh wines and Engliſh cloth; Verre in Zeland for Scotch merchandizes, &c.

The *ſtaples* in the Levant, called by the French, *Eſchelles*, i. e. *ſcales*, are ſuch cities where the Engliſh, French, Dutch, Italians, &c. have conſuls, factors, and magazines; and whither they ſend veſſels regularly each year.—The principal of theſe are Smyrna, Alexandretta, Aleppo, Seyda, Cyprus, Sallee, Alexandria, Cairo, Tunis, Algiers, Tripoli, the Morea, Candia, and the iſlands of the Archipelago. See FACTORY.

Statute STAPLE, } See the articles { STATUTE.
Law of the STAPLE, } See the articles { LAW.

STAR, STELLA, in aſtronomy, a general name for all the heavenly bodies. See HEAVEN.

The *ſtars* are diſtinguiſhed, from the phænomena of their motion, &c. into *fixed* and *erratic*.

Erratic or *wandering* STARS, are thoſe whoſe diſtances and places, with regard to each other, are continually changing. Theſe are what we properly call *planets*. See PLANET.

Though, to the ſame claſs, may likewiſe be referred, what we popularly call *blazing ſtars* or *comets*. See COMET.

Fixt STARS, called alſo, by way of eminence, *ſtars*, are thoſe which continually keep the ſame diſtance, with regard to each other. See FIXT.

The principal points that have come under the conſideration of aſtronomers concerning the *fixt ſtars*, are their *diſtance*, *magnitude*, *number*, *nature*, and *motion*.

Diſtance of the fixed STARS.—The fixed *ſtars* are bodies exceedingly remote from us; ſo remote, that we have no diſtances in the planetary ſyſtem to compare to them. See DISTANCE.

Their immenſe diſtance is argued hence, that they have no ſenſible parallax: that is, that the diameter of the earth's orbit bears no ſenſible proportion thereto; but they are ſeen the very ſame, in all the points thereof. Mr. Flamſteed, indeed, ſeems to have diſcovered a ſmall parallax: ſirius, *e. gr.* he finds to have a parallax of twenty ſeconds. Admitting this, we have data enough to determine their diſtance, a thing hitherto deſpaired of.

For thus, the ſun's parallax being had, and his mean diſtance being 34377 ſemi-diameters of the earth, the diſtance of ſirius from the earth will be found to be 35477064 ſemidiameters of the earth. See PARALLAX.

Mr. Huygens attempts the diſtance of the *ſtars* by another method, *viz.* by making the aperture of a teleſcope ſo ſmall, as that the ſun through it appears no bigger than ſirius. In this ſtate he found the ſun's diameter to be as 1 to 27664 of his diameter, when ſeen with the naked eye. Were the ſun's diſtance, then, 27664 times as great as it is, it would be ſeen of the ſame diameter with ſirius; ſo that allowing ſirius to be equal in magnitude with the ſun (which is a very reaſonable ſuppoſition) the diſtance of ſirius from the earth, will be found to be to that of the ſun from the earth, as 27664 to 1. On which principle, ſirius will be 951005328 ſemi-diameters of the earth diſtant from our earth.

If it be urged, that theſe methods are too precarious, to conclude any thing from them, yet this we can demonſtrate, that the *ſtars* are remoter than ſaturn; nay, that they are vaſtly more remote than ſaturn, as ſaturn has a great parallax, and the *ſtars* ſcarce any at all. See SATURN.

The *magnitudes of the fixed* STARS, appear to be very different; which difference probably ariſes, not from any diverſity in their real magnitudes, but from their diſtances, which are different. From this difference, the *ſtars* become diſtributed into ſeven ſeveral claſſes, called *magnitudes*. See MAGNITUDE.

The firſt claſs, or *ſtars* of the firſt magnitude, are thoſe neareſt us, and whoſe diameters are, therefore, biggeſt. Next theſe, are thoſe of the ſecond magnitude, and ſo on to the ſixth, which comprehends the ſmalleſt *ſtars* viſible to the naked eye. All beyond, are called *teleſcopic ſtars.* See TELESCOPICAL. Not that all the *ſtars* of each claſs appear juſtly of the ſame magnitude; there is a great latitude in this reſpect; and thoſe of the firſt magnitude, appear almoſt all different in luſtre and ſize. Other *ſtars* there are, of intermediate magnitudes, which aſtronomers cannot refer to this, rather than the next claſs, and therefore place them between the two.

Procyon, for inſtance, which Ptolemy makes of the firſt magnitude, and Tycho of the ſecond, Mr. Flamſteed lays down as between the firſt and ſecond.

Thus, inſtead of ſix ſeveral magnitudes, we have really ſix times ſix.

Some authors aſſert, that the *ſtars* of the firſt magnitude, ſubtend an angle of at leaſt a minute; but the earth's orbit ſeen from the *fixed ſtars*, we have obſerved only ſubtends an angle of twenty ſeconds; and hence they conclude, that the diameter of the *ſtars* is vaſtly greater than that of the earth's whole orbit.

Now a ſphere, whoſe ſemi-diameter only equals the diſtance between the ſun and earth, is ten millions of times greater than the ſun; conſequently, the *fixed ſtars* muſt be much more than ten millions of times greater than the ſun.

But here is a miſtake; for the diameters, even of the largeſt *ſtars* viewed through a teleſcope, which magnify, *e. gr.* a hundred times, ſubtend no ſenſible angle at all, but are mere lucid points.

The *ſtars* are likewiſe diſtinguiſhed, with regard to their ſituation, into *aſteriſms* or *conſtellations*, which are nothing but aſſemblages of ſeveral neighbouring *ſtars*, conſidered as conſtituting ſome determinate figure, as of an animal, *&c.* and denominated therefrom: a diviſion as ancient as the book of Job; wherein we find mention of orion and the pleiades, *&c.* See CONSTELLATION.

Beſides the *ſtars* thus diſtinguiſhed into magnitudes and conſtellations, there are others not reduced to either. Thoſe not reduced into conſtellations, are called *informes*, or *unformed ſtars*; of which kind, ſeveral ſo reputed by the ancients, have been ſince formed into new conſtellations by the modern aſtronomers; as *cor Caroli* by Dr. Halley, *ſcutum Sobieſci*, by Hevelius, *&c.* See INFORMES.

Thoſe not reduced to claſſes or magnitudes, are called *nebulous ſtars*, being ſuch as only appear faintly, in form of little lucid nebulæ or clouds. See NEBULOUS.

The *number of* STARS appears to be vaſtly great, almoſt infinite; yet have aſtronomers long ago aſcertained the number of thoſe viſible to the eye; which are found vaſtly fewer than one would imagine.—Hipparchus 125 years before the incarnation, on occaſion of a new *ſtar* then appearing, made a catalogue of the *ſtars*, i. e. an enumeration thereof, with an exact deſcription of their magnitudes, ſituations, longitude, latitude, *&c.* that it might be known, if any the like change ſhould happen for the future in the heavens. Hipparchus made the number of viſible *ſtars* 1022. Theſe were reduced into forty-eight conſtellations, and he laid it down, that if there ſometimes appeared more in winter nights, it was owing to a deception of the ſenſe.—Ptolemy added four *ſtars* to Hipparchus's catalogue, and made the number 1026.—In the year 1437, Ulug Beigh, grandſon of Tamerlane, in a new catalogue he made, only gave 1017.

But in the ſeventeenth century, when aſtronomy began to be retrieved, their number was found to be much greater.—To the forty-eight conſtellations of the ancients, were added twelve new ones, diſcovered towards the ſouth pole, and two towards the north; beſides ſeveral others not univerſally admitted, as the flower de lis, the royal oak, *&c.* See CONSTELLATION.

Tycho Brahe publiſhed a catalogue of 777 *ſtars*, from his own obſervations; which Kepler, from Ptolemy and others, increaſed to 1163, Ricciolus, to 1468, and Bayer, to 1725: Dr. Halley added 373 obſerved by him, within the antarctic circle.—Hevelius, from his own obſervations, and thoſe of Dr. Halley, and the ancients, made a catalogue of 1888 *ſtars*: and Mr. Flamſteed has ſince made a catalogue of no leſs than 3000 *ſtars*, all from his own moſt accurate obſervations. See CATALOGUE.

Of theſe 3000, it is true, there are many only viſible through a teleſcope; nor does a good eye ſcarce ever ſee more than an hundred at the ſame time in the cleareſt heaven: the appearance of innumerable more, frequent in clear winter nights, ariſes from our ſight's being deceived by their twinkling, and from our viewing them confuſedly, and not reducing them to any order. Yet for all this, the *ſtars* are really almoſt infinite. Riccioli makes no ſcruple no affirm, in his new *Almageſt*, that a man who ſhould ſay there are above twenty thouſand times twenty thouſand, would ſay nothing improbable.

For a good teleſcope directed almoſt to any point of the heavens, diſcovers numbers that are loſt to the naked ſight: particularly in the milky way, which is nothing but an aſſemblage of *ſtars*, too remote to be ſingly ſeen, but ſo cloſely diſpoſed, as to give a luminous appearance to that part of the heavens where they are. See GALAXY.

In the ſingle conſtellation of the pleiades, inſtead of ſix or ſeven *ſtars* ſeen by the beſt eye, Dr. Hook, with a teleſcope twelve foot long, told ſeventy-eight; and with larger glaſſes many more of different magnitudes. F. de Rheita, a capuchin, affirms, that he has obſerved above 2000 *ſtars* in the ſingle conſtellation of orion.

The ſame author found above 188 in the pleiades. And Huygens looking at the *ſtar* in the middle of orion's ſword; inſtead of one, found it to be twelve. Galileo found eighty in orion's ſword; twenty-one in the nebulous *ſtar* of his head; and thirty-ſix in the nebulous *ſtar*, præſepe.

The *changes that have happened in the* STARS, are very conſiderable; contrary to the opinion of the ancients, who held, that the heavens and heavenly bodies were incapable of any change, the matter thereof being permanent and eternal, infinitely exceeding the hardneſs of diamonds, and not ſuſceptible of any different form. And, in effect, till the time of Ariſtotle, and even two hundred years afterwards, there had no change been obſerved.

The firſt, was in the year 125, before the incarnation; when Hipparchus diſcovering a new *ſtar* to appear, was firſt induced to make a catalogue of the *ſtars*, that poſterity, as we have obſerved, might perceive any future changes of the like kind.

In the year 1572, Tycho Brahe, obſerved another new *ſtar* in the conſtellation caſſiopeia, which was, likewiſe, the occaſion of his making a new catalogue. Its magnitude, at firſt, exceeded that of the biggeſt of our *ſtars*, ſirius and lyra; it even equalled that of venus, when neareſt the earth; and was ſeen in fair day-light. It continued ſixteen months; towards the latter part whereof, it began to dwindle, and at laſt totally diſappeared, without any change of place in all that time.

Leovicius tells us of another *ſtar* appearing in the ſame conſtellation, about the year 905, which reſembled that of 1572; and quotes another ancient obſervation, whereby it appears, that a new *ſtar* was ſeen about the ſame place in 1264.

Dr. Keil takes thoſe to have been all the ſame *ſtar*; and does not know but it may make its appearance a-new 150 years hence.

Fabricius diſcovered another new *ſtar* in the neck of the whale, which appeared and diſappeared ſeveral times in the years 1648 and 1662. Its courſe and motion, are deſcribed by M. Bouillaud.

Simon Marius diſcovered another in andromeda's girdle, in 1612 and 1613; though M. Bouillaud ſays, it had been ſeen before, in the 15th century. Another was obſerved by Kepler in ſerpentarius. Another of the third magnitude in the conſtellation cygnus, near the bill, in the year 1601, which diſappeared in 1626, and was obſerved again by Hevelius in 1659, till the year 1661, and again in 1666 and 1671, as a *ſtar* of the ſixth magnitude.

It is certain, from the ancient catalogues, that many of the ancient *ſtars* are not now viſible. This is particularly notorious in the pleiades, or ſeven *ſtars*, whereof only ſix are now viſible to the eye; a thing long ago obſerved by Ovid: witneſs the verſe, *Quæ ſeptem dici, ſex tamen eſſe ſolent.*

M. Montanere, in his letter to the Royal Society in 1670, obſerves, that there are now wanting in the heavens, two *ſtars* of the ſecond magnitude, in the ſtern of the ſhip argo and its yard; which had been ſeen till the year 1664. When they firſt diſappeared it is not known; but he aſſures us, there was not the leaſt glympſe of them in 1668. He adds, he has obſerved many more changes in the *fixed ſtars*, even to the number of an hundred.

For the *nature of the fixt* STARS, their immenſe diſtance leaves us greatly at a loſs about it. What we can gather for certain from their phænomena, is as follows:

1°. That the fixt *ſtars* are greater than our earth. This is demonſtrable thus: ſuppoſe two *ſtars* C and D (*Tab. Aſtronomy*, fig. 7.) the one in the eaſtern horizon, and the other in the weſtern. As ſoon as D arrives in C; C will appear in D. But ſince both move with the ſame velocity, while C deſcribes the arch CHD; the *ſtar* D deſcribing an arch equal to CDH, will appear in F: wherefore, if the *ſtars* C and D be leſs than the earth, the *ſtar* C will not be ſeen in the eaſtern horizon, when the other, D, is arrived at the weſtern: But as this is contrary to experience, it follows, that the *ſtars* being in L and S, and there ſeen at the ſame time by ſpectators in A and B, are greater than the earth AB.

2°. The fixt *ſtars* are farther diſtant from the earth, than the fartheſt of the planets. For we frequently find the fixt *ſtars* hid behind ſaturn's body, the higheſt of the planets.

3°. The fixt *ſtars* ſhine with their own light: for they are much farther from the ſun than ſaturn, and appear much ſmaller than ſaturn; but ſince, notwithſtanding this, they are found to ſhine much brighter than ſaturn, it is evident they cannot borrow their light from the ſame ſource as ſaturn does, *viz.* the ſun: but ſince we know of no other luminous body beſide the ſun, whence they might derive their light; it follows, that they ſhine with their own native light. Hence 1°. we deduce, that the fixt *ſtars* are ſo many ſuns; for they have all the characters of ſuns. See SUN.

2°. That in all probability, the *ſtars* are not ſmaller than our ſun.

3°. That it is highly probable, each *ſtar* is the centre of a ſyſtem, and has planets or earths revolving round it, in the ſame manner as round our ſun, *i. e.* has opake bodies illuminated, warmed and cheriſhed by its light. See SYSTEM. How immenſe then, does the univerſe appear! Indeed it muſt either be infinite, or infinitely near it. See UNIVERSE.

Kepler, it is true, denies, that each *ſtar* can have its ſyſtem of planets as ours has; and takes them all to be fixed in the ſame ſurface or ſphere; urging, that were one twice or thrice as remote as another, it would appear twice or thrice as ſmall, ſuppoſing their real magnitudes equal; whereas there is no difference in their apparent magnitudes, juſtly obſerved, at all. But to this we oppoſe, that Huygens has not only ſhewn that fires and flames are viſible at diſtances where other bodies, comprehended under equal angles, diſappear; but it ſhould likewiſe ſeem, that the optic theorem about the apparent diameters of objects being reciprocally proportional to their diſtances from the eye, does only hold while the diameter of the object has ſome ſenſible ratio to its diſtance.

4°. The *ſtars* which appear and diſappear by turns, being always found to increaſe in magnitude at their firſt appearance, and to decreaſe as they begin to diſappear, and being likewiſe ſtill viſible through teleſcopes, for ſome time after they are loſt to the naked eye (of which we have various inſtances in the *Philoſophical Tranſactions*) ſeem to be no more than planets performing their periods about the fixt *ſtars*, as their reſpective ſuns; unleſs any perſon ſhould rather incline to Dr. Keil's opinion, *viz.* that the *ſtars* loſe their brightneſs, and diſappear, by their becoming covered with maculæ or ſpots, ſuch as are frequently found to overſpread the ſun. See SPOTS.

5°. Thoſe temporary *ſtars*, which, upon their diſappearing, have never been found to return again; are probably conjectured to be of the number of comets, which make long excurſions from their ſuns, or the centers of the upper planetary ſyſtems, *i. e.* from the fixt *ſtars*; returning too ſeldom to have their returns perceived. See COMET.

Motion of the STARS.—The fixed *ſtars* have two kinds of motions; one called the *firſt*, *common* or *diurnal motion*, or the *motion of the primum mobile:* by this they are carried along with the ſphere or firmament wherein they appear fixed, round the earth, from eaſt to weſt, in the ſpace of twenty-four hours.

The other, called the *ſecond* or *proper motion*, is that whereby they go backwards from weſt to eaſt round the poles of the ecliptic, with an exceeding ſlowneſs, as not deſcribing above a degree of their circle in the ſpace of ſeventy-one or ſeventy-two years, or 51 ſeconds in a year.

Some have imagined, I do not know on what grounds, that when they are got round to the points, whence they firſt departed, nature will have finiſhed her courſe, and the *ſtars* having performed their career, the heavens will remain at reſt, unleſs the being, who firſt gave them motion, appoint them to begin another circuit.

On the footing of this calculation, the world ſhould laſt about 30000 years, according to Ptolemy; 25816 according to Tycho; 25920 according to Riccioli; and 24800 according to Caſſini. See PRECESSION *of the equinox*.

In effect, the latitudes of the fixt *ſtars*, we find, by comparing the obſervations of the ancient aſtronomers with thoſe of the moderns, continue ſtill the ſame; but their longitude is by this ſecond motion always increaſing.

Thus, *e. gr.* the longitude of cor leonis, was found by Ptolemy, *A. D.* 138, to be 2° 30′; in 1115 it was obſerved by the Perſians to be 17° 30′: in 1364, by Alphonſus, 20° 40′; in 1586 by the prince of Heſſe, 24° 11′; in 1601 by Tycho, 24° 17′; and in 1690 by Mr. Flamſteed, 25° 31′ 20″; whence the proper motion of the *ſtars*, according to the order of the ſigns in circles parallel to the ecliptic, is eaſily inferred.

It was Hipparchus firſt ſuſpected this motion, upon comparing the obſervations of Tymocharis and Ariſtyllus with his own. Ptolemy, who lived three centuries after Hipparchus, demonſtrated the ſame by undeniable arguments. See LONGITUDE.

Some, it is true, have imagined a change in the latitudes of the *ſtars*; but ſuch an opinion has little countenance from obſervation. See LATITUDE.

Tycho Brahe makes the increaſe of longitude in a century 1° 25′; Copernicus 1° 23′ 40″ 12‴; Flamſteed and Ricciolus 1° 23′ 20″; Bullialdus 1° 24′ 54″; Hevelius 1° 24′ 46″ 50‴; whence, with Flamſteed, the annual increaſe of the longitudes of the fixed *ſtars* may be well fixed at 50″.

From theſe data, the increaſe of the longitude of a *ſtar* for any given time, is eaſily had; and hence the longitude of a *ſtar* for any given year, being given, its longitude for any other year is readily found: *e. gr.* the longitude of ſirius in Mr. Flamſteed's tables for the year 1690 being 9° 49′ 1″; its longitude for the year 1724 is found, by multiplying the interval of time, *viz.* 34 years by 50″, the product 1700″ or 28′ 2″ added to the given longitude, will give the longitude required, 10° 17′ 3″.

The principal phænomena of the fixt *ſtars*, ariſing from their common and proper motion, beſides their longitude, are their altitudes, right aſcenſions, declinations, occultations, culminations, riſings and ſettings; which ſee under their proper articles, ALTITUDE, ASCENSION, DECLINATION, OCCULTATION, &c.

The ſeveral *ſtars* in each conſtellation, *e. gr.* in taurus, bootes, hercules, &c. their longitudes, latitudes, magnitudes, names, places, &c. as fixed by Mr. Flamſteed in the *Britannic Catalogue*; ſee under the proper article of each conſtellation, TAURUS, BOOTES, HERCULES, &c.

To learn to know the ſeveral fixt *ſtars* by the globe; ſee GLOBE.

The parallax and diſtance of the fixt *ſtars*, ſee under PARALLAX and DISTANCE.

Circumpolar STAR,	See	CIRCUMPOLAR.
Morning STAR,		MORNING.
Place of a STAR,		PLACE and APPARENT.
Pole STAR,		POLE.

STAR, in fortification, a little fort, with five or more points, or ſaliant and re-entring angles, flanking one another, and their faces 90 or 100 foot long. See FORT.

Formerly, *ſtar* forts were frequently made in lines of circumvallation, after two or three redoubts. See REDOUBT and SCONCE.

STAR, in pyrotechny, a compoſition of combuſtible matters, which being born or thrown aloft into the air, exhibits the appearance of a real *ſtar*.

Stars are chiefly uſed as appendages to rockets, a number of them being uſually incloſed in a conical cap or cover at the head of the rocket, and carried up with it to its utmoſt altitude, where the *ſtars* taking fire, are ſpread around, and exhibit an agreeable ſpectacle. See ROCKET.

To make STARS; mix three pounds of ſalt petre, eleven ounces of ſulphur, one of antimony, and three of gunpowder duſt: or twelve ounces of ſulphur, ſix of ſalt petre, five and a half of gunpowder duſt, four ounces of olibanum, one of maſtic, camphir, ſublimate of mercury, and half a one of antimony and orpiment.

Moiſten the maſs with gumwater, and make it into little balls, of the ſize of a cheſnut, which dry either in the ſun or the oven. Theſe ſet on fire in the air, will repreſent *ſtars*.

STAR, in heraldry, denotes a charge frequently born on the ſhield, and the honourable ordinaries, in the figure of a *ſtar*. It differs from the *mullet*, or ſpur-rowel, in that it is not pierced as this laſt is. See MULLET.

It uſually conſiſts of five rays or ſpokes. When it has ſix or eight, as among the Germans and Italians, particular mention muſt be made thereof in blazoning.

On medals, STARS are marks of conſecration and deification, being intended as ſymbols of eternity.—F. Joubert ſays, they ſometimes expreſs the children of princes reigning; and ſometimes the children dead, and placed in the rank of deities. See DEIFICATION.

STAR, is alſo a badge of the honourable orders of the garter and bath. See GARTER.

Order of the STAR, or our *lady of the* STAR, an order of knighthood inſtituted by king John of France in the year 1352, denominated from a *ſtar* they wore on the ſtomach.

At firſt there were but thirty knights; but the order in time became depreciated by the multitude of perſons admitted, without any diſtinction. For which reaſon, Charles VII. when grand-maſter thereof, quitted it, and gave it the chevalier du Guet, knight of the watch at Paris, and his archers, who ſtill wear a *ſtar* on their coats. But this account is contradicted by others; who will have the order inſtituted by king Robert in 1022 in honour of the holy virgin, and to have fallen into diſregard during the wars of Philip de Valois.

Juſtiniani mentions another *order of the ſtar*, at Meſſina in Sicily, called alſo the *order of the creſcent*. It was inſtituted in the year 1268, by Charles of Anjou, brother of St. Louis, king of the two Sicilies.

Others will have it inſtituted in 1464, by Renatus duke of Anjou, who took the title of king of Sicily. At leaſt, it appears from the arms of this prince, that he made ſome alteration in the collar of the order; for inſtead of flower-de-luces and *ſtars*, he only bore two chains, whence hung a creſcent, with the old French word *loz*, which in the language of Rebus, ſignified *loz in a creſcent*.

The order being dropt into obſcurity, was raiſed again by the people of Meſſina, under the name of the *noble academy of the knights of the ſtar*; reducing the ancient collar to a ſingle *ſtar* placed on a forked croſs, and the number of knights to ſixty-two. Their device was, *monſtrant regibus aſtra viam*,
M R
which they expreſſed by the four initial letters * with
A V
the *ſtar* in the middle.

STAR, in the manage.—*White* STARS *in the forehead*, are eſteemed good marks in all horſes, except white and grey ones: where nature fails to produce this good criterion, our jockies have frequent recourſe to art. See HORSE.

The method of making *ſtars*, practiſed among the Dutch, is to roaſt a large onion in hot aſhes, and when near thoroughly done, to divide it in two, and dip it in ſcalding hot wallnut oil. This done, they immediately apply the flat ſide thereof to the place the *ſtar* is to be on, and keep it there half an hour. After taking it off, they anoint the ſcalded place with ointment of roſes: in a ſhort time, the ſcarf ſkin falls off, and white hair grows up in its room; but the middle always continues bare of hair, which is the certain characteriſtic of an artificial *ſtar*.

The method moſt uſed among us, is to ſhave the hair from the place it is to be made on; than to apply a little oil of vitriol with a feather, or the like, paſſing it lightly over the bald place. This eats away the roots of the former hair, which will be ſucceeded by white. The ſore is healed up with copperas and green ointment.

To make a *black* STAR, on a white or other coloured horſe; waſh the place to be changed, frequently, with fern roots and ſage boiled in lye; and it will breed black hairs. The ſame may be done, by beating ſour milk, galls and ruſt together, and anointing the part therewith.

A red STAR is made with an ounce of aqua-fortis, a pennyworth of aqua-vitæ, and ſilver to the value of eighteenpence, all heated together in a glaſs, and the place anointed therewith. This immediately turns the hair to a perfect red; but it laſts no longer than till the horſe caſts his coat; when it is to be renewed.

STARBOARD, denotes the right hand ſide of a ſhip: as larboard does the left. See LARBOARD.

They ſay, *ſtarboard the helm*, or *helm a ſtarboard*, when the man at the helm ſhould put the helm to the right ſide of the ſhip. See HELM.

STARCH, a fecula, or ſediment, found at the bottom of veſſels wherein wheat has been ſteeped in water; of which fecula, after ſeparating the bran from it, by paſſing it through ſieves, they form a kind of loaves, which being dried in the ſun, or an oven, is afterwards broke into little pieces, and ſo ſold.

The beſt is white, ſoft, and friable, eaſily broke into powder. Such as require very fine *ſtarch*, do not content themſelves, like the ſtarch-men, with refuſe wheat, but uſe the fineſt grain. The proceſs is as follows;

Method of making STARCH *of wheat.*—The grain being well cleaned, is put to ferment in veſſels full of water, which they expoſe to the ſun, when in its greateſt heat; changing the water twice a day, for the ſpace of eight or twelve days, according to the ſeaſon. When the grain burſts eaſily under the finger, they judge it ſufficiently fermented. The fermentation perfected, and the grain thus ſoftened; it is put, handful by handful, in a canvas bag, to ſeparate the flour from the huſks, which is done by rubbing and beating it on a plank, laid a-croſs the mouth of the empty veſſel that is to receive the flour.

As the veſſels are filled with this liquid flour, there is ſeen ſwimming a-top, a reddiſh water, which is to be carefully ſcummed off from time to time, and clean water put in its place; which, after ſtirring the whole together, is all to be ſtrained through a cloth or ſieve, and what is left behind, put into the veſſel with new water, and expoſed to the ſun for ſome time; and as the ſediment thickens at the bottom, they drain off the water four or five times, by inclining the veſſel, but without paſſing it through the ſieve. What remains at bottom, is the *ſtarch*, which they cut in pieces to get out, and leave it to dry in the ſun. When dry, it is laid up for uſe.

To uſe *ſtarch*, they take as much as is needed, and ſteep it in water over night, changing the water four or five times.

The ſtarch-men uſing the refuſe of wheat, only obſerve a part of all theſe things in their proceſs; but their *ſtarch* falls far ſhort of this.

Starch is uſed along with ſmalt, or ſtone blue, to ſtiffen and clear linen. The powder thereof is alſo uſed to whiten, and powder the hair.

It is alſo uſed by the dyers to diſpoſe their ſtuffs to take colours the better.

STAR-CHAMBER, *camera ſtellata*, was a chamber at Weſtminſter, ſo called, from its roof being painted with gilt ſtars. See CHAMBER.

STAR-FORT, or *redoubt*, in fortification, is a work with ſeveral faces, generally compoſed of from five to eight points, with ſaliant and re-entring angles flanking one another; every one of its ſides containing from twelve to twenty-five fathoms. See FORT, and REDOUBT.

STARTING, among brewers, the putting of new beer, or ale, to that which is decayed, to revive it again.

STATE, or *eſtate*, an empire, kingdom, province, or extent of country under the ſame government. See ESTATE, EMPIRE, PROVINCE, *&c.*

The *ſtate*, or *ſtates* of the king of England, include the Britiſh iſlands, and the Weſt India plantations, as Virginia, Carolina, Maryland, *&c.* to which may be added the dutchies of Brunſwic-Lunenburg, Bremen, *&c.*

Free STATE. See the article FREE.

STATE is alſo uſed for the policy or form of government of a nation.—Hence, miniſters of *ſtate*; reaſons of *ſtate*, *&c.* See GOVERNMENT, MINISTER, RATIO *ſtatus*, &c.

Politicians diſtinguiſh ſeveral forms of *ſtate*, *viz.* the *monarchic*, as that of England; ſee MONARCHY: the *democratic*, as that of Rome and Athens; ſee DEMOCRACY: the *oligarchic*, as that of Venice; ſee OLIGARCHY: and the *ariſtocratic*, as that of Sparta; ſee ARISTOCRACY, *&c.*

STATE *of a diſeaſe*, the ſame with *acme*. See ACME.

STATED *winds*. See the article WIND.

STATER, an ancient coin, weighing four Attic drachms: it was either of ſilver, or gold; the former worth about two ſhillings four-pence ſterling. See COIN.

STATERA *Romana*, or ſtilyard, a name given to the Roman balance. See STILYARD.

STATES, a term applied to the ſeveral orders, or claſſes of a people, aſſembled to conſult of matters for the publick good. See ESTATES.

STATES-GENERAL, the name of an aſſembly, conſiſting of the deputies of the ſeven United Provinces.

In this aſſembly, the deputies of each province, what number ſoever they be, have only one voice, and are eſteemed as but one perſon; the votes being given by provinces. Each province preſides at the aſſembly in its turn, according to the order ſettled among them; Guelderland preſides firſt, then Holland, *&c.*

This aſſembly is the repreſentative of the ſovereignty of the union, which reſides properly in the general aſſembly of the ſtates themſelves of all the provinces: but as that aſſembly ordinarily conſiſts of ſeven or eight hundred perſons, it was reſolved, after the departure of the earl of Leiceſter, in order to avoid expence, and the confuſion of ſo numerous a body, that the provincial eſtates ſhould, for the future, be ordinarily repreſented by their deputies, under the name of the *ſtates-general*, who were always to reſide at the Hague, and who alone are now called *ſtates-general.*

Since that new regulation, there have been but two general aſſemblies of the *ſtates* of the provinces; the former held in 1600 at Berg-op-Zoom, to confirm the truce agreed on with the arch-duke Albert, with the greater ſolemnity: and the latter in 1651.

STATES *of Holland*, an aſſembly conſiſting of the deputies of the councils, or colleges of each city; wherein reſides the ſovereignty of that province.

Originally, none but the nobility and the ſix principal cities had ſeats, or voices in the *ſtates.*—At preſent there are the deputies of eighteen cities.—The nobility have the firſt voice.

The other provinces of the union have likewiſe their *ſtates*, repreſenting their ſovereignty: deputies from which conſtitute what they call the *ſtates-general.* See STATES-GENERAL.

STATHOLDER. See the article STADTHOLDER.

STATICAL *baroſcope.* See BAROSCOPE, and BAROMETER.

STATICKS, STATICE, a branch of mathematics, which conſiders weight or gravity, and the motion of bodies ariſing therefrom. See MOTION, and HYDROSTATICKS.

Thoſe who define mechanics, the ſcience of motion, make *ſtaticks* a member thereof, *viz.* that part which conſiders the motion of bodies ariſing from gravity. See GRAVITY.

Others make them two diſtinct doctrines; reſtraining mechanics to the doctrine of motion and weight in reference to the ſtructure and power of machines; and *ſtaticks* to the doctrine of motion conſidered merely as ariſing from the weight of bodies, without any immediate reſpect to machines.—On which footing, *ſtaticks* ſhould be the doctrine or theory of motion; and mechanics the application thereof to machines. See MECHANICS.

For the laws of STATICKS, ſee GRAVITY, DESCENT, *&c.*

STATICKS, STATICI, in medicine, a kind of epileptics, or perſons ſeized with epilepſies. See EPILEPSY.

Staticks differ from *cataleptics*, in that, theſe laſt have no ſenſe of external objects, nor remember any thing that paſſes at the time of the paroxyſm: whereas the *ſtatici* are all the while taken up with ſome very ſtrong lively idea, which they remember well enough, out of the fit. See CATALEPSIS.

STATION, in geometry, *&c.* a place pitched upon to make an obſervation, take an angle, or the like.

An inacceſſible height or diſtance is only to be taken, by making two *ſtations*, from two places. whoſe diſtances are known.—In making maps of provinces, *&c.* *ſtations* are fixed on all the eminences, *&c.* of the country, and angles taken thence to the ſeveral towns, villages, *&c.*

In ſurveying, the inſtrument is to be adjuſted by the needle, to anſwer the points of the horizon, at every *ſtation*; the diſtance from the laſt *ſtation* to be meaſured, and an angle to be taken to the next *ſtation*: which includes the whole buſineſs of ſurveying. See SURVEYING.

In levelling, the inſtrument is rectified, that is placed level, at each *ſtation*, and obſervations made forwards and backwards. See LEVELLING.

Line of STATION in perſpective. See the article LINE.

STATION, in aſtronomy, the poſition or appearance of a planet in the ſame point of the zodiac for ſeveral days. See PLANET.

As the earth, whence we view the motions of the planets, is out of the centre of their orbits, the planets appear to proceed irregularly; being ſometimes ſeen to go forwards, that is from weſt to eaſt, which is called their *direction*; ſometimes to go backwards, or from eaſt to weſt, which is called their *retrogradation*. See DIRECTION, and RETROGRADATION.

Now between theſe two ſtates, there muſt be an intermediate one, wherein the planet neither appears to go backwards nor forwards, but to ſtand ſtill and keep the ſame place in her orbit; which is called her *ſtation*. See STATIONARY.

STATION, STATIO, in church hiſtory, is applied to the faſts of the fourth and ſixth days of the week; that is, Wedneſday and Friday; which many among the ancients obſerved with much devotion, till three of the clock in the afternoon. See FAST.

S. Peter of Alexandria, in his *Canonical Epiſtle*, can. 15. obſerves, that it was appointed conformably to ancient tradition, to faſt weekly on thoſe days: on Wedneſday, in memory of the counſel the Jews took to put our Saviour to death; and on Friday, on account of his paſſion.—Some regard to which is ſtill had by the church of England. See ABSTINENCE.

STATION is alſo uſed in the church of Rome, for a church where indulgences are to be had on certain days. See INDULGENCE.

It was St. Gregory that fixed the *ſtations* at Rome, i. e. the churches where the office was to be performed each day of Lent, and on ſolemn feaſt days. Theſe *ſtations* he marked down in his *Sacramentary*, as they now ſtand in the *Roman Miſſal*; appropriating them chiefly to the patriarchal and titular churches: but though the *ſtations* were fixed, the archdeacon did not fail at each *ſtation*, to publiſh to the people the following *ſtation*.

STATION is alſo a ceremony in the Romiſh church, wherein the prieſts or canons go out of the choir to ſing an anthem before the crucifix, or the image of our lady.—This ceremony is aſcribed to S. Cyril.

STATIONARY, in aſtronomy, the ſtate of a planet when it ſeems to remain immoveable in the ſame point of the zodiac. See STATION.

The planets having ſometimes a progreſſive and ſometimes a retrograde motion; there will be ſome point wherein they appear *ſtationary*. Now a planet will be ſeen *ſtationary*, when the line that joins the earth's and planet's center, is conſtantly directed to the ſame point in the heavens; that is, when it keeps parallel to itſelf.—For all right lines drawn from any point of the earth's orbit, parallel to one another, do all point to the ſame ſtar; the diſtance of thoſe lines being inſenſible, in compariſon of that of the fixed ſtars.

Saturn is ſeen *ſtationary*, at the diſtance of ſomewhat more than a quadrant from the ſun; jupiter at the diſtance of 52°, and mars at a much greater diſtance.

Saturn is *ſtationary* eight days, jupiter four, mars two, venus one and a half, and mercury an half; though the ſeveral ſtations are not always equal. See SATURN, &c.

STEATOCELE, ΣΤΕΑΤΟΚΗΛΗ, in medicine, a rupture, or tumour of the ſcrotum, conſiſting of a fatty ſubſtance reſembling ſuet collected therein. See HERNIA.

STATUARY, STATUARIA, a branch of ſculpture, employed in the making of ſtatues. See STATUE.

Statuary is one of thoſe arts wherein the ancients ſurpaſſed the moderns: indeed it was much more popular, and more cultivated among the former than the latter. See SCULPTURE.—It is diſputed between *ſtatuary* and painting, which of the two is the moſt difficult and the moſt artful. See PAINTING.

The invention of *ſtatuary* was at firſt very coarſe. Leon Battiſta Alberti, who has an expreſs treatiſe on ſtatues, imagines that it took its riſe from ſomething caſually obſerved in the productions of nature, that, with a little help, ſeemed diſpoſed to repreſent the figure of ſome animal.—The common ſtory is, that a maid, full of the idea of her lover, made the firſt eſſay, by the aſſiſtance of her father's implements, who was a potter. This, at leaſt, is pretty certain, that earth is the firſt matter *ſtatuary* was practiſed upon. See POTTERY.

STATUARY is alſo uſed for the artificer, who makes ſtatues. Phidias was the greateſt *ſtatuary* among the ancients, and Michael Angelo among the moderns.

STATUARY *column*,	See the articles	COLUMN.
STATUARY *fountain*,		FOUNTAIN.

STATUE, STATUA, a piece of ſculpture in full relievo, repreſenting a human figure. See FIGURE, and IMAGE.

Daviler more ſcientifically defines *ſtatue* a repreſentation in high relievo and inſulate, of ſome perſon diſtinguiſhed by his birth, merit, or great actions; placed as an ornament in a fine building, or expoſed in a public place to preſerve the memory of his worth.

In ſtrictneſs, the term *ſtatue* is only applied to figures on foot; the word being formed from the Latin, *ſtatura*, the ſize of the body; or from *ſtare*, to ſtand.

Statues are formed with the chiſſel, of ſeveral matters, as ſtone, marble, plaiſter, &c. See STONE, MARBLE, CHISSEL, &c.

They are alſo caſt of various kinds of metal, particularly gold, ſilver, braſs, and lead.—For the method of caſting *ſtatues*, ſee FOUNDERY *of ſtatues*.

Dædalus, the ſon of Eupalmus, who lived not only before the ſiege of Troy, but even before the expedition of the Argonauts, among many other notable contrivances aſcribed to him, is ſaid to have been the inventor of *ſtatues*.—And yet it is certain, there were ſtatuaries before him; only it was he who firſt found how to give them action and motion, and to make them appear as if alive. Before him, they made them with the feet joined together, never intending to expreſs any action. He firſt looſened the feet of his, and gave them the attitudes of people walking and acting.—The Phœnicians are ſaid to have been the firſt who erected *ſtatues* to the gods. See IDOL.

The Greeks ſucceeded in their *ſtatues* beyond the Romans; both the workmanſhip and the fancy of the Roman *ſtatues* were inferior to the Grecian. Indeed we have very few remaining, that have eſcaped the injuries of time.

Statues are uſually diſtinguiſhed into four kinds.—The firſt, are thoſe leſs than the life: of which kind we have ſeveral *ſtatues* of men, of kings, and gods themſelves.

The ſecond, thoſe equal to the life: in which manner it was, that the ancients, at the publick expence, uſed to make *ſtatues* of perſons eminent for virtue, learning, or the ſervices they had done.

The third, thoſe that exceed the life: among which, thoſe which ſurpaſſed the life once and a half, were for kings and emperors; and thoſe double the life, for heroes.

The fourth kind, were thoſe that exceeded the life twice, thrice, or even more; and were called *coloſſus's*. See COLOSSUS.

Every *ſtatue* reſembling the perſon it is intended to repreſent, is called *ſtatua iconica*.

Allegorical STATUE, that which, under a human figure, or other ſymbol, repreſents ſomething of another kind, as a part of the earth, a ſeaſon, age, element, temperament, hour, &c.

Caryatic STATUE,	See the articles	CARYATIDES.
Coloſſal STATUE,		COLOSSUS.

Curule STATUES, thoſe which are repreſented in chariots drawn by bigæ, or quadrigæ, that is, by two, or four horſes: of which kind there were ſeveral in the Circus's, Hippodromes, &c.—or in cars, as we ſee ſome with triumphal arches on antique medals. See CURULE.

Equeſtrian STATUE, that repreſenting ſome illuſtrious perſon on horſeback—as that famous one of Marcus Aurelius at Rome; and that of king Charles I. at Charing-croſs.

Greek STATUE, denotes a figure that is naked and antique; it being in this manner the Greeks repreſented their deities, athletæ of the olympic games, and heroes.

The reaſon of this nudity, whereby the Greek *ſtatues* are diſtinguiſhed, is, that thoſe who exerciſed wreſtling, wherein the Greek youth placed their chief glory, always performed naked. See ATHLETA, GYMNASIUM, &c.

The *ſtatues* of heroes were particularly called *Achillean ſtatues*, by reaſon of the great number of figures of that prince, in moſt of the cities of Greece.

Hydraulic STATUE, any figure placed as an ornament of a fountain, or grotto; or that does the office of a jet d'eau, a cock, ſpout, or the like, by any of its parts, or by any attribute it holds.—The like is to be underſtood of any animal ſerving for the ſame uſe.

Pedeſtrian STATUE, a *ſtatue* ſtanding on foot—as that of king Charles II. in the Royal Exchange, and that of king James II. in the Privy Gardens.

Perſian STATUE. See the article PERSIAN *order*.

Roman STATUES, is an appellation given to ſuch as are cloathed, and which receive various names from their various dreſſes.

Thoſe of emperors with long gowns over their armour, were called *ſtatuæ paludatæ*; thoſe of captains and cavaliers, with coats of arms, *thoracatæ*; thoſe of ſoldiers, with cuiraſſes, *loricatæ*; thoſe of ſenators and augurs, *trabeatæ*; thoſe of magiſtrates with long robes, *togatæ*; thoſe of the people with a plain tunica, *tunicatæ*; and, laſtly, thoſe of women with long trains, *ſtolatæ*.

The Romans had another diviſion of *ſtatues*, into *divine*, which were thoſe conſecrated to the gods; as Jupiter, Mars, Apollo, &c.—*Heroes*, which were thoſe of the demi-gods; as Hercules, &c.—and *Auguſti*, which were thoſe of the emperors; as thoſe two of Cæſar and Auguſtus, under the portico of the capitol.

Foundery of STATUES,	See the articles	FOUNDERY.
Pedeſtal of STATUES,		PEDESTAL.
Plinth of STATUES,		PLINTH.

Repairing a STATUE. See the article REPAIRING.

STATURE, the ſize or height of a man.—From the Latin, *ſtatura*, of *ſtare*, to ſtand.

The *ſtature*, or pitch of a man, is found admirably well adapted to the circumſtances of his exiſtence. Had man, obſerves Dr. Grew, been a dwarf; he could ſcarce have been a reaſonable creature: For, to that end, he muſt have had a jolt-head; and then he would not have had body and blood to ſupply his brain with ſpirits: or if he had had a ſmall, proportioned portional head, there would not have been brain enough for his buſineſs.—Again, had man been a giant, he could not have been ſo commodiouſly ſupplied with food: for there would not have been fleſh enough of the beſt edible beaſts to ſupply his turn; or if the beaſts had been made proportionably bigger, there would not have been graſs enough, *&c.* See DWARF, GIANT, *&c.*

It is a common opinion, however, and has been ſo ever ſince Homer's time, that people in the earlieſt ages of the world, much ſurpaſſed the moderns in *ſtature*; and it is true, we read of men, both in ſacred and profane hiſtory, whoſe pitch appears ſurprizing: but then it is true, they were eſteemed giants.

The ordinary *ſtature* of men, Mr. Derham obſerves, is, in all probability the ſame now, as at the beginning; as may be gathered from the monuments, mummies, *&c.* ſtill remaining. The oldeſt monument in the world, is that of Cheops, in the firſt pyramid of Egypt, which Mr. Greaves obſerves, ſcarce exceeds the meaſure of our ordinary coffins. The cavity, he ſays, is only 6.488 feet long, 2.218 feet wide, and 2.160 deep: from which dimenſions, and thoſe of ſeveral embalmed bodies, taken by him in Egypt, that accurate writer concludes, there is no decay in nature; but that the men of this age are of the ſame *ſtature* as thoſe three thouſand years ago.

To theſe we have other and later inſtances to add from Hakewell: the tombs at Piſa, which are ſome thouſands of years old, are no longer than ours. The ſame may be ſaid of Athelſtan's in Malmſbury church; Sheba's in Paul's, of the year 693, *&c.*

The like evidence we have from the ancient armour, ſhields, veſſels, *&c.* dug up at this day, *e. gr.* the braſs helmet dug up at Metaurum, fits one of our men; yet it is allowed to have been left there at the overthrow of Aſdrubal. Add, that Auguſtus was five foot nine inches, which was the meaſure of our queen Elizabeth; only the queen exceeded the emperor by two inches, allowance being made for the difference between the Roman and our foot.

STATUS *de manerio*, in ancient records, denotes all the tenants and legal men within the lands of a manor, aſſembled in their lord's court, to do their cuſtomary ſuit, and enjoy their rights and privileges. See MANOR, *&c.*

STATUTE, STATUTUM, in its general ſenſe, ſignifies a law, ordinance, decree, *&c.* See LAW, DECREE, *&c.*

STATUTE, in our laws and cuſtoms, more immediately ſignifies an act of parliament, made by the three eſtates of the realm; and having the force of a law. See LAW, and PARLIAMENT.

Acceſſory by STATUTE,	See the articles	ACCESSORY.
Action upon the STATUTE,		ACTION.

STATUTE *ſeſſions*, called alſo *petit ſeſſions*, are meetings in every hundred, to which conſtables repair, and others, both maſters and ſervants, for deciding differences between maſters and ſervants, rating of wages, beſtowing people in ſervice, who being fit to ſerve, either refuſe to ſeek, or cannot get maſters. See SESSIONS.

STATUTE *merchant*, is a bond of record acknowledged before one of the clerks of the *ſtatutes* merchant and mayor or chief warden of the city of London, or two merchants of the ſaid city for that purpoſe aſſigned, or before the mayor, chief warden, or maſter of other cities or towns, or other ſufficient men for that purpoſe appointed; ſealed with the ſeal of the debtor and of the king, which is of two pieces, the greater to be kept by the mayor, chief warden, *&c.* and the leſſer by the ſaid clerks. Its effect is, that if the obligor pay not the debt at the day, execution may be awarded againſt his body, lands, and goods; and that the obligee ſhall hold the ſame till the debt be levied.

Tenant per STATUTE *merchant.* See TENANT.

STATUTE *ſtaple*, is a ſort of *ſtatute* merchant, relating to merchants, and merchandizes of the ſtaple. See STAPLE.

The *ſtatute* ſtaple is of two kinds; *proper*, and *improper*.

Proper is a bond of record, acknowledged before the mayor of the ſtaple, in the preſence of one or more conſtables of the ſtaple; by virtue of which the creditor may forthwith have execution of the body, lands, and goods of the debtor, on non-payment.

Improper is a bond of record, founded upon the *ſtatute* 23 Hen. VIII. c. 6. of the nature of a proper *ſtatute* ſtaple as to the force and execution of it, and acknowledged before one of the chief juſtices; or in their abſence, before the mayor of the ſtaple, and recorder of London.

STAVERS, or STAGGERS, among farriers, a giddineſs in a horſe's head, which ends in madneſs.

It is frequently occaſioned, by turning out a horſe to graſs too ſoon, before well cold; where, by hanging down his head to feed, ill vapours and humours are generated, which oppreſſing the brain, are the next cauſe of this diſeaſe.—Sometimes it comes by over exerciſe in hot weather, which inflames the blood, *&c.* and ſometimes by noiſome ſmells in the ſtable, exceſſive eating, *&c.*

The ſigns of it, are dimneſs of ſight, reeling, and ſtaggering, watery eyes, *&c.* At length, for very pain, he beats his head againſt the wall, thruſts it into the litter, riſes and lies down with fury, *&c.*

The methods of cure are various; but they all begin with bleeding.

STAVES, *Flag* STAVES,	See	FLAG *ſtaves.*
Levelling STAVES,		LEVELLING *ſtaves.*
Tip STAVES,		TIP *ſtaves.*

STAY, in the ſea language, a big, ſtrong rope, faſtened to the top of one maſt, and the foot of that next before it, towards the prow, ſerving to keep it firm, and prevent its falling aftwards, or towards the poop.—See *Tab. Ship. fig.* I. *n.* 29, 33, 78, 85, 120. See alſo the article MAST.

All maſts, top-maſts, and flag-ſtaves, have their *ſtays*; except the ſprit-ſail top-maſts. That of the main-maſt is called the *main ſtay.*

The main-maſt, fore-maſt, and thoſe belonging to them, have alſo *back ſtays*, to prevent their pitching forwards, or over-board; as going on either ſide her. See BACK *ſtays.*

To STAY *a ſhip*, or *bring her on the* STAYS, is to manage her tackle and ſails, ſo as that ſhe cannot make any way forwards, which is done in order to her tacking about.

STEADY, a word of command at ſea, for the man at the helm to keep the ſhip *ſteady* in her courſe, and not to make angles (or *yaws* as they call them) in and out. See HELM.

STEATOMA, ΣΤΕΑΤΩΜΑ, a kind of ſwelling, or abſceſs; conſiſting of a matter much like ſuet; ſoft, without pain, and without diſcolouring the ſkin; contained in a cyſtis, and eaſily turned out upon inciſion. See TUMOR.

STEEL, a kind of iron refined, and purified by the fire, with other ingredients; which renders it whiter, and its grain cloſer, and finer than common iron. See IRON.

Steel, of all other metals, is that ſuſceptible of the greateſt degree of hardneſs, when well tempered; whence its great uſe in the making of tools and inſtruments of all kinds. See TEMPERING.

The true method of making *ſteel* has been greatly concealed, and the public long abuſed by counterfeit ones.—The following method we have from Agricola; and is affirmed by Kircher to be that practiſed in the iſland of Ilva; a place famous in all ages for the manufacture of good *ſteel*, from the time of the Romans to ours.

Heat a quantity of iron red hot, cut it into ſmall pieces, mix it with a ſort of ſtone that eaſily melts. This mixture put by little and little into a crucible, firſt filled with charcoal-duſt, and heated red-hot; when melted off, three, four, or more pieces of iron are to be put in the middle of it; there boil them five or ſix hours with a ſtrong fire. The workman is to ſtir the melted matter often, that the pieces of iron may ſoak in the ſmaller particles of the melted matter; which particles conſume, and thin the groſſer ones of the iron pieces, and are, as it were, a ferment to them, and make them tender. One of the pieces is now taken out of the fire, and put under the great hammer, to be drawn out into bars, and wrought; and hot as it is, plunged into cold water.—Thus tempered, it is again worked upon the anvil; then breaking it, it is conſidered, whether in any part it looks like iron; or whether it be wholly condenſed, and turned into *ſteel.*

Damaſcus STEEL,	See the articles	DAMASCUS.
Engraving on STEEL,		ENGRAVING.
Faggot of STEEL,		FAGGOT.
Nealing of STEEL,		NEALING.

STEEL, in medicine. See the article CHALYBEAT.

STEEL *Wine.* See the article WINE.

STEELYARD, or STILYARD, in mechanics, a kind of balance called alſo *ſtatera Romana*, or the *Roman balance*; by means whereof, the gravity of different bodies are found by the uſe of one ſingle weight. See BALANCE.

Conſtruction of the STEELYARD.—It conſiſts of an iron beam A B (*Tab. Mech. fig.* 35.) wherein a point is aſſumed at pleaſure, as C, and on this a perpendicular raiſed C D. On the ſhorter arm A C, is hung a ſcale or baſon to receive the bodies weighed: the weight I is ſhifted this and that way on the beam, till it be a counter-balance to one, two, three, four, *&c.* pounds placed in the ſcale; and the points are noted wherein I weighs as one, two, three, four, *&c.* pounds. From this conſtruction of the *ſteelyard*, the manner of uſing it is apparent. But the inſtrument being very liable to deceit, is therefore not to be countenanced in commerce.

Spring STEELYARD, is a kind of portable balance, ſerving to weigh any matter, from about one to forty pounds.

It is compoſed of a braſs tube, into which goes a rod, and about that is wound a ſpring of tempered ſteel in a ſpiral form. On this rod are the diviſions of pounds and parts of pounds, which are made by ſucceſſively hanging on to a hook faſtened to the other end, one, two, three, four, *&c.* pounds.

Now the ſpring being faſtened by a ſcrew, to the bottom of the rod; the greater weight is hung on the hook, the more will the ſpring be contracted, and, conſequently, a greater part of the rod will come out of the tube; the proportions of which greater weights are indicated by the figures appearing againſt the extremity of the tube.

STEEPLE, an appendage generally raiſed on the weſtern end of a church, to hold the bells. See CHURCH, and BELL.

Steeples are denominated from their form, either *ſpires*, or *towers*.—The firſt, are ſuch as aſcend continually diminiſhing either conically or pyramidically.

The latter are mere parallelepipeds, and are covered a-top, plat-form like.

In each kind, there is uſually a ſort of windows or apertures to let out the ſound; and ſo contrived, at the ſame time, as to drive it down.

Maſius, in his treatiſe of bells, treats likewiſe of *ſteeples*. The moſt remarkable in the world, is that at Piſa, which leans all on one ſide, and appears every moment ready to fall; yet is in no danger. This odd diſpoſition, he obſerves, is not owing to a ſhock of an earthquake, as is generally imagined; but was contrived ſo at firſt by the architect; as is evident from the ceilings, windows, doors, &c. which are all in the level.

STEER, *Hog* Steer. See the article Hog.

STEERAGE, the act of ſteering. See Steering.

The word is alſo uſed for a place in a ſhip, next below the quarter-deck, before the bulk-head of the great cabin; where the ſteers-man ſtands and lodges.—See *Tab. Ship.* fig. 2. n. 102.

STEERING, in navigation, the directing a veſſel from one place to another, by means of the helm and rudder. See Helm and Rudder.

He is held the beſt *ſteers-man*, who uſes the leaſt motion in putting the helm over to and again, and who keeps the ſhip beſt from making yaws; that is, from running in and out. See Yaws.

There are three methods of *ſteering*, 1°. By any mark on the land, ſo as to keep the ſhip even by it.—2°. By the compaſs, which is by keeping the ſhip's head on ſuch a rhumb or point of the compaſs, as beſt leads to port.—3°. To ſteer as one is bidden or conned; which, in a great ſhip, is the duty of him that is taking his turn at the helm. See Cond.—For the theory and effect of *ſteering*; ſee Sailing, Course, &c.

STEGANOGRAPHY, ΣΤΕΓΑΝΟΓΡΑΦΙΑ, the art of ſecret writing, or of writing in cyphers; known only to the perſons correſponding. See Cipher.

One Æneas Tactitus, two thouſand years ago, as we are told by Polybius, had invented twenty different manners of writing, ſo as no body, but thoſe let into the ſecret, could underſtand any thing of the matter.

But now-a-days, hardly any thing can be written by this art, but what may be decyphered, and the meaning diſcovered. And to this art of decyphering, that excellent mathematician, Dr. Wallis, hath contributed much. See Deciphering.

STEGNOSIS, ΣΤΕΓΝΟΣΙΣ, an obſtruction of any natural diſcharge, eſpecially that by the pores. See Perspiration.

STEGNOTICKS *, ΣΤΕΓΝΟΤΙΚΑ, in medicine, remedies proper to cloſe, and ſtop the orifices of the veſſels, or emunctories, when relaxed, ſtretched, lacerated, &c. See Styptick, and Astringent.

* The word is formed from the Greek ϛεγω, *impedio, conſtipo*, I hinder, cloſe.

Such are pomgranate leaves, red roſes, plantain leaves, tormentil roots, &c.—*Stegnoticks* are proper in the hæmorrhoids, and other fluxes of blood.

STELLA, } See the articles { Pseudo *ſtella*.
STELLAR, } See the articles { Inter *ſtellar*.

STELLATE *plants*, ſuch as have their leaves growing on the ſtalks, at certain diſtances, in the form of a ſtar with beams; or, ſuch flowers as are ſtar-like, or full of eyes reſembling ſtars, in the thrum and pendants. See Plant.

Mr. Ray makes this the tenth genus of Engliſh plants; of which kind is croſs-wort, mollugo, wild madder, aſperula, or woodruff, gallium or ladies bed-ſtraw, aparine or cleavers, rubia tinctorum or dyers madder.—To which he adds, as a-kin to this genus, the naſturtium Indicum, Indian creſſe, or yellow lark-ſpur.

STELLIONATE *, Stellionatus, in the civil law, a kind of crime committed by a fraudulent bargain, where one of the parties ſells a thing for what it is not.

* Cujas ſays, the word comes from *ſtellio*, a very ſubtile kind of lizzard.—We find mention hereof in the *code*, leg. ix. tit. 34.

As, if I ſell an eſtate for my own, which belongs to another; or convey a thing as free and clear, which is already engaged to another; or put off copper for gold, &c.

The Romans frequently uſed *ſtellionatus* to expreſs all kinds of crimes that had no proper names.

STEM, in botany, that part of a plant ariſing out of the root, and which ſuſtains the leaves, flowers and fruits. See Plant.

In trees, the *ſtem* is called the *trunk*, or *ſtock*; in Latin *caudex* and *truncus*. See Stock, &c.

In herbs, it is ordinarily called the *ſtalk*; by the Latins, *caulis* and *ſcapus*, when ſtreight like a column. See Stalk.

When ſlender, and creeping on the ground, as that of nummulary, ſome authors call it *viticulus*.

In the ſeveral kinds of corn and plants of that kind, it is more properly called *culmus*. See Culmus.

The *ſtem* of the plant, according to Dr. Grew, is no more than the cutis or ſkin which at firſt covers the two lobes, and the plume of the ſeed, and which is further dilated as the plant grows. See Plume, Seed, &c.

Stem *of a ſhip*, is that main piece of timber which comes bending from the keel below, where it is *ſcarfed* as they call it, that is pieced in; and riſes compaſſing right before the fore-caſtle.

This *ſtem* it is, which guides the rake of the ſhip; and all the butt-ends of the planks forwards, are fixed into it.

This in the ſection of a firſt rate ſhip, is called the *main ſtem*.—See *Tab. Ship.* fig. 1. lit. b. fig. 2. n. 1.

STENCH. See the article Stink.

STENTOROPHONIC *tube*, a ſpeaking trumpet; thus called from *Stentor* (a perſon mentioned in the fifth book of the Iliad, who could call louder than fifty men) and φωνη, *voice*.

The *ſtentorophonic* horn of Alexander the Great is famous; with this he could give orders to his army at the diſtance of 100 ſtadia; which is above twelve Engliſh miles. See Speaking *trumpet*.

STEP. See the articles Pace, Stair, &c.

Step *and Leap*, in the manage, one of the ſeven airs or artificial motions of a horſe; conſiſting, as it were, of three airs; *viz.* the pace or ſtep which is terra a terra; the raiſing, which is a curvet; and the whole finiſhed with a ſault or *leap*. See Air, and Salts.

The *ſtep*, properly, puts a horſe on the hand, and gives him a riſe to leap; like one that runs before he leaps, that he may go the higher, or the further.

For leaps of all kinds, the rider is not to give any aids or helps with his legs; only to hold the horſe well up with the bridle-hand when he riſes before, that he may riſe the higher behind: when he begins to riſe behind, he is to put the bridle-hand a little forwards to hold him before, and ſtay him there on the hand, as if he hung in the air; timing the motion of the bridle-hand ſo, as to take him like a ball on the bound, which is the great ſecret in leaping.

STEPHENS's *water*. See the article Water.

STERCORARIANS *, or Stercoranistæ, a name which thoſe of the Romiſh church anciently gave to ſuch as held that the hoſt was liable to digeſtion, and all its conſequences, like other food. See Host.

* The word is formed from the Latin, *ſtercus*, dung.

Card. Humbert in his anſwer to Nicetas Pectoratus treats him as a *ſtercoraniſt*, merely for holding, that the euchariſt breaks the faſt; which opinion he imagined led directly into *ſtercoraniſm*.

STEREOBATA *, or Stereobates, in the ancient architecture, the baſis or foundation, whereon, a column wall or other piece of building is raiſed. See Base.

* The word is formed from the Greek ϛερεοβατης, *ſolid prop.*

This anſwers pretty well to the continued ſocle or baſement of the moderns. See Socle.

Some confound it with the ancient *ſtylobata*, or pedeſtal; but in effect, the *ſtereobata* is that to the ſtylobata which the ſtylobata is to the ſpira or baſe of the column. See Pedestal.

STEREOGRAPHIC *projection of the ſphere*, is that wherein the eye is ſuppoſed to be placed in the ſurface of the ſphere. See Projection *of the ſphere*.

Stereographic projection is, the projection of the circles of the ſphere on the plane of ſome one great circle; the eye being ſuppoſed placed in the pole of that circle. See Circle, Sphere, and Perspective.

The method and practice of this projection, in all the principal caſes, *viz.* on the planes of the meridian, equinoctial and horizon, is as follows:

Stereographic *projection on the plane of the meridian.*—Let ZQNE (*Tab. Perſpect.* fig. 22.) be the meridian, Z and N the poles, as alſo the zenith and nadir; EQ the equinoctial and horizon; ZN the equinoctial colure, and prime vertical circle: Z 15 N, Z 30 N, Z 45 N, &c, are hour-circles or meridians, and alſo azimuths, becauſe the pole is in the zenith. To deſcribe theſe circles, find the points, 15, 30, 45, 60, &c. in the equinoctial, by ſetting the half-tangent of their diſtance from ♈; and then their centers are found by ſetting their co-ſecants, both ways, from their points of interſection with the equator: ♋, ♋, and ♑, ♑, are the northern and ſouthern tropics, which are deſcribed by ſetting the half tangent of 23 degrees 30 minutes from ♈ each way; then the tangent of its complement, *viz.* 66 degrees 30 minutes, each way from thence on the colure produced, gives their centres. By this method, all parallels of declinations may be drawn.—Or you might have ſet the co-ſecant of the parallel from the centre of the primitive, which would alſo have found the ſame point for the centre of the parallel, whoſe radius is equal to the tangent of its diſtance from its pole.

The parallels in this projection, are alſo almacanters, or parallels of altitude; ♋, ♑ is the ecliptic, which muſt be divided from the diviſion on the ſcale of half tangents; but denominated according to the ſigns of the zodiac, reckoning 30 degrees to each ſign.

Stereographic *projection on the plane of the equinoctial.*—

Let SC (fig. 23.) be the meridian, and ſolſtitial colure; EN the equinoctial colure, and hour-circle of 6; P the north pole; ♋ ♋, the northern tropic; E ♋ N the northern half of the ecliptic (whoſe center is found by ſetting off the ſecant of 23 degrees 30 minutes from ♋) and its pole is at *a* the interſection of the polar circle and meridian, being the place through which all circles of longitude muſt paſs; and E Z N the horizon of London, which is deſcribed thus: ſet the half tangent of the co-latitude, from P to Z; then the tangent of the ſame, ſet from P to O, or its ſecant from Z to O, gives its centre; and its pole will be at *b* 38 degrees 30 minutes, (in the half tangents) diſtant from F, where *b* is at the zenith.

To draw any other circles in this projection; 1. For circles of longitude, which muſt all paſs through *a*, and the ſeveral degrees of the ecliptic; ſet the tangent of 66 degrees, 30 minutes, from *a* downwards, on the meridian produced; which will find a point, through which a perpendicular, drawn to the meridian, ſhall contain in it the centers of all the circles of longitude, whoſe diſtances ſet off to the radius P *x*, ſhall be the tangents of the degrees of their diſtances from the meridian SPC (which is that belonging to 180 degrees.)—2. All parallels of declination are drawn by ſetting the half tangents of their diſtances from P.—3. All azimuths or vertical circles muſt paſs through *b* at the zenith: ſince, therefore, the zenith is 38 degrees 30 minutes diſtant from P, ſet the co-ſecant of that (or the ſecant of 51 degrees 30 minutes) from *b* on the meridian extended below, and that will find the point *x*, the centre of the azimuth of eaſt and weſt, *viz.* E *b* N; and the centres of all the reſt are in a line, that is perpendicular to the meridian, and drawn through *x*.—4. Circles of altitude or almacanters, are leſſer circles, whoſe poles are not in the plane of the projection; thus the circle O *e*, is a parallel of altitude 50 degrees above the horizon.—5. All hour-circles are ſtrait lines from the center to the limb.

STEREOGRAPHIC *projection on the plane of the horizon.*—First draw a circle repreſenting the horizon, and quarter it with two diameters; then will z be the zenith of the place, 12 z 12 the meridian; 6 z 6 the prime vertical, or azimuth of eaſt and weſt; (fig. 24.) make z P=half tangent of 38° 30′. (or tangent of 19° 15′) P ſhall be the pole of the world. Make z E=half tangent of 51° 30′(or tangent of 25° 45′)

$$\left.\begin{array}{l}\text{and E } o\text{=ſecant}\\ z\ o = \text{tangent}\end{array}\right\}\text{ of 38 degrees 30 minutes; then}$$

ſhall *o* be the center of the equinoctial 6 Æ 6.

In this projection, almacanters are all parallel to the primitive circle: and azimuths are all right lines paſſing through z the centre of the primitive, to the equal diviſions in the limb. Parallels of declinations are all leſſer circles, and parallel to the equinoctial, and their interſections with the meridian are found, by ſetting the half-tangent of their diſtance from the zenith, ſouthward or northward, or both ways from z.—Their centres are found, by biſſecting the diſtance between thoſe two points; for the middle will be the center of the parallel. Thus z ♋ = half-tangent of 20° 00′=

$$\left.\begin{array}{l}\text{diſtance of the tropic of ♋ from the}\\ \text{zenith - - - - - - - - -}\\ \text{And z ♑=half-tangent of 75° =}\\ \text{diſtance of the tropic of ♑ from}\\ \text{the zenith - - - - - - - -}\end{array}\right\}\begin{array}{l}\text{to the ſouthward, or}\\ \text{downward from z,}\end{array}$$

and the interſection again with the north of the meridian, is at

$$\left.\begin{array}{l}105°\ 30'\\ 152°\ 30'\end{array}\right\}\text{for}\left\{\begin{array}{c}♑\\ ♋\end{array}\right\}\text{to the northward, or upward from z.}$$

For the hour-circles make z *c* = tangent of 51° 30′, or P *c* = ſecant of 51° 30′, draw GCT perpendicular to the produced meridian: then, if from *c* with the radius z *c*, you ſet off the tangents of 15° 30° 45°, &c. both ways, you will have the centers of the ſeveral hour-circles, 7 and 5, 8, 4, &c.

Note, in all *ſtereographic* projections, all diameters are meaſured on the ſcale of half-tangents; and this is the ground of all dialling, or the true projection of the hour-circles of the ſphere on any given plane. See SPHERICKS, DIALLING, &c.

STEREOGRAPHY *, the art of drawing the forms or figures of the ſolids upon a plane. See SOLID.

* The word is formed from the Greek ςερεος, ſolid, and γραφω, I deſcribe.

STEREOMETRY *, ΣΤΕΡΕΟΜΕΤΡΙΑ, that part of geometry, which teaches how to meaſure ſolid bodies, *i. e.* to find the ſolidity, or ſolid content of bodies; as globes, cylinders, cubes, veſſels, ſhips, &c. See SOLID, and SOLIDITY.

* The word is formed of the Greek ςερεος, ſolid; and μετρον, meaſure.

The methods hereof, ſee under the reſpective bodies, as GLOBE, SPHERE, CYLINDER, &c. See alſo GAUGING.

STEREOTOMY *, the art or act of cutting ſolids, or making ſections thereof; as walls and other members in the profiles of architecture. See SECTION.

* The word is formed from ςερεος, and τομη, ſection.

STERILITY *, the quality of a thing that is barren; in oppoſition to *fecundity*. See FECUNDITY.

* The word is formed from the Latin *ſterilitas*, of *ſterilis*, barren.

Sterility was held a grievous affliction by the wives of the ancient patriarchs.—Nature has annexed *ſterility* to all monſtrous productions, that the creation might not degenerate. Hence the *ſterility* of mules, &c. See MONSTER, MULE, &c.

Women frequently become *ſterile* after a miſcarriage or a difficult labour, by reaſon the uterus or ſome other of the genital parts are injured thereby. See ABORTION, &c.

The *ſterility* of mercury, ſay the alchymiſts, reſembles that of women who are too cold and moiſt; and who, by being purged and heated, would be cured of their *ſterility*, as mercury is when purged according to the rules of art.

STERLING, a term frequent in the Engliſh commerce.

A *pound*, *ſhilling*, or *penny ſterling*, ſignifies as much as a pound, ſhilling or penny of lawful money of England, as ſettled by public authority. See POUND, SHILLING, &c.—Antiquaries and critics are greatly divided, as to the origin of the word *ſterling*. Buchanan fetches it from the caſtle of Striveling or Sterling in Scotland, where a ſmall coin was anciently ſtruck, that in time according to him, came to give name to all the reſt.—Camden derives the word from *eaſterling* or *eſterling*; obſerving, that in the reign of King Richard I. money coined in the eaſt parts of Germany, began to be of eſpecial requeſt in England, by reaſon of the purity thereof, and was called *eaſterling money*, as all the inhabitants of thoſe parts were called *Eaſterlings*; ſome of whom, ſkilled in coinage, were ſoon after ſent for over to perfect the Engliſh money, which was thenceforwards denominated from them, *ſterling*, for *eaſterling*, or *eſterling*: not, ſays Camden, from Striveling in Scotland, nor from *ſtella*, a ſtar which ſome dream to have been coined thereon; for in old deeds, the Engliſh ſpecies are always called *nummi eaſterlingi*, which implied as much as good and lawful money, &c.—Somner, again, derives the word from the Saxon, *ſteore*, a rule or ſtandard; intimating, that this, as to weight and fineneſs, was to be the common ſtandard of all current money.

In Stow, and ſome other of our ancient writers, *ſterling*, or eaſterling is alſo uſed for a certain coin, amounting nearly to our ſilver-penny: and on ſome occaſions we find the ſame word *ſterling* uſed in the general for a piece of money; it being obſervable, that, for a good while together, there was no other coin but pennies, with which *ſterlings* or eaſterlings were become ſynonymous: much as among the ancients, the words *denarius* and *nummus* were uſed. See PENNY, MONEY, COIN, &c.

STERN *of a ſhip*, uſually denotes all the hindermoſt part of her; but properly, is only the outmoſt part abaft. See SHIP, ABAFT, &c.

STERN, among hunters, is the tail of a wolf, or a grey-hound. See TAIL.

STERN *Chaſe*. See the article CHASE.

STERNOHYOIDEUS, in anatomy, a pair of muſcles ariſing from the upper and internal part of the bone of the ſternum, and part of the clavicle, and adjoining part of the firſt rib, with a broad origin; and running from the aſpera arteria, glandulæ thyroideæ, and cartilago ſcutiformis, terminates in the baſe of the os hyoides. It draws the bone ſtraight downward.—See *Tab. Anat.* (Myol.) fig. 2. *n.* 7, 8.

STERNOTHYROIDEUS, in anatomy, a pair of muſcles of the larynx; ariſing in the ſternum, or breaſt-bone, and terminating in the cartilago thyroides. They ſerve to draw down that cartilage.

STERNUM, ΣΤΕΡΝΟΝ, the breaſt-bone, a cartilaginous ſort of bone which makes the forepart of the breaſt, and into which the ribs are fitted.—See *Tab. Anat.* (Oſteol.) fig. 3. n. 11. See alſo the article BONE.

In adults, it conſiſts of one ſingle piece; but in infants, of ſeveral, according to the diverſity of age. Kerkringius tells us, he has never ſeen more than ſix. They continue cartilaginous until ſeven years of age; and are not very ſolid afterwards, but ſpongeous. See CARTILAGE.

At the lower extremity of the *ſternum*, is a cartilage, called *xiphoides* or *enſiformis*, becauſe reſembling the point of a ſword. See XIPHOIDES, &c.

The uſe of the *ſternum* is to defend the heart, and to receive the extremities of the true ribs. See RIB.

STERNUTATION. See the article SNEEZING.

STERNUTATIVE, or STERNUTATORY, a medicine proper to produce ſneezing. See SNEEZING.

Sternutatives, called alſo *ptarmicks*, are of two kinds, *gentle* and *violent*. Of the firſt kind are betony, ſage, marjoram, tobacco, and the whole faſhionable tribe of ſnuffs. See SNUFF.

Of the latter kind are euphorbium, white hellebore, pellitory, &c. See PTARMICS.

Sternutatives operate by their ſharp, pungent parts vellicating the inner membrane of the noſe, which is exceedingly ſenſible, and occaſioning the ſerous matter contained in the glands of the noſe, and in ſeveral ſinus's ſituate in the baſe of the cranium, and the os frontis, to be expelled. See NOSE, PITUITA, &c.

STEW, a ſmall kind of fiſh-pond, the peculiar office whereof is, to maintain fiſh, and keep them in readineſs, for the daily uſes of a family, *&c.* See Fish-pond.

The fiſh bred in the large ponds, are drawn and put in here. For two large ponds of three or four acres a-piece, it is adviſeable to have four *ſtews*, each two rods wide, and three long. The *ſtews* are uſually in gardens, or at leaſt near the houſe, to be more handy, and the better looked to.

The method of making them, is to carry the bottom in a continual decline from one end, with a mouth to favour the drawing with a net. See Pond.

Stews *, or Stues, were alſo places anciently permitted in England, to women of profeſſed incontinency, for the proffer of their bodies to all comers.—Theſe were under particular rules, and laws of diſcipline, appointed by the lord of the manor.

* The word is probably borrowed from the French, *eſtuves*, hot baths, in regard wantons are wont to prepare themſelves for venereal acts, by bathing.

STEWARD, or Seneschal, an officer, whereof there are various kinds; thus called from the Saxon, *ſteda*, ſtead, place, or room, and *ward*, keeper, *q. d.* a deputy, or perſon appointed in the place of another. See Seneschal.

Lord High Steward *of England*, is the firſt and higheſt officer of the crown; as having the power of what we call a *vice-roy*, the Danes, *&c. ſtadtholder*, and the Swedes, *reichs droſſet*, q. d. *vice rex.* Chamberlayne. See Lord.

Common lawyers call him *magnus Angliæ ſeneſcallus.* His office, as expreſſed in an ancient record, is to ſuperviſe and regulate the whole kingdom, both in time of peace and war, immediately under the king and after him; an authority ſo very great, that it was not judged ſafe, to truſt it any longer in the hands of any ſubject.

The office was hereditary and permanent in the family of the dukes of Lancaſter, till the time of Henry IV. ſince whom it has only been made *pro hac vice*, occaſionally: as to officiate at a coronation; at the arraignment and trial of ſome nobleman for treaſon, or other great crime.—During his ſtewardſhip, he bears a white ſtaff in his hand; and the trial, *&c.* ended, he breaks his ſtaff, and with it, his commiſſion expires.

Lord Steward *of the houſhold*, is an officer to whom the ſtate of the king's houſe is committed; to be ruled and guided at his diſcretion. See Lord and Houshold.

He has authority over all officers and ſervants of the king's houſe, except thoſe of the chapel, chamber, and ſtable; which are under the lord chamberlain, maſter of the horſe, and dean of the chapel. See Chamberlain, *&c.*

Steward *of a ſhip*, is he who receives all the victuals from the purſer; and is to ſee it well ſtowed in the hold: all things of that nature belonging to the ſhip's uſe, are in his cuſtody: he looks after the bread, and diſtributes out the ſeveral meſſes of victuals in the ſhip.

He hath an apartment for himſelf in the hold, which is called the *ſteward's room.*—See *Tab. Ship.* fig. 2. lit. Y.

STIGMATA, ΣΤΙΓΜΑΤΑ, in natural hiſtory, denotes points, or ſpecks uſually ſeen on the ſides of the bellies of inſects; particularly the ſphondylium, where they are very apparent. See Insect.

They are nothing but the extremities of certain veſſels terminating in the ſides at each nodus or inciſure, and ſerving them for lungs.

Stigmata, in antiquity, certain marks impreſſed on the left ſhoulder of the ſoldiers, when liſted. See Mark.

Stigmata, were alſo a kind of notes, or abbreviations; conſiſting only of points, diſpoſed various ways, as in triangles, ſquares, croſſes, *&c.* See Abbreviation and Note.

Stigmata, is alſo a term introduced by the Franciſcans, to expreſs the marks, or prints of our Saviour's wounds, impreſſed by him on the body of their ſeraphic father, St. Francis.

It was one morning, about the feaſt of the Exaltation, in the year 1224, that St. Francis, being at prayers on mount Alvernus, whither he had retired to paſs the Michaelmas Lent; ſaw a ſeraph with ſix burning wings, in other reſpects like a man; with his hands and his feet ſtretched upon a croſs. With two of the wings he covered his body, two were raiſed over his head, and with two he flew ſwiftly down. Five rays proceeded from the five wounds of the perſon crucified, and were directed to the correſpondent five parts of the body of the ſaint.

Upon the viſion's diſappearing, he ſaw the marks of the nails, *&c.* on his own hands and feet; the ſame as he had ſeen them in the image of the crucifix. His hands and feet were found pierced with nails in the middle; the heads of the nails were plainly ſeen within the fleſh on one ſide, and the points clenched on the other. On his right ſide appeared a red ſcar, as from the wound of a ſpear, which frequently run with blood, and ſtained his gown, *&c.*

The good man, we are told, took a world of pains to hide the *ſtigmata*; but thoſe of his hands and feet were ſeen in his life-time, maugre all his endeavours, by ſeveral of the brotherhood, who affirmed it upon oath, and by ſome cardinals, ſays St. Bonaventure, who atteſted the miracle both by word and writing, and expreſſed it in the hymns, anthems, *&c.* compoſed in honour of St. Francis.

After his death, they were ſeen by fifty of his religious, as well as by St. Clara and her nuns, and an infinite number of ſeculars; many of whom felt them with their hands, to be the more certain.

A ſolemn feaſt was hereupon appointed to be annually celebrated, in memory of the miracle, called *the feaſt of the* ſtigmata *of St. Francis*; and a peculiar maſs or office compoſed for the ſame.

An archi-confraternity was erected on the ſame occaſion, by Frid. Pizzi, a Roman chirurgeon, in the year 1594.

STIBIUM, ΣΤΙΒΙ, or ΣΤΙΜΜΙ, an ancient name for antimony, now ſeldom uſed. See Antimony.

STILE and Stilus. See the article Style.

STILES, in carpentry, denote the upright pieces which go from the bottom to the top in any wainſcot, or the like.

STILLATITIOUS *oils*, are ſuch as are procured by diſtillation,—in oppoſition to thoſe got by infuſion, expreſſion, *&c.* See Oil and Distillation.

STILLYARD, Stilyard, or Steelyard, in commerce.—*The company of the* Stillyard was a community, or corporation of foreign merchants, eſtabliſhed at London; thus called, from the place where they had their reſidence, called the *Stillyard*, near the bridge, which was aſſigned them by act of parliament; and which, in ſome records, is called *Guildhalda Teutonicorum*; being, as ſome write, a broad place, or yard, where much ſteel had uſed to be ſold.

This company was created in the year 1215, under Hen. III. in favour of the free cities of Germany, who had been aſſiſtant to him in his wars againſt France. See Commerce.

It had rendered itſelf miſtreſs of all the Engliſh manufactories, particularly thoſe of cloth; which it was allowed not only to ſell throughout the kingdom, but alſo to tranſport abroad. See Woolen.

The prejudice theſe privileges did, by which the company frequently abuſed the nation, occaſioned its being broke, by ſentence of the judges, under Edward IV. But it redeemed its rights, and laſted to the year 1552, when it was ſuppreſſed by Edward VI. See Hanse.

STIMULATING, Stimulans, a property in angular or ſharp bodies, whereby they vellicate, and cauſe vibrations and inflections of the fibres of the nerves, and a greater derivation of nervous fluid into the part affected.

Stimulants produce pain, heat, redneſs, *&c.*—They may be reduced to violent penetrating depilatories, gentle ſinapiſms, veſicatories, and cauſtics. See Sinapism, Vesicatory, *&c.*

STING, *aculeus*, an apparatus in the body of certain inſects, in form of a little ſpear; ſerving them as a weapon of offence. See Insect, Arms, *&c.*

The *ſting* of a bee, or waſp, is a curious piece of mechaniſm: it conſiſts of a hollow tube, at the root whereof is a bag full of ſharp, penetrating juice, which, in ſtinging, is injected into the fleſh through the tube.

Within the tube, Mr. Derham has obſerved, there lie two ſmall ſharp-bearded ſpears: in the *ſting* of a waſp, he told eight beards on the ſide of each ſpear, ſomewhat like the beards of fiſh-hooks. See *Tab. Nat. Hiſt. fig.* 29 & 30.

One of theſe ſpears in the *ſting*, or ſheath, lies with its point a little before the other; to be ready, as ſhould ſeem, to be firſt darted into the fleſh: which once fixed, by means of its foremoſt beard, the other then ſtrikes in too; and ſo they alternately pierce deeper and deeper, their beards taking more and more hold in the fleſh: after which, the ſheath or *ſting* follows, to convey the poiſon into the wound; which, that it may pierce the better, is drawn into a point, with a ſmall ſlit below that point, for the two ſpears to come out at.

By means of theſe beards it is, that the animal is forced to leave its *ſting* behind it, when diſturbed, before it can have time to withdraw the ſpears into their ſcabbard.

STINK, or Stench, a diſagreeable ſmell exhaling from a corrupted, or other body; and which is prejudicial to the noſe and brain. See Smell.

A *ſtinking* breath is uſually the reſult either of diſeaſed lungs, or of ſcorbutic gums, *&c.* See Fœtor.

A *ſtinking* noſe, *fœtor naris*, is the reſult of a deep ulcer within the noſe, whence ariſe fœtid ſcabs, *&c.*—Its cauſe, according to Galen, is a ſharp, putrid humour falling from the brain, on the proceſſus mamillares.—This is reckoned by the civilians, one of the legal cauſes of annulling marriage.

STIPEND, Stipendium, among the Romans, ſignified the ſame with *tribute*; and hence *ſtipendiarii* were the ſame with *tributarii.* See Tribute.

STIPITE, *Nativi de* Stipite. See Nativi.

STIPULATION, in the civil law, the act of *ſtipulating*; that is, of treating, and concluding terms, and conditions to be inſerted in a contract. See Treaty and Contract.

Stipulations were anciently performed at Rome, with abundance of ceremonies; the firſt whereof was, that one party ſhould interrogate, and the other anſwer, to give his conſent and oblige himſelf.

By the ancient Roman law, no body could *ſtipulate*, but for himſelf; but as the tabelliones were public ſervants, they were allowed to *ſtipulate* for their maſters; and the notaries ſucceeding the tabelliones have inherited the ſame privilege.—The *ſtipulation* had its origin in the *lex aquilia*, and another law of the emperor Arcadius.

The word is formed from the Latin, *ſtipula*, a ſtraw; becauſe, in making a ſale, a ſtraw was given the purchaſer, in ſign of a real delivery. Which cuſtom is ſtill retained in ſome parts of France, particularly at Verdun. The cuſtom always has been on this occaſion, for the two parties to break a ſtraw between them, and each take his moiety; which they afterwards joined again, to recognize their promiſe.

STIRROP, or STIRRUP, a reſt or ſupport for the horſeman's foot; ſerving to keep him firm in his ſeat, and enable him to mount. See SADDLE.

The great art of a cavalier in the ancient tournaments, was to make his antagoniſt loſe his *ſtirrop*, that is, ſlip the foot out of it.

For combating, it is a rule to have the right foot *ſtirrop* ſomewhat ſhorter than the other.

Stirrops are allowed a modern invention: Menage obſerves, that St. Jerom is the firſt author who mentions them.—Matthiolus relates, that the Turks have a knack of poiſoning their *ſtirrops*, with ſo ſubtile and penetrating a poiſon, that it makes its way through the boots, and kills the rider. F. le Comte tells us, that the Tartars ride croſs-legged, and with their *ſtirrops* exceedingly ſhort.

STOCK, in gardening, *&c.* the ſtem or trunk of a tree. See STEM.

For STOCKS *of fruit trees*; the beſt to graft on, are thoſe raiſed of kernels of wildings, and crabs of the moſt thriving trees. Though the fruit always take after the graft; yet the *ſtock* has ſome influence. A wild *ſtock* is always found to enliven a dull apple. See ENGRAFTING.

To have a quantity of *ſtocks* to graft on; old trees are to be cut down within two inches of the ground, which will cauſe a multitude of ſuckers to riſe from the roots. When theſe are riſen half a yard, they are to be covered up with good earth a foot thick, and as ſoon as they have put forth roots, in winter, are to be conveyed into the nurſery, where, in a year or two, they will be ready to graft. Cherry *ſtocks*, plumb *ſtocks*, and pear *ſtocks*, may be thus raiſed from ſuckers, as well as from ſtones or ſeeds; but thoſe raiſed this latter way are preferred. See FRUIT-*tree*, &c.

Brokers STOCK,	See the articles	BROKER.
Capital STOCK,		CAPITAL.
Pen STOCK,		PEN *ſtock*.

STOCKFISH, or STOCKFISCH, in commerce, a kind of dried, ſalted fiſh; of a greyiſh aſh-colour, only the belly ſomewhat whiter. See FISH.

The commerce of *ſtockfiſh* is very conſiderable in Holland, both from the great conſumption thereof in the country, and from their victualling their veſſels therewith. It is ſaid to take its name from being as hard as a *ſtock*, or from its needing to be beaten with a ſtick, to fit it for eating. See FISHERY.

STOCKING, that part of the cloathing of the leg and foot, which immediately covers their nudity, and ſkreens them from the rigor of the cold. See SHOE.

Anciently, the only *ſtockings* in uſe, were made of cloth, or milled ſtuffs ſewed together; but ſince the invention of knitting and weaving *ſtockings* of ſilk, wool, cotton, thread, *&c.* the uſe of cloth *ſtockings* is quite out of doors.

The modern *ſtockings*, whether wove or knit, are a kind of plexus's formed of an infinite number of little knots, called *ſtitches*, *loops*, or *maſhes*, intermingled in one another.

Knit STOCKINGS are wrought with needles made of poliſhed iron, or braſs wire, which interweave the threads, and form the maſhes the *ſtocking* conſiſts of.

This operation is called *knitting*; the invention whereof it were difficult to fix preciſely; though it is commonly attributed to the Scots, on this ground, that the firſt works of this kind came from thence.—It is added, that it was on this account, that the company of *ſtocking* knitters eſtabliſhed at Paris 1527, took for their patron St. Fiacre; who is ſaid to have been the ſon of a king of Scotland.

Woven STOCKINGS are ordinarily very fine: they are manufactured on a frame or machine made of poliſhed iron; the ſtructure whereof is exceedingly ingenious, but withal exceedingly complex, ſo that it were very difficult to deſcribe it well, by reaſon of the diverſity and number of its parts; nor is it even conceived, without a deal of difficulty, when working before the face.

The Engliſh and French have greatly conteſted the honour of the invention of the *ſtocking loom*; but the matter of fact, waving all national prejudices, ſeems to be this, that it was a Frenchman firſt invented this uſeful and ſurprizing machine; who, finding ſome difficulties in procuring an excluſive privilege, which he required, to ſettle himſelf at Paris, went over into England, where his machine was admired, and the workman rewarded according to his merit.

The invention thus imparted to the Engliſh, they became ſo jealous hereof, that for a long time it was forbid, under pain of death, to carry any of the machines out of the iſland, or communicate a model thereof to foreigners.—But, as it was a Frenchman firſt inriched our nation with it, ſo a Frenchman firſt carried it abroad; and, by an extraordinary effort of memory and imagination, made a loom at Paris, on the idea he had formed thereof, in a voyage he made to England. This loom, firſt ſet up in the year 1656, has ſerved for the model of all thoſe ſince made in France, Holland, *&c.*

Fulling of STOCKINGS. See the article FULLING.

STOCKS, in ſhip carpentry, a frame of timber and great poſts, made a-ſhore, to build pinnaces, ketches, boats, and ſuch ſmall craft, and ſometimes ſmall frigates upon. See SHIP and VESSEL.

Hence we ſay, *a ſhip is on the ſtocks*, when ſhe is building.

STOICAL *fate*. See the article FATE.

STOICISM, the doctrines and opinions of Zeno's followers, called *ſtoicks*. See STOICKS.

STOICKS, a ſect of ancient philoſophers, the followers of Zeno; thus called from the Greek, ϛοα, *portico*, in regard Zeno uſed to teach under a portico, or piazza. See PORTICO and PHILOSOPHY.

The author of this ſect, Zeno, was of Cittium, a town in Cyprus, inhabited by a colony of Phœnicians; whence he is ſuppoſed to have borrowed many of his dogmata from the Phœnician philoſophy, which many learned men maintain was, itſelf, borrowed from the Jewiſh: though it muſt be allowed, there appear as many things in the *ſtoick* philoſophy, borrowed from Plato's and Socrates's ſchool, as from that of Moſes.

Zeno making a trading voyage from Cittium to Athens, richly freighted with Tyrian purple, was ſhipwrecked not far from port; upon which, we are told, conſulting the oracle how he ſhould beſt ſpend the reſt of his life, he was anſwered, ει ζυγχρωτιζοιτο τοις νεκροις, *by becoming of the ſame colour with the dead*: upon which he applied himſelf to the ſtudy of the ancient philoſophers; and became a hearer of Crates the Cynic.—But Laertius tells us, he had too much natural modeſty to give into the Cynic impudence.

From Crates, he had recourſe to Xenocrates, then to Polemon; and at length began to think of inſtituting a new ſect.—To this purpoſe, a ϛοα, *portico*, called from the pictures of Polignotus therein, the *painted portico*, was pitched on. Here, uſing to walk and philoſophize; he was ſoon attended by a great number of diſciples, hence called Στωικοι, *Stoici*.

He became exceedingly reverenced at Athens, for the probity and ſeverity of his life and manners, and the conſiſtency thereof with his doctrine; inſomuch that the Athenians decreed him, when living, a golden crown, and uſed in dubious times to depoſite the keys of the city with him: and after his death, conſecrated an altar to him.

One of his chief followers was Cleanthes, who was ſucceeded by Chryſippus, and he by Diogenes Babylonius, Antipater, Panætius, and Poſſidonius among the Greeks; and by Cato, Varro, Cicero, Seneca, the emperor Antoninus, *&c.* among the Romans; and by Pantenus, and Clemens Alexandrinus, among the Chriſtians.

The *Stoicks* cultivated logics, phyſics, metaphyſics, *&c.* but chiefly ethics.—The principal of their dogmata of the former kinds, are as follows.

That there are certain καταληψεις, *comprehenſions*, (which others call κοιναι εννοιαι, *common notices*, or *innate ideas*, or *principles*, and Cicero, *inchoatæ intelligentiæ*, beginnings of underſtanding) naturally found in the mind: that God is the ſeminal cauſe of the univerſe: that the world is an animal; which opinion the *Stoicks* maintained in common with the Platoniſts, by reaſon of God's inhabiting and informing every part thereof, in quality of an anima mundi. See ANIMA.—That nature is an artificial fire, tending to generation: and, that the world is to be deſtroyed at laſt by a conflagration. See CONFLAGRATION.

For the morality of the *Stoicks*, it was couched much in paradoxes: as, that a wiſe man is void of all paſſion or perturbation of mind: that pain is no real evil; but that a wiſe man is happy in the midſt of the ſevereſt torture: that a wiſe man is always the ſame, and always joyful: that none but a wiſe man is free; all others are ſlaves: that none but a wiſe man is rich: that none but a wiſe man ought to be eſteemed a king, magiſtrate, poet, or philoſopher: that all wiſe men are great: that all things are a wiſe man's, who is contented with himſelf: that wiſe men are the only friends, and the only lovers: that nothing ever happens to a wiſe man beyond expectation: that all virtues are inviolably connected together: that all good things are equal, and equally to be deſired; and that goodneſs admits of no increaſe or diminution.

Whether virtue might be loſt or no, was hotly diſputed among them? Chryſippus held it might, by drunkenneſs and atrabilis; Cleanthes, that it could not, by reaſon of the firmneſs of the καταληψεις, *comprehenſions*.

They owned but one God; whom, however, they called by various names, as *Mind*, *Fate*, *Jupiter*, &c. by which they did not mean various things; but various powers and relations of the ſame things. Providence, they expreſſed under the name of *Fate*, which Chryſippus defines to be a natural ſeries or compoſition of things mutually following each other by an immutable nexus or tie, fixed from all eternity. Laſtly, they held, that the human ſoul ſurvived the body. See FATE, &c.

STOLE*, STOLA, a ſacerdotal ornament, wore by the Romiſh pariſh prieſts over the ſurplice, as a mark of ſuperiority in their reſpective churches.

* The word is Greek, ςολη, ſignifying a long robe, or veſtment.

The *ſtole* is worn by other prieſts over the alb, at celebrating of maſs; in which caſe, it goes a-croſs the ſtomach: and by deacons over the left ſhoulder, ſcarf-wiſe.

The *ſtola* is a broad ſwath, or ſlip of cloth or ſtuff, hanging from the neck to the feet, with three croſſes thereon.—The biſhops anciently pretended, that the pariſh prieſts were never to appear before them, but in their *ſtoles*. In Flanders and Italy, they always preach in *ſtoles*. It is ſuppoſed to be a repreſentation of the borders of the long robe worn by the Jewiſh high prieſts.

The *ſtola* of the ancient Romans, &c. was very different from that now in uſe: the former was a kind of robe fitter for women than men; though it was held a robe of honour among all nations. Kings themſelves ſometimes uſed it, and ſometimes beſtowed it as a reward of virtue.

Groom of the STOLE, the eldeſt gentleman of his majeſty's bed-chamber; whoſe office and honour it is, to preſent and put on his majeſty's firſt garment or ſhirt every morning; and to order the things in the chamber. See BED-*chamber*.

Order of the STOLE, an order of knights inſtituted by the kings of Arragon; though as to the particular author, or time of the inſtitution, we are in the dark. The firſt time we hear of it, is under Alphonſus V. who mounted the throne in 1416. Juſtiniani takes it to have been inſtituted about the year 1332.

Order of the golden STOLE, a military order at Venice; thus called from a golden *ſtole* which the knights wear over the left ſhoulder, reaching to the knee, both before and behind, a palm and a half broad. None are raiſed to this order but the patricians or noble Venetians. Juſtiniani obſerves, that the time of the inſtitution of this order is unknown.

STOMACH, ΣΤΟΜΑΧΟΣ, *ventriculus*, in anatomy, a hollow, membranous, organical part of an animal, deſtined to receive the food after deglutition, and convert it into chyle. —See *Tab. Anat.* (Splanch.) fig. 2. lit. d. d. h. See alſo FOOD, DIGESTION, CHYLE, &c.

Its form is longiſh, compared by ſome to a gourd, by others to a bag-pipe. It is ſituate in the epigaſtrium, declining a little further to the left than the right. Its upper part is connected to the diaphragm, the bottom to the cawl; the right ſide to the duodenum, and the left to the ſpleen.

It has two orifices, one at each end. The left orifice is properly called ςομαχος, from ςομα, mouth; and alſo καρδια: this is joined to the oeſophagus, of which it ſeems to be only a continuation.—By this orifice, the aliments enter the ſtomach; where being digeſted, they aſcend obliquely to the pylorus, or right orifice, which is united to the firſt of the inteſtines.—See *Tab. Anat.* (Splanch.) fig. 2. lit. 6. See alſo OESOPHAGUS, and PYLORUS.

The *ſtomach* conſiſts of four membranes or coats: the firſt and inmoſt is formed of ſhort fibres, which ſtand perpendicularly upon the fibres of the next coat, and are to be ſeen plainly towards the pylorus: when the *ſtomach* is diſtended with meat, theſe fibres become thick and ſhort. Whilſt they endeavour to reſtore themſelves by their natural elaſticity, they contract the cavity of the *ſtomach* for the attrition and expulſion of the aliments.—This coat is much larger than the reſt, being full of plaits and wrinkles, and chiefly about the pylorus: theſe plaits retard the chyle, that it runs not out of the *ſtomach* before it be ſufficiently digeſted.—In this coat, there are alſo a great number of ſmall glands which ſeparate a liquor, which beſmears all the cavity of the *ſtomach*, and helps the concoction of the aliments; for which reaſon this coat is called the *tunica glanduloſa*:—See *Tab. Anat.* (Splanch.) fig. 2. lit. i.

The ſecond is much finer and thinner; it is altogether nervous; is of an exquiſite ſenſe, and is called *nervoſa*.—See *Tab. Anat.* (Splanch.) fig. 2. lit. k.

The third is muſcular, being made of ſtreight and circular fibres: the ſtreight run upon the upper part of the *ſtomach*, between its ſuperior and inferior orifices; and the circular run obliquely from the upper part of the *ſtomach* to the bottom. Of theſe, the innermoſt deſcend towards the right ſide, and the outermoſt towards the left; ſo that by their action, both ends of the *ſtomach* are drawn towards its middle, and the whole is equally contracted: by their contraction and continual motion, the attrition and digeſtion of the aliments is in great meaſure performed.

The fourth tunic is common; it comes from the peritonæum.

The *ſtomach* ſends veins to the porta, and branches to the gaſtrepiploica, accompanied with others of the cœliac; all lying immediately under the fourth coat.

The eighth pair of nerves gives two conſiderable branches to the *ſtomach*, which are ſpread much about the upper orifice; by which it is rendered very ſenſible: whence alſo proceeds the great ſympathy betwixt the *ſtomach*, head, and heart; on account whereof, Van Helmont thought, that the ſoul had its ſeat in the upper orifice of the *ſtomach*.

For the motion of the STOMACH; Dr. Pitt, in the *Philoſophical Tranſactions*, acquaints us, that in diſſecting a dog, he found the periſtaltic motion of the guts continued through the *ſtomach*; the pylorus, which is uſually found as high as the diaphragm, being, in every undulation, brought below the very bottom of the *ſtomach*; ſo that he could manifeſtly obſerve a conſtriction in the middle of the *ſtomach*, at every motion downwards, paſſing it in ſo as to be able to compreſs whatever was contained in its cavity. Theſe motions, he obſerves, were as regular as any he ever obſerved in the guts; and adds, that he has ſince obſerved the ſame in three others; whence one may ſafely enough conclude it holds of all. See PERISTALTIC.

Hence, we eaſily ſee the reaſon of the quick diſtribution of the nouriſhment; the food being no ſooner opened by the drink and ſpittle, &c. than it has a free motion through the pylorus into the inteſtines, from this compreſſion in the middle of the *ſtomach*. See INTESTINES.

Ruminating animals have four *ſtomachs*; yet it is obſerved that ſome of theſe, which have four in Europe, have only two in Africa, probably by reaſon the herbs in Africa are more nouriſhing. See RUMINANT.

Birds that live ordinarily of ſeeds covered with a tough rind, have a kind of *ſtomach*, called the *crop*, or *gizzard*, conſiſting of four large muſcles without-ſide, and a hard callous membrane within.—Such as live on fleſh, as eagles, vultures, &c. have only one. See CARNIVOROUS, GRANIVOROUS, &c.

STOMACHIC, ΣΤΟΜΑΧΙΚΟΣ, a medicine that ſtrengthens the *ſtomach*; and promotes the office of digeſtion. See STOMACH, and DIGESTION.

Of this kind are wormwood, rhubard, mint, maſtic, aloes, pepper, cinnamon, and aromatic bitters: good wine is alſo a *ſtomachic*.

STOMACHIC, in anatomy, is applied to the arteries, veins, &c. of the *ſtomach*; called alſo *gaſtric*. See GASTRIC.

The *ſtomachic* veins terminate in the trunk of the vena porta, and the ſplenic vein. See VEIN.—The *ſtomachic* arteries ariſe from the cœliac. See ARTERY.—The *ſtomachic* nerves come from the eighth pair. See NERVE.

STOMACHIC *coronary*, } See the articles { CORONARY.
STOMACHIC *water*, } See the articles { WATER.

STONE, in natural hiſtory, a hard, ſolid body, neither malleable, fuſible by fire, nor ſoluble in water; formed by ſucceſſion of time, in the body of the earth. See FOSSIL.

For the origin and formation of STONES, M. Tournefort, on his return from the eaſt, in the year 1702, propoſed to the royal academy, a new theory.

On a curious ſurvey of the famous labyrinth of Crete, he obſerved, that ſeveral people had engraven their names in the living rock, whereof its walls are formed; and, what was very extraordinary, the letters whereof they conſiſted, inſtead of being hollow, as they muſt have been at firſt (being all cut with knife-points) were prominent, and ſtood out from the ſurface of the rock, like ſo many baſſo-relievo's. See LABYRINTH.

This is a phænomenon no otherwiſe accountable for, than by ſuppoſing the cavities of the letters filled inſenſibly, with a matter iſſuing from out of the ſubſtance of the rock; and which even iſſued in greater abundance than was neceſſary for filling the cavity. Thus is the wound made by the knife healed up, much as the fracture of a broken bone is conſolidated by a callus, formed of the extravaſated nutritious juice, which riſes above the ſurface of the bone: and this reſemblance is the more juſt; as the matter of the letters was found whitiſh, and the rock itſelf greyiſh.

Something very like it is obſerved in the barks of trees, wherein letters have been cut with the knife; ſo that the poet had reaſon to ſay, that the characters grew as the trees themſelves grew: *creſcent illæ, creſcetis amores*.

M. Tournefort ſupports his opinion by ſimilar callus's apparently formed in ſeveral other *ſtones*, which had re-united after, by accident, they had been broken.

From theſe obſervations, it follows, that there are *ſtones* which grow in the quarries, and of conſequence that are fed; that the ſame juice which nouriſhes them, ſerves to rejoin their parts when broken; juſt as in the bones of animals, and the branches of trees, when kept up by bandages; and, in a word, that they vegetate. See VEGETATION.

There is, then, no room to doubt but that they are organized; or that they draw their nutritious juice from the earth. This juice muſt be firſt filtrated and prepared in their ſurface; which may be here eſteemed as a kind of bark; and hence it muſt be conveyed to all the other parts.

It is highly probable, the juice which filled the cavities of the letters, was brought thither from the bottom of its roots;

nor is there any more difficulty in conceiving this, than in comprehending how the ſap ſhould paſs from the roots of our largeſt oaks, to the very extremities of their higheſt branches.

It muſt be owned, the heart of theſe trees is exceedingly hard; and yet thoſe of Braſil, called *iron wood*, guaiacum, and ebony, are much harder. Coral is as hard in the ſea as out of it; and ſea muſhrooms, which every body allows to grow, are true *ſtones*, and ſo, like the common *ſtones*, are uſed in America to make lime of.

None, we believe, ever doubted that ſhells grow by means of a nutritious juice; and yet this juice is conveyed along the narrow canals of theſe exceſſively hard bodies, as well as through thoſe of plants, which are much leſs hard. See Shell.

Some *ſtones*, then, muſt be allowed to vegetate and grow like plants: but this is not all; probably they are generated in the ſame manner; at leaſt there are abundance of *ſtones*, whoſe generation is inconceivable, without ſuppoſing they come from a kind of ſeeds, wherein the organical parts of the *ſtones* are wrapped up in little; as thoſe of the largeſt plants are in their grains.

The *ſtones*, called *cornu Ammonis*, *lapis Judaicus*, *aſtroites*, thoſe of Bologna, and Florence, the ſeveral kinds of pyrites, ſea muſhrooms, cryſtals of the rock, and an infinity of other *ſtones*, ſuppoſe their ſeveral ſeeds; as much as muſhrooms, truffles, and various kinds of moſſes, whoſe ſeeds were never yet diſcovered. See Mushroom, Crystal, Coral, *&c.*

How ſhould the cornu Ammonis, which is conſtantly in figure of a volute, be formed without a ſeed, containing that ſame ſtructure in little? who moulded it ſo artfully? and where are the moulds? Far from this, theſe kinds of *ſtones* are found in the earth, like common flints. Nor were either moulds, or any thing like them, ever diſcovered. See Cornu *Ammonis*.

M. Tournefort examines the ſeveral kinds of *ſtones* above-mentioned, and finds them under the ſame neceſſity of ſeed. Again, that immenſe quantity of flints, wherewith the Crau of Arles is covered, is a ſtrong argument in behalf of this theory.

The country there, for twenty miles round, is full of roundiſh flints; which are ſtill found in equal abundance, to whatever depth you dig. M. Peireſc, who firſt propoſed the generation of *ſtones* by means of ſeeds (though he took the word *ſeed* in a very different ſenſe from M. Tournefort) firſt brought this extraordinary campagne as a proof thereof. In effect, how could ſo many ſimilar flints be formed? There is no ſaying they are coeval with the world, without aſſerting at the ſame time, that all the *ſtones* in the earth were produced at once; which were to go directly contrary to the obſervations above-mentioned.

Among the ſeeds of *ſtones*, M. Tournefort obſerves, there are ſome, which do not only grow ſoft by the juices of the earth, but even become liquid. Theſe, then, if they penetrate the pores of certain bodies, grow hard, petrify, and aſſume the figure or impreſſion of the body: thus what we call *pectinites*, *conchites*, *mytulites*, *oſtracites*, *nautilites*, *echinites*, *&c.* are real *ſtones*, the liquid ſeeds whereof have inſinuated into the cavities of the ſhells called *pecten*, *concha*, *mytulus*, *oſtrea*, *nautilus*, *echinus*.

On the contrary, if thoſe liquid ſeeds fall on flints, on ſhells, ſand, *&c.* they incloſe thoſe ſeveral bodies, and fixing between them, form a kind of cement, which yet grows like other *ſtones*. It is highly probable that ſuch rocks as are only an aſſemblage of maſticated flints, have been formed by a number of theſe liquid ſeeds; in like manner as the quarries full of ſhells: unleſs the rocks have envelloped theſe bodies in their growth.

He adds, that there are ſeeds of real *ſtones* incloſed in the ſpawn of certain ſhell-fiſh; as well as that hard ſolid matter deſtined to the forming their ſhells.

There is a particular kind of ſhell-fiſh, called *pholas*, which is never found any where but in the cavities of flints, which are always found exactly fitted to receive them. Now, it is highly improbable the fiſh ſhould come and dig ſuch a nitch to ſpawn in; it is much more likely, the *ſtones* they are found incloſed in, were at firſt ſoft; and that the matter they are formed of, was originally found in the ſpawn, in like manner as the matter which forms the egg-ſhell, is really found in the ſeed thereof.

From the whole, he concludes, that the ſeed of *ſtones*, and even of metals, is a kind of duſt which probably falls from them while they are alive, *i. e.* while they continue to vegetate as above. This duſt may be compared to the ſeeds of ſeveral plants, as thoſe of ferns, capillaries, moſſes, truffles, *&c.* which no microſcope ever yet diſcovered; though their exiſtence is not at all to be doubted. See Seed.

Probably, flints and pebbles are among *ſtones*, what truffles are among plants: nor is this opinion new; Pliny aſſures us, that Theophraſtus and Mutianus believed, that *ſtones* produced *ſtones*: and Gregory Nazianzen adds, that there were authors who even believed that *ſtones* made love,

Εςι και αψυχοισι γαμος και δεσμος ερωτος, *Poem. de Virgin.*

M. Geoffroy accounts for the origin and formation of *ſtones*, in a different manner.—He lays it down as a principle, that all *ſtones*, without exception, have been fluid; or at leaſt a ſoft paſte, now dried and hardened: witneſs the *ſtones* wherein are found foreign bodies; witneſs, alſo, figured *ſtones*, &c.

On this principle, he examines the formation of the different kinds of *ſtones*; and ſhews, that the earth alone ſuffices for the ſame, independent of all ſalts, ſulphurs, *&c.* The metallic particles contained in flints, give them their colour; but theſe are only accidents: for proof of which, he inſtances the ſapphires and emeralds of Auvergne, which loſe all their colour by a moderate fire conſuming their metallic parts; but without any damage to their tranſparence; they being hereby rendered mere cryſtals.

To view rock cryſtal, indeed, one would not take it for earth; and yet earth it muſt be, not water congealed, as the ancients imagined. See Crystal.

M. Geoffroy conceives two kinds of primitive particles in the earth.—Thoſe of the firſt kind, are exceedingly fine, thin lamellæ, equal to each other, or nearly ſo. Now, when theſe meet together, from any cauſe whatever, in a ſufficient quantity; the regularity and equality of their figures determines them to range themſelves equally and regularly; and thus to form a homogeneous compound, which is very hard, from the immediate contact of the parts; and very tranſparent, by reaſon of their regular diſpoſition, which leaves a free paſſage to the rays of light every way: and this is cryſtal. See Crystal.

The parts of the ſecond kind have all ſorts of irregular figures; and muſt accordingly form aſſemblages that are much opaker and leſs hard. Now cryſtal is formed wholly of parts of the firſt kind; and all other *ſtones* of a mixture of the two kinds of parts together: this mixture is abſolutely neceſſary, in order to unite and bind together the parts of the ſecond kind, and give them a hardneſs and conſiſtence, without which they would only make a ſand or duſt.

Water, now appears the fitteſt vehicle, to carry the parts of the firſt kind. This is ſeen from ſeveral petrifying ſprings, which incruſtate the pipes through which their waters are conveyed, or even ſolid bodies laid in them for ſome time. The water does not diſſolve thoſe earthy parts; it only keeps them in fuſion, as it does the juices wherewith plants are fed.

This water, thus charged with earthy particles of the firſt kind, M. Geoffroy calls the *ſtoney*, or *cryſtalline juice*, whereof thoſe bodies are primarily formed.

Stones are of various kinds, with regard to the places they are produced in: the moſt ordinary are under ground; others in the bodies of men, and other animals; others ſeem to be generated by the ſea, as pumice, *&c.* and others, the effect of a petrifying virtue in certain waters. See Petrefaction, *&c.* Of theſe, ſome ſerve ſimply for magnificence, and ornament; as all thoſe called,

Precious Stones; which make the commerce of lapidaries and jewellers. See Precious *ſtone*, and Gem.

Others, much uſefuller, if one might credit all the virtues attributed to them, are uſed in medicine; ſuch as bezoards, Jews *ſtone*, eagles *ſtone*, &c. See Bezoard, Ætites, Judaicus, *&c.*

Others, again, are uſed in painting; either to prepare colours from, by calcining and grinding them, or to be uſed as crayons or pencils for deſigning: of which number are the Armenian *ſtone*, black lead, ruddle, *&c.* See Armenian, Ruddle, *&c.*

Laſtly, much the greateſt quantity, and thoſe too of the moſt immediate and common uſe, are thoſe employed in building; ſuch as free *ſtone*, marble, lime *ſtone*, fire *ſtone*, &c. See Marble, *&c.*

For *Free* Stone, that dug in the peninſula of Portland, and thence called *Portland ſtone*, is much uſed; being ſofter and whiter than Purbec *ſtone*, and is commonly raiſed out of the quarries in bigger blocks than that.

Some alſo call Ryegate, or fire *ſtone*, *free ſtone*. See Fire.

Mr. Boyle obſerves, that a competent knowledge of the nature of the ſap or juice found in *ſtones* uſed in building, is of the laſt importance; the ſame *ſtone* dug out of the ſame quarry at one ſeaſon, being found to moulder away in a few winters, which dug at another ſeaſon, will brave the weather for many ages: and there are others, which, though dug at the proper ſeaſon, yet make but ruinous building, if uſed at an improper ſeaſon.

The ſame author adds, that as there are ſome ſorts of *ſtones* which will decay in a few years, there are others will not have attained their full hardneſs in thirty or forty years, or even much more. See Porphyry.

Stones are divided by biſhop Wilkins into *vulgar*, *middle priced*, and *precious*.

1. *Vulgar* Stones, or ſuch as are of little price, are diſtinguiſhable by their different magnitudes, uſes, and conſiſtence, into the

Greater magnitudes of *ſtone*, uſed either about
Buildings, whether of
Walls; chiefly being of a
ſofter conſiſtence, whether natural or factitious;
1 *free ſtone*, *brick*.
harder conſiſtence; not eaſily yielding to the tool of the workman, growing either in
great maſſes,
2 *ragg*.
leſſer maſſes; whether ſuch as are for their figure,
more knobbed, and unequal; uſed for the ſtriking of fire, either the more common, which is leſs heavy; or leſs common, which is more heavy, as having ſomething in it of a metalline mixture,
3 *flint*, *marcaſite*, fire *ſtone*.
more round and even,
4 *pebble*, thunderbolt.
Roof, or pavement, being of a laminated figure, either natural, or factitious,
5 *ſlate*, *tyle*.
Metals, either for the
ſharpening, or trying of them,
6 *whet ſtone*, *touch ſtone*.
poliſhing, or cutting of them; being either of a more ſpongy and ſoft, or of a more hard conſiſtence,
7 *pumice*, *emery*.
leſſer magnitudes, either more, leſs, or minute,
8 *ſand*, *gravel*.

2. *Middle priced* Stones, are either of a
ſhining politure, or capable of it; whether of a
ſimple white colour, and more ſoft conſiſtence,
1. *alabaſter*.
ſometimes white, ſometimes black or green, and ſometimes variegated with veins, growing in greater or leſſer maſſes,
2 *marble*, *porphyry*, *agat*.
ſpotted with red, upon a greeniſh colour, or with ſpots of gold colour upon blue,
3 *jaſpis*, *heliotrope*, *laziul*, *azure ſtone*.
Tranſparency, either
brittle; whether natural or factitious,
4 *cryſtal*, *glaſs*.
fiſſile into flakes, either greater or leſſer,
5 *ſelenite*, Muſcovia *glaſs*, *iſing glaſs*, *ſpar*, *talc*.
Relation to metals, attracting iron, or making of braſs,
6 *load ſtone*, *cadmia calaminaris*.
Incombuſtible nature,
7 *amiantus*, *asbeſtus*.
Strange original; not being properly minerals, though uſually reckoned amongſt them; but either a ſubmarine plant, or ſuppoſed to proceed from a liquid bitumen,
8 *coral*, *coralline*, *amber*.

3. *Precious* Stones; which ſee under the article Precious *ſtone*.

Bolonian Stone,	See the articles	Bolonian.
Calamine Stone,		Calaminaris.
Eagles Stone,		Ætites.
Emery Stone,		Emery.
Fire Stone,		Fire.
Horſham Stone,		Horsham.
Jewiſh Stone,		Judaicus.
Infernal Stone,		Lapis *infernalis*.
Lime Stone,		Lime *ſtone*.
Philoſophers Stone,		Philosophers.
Pumice Stone,		Pumice.
Roll-rich Stones,		Roll.
Sanguine Stone,		Sanguine.
Touch Stone,		Touch.
Whet Stone,		Whet *ſtone*.

Stone alſo denotes a certain quantity, or weight of ſome commodities. See Weight.

A *ſtone* of beef at London, is the quantity of eight pounds: in Herefordſhire, twelve pounds; in the North, ſixteen pounds.—A *ſtone* of glaſs is five pounds; of wax, eight pounds.

A *ſtone* of wool (according to the ſtatute of 11 Hen. VII.) is to weigh fourteen pounds; yet in ſome places it is more, in others leſs; as in Glouceſterſhire, fifteen pounds; in Herefordſhire, twelve pounds.

Among horſe-courſers, a *ſtone* is the weight of fourteen pounds.

Caſting in Stone. See the article Casting.

Characters on Stones,	See the articles	Characters.
Engraving on Stones,		Engraving.
Face of a Stone,		Face.
Painting on Stone,		Painting.
Sculpture in Stone,		Sculpture.
Stone *of ſcandal*,		Scandal.

Stone, in medicine, is the denomination of a diſeaſe, called alſo *calculus*, and *lithiaſis*; and, occaſionally, the *gravel*. See Calculus, Gravel, &c.

It conſiſts of a ſtoney concretion, formed either in the bladder or kidneys; which prevents the diſcharge of urine, and occaſions violent pains. See Bladder, and Kidneys.

The *ſtone*, Etmuller ſays, is not a diſeaſe, but the product of a diſeaſe: the diſeaſe, properly, is the *lithiaſis*, or the diſpoſition of the kidneys and bladder to generate *ſtones*.

The *ſtone* is generated, according to ſome authors, of the earthy viſcid parts of the blood, hardened, in courſe of time, by the heat of the kidneys; much after the manner as brick is baked in a kiln.—Dr. Quincy ſuppoſes it generated of the harder parts of the urine, pent up by the ſtreightneſs of the ducts, and brought into contact and coheſion.—Etmuller aſcribes the *ſtone*, ſometimes to the ſtoney and metallic particles of our foods and drinks, which the reins, through weakneſs and relaxation thereof, cannot eject; but more uſually to the unequal ſtrength of the kidneys: whence it is that we ſee one kidney breeds *ſtones*, the other remaining ſound.

The *ſtone* in the bladder, is firſt formed in the pelvis of the kidneys; whence falling into the bladder, it becomes augmented by new lamellæ or coats. See Pelvis.

The diagnoſtic ſigns of the *ſtone in the kidneys*, are, 1° A fixed, obtuſe pain in the region of the loins, appearing like a weight loading the reins. As the *ſtone* falls out of the pelvis into the ureter, the pain is exceedingly acute and racking, which holds till either the *ſtone* be got into the bladder, or returned again to the pelvis. 2° An inflexibility of the ſpina dorſi, from the extenſion and compreſſion of the nerves. 3° A ſtupor of the thigh and leg of that ſide, from the conſent of parts. 4° A retraction of the teſticle. 5° A very ſmall quantity of urine, either thin and limpid, or bloody. But as ſoon as the *ſtone* is got into the bladder, the urine becomes thick, turbid, blackiſh and in great quantity.

The diagnoſtics of the *ſtone in the bladder*, are a ſenſe of heavineſs in the perinæum and inguinal region, a perpetual and troubleſome deſire of making water, which is followed with a ſharp pain, principally in the glans of the penis, whence a prolapſus of the anus. But the fureſt way of finding it, is by the touch, *viz.* by thruſting the finger or a catheter up the anus.

The cure of the *ſtone*, is either by a liquor that will diſſolve or break the concrete *ſtone*; ſo as it may be evacuated piecemeal: which is called a *lithonthriptic*; or by enlarging the capacity of the veſſels; or by the operation of cutting, called *lithotomy*.

We have yet no aſſured lithonthriptic known, how many ſoever may pretend to it; the moſt noted, are Daffey's elixir, Tipping's liquor, and Rogers's powder. See Lithonthriptic.

The moſt uſual cure is by cutting; the various manners whereof, ſee under Lithotomy.—In ſome deſperate caſes, the *ſtone* has been known to make itſelf a way through the ſpinal muſcles.

Dr. Liſter obſerves, that *ſtones* are found, not only in the bladder and kidneys, but alſo in the pituitary ducts, the brain, liver, lungs, ſtomach, inteſtines, and joints of the hands and feet; to which may be added, that in the *Philoſophical Tranſactions*, we have likewiſe accounts of *ſtones* in the pineal gland, the heart, gall-bladder, &c.

Stones are diſtinguiſhed into three kinds, *white*, *red*, and *yellow*; which laſt are the moſt uſual.

Deckers recommends calcined egg-ſhells as excellent in all ſuppreſſions of urine; Hamilton, linſeed oil; and Mr. Boyle, the herb arſemart.

STONE-BLUE, a mineral preparation, properly called *ſmalt*. See Smalt.

STONEHENGE, in antiquity, a famed pile or monument of huge ſtones on Saliſbury plain, ſix miles diſtant from that city. It conſiſts of the remains of four ranks of rough *ſtones*, ranged one within another, ſome of them, eſpecially in the outermoſt and third rank, twenty feet high, and ſeven broad; ſuſtaining others, laid acroſs their heads, and faſtened by mortiſes: ſo that the whole muſt have anciently hung together.

Antiquaries are divided, as to the origin, uſe, ſtructure, &c. of this wonderful fabric. Moſt of them take the *ſtones* to be artificial, and to have been made on the ſpot; which ſeems the more probable, as we are pretty well aſſured the ancients had the art of making *ſtones* with ſand, and a ſtrong lime or cement; and as the *ſtones* ſeem too big for land carriage; and yet are in a plain, which for ſome miles round ſcarce affords any *ſtones* at all.—Inigo Jones, however, a better judge than moſt antiquaries, is poſitive that the *ſtones* are all natural; and there is hardly any architect or naturaliſt who examines the grain of them exactly, but will be of his mind.—As to their unweildineſs, which is brought as an argument againſt their being portable, it is without foundation; they being merely but trifles compared to many other *ſtones* which are known to have been thus carried.

The legends give us various other accounts; ſome will have them brought miraculouſly by St. Patrick, from Ireland; others, *&c.*

As to its uſe, ſome antiquaries take it to have been an ancient temple of the Druids*; others, of the Romans, dedicated to Cœlus; in which they are confirmed by its having been open a-top. Others, reading the name, *ſtone-hengiſt*, maintain it to have been a monument erected in memory of Hengiſt, the firſt general of the Saxons in England: others will have it a funeral monument, raiſed to that brave Romano-Briton, Aurelius Ambroſius; to which opinion, ſome circumſtances of his actions, the ſtill remaining Latin name of the place (Mons Ambroſii) and that very ancient Welſh proverb, *Mal gwaith Emrys*, Like the work of Ambroſe, give ſome countenance.

STOOL, *alvus*, in medicine. A thing is ſaid to be voided by *ſtool*, when it is diſcharged by the anus, or fundament. See ANUS.

In the Philoſophical Tranſactions, we have inſtances of ſick perſons voiding factitious ſtones, balls, *&c.* by *ſtool*. See EXCREMENT.

Cucking STOOL. See the article CUCKING.

STOOMING *of wine*, the putting bags of herbs, or other ingredients into it. See WINE, NODULE, SACCULUS, *&c.*

STOOPING, in falconry, is when a hawk being upon her wings, at the height of her pitch, bends down violently to take the fowl.

STOPS, }
STOPPING, } in grammar. See { POINTS.
{ PUNCTUATION.

Saturday STOP. See the article SATURDAY.

STORAX, or STYRAX, a reſinous, odoriferous gum, brought from Syria; whereof there are two, or three kinds: *red ſtorax*, *ſtorax calamita*, and *liquid ſtorax*.

Red or *dry* STORAX, called alſo *Jews incenſe*, is a gum or reſin oozing out at an inciſion made in the trunk and biggeſt branches of a tree, called *ſtorax*, not unlike our quince tree. Its fruit is of the ſize of a filberd, and contains a white, oily kernel, of a ſmell perfectly like *ſtorax*.

It muſt be choſen in a maſs, of a reddiſh colour, ſoft and fat, and of an agreeable ſmell, bearing no reſemblance to liquid *ſtorax*.—That in cakes, in balls, *&c.* is all ſophiſticated; and only a wretched compoſition of liquid *ſtorax*, and the impurities of the true red *ſtorax*, and other drugs. That in powder is ſtill worſe.

Red *ſtorax* is of ſome uſe in medicine; and is alſo uſed by the perfumers, and often ſubſtituted for frankincenſe. See FRANKINCENSE.

STORAX *calamita*, thus called from the ruſhes or quills, in Latin, *calami*, it was anciently brought in, is, by ſome, held to be only a compoſition of ſeveral excellent drugs; and among the reſt, of red *ſtorax*, whence its name: though authors have generally taken it for a natural gum, different from the red *ſtorax*. Hoffman's conjecture is, that it only differs from the other in age; the *ſtorax* growing higher coloured with keeping.

It muſt be choſen in fine white tears, very dry, and not bitter; ſometimes it is in reddiſh maſſes, full of theſe whitiſh tears, only mixed with a ruddy ſubſtance.

Theſe two kinds are eſteemed excellent pectorals, ſtomachics, and cephalics.

Liquid STORAX, is a kind of factitious reſin, of a greyiſh colour, compounded of true *ſtorax*, common reſin of the pine oil, and wine, beaten with water, into the conſiſtence of an unguent.

The druggiſts alſo call it *ſtacte*, to diſtinguiſh it, and ſell it for the better price. See STACTE.

The beſt is that of Holland. It is eaſily kept in a cellar, by pouring water on it from time to time. It is an ingredient in an unguent which experience has ſhewn to be excellent againſt the ſcorbutus, and gangrene.

STORE. *Bill of* STORES. See the article BILL.

STORGE, ΣΤΟΡΓΗ, a Greek term, frequently uſed by naturaliſts, to ſignify that parental inſtinct, or natural affection, which all, or moſt animals bear their young. See INSTINCT.

The *ſtorge* is an admirable principle implanted by the all-wiſe Creator throughout the animal world, for the preſervation thereof; and is governed by ſuch rules as make it beſt contribute thereto. By means of this, with what care and alacrity do animals nurſe their young? and what dangers will they avoid for their ſecurity? even the moſt timorous creatures, which at other times fly the face of men, dogs, *&c.* will, for the ſake of their young, expoſe themſelves. Thus hens, inſtead of flying from, will aſſault ſuch as meddle with their brood; and partridges, before their young can fly, will frequently drop down before the dogs, firſt at leſs, then at greater diſtances, to dodge, and draw them off, from purſuing their young. With what concern do others lead about their young in places of ſafety? and ſome even admit them for ſhelter into their bowels.

Thus the oppoſum, Dr. Tyſon obſerves, has a curious bag on purpoſe for the ſecuring and carrying about her young; and ſome ſay, the teats lie in it. The ſame author adds, from Oppian, that the dog-fiſh, upon any ſtorm or danger, receives her young into her belly, which come out again when the fright is over. The ſquatina and glaucus do the like.

With what tenderneſs do others ſeek and prepare the food for their young, teach them to ſuck, cheriſh, or lull them to reſt, *&c.* like ſo many nurſes, deputed by the Creator to take care of his creatures? and ſtill in proportion, as they grow up and become fit to look to themſelves, this *ſtorge* abates; and, at length, when no longer needed, becomes extinct. Mr. Ray obſerves, that young doves are fed with meat firſt eat by the dam, and ſodden a-while in her prolobe. And Cluſius obſerves, that the old female Ethiopian takes no food but from the male, after this manner.

The returns made by the young to the parent animal, when grown old, are not leſs conſiderable. Pliny ſays of rats, that they nouriſh their aged parents with eminent piety.

St. Ambroſe, and after him Olaus Magnus, obſerve of the crane, that when the parents, through old age, are bereft of their feathers, and left half naked, their offſpring ſtand around them, and cheriſh them with their own feathers; that they ſeek food for them; and when nature, as it often happens, repairs their decays, and reſtores them to ſtrength again, they take them up by turns, on their wings, and habituate their unpractiſed limbs to their ancient art of flying.

STORM, in the military art. See ASSAULT.

STOVE, in building, a hot houſe or room. See HYPOCAUSTUM, SUDATORY, FIRE, CHIMNEY, *&c.*

Palladio obſerves, that the ancients uſed to warm their rooms with certain ſecret pipes, which came through the walls, conveying heat to ſeveral parts of the houſe, from one common furnace. Whether this were a common cuſtom, ſays Sir Henry Wotton, or a curioſity, we cannot determine; but it was certainly, both for profit and uſe, far beyond the German *ſtoves*.

STOVE, among confectioners, denotes a little cloſet well cloſed on all ſides, wherein are ſeveral ſtories or rows of ſhelves made of wiars one above another, for the drying of ſweetmeats.

STOWAGE, in the ſea language, the putting of goods orderly into the hold of a ſhip; the moſt ponderous and heavy next the ballaſt. See HOLD.

STRABISMUS, ΣΤΡΑΒΙΣΜΟΣ, a diſorder of the eye, which makes it look a-ſquint, either upwards, downwards, or awry.

The *ſtrabiſmus* conſiſts in a retraction of the ball of the eye, towards one ſide; occaſioned by a convulſion, or a palſy of one of its muſcles.

Children are apt to acquire it through the careleſſneſs of their nurſes, in placing them always on the ſame ſide the light, or of any other remarkable object that occaſions them to turn their eyes that way.

To remedy it, care is to be taken, that the light, or other notable body, be placed on the other ſide of them; or elſe a maſk put on them, the holes whereof are ſo diſpoſed, as that to ſee through them, the child be obliged to turn his eyes the oppoſite way.

STRAIGHT, STREIGHT, or STRAIT, in hydrography, a narrow ſea, or gut, ſhut up between lands on either ſide, and affording a paſſage out of one great ſea into another. See SEA and OCEAN.

The moſt celebrated *ſtreight* in the world, is that of Gibraltar, which is about one hundred and thirty miles long and twelve broad, joining the Mediterranean ſea, with the Atlantic ocean.

The *ſtreights* of Magellan, diſcovered in 1520, by F. Magellan, were uſed ſome time, as a paſſage out of the north into the ſouth ſea; but ſince the year 1616, that the *ſtreight* of le Maire has been diſcovered, the former has been diſuſed; both becauſe of its length, which is full three hundred miles, and becauſe the navigation thereof is very dangerous, from the waves of the north and ſouth ſeas meeting herein, and claſhing.

The *ſtreight* at the entrance of the Baltic, is called the *Sound*. See SOUND.—That between England and France, *Le pas de Calais*, or the *channel*.—The *ſtreights* of *Babelmandel*, of *Weigats*, of *Jeſſo*, of *Anian*, of *Davis*, and *Hudſon*, &c.

STRAIGHT is alſo uſed in geography, for an iſthmus, or neck of land between two ſeas; preventing the communication thereof. See ISTHMUS.

STRAIGHT *arches*, } See the articles { ARCH.
STRAIGHT *ſtairs*, } { STAIRS.

STRAIN, or SPRAIN, a violent extenſion of the ſinews or tendons of ſome muſcle. See TENDON.

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* Antiquaries are now pretty well agreed, that it was a Britiſh temple; and Dr. Langwith thinks it might eaſily be made probable, at leaſt, that it was dedicated to the ſun and moon. V. Stukel. *Stone-henge*, a temple reſtored to the Britiſh Druids.—Inigo Jones has given a fine ſcheme of the work, and ſtrives hard to perſuade the world, that it was Roman: but Dr. Langwith, who took his meaſures on the ſpot, aſſures us, he could by no means reconcile them with that ſcheme.

STRAINED *ſugar*. See the article Sugar.

STRAINING *, is the clarification of a liquor, by paſſing it through a ſieve, or filtre. See Filtration.

* The word is derived from the French, *eſtreindre*; which is formed from *ex*, out of; and *ſtringere*, to preſs.

STRAIT. See the article Straight.

STRAND *and Stream*, in ancient cuſtoms, a freedom from all impoſitions upon goods or veſſels by land or water.

STRANDED *, is when a ſhip is by tempeſt, or ill ſteerage, run on ground, and ſo periſhes.

* The word is formed from the Saxon *ſtrand*, a ſhore or bank of the ſea, or a great river.

STRANGER, in law, denotes a perſon who is not privy, or party, to an act.

Thus a *ſtranger* to a judgment, is he to whom a judgment does not belong: in which ſenſe the word ſtands directly oppoſed to *party*, or *privy*. See Parties and Privy.

STRANGURY *, ΣΤΡΑΓΓΟΥΡΙΑ, in medicine, a diſeaſe occaſioning a frequent and involuntary emiſſion of urine, in very ſmall quantities, and, as it were, drop by drop; with an intenſe pain. See Urine.

* The word is formed from the Greek, ϛραγξ, *gutta*, drop, and ȣρον, urine.

The *ſtrangury* ariſes from the too great acrimony of the urine, which vellicating the nervous parts of the bladder, occaſions a continual inclination to urine.

New beer, and other liquors, not well fermented, uſually occaſion the *ſtrangury*.—The extreme ſharpneſs of the urine in the *ſtrangury*, ſometimes produces an ulcer in the bladder. Some authors confound the *ſtrangury*, which the Latins call *urinæ ſtillicidium*, with the *urinæ incontinentia*.—The difference between them conſiſts in this, that in the former, the urine comes away with pain, in the latter without. The former proceeds from the acrimony of the urine; and the latter from a relaxation or palſy of the ſphincter of the bladder, which cannot keep the neck thereof cloſe ſhut. See Urine.

STRAP, among ſurgeons, a ſort of band uſed to ſtretch out members in the ſetting of broken, or disjointed bones. See Bandage.

STRAPADO *, or Strappado, a kind of military puniſhment, wherein the criminal's hands being tied behind him, he is hoiſted up with a rope, to the top of a long piece of wood, and let fall again almoſt to the ground; ſo that by the weight of his body in the ſhock, his arms are diſlocated. —Sometimes he is to undergo three *ſtrapado's*, or more.

* The word is formed from the French *eſtrapade*, which ſignifies the ſame; and which is ſuppoſed to come from the old proverb *eſtreper*, to break, extirpate; or from the Italian *ſtrappata*, of the verb *ſtrappare*, to wreſt by force.

STRATA, in natural hiſtory, the ſeveral beds, or layers of different matters, whereof the body of the earth is compoſed. See Earth.

The *ſtrata* include all the layers of earths, minerals, metals, ſtones, &c. lying under that upper tegument or ſtratum, the turf, or mould. See Fossil, Mineral, Metal, &c.

The time when thoſe ſeveral *ſtrata* were laid, was, doubtleſs, at the creation; unleſs, with ſome great naturaliſts, as Steno, Dr. Woodward, &c. we ſuppoſe the globe of earth to have been diſſolved by the flood. See Deluge.

At that time, ſays Mr. Derham, whenever it was that the terreſtrial globe was in a chaotic ſtate, and the earthy particles ſubſided, then theſe ſeveral beds were repoſited in that commodious order, wherein they are now found; and that, as is aſſerted, according to the laws of gravity; the lower ſtill heavier than the upper.

But Dr. Leigh, in his *Natural Hiſtory of Lancaſhire*, ſpeaking of the coal-pits, denies the *ſtrata* to lie according to the laws of gravitation; obſerving that the *ſtrata* there, are firſt a bed of marle, then free-ſtone, next iron-ſtone, then coal, or channel mire, then ſome other *ſtrata*, then coal again, &c. This determined Mr. Derham to make a nicer enquiry into the matter; accordingly, in 1712, he cauſed divers places to be bored, laying the ſeveral *ſtrata* by themſelves; and afterwards determined very carefully their ſpecific gravity. The reſult was, that in his yard, the *ſtrata* were gradually ſpecifically heavier and heavier, the lower and lower they went; but in another place in his fields, he could not perceive any difference in the ſpecific gravities.

Acquainting the Royal Society therewith, their operator Mr. Haukſbee, was ordered to try the *ſtrata* of a coal-pit, which he did to the depth of thirty *ſtrata*: the thickneſs and ſpecific gravity of each whereof, he gives us in a table in the *Philoſophical Tranſactions*; and from the whole makes this inference, that it evidently appears, the gravities of the ſeveral *ſtrata* are in no manner of order; but purely caſual, as if mixed by chance. See Vein and Coal.

STRATARITHMOMETRY *, in war, the art of drawing up an army, or any part of it, in any given geometrical figure; and of expreſſing the number of men contained in ſuch a figure, as they ſtand in array, either near at hand, or at any diſtance aſſigned. Harris.

* The word is formed from the Greek, ϛρατος, army, αριθμος, number, and μετρον, meaſure.

STRATEGEM *, ΣΤΡΑΤΗΓΗΜΑ, a military wile; or a device in war, for the ſurprizing, or deceiving an enemy.

* The word is formed from the Greek, ϛρατηγεω, I lead or command an army.

The ancients dealt mightily in *ſtrategems*; the moderns wage war more openly, and on the ſquare.—Frontinus has made a collection of the ancient *ſtrategems* of war.

STRATEGUS, ΣΤΡΑΤΗΓΟΣ, in antiquity, an officer among the Athenians, whereof there were two choſen yearly, to command the troops of the ſtate. See Captain, General, &c. See alſo Archistrategus.

Plutarch ſays, there was one choſe from out of each tribe, but Pollux ſeems to ſay, they were choſe indifferently out of the people. It was the people themſelves made the choice; and that on the laſt day of the year, in a place called *Pnyx*.

The two *ſtrategi* did not command together; but took their turns, day by day; as we find from Herodotus and Cornelius Nepos. Sometimes, indeed, as when a perſon was found of merit vaſtly ſuperior, and exceedingly famed in war, the command was given to him alone: but it was ever a rule, not to put any perſon in the office, but whoſe eſtate was in Attica, and who had children, that there might be ſome hoſtages, and ſecurities for his conduct and fidelity.

STRATIFICATION, Stratificatio, in chymiſtry, the arrangement of different matters, in ſeveral ſtrata or layers, alternately; called alſo by the Latins, *ſtratum ſuper ſtratum*; and marked in books of chymiſtry with SSS.

This operation is uſed in calcining of minerals or metals with ſalts or other matters. See Calcination.

To purify gold by cæmentation, they *ſtratify* laminæ, or plates of gold in a crucible, with a dry paſte called *cæment*. See Cæment and Cæmentation.

STRAY. See the article Estray.

STREAM-*anchor*, is a ſmall anchor made faſt to a *ſtream*-cable; for a ſhip to ride by in gentle *ſtreams*, and in fair weather. See Anchor.

Stream-*works*, are certain works in the tin-mines, when the miners follow the veins of metal, by cutting trenches, &c. See Tin.

STREIGHT. See the article Straight.

STRENÆ, in antiquity, *new years gifts*; preſents made out of reſpect on new-year's day; as a happy augury for the enſuing year. See *New* Year's *day*.

The ancient lawyers derive the word hence, That theſe preſents were only given *viris ſtrenuis*; Symmachus adds, that the uſe hereof was firſt introduced by king Tatius, Romulus's colleague, who received branches of vervain gathered in the ſacred grove of the goddeſs Strenia, as a happy preſage of the beginning year.

Anciently, a pound of gold was given to the emperors every new-year's day, by way of *ſtrena*.—Du Cange obſerves, that *ſtrina*, or *ſtrinna*, denoted a kind of tribute which the people of Dalmatia or Croatia payed to the Venetians, or to the kings of Hungary, whom they obeyed voluntarily.

STRENGTH, *vis*. See Force and Power.

The *ſtrengths* of different animals of the ſame ſpecies, or of the ſame animal at different times, are demonſtrated to be in a triplicate proportion of the quantities of the maſs of their blood: the whole *ſtrength* of an animal, is the force of all the muſcles taken together; therefore, whatever increaſes *ſtrength*, increaſes the force of all the muſcles, and of thoſe ſerving digeſtion, as well as others. See Muscle.

Yet, notwithſtanding the truth of this, the quantity of blood may be increaſed in ſuch circumſtances, as to abate the *ſtrength*. The equilibrium between the blood and veſſels being deſtroyed, wonderfully leſſens the *ſtrength*. The ſudden ſuppreſſion of perſpiration, though it increaſes the quantity of the blood, as it muſt conſiderably do, by Sanctorius's calculation, yet it leſſens the *ſtrength*; becauſe the retained matter, being what ought to be evacuated, ſo alters the texture of the blood, as to make it unfit for muſcular motion. Suppoſe the increaſe of quantity to be connected with an extraordinary viſcidity, the quantity of ſmall ſeparable parts decreaſing, as the viſcidity increaſes, the quantity of animal ſpirits ſeparated in the brain, will be leſs; and the tenſion of the fibres being in proportion to the animal ſpirits forced into them, they will not be able to counterpoiſe the great weight of the blood, and ſo the *ſtrength* will be diminiſhed.

Bellini proves, that if the blood be ſo vitiated, as to increaſe or diminiſh *ſtrength*; it amounts to the ſame as if the blood were in a natural ſtate, but its quantity increaſed or diminiſhed in the ſame proportion: ſo that the blood, when vitiated, may ſo impair the *ſtrength* of the muſcles, as even to ſpoil digeſtion; and yet in ſome caſes, it may be ſo vitiated, as to help digeſtion, and increaſe *ſtrength*.

M. de le Hire, in a calculation of the *ſtrength* of a man in drawing and bearing, ſhews, that the *ſtrength* of an ordinary man walking in a horizontal direction, and with his body inclining forwards, is only equal to twenty-ſeven pounds; which is much leſs than one would have imagined.

He adds, that this force would be much greater, if the man were to walk backwards; and that it is for this reaſon, the watermen fetch their oars from before, backwards: and though he obſerves, the gondoliers of Venice fetch them the contrary way, yet this is, becauſe they chuſe to loſe the advantage

vantage of *ſtrength*, to have that of ſeeing the place they are going to, in the numerous turns and canals they there meet withal.

It is known by experience, that a horſe draws, horizontally, as much as ſeven men; conſequently, his *ſtrength* will be 189 pounds. A horſe, as to puſhing forwards, has a great advantage over a man, both in the *ſtrength* of its muſcles, and the diſpoſition of the whole body; but the man has the advantage over the horſe in aſcending. M. de la Hire ſhews, that three men laden with 100 pounds a-piece, will aſcend a pretty ſteep hill with more eaſe and expedition, than a horſe loaden with 300 pounds.

Hakewell furniſhes us with abundance of inſtances of extraordinary *ſtrength:* Clunher, provoſt of the great church of Meſnia in 1529, carried a pipe of wine out of the cellar, and laid it in the cart.—Mayolus ſaw one hold a marble pillar in his hand three foot long, and one in diameter, which he toſſed in the air, and catched again like a ball.—A little man of Mantua, called *Rodamas*, could break a cable.—Ernando Burgh fetched up ſtairs, an aſs laden with wood, and threw both into the fire. At Conſtantinople, in 1581, one lifted a piece of wood which twelve men could ſcarce raiſe; then lying all along, bore a ſtone which ten could but juſt roll on him.—G. of Fronſbergh, baron of Mindleheim, could raiſe a man off his ſeat with his middle finger, and ſhove a cannon out of its place.—Cardan ſaw a man dance with two men in his arms, two on his ſhoulders, and one on his neck. Patacona, captain of the Coſſacks, could tear an horſe-ſhoe; and the ſame is reported of the late Auguſtus king of Poland.—On Putney Common, is a ſtone with an inſcription, mentioning a man, who in that place out-drew five horſes in his own team.—A gigantic woman of the Netherlands, could lift a barrel of Hamburgh beer.—Mr. Carew had a tenant that could carry ſix buſhels of wheat in meal (of fifteen gallons meaſure) with the lubber a-top of it. And J. Roman of the ſame country, could carry the carcaſs of an ox. See Hakewell's *Apology*, p. 238.

STRENGTHENERS, *corroborants*, ſuch medicines as add to the bulk and firmneſs of the ſolids. See SOLIDS and STRENGTH.

Strengtheners differ from *cordials*, as a bandage does from a fleſh-bruſh: the latter are ſuch as facilitate and drive on the vital actions; but the former, ſuch as confirm the ſtamina, and maintain the ſolids in ſuch a condition, as to exert themſelves into action on all proper occaſions, with the greateſt force and vigour. See CORDIAL.

The continual waſte, which conſtant motion makes in the conſtitution, were it not for frequent and proper ſupplies, would ſoon wear the body quite out. The attritions and abraſions of the circulating fluids, would quickly carry away the canals in which they circulate, were not ſomewhat furniſhed in their compoſition, which is ſuited to fall into, adhere with, and recruit that which is waſhed off. And thoſe particles muſt be much more diſpoſed ſo to do, whoſe adheſions are greateſt, when once they come into contact; ſuch are thoſe of bodies we call *glutinous*, and which eaſily form themſelves into jellies, and ſuch like conſiſtences: for the parts of ſuch bodies are very light, by the over-proportion of their ſurfaces to their ſolidities, whereby their motions are both more languid, when in circulation; and when they ſtop, their coheſions will be much the ſtronger, with whatſoever they happen to fall into contact. See NUTRITION.

Medicines of this tribe, are therefore of great ſervice in hectics; where the ſwift motion of a thin, ſharp blood, wears away the ſubſtance of the body, inſtead of nouriſhing it: for they not only retard the inordinate motion, but give ſuch a weight and conſiſtence to the juices, as fits them alſo for nouriſhment.—There are likewiſe other cauſes, which may weaken the ſolids, by admitting, or occaſioning them to relax too much.

Whatſoever therefore acts as a ſtimulus, and criſps and corrugates the fibres into a more compacted tone, which moſt auſtere and pointed bodies do, will remove ſuch weakneſs, and increaſe ſtrength: and as too much moiſture may alſo contribute to ſuch a relaxation, what has no other quality but that of abſorbing, and drying up ſuch ſuperfluous humidities, may deſerve, though accidentally, to come under this denomination. See FIBRE, *&c.*

STRETCH.—When at ſea, they are going to hoiſt the yard, or hale the ſheet; they ſay, *ſtretch forward the ſheets*: meaning, that the part which the men are to hale by, ſhould be put into their hands, in order to their haling.

STRIÆ, in the ancient architecture, the liſts, fillets or rays which ſeparate the ſtriges or flutings of columns. See STRIGES and FLUTING.

STRIÆ, among naturaliſts, denote the ſmall grooves or channels in the ſhells of cockles, ſcollops, *&c.*

STRICTOR, in anatomy, the ſame as *ſphincter*. See SPHINCTER.

STRIGES, in the ancient architecture, are what in the modern we call *flutings*. See FLUTING.

They were thus denominated, as being ſuppoſed to have been originally intended to imitate the folds or plaits in womens robes; which the Latins call *ſtrigæ*.—The fillets or ſpaces between them, were called *ſtriæ*. See STRIÆ.

STRIKE, or STRYKE, a meaſure, containing four buſhels; two of which make a quarter. See BUSHEL and QUARTER.

A STRIKE *of flax*, is as much as can be heckled at one handful.

STRIKE, is a ſea word variouſly uſed.—When a ſhip in a fight, or upon meeting with a man of war, lets down, or lowers her top-ſails, at leaſt half-maſt high; they ſay, *ſhe ſtrikes:* meaning, ſhe yields or ſubmits, or pays her devoir to that man of war, as ſhe paſſes by. See FLAG.

When a top-maſt is to be taken down, they ſay, *ſtrike the top-maſt.*

And when any thing is let down or lowered into the hold, they call it *ſtriking down into the hold.*

Alſo, when a ſhip touches ground in a ſhoal-water, they ſay, *ſhe ſtrikes.*

STRIKE *a hull.* See the article HULL.

STRIKING.—The puniſhment appointed by our laws, for *ſtriking within the king's court*, whereby blood is drawn, is, that the criminal ſhall have his right-hand ſtruck off, in a moſt ſad and ſolemn manner.

For *ſtriking in Weſtminſter-Hall*, while the courts of juſtice are ſitting, the puniſhment is impriſonment for life, and forfeiture of one's eſtate.

STRIKING *watch.* See the article WATCH.

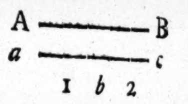
STRING, in muſic. See the article CHORD.

If two *ſtrings* or chords of a muſical inſtrument only differ in length; their tones, that is, the number of vibrations they make in the ſame time, are in the inverſe ratio of their lengths.

If they only differ in thickneſs, their tones are in the inverſe ratio of their diameters.—As to the tenſion of *ſtrings*, to meaſure it regularly, they muſt be conceived ſtretched or drawn by weights; and then, cæteris paribus, the tones of two *ſtrings* are in a direct ratio of the ſquare roots of the weights which ſtretch them, that is, *e. gr.* the tone of a *ſtring* ſtretched by a weight, 4, is an octave above the tone of a *ſtring*, ſtretched by the weight 1.

It is an obſervation of an old ſtanding, that if a viol or lute-*ſtring* be touched with the bow, or hand, another *ſtring* on the ſame, or another inſtrument, not far from it, if in uniſon to it, or in octave, or the like, will at the ſame time tremble of its own accord. See UNISON.

But it is now found, that not the whole of that other *ſtring* doth thus tremble; but the ſeveral parts, ſeverally, according as they are uniſons to the whole, or the parts of the *ſtring* ſo ſtruck. Thus ſuppoſing A B to be an upper octave to *a c*, and therefore an uniſon to each half of it ſtopped at *b*.



If while *a b* is open, A B be ſtruck, the two halves of this other, that is *a b* and *b c* will both tremble; but the middle point will be at reſt; as will be eaſily perceived, by wrapping a bit of paper lightly about the *ſtring a c*, and removing it ſucceſſively from one end of the *ſtring* to the other. In like manner, if A B were an upper twelfth to *a c*, and conſequently, an uniſon to its three parts *a* 1, 1 2 and 2 *c*; if *a c* being open, A B be ſtruck, its three parts *a* 1, 1 2 and 2 *c* will ſeverally tremble; but the points 1 and 2 remain at reſt.

This, Dr. Wallis tells us, was firſt diſcovered by Mr. William Noble of Merton college; and after him by Mr. T. Pigot of Wadham college, without knowing that Mr. Noble had obſerved it before. To which we may add, that M. Sauveur, long afterwards, propoſed it in the Royal Academy at Paris, as his own diſcovery, as it is like enough it might: but upon his being informed, by ſome of the members then preſent, that Dr. Wallis had publiſhed it before, he immediately reſigned all the honour thereof.

STRINGENT—*Line of Defence* STRINGENT. See LINE.

STRING-HALT, a ſudden twitching or ſnatching up of an horſe's hinder leg, much higher than the other, as if he trod on needles; generally befalling only the beſt mettled horſes, and ranked in the number of ſpavins. See SPAVIN.

It frequently happens upon taking cold, after hard riding, or ſore labour; eſpecially upon waſhing him when too hot, which chills the blood, and ſo benumbs the ſinews, as to take away the ſenſe and feeling of the member.

To cure it, the middle vein is taken up above and underneath the thigh; under which is found a *ſtring*, which is to be cut away, and the part anointed with butter and ſalt.

STRIPED *ſtalk*, } See the articles { STALK.
STRIPED *velvet*, } See the articles { VELVET.

STROAKING, a method of cure which ſome people have given into, in certain diſeaſes, conſiſting in a mere application of the hand to the part affected, in the way of friction or rubbing. See EVIL.

That friction has very conſiderable uſes in many diſeaſes, is allowed. See FRICTION.

But, as to the particular efficacy of the *ſtroak* of particular perſons; we ſee little foundation for it in nature. Experience, indeed, ſeems to afford ſome; to which we do not well know what to object.

Mr. Thoreſby, in the *Philoſophical Tranſactions*, gives ſeveral remarkable inſtances of cures performed by that famous *ſtroaker*, Mr. Greatrix. Mr. Thoreſby's own brother being ſeized with a violent pain in his head and neck; Mr. Greatrix coming accidentally thither, gave immediate eaſe to his head, by only *ſtroaking* it with his hand: he then fell to *ſtroak* his back; whence the pain immediately fled to his right thigh: then he purſued it with his hand to the knee, from thence to the leg, ancle, foot, and at laſt to the great toe, where it grew more violent; but upon rubbing there, it vaniſhed.

Another relation of the ſame author having a great pain and weakneſs in her knees, which occaſioned a white ſwelling; that had hung to her ſeveral years, in ſpight of all means; the ſame *ſtroaker* rubbing both her knees, gave her preſent eaſe; the pain flying downwards from his hand, till he drove it out of the toes: after which the ſwelling ſoon went abſolutely away.

Mr. Thoreſby gives various other like inſtances, all among his acquaintance; and adds, that when Mr. Greatrix *ſtroaks* only for pains, he uſes nothing but his hand; but that for ulcers, or running ſores, he uſes ſpittle on his hand or fingers.

STROBILITES *vinum*. See VINUM.

STROPHE, in the Greek and Latin poetry, a ſtanza, or certain number of verſes including a perfect ſenſe; ſucceeded by another, conſiſting of the ſame number and meaſure of verſes, and in the ſame diſpoſition and rhythmus, called *antiſtrophe*. See ANTISTROPHE.

What the couplet is in ſongs, and the ſtanza in epic poetry; *ſtrophe* is in odes. See COUPLET and STANZA.

The word is Greek, ϛροφη, formed from ϛρεφω, I turn; becauſe at the end of the *ſtrophe*, the ſame meaſures returned again; or rather, as the term related principally to the muſic or dancing, becauſe at firſt coming in, the chorus, or the dancers turned to the left, and that meaſure ended, they turned back again to the right.

STRONG *place*,	See the articles	PLACE.
STRONG *pulſe*,		PULSE.

STRUCTURE, in architecture. See BUILDING.

STRUMÆ *, in medicine, tumours ariſing moſt uſually on the neck and throat; called alſo *ſcrophulæ*, and, popularly the *evil*, or *king's evil*. See EVIL.

* The word is Latin, formed as ſome will have it, *a ſtruendo*, becauſe they grow inſenſibly, *ſtructim aſſurgunt*.—The Greeks call them χοιραδες, ſores.

STRYKE. See the article STRIKE.

STUC, or STUCCO, in building, a compoſition of white marble pulveriſed and mixed with plaiſter or lime; the whole ſifted, and wrought up with water; to be uſed like common plaiſter. See PLAISTER, &c.

* This is what Pliny means by *marmoratum opus*; and *albarium opus*. See MOSAIC, &c.

Of this are made ſtatues, buſts, baſſo relievo's, and other ornaments of architecture. See STATUE, &c.

STUES. See the article STEWS.

STUFF, in commerce, a general name for all kinds of fabrics of gold, ſilver, ſilk, wool, hair, cotton or thread, manufactured on the loom; of which number are velvets, brocades, mohair, ſattins, taffetys, cloths, ſerges, &c. See CLOTH, VELVET, BROCADE, &c.

STUFF is particularly uſed, for certain kinds of ſlight woolen ſtuffs, uſed principally for linings and womens wear; as linſeys, rateens, &c.

Bleaching of STUFFS,	See	BLEACHING.
Croſs-grained STUFF,		CROSS-GRAINED.
Fulling of STUFFS,		FULLING.

STUM, the flower of wine ſet a working. See WINE, MUST, FERMENTATION, &c.

Hence to *ſtum*, is to put certain ingredients into ſick and decayed wine, in order to revive it, and make it briſk.

STUMBLING, in the manage, &c. a vice in a horſe, either *natural* or *accidental*.

The *natural* ariſes from the ſinews of the fore-legs being ſomewhat too ſtraight, which cramps the horſe, and prevents his uſing his legs with the neceſſary freedom and nimbleneſs.—The way to cure them, is to cut him of the cords, *i. e.* to make a ſlit on the top of his noſe, and with a cornet, to raiſe up the great ſinews, to cut them aſunder, and heal them up again with a proper ſalve.

The *accidental* ariſes from a ſplint, wind-gall, being founder'd, pricked, ſtubbed, gravelled, &c.

STUNG.—*Adder* STUNG. See the article ADDERSTUNG.

STUPA. See the article STUPHA.

STUPEFIERS, in medicine, the ſame as narcotics, and opiates. See NARCOTIC, and OPIATE.

STUPHA, STUPA, STUPE ſometimes denotes a fomentation. See FOMENTATION.

STUPOR, a numbneſs, occaſioned by any accidental bandage that ſtops the motion of the blood and nervous fluids, or by a decay in the nerves, as in a palſy, &c.

STYGIAN *liquors*; a term which ſome chymiſts apply to the corroſive acid ſpirits, as aqua regia, from their efficacy in deſtroying or diſſolving mixt bodies. See SPIRIT, AQUA *regia*, &c.

STYLE, ΣΤΥΛΟΣ, a kind of bodkin, wherewith the ancients wrote on plates of lead, or on wax, &c. and which is ſtill uſed to write on ivory leaves, and paper prepared for that purpoſe, &c. See WRITING.

This is the origin of all the other ſignifications of the ſame word in Engliſh.

STYLE, STYLUS, in chirurgery, denotes a long ſteel inſtrument, which goes diminiſhing to a point at one end, ſo as to be of a conical form; ſerving either to expand and open, or to be thruſt into a part.

The *ſtyle* is frequently uſed to be thruſt in red-hot, in cannulæ, and to be pulled out again, immediately: it is put in and drawn out ſucceſſively, as often as is neceſſary. In order to do this, it is good to have two *ſtyles*, to be put in alternately. See CANNULA.

STYLE, in dialling, denotes the gnomon or cock of a dial, raiſed on the plane thereof, to project a ſhadow. See GNOMON.

STYLE, STYLUS, in botany, the part riſing up in the middle of a flower, and bearing, by its lower part, on the rudiment of the fruit, or ſeed.

This, we more uſually call the *piſtil*: though Bradley makes a diſtinction; calling it *ſtyle* when it is only joined or contiguous to the ſeed or fruit; and *piſtil* when it contains the ſeed or fruit within it; as the ovary does the egg. See PISTIL.

STYLE, in matters of language, is a particular manner of delivering a man's thoughts in writing, agreeably to the rules of ſyntax; or, as F. Buffier more accurately defines it, the manner wherein the words conſtructed according to the laws of ſyntax, are arranged among themſelves, ſuitably to the genius of the language. See LANGUAGE.

This definition fixes the notion of *ſtyle*, to ſomething determinate, which before was very vague and arbitrary; whence many authors, even of note, confounded it with ſyntax itſelf. See SYNTAX.

From the definition, it appears, that *ſtyle* ſuppoſes or includes the ſyntax; and that ſyntax does not extend ſo far as *ſtyle*: for the ſyntax may be very juſt, where the *ſtyle* is wretched, were it only in this example: "God always "rewards with great fidelity, and greater liberality, the "juſt:" or this, "There is no body, who more than I "honour you."

The regimens and terminations of each word, are perfectly juſt in each of theſe phraſes: there is no fault then, in the ſyntax; but there is ſomething wanting in the arrangement of the words, to ſuit them to the genius of the language; there is a fault then, in the *ſtyle*.

Indeed, againſt what particular rule of grammar the fault is committed, it is ſcarce poſſible to determine preciſely; the taſte and uſe of a language being ſo exceedingly delicate and precarious. It is true, a fault in *ſtyle*, is not leſs a fault againſt grammar, than is a fault in *ſyntax*; only the former is leſs preciſe and palpable than the latter.

A very common error in grammarians, F. Buffier adds, is to confound two kinds of *ſtyles* in one: the *grammatical ſtyle*, or that directed by the rules of grammar; and the *perſonal ſtyle*, which depends leſs on the grammar, than on the perſon that writes; whether with regard to his particular taſte and genius, or with regard to his matter, or the kind or character of his work.

There are a great many differences between the two; the moſt eſſential is, that the one may be diverſified an infinite number of ways, and the other cannot.—In effect, the perſonal *ſtyle* is naturally variable, according to the different genius's, humours, and complexions.

It is the imagination that acts, that conceives, that propoſes, and that expreſſes things, according to its character, which is different in all men, and which is to be varied, according to the particular kind of the work.

Hence ariſes the gay, the grave, the florid, the jejune, the copious, the conciſe, the poetical, the epiſtolary, the burleſque *ſtyles*. See FLORID, BURLESQUE, &c.

Theſe perſonal *ſtyles* are all independant on the grammatical; and we have authors, who excel in the one, yet are miſerably defective in the other. The perſonal *ſtyle* is not under the direction of grammar; but of the imagination, or rather of rhetoric, that art having to do directly with our thoughts, as grammar with our words.

This, however, may be ſaid, that grammar is far from being able to vary the ſame words of a phraſe with equal perfection; and that generally there is but one way of delivering them in the taſte and genius of the language. Thus, the grammatical *ſtyle* is invariable in the following phraſe, and proportionably in others. "Death is a law, which all men "are to undergo." For you cannot well range the words otherwiſe than they here are, without going out of the bounds of grammar. Would you ſay, "A law is death, "which all men," &c. or "law is a death, which", &c. But in the perſonal *ſtyle*, where the imagination comes to be concerned, this ſentence might be varied infinite ways, according to the kind of the writing, whether oratorial, poetical, &c. As, "Death neither ſpares the prince nor the "peaſant. Death knocks equally at the monarch's palace "and the beggar's hut," &c.

STYLE, in oratory and poetry, is reſtrained wholly to what F. Buffier calls the *perſonal ſtyle*.

Language refers principally to the matter of the diſcourſe, *viz.* the words; elocution to the particular members or parts thereof; and *ſtyle* to the whole compoſition.

The maſters of the art, reduce the kinds of *ſtyle* to three; the *ſublime*, the *low*, and the *intermediate*, or *equable ſtyle*.

Sublime STYLE, is that conſiſting in magnificent words and ſentences; which by its noble boldneſs, raviſhes the hearers, and extorts admiration even from the unwilling. See SUBLIME.

Low or *ſimple* STYLE, is that ordinarily uſed in ſmaller and humbler works; as epiſtles, dialogues and common diſcourſe. The chief virtues hereof are perſpicuity, ſmoothneſs, eaſineſs, and cleanneſs; it muſt be very ſparing in the uſe of tropes and figures, eſpecially the more violent ones, as the proſopopœia, apoſtrophe, *&c.*

Intermediate, or *equable* STYLE, partakes of the magnificence of the *ſublime*, and the ſimplicity of the *low*. It neither riſes to the majeſty of the one in words and ſentences; nor yet is ſmartly pointed like the other: but, as Tully excellently expreſſes it, *Eſt ſtylus quidam interjectus, intermedius, & quaſi temperatus*; *nec acumine inferioris, nec fulmine utens ſuperioris, vicinus amborum, in neutro excellens, utriuſque particeps.*

The ſame author calls it the *florid* and *poliſh'd ſtyle*; it being in this that all the graces and beauties of language are principally to be uſed.

For the choice of *ſtyle*, in the general, the matter is to determine it. Such *ſtyle*, ſays Cicero, is to be choſen, as expreſſes great things magnificently, middle things moderately, and low things ſubtilly: but more particularly, as there are three branches of the duty of an orator, to teach, to delight, and to move; the ſimple *ſtyle* is uſed to teach, the middle to delight, and the ſublime to move.

Again, the ſimple or low *ſtyle* is fit for comedy, the ſublime for tragedy; and the middle for hiſtory.—Cæſar, it is true, rather uſed the ſimple than the intermediate *ſtyle*; but then he wrote commentaries, not a hiſtory, as is obſerved by Tully.

Again, the ſimple *ſtyle* is fit for bucolics, and eclogues; the intermediate *ſtyle* for georgics; and the ſublime for epics: which triple difference we eaſily deſcry in Virgil, though he ſometimes mixes them all in the *Æneid* itſelf, uſing the ſimple *ſtyle* in the fifth book, where he deſcribes games, and the intermediate in the beginning of the poem. Care is ſtill to be taken, that the *ſtyle* be not flat and dull, on pretence of being ſimple.

M. Boileau obſerves, that in all languages a mean thought expreſſed in noble terms, is better liked than the nobleſt thought expreſſed in mean terms: the reaſon he gives, is, that every body cannot judge of the force and juſtneſs of a thought: but ſcarce any body but perceives the meanneſs of words. The latter we find by our ſenſes, the former by our reaſon.

He adds, that the words in different languages do not always anſwer juſtly to one another; and that a noble Greek term cannot frequently be expreſſed in another language, but by a very mean one.

This we ſee in the words *aſinus* in Latin, *ane* in French, and *aſs* in Engliſh, which are the meaneſt imaginable, in thoſe three languages; yet the word expreſſing that animal, has nothing mean in it, either in Greek or Hebrew, but is uſed in the fineſt and nobleſt paſſages.

Add to this, that languages are exceedingly capricious on this head: a bull, a heifer, a goat, a boar, *&c.* may be uſed in the ſublimeſt paſſages, without debaſing the *ſtyle*; but a cow, a ſheep, a hog, a ſow, *&c.* would be intolerable. Shepherd and herdſman, are fine words; hog-keeper and cow-ward, which carry the ſame ideas, vicious to the laſt degree. The chief faults in *ſtyle* are, its being *tumid* and *ſwollen*; or *cold* and *puerile*, or *ſtiff*, or *looſe*, or *dry* and *jejune*.

A *tumid* STYLE is that immediately ſtuffed with big words and ſentences; ſuch are thoſe verſes of the emperor Nero, ridiculed by Perſius.

> *Torva mimalloneis implerunt cornua bombis*
> *Et raptum vitulo caput ablatura ſuperbo*
> *Baſſaris, & lyncem mœnas flexura corymbis*, &c.

Frigid, or *puerile* STYLE, is that which affects certain trifling ornaments, inſipid jeſts, remote and ſtrained alluſions, redundant deſcriptions, *&c.*—Such, *e. gr.* as, a centaur's riding himſelf: more golden than gold, *&c.*—Of this vice, that paſſage of Virgil ſeems guilty,

> *Num capti potuere capi? Num incenſa cremavit*
> *Troja viros?*

And that in Plutarch, and Dion Caſſius; "It was no "wonder Diana's temple ſhould be burnt the night Alex- "ander was born; as that goddeſs, attending at ſo great a "birth, could not be in the way to extinguiſh the flames." —And that in Plautus, where a perſon is repreſented ſo exceedingly covetous, that he would invoke heaven and earth, if he ſaw but a grain of ſmoke eſcape out of his cottage. See FRIGID.

Looſe STYLE, is that which wanting articles, numbers, *&c.* fluctuates here and there, not connected or joined together. This is a fault ſo frequent, eſpecially in young writers, that we ſhall ſpare giving inſtances of it.

Dry, *jejune* STYLE, is that which is deſtitute of ornament, ſpirit, *&c.* The ancients made a notable diſtinction of *ſtyles*, into *Laconic*, and *Aſiatic*.

Aſiatic STYLE, is that which is very diffuſive and prolix; or where abundance of words are uſed to expreſs a little matter: thus called, by the Greeks, from the people of Aſia, who affected ſuch redundances, in oppoſition to the

Laconic STYLE, which is diſtinguiſhed by its exceeding conciſeneſs; and by comprehending a deal of matter under a few words. See LACONICISM.

Such, *e. gr.* is that anſwer returned by the Lacedæmonians, to a long epiſtle of an enemy, threatning to deſtroy them with fire and ſword; ει, *ſi*, if; that is, do *if* you can: or, that returned by the ſame people to king Philip, demanding ſome extravagant thing of them, ȣ, *non*, no. Or that of Cleomenes, the Spartan general, to the ambaſſador of Samos; "As to what you have ſaid, the firſt part I do not "remember; the middle I do not underſtand; the laſt I do "not approve." Or that epiſtle of Archidamus to Elei, who were preparing war againſt him; Archidamus to the Eleans: "It is good to be quiet." Or that of Cæſar to the Roman ſenate, after his conquering Pharnaces, king of Pontus: *veni*, *vidi*, *vici*; I came, I ſaw, I conquered.

Marotic STYLE. See the article MAROTIC.

STYLE, in juriſprudence, the particular form, or manner of proceeding in each court or juriſdiction, agreeable to the rules and orders eſtabliſhed therein.—Thus we ſay, the *ſtyle* of the court of Rome, of the court of chancery, of parliament, of the privy council. See CHANCERY, *&c.*

STYLE, in muſic, denotes a peculiar manner of compoſing, or ſinging.

The *ſtyle* is, properly, the manner each perſon has, either of compoſing, of performing, or teaching; which is very different, both in reſpect of the different genius's of countries and nations, and of the different matters, places, times, ſubjects, expreſſions, *&c.*

Thus we ſay, the *ſtyle* of the Chariſſimi, of Lully, of Lambert; the *ſtyle* of the Italians, the French, the Spaniards, *&c.* The *ſtyle* of gay pieces of muſic, is very different from that of ſerious pieces: the *ſtyle* of church muſic very different from theatrical muſic. The *ſtyle* of the Italian compoſitions, is poignant, florid, expreſſive; that of the French compoſitions, natural, flowing, tender, *&c.*

Hence, the various epithets, given to diſtinguiſh theſe various characters; as, the ancient and modern *ſtyle*, the Italian and German *ſtyle*, the eccleſiaſtical and dramatic *ſtyle*, the gay, grave, majeſtic, natural, ſoft, familiar, gallant, low, ſublime *ſtyles*, &c.

STYLO *recitativo*, or *drammatico*, in the Italian muſic, is a *ſtyle* fit to expreſs the paſſions. See RECITATIVE.

STYLO *eccleſiaſtico* is full of majeſty, very grave, and fit to inſpire devotion.

STYLO *motectico*, is a various, rich, florid *ſtyle*, capable of all kinds of ornaments, and of conſequence, fit to expreſs various paſſions, particularly admiration, grief, *&c.*

STYLO *madrigaleſco*, is a *ſtyle* proper for love, and the other ſofter paſſions.

STYLO *hyperchematico*, is a *ſtyle* proper to excite mirth, joy, dancing, *&c.* and of conſequence, full of briſk, gay motions.

STYLO *ſymphoniaco*, is a *ſtyle* fit for inſtrumental muſic: but as each inſtrument has its particular effect, there are as many different ſymphoniacal *ſtyles*.—The *ſtyle* of violins, for inſtance, is uſually gay; that of flutes, melancholy and languiſhing, and that of trumpets, ſprightly, and animated.

STYLO *meliſmatico*, is a natural, artleſs *ſtyle*, which any body, almoſt, may ſing.

STYLO *phantaſtico*, is a free, eaſy, humorous manner of compoſition, far from all conſtraint, *&c.*

STYLO *choraico*, is the *ſtyle* proper for dancing; and is divided into as many different kinds, as there are dances; as the *ſtyle* of ſarabands, of minuets, of gavots, rigadoons, *&c.*

STYLE, in chronology, denotes a particular manner of accounting time, with reward to the retrenchment of ten days from the calendar, in the reformation made thereof under pope Gregory XIII.

Style is either *old* or *new*.

Old STYLE, is the Julian manner of computing, which obtains in England, and ſome other proteſtant ſtates, who refuſed to admit of the reformation. See JULIAN.

New STYLE, is the Gregorian manner, followed by the catholics, and others, in conſequence of that reformation. See GREGORIAN.

Hence, there has ariſen a difference of ten days, between the old *ſtyle* and the new, the latter being ſo much beforehand with the former: ſo that when the catholics, *e. gr.* reckoned the 21ſt of May, we only reckoned the 11th.

This difference of ten days, was increaſed in the year 1707, to eleven days, by reaſon that year was not the Biſſextile in the old *ſtyle*, but was in the new: ſo that the 10th day of the one, correſponded to the 21ſt of the other.

There are ſeveral places, however, where the new *ſtyle* has begun to obtain, even among proteſtants; and it is not unlikely, that the old *ſtyle* may, in time, dwindle quite away. —At the Diet of Ratiſbon in 1700, it was decreed, by the body of proteſtants of the empire, that eleven days ſhould be retrenched from the old *ſtyle*, to accommodate it for the future to the new. And the ſame regulation has ſince paſſed into Sweden and Denmark. England holds out, almoſt alone, for the old *ſtyle*. See CALENDAR.

STYLES *of hunting*. See the article HUNTING.

STYLET, STYLETTO, a ſmall, dangerous kind of poniard, which may be concealed in the hand; chiefly uſed in treacherous aſſaſſinations. See PONIARD.

The blade is uſually triangular, and ſo ſlender, that the wound it makes, is almoſt imperceptible.—The *ſtyletto* is ſtrictly prohibited in all well diſciplined ſtates.

STYLITES, ΣΤΥΛΙΤΗΣ, an appellation given to a kind of ſolitaries, who ſpend their life ſeated on the tops of columns, to be the better diſpoſed for meditation, *&c.* See HERMIT, ANACHORET, *&c.*

Of theſe, we find ſeveral mentioned in ancient writers, and even as low as the eleventh century. The founder of the order was St. Simeon *Stylites*, a famous anachoret in the fifth century; who firſt took up his abode on a column ſix cubits high; then on a ſecond of twelve cubits; a third of twenty two; and at laſt on another of thirty ſix, where he lived ſeveral years.

The extremities of theſe columns were only three foot in diameter, with a kind of rail or ledge about, that reached almoſt to the girdle, ſomewhat reſembling a pulpit. There was no lying down in it.—The faquirs, or devout people of the eaſt, imitate this extraordinary kind of life to this day. See FAQUIR.

STYLOIDES, in anatomy, an apophyſis of the os petroſum, thus called from its reſembling a ſtyle or ſtylet.—See *Tab. Anat.* (Oſteol.) *fig.* 13. *lit. e.* See alſo the articles GRAPHOIDES and PETROSUM *Os*.

STYLOGLOSSUS, in anatomy, a pair of muſcles, running off ſharp and fleſhy, from the proceſſus ſtyloides; whence deſcending obliquely forwards, they are inſerted into the root of the tongue.—They ſerve to pull the tongue up in the action of deglutition.

STYLOHYOIDEUS, in anatomy, a pair of muſcles ſpringing from the proceſſus ſtyloides, and inſerted into the baſis and horns of the os hyoides; which it draws laterally upwards.

STYLOPHARYNGEUS, in anatomy, a pair of muſcles ariſing round and fleſhy, from the proceſſus ſtyloides; and which, in its oblique deſcent becomes thicker, and is afterwards expanded on the back parts of the fauces.—It ſerves to draw up, and dilate the pharynx.

STYPTIC, ΣΤΥΠΤΙΚΟΝ, in medicine, *aſtringent*; a remedy that has the virtue of ſtopping blood, or of binding up the aperture of a wounded veſſel. See BLOOD and ASTRINGENT.

The ſervice, nettle, Solomon's ſeal, *&c.* are *ſtyptics*.—There are various *ſtyptic* waters, and powders of great efficacy, in moſt of which, vitriol is the principal ingredient. See VITRIOL and WATER.

The uſual *ſtyptic* water is made of colcothar calcined, or vitriol diſſolved with burnt allum, ſugar-candy, the urine of a young man, *&c.*

Dr. Colbatch's *ſtyptic* powder has been famed; though Mr. Cowper, in the *Philoſophical Tranſactions*, gives us a number of inſtances, wherein it was applied with very little or ill ſucceſs in human ſubjects: but he gives us others made in dogs, where it anſwered well.

M. Tournefort obſerves, from the analyſis he has made of *ſtyptic* and aſtringent plants, that acids and earths prevail therein; though ſome of them yield an urinous ſpirit. On this principle, he aſſerts, that their ſalt is analogous to allum, and that there is ſomewhat of ſal ammoniac in their texture.—But Chomel notes, that this does not hold univerſally.

STYRAX, ΣΤΥΡΑΞ, in medicine. See STORAX.

SUB, a Latin prepoſition ſignifying *under*, or *below*; frequently uſed, in compoſition, in our language.—*E. gr.*

SUB-BRIGADIER, an officer in the cavalry, who commands under the brigadier; aſſiſting him in the diſcharge of his functions, See BRIGADIER.

SUB-CHANTOR, on officer in the choir, who officiates in the abſence of the chantor, *&c.* See CHANTOR.

SUB-DEAN, a dignity in certain chapters beneath the dean. See DEAN.

SUB-PRIOR, a clauſtral officer, who aſſiſts the prior, *&c.* See PRIOR.

SUB-DEACON, an inferior miniſter, who anciently attended at the altar, prepared the ſacred veſſels, *&c.* and was inveſted with the firſt of the holy orders. See ORDER.

According to the canons, a perſon muſt be twenty two years of age, to be promoted to the order of *ſub-deacon*. See DEACON.

It is diſputed among the Romaniſts, whether the ſub-deaconhood be a ſacrament or not; in regard *ſub-deacons* are ordained without impoſition of hands, and that there is no mention made of them in ſcripture. Yet Bellarmin holds the affirmative ſide of the queſtion.

By the papal canons, a married man may be ordained *ſub-deacon*; upon condition his wife conſent to it, make a vow of continence, and ſhut herſelf up in a monaſtery.

SUBALTERN*, a ſubordinate officer, or one who diſcharges his poſt under the command, and direction of another. See OFFICER.

* The word is formed from the Latin, *ſub*, and *alter*, another.

Such are lieutenants, ſub-lieutenants, cornets and enſigns, who ſerve under the captain. See LIEUTENANT, *&c.*

We alſo ſay, *ſubaltern* courts, juriſdictions, *&c.*—Such are thoſe of inferior lords, with regard to the lord paramount; hundred courts, with regard to county courts, *&c.*

For the *ſubaltern* perſons in an epic poem, F. Boſſu obſerves, there is no neceſſity to be very ſtrict in preſerving every one's character. See CHARACTER and PERSON.

The patriarchs, M. St. Evremont tells us, had ſeveral wives, who did not all hold the ſame rank; but there were ſeveral *ſubaltern* to the principal wife.

SUBALTERN *genus*. See the article GENUS.

SUBCLAVIAN, SUBCLAVIUS, is applied to any thing under the arm-pit, or ſhoulder; whether artery, nerve, vein, or muſcle.

SUBCLAVIUS, more particularly denotes a muſcle which ariſes from the lower ſide of the clavicula, near the acromium; and deſcends obliquely to be inſerted into the upper part of the firſt rib, near the ſternum.—See *Tab. Anat.* (Myol.) *fig.* 2. *n.* 9.

SUBCONTRARY *poſition*, in geometry, is when two ſimilar triangles are ſo placed, as to have one common angle, V, (*Tab. Geom. fig.* 44.) at the vertex, and yet their baſes not parallel.

If the ſcalenous cone B V D be ſo cut by the plane C A, as that the angle at C=D; the cone is then ſaid to be cut *ſubcontrarily* to its baſe B D.

SUBCUTANEUS, in anatomy, a thin membranous muſcle, running under the ſkin, called alſo *quadratus genæ*, and *platyſma myoides*. See QUADRATUS.

It ariſes with a pretty broad origin, from the hind part of the neck, and from the pectoral muſcle below the clavicle. It adheres firmly to the panniculus carnoſus; from which it is not ſeparated without difficulty, and therefore was not anciently diſtinguiſhed from it; and is inſerted, obliquely, on each ſide, into the lower jaw-bone near the ſkin, lips, and ſometimes the bottom of the noſe; all which parts it draws downwards and a-wry.

A convulſion herein is called a *ſpaſmus cynicus*.—In ſome perſons, it reaches to the ears, and in others not; which is the reaſon ſome folks have a faculty of moving their ears, which others want. See EAR.

SUBDUCTION, in arithmetic, the ſame as ſubſtraction. See SUBSTRACTION.

SUBDUPLE *ratio*, is when any number or quantity is contained in another, twice.—Thus 3 is ſaid to be *ſubduple* of 6, as 6 is duple of 3. See RATIO and DUPLE.

SUBJECT, SUBDITUS, a perſon under the rule and dominion of a ſovereign prince, or ſtate. See GOVERNMENT, *&c.*

Of *ſubjects*, ſome are ſo by birth, others by acts of naturalization. See NATIVE, ALIEN, DENIZEN, NATURALIZATION, *&c.*

Anciently the lords called, abuſively, thoſe who held lands or fees of them, or owed them any homage, *ſubjects*. See VASSAL.

SUBJECT, SUBJECTUM, is alſo uſed for the matter of an art, or ſcience; or that which it conſiders, or whereon it is employed.—Thus the human body is the *ſubject* of medicine. See OBJECT.

In this ſenſe, anatomiſts call the body they are diſſecting, and whereon they read lectures, their *ſubject*. See BODY, *&c.*

The *ſubject* of logic, is thinking, or reaſoning: but more particularly, in a ſyllogiſm, one of the terms of a propoſition is called the *ſubject*, and the other the *attribute*. See PROPOSITION, ATTRIBUTE, *&c.*

In poetry, the *ſubject* is the matter treated of; the event related, or ſet to view, and inriched with ornaments.

SUBJECT alſo denotes the ſubſtance or matter to which an accident is added. See ACCIDENT.

It is a maxim, that two contraries can never ſubſiſt in the ſame *ſubject*.

SUBJECTIVE *part*. See the article PART.

SUBJUNCTIVE, in grammar, the fourth mood, or manner of conjugating verbs; thus called, becauſe uſually ſubjoined to ſome other verb, or at leaſt to ſome other particle, as, *If I loved: though this were true*, &c. See MOOD.

The Greek is almoſt the only language that properly has any *ſubjunctive* mood; though the French, Spaniſh, and Italian, have ſome ſhew thereof.—In all other languages, the ſame inflexions ſerve for the optative, and the *ſubjunctive* moods: for which reaſon, the *ſubjunctive* mood might be retrenched from the Latin, and thoſe other grammars; it not being the different ways of ſignifying, which may be very much multiplied, but the different inflexions, that conſtitute the different moods. See OPTATIVE, *&c.*

SUBLAPSARY, or *Infralapſary*, in theology, a term applied to ſuch as hold, that God having foreſeen the fall of

Adam, and in conſequence thereof, the loſs of mankind; reſolved to give a grace ſufficient for ſalvation to ſome, and to refuſe it to others. See GRACE, and SUPRALAPSARY.

Sublapſary is uſed as ſynonymous with *infralapſary*; in oppoſition to *ſupralapſary*. See INFRALAPSARY, and SUPRALAPSARY.

SUBLIMATE, a chymical preparation, the baſis whereof is mercury, or quickſilver. See FLOWERS, and SUBLIMATION.

There are two kinds of *ſublimate*, *corroſive* and *ſweet*; which ſee under the article MERCURY.

Refining of gold by SUBLIMATE. See REFINING.

SUBLIMATION, SUBLIMATIO, in chymiſtry, an operation which differs little from diſtillation, excepting, that in diſtillation, only the fluid parts of bodies are raiſed; but in *ſublimation*, the ſolid and dry: and that the matter to be diſtilled may be either ſolid or fluid; but *ſublimation* is concerned only about ſolid ſubſtances. See DISTILLATION.

There is alſo another difference, namely, that rarefaction, which is of very great uſe in diſtillation, has hardly any room in *ſublimation*; for the ſubſtances which are to be ſublimed, being ſolid, are incapable of rarefaction; and ſo it is only impulſe can raiſe them.

However, it may not be improper to inquire a little more nicely into the reaſon of ſuch a diverſity in the elevation of bodies; why ſome do aſcend with a gentle heat, and others are not to be raiſed by the moſt vehement fire: and ſuch an enquiry will more properly come in here, becauſe this head contains all the buſineſs of volatility and fixation. See VOLATILITY, and FIXITY.

The cauſe of this elevation, and aſcent in the particles of bodies, is to be aſcribed to the fire; not only on account of impulſe, but of another property the fire has; namely, to inſinuate itſelf into all the interſtices of theſe bodies, and thereby break the coheſion of their parts, ſo that at laſt they become divided into very ſmall parts, if not into the ſmalleſt that art can reduce them into. See PARTICLE.

Particles thus ſeparated and divided, loſe much of their gravity. For the gravity of the ſame particle decreaſes in the ſame proportion as the cube of the diameter is leſſened. Suppoſe, therefore, a body, whoſe diameter is 12: if, then, its diameter be made leſs by 1, *viz.* 11, the gravity of that body will be only $9\frac{1}{4}$, or thereabouts: a body, therefore, by being divided into very minute corpuſcles, becomes eaſy to be ſublimed.

Add, that the ſurface of a body decreaſes in a very different manner from gravity, only as the ſquare of the diameter is leſſened. Where the gravity decreaſes, in ſuch a ſeries, as is expreſſed by the numbers 1728, 1331, 1000, the diminution of the ſurface will obſerve this proportion, *viz.* 144, 121, 100; and when, upon reducing the diameter to 6, the gravity becomes leſs than 2, the ſurface will ſtill amount to 36.

How much this contributes to a quick aſcent, will appear from the *ſublimation* of camphire, benzoin, and arſenic; whoſe particles, as they cohere but looſely, are, for that reaſon, diffuſed into a larger ſurface; upon which account they are the eaſieſt to be ſublimed of any: nay, theſe ſolid particles, upon account of their ſurface, will ſooner aſcend than ſome fluids.

So flower of ſulphur riſes ſooner than oil, not only than that of vitriol, but any other, though ever ſo light.

By this contrivance of nature, *viz.* that the gravity of bodies decreaſes in a triplicate, but their ſurface in a duplicate proportion of their diameters; it comes to paſs, that bodies, which have a very different gravity, may be raiſed with the ſame force. Thus the ſalts of animals, as of hartshorn, human blood, of vipers, *&c.* being compoſed of very minute corpuſcles, as is found by experience, in diſtilling them, do eaſily aſcend; becauſe the ſurface in them is not leſſened ſo much as the gravity is; and the ſalts of vegetables, as of tartar, balſam, *&c.* which are of a more cloſe texture, by reaſon of their larger ſurfaces, are without much difficulty raiſed.

The corpuſcles alſo of minerals and metals, though very compact and heavy, do, in ſome meaſure, give way to the fire, and are capable of being ſublimed. In all theſe inſtances, the breadth of the ſurface, which expoſes the particles more to the impetus of the fire, is the reaſon why they are raiſed with as much eaſe, as if their gravity had been leſſened, by diminiſhing their ſurface: ſo that particles, though ever ſo different in weight, may be equally raiſed by the ſame degree of heat, if the proportion of their gravity be reciprocal to that of their ſurfaces.

SUBLIME, in diſcourſe, ſomething extraordinary, and ſurprizing, which ſtrikes the ſoul, and makes a ſentiment or compoſition raviſh and tranſport.

This is what Longinus, who has wrote expreſly on the ſubject, means by *ſublime.*—The definition, indeed, is not his, but M. Boileau's; for the author writing his book after another of Cecilius on the ſame ſubject, employed almoſt wholly in ſhewing what the *ſublime* is, declined defining it, as ſuppoſing it well known.

By the definition, it may appear, that the *ſublime* is a very different thing from what the orators call the *ſublime ſtyle.* See STYLE.

The *ſublime* ſtyle neceſſarily requires big and magnificent words; but the *ſublime* may be found in a ſingle thought, a ſingle figure, a ſingle turn of words. A thing may be in the *ſublime* ſtyle, and yet not be *ſublime*, i. e. have nothing extraordinary and ſurprizing.

For inſtance: "The almighty Author of the univerſe, with "a ſingle word, created light." This, now, is in the *ſublime* ſtyle, yet it is not *ſublime*, there being nothing extraordinary in it, which another perſon might not eaſily hit on. But in "God ſaid, let there be light, and there was light;" ſo extraordinary a turn of expreſſion, which ſhews the obedience of the creature to the orders of his creator, is truly *ſublime*, and has ſomething more in it than human.

Longinus makes five ſources of the *ſublime*. The firſt, a certain elevation of mind, which makes us think happily. The ſecond, is the pathetic, or that natural vehemence and enthuſiaſm, which ſtrikes and moves us: theſe two are owing almoſt wholly to nature, and muſt be born with us; whereas the reſt depend, partly, on art. The third is, the turning of figures in a certain manner, both thoſe of thoughts and of ſpeech. The fourth, nobleneſs of expreſſion, which conſiſts of two parts, the choice of words, and the elegant, figurative diction. The fifth, which includes all the reſt, is the compoſition and arrangement of the words in all their magnificence and dignity. See PATHETIC, *&c.*

SUBLIME *geometry.* See the article GEOMETRY.

SUBLIMING *pots.* See the article ALUDELS.

SUBLINGUAL *glands*, in anatomy, two glands under the tongue, placed one on each ſide thereof. See TONGUE.

Theſe, called alſo *hypoglottides*, filtrate a ſerous humour, of the nature of ſaliva, which they diſcharge by little ducts near the gums, into the mouth. See HYPOGLOTTIDES.

SUBMULTIPLE, in geometry, *&c.*—A *ſubmultiple* number or quantity, is that which is contained a certain number of times in another; and which therefore repeated a certain number of times, becomes exactly equal thereto.

Thus 3 is a *ſubmultiple* of 21.—In which ſenſe, a *ſubmultiple* coincides with an aliquot part. See ALIQUOT *part.*

SUBMULTIPLE *ratio*, is that between the quantity contained, and the quantity containing.—Thus the ratio of 3 to 21 is *ſubmultiple*.

In both caſes, *ſubmultiple* is the reverſe of multiple: 21, *e. gr.* being a multiple of 3, and the ratio of 21 to 3 a multiple ratio. See MULTIPLE.

SUBMULTIPLE *ſubſuperparticular*. }
SUBMULTIPLE *ſubſuperbipartiens*. } See RATIO.

SUBNORMAL, in geometry, a line which determines the point in the axis of a curve, where a normal or perpendicular, raiſed from the point of contact of a tangent to the curve, cuts the axis. See CURVE.

Or, the *ſubnormal* is a line, which determines the point wherein the axis is cut by a line falling perpendicularly on the tangent in the point of the contact.

Thus T M (*Tab. Conics*, fig. 19.) being a tangent to a curve in M; and M R a normal or perpendicular to the tangent; the line P R intercepted between the ſemiordinate P M and the normal M R, is called the *ſubnormal.*

Hence, 1°, In a parabola, as A M, *&c.* the *ſubnormal* P R is to the ſemiordinate P M, as P M is to P T, and M R to T M. 2°. In the parabola, the *ſubnormal* P R is ſubduple the parameter; and, conſequently, an invariable quantity.

SUBORDINATED, and SUBORDINATING *affections.* See AFFECTIONS.

SUBORDINATION, a relative term, expreſſing the degree of inferiority between one thing and another.

There is a ſeries of *ſubordinations* running throughout all nature. In the church there are ſeveral degrees of *ſubordination*, as of deacons to prieſts; prieſts to prelates, *&c.*—The like are obſervable in the ſecular ſtate; in offices of war, juſtice, *&c.* and even

In the ſciences, trigonometry is *ſubordinate* to geometry; and in the virtues, abſtinence and chaſtity are *ſubordinate* to temperance: in muſic, ſome call the plagal tones, *ſubordinate tones.* See TONE.

SUBORNATION, SUBORNATIO, a ſecret or underhand preparing, inſtructing or bringing in, a falſe witneſs; or corrupting or alluring a perſon to do ſuch a falſe act. See WITNESS, EVIDENCE, *&c.*

Hence, the *ſubornation* of perjury, mentioned in the act of general pardon, 12 Car. II. c. 8. is the alluring or diſpoſing to perjury. See PERJURY.

SUBPŒNA *, a writ, whereby any perſon under the degree of peerage, is called to appear in chancery, in caſes where the common law hath made no proviſion.

* The name is taken from the words in the writ, which charge the party ſummoned to appear at the day and place aſſigned, *ſub pæna centum librarum*, on the penalty of an hundred pounds.

The peers, in the like caſes, are called by the lord chancellor's letter, giving notice of the ſuit intended againſt them, and requiring them to appear.

There is alſo a *ſubpœna ad teſtificandum*, for ſummoning of witneſſes in other courts, as well as in chancery.

There is alſo a *ſubpœna* in the exchequer, as well in the court of equity there, as in the office of pleas.

SUBPOPLITÆUS, in anatomy. See Poplitæus.

SUBREPTION *, Subreptio, the act of obtaining a favour from a ſuperior by ſurprize, or a falſe repreſentation. See Subreptitious.

* The word is formed from the Latin, *ſub*, under, and *repo*, I creep.

Subreption differs from *obreption*, in that the latter denotes a falſe expreſſion of the quality of a thing, or fact, &c. And *ſubreption*, a want of expreſſion, or a fraudulent reticency or concealment of a thing, which would have rendered the obtaining of the favour more difficult. See Obreptitious.

SUBREPTITIOUS or Surreptitious, a term applied to a letter, licence, patent, or other act, fraudulently obtained of a ſuperior, by concealing ſome truth, which had it been known, would have prevented the conceſſion or grant. See Subreption.

The benefit of letters, licences, &c. is forfeited, when they are found contrary to the informations given; they being then reputed *ſubreptitious*.

Papal bulls and ſignatures are null and *ſubreptitious*, when the true ſtate of the benefice, the manner of the vacancy, and other neceſſary matters, are not juſtly ſignified to the pope.

SUBROGATION, or Surrogation, in the civil law, the act of ſubſtituting a perſon in the place, and intitling him to the rights of another. See Surrogate and Substitution.

In its general ſenſe, *ſubrogation* implies a ſucceſſion of any kind; whether of a perſon to a perſon, or of a perſon to a thing.

There are two kinds of *ſubrogation*; the one *conventional*, the other *legal*.

Conventional Subrogation, is a contract, whereby a creditor transfers his debt, with all appurtenances thereof, to the profit of a third perſon.

Legal Subrogation, is that which the law makes in favour of a perſon, who diſcharges an antecedent creditor; in which caſe there is a legal tranſlation of all rights of the ancient creditor to the perſon of the new one.

This the civilians more uſually call *ſucceſſion*, as being wholly the work of the law, and to diſtinguiſh it from the conventional *ſubrogation*, which they alſo call *ceſſion*. See Cession.

—The word is formed from the Latin, *ſubrogatio*, of the verb *rogare*, which, among the ancient Romans, ſignified to aſk, to interrogate; whence it was, that they called the laws themſelves *rogationes*, in regard the people made them, upon being aſked by the magiſtrates.—And as laws made by the people could not be changed without their conſent, and without being aſked a-new; if they thought good to have the law wholly aboliſhed, *lex abrogabatur*; if only a part of it were to be aboliſhed, *lex derogabatur*; and if any clauſe or amendment were added to it, *lex ſubrogabatur*.

The new magiſtrates were alſo *ſubrogated* in the place of the old ones; for during the time of the republic, no magiſtrate could be, but by conſent of the people, nor, of conſequence, but by law; ſince whatever the people thought good, was law.—This is what occaſioned Salmaſius to ſay, that *ſubrogare* and *ſubſtituere per legem*, were reciprocals.

SUBSCAPULARIS, in anatomy, a muſcle ariſing from the baſis and ſide of the ſcapula; and, ſpreading itſelf under the whole convex, or under ſide of it, is inſerted by a ſemicircular tendon, into the neck of the os humeri, and draws it down to the ſide of the trunk.—See *Tab. Anat.* (Myol.) fig. 1. n. 16.

SUBSCRIPTION, the ſignature put at the bottom of a letter, writing, or inſtrument. See Signature.

In church hiſtory, we meet with inſtances of *ſubſcriptions* wrote in the blood of Jeſus Chriſt. Nicetas, in the life of Ignatius, ſpeaking of the *ſubſcriptions* made at the council, wherein that patriarch was depoſed, ſays, they *ſubſcribed*, not with common ink, but what ſtrikes a man with horror, with a pen dipped in the blood of Chriſt. The hiſtorian Theophanes, tells us, that pope Theodore mixed the blood of Chriſt with the ink, wherein he wrote the depoſition of Pyrrhus.

Subscription, in the Engliſh commerce, is uſed for the ſhare, or intereſt, which particular perſons take in a public ſtock, or a trading company, by writing their names, and the ſhares they require, in the books or regiſter thereof. See Company, Bubble, Fund, &c.

The French have likewiſe adopted the word *ſubſcription*; uſing it in ſpeaking of the actions of their India company.

A *ſubſcription* differs from an *action*; in that the firſt is properly only an action begun, or an engagement, by making the firſt payment, to acquit the reſt in the time limited; and that the other is the whole action, performed in all its parts. See Action.

Subscription, in the commerce of books, ſignifies an engagement to take a certain number of copies of a book going to be printed; and a reciprocal obligation of the bookſeller or publiſher, to deliver the ſaid copies, on certain terms.

The uſual conditions of theſe *ſubſcriptions* are, on the part of the bookſeller, to afford the books cheaper to a ſubſcriber than to another, by one third or one fourth of the price; and on the part of the latter, to advance half the money in hand, and to pay the reſt on the delivery of the copies: an agreement equally advantageous to the one and the other; as the bookſeller is hereby furniſhed with money to carry on works, which would otherwiſe be above his ſtock; and the ſubſcriber, receives, as it were, intereſt for his money, by the moderate price the book ſtands him in.

Subſcriptions had their riſe in England, and it is but very lately that they are got into other countries. They were firſt ſet on foot, in the middle of the laſt century, for the printing of Walton's *Polyglott bible*, which is the firſt book ever printed by way of *ſubſcription*.

From England, they paſſed a few years ago into Holland, and are juſt now introduced into France. F. Montfaucon's *collection of antiquities*, is the firſt book there publiſhed by *ſubſcriptions*, which were ſo very numerous, that great numbers were refuſed. The ſame method has been ſince propoſed, for the publication of S. Chryſoſtom by the Benedictines; but not with equal ſucceſs.

All the other books ſince printed in France by *ſubſcription*, are M. Dacier's *Tranſlation of Plutarch's lives*; the *Deſcription of Verſailles*, and F. Daniel's *Hiſtory of the French militia*.

In England, they are become exceedingly frequent; and their frequency has rendered them liable to ſome abuſes, which begin to diſcredit them.

SUBSEQUENT, ſomething that comes after another, particularly with regard to the order of time. See Posterior, &c.

When two feſtivals happen on the ſame day, the principal one is celebrated; and the other transferred to the *ſubſequent* day, *i. e.* to the morrow.

SUBSESQUIALTERATE. See the article Ratio.

SUBSIDY, Subsidium, in law, any aid, tax, or tribute granted, by authority of parliament, to the king, on preſſing occaſions of the ſtate; levied on the ſubjects, according to their ſeveral abilities, or the yearly produce of their lands, goods, &c. See Tax.

Such is the land tax, or royal aid, as it is called; which is uſually at the rate of two, three, or four ſhillings in the pound, for lands; and of two ſhillings and eight pence for goods, and perſonal eſtate, when of four ſhillings for lands. See Aid, &c.

The ancient Saxon kings had no *ſubſidies* collected after the manner of ours; but in lieu thereof, had ſeveral cuſtoms, whereby they levied money or perſonal ſervice on the people, for the repairing of cities, caſtles, bridges, military expeditions, &c. which they called *burgbote*, *brigbote*, *herefare*, *heregeld*, &c.

But upon the land's becoming oppreſſed by the Danes, king Ethelred in the year 1007, agreed to pay them yearly 10000*l.* for redemption of peace; which ſum was afterwards increaſed to 36000*l.* and at length to 48000*l.* which was called *Danegeld*, and was levied on land; each hide, or ploughland, that of the church only excepted, being ceſſed 12 *d.* See Danegeld.

Hence the tribute came to be called *hidage*, a name that afterwards became common to all taxes and *ſubſidies* impoſed on lands; as thoſe on cattle were called *hornegeld*. See Hidage.

Both theſe the Normans ſometimes called *taxes*, from the Greek τάξις, order; ſometimes from their own language, *taillage*; and ſometimes, according to the cuſtom beyond-ſea, *ſubſidia*, and *auxilia*. See Auxilium.

After the conqueſt, theſe *ſubſidies* ſeem to have been granted differently from what they now are; as every ninth lamb, every ninth fleece, every ninth ſheep, &c. Sometimes the rate was every tenth, and ſometimes every fifteenth, &c. See Fifteenth, &c.

In France, the king alone, by his own authority, impoſes *ſubſidies* on his people, at his own diſcretion. What Grotius ſays, that thoſe who pay *ſubſidies* to other ſovereigns, to ingage them in their defence againſt powerful enemies, by ſo doing, acknowledge their own weakneſs, and that ſuch an acknowledgment diminiſhes ſomewhat of their dignity; muſt be underſtood of ſuch ſtates as are too weak to defend themſelves, and who, in reſpect hereof, render themſelves in ſome meaſure, tributary; not of ſuch as ſubſiſting by their own ſtrength, give *ſubſidies* to their weaker neighbours, to prevent their being over-run by others.

Such, *e. gr.* as the kings of England and France, are with regard to Sweden and ſeveral other princes; to whom they generally grant *ſubſidies* in the treaties they conclude with them.

In the liſt of Engliſh duties, or impoſitions, are divers kinds of *ſubſidies:* old *ſubſidy*, additional impoſition to the old *ſubſidy*, new *ſubſidy*, third *ſubſidy*, two-thirds *ſubſidy*. See Duty, Custom, &c.

SUBSTANCE, Substantia, ſomething that we conceive to ſubſiſt of itſelf, independantly of any created being, or any particular mode or accident. See Ens.

Thus a piece of wax is a *ſubſtance*; becauſe we can conceive it as ſubſiſting of itſelf, and of its own nature, without any dependance on any other created nature, or without any particular mode, form, colour, *&c.* See MODE.

Spinoſa maintains, that there is but one only *ſubſtance* in nature, whereof all created things are ſo many different modifications; and thus he makes the ſoul of the ſame *ſubſtance* with the body. The whole univerſe, according to him, is but one *ſubſtance*; which *ſubſtance*, he holds endowed with an infinity of attributes, in the number of which are thinking and extenſion. All bodies are modifications of this *ſubſtance*, conſidered as extended; and all ſpirits modifications of the ſame *ſubſtance*, conſidered as thinking. See BODY and THINKING. See alſo SPINOSISM.

Mr. Lock's philoſophy of *ſubſtances*, is more orthodox: our ideas of *ſubſtances*, that great author obſerves, are only ſuch combinations of ſimple ideas, as are taken to repreſent diſtinct things, ſubſiſting by themſelves; in which the confuſed idea of *ſubſtance*, is always the chief. Thus the combination of the ideas of a certain figure, with the powers of motion, thought, and reaſoning, joined to *ſubſtance*, make the ordinary idea of man; and thus the mind obſerving ſeveral ſimple ideas to go conſtantly together, which being preſumed to belong to one thing, or to be united in one ſubject, are called by one name; which we are apt, afterwards, to talk of and conſider as one ſimple idea. See IDEA.

We imagine theſe ſimple ideas do not ſubſiſt by themſelves; but ſuppoſe ſome ſubſtratum, wherein they ſubſiſt, which we call *ſubſtance*.

The idea of pure *ſubſtance*, is nothing but the ſuppoſed, yet unknown ſupport of thoſe qualities which are capable of producing ſimple ideas in us. See QUALITY.

The ideas of particular *ſubſtances* are compoſed out of this obſcure and general idea of *ſubſtance*, together with ſuch combinations of ſimple ideas, as are obſerved to exiſt together, and ſuppoſed to flow from the internal conſtitution, and unknown eſſence of that *ſubſtance*.

Thus we come by the ideas of man, horſe, gold, *&c.* Thus the ſenſible qualities of iron, or a diamond, make the complex idea of thoſe *ſubſtances*, which a ſmith, or a jeweller, commonly knows better than a philoſopher. See DEFINITION.

The ſame happens concerning the operations of the mind, *viz.* thinking, reaſoning, *&c.* which we concluding not to ſubſiſt by themſelves, nor apprehending how they can belong to body, or be produced by it, we think them the actions of ſome other *ſubſtance*, which we call *ſpirit*; of whoſe *ſubſtance* or nature we have as clear a notion, as of that of body; the one being but the ſuppoſed ſubſtratum of the ſimple ideas we have from without; as the other of thoſe operations, which we experiment in ourſelves within: ſo that the idea of corporeal *ſubſtance* in matter, is as remote from our conceptions, as that of ſpiritual *ſubſtance*.

Hence we may conclude, that he has the perfect idea of any particular *ſubſtance*, who has collected moſt of thoſe ſimple ideas which exiſt in it; among which, we are to reckon its active powers and paſſive capacities, though not ſtrictly ſimple ideas.

Subſtances are generally diſtinguiſhed by ſecondary qualities; for our ſenſes fail us in the diſcovery of primary ones, as the bulk, figure, texture, *&c.* of the minute parts of bodies, on which their real conſtitutions and differences depend. See PARTICLE.—And ſecondary qualities are nothing but powers, with relation to our ſenſes.

The ideas that make our complex ones of corporeal *ſubſtances*, are of three ſorts: Firſt, the ideas of primary qualities of things, which are diſcovered by our ſenſes; ſuch as bulk, figure, motion, *&c.* Secondly, the ſenſible ſecondary qualities, which are nothing but powers to produce ſeveral ideas in us, by our ſenſes. Thirdly, the aptneſs we conſider in any *ſubſtance*, to cauſe or receive ſuch alterations in its primary qualities, as that the *ſubſtance* ſo altered, ſhould produce in us different ideas from what it did before.

Beſides the complex ideas we have of material *ſubſtances*, by the ſimple ideas taken from the operations of our own minds, which we experiment in ourſelves, as thinking, underſtanding, willing, knowing, *&c.* co-exiſting in the ſame *ſubſtance*; we are able to frame the complex idea of a ſpirit: and this idea of an immaterial *ſubſtance*, is as clear, as that we have of a material. See SPIRIT.

By joining theſe with *ſubſtance*, of which we have no diſtinct idea, we have the idea of ſpirit: and by putting together the ideas of coherent ſolid parts, and a power of being moved, joined with *ſubſtance*, of which likewiſe we have no poſitive idea; we have the idea of matter. See MATTER.

Further, there are other ideas of *ſubſtances*, which may be called *collective*, which are made up of any particular *ſubſtances*, conſidered as united into one idea; as a troop, army, *&c.* which the mind does by its power of compoſition. Theſe collective ideas, are but the artificial draughts of the mind, bringing things remote, and independent, into one view, the better to contemplate and diſcourſe of them united into one conception, and ſignified by one name. For there are no things ſo remote, which the mind cannot, by this art of compoſition, bring into one idea; as is viſible in that ſignified by the name *univerſe*. See COMPOSITION.

Such is the generally received doctrine of *ſubſtance*: but Bp. Berkeley, in his *Principles of human knowledge*, and Mr. Collier, in his *Clavis Univerſalis*, have made great refinements thereon. See BODY, EXISTENCE and EXTERNAL.

SUBSTANTIAL, or SUBSTANCIAL, in the ſchools, ſomething belonging to the nature of *ſubſtance*. See SUBSTANCE and CONSUBSTANTIAL.

It is generally diſputed, whether or no there be ſuch things as *ſubſtantial* forms? i. e. forms independant of all matter; or forms that are ſubſtances themſelves. See FORM.

SUBSTANTIAL is alſo uſed in the ſame ſenſe with *eſſential*; in oppoſition to *accidental*: in which relation it gives room for abundance of diſtinguo's. See ESSENTIAL and ACCIDENTAL.

SUBSTANTIVE, in grammar, is a quality aſcribed to a noun or name, when the object it denotes is conſidered ſimply, and in itſelf, without any regard to its qualities. See NOUN.

When the object is conſidered, as clothed with certain qualities, the noun is ſaid to be *adjective*. See ADJECTIVE.

For a more palpable criterion; all nouns, to which one cannot add the word *thing*, are *ſubſtantives*; and all thoſe to which *thing* may be added, are adjectives.

F. Buffier obſerves, it is a common miſtake in grammarians, to define a noun *ſubſtantive*, to be that which denotes a ſubſtance.—The miſtake ariſes hence, that finding all ſubſtances expreſſed by *ſubſtantives*, they have called all kinds of nouns, *ſubſtantives*. But it does not follow, that all nouns deſign ſubſtances; witneſs the nouns *accident*, *lightneſs*, &c. which are far from expreſſing ſubſtances, and yet are true nouns *ſubſtantives*.—Perhaps grammarians mean nothing here by *ſubſtance*, but the ſubject ſpoke of: if ſo, the definition is not amiſs.

Nouns *ſubſtantives* ſometimes become adjectives; and nouns adjectives become *ſubſtantives*. In effect, the nature of the adjective being to expreſs the quality of an object; if that quality be the object itſelf ſpoke of, then, on the foot of our definition, it becomes a *ſubſtantive*.—If, I ſay, a *good prince*, the word *good* is apparently an adjective, becauſe it repreſents the prince as clothed with the quality of goodneſs. But if I ſay, the *good* ought to be preferred to the bad; it is evident, *good* is the ſubject ſpoke of, and, conſequently, a *ſubſtantive*. Indeed, cuſtom does not allow us to uſe all adjectives indifferently, as *ſubſtantives*; nor all *ſubſtantives*, as adjectives. The laws obſerved herein are as follow:

All nouns either ſignify an individual, as Socrates, Alexander, *&c.* or a ſpecies; as man, horſe, *&c.* or an eſſential quality, as rational, material, *&c.* or an accidental one, as black, white, good, fair, *&c.* or a dignity, office, art, *&c.* as king, preſident, philoſopher, *&c.*

Thus have we four kinds of nouns; whereof the firſt is very rarely taken adjectively; for as they ſignify individuals or particular beings, they can ſcarce be applied to any thing but the thing they properly ſignify: yet we have ſometimes known the name of Cato taken adjectively; as, "this is to be "Cato, indeed." Nor does Malherbe ſcruple to ſay in French "plus Mars que le Mars de la Thrace." Add that proper names are ſometimes converted into the name of dignities, *&c.* as Cæſar, Auguſtus, *&c.* In which caſe, they may be conſidered, in the ſame light, as nouns of the fourth kind.—Nouns of the ſecond kind, are alſo ſometimes taken adjectively, as "he is much a man," *&c.* The third kind are adjectives of themſelves. For the fourth kind, all grammarians rank them among *ſubſtantives*; excepting F. Buffier, who will have them to be adjectives; or, to uſe his own term, modificatives. Be that as it will, they are frequently uſed adjectively, "he is more a king, and more a philoſo- "pher, than any of his predeceſſors."

Now for adjectives taken *ſubſtantively*, 1° Participles paſſive, are very rarely thus taken; though we ſometimes ſay, "the "loved are leſs happy than the lovers; the taught have the "advantage of the untaught: the beſieged made a ſalley," *&c.* And, 2° Participles active are taken ſtill more rarely for *ſubſtantives*. We ſcarce ever, *e. gr.* ſay "the loving, "the reading,;" but "the lover, the reader:" yet we ſay, "the ſtudent, the proteſtant, the tenant, the appellant, the "opponent," *&c.*—3° For nouns adjectives, thoſe applied to men are not only uſed *ſubſtantively*, but are even become *ſubſtantives* by uſe; whether they be ſuch as regard religion; as "chriſtian, pagan, mahometan," *&c.* or opinion; as "ſtoic, peripatetic, carteſian," *&c.* or country; as "the "Engliſh, French, Italians:" or temperament; as "the "melancholic, phlegmatic, choleric," *&c.* Under the ſame rule, are likewiſe comprehended abundance of adjectives, ſignifying a number of people agreeing in ſome common attribute; as, "the learned, the great, the devout, the "brave, the diſſolute," *&c.* But uſe is here to be regarded; for we do not ſay "the elegant," as we ſay "the "learned;" but "elegant writers," *&c.* It is cuſtom, and the ear alone, that are to decide about theſe differences.

Again, adjectives taken *ſubſtantively*, for other things beſide men, are either ſo uſed, to ſignify a number or ſet of things that have ſome common quality; or to expreſs an abſtract quality. In both which, as in thoſe of men, there are ſome authorized by cuſtom, and others formed every day on their model.

With regard to which laſt, uſe, again, and the ear, are to decide. Here all the adjectives of colours, are uſed *ſubſtantively*; as "the white, black, green," &c. Some of the qualities; as "the cold," &c. thoſe of time; as "the paſt, preſent, future:" and many of other matters; as "the agreeable, the ſublime, the principal," &c. Nor is it only in the poſitive, but alſo in the comparative and ſuperlative degrees, that adjectives are uſed *ſubſtantively*; as "the better of the two: the beſt of it," &c.

SUBSTANTIVE *verb*. See the article VERB.

SUBSTITUTE*, SUBSTITUTUS, a perſon appointed to officiate for another, in caſe of abſence, or other legal impediment. See ATTORNEY, and SURROGATE.

* The word is formed from the Latin, *ſub*, under, and *ſtatuo*, I appoint, eſtabliſh.

In the French law, the procureurs, or proctors, are obliged to name two of their brethren for *ſubſtitutes*, whoſe names are wrote after theirs in the liſt; to receive ſignifications and ſummons's made in their abſence. See PROCURATOR, &c.

SUBSTITUTE, in medicine, denotes a drug, or remedy that may be uſed in lieu of another; or that ſupplies the place of another of like virtue, which is not to be had: called alſo *ſuccedaneum*. See SUCCEDANEUM.

The root of the great centaury, and ſometimes rhaponticum, are uſed as *ſubſtitutes* to rhubarb. See RHUBARB.

SUBSTITUTION, in grammar, the uſing of one word for another; or one mode, ſtate, perſon or number of a word for another.—This the grammarians otherwiſe call *ſyllepſis*. See SYLLEPSIS.

SUBSTITUTION, in the civil law, a diſpoſition of a teſtator, whereby he ſubſtitutes one heir to another, who has only the uſufruit, and not the property of the thing left him.

Subſtitution is a kind of fiduciary inheritance, called alſo *fidei commiſſio*, in regard the immediate inheritor has only the uſe or produce of the thing; the body thereof being ſubſtituted and appropriated to certain perſons, who are likewiſe to have the uſufruit in their turns, but never the property.

In ſome countries, *ſubſtitution* is perpetual; in France, it only holds to the fourth generation.—*Subſtitution* anſwers to *remainder*, in common law. See REMAINDER.

Among the Romans, there were abundance of theſe fiduciary heirs; who enjoyed inheritances, till they returned them into the hands of the right heir: and the reaſon why they did not likewiſe reſtore the fruits, or that the fruits were not deemed to make a part of the inheritance, but only of the thing, was, that the fiduciary or truſtee was obliged to run the riſks, and to ſtand the charge of the culture of the land.

SUBSTITUTION, in algebra, &c. is the putting in the room of any quantity in an equation, ſome other quantity, which is equal to it, but expreſſed after another manner. See QUANTITY, and EQUATION.

SUBSTRACTION, or SUBTRACTION, in arithmetic, the ſecond rule, or rather operation, in arithmetic; whereby we deduct a leſs number from a greater, to learn the preciſe difference:

Or, more juſtly, *ſubſtraction* is the finding a certain number from two homogeneous ones given; which, with one of the given numbers, is equal to the other. See ARITHMETIC.

The doctrine of *ſubſtraction* is reducible to what follows:

To SUBSTRACT *a leſs number from a greater.*—1° Write the leſs number under the greater, in ſuch manner, as that homogeneous figures anſwer to homogeneous, *i. e.* unites to unites, tens to tens, &c. as directed under ADDITION. 2° Under the two numbers, draw a line. 3° *Subſtract*, ſeverally, unites from unites, tens from tens, hundreds from hundreds; beginning at the right-hand, and proceeding to the left; and write the ſeveral remainders in their correſpondent places, under the line. 4° If a greater figure come to be *ſubſtracted* from a leſs; borrow an unite from the next left-hand place; this is equivalent to 10, and added to the leſs number, the *ſubſtraction* is to be made from the ſum: or if a cypher chance to be in the next left-hand place, borrow the unite from the next further place.

By theſe rules, any number may be *ſubſtracted* out of another greater. For example;

If it be required, from	9800403459
To *ſubſtract*	4743865263
The remainder will be found	5056538196

For, beginning with the right-hand figure, and taking 3 from 9, there remains 6 unites, to be wrote underneath the line: going then to the next place, 6 I find, cannot be taken from 5; wherefore, from the place of hundreds 4, I borrow 1, which is equivalent to 10, in the place of tens; and from the ſum of this 10 and 5, *viz.* 15, *ſubſtracting* 6, I find 9 tens remaining, to be put down under the line. Proceeding to the place of hundreds, 2 with the 1 borrowed at the laſt, make 3, which *ſubſtracted* from 4, leave 1. Again, 5 in the place of thouſands, cannot be *ſubſtracted* from 3; for which reaſon, taking 1 from 4, in the place of hundreds of thouſands, into the empty place of tens of thouſands, the cypher is converted into 10 tens of thouſands, whence one 10 being borrowed, and added to the 3, and from the ſum 13 thouſand, 5 thouſand being ſubſtracted, we ſhall have 8 thouſand to enter under the line: then ſubſtracting 6 tens of thouſands from 9, there remain 3. Coming now to take 8 from 4; from the 8 further on the left, I borrow 1, by means whereof, the two cyphers will be turned each into 9. And after the like manner is the reſt of the *ſubſtraction* eaſily performed.

If heterogeneous numbers be to be ſubſtracted from each other; the unites borrowed are not to be equal to ten; but to ſo many as there go of unites of the leſs kind, to conſtitute an unite of the greater: for example;

l.	*s.*	*d.*
45	16	6
27	19	9
17	16	9

For ſince 9 pence cannot be ſubſtracted from 6 pence; of the 16 ſhillings, one is converted into 12 pence; by which means, for 6 we have 18 pence; whence 9 being ſubſtracted, there remain 9. In like manner, as 19 ſhillings cannot be ſubtracted from the remaining 15; one of the 45 pounds is converted into 20 ſhillings, from which, added to the 15, 19 being ſubtracted, the remainder is 16 ſhillings. Laſtly, 27 pounds ſubtracted from 44 pounds, there remains 17.

If a greater number be required to be ſubtracted from a leſs, it is evident the thing is impoſſible.—The leſs number, therefore, in that caſe, is to be ſubtracted from the greater; and the defect to be noted by the negative character. *E. gr.* If I am required to pay 8 pounds, and am only maſter of 3; when the 3 are paid, there will ſtill remain 5 behind; which are to be noted, —5.

Subſtraction is proved, by adding the remainder to the ſubtrahend, or number to be ſubſtracted: for if the ſum be equal to the number whence the other is to be ſubſtracted, the *ſubſtraction* is juſtly performed.—For example;

		l.	*s.*	*d.*	
9800403459		156	11	3 $\frac{1}{4}$	
4743865263	ſubtrahend	21	17	2 $\frac{1}{2}$	ſubtrahend
5056538196	remainder	134	14	0 $\frac{3}{4}$	
9800403459		156	11	3 $\frac{1}{4}$	

SUBSTRACTION, in algebra, is performed by connecting the quantities with all the ſigns of the ſubtrahend changed; and at the ſame time uniting ſuch as may be united; as is done in addition. See ALGEBRA, QUANTITY, CHARACTER, and ADDITION.

Thus $+7a$ ſubſtracted from $+9a$, makes $+9a-7a$, or $2a$,

In the *ſubſtraction* of compound algebraic quantities; the characters of the ſubtrahend, are to be changed into the contrary ones, *viz.* $+$ into $-$; and $-$ into $+$. See QUANTITY.

To SUBSTRACT *ſpecious numbers, or quantities from one another; both thoſe affected with the ſame, and thoſe with contrary characters.*—1° If the quantities deſigned by the ſame letter have the ſame ſigns; and the leſs to be ſubſtracted from the greater; the *ſubſtraction* is performed as in common arithmetic, *e. gr.*

$$\begin{array}{ll} 5b+4d-f & =5\,\text{ſh.}+4\,p.-\tfrac{1}{4} \\ 2b+d\;-f & =2\,\text{ſh.}+1\,p.-\tfrac{1}{4} \\ \hline 3b\quad 3d-0 & \quad 3\,\text{ſh.}+3\,p.\quad 0 \end{array}$$

2° If a greater quantity be to be ſubſtracted out of a leſs; the leſs muſt be ſubſtracted out of the greater, and to the remainder muſt be prefixed the ſign $-$, if the quantities be affected with the ſign $+$; or the ſign $+$, if they be affected with $-$.

$$\begin{array}{llll} 16a+2b-9d & =16\,lib.+2\,\text{ſh.}-9\,d. & & \\ 19a+3b-11d & \quad 19 & +3 & -11 \\ \hline -3a-1b+2 & \quad -3 & -1 & +2 \end{array}$$

3° If the quantities have different ſigns; the *ſubſtraction* is converted into addition, and to the aggregate is prefixed the ſign of the quantity, whence the *ſubſtraction* is to be made: for example;

$$\begin{array}{ll} 8a-5c+9d & =8\,lib.-5+9\,d. \\ 6a-8c-7d & =6\quad -8-7 \\ \hline 2a+3c+16d & =2\,lib.+3+16 \end{array}$$

4° If the quantities be expreſſed in different letters, they muſt be connected; only the characters of the ſubtrahend muſt be changed into the contrary ones: for example;

$$\begin{array}{c} a+b-c \\ d-e+f \\ \hline a+b-c-d+e-f \end{array} \qquad \begin{array}{c} a+d \\ c-e-g \\ \hline a+d-c+e+g \end{array}$$

SUBSTRACTION *of logarithms*, } { LOGARITHM.
SUBSTRACTION *of vulgar fractions*, } See { FRACTIONS.
SUBSTRACTION *of decimals*, } { DECIMALS.

SUBSTRUCTION, in building, denotes under-pinning, ground-ſelling, &c. See FOUNDATION.

SUBSTYLAR *line*, in dialling, a right line, whereon the ſtyle or gnomon of a dial is erected. See GNOMON and LINE.

In polar, horizontal, meridianal, and northern dials, the *ſubſtylar* line is the meridianal line, or line of 12 a clock; or the interſection of the plane, whereon the dial is delineated, with that of the meridian. See MERIDIAN.

In eaſterly and weſterly dials, the *ſubſtylar* line, is the line of 6 a clock; or the interſection of the plane, whereon the dial is delineated, with the prime vertical. See DIAL.

SUBSUPERPARTICULAR, } See { RATIO.
SUBSUPERPARTIENS,

SUBTANGENT *of a curve*, the line that determines the interſection of a tangent with the axis; or, that determines the point wherein the tangent cuts the axis, prolonged. See CURVE and TANGENT.

Thus, in the curve A M, &c. (*Tab. Anal. fig.* 10.) the line T P intercepted between the ſemiordinate P M, and the tangent T M, is the *ſubtangent*. And P R is to P M, as P M to P T; and P M to P T, as M R to T M.

It is a rule in all equations, that if the value of the *ſubtangent* comes out poſitive, the point of interſection of the tangent and axis, falls on that ſide of the ordinate, where the vertex of the curve lies: as in the parabola and paraboloides.

If it come out negative, the point of interſection will fall on the contrary ſide of the ordinate, in reſpect of the vertex or beginning of the abſciſſe: as in the hyperbola, and hyperboliform figures.

And univerſally, in all paraboliform, and hyperboliform figures, the *ſubtangent* is equal to the exponent of the power of the ordinate, multiplied into the abſciſs.

Thus in the common parabola, whoſe property is $px=yy$. The *ſubtangent* is in length, equal to x, the abſciſs multiplied by 2, the exponent of the power of yy, the ſquare of the ordinate; that is, it is equal to twice the abſciſs; and by the former rule for paraboliform figures, it muſt be taken above the ordinate, in the axis produced.

Thus, alſo, in one of the cubical paraboloids, where $pxx=yyy$; the length of the *ſubtangent* will be $\frac{3}{2}$ of the abſciſs.

In the parabola, the *ſubtangent* P T is double the abſciſs AP; and the ſubnormal is P R ſubduple of the parameter. See NORMAL.

SUBTENSE*, in geometry, a right line oppoſite to an angle, and preſumed to be drawn between the two extremities of the arch which meaſures that angle. See ANGLE and ARCH.

* The word is formed from the Latin, *ſub*, under, and *tendo*, I ſtretch.

The *ſubtenſe* of the angle coincides with the chord of the arch. See CHORD.

In every rectangle triangle, the ſquare of the *ſubtenſe* of the right angle, is equal to the ſquares of the *ſubtenſes* of both the other angles; by the 47th prop. of Euclid. This wonderful property of that triangle, was firſt diſcovered by Pythagoras; who, in the tranſport of joy hereby occaſioned, ſacrificed a hecatomb. See TRIANGLE and HYPOTHENUSE.

SUBTERRANEOUS, or SUBTERRANEAN, ſomething under-ground. See FOSSIL.

Naturaliſts talk much of *ſubterranean* fires, as the cauſe of volcano's. See FIRE and VOLCANO.—*Subterranean* winds, as the cauſe of earthquakes. See EARTHQUAKE.

Mr. Boyle gives us an inſtance, from the diſſertation *de admirand. Hungar. aquis*, of a huge *ſubterraneous* oak dug out of a ſalt mine in Tranſylvania, ſo hard, that it could not eaſily be wrought on by iron tools; which yet, being expoſed to the air out of the mine, became ſo rotten, that in four days it was eaſy to be broken and crumbled between one's fingers. Mr. Derham adds, that the trees turned out of the earth, by the breaches at Weſt Thurrock and Dagenham, though probably no other than alder, and interred many ages ago, in a rotten, oozy mould, were ſo exceedingly tough, hard, and ſound, at firſt, that he could make but little impreſſion on them with the ſtrokes of an ax; yet being expoſed to the air and water, ſoon became ſo rotten, as to be crumbled between the fingers. See WOOD.

SUBTILE, in phyſics, intimates a thing exceedingly ſmall, fine, and delicate: ſuch as the animal ſpirits, the effluvia of odorous bodies, &c. are ſuppoſed to be. See SPIRITS, EFFLUVIA, &c.

One kind of matter is only more *ſubtile* than another, in that being divided into ſmaller parts, and thoſe, too, more agitated; on the one hand, it makes leſs reſiſtance to other bodies; and on the other, inſinuates itſelf more eaſily into their pores. See MATTER, PARTICLE, ATOM, &c.

The Carteſians ſuppoſe a *ſubtile* matter for their firſt element. See CARTESIAN and ELEMENT.

This they lay down as ſo exceedingly fine, that it penetrates the minute pores of glaſs, and other ſolid bodies; and from this they account for moſt of the phænomena of nature. See VACUUM, PLENUM, SUCTION, &c.

Yet they do not pretend to prove the exiſtence of this matter, otherwiſe than by conſequence. See MATERIA *ſubtilis*.

SUBTILIZATION, SUBTILISATIO, the act of ſubtilizing, or rendering any thing ſmaller and ſubtiler; particularly, the diſſolving or changing a mixt body into a pure liquor, or a fine powder, by ſeparating the groſſer parts therefrom. See PULVERIZATION, ATTENUATION, &c.

SUBTRIPLE *ratio*, is when one number or quantity is contained in another three times. See RATIO.

Thus, 2 is ſaid to be *ſubtriple* of 6; as 6 is triple of 2.

SUBURBICARY*, SUBURBICARIUS, an epithet given to thoſe provinces of Italy, &c. which compoſed the ancient dioceſe, or patriarchate of Rome. See PROVINCE.

* The term is formed from the Latin, *ſub*, under, and *urbs*, city.—They were alſo ſometimes called *urbicary* provinces.

Authors uſually reckon ten of theſe *ſuburbicary* provinces; whereof Italy, from the Po to the heel made ſeven, and the iſles of Sicily, Sardinia, and Corſica, the other three.

Yet Salmaſius will have the *ſuburbicary* provinces confined to thoſe four in the neighbourhood of Rome, to which the authority of the præfect of Rome extended; and theſe he makes the limits of the dioceſe of ancient Rome. See DIOCESE.

F. Sirmond takes the other extreme, and comprehends all the weſt under the name of *ſuburbicary* provinces.—Rufinus, who lived in the age of the council of Nice, explains the power aſcribed to the pope, in the ſixth canon of that council, by ſaying, that he had the care and ſuperintendance of the *ſuburbicary* provinces. Hence the different ſentiments of authors, with regard to the *ſuburbicary* provinces; ſome only conſidering the pope as biſhop of Rome; others, as patriarch of the weſt, &c. See POPE.

SUCCEDANEUM*, in pharmacy, a remedy ſubſtituted in the place of another firſt preſcribed, when the ingredients are wanting, neceſſary for the compoſition of that other. See SUBSTITUTE.

* The word is formed from the Latin *ſuccedo*, to ſucceed, to come after.

Subſtitute and *ſuccedaneum*, are of equal import; unleſs, with ſome authors, we chuſe to uſe ſubſtitute, where a ſimple of like virtue is put for another; and *ſuccedaneum*, where a compound is uſed with the ſame intention.

SUCCENTURIATI *renes*, in anatomy. See RENES *ſuccenturiati*.

SUCCENTURIATION, the act of ſubſtituting. See SUBSTITUTION.

SUCCENTURIATUS, in anatomy, a muſcle, called alſo *pyramidalis*. See PYRAMIDALIS.

SUCCESSION, SUCCESSIO, in philoſophy, an idea which we get by reflecting on that train of ideas conſtantly following one another in our minds when awake. See IDEA and MODE.

The diſtance between any parts of this *ſucceſſion*, is what we call *duration*. When this *ſucceſſion* of ideas ceaſes, we have no perception of time, or of the duration thereof; but the moment we fall aſleep, and that wherein we awake, ſeem connected. See DURATION.

They, who think we get the idea of *ſucceſſion* from our obſervation of motion by our ſenſes, will come into Mr. Lock's ſentiment, above, when they conſider that motion produces an idea of *ſucceſſion* no otherwiſe, than by producing a continued train of diſtinguiſhable ideas.

A man that looks on a body moving, perceives no motion, unleſs that motion produces a conſtant train of ſucceſſive ideas. But where-ever a man is, though all things be at reſt about him, if he thinks, he will be conſcious of *ſucceſſion*. See MOTION.

SUCCESSION, in aſtronomy. The SUCCESSION *of the ſigns*, is the order wherein they follow each other, and according to which, the ſun enters, ſucceſſively, into one, then into another, called, alſo, *conſequentia*. See SIGN.

This order is expreſſed in the two following technical verſes:

Sunt Aries, Taurus, Gemini, Cancer, Leo, Virgo,
Libraque, Scorpius, Arcitenens, Caper, Amphora, Piſces.

When a planet is direct, it is ſaid to go according to the order and *ſucceſſion of the ſigns*, or *in conſequentia*; that is, from Aries to Taurus, &c. When retrograde, it is ſaid to go contrary to the *ſucceſſion of the ſigns*, or *in antecedentia*; *viz.* from Gemini to Taurus, then to Aries, &c. See PLANET, DIRECT, RETROGRADATION, &c.

SUCCESSION, in the civil law, implies a right to the whole effects left by a defunct. See INHERITANCE and DESCENT.

Of this there are ſeveral kinds, *ab-inteſtate*, *inteſtate*, &c.

SUCCESSION *ab-inteſtate*, is that which a perſon has a right to by being next of kin, which is, what we call, being *next heir at law*. See AB-INTESTATE.

Teſtamentary SUCCESSION, is that which a perſon comes to by virtue of a will. See TESTAMENT.

SUCCESSION *in the direct line*, is that, coming from aſcendents or deſcendents. See DIRECT.

Collateral SUCCESSION, is that, coming by uncles, aunts, or other collaterals. See COLLATERAL.

A jacent, or *abandoned* SUCCESSION, is a burthenſome or vexatious one, which no body will accept of.

There is no real *ſucceſſion* in benefices; for here, no body inherits. See BENEFICE.

In effects that cannot be divided, as kingdoms, &c. the *ſucceſſion* falls on a ſingle head; which is uſually the eldeſt ſon of the deceaſed, as being ſuppoſed the indiviſible repreſentative of his father.

In effects that are divided, all the children repreſent their father. It was on this principle, M. Courtin obſerves, that each of the ſons of Jacob had his ſhare aſſigned him in the Land of Promiſe. It is true, Manaſſeh and Ephraim, the two ſons of Joſeph, had likewiſe their ſhares; but this was becauſe a double portion had been allotted their father, wherein he was treated as elder brother, in conſideration of the great ſervices he had done his father and brethren. See PRIMOGENITURE.

SUCCESSIVE *action*. See the article ACTION

SUCCESSOR, a perſon who holds the place which another held before him; whether he arrived at it by election, collation, inheritance, or otherwiſe. See SUCCESSION.

Our hiſtorians tell us, that queen Elizabeth could never bear to hear of a *ſucceſſor*. The king of the Romans is preſumptive *ſucceſſor* to the empire. See HEIR, &c.

The canoniſts ſay, a coadjutor is a neceſſary *ſucceſſor* to a prelature; a reſignee to the reſignant. See COADJUTOR, RESIGNATION, &c.

Civilians ſay, a titular uſufructuary can do nothing to the prejudice of his *ſucceſſor*.

SUCCINUM, in pharmacy, *karabe*, or *amber*; a bituminous juice or reſin, which from a fluor grows hard and brittle. See AMBER.

The whiteſt, and moſt tranſparent, is accounted beſt: it is of no great uſe in medicine, per ſe, as its texture ſeems too compact to open and yield to the natural concoctions; though ſome have a great opinion of it, as a balſamic, and give it in gonorrhœa's particularly.—But it is certain, that what pharmacy extorts from it, is of great efficacy; eſpecially in nervous caſes.

SUCCISA, a medicinal alexipharmic herb; called alſo *morſus diaboli*, or the *devil's bit*. See MORSUS *diaboli*.

It is a powerful ſudorific, inſomuch that Sir Theodore Mayerne obſerves, in the *Philoſophical Tranſactions*, laying a perſon ſick of a plague, or other malignant fever, on a bed thereof, moderately hot, he ſhall ſweat till they take him off; and much more, if he drink of the decoction or juice of the herb. But the *ſucciſa* is now little uſed.

SUCCOTRINE *aloes*. See the article ALOES.

SUCCUBUS, or SUCCUBA, a term uſed by ſome viſionary writers, to ſignify a dæmon, or ſpirit, who aſſumes the ſhape of a woman, and, as ſuch, lies with a man. See DÆMON, &c.

Some authors uſe *incubus* and *ſuccubus*, indiſcriminately; but they ought to be diſtinguiſhed; *incubus* being only properly uſed, where the dæmon is ſuppoſed to be in form of a man, and, as ſuch, lies with a woman.

SUCCULA, in mechanics, a bare axis, or cylinder, with ſtaves in it to move it round; but without any tympanum, or peritrochium. See AXIS, and PERITROCHIUM.

SUCCUS *pancreaticus*, } See { PANCREATIC *juice*.
SUCCUS *nervoſus*, } { NERVOUS *juice*.

SUCKERS, *off-ſets*, in agriculture, and gardening, young ſhoots proceeding from the root of a tree; being of the ſame kind with the tree from which they ſpring: for that ſuch as grow from trees raiſed by grafting or inoculation, follow the nature of the ſtock. See ROOT, ENGRAFTING, &c.

They ſometimes ſpring forth near the body of the mother-plant; but other *ſuckers* at a greater diſtance from it are better: yet the former removed when there is leaſt ſap in the top, and preſerving what fibrous roots are upon them, often proſper.

When they are taken up, the ground is to be well opened, and if they grow from the body of the tree, or great roots, they muſt be cut off cloſe to the ſtem, and ſet preſently. See STOCK.

It forwards much the ſpringing out of *ſuckers*, to bare the roots of trees, and ſlip them in ſome places. See ABLAQUEATION.

SUCKING *pump*. See the article PUMP.

SUCTION, SUCTIO, the act of ſucking, or of drawing up a fluid, as air, water, or the like, by the mouth, and lungs.

Air is ſucked in at the mouth, by the muſcles of the thorax and abdomen diſtending the cavity of the lungs and abdomen, by which means the air included therein is rarified, and ceaſes to be a counterbalance to the external air, which, of conſequence, is driven in by the preſſure of the atmoſphere through the mouth and noſtrils. See RESPIRATION.

Air is ſucked through a pipe, in the ſame manner as with the naked mouth: it being here all one as if the mouth were extended the length of the pipe.

The *ſuction* of heavier liquors is performed after the ſame manner, *e. gr.* in lying prone to drink out of a ſpring, &c. the lips are applied cloſe to the ſurface of the water, ſo as to prevent any paſſage of the air between them; then the cavity of the abdomen, &c. being diſtended as before, the preſſure of the air incumbent on the ſurface of the water without the circumference of the mouth, prevailing over that upon the water within the ſame, the fluid is raiſed, from the ſame principle as water in a pump. See PUMP.

In ſucking a heavy liquor, as water, through a pipe, the longer the pipe is, the greater difficulty is found in the *ſuction*; and the bigneſs or diameter of the pipe, makes a further alteration therein. The reaſon of this ariſes from that great principle in hydroſtatics, that fluids preſs in the compound ratio of the baſes and perpendicular altitudes. See FLUID.

From what we have ſaid, it evidently enough appears, that what we call *ſuction*, is not performed by any active faculty in the mouth, lungs, &c. but is performed by the mere impulſe and preſſure of the atmoſphere. See AIR, and ATMOSPHERE.

A very curious and intelligent perſon diſtinguiſhes two different ſorts of *ſuction* perform'd after two quite different manners; a diſtinction which however hitherto overlooked by authors, ſeems abſolutely neceſſary in order, I think, to give a juſt account of the nature of this phænomenon.

Suction, then, according to him, is perform'd either, 1°, By the dilatation of the thorax; or 2°, By that of the cavity of the mouth.

In the former caſe the lungs are kept continually diſtended; for if the breath be let go, ever ſo little, the liquor in the tube will begin to ſubſide.

On the contrary, when *ſuction* is perform'd by inlarging the cavity of the mouth, we may ſuck with our utmoſt force, and yet breathe freely through the noſtrils at the ſame time. This is the true and proper *ſuction*: the other ought rather to be call'd ſupping, than ſucking through a tube.

Note, The cavity of the mouth is inlarg'd by being a little open'd, while the lips are cloſe ſhut, the tongue being at the ſame time contracted, and drawn backwards towards the throat.

SUCULA, in mechanics. See the article SUCCULA.

SUDAMINA, little heat-pimples in the ſkin, like millet grains, frequent in youth; eſpecially thoſe of a hot temperament, and that uſe much exerciſe. See SWEAT.

SUDATORY, SUDATORIUM, a name given by the ancient Romans to their hot or ſweating rooms; ſometimes alſo called *laconica*. See BATH, and GYMNASIUM.

The *ſudatory* was a ſpecies of their hypocauſta, or ſtoves. See HYPOCAUSTUM, &c.

SUDOR, in medicine. See the article SWEAT.

SUDOR *Anglicanus*, the *Engliſh ſweat*, or *ſweating ſickneſs*; is the name of an epidemic diſeaſe, firſt perceived in England, in 1485. It was properly, a ſort of plague; thus called, becauſe attended with an extraordinary kind of ſweat. It made its return four times in the ſpace of ſixty-ſix years, *viz.* in 1506, 1517, 1528, and 1551.

It began with a ſweat, which never ended, but either with the death of the patient, or his recovery. If he ſurvived twenty-four hours he was ſafe. Few people eſcaped of it at firſt; too much care, and too little, were found equally deſtructive.

The patient was to wait, without ſtirring, either in his bed, or in his clothes, according to the condition nature was ſurprized in; without burthening him either with remedies or with foods; without cloathing either too much or too little; and, if poſſible, without either eating or drinking. The ſweat to be kept up, without either promoting it, by any extraordinary heat, or checking it by the leaſt cold.

This was what was found by experience; and which was at length practiſed, with happy ſucceſs. The diſeaſe was firſt felt on the 21ſt of September, and in the ſame day ſpread itſelf all over England; where, after a great mortality, it ſtopped all at once, towards the end of October.

Its ravages were ſo great, that in ſome parts it took off a third part of the people in a very little time.

At its return under Henry VIII. in 1506, it was as general, and as dangerous as before, and again diſappeared all at once.

At the third attack, in 1528, is was leſs fatal; inſomuch that Bellay, biſhop of Bayonne, then ambaſſador in England, who ſweated like the reſt, tells us, that of forty thouſand ſouls, ſeized with it in London, only two thouſand died. In 1534, it paſſed over into Ireland, where it killed great numbers.

SUDORIFIC, in medicine, a remedy that cauſes, or promotes ſweat. See SWEAT.

Sudorifics only differ from *diaphoretics* in the degree of their action; the one promoting ſenſible perſpiration, the other inſenſible. See DIAPHORETICS.

To the claſs of *ſudorifics* belong, 1°. All things that moving violently through the body, attenuate the humours, and accelerate their motion.

2°. Such things, as at the ſame time diminiſh the reſiſtence in the ſudatory veſſels about the cutis.

To which ſome add a third kind, *viz.* ſuch as abſorb the acidities of the blood, and thus ſet at liberty the matter of the ſweat.

The firſt intention is chiefly effected by a copious drinking of very hot waters; by acids drawn from vegetables by fermentation and diſtillation; or thoſe of foſſils, attenuated by repeated diſtillations, eſpecially if theſe be drunk mixed with hot water; by alcali's both volatile and fixt, diluted with hot water; by all compound ſalts, diſſolved in water; by ſapa's, metallic cryſtals, or the attenuated parts of metals themſelves, as ſtibium diaphoreticum, fixt ſulphur of Tachenius, bezoardic mineral, diaphoretic mercury, diaphoretic gold, *&c.* by ſharp, ſubtile, acrimonious aromatics: as abſynthium, abrotonum, opium, aſparagus, anis, aſclepias, ariſtolochia, gum ammoniac, carduus benedictus, caraways, cinnamon, camomile, ſaffron, capillus veneris, china, dittany, eupatorium, gentian, hyſſop, laurel, mint, leek, roſemary, ſage, ſavin, ſaſſafras, ſcordium, thyme, veronica, nettle, and other medicines compounded hereof, as venice-treacle, mithridate, diaſcordium, orvietan, *&c.*

The ſecond is chiefly effected by cleanſing the ſkin, by vaporous lotions, baths, and frictions; by relaxing the cutaneous and ſubcutaneous veſſels, which is beſt done by hot water ſprinkled all over the body, the head excepted; by increaſing the external heat about the naked body, as by the warmth of a bed, a vapour-bath, *&c.*

The third is effected by abſorbents; as corals, crabs-eyes, diaphoretic antimony, bezoar, *&c.* See each under its proper article.

SUET *, SEBUM, a kind of fat, found in deer, ſheep, oxen, hogs, *&c.* which melted down and clarified, makes what we call *tallow*, uſed in the making of candles. See FAT and TALLOW.

* The word is formed from the Latin, *ſuedum*, *ſebum*, or *ſevum*, which ſignify the ſame; and theſe *a ſue*, by reaſon of the fatneſs of that beaſt.

Anatomiſts, *&c.* diſtinguiſh four kinds of fat in the body of an animal. The firſt, which fixes itſelf, and after melting, cools into a very firm conſiſtence, they call *ſuet*.

It is found in greateſt abundance in the lower belly, and about the kidneys.

F. le Comte mentions a tree in China, that bears *ſuet*, or tallow. See TALLOW-*tree*.

SUFFERANCE, in ancient cuſtoms, a delay, or reſpite of time, which the lord granted his vaſſal, for the performance of fealty and homage; ſo as to ſecure him from any feodal ſeizure. See SERVICE, VASSAL, FEE, *&c.*

Sufferance, ſay the cuſtoms, is equivalent to fealty and homage, while it holds. See FEALTY and HOMAGE.

The word is alſo uſed for a delay which the lord grants his vaſſals, to quit their hands of fees or inheritances they have acquired, till they have paid the due of indemnity, *&c.*

Bill of SUFFERANCE. See the article BILL.

SUFFICIENT, in the ſchool theology.—SUFFICIENT *grace*, denotes a help or aſſiſtance which God gives to man, to enable him to act and perform his duty. See GRACE.

It is allowed an article of faith, that grace is neceſſary; and that without grace, nothing that is good, or that can any way intitle us to heaven, can be done: it is allowed too, that God does not refuſe the neceſſary aſſiſtances; and it is allowed, that man, frequently, either does not act when he ſhould, or acts what he ſhould not.

From theſe principles, which are generally admitted by all ſects however different in other reſpects, it follows, that there is ſome aſſiſtance of God which man reſiſts; ſome wherewith man does not act, wherewith yet he might act; or ſome, whereby he does evil, by which he might do good. It is this aſſiſtance that is called *ſufficient grace*: becauſe ſufficing to make us act, though we do not act with it.

SUFFITUS, SUFFIMENT, or SUFFUMIGATION, in medicine, a thickiſh powder, prepared of odoriferous plants, gums, *&c.* which being thrown on coals, the vapours or ſteam thereof, are received by ſmelling. See FUMIGATION and SUFFUMIGATION.

SUFFOCATION, SUFFOCATIO, in medicine, a privation, or obſtruction of reſpiration. See RESPIRATION.

Suffocation ſometimes ariſes from a too great abundance of blood thrown on the lungs, or the muſcles of the larynx, and preventing the ingreſs of the air; as is the caſe in quinzies, ſuffocating catarrhs, peripneumonies, *&c.* See QUINZY, *&c.*

The fumes of wines, or ſtrong beers, when boiling, cauſe *ſuffocation*, by interrupting the circulation of the blood. And the ſame may be obſerved of the fumes of lime, wherewith walls are whitened; and thoſe of charcoal, antimony, ſulphur, vitriol, and ſpirit of nitre.

The *ſuffocation* under water, is owing partly to the paſſage of the air being ſtopped up, and partly to the irruption of the water into the breaſt. See DROWNING.

In France they diſpatch their people that are raving mad by *ſuffocating* them between two pillows: the ſame is alſo ſometimes practiſed here in caſes of hydrophobia's, *&c.*

SUFFOCATION *of the womb*, or *matrix*, is a diſeaſe pretty frequent in women, called alſo *fits of the mother*. In this, the patient imagines a malignant vapour riſing from the matrix, and ſo preſſing againſt the lungs and the diaphragm, as to prevent the free motion neceſſary to reſpiration.

Its true cauſe is a convulſion of the muſcles of the larynx, which ſtraighten the wind-pipe, and prevent the air's paſſing into the lungs. Hence it is, that hyſteric women feel constrictions in the throat, as if one were ſtrangling them with a cord. See HYSTERIC.

SUFFOCATIVE *catarrh*. See the article CATARRH.

SUFFRAGAN, SUFFRAGANEUS, in the eccleſiaſtical polity, a term applied to a biſhop, with reſpect to his archbiſhop on whom he depends, and to whom appeals lie from the biſhop's official. See BISHOP.

In this ſenſe, the archbiſhop of Canterbury has twenty-one *ſuffragans*; and the archbiſhop of York four.

The term was never heard of before the eighth century.—Some derive it hence, that the biſhops are to help and aſſiſt the archbiſhop; *quia archiepiſcopo* ſuffragari & *aſſiſtere tenentur*. Others ſay, it is becauſe eccleſiaſtical matters are determined by their votes, or ſuffrages; & ſuffraganei *dicuntur quia eorum* ſuffragiis *cauſæ eccleſiaſticæ judicantur*. Others hold, they are called *ſuffragans*, becauſe when called by the metropolitan to a ſynod, they have a right of ſuffrage, or of voting; or becauſe they could not be conſecrated without his ſuffrage or conſent.

SUFFRAGAN is alſo uſed for a chorepiſcopus, or an aſſiſtant biſhop, or co-adjutor, who has a title *in partibus infidelium*, and aſſiſts another in the diſcharge of his function, or diſcharges it himſelf in the abſence of that other. See CHOR-EPISCOPUS, COADJUTOR, *&c.*

Theſe are by ſome alſo called *ſubſidiary biſhops*. See BISHOP.

By ſtatute 26 Henry VIII. every biſhop and archbiſhop is allowed to appoint ſome one, ſome two, and ſome three biſhops *ſuffragans*, under them; the ſeats, or reſidences whereof, are fixed by the ſame ſtatute. The *ſuffragan* biſhop for the dioceſe of Canterbury, to be at Dover only; for York, at Nottingham and Hull; for London, at Colcheſter; for Wincheſter, at Guilford, Southampton, and in the iſle of Wight, *&c.*

Du Cange obſerves, that the title *ſuffragan* has alſo been given to ſuch prieſts as are ſubject to the viſitation of the arch-deacon: and *ſuffragans of the pope*, to the biſhops of ſuch dioceſes, as are immediately ſubject to the pope.

SUFFRAGE*, SUFFRAGIUM, a voice or vote, given in an aſſembly, where ſomething is deliberated on, or where a perſon is elected to an office or benefice. See VOTE.

* The word is formed from the Latin, *ſuffragium*, which anciently ſignified money, as appears in the eighth novel of Juſtinian: *ut judices ſine* ſuffragio *fiant*; and the ſixth novel: *qui emerit præſulatum per* ſuffragium, *epiſcopatu & ordine eccleſiaſtico excidat*.

Suffrages are ſometimes given by word of mouth; and ſometimes in writing, as at elections liable to a ſcrutiny. See SCRUTINY. The preſident or chairman of the aſſembly uſually collects the *ſuffrages*.

SUFFRAGES *of the ſaints*, in the Romiſh church, denote the prayers and interceſſions which the ſaints are ſuppoſed to make to God, in behalf of the faithful. See SAINT.

SUFFRUTEX, *under-ſhrub*; among botaniſts, a name given to the loweſt ſort of woody, perennial plants: ſending no leaves from their root, and beginning to be branched from the very bottom of the ſtalk. Such are lavender, rue, ſage, *&c.* See PLANT, TREE, *&c.*

SUFFUMIGATION *, SUFFUMIGATIO, in medicine, a term applied to all remedies that are received into the body in form of fumes, *i. e.* of ſmoak, vapour, or perfume. See SMOAK, VAPOUR, *&c.*

* The word is formed from the Latin, *ſub*, under, and *fumus*, ſmoak.

Suffumigations are compoſed of different matters, according to the nature of the diſeaſe. See SUFFITUS. Their intentions are to ſoften ſharp, ſerous humours, to provoke or check the courſe of the menſes, to raiſe a ſalivation in venereal evils, *&c.*

SUFFUSION, SUFFUSIO, in medicine, an overflowing of ſome humour, ſhewing itſelf in the ſkin; particularly that of the blood or bile. See BLOOD, BILE, *&c.*

That redneſs ordinarily ariſing from ſhame, is only a *ſuffuſion* of blood appearing in the cheeks. See BLUSHING.

The jaundice is a *ſuffuſion* of bile over the whole body. See JAUNDICE.

SUFFUSION is alſo uſed for a little film or pellicle, formed in the aqueous humour of the eye, before the pupil; called, alſo, *cataract*. See HYPOCHYMA and CATARACT.

SUGAR, SACCHARUM, a very ſweet, agreeable juice, expreſſed from a kind of canes, or reeds, growing in great plenty in the Eaſt and Weſt-Indies; particularly in Madera, Braſil, and the Caribbee iſlands.

It is a queſtion not yet decided among botaniſts, *&c.* whether the ancients were acquainted with this cane, and whether they knew how to expreſs the juice from the ſame? What we can gather from the arguments advanced on either ſide, is, that if they knew the cane and the juice, they did not know the art of condenſing, hardening and whitening it, and, of conſequence, knew nothing of our *ſugar*.

Some ancient authors, indeed, ſeem to mention *ſugar*, under the name of *Indian ſalt*; but they add, that it oozed out of the cane of itſelf; and there hardened like a gum; and was even friable between the teeth, like our common ſalt: whereas *ſugar* is expreſſed by a machine on purpoſe, and coagulated by the fire.

Theirs, Salmaſius tells us, was cooling and looſening, whereas ours, the ſame writer aſſerts, is hot, and excites thirſt. Hence, ſome have imagined, that the ancient and modern *ſugar* plants were different: but Matthiolus, on Dioſcorides, c. 75. makes no doubt they were the ſame; and others are even of opinion, that ours has a laxative virtue, as well as that of the ancients, and that it purges pituita.

The generality of authors, however, agree, that the ancient *ſugar* was much better than the modern; as conſiſting of only the fineſt and matureſt parts, which made themſelves a paſſage, and were condenſed in the air.—The interpreters of Avicenna and Serapion, call *ſugar*, *ſpodium*; the Perſians, *tabaxir*; and the Indians, *mambu*.

Salmaſius aſſures us, that the Arabs have uſed the art of making *ſugar*, ſuch as we now have it, above 800 years. Others produce the following verſes of P. Terrentius Varro Atacinus, to prove that it was known before Jeſus Chriſt.

Indica non magna nimis arbore creſcit arundo,
Illius extentis premitur radicibus humor,
Dulcia cui nequeunt ſucco contendere mella.

Another queſtion among naturaliſts is, whether the *ſugar* canes be originally of the Weſt-Indies; or whether they have been tranſlated rather from the Eaſt?

The learned of theſe laſt ages, have been much divided on the point: but ſince the diſſertation of F. Labat, a dominican miſſionary, publiſhed in 1722, there is no longer room to doubt, but that the *ſugar* cane is as natural to America as India: all that can be ſaid in favour of the latter, is, that the Spaniards and Portugueſe firſt learnt from the orientals, the art of expreſſing its juice, boiling it, and reducing it into *ſugar*.

Culture of the SUGAR *cane.*—The reed or cane, whence this uſeful juice is drawn, reſembles thoſe others we ſee in moraſſes, and on the edges of lakes; excepting that the ſkin of theſe latter is hard and dry, and their pulp void of juice; whereas the ſkin of the *ſugar* reed is ſoft, and the ſpongeous matter or pith it contains, very juicy, though that in a greater or leſs degree, according to the goodneſs of the ſoil, its expoſure to the ſun, the ſeaſon it is cut in, and its age; which four circumſtances contribute equally to its goodneſs and its bulk.

The *ſugar* cane uſually grows five or ſix foot high, and about half an inch in diameter; though F. Labat mentions ſome extraordinary ones in the iſle of Tabago, twenty-four foot high. The ſtem or ſtalk is divided by knots, a foot and half a-part. At the top it puts forth a number of long, green, tufted leaves, from the middle whereof, ariſe the flower and the ſeed. There are likewiſe leaves ſpringing out from each knot; but theſe uſually fall as the cane riſes; and it is a ſign, either that the cane is naught, or that it is far from its maturity, when the knots are ſeen beſet with leaves.

The ground fit for *ſugar* canes, is that which is light, ſoft, and ſpongy, lying on a deſcent proper to carry off the water, and well turned to the ſun. They uſually plant them in pieces, cut a foot and half below the top of the flower. Theſe are ordinarily ripe in ten months, though ſometimes not till fifteen; at which time, they are found quite full of a white ſucculent marrow, whence is expreſſed the liquor whereof *ſugar* is made. When ripe, they are cut, their leaves cleared off, and they are carried in bundles to the mills. The mills conſiſt of three wooden rollers, covered with ſteel plates; and have their motion either from the water, the wind, cattle, or even the hands of ſlaves. See *Sugar*-MILL.

Two rules belonging hereto are, that no canes above four foot, or under two foot and a half long be ſent to the mills; and, that no more canes be cut than can be conveniently preſſed in twenty-four hours; in regard they will heat, ferment, and turn ſour.

Preparation of SUGAR.—The juice coming out of the canes, when preſſed and broke between the rollers, runs through a little canal into the *ſugar*-houſe; which is near the mill; where it falls into a veſſel, whence it is conveyed into the firſt copper or cauldron, to receive its firſt preparation, only heated by a ſlow fire to make it ſimmer. With the liquor, is here mixed a quantity of aſhes and quick-lime; the effect of which mixture, aſſiſted by the action of the fire, is, that the unctuous parts are ſeparated from the reſt, and raiſed to the top, in form of a thick ſcum, which is kept conſtantly ſcumming off; and ſerves to feed the poultry, *&c.* withal.

The juice, in the next place, is purified in a ſecond copper; where a briſker fire makes it boil; and all the time the caſting up of its ſcum is promoted by means of a ſtrong lye, compoſed of lime-water, and other ingredients.

This done, it is purified and ſcummed in a third boiler, wherein is caſt a kind of lye, that aſſiſts in purging it, collects together its impurities, and makes them riſe to the ſurface; whence they are taken with a ſkimmer.

From the third, it is removed to a fourth boiler, where the juice is further purified by a more violent fire: and hence to a fifth; where it is brought to the conſiſtence of a ſyrop.

In a ſixth boiler, the ſyrop receives its full coction; and here all the impurities left from the former lyes, are taken away by a new lye, and a water of lime and allom caſt into it. In this laſt copper, there is ſcarce found one third of what was in the firſt; the reſt being waſted in ſcum.

By thus paſſing, ſucceſſively, a number of coppers, the *ſugar* juice is purified, thickened, and rendered fit to be converted into any of the kinds of *ſugar* hereafter mentioned. The ſize of the ſeveral coppers always diminiſhes, from the firſt to the laſt; each being furniſhed with a furnace, to give a heat proportionable to the degree of coction the juice has received. In ſome large *ſugar* works, there are alſo particular coppers, for the boiling and preparing the ſcums.

F. Labat mentions ſeveral different *kinds of* SUGARS, prepared in the Caribbees, *viz. Crude ſugar*, or *moſcovado*; *ſtrained* or *brown ſugar*; *earthed* or *white ſugar*, in powder; *refined ſugar*, either in powder or loaves; *royal ſugar*; *candied ſugar*; *ſugar of fine ſyrop*; *ſugar of coarſe ſyrop*; *ſugar of the ſcum*.

Crude SUGAR, or moſcovado, is that firſt drawn from the juice of the cane, and whereof all the reſt are compoſed.

The method of making it, is that already deſcribed as for *ſugar* in the general.—We need only add, that when taken out of the ſixth copper, it is put in a cooler, where ſtirring it briſkly together, it is let ſtand to ſettle, till a cruſt, of the thickneſs of a crown piece, be formed thereon. The cruſt being formed, they ſtir it up again, then put it into veſſels, where it ſtands to ſettle, till it be fit to barrel.

Strained or *brown* SUGAR, though whiter and harder, does not differ much from the crude *ſugar*: though it is held a medium between this laſt and the earthed *ſugar*; which is the white powder *ſugar*.

The preparation of this, is the ſame as that of the moſcovado, with this difference, that to whiten it, they ſtrain the liquor through blankets, as it comes out of the firſt copper. The invention of ſtrained *ſugar* is owing to the Engliſh, who are more careful than their neighbours, in the preparation hereof; for they not only ſtrain it, but when boiled, put it in ſquare wooden forms, or moulds, of a pyramidal figure; and when it has purified itſelf well, they cut it in pieces, dry it in the ſun, and barrel it up.

Earthed SUGAR, is that which is whitened by means of earth laid on the top of the forms it is put in, to purge itſelf.

The making of this *ſugar*, is begun after the ſame manner as that of crude *ſugar*; except that they only uſe the beſt canes in it; that they work with more care and nicety; that when the liquor is in the firſt copper, the aſhes they put in, are little or nothing mixt with lime, for fear of reddening it; and that they ſtrain it through a blanket, from the firſt to the ſecond copper.

When it has paſſed all the ſix coppers, it is laden out into a cooler; whence it is put into conical moulds or forms, the tips whereof are perforated, but now ſtopped with linen or other ſtuff; and theſe ranged evenly before the furnace. When it has been a quarter of an hour in the forms, it is cut with a *ſugar* knife, that is, it is ſtirred briſkly this way, and that, for half an hour.

This ſerves, not only to promote the forming of the grain, and the diffuſing it equally throughout; but alſo to determine the unctuous parts of the *ſugar* to mount to the top, that they may be ſcummed off.

The forms being left to ſtand fifteen hours in this ſtate, the holes at the bottom are then unſtopped, to give a paſſage to the ſyrop, and to determine it to take that way. When enough of theſe forms are filled, to fill a ſtove, which uſually contains five or ſix hundred forms; they viſit the *ſugar* in all the forms to examine the quality thereof, and to ſee if it quit the form eaſily; that it may either have the earth given it, as the refiner, who viſits it, judges proper; or be melted over again, if it do not prove well.

This done, the forms are planted, each on its pot, with the tip of the cone downwards; the top is taken off, and in lieu thereof, they put in ſome *ſugar* in grain, to within an inch of the edge; which ſpace is left for the earth prepared for it.

The earths here uſed are of various kinds; the good qualities of each whereof, are, that they do not tinge the water, that they let it filtrate eaſily through, and that they do not imbibe the fatty part of the *ſugar*. Before put in the forms, the earth is ſteeped in water twenty-four hours; and at length applied, in the conſiſtence of a pulp.

As ſoon as the earth is on the *ſugar*, all the windows of the refining room are ſhut, that the air and heat may not dry the earth. When it is quite dry, which uſually happens in nine or ten days time, it is taken off; and after cleaning the ſurface of the *ſugar* with bruſhes, and raking it up an inch deep, and again laying it level as before, they give it a ſecond earth.

The whiteneſs of the *ſugar* of each form, is ſeen from the firſt earth; experience ſhewing, that a ſecond or third earth do not make the *ſugar* any whiter, but only whitens the head of the loaf. When the ſecond earth is taken off, they cleanſe the ſurface of the *ſugar* with a bruſh, and with a knife looſen the edge of it, where it ſticks to the form, that neither the form nor the *ſugar*-loaf be damaged in taking out the latter. The windows are now opened, and the forms left to ſtand eight or ten days to dry. While the *ſugar* is draining in its forms, a ſtove is prepared to receive them.

The ſtove being ſufficiently heated, by means of the furnace therein, loaves are taken out of the forms one after another; and ſuch as are white from one end to the other, are carried to the ſtove, as are, alſo, the reſt, after cutting off what is not white, to be farther refined.

When the loaves are all ranged in the ſtove, a moderate fire is made for about two days, during which time, they viſit every part of the ſtove very carefully, to ſee that every thing is in good order, and to repair any thing that may go amiſs.

After theſe two days, they ſhut the trap-door a-top of the building, and increaſe the fire. Eight or ten days and nights continued violent fire uſually ſuffice to dry a ſtove of *ſugar*.

When they judge it ſufficiently done, they open the trap-door, and chuſe a hot dry day to pound the *ſugar*, which is performed with huge, hard, heavy wooden peſtles; when pounded, it is put up in barrels, and well trodden down as it is put in, that the barrels may hold the more.

SUGAR *of the ſcum*.—This is all made of the ſcum of the two laſt coppers; thoſe of the former being reſerved for making of rum.

The ſcum deſtined to make *ſugar*, is kept in a veſſel for that purpoſe, and boiled every morning in a copper ſet apart for that uſe. With the ſcum, is put into the copper a fourth part of water, to retard the boiling, and give time for its purging: when it begins to boil, the uſual lye is put in, and it is carefully ſcummed: when almoſt enough boiled, lime and allom-water are thrown in; and when it is ready to be taken out, they ſprinkle it with a little powdered allom.

SUGAR *of ſyrop*, or *treacle*.—There are three kinds of ſyrops that run from *ſugar*. The firſt from the barrels of raw *ſugar*, which is the coarſeſt of all: the ſecond, from the forms or moulds, after they are perforated, and before they receive their earth: the third, that coming from the forms after they have had their earth; which laſt is the beſt.

The coarſe ſyrops ſhould only be uſed for rum; but *ſugar* being grown dear, endeavours have been uſed to make ſome hereof, and that with tolerable ſucceſs. They are firſt clarified with lime-water, and, when boiled, are put up in barrels, with a *ſugar* cane in the middle, to make them purify themſelves. After twenty days, a quantity of coarſe earth is thrown in, to make them caſt the remainder of their ſyrop, and fit them to be returned into a crude *ſugar*. The Dutch and German refiners firſt taught the iſlanders how to turn their treacle into *ſugar*.

The ſecond ſyrop is wrought ſomewhat differently: after the copper, it is to be boiled in, is half full, eight or ten quarts of lime-water are caſt in: It is then boiled with a briſk fire, and carefully ſcummed: ſome add a lye, and others none. F. Labat takes the former method to be the better, though it requires more trouble and attention. This *ſugar* may be earthed alone, or at leaſt, with the heads of loaves, the dryed tops, and ſuch other kinds of *ſugars* as may not be mixt with the true earthed *ſugar*, nor yet with the crude *ſugar*.

For the third ſyrop, after boiling and ſcumming it as the former, they put it inſtantly into coolers, the bottoms whereof are covered half an inch thick with white *ſugar* very dry, and well pounded; and the whole is well ſtirred, to incorporate the two together. This done, they ſtrew the ſurface over with the ſame pounded *ſugar*, to the thickneſs of one fifth of an inch; this aſſiſting the *ſugar* in forming its grain. When ſettled, and the cruſt gathered at the top, a hole is made in the cruſt five or ſix inches diameter.

By this aperture, they fill the cooler with a new ſyrop, poured gently in, which inſenſibly raiſes up the former cruſt. When all the ſyrops are boiled, and the cooler is full, they break all the cruſts; and after mixing them well, put it up in forms or moulds.

The reſt is performed in the ſame manner as for the earthed *ſugar*, from which it only differs in that it falls ſhort of its gloſs and brightneſs; being, in reality, ſometimes whiter and finer, though of a flatter and duller white.

Refined SUGAR.—Crude *ſugar*, ſtrained *ſugar*, and the heads or tops of loaves that have not whitened well, are the baſis or ground of this *ſugar*.

In a refinery are uſually two coppers, the one ſerving to clarify, the other to boil the clarify'd liquor; tho' they ſometimes clarify in both, and boil afterwards. For the operation of refining, the ſame weight of lime-water and of *ſugar* are put in the copper; and as the ſcum is raiſed by the heat, it is taken off, and when it ceaſes to riſe any more, the ſyrop is ſtrained through a cloth.

After this, it is clarified; that is, a dozen of eggs is thrown, white, yolk, ſhell and all; after having firſt broke and beaten them well in lime-water. When the fat, and other impurities of the *ſugar*, which this compoſition gathers together on the ſurface of the ſyrop, have been ſcummed off; a few more eggs are thrown in, and it is ſcummed afreſh. This they repeat till the ſugar be ſufficiently clarified; which done, it is again ſtrained through the cloth.

When taken out of this copper, it is boiled in the ſecond; which done, it is put out into coolers, the bottoms whereof are firſt covered half an inch thick with fine white powdered *ſugar*. As ſoon as it is there, it is briſkly ſtirred about, and the ſurface ſtrewed over with pounded *ſugar*. The reſt is performed as in *ſugars* of fine ſyrops, or in earthed *ſugar*; only more care and exactneſs is uſed. See REFINING.

Royal SUGAR.—The baſis of this ſort ought to be the fineſt refined *ſugar* to be found. This they melt with a weak lime-water; and ſometimes, to make it the whiter, and prevent the lime from reddening it, they uſe allum-water. This they clarify three times, and paſs as often through a cloſe cloth, uſing the very beſt earth. When prepared with theſe precautions, it is whiter than ſnow, and ſo tranſparent, that we ſee a finger touching it, even through the thickeſt part of the loaf.

SUGAR-*candy*, *ſaccharum candum*, or *cryſtallinum*,—is *ſugar* depurated and cryſtallized. See CANDY.

This is better made of earthed *ſugar*, than refined *ſugar*, in regard the former is ſweeter.

The *ſugar* to be uſed herein, is firſt diſſolved in a weak lime-water, then clarified, ſcummed, ſtrained through a cloth, and boiled, and put in forms or moulds that are traverſed with little rods, to retain the *ſugar* as it cryſtallizes. Theſe forms are ſuſpended in a hot ſtove, with a pot underneath, to receive the ſyrop that drops out at the hole in the bottom, which is half ſtopped, that the filtration may be the gentler. When the forms are full, the ſtove is ſhut up, and the fire made very vehement.

Upon this the *ſugar* faſtens to the ſticks that croſs the forms, and there hangs in little ſplinters of cryſtal. When the *ſugar* is quite dry, the forms are broke and the *ſugar* taken out, candied. Red *ſugar*-candy they make, by caſting into the veſſel, where the *ſugar* is boiling, a little juice of the Indian fig; and if it is deſired to have it perfumed, they caſt a drop of ſome eſſence in, when the *ſugar* is putting into the forms.

This method of making *ſugar*-candy is that of F. Labat, practiſed in the Caribbees: the method in Europe, deſcribed by Pomet, is ſomewhat different.

White SUGAR-*candy* they make of white refined *ſugar*, boiled with water into a thick ſyrop, in a large pan. It is candied in a ſtove, whither it is carried, incloſed in braſs peels, croſſed with little rods, about which the cryſtals faſten as they are formed.

The fire of the ſtove is kept equable for fifteen days; after which the *ſugar* is taken out of the peels to be dried. Red or brown *ſugar*-candy is made like the white, except that they only uſe brown *ſugars* and earthen pots.

Barley SUGAR, *ſaccharum hordeatum*, is a *ſugar* boiled till it be brittle, and then caſt on a ſtone anointed with oil of ſweet almonds, and formed into twiſted ſticks, about the length of the hand, and the thickneſs of a finger.

It ſhould be boiled up with a decoction of barley, whence it takes its name; but in lieu thereof they now generally uſe common water, to make the *ſugar* the finer.—To give it the brighter amber colour, they ſometimes caſt ſaffron into it.—It is found very good for the cure of colds and rheums.

SUGAR *of roſes*, *ſaccharum roſatum*, is white *ſugar* clarified, and boiled into a conſiſtence in roſe-water: when boiled, they form it into lozenges, ſometimes into little grains, of the ſize of peas, by keeping it ſtirring till it be cold, and dry.—It is reputed good to ſoften and allay acrimonies, &c. of the breaſt. See ROSE.

Cask of SUGAR, } See the articles { CASK.
Cheſt of SUGAR, } { CHEST.

SUGAR *of ſaturn*, } See the article LEAD.
SUGAR *of lead*, }

SUGGESTION, SUGGESTIO, the act of hinting, or furniſhing another with a thought, or deſign, or of inſinuating it artfully into his mind.

In the French law, a teſtament is ſaid to be made by *ſuggeſtion*, when it is made by ſurprize, and contrary to the intention of the teſtator.

If *ſuggeſtion* be proved, the teſtament becomes null. Articles of *ſuggeſtion* are not admittable againſt a teſtament wrote with the teſtator's own hand, which is never ſuſpected. See TESTAMENT.

SUIT, SUTE, SECTA in law, (from the French *ſuite*, a following another) is uſed in divers ſenſes.—As, SUIT *in law*; which is of two kinds, *real* and *perſonal*: the ſame with what we call *real* and *perſonal actions*. See ACTION.

SUIT *of court*, or *ſuit of ſervice*; an attendance which the tenant owes the court of his lord. See SERVICE.

SUIT *covenant*; when your anceſtor hath covenanted with mine to ſue to his court.

SUIT *cuſtom*; when I and my anceſtors owe ſuit time out of mind.

SUIT *real*, or *regal*; when men come to the ſheriffs turn or leet.

SUIT alſo ſignifies the following one in chaſe; as *freſh ſuit*. See FRESH-SUIT.

SUIT, again, ſignifies a petition made to the king, or any great perſon. See PETITION.

SULPHUR, in natural hiſtory, a fat, unctuous ſort of mineral ſubſtance, fuſible and inflammable by fire, and not diſſoluble or miſcible in water. See FOSSIL.

This is particularly called *foſſil*, or *mineral ſulphur*, to diſtinguiſh it from the *ſulphur of metals*, or *of the philoſophers*. See METAL.

Sulphurs make a particular claſs of foſſils, divided into *ſolid* and *fluid*.

The *ſolid* SULPHURS are, common *ſulphur*, or *ſulphur* properly ſo called, arſenic and amber. See ARSENIC and AMBER.

The *liquid* SULPHURS are, aſphaltum, piſſaſphaltum, bitumen, petroleum, naphtha, and oleum terræ, &c. See BITUMEN, PISSASPHALTUM, PETROLEUM, NAPHTHA, &c.

SULPHUR, properly ſo called, or *brimſtone*, is of two kinds, viz. *vivum*, and *common ſulphur*.

SULPHUR *vivum*, *native*, or *virgin ſulphur*, is that which is dug in this form out of the earth; being opake, of a yellow or aſh-colour; it eaſily takes fire, and, in burning, caſts a ſtrong ſulphurous ſmell.

It is chiefly brought from Sicily; and is but little uſed, except in ſome galenical compoſitions, and to *ſulphur* wine, in order to make it keep in carriage.

It is found in great quantities in the neighbourhood of vulcanos or burning mountains, as Veſuvius, Ætna, &c. yet *ſulphur* has alſo its particular mines; and we have very good from ſeveral parts of Italy and Switzerland, though the beſt is that of Quitto and Nicaragua in America.

Common SULPHUR, or that uſed in gunpowder, and on divers other occaſions, is ſaid by ſome to be a compoſition of the native *ſulphur* with roſin; rolled up into cylindrical pieces. —Though others aſſure us, it is procured from the native *ſulphur* by means of fire and train oil, which diſſolving it, it is poured into moulds; and thus formed into thoſe cylinders we find it in. Savary.

This common *ſulphur* is either better or worſe, according to the refinery it comes from. That of Holland has a long time had the vogue; the ſecond place has been given to that of Venice; and the third to that of Marſeilles: but the order ſeems to have been ſince changed, and that from Marſeilles is now in the firſt place.

It is choſen in large thick cylinders, of a golden yellow colour, very brittle, and when broke, appearing all brilliant, as if cryſtallized.

Beſide the uſe of *ſulphur* in the compoſition of gun-powder, whereof it is one of the three ingredients, and that which makes it take fire ſo readily, (ſee GUNPOWDER) it is of ſome uſe in medicine, and more in chymiſtry. It is alſo uſed in whitening ſilken and woollen ſtuffs; to which end, the vapour thereof is contrived to be received by them. See BLEACHING.

Its vapour alſo whitens red roſes; and even young rooks, taken out of the neſt, and expoſed thereto, are ſaid to become perfectly white. It has the ſame effect on gold; which is to be reſtored to its colour by boiling it in water with tartar.

The chymical analyſis of *ſulphur* is very difficult; its principles being ſo volatile, and withal ſo faſt bound together, that they either riſe all together, or are diſſipated and loſt in the ſeparation.

M. Homberg, however, has at length found the ſecret of ſeparating the principles, and of ſaving them at the ſame time. He finds it to conſiſt of an acid ſalt, an earth, an oily bituminous and inflammable matter, and uſually a little metal.

The three firſt he finds, by a long ſeries of operations, are in pretty equal quantities; but the laſt, which proves to be copper, inconſiderable. The acid, he adds, is exactly the ſame with that of vitriol; the oil, which is thick and red as blood, appears to be the inflammable part, and that which conſtitutes the chymical principle *ſulphur*, only that it retains ſome heterogeneous matter in the operation. The earth is extremely fixt, and unalterable by the ſtrongeſt fire.

M. Geoffroy tried the re-compoſition of *ſulphur*, on M. Homberg's principles, and with ſucceſs. The pure acid ſalt of *ſulphur* being mixed with an equal quantity of the oily matter, and earthy alcali, and a little oil of tartar, and the operation conducted according to the rules of art, the mixture was converted into a pure burning *ſulphur*.

This done, he attempted the compoſition of *ſulphur*, not by recompounding it out of the ſame matters it had been reſolved into, but by uſing matters judged of the ſame nature. Thus, by ſubſtituting oil of vitriol for the acid ſalt, and oil of turpentine for the inflammable part, he ſucceeded as before.

Again, he found that fixt ſalts, as they are acids abſorbed in earth, ſerve for two principles at once, and need nothing but an inflammable oil to make *ſulphur*: and even in lieu of this oil, M. Geoffroy imployed, with equal ſucceſs, char-coal, pit-coal, and other ſolids.

Indeed Mr. Boyle and Glauber had before made common *ſulphur*, and that by mixtures, ſuch as M. Geoffroy deſcribes; but they were both miſtaken as to the reaſon thereof; the one concluding, that the *ſulphur* he thus got, had been contained in the fixed ſalts, and the other in the coal; neither of them dreamed, that it was the mixture of the three principles that produced the mixt.

Flowers of SULPHUR, are the pureſt and fineſt part of common *ſulphur*, gained by evaporating *ſulphur*, by ſublimation, or burning it in pots made for that purpoſe; and gathered in the capital of the cucurbit, where the vapour ſticks. See FLOWER.

This preparation, as, indeed, *ſulphur*, in moſt of its forms, is found excellent for the lungs. The beſt flower of *ſulphur* is in cakes, or pieces, light, ſoft, friable, and rather white than yellow. If it be in powder it muſt be very fine, of a yellow colour, that is, both whitiſh and gilt at the ſame time.

Inſtead of this, we have frequently put upon us a vile *ſulphur*, mixed with ſtarch, or wheat flour; and ſometimes only *ſulphur-duſt* well ſifted.

By adding fixed nitre, or ſal polychreſt, to the flowers of *ſulphur*, we have the *white flowers of ſulphur*.

Magiſtery, *balm*, or *milk of* SULPHUR, is *ſulphur* diſſolved in a ſufficient quantity of water, with ſalt of tartar; and precipitated by means of ſpirit of vinegar, or ſome other acid. See MAGISTERY.

It is called *milk of ſulphur* from its whiteneſs; and *balm of ſulphur*, or *of the lungs*, from its excellent uſe in diſeaſes of the lungs and breaſt. See BALSOM, &c.

Salt of SULPHUR, is a chymical preparation, very improperly thus called: as being no other than the ſal polychreſton, impregnated with ſpirit of *ſulphur*, and reduced to an acid ſalt, by evaporating the humidity thereof. Some hold it a powerful febrifuge. See SALT.

Spirit of SULPHUR. See the article SPIRIT.

SULPHUR *of antimony*, is a diaphoretic tincture drawn from antimony and ſalt of tartar or nitre by divers operations. See ANTIMONY.

That drawn from the fæces of crocus metallorum, is by ſome called *golden ſulphur*. See ANTIMONY.

SULPHUR *metallorum*, or *ſulphur of metals*, called alſo, *ſulphur figens*, is uſed among chymiſts and alchymiſts for a peculiar matter, which enters the compoſition of all metals. See METAL.

Metals are ſuppoſed to conſiſt of two eſſential parts, or principles; mercury, as the baſis, or metallic matter; and *ſulphur*, as the binder, or cement, which fixes the fluid mercury into a coherent malleable maſs. See METAL, and MERCURY.

Some of the lateſt and beſt chymiſts, particularly Monſ. Homberg, will have this *ſulphur* to be no other than fire. See FIRE, GOLD, and BURNING-*glaſs*.

SULPHURATED *wine*. See the article WINE.

SULTAN, or SOLDAN, a title, or appellation given the emperor of the Turks.

It had its riſe under Mahmoud, ſon of Sebecteghin, the firſt emperor of the dynaſty of the Gaznevides, towards the cloſe of the fourth century of the æra of the Hegira: when that prince going to Segeſtan to reduce Kalaf, governor of that province, who affected the ſoveraignty; Kalaf was no ſooner advertiſed of his coming, then he went out to meet him, delivered the keys of his fortreſs, and owned him his *ſultan* *, that is, his lord or commander. The title pleaſed Mahmoud ſo well, that he aſſumed it ever afterwards; and from him it paſſed to his deſcendants, and to other Mahometan princes.

In the Roman ceremonial, we alſo find mention made of a SOLDAN, or marſhal, who is to attend the pope when he marches in ſtate. He is alſo to apprehend malefactors.

SULTANA, the wife of a ſultan. The favourite *ſultana* is called *Hhaſeki-ſultana*, *i. e.* private *ſultana*.

The *ſultana* queen is the emperor's chief wife. The old *ſultana*, mother of the emperor reigning, is called *ſultana valide*.

SULTANA alſo denotes a ſtrong Turkiſh veſſel of war.

SULTZ, or SULZ. See the article SALZ.

SUM, SUMMA, in mathematics, ſignifies the quantity that ariſes from the addition of two or more magnitudes, numbers, or quantities together. See ADDITION.

This is ſometimes called the *aggregate*; and, in algebra, is ſometimes denoted by the letter Z, which ſtands for *zuma*, or *ſuma*; and ſometimes by the letter S.

SUM *of an equation*, is when the abſolute number being brought over to the other ſide, with a contrary ſign, the whole become, comes equal to 0: this Des Cartes calls the *ſum of the equation* propoſed. See EQUATION.

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* Vattier will have the word Turkiſh, and to ſignify king of kings; adding that it was firſt given the Turkiſh princes Angrolipex and Maſgud, about the year 1055; others will have it originally Perſian, alledging, in proof hereof, an ancient medal of Coſroe; others derive it from *ſoldanus*, *quaſi ſolus dominus*; others from the Hebrew שלט, *ſchalat*, to rule, reign.

SUMACH, a drug uſed to dye in green; as alſo in the preparation of black morocco, and other leather. See MOROCCO.

It conſiſts of the leaves and young branches of a ſhrub, not unlike the little ſervice-tree: the leaves are longiſh, pennated and hairy: the flowers grow in cluſters, and are red, like our roſes. Its fruit is a kind of grape, of a very aſtringent quality; and its ſeed almoſt oval, and incloſed in capſulæ of the like figure.

The ancients uſed them, inſtead of ſalt, to ſeaſon their meat withal; whence the Latins call the tree, *rhus obſoniorum*: from its uſe in the dreſſing of leather, it is alſo called *rhus coriaria*.

SUMMARY, an abridgement, containing the ſum and ſubſtance of a thing in a few words. See ABRIDGEMENT.

The *ſummary* placed at the head of a book, a chapter, a law, or the like, is very uſeful to the reader, to facilitate the underſtanding thereof. See ARGUMENT.

A recapitulation, is to contain a *ſummary* of the whole preceding diſcourſe. See RECAPITULATION.

SUMMATORIUS *calculus*, the method of ſumming differential quantities; that is, from any differential given, to find the quantity from whoſe differencing the given differential reſults. See DIFFERENTIAL.

This method we more uſually call *the inverſe method of fluxions*; and foreigners, *integralis calculus*. See CALCULUS, and FLUXIONS.

SUMMER, one of the ſeaſons of the year, commencing in theſe northern regions, on the day the ſun enters cancer; and ending when he quits virgo. See SEASON.

Or, more ſtrictly and univerſally, the *ſummer* begins on the day when the ſun's meridian diſtance from the zenith is the leaſt. It ends on the day when his diſtance is a mean betwixt the greateſt and ſmalleſt. See SUN.

The end of *ſummer* coincides with the beginning of winter. See WINTER.

SUMMER *flowers*, } See the articles { FLOWERS.
SUMMER *ſolſtice*, } { SOLSTICE.

SUMMER *, in architecture, is a large ſtone, the firſt that is laid over columns and pilaſters, in beginning to make a croſs vault; or it is the ſtone which being laid over a piedroit or column, is hollowed, to receive the firſt haunce of a plat-band.

* The word is formed from the French, *ſommier*, which ſignifies the ſame thing.

SUMMER, in carpentry, is a large piece of timber, which being ſupported on two ſtone peers, or poſts, ſerves as a lintel to a door, window, *&c.*

There are alſo *ſummers* uſed in various engines, *&c.* ſerving to ſuſtain the weight, *&c.*

SUMMER *tree*, denotes a beam into which the ends of joyſts are faſtened, and to which the girders are framed. See BREST-SUMMER, and GIRDER.

SUMMER of an organ. See the article SOUND-*board*.

SUMMET *, the vertex, or point of any body, or figure; as of a triangle, a pyramid, a pediment, *&c.* See APICES, VERTEX.

* The word is formed from the French, *ſommet*, which ſignifies the ſame.

SUMMONER, SUMMONITOR, an apparitor, or petty officer who is to cite perſons to appear at a certain time and place, to anſwer to the charge exhibited againſt them. See APPARITOR, and SUMMONS.

SUMMONS, SUMMONITIO, in law, a citing or calling a perſon to any court, to anſwer a complaint, or even to give in his evidence, *&c.* See CITATION, and RESUMMONS.

This is the ſame with the *vocatio in jus*, or the *citatio* of the civilians: hence alſo our old word *ſumner*, or *ſummoner*. See SUMMONER.

SUMMONS *in terra petita*, is that made on the land which the party, at whoſe ſuit the ſummons is ſent out, ſeeks to have.

SUMMONS *ad warrantizandum*, is a proceſs, whereby the vouchee in a common recovery is called. See VOUCHEE.

SUMMONS, in war.—To *ſummons* a place, is to ſend a drum, or trumpet, to command the governor to ſurrender; or, in defect thereof to proteſt to make an aſſault, and to lay all in fire and blood.

SUMMUM *bonum*, in ethics, the chief good of human nature; or that, which, by its enjoyment, renders men truly and compleatly happy. See GOOD.

The ſchools diſtinguiſh this chief good of man, into that which is ſimply and adequately ſo, and beyond which there can be no other; and an inferior and ſubordinate ſort, which is in ſome meaſure attainable in this imperfect ſtate.

This laſt they call *fœlicitas viatorum*; and the former, *fœlicitas comprehenſorum*.

SUMMUM *genus*. See the article GENUS.

SUMPTER *horſe*, is an horſe that carries proviſions, and neceſſaries for a journey. Ruſt.

SUMPTUARY *laws*, *leges* SUMPTUARIÆ, are laws made to reſtrain exceſs in apparel, coſtly furniture, eating, *&c.* See LAW.

Moſt ages and nations have had their *ſumptuary* laws; and ſome retain them ſtill, as the Venetians, French, *&c.* But it is obſerved, that no laws are worſe executed than *ſumptuary* laws.

The *ſumptuary* laws of that ancient Locrian legiſlator Zaleucus, are famous: by theſe it was ordained, that no woman ſhould go attended with more than one maid in the ſtreet, except ſhe were drunk: that ſhe ſhould not go out of the city in the night, unleſs ſhe went to commit fornication: that ſhe ſhould not wear any gold or embroidered apparel, unleſs ſhe propoſed to be a common ſtrumpet. That men ſhould not wear rings, or tiſſues, except when they went a whoring, *&c.*

The Engliſh have had their ſhare of *ſumptuary* laws, though all repealed by a ſtatute 1° Jac. I. or obſolete.

Under king Henry IV. Camden tells us, pride was got ſo much into the foot, that it was proclaimed, That no man ſhould wear ſhoes above ſix inches broad at the toes. And their other garments were ſo ſhort, that it was enacted, 25 Ed. IV. That no perſon under the condition of a lord, ſhould, from that time, wear any mantle or gown, unleſs of ſuch length, that, ſtanding upright, it might cover his privy members and buttocks.

Among the Romans, the *ſumptuary* and cibary laws were very numerous: by the lex Orchia, the number of gueſts at feaſts was limited, though without limitation of the charges thereof. By the Fannian law, made twenty-two years afterwards, it was enacted, That more than ten as's ſhould not be ſpent at any ordinary feaſt: for the ſolemn feaſts, as the ſaturnalia, *&c.* an hundred as's were allowed; ten of which, Gellius informs us, was the price of a ſheep, and an hundred of an ox.

By the Didian law, which was preferred eighteen years after, it was decreed, that the former *ſumptuary* laws ſhould be of force, not only in Rome, but throughout Italy: and that for every tranſgreſſion, not only the maſter of the feaſt, but all the gueſts too, ſhould be liable to the penalty.

SUN, SOL, in aſtronomy, the great luminary which enlightens the world, and by his preſence conſtitutes day. See DAY.

The *ſun* is uſually reckoned among the number of planets; but that he ought rather to be numbered among the fixed ſtars, will be ſhewn in its place. See STAR, and PLANET.

According to the Copernican hypotheſis, which is now generally received, and which has even demonſtration on its ſide, the *ſun* is the centre of the planetary and cometary ſyſtem; round which all the planets and comets, and our earth among the reſt, revolve, in different periods, according to their different diſtances from the *ſun*. See this motion illuſtrated and demonſtrated under the article PLANET.

But the *ſun*, though thus eaſed of that prodigious motion, whereby the ancients imagined him to revolve daily round our earth; yet is not a perfectly quieſcent body.

From the phænomena of his maculæ or ſpots, it evidently appears, that he has a rotation round his axis; like that of the earth whereby the natural day is meaſured; only ſlower.—Some of theſe ſpots have made their firſt appearance near the edge or margin of the *ſun*, and have been ſeen ſome time after on the oppoſite edge; whence, after a ſtay of about fourteen days, they have re-appeared in their firſt place, and taken the ſame courſe over again; finiſhing their entire circuit in twenty-ſeven days time: which is hence deduced to be the period of the *ſun*'s rotation round his axis. This motion of the ſpots, is from weſt to eaſt, whence we conclude that of the *ſun*, to which the other is owing, to be from eaſt to weſt.—For the various appearance of the ſolar ſpots, their cauſe, *&c.* ſee MACULÆ, and SPOTS.

For the apparent annual motion of the SUN *round the earth*; it is eaſily ſhewn by aſtronomers, that the annual motion of the earth will occaſion ſuch an appearance, though it be demonſtrated that there is no ſuch thing.

A ſpectator in the *ſun*, would ſee the earth move from weſt to eaſt, for the ſame reaſon as we ſee the *ſun* move from eaſt to weſt. And all the phænomena reſulting from this annual motion, in whichſoever of the bodies it be, will appear the ſame from either.

Let S, for inſtance (*Tab. Aſtron.* fig. 39.) repreſent the *ſun*, ABCD the earth's orbit, which it paſſes through from weſt to eaſt, in the ſpace of a year.—Now, a ſpectator in S, viewing the earth at A, will refer it to the point of the ſphere of the ſtars, ♈: when arrived in B, the ſpectator will ſee it, as in the point ♋: when in C, as in the point ♎, *&c.* till after its whole circuit, it will be again ſeen in ♈. Thus will the earth appear to deſcribe the whole ecliptic, and to paſs, ſucceſſively, from ſign to ſign.

Suppoſe, now, the ſpectator removed from the *ſun* to the earth, which imagine in C; the diſtance of the fixed ſtars, we have ſhewn, is ſo vaſt, that the *ſun* is but a point to it. The ſpectator, therefore, now ſituate on the earth, will ſee the ſame face of the heavens, the ſame ſtars, *&c.* as before; the only difference will be, that as before he imagined the earth in the heavens, and the *ſun* in the centre; he will now ſuppoſe the *ſun* in the heavens, and the earth in the centre.

The earth, therefore, being in C, the ſpectator will ſee the *ſun* in ♈; and the ſpectator being carried along with the earth, and partaking of his annual motion, will not perceive either his own motion, or that of the earth; but obſerving the *ſun*, when the earth is arrived at D, the *ſun* will be ſeen at ♋. Again, while the earth proceeds to A, the *ſun* will ſeem to have moved through the ſigns ♋, ♌, and ♍: and while the earth deſcribes the ſemi-circle A B C, the *ſun* will appear to have moved in the concave ſurface of the heavens, through the ſix ſigns, ♎, ♏, ♐, ♑, ♒, ♓. So that an inhabitant of the earth will ſee the *ſun* go through the ſame orbit or circle in the heavens, and in the ſame ſpace of time, as a ſpectator in the *ſun* would ſee the earth deſcribe the ſame.

Hence ariſes that apparent motion of the *ſun*, whereby he is ſeen to advance, inſenſibly, towards the eaſtern ſtars: inſomuch, that if any ſtar near the ecliptic, riſe any time with the *ſun*; after a few days, the *ſun* will be got more to the eaſt of the ſtar; and the ſtar will riſe and ſet before him.

For the ſeveral phænomena reſulting from the *ſun*'s apparent motion, or the earth's real motion, as the diverſity of day and night, of ſeaſons, *&c.* ſee EARTH.

Nature, *properties*, *figure*, &c. *of the* SUN.—1°. As the ſolar ſpots are ſometimes found to ſtay three days longer behind the *ſun*, than they ſpend in paſſing over the hemiſphere viſible to us; we eaſily deduce, that they do not adhere to the ſurface of the *ſun*, but are at ſome diſtance therefrom.

2°. As the ſpots frequently riſe and vaniſh, even in the midſt of the *ſun*'s diſk; and undergo ſeveral changes, both with regard to bulk, and figure, and denſity; it follows, that they frequently riſe de novo, about the *ſun*, and are again diſſipated.

3°. Hence it ſhould follow, that they are formed out of the exhalations of the *ſun*; and are no other than ſolar clouds. See VAPOUR, CLOUD, *&c.*

4°. Since, then, exhalations proceeding from the *ſun*, riſe above him, and ſtop at a certain altitude; it is evident there is ſome fluid incompaſſing the *ſun*, to urge the exhalations to riſe: and this fluid muſt be denſer at bottom, and rarer a-top, like our atmoſphere. See ATMOSPHERE.

5°. Since the ſpots frequently diſſolve and diſappear in the middle of the *ſun*'s diſk; the matter of the ſpots, that is, the ſolar exhalations, fall back again to the *ſun*: whence it follows, that there muſt ariſe various alterations in the *ſun*'s atmoſphere, and the *ſun* himſelf. See RAIN, HAIL, METEOR, *&c.*

6°. Since the revolution of the ſpots round the *ſun* is found very regular, and the ſpots very near the *ſun*; it follows, that the ſpots do not revolve round the *ſun*, but that the *ſun*, together with his atmoſphere, wherein the maculæ are, move round their common axis, in an interval of about twenty-ſeven days: and hence it is, that the ſpots near the limb, being viewed obliquely, appear narrow and oblong.

7°. Since the *ſun*, in every ſituation, appears like a circular diſk; its figure, as to ſenſe, muſt be ſpherical; though we ſhall hereafter ſhew, that it is really ſpheroidical.

Beſides the maculæ or dark ſpots, ſeveral authors make mention of faculæ, or ſpots brighter than the reſt of the *ſun*'s diſk; and thoſe generally larger, and very different from the maculæ, both in figure, duration, *&c.*

The faculæ, Kircher, Scheiner, *&c.* ſuppoſe to be eruptions of flames; and hence take occaſion to repreſent the face of the *ſun* as full of volcano's, *&c.* But Huygens, uſing the beſt teleſcopes, could never find any ſuch things, though he has ſometimes ſpied certain places in the maculæ themſelves, more lucid than the reſt. But theſe do not ſeem owing to any kindled matter, which were ſcarce conſiſtent with their duration, and their frequent change into maculæ; but to the refraction of the *ſun*'s rays through the thinner exhalations, when as the groſſer, in their neighbourhood, intercept the ſame. See FACULÆ.

8°. That the ſubſtance of the *ſun* is fire, we thus prove: the *ſun* ſhines, and his rays, collected by concave mirrors, or convex lens's, burn, conſume, and melt the moſt ſolid bodies, or elſe convert them into aſhes, or glaſs. Wherefore, as the force of the ſolar rays is diminiſhed by their divergency, in a duplicate ratio of the diſtances reciprocally taken: it is evident, their force and effect is the ſame, when collected by a burning lens or mirror, as if we were at ſuch diſtance from the *ſun*, where they were equally denſe. The *ſun*'s rays, therefore, in the neighbourhood of the *ſun*, produce the ſame effects, as might be expected from the moſt vehement fire; conſequently, the *ſun* is of a fiery ſubſtance. See FIRE.

Hence it follows, that its ſurface is every where fluid; that being the condition of flame. See FLAME and FLUIDITY. Indeed, whether the whole body of the *ſun* be fluid, as ſome think, or ſolid, as others; we do not determine: but as there are no other marks, whereby to diſtinguiſh fire from other bodies, but light, heat, a power of burning, conſuming, melting, calcining, and vitrifying; we do not ſee what ſhould hinder, but that the *ſun* may be a globe of fire, like ours, inveſted with flame.

9°. Since the maculæ are formed out of the ſolar exhalations, it appears, that the *ſun* is not pure fire, but that there are heterogeneous particles mixed along with it.

10°. The figure of the *ſun* is a ſpheroid, higher under its equator than about the poles. This we prove thus: the *ſun* has a motion about its own axis, and therefore the ſolar matter will have an endeavour to recede from the centres of the circles wherein it moves; and that, with the greater force, as the peripheries of the circles are greater. But the equator is the greateſt circle, and the reſt, towards the poles, continually decreaſe; therefore the ſolar matter, though at firſt in a ſpherical form, will endeavour to recede from the centre of the equator, further than from the centres of the parallels. See CENTRAL *force.*

Conſequently, ſince the gravity whereby it is retained in its place, is ſuppoſed to be uniform throughout the whole *ſun*; it will really recede from the centre, more under the equator than under any of the parallels. And hence the *ſun*'s diameter, drawn through the equator, will be greater than that paſſing through the poles, *i. e.* the *ſun*'s figure is not perfectly ſpherical, but ſpheroidical. See SPHEROID.

For the parallax of the SUN, ſee PARALLAX.

For the SUN'*s diſtance*; as the determination thereof depends on that of the parallax, and as the *ſun*'s parallax is not found without a long operoſe calculus; ſo aſtronomers do not agree much about either of them.

The mean diſtance of the *ſun* from the earth, ſome make 7490 diameters of the earth; others 10000, others 12000, others 15000; but allowing M. de la Hire's parallax of 6″, the *ſun*'s mean diſtance will be 17188 diameters of the earth; and allowing that of Caſſini, only 14182. See DISTANCE.

The apparent diameter of the *ſun*, is not always the ſame. Ptolemy makes it, when greateſt, 33′ 20″; Tycho 32′; Kepler, 31′ 4″; Ricciolus, 32′ 8″; Caſſini, 32′ 20″; de la Hire, 32′ 43″. Its mean, apparent diameter, according to Ptolemy, is 32′ 18″; according to Tycho, 31′; according to Kepler, 30′ 30″; according to Ricciolus, 31′ 40″; according to Caſſini, 31′ 40″; according to de la Hire, 32′ 10″. Its leaſt diameter, Ptolemy makes, 31′ 20″; Tycho, 30′; Kepler, 30′; Ricciolus, 31′; Caſſini, 31′ 8″; de la Hire, 31′ 38″.

The true diameter of the *ſun* to that of the earth, is computed to be, as 10000 to 208. See DIAMETER.

For the eclipſes of the SUN, ſee the article ECLIPSE.

Cycle of the SUN. See the article CYCLE.

Meridian altitude of the SUN. See the article MERIDIAN.

Angle at the SUN,		ANGLE.
Diurnal arch of the SUN,		ARCH.
Height of the SUN,		HEIGHT.
Nadir of the SUN,		NADIR.
Nocturnal arch of the SUN,	See	ARCH.
Place of the SUN,		PLACE.
Retrogradation of the SUN,		RETROGRADATION.
Vertical of the SUN,		VERTICAL.
Raiſins of the SUN,		RAISIN.

SUNDAY, the firſt day of the week; thus called by our idolatrous anceſtors, becauſe ſet apart for the worſhip of the ſun. See DAY and WEEK.

It is now called the *Lord's-day*, *dies dominicus*, becauſe kept as a feaſt in memory of our Lord's reſurrection on this day; and *ſabbath-day*, becauſe ſubſtituted under the new law, in the place of the ſabbath, in the old law. See SABBATH.

In the Breviary, and other offices, we meet with *ſundays* of the *firſt* and *ſecond claſs.*—Thoſe of the firſt claſs, are *Palm*, *Eaſter*, *Advent* and *Whit-ſunday*, thoſe of *quaſimodo* and *quadrageſima*; each whereof ſee under its proper article.—Thoſe of the ſecond claſs, are the common *ſundays.*

Anciently, each *ſunday* in the year had its particular name, which was taken from the introit of the day; which cuſtom has only been continued to ſome few in Lent: as, *reminiſcere*, *oculi*, *lætare*, *judica.*

It was Conſtantine the Great, who firſt made a law for the obſervation of *ſunday*; and who, according to Euſebius, appointed it ſhould be regularly celebrated throughout the Roman empire.

Before him, and even in his time, they obſerved the Jewiſh ſabbath as well as *ſunday*; both to ſatisfy the law of Moſes, and to imitate the apoſtles, who uſed to meet together on the firſt day.

Indeed, ſome are of opinion that the Lord's-day, mentioned in the Apocalypſe, is our *ſunday*; which they will have to have been ſo early inſtituted by the apoſtles.—Be this as it will, it is certain, a regard was had to this day, even in the earlieſt ages of the church; as appears from the firſt apology of Juſtin Martyr, where he deſcribes the exerciſe of the day, not much unlike to ours.

By Conſtantine's laws, made in 321; it was decreed, that for the future, the *ſunday* ſhould be kept a day of reſt in all cities and towns; but he allowed the country people to follow their work.—In 538, the council of Orleans prohibited this country-labour; but in regard there were ſtill abundance of Jews in the Gauls, and that the people gave into a good many ſuperſtitious uſages in the celebration of the new ſabbath, like thoſe of the Jews among that of the old; the council declares, that to hold it unlawful to travel with horſes, cattle, and carriages, to prepare foods, or to do any thing neceſſary to the cleanlineſs and decency of houſes or perſons, ſavours more of Judaiſm than Chriſtianity.

Quinquageſima SUNDAY,	See	QUINQUAGESIMA.
Trinity SUNDAY,		TRINITY.

SUNDAY *letter*. See the article DOMINICAL *letter*.

SUN-*flower*. See the article TURNESOL.

SUONATA. See the article SONATA.

SUOVETAURILIA, or SOLITAURILIA, a ſolemn ſacrifice among the ancient Romans; wherein they offered three victims, of three different kinds, *viz.* a bull, a ram, and a boar.

Livy deſcribing it, calls it *ſuovetaurilia*, as compoſed of *ſus*, *ovis*, and *taurus*, the names of the three victims ſacrificed. Dion. Halicarnaſſeus deſcribing the ſame, calls it *ſolitaurilia*, in regard it was required, that the victims were perfect, and without any defect; *ſollus*, or *ſolus*, in the language of the Oſci, ſignifying *integer*, entire.

SUPERBIPARTIENS. See the article RATIO.

SUPERCARGO, a perſon employed by merchants to go a voyage, and overſee their cargo or lading, and diſpoſe of it to the beſt advantage.

SUPERCILII *corrugator*. See the article CORRUGATOR.

SUPERCILIUM, in anatomy, the eye-brow. See EYE.

SUPERCILIUM, in the ancient architecture, denotes the uppermoſt member of the corniche, called by the moderns, *corona*, *crown*, or *larmier*. See LARMIER.

Mr. Evelyn conceives, it ſhould rather have been called *ſtillicidium*, or *drip*, to denote its office of ſheltering the order from rain, *&c.* See CORONA and CORNICHE.

SUPERCILIUM, is alſo uſed for a ſquare member under the upper tore in ſome pedeſtals.

Some authors confound it with the tore itſelf. See TORE.

SUPEREROGATION, in theology, what a man does beyond his duty, or more than he was commanded to do.

The Romaniſts ſtand up ſtrenuouſly for works of *ſupererogation*; and maintain, that the obſervance of evangelical councils is ſuch. By means hereof, a ſtock of merit is laid up; which the church has the diſpoſal of, and which ſhe diſtributes in indulgences to ſuch as need. See INDULGENCE.

The reformed church do not allow of any work of *ſupererogation*; but hold with the apoſtle, That when we have done our beſt, we are but unprofitable ſervants. See MERIT.

SUPERFETATION, SUPERFOETATIO, in medicine, an after or ſecond conception; happening when the mother, already pregnant, conceives, of a later coition; ſo that ſhe bears at once two fœtus's of unequal age and bulk, and is delivered of them at different times. See BIRTH, CONCEPTION, FOETUS, *&c.*

* The word is formed from the Latin, *ſuper*, over, and *fœtus*, embryo.

We meet with inſtances of *ſuperfetations* of women in Hippocrates, Ariſtotle, Pliny, du Laurens, *&c.*—But they are much more frequent in hares, and ſows.

An inſtance of an extraordinary kind of *ſuperfetation*, we have in Bartholine; who tells us, that a Daniſh girl was born big with child.

Mentzelius, a German phyſician, adds, that in 1672, the wife of a phyſician, in Thuringia, was delivered of a girl big with another; whereof ſhe was delivered in eight days time; and which was baptized, and died a day after her mother.

The naturaliſts hold, that female rats are frequently born with young rats in their wombs.—In the king of Denmark's cabinet, is ſeen an egg, in the middle whereof is another egg perfectly formed. See EGG.

We meet with ſomething like a *ſuperfetation* in plants too; there being a kind of lemon found to grow incloſed in the body of another.

In the *Hiſtory of the royal academy of ſciences*, for the year 1709, mention is made of a letter from a very conſiderable magiſtrate, to the academy, containing a very remarkable inſtance of a *ſuperfetation*; a butcher's wife of Aix being delivered in that year of nine children, each about two days after other, all well formed and alive.

SUPERFICIAL *content*. See SUPERFICIES, AREA and MEASURING.

SUPERFICIES, or SURFACE, in geometry, a magnitude, conſidered as having two dimenſions; or extended in length and breadth; but without thickneſs or depth. See DIMENSION.

In bodies, the *ſuperficies* is all that preſents itſelf to the eye. See BODY.—A *ſuperficies* is chiefly conſidered, as the external part of a ſolid: when we ſpeak of a ſurface ſimply, and without any regard to body, we uſually call it *figure*. See FIGURE.

Rectilinear SUPERFICIES, is that comprehended between right lines.

Curvilinear SUPERFICIES, that comprehended between curve lines. See CURVE.

Plane SUPERFICIES, is that which has no inequality, but lies evenly between its boundary lines. See PLANE.

Convex SUPERFICIES, is the exterior part of a ſpherical or ſpheroidical body. See CONVEX.

Concave SUPERFICIES, is the internal part of an orbicular or ſpheroidical body. See CONCAVE.

The meaſure or quantity of a ſurface, is called the *area* thereof. See AREA and MEASURING.

The finding of this meaſure or area, is called the *quadrature* thereof. See QUADRATURE.

To meaſure the ſurfaces of the ſeveral kinds of bodies, as ſpheres, cubes, parallelepipeds, pyramids, priſms, cones, *&c.* ſee SPHERE, CUBE, PARALLELEPIPED, *&c.*

Line of SUPERFICIES, a line uſually found on the ſector, and Gunter's ſcale.—The deſcription and uſe hereof, ſee under the articles SECTOR and GUNTER's *ſcale*.

SUPERFINE, in the manufactories, a term uſed to expreſs the ſuperlative fineneſs of a ſtuff. See FINE.

Thus a cloth, a camlet, *&c.* are ſaid to be *ſuperfine*, when made of the fineſt wool, *&c.* or when they are the fineſt that can be made.

The term is particularly uſed among gold wier-drawers, for the gold or ſilver wier which after being drawn through an infinite number of holes, each leſs and leſs, is, at length, brought to be no bigger than a hair. See GOLD-*wier*.

SUPERINCESSUS *radens*,	See	SLIDING.
SUPERINCESSUS *volvens*,		ROLLING.

SUPERINSTITUTION, SUPERINSTITUTIO, denotes one inſtitution upon another.—As, if A be admitted and inſtituted to a benefice upon one title, and B be admitted, inſtituted, *&c.* by the preſentation of another. See INSTITUTION.

SUPERINTENDENT, in the French cuſtoms, an officer who has the prime management and direction of the finances or revenues of the king.

The term is alſo uſed for the firſt officer in the queen's houſhold, who has the chief adminiſtration thereof.

They have alſo a *ſuperintendent* of the buildings, anſwering to the ſurveyor of the works among us. See SURVEYOR.

The cardinal de Richelieu made himſelf *ſuperintendent* of commerce.

SUPERINTENDENT, alſo denotes an eccleſiaſtical ſuperior in ſeveral reformed churches where epiſcopacy is not admitted; particularly among the Lutherans in Germany, and the Calviniſts in ſome other places.

The *ſuperintendent* is, in effect, little other than a biſhop; only his power is ſomewhat more reſtrained than that of our dioceſan biſhops. See BISHOP.

He is the chief paſtor, and has the direction of all the inferior paſtors within his diſtrict, or dioceſe.

In Germany they had formerly SUPERINTENDENTS *general*, who were ſuperior to the ordinary *ſuperintendents*.—Theſe, in reality, were archbiſhops; but the dignity is ſunk into diſuſe; and at preſent, none but the *ſuperintendent* of Wirtemberg aſſumes the quality of *ſuperintendent general*.

SUPERIOR, or SUPERIOUR, ſomething raiſed above another, or that has a right to command another.—Thus an abbot is called the *ſuperior* of an abbey; and a prior the *ſuperior* of a convent. See ABBOT, PRIOR, *&c.*

The canoniſts hold, that a perpetual ſuperiority conſtitutes a title: but a *ſuperior* may be continued by thoſe who conſtituted him ſuch, yet without the ſuperiority's being rendered, by that means, perpetual.

The church of France allow the ſuperiority and primacy of the pope; not his infallibility, as all the other Romiſh churches do. See POPE.

SUPERIOR *capitis obliquus*,	See	OBLIQUUS.
SUPERIOR *maxilla*,		MAXILLA.
SUPERIOR *oculi obliquus*,		OBLIQUUS.
SUPERIOR *planets*,		PLANET.
SUPERIOR *poſticus ſerratus*,		SERRATUS.
SUPERIOR *reſpondeat*,		RESPONDEAT.
SUPERIOR *ſcapularis*,		SUPRASPINATUS.
SUPERIORIS *labii elevator*,		ELEVATOR.

SUPERJURARE.—Anciently, when a criminal endeavoured to excuſe himſelf by his own oath, or by that of one or more witneſſes; and yet the crime was ſo notorious, that he was convicted by the oaths of many more witneſſes; this was called *ſuperjurare*. See OATH, PURGATION, *&c.*

SUPERLATIVE, in grammar, an inflexion of nouns adjective, ſerving to augment and heighten their ſignification, and ſhew the quality of the thing denoted to be in the higheſt degree. See DEGREE.

In Engliſh, the *ſuperlative* is uſually formed by the addition of *eſt*; as rich*eſt*, holi*eſt*, *&c.* rarely by the addition of *iſſimo*, as generali*ſſimo*; more frequently by the prefixing of *moſt*; as *moſt* honourable, *moſt* amiable, *&c.*

The French are generally forced to form their *ſuperlatives*, by prefixing of *le plus*, ſometimes of *tres*, and ſometimes of *fort*. The Italians and Spaniards have great advantages over them in this reſpect; their language abounding with magnificent words to exaggerate things withal, without auxiliary particles: yet the Hebrews are more poor than the French in this reſpect, as having neither comparatives nor *ſuperlatives*. They uſe to expreſs theſe degrees by the particles *joter* and *meod*, ſometimes by the prepoſition *min*, and ſometimes by re-doubling the words; of which we find frequent inſtances in the bible.

SUPERNATURAL *grace.* See the article GRACE.

SUPERNATURAL *theology.* See the article THEOLOGY.

SUPERNUMERARY, ſomething over and above a fixed number.—In ſeveral of the offices are *ſupernumerary* clerks, to be ready on extraordinary occaſions.

There are alſo *ſupernumerary* ſurveyors of the exciſe, to be ready to ſupply vacancies when they fall: theſe have but half pay.

In muſic, the *ſupernumerary*, called by the Greeks *proſlambanomenos*, is the loweſt of the chords of their ſyſtem; anſwering to a, mi, la, of the loweſt octave of the moderns. See DIAGRAM.

SUPERPARTICULARIS,
SUPERPARTIENS, } See RATIO.

SUPER-PURGATION, *hypercatharſis*, in medicine, an exceſſive, over-violent purging. See PURGATION.

A man who had taken powder of diarcathamum inwardly, was ſent by it to ſtool an hundred times; and was cured of the *ſupur-purgation* by a pound of capon-broth, an ounce of ſaccharum roſatum, five grains of laudanum, and the yolk of an egg.—In lieu of laudanum, they ſometimes uſe a drachm and a half of new venice-treacle. Burnet.

SUPERQUADRIPARTIENS. See the article RATIO.

SUPERSCAPULARIS *inferior*, called alſo *infraſpinatus*; a muſcle that helps to draw the arm backwards. It covers all the ſpace that is between the ſpine, and the teres minor; and is inſerted into the neck of the humerus.

SUPERSCAPULARIS *ſuperior*, in anatomy, a muſcle, called alſo *ſupraſpinatus*. See SUPRASPINATUS.

SUPERSEDEAS, a writ iſſued in divers caſes, importing, in general, a command to ſtay, or forbear ſome ordinary proceedings at law, which, in appearance, ought to be done, or purſued, were it not for the cauſe, whereon this writ is granted.

Thus, a man, regularly, is to have a ſurety of peace, againſt him of whom he will ſwear he is afraid; and the juſtice required hereunto cannot deny it him: yet if the party be formerly bound to the peace, either in chancery, or elſewhere, this writ lies, to ſtay the juſtice from doing that, which otherwiſe he ought not to deny.

Clerk of the SUPERSEDEAS. See the article CLERK.

SUPERSTITION, extravagant devotion, or religion wrong directed, or conducted. See RELIGION.

It was a piece of *ſuperſtition* in the ancient Romans, to obſerve the flight of birds, the entrails of victims, &c. See AUGURY, AUSPICIUM, &c.

The Romiſh prieſts make a fine penny of the *ſuperſtition* of the people: Monſ. Thiers has an expreſs treatiſe *de ſuperſtitions populaires.* Women, he obſerves, are naturally more inclined to *ſuperſtition* than impiety. Plutarch has endeavoured to ſhew, that *ſuperſtition* is worſe than atheiſm. The puniſhment allotted by ſeveral councils for the ſuperſtitious, is, to faſt a month in priſon.

SUPERSTITIOUS *magic.* See MAGIC.

SUPERVISOR, ſignifies a ſurveyor, or overſeer. See SURVEYOR, &c.

It was formerly, and ſtill remains a cuſtom among ſome, eſpecially of the better ſort, to make *ſupervisſor* of wills; to overlook the executors, and ſee their wills truly performed: but it is to little purpoſe; as being now ſo careleſly executed. See WILL, EXECUTOR, &c.

SUPINATION, SUPINATIO, in anatomy, the action of a ſupinator muſcle; or the motion whereby it turns the hand, ſo as that the palm is lifted upwards towards heaven. See SUPINATOR.

SUPINATOR, in anatomy, a denomination given to two muſcles of the arm; the one called *ſupinator longus*, the other *ſupinator brevis:* both ſerving to turn the palm of the hand upwards.

The firſt ariſes by a fleſhy beginning, three or four fingers breadth above the external protuberance of the humerus. It lies along all the radius, to whoſe inferior and external part it is inſerted by a pretty broad tendon.—See *Tab. Anat.* (Myol.) fig. 1. n. 20. fig. 2. n. 19, fig. 6. n. 16. fig. 7. n. 44.

The ſecond comes from the external and upper part of the ulna, and paſſing round the radius, is inſerted into its upper and fore part, below the tendon of the biceps.—See *Tab. Anat.* (Myol.) fig. 7. n. 10, 10. and 45.

SUPINE, in the Latin grammar, a part of the conjugation of a verb, of like effect with the infinitive mood. See VERB, MOOD, &c.

There are two kinds of *ſupines*, the one in *um*, whoſe ſignification is active, and marks a motion, as *dare nuptum*; the other in *u*, having a paſſive ſignification, as *horrendum auditu*, &c.—The *ſupines* have neither number nor perſon.

They have their name, ſays Probus, and after him Voſſius, *quod ad inſtar* ſupinorum & *otioſornm hominum omnia habent confuſa.* Or, according to Priſcian, *quod naſcantur a participiis paſſivis, quæ* ſupina *appellata ſunt, quia in infimo loco ſita, totam conjugationis molem ſuſcipiant.*

SUPPLANTALIA, or SUPPEDANEA, among phyſicians, plaiſters, or other medicaments applied to the ſoles of the feet; generally made of leaven, muſtard, horſe-radiſh, ſalt, ſoap, gunpowder, &c.

SUPPLEMENT *of an arch*, in geometry or trigonometry, is the number of degrees that it wants of being an intire ſemicircle: as *complement* ſignifies what an arch wants of being a quadrant. See QUADRANT, COMPLEMENT, &c.

SUPPLEMENT, in matters of literature, an appendage to a book, to ſupply what is wanting therein. See APPENDIX, and PARERGON.

Frenſheimius has wrote divers *ſupplements*, to reſtore the books of ſeveral ancient authors, part whereof had been loſt. The French alſo uſe the word *ſupplement* for a kind of tax, or after-payment charged on lands, offices, &c. that are pretended to have been ſold beneath their value.

SUPPLICAVIT, a writ iſſuing out of chancery, for taking ſurety of the peace when one is in danger of being hurt in his body by another. See SURETY.

It is directed to the juſtices of the peace, and ſheriff of the county; and is grounded on the ſtatute 1 Ed. III. which appoints, that certain perſons ſhall be aſſigned by the lord chancellor to take care of the peace. See PEACE.

SUPPORTED, in heraldry, a term applied to the uppermoſt quarters of a ſhield, when divided into ſeveral quarters; theſe ſeeming, as it were, *ſupported*, or ſuſtained, by thoſe below. See QUARTERING.

The chief is alſo ſaid to be *ſupported* when it is of two colours, and the upper colour takes up two thirds of it: in this caſe it is *ſupported* by the colour underneath.

SUPPORTERS, in heraldry, figures in an atchievement, placed by the ſide of the ſhield, and ſeeming to *ſupport*, or hold up the ſame. See ATCHIEVEMENT, ESCUTCHEON, &c.

Supporters are chiefly figures of beaſts; figures of human creatures uſed for the like purpoſe are more properly called *tenants.* See TENANT.

Some make another difference beween *tenant* and *ſupporter:* when the ſhield is bore by a ſingle animal, it is called *tenant*; when by two, they are called *ſupporters.*

The figures of things inanimate, ſometimes placed aſide of eſcutcheons, but not touching, or ſeeming to bear them; though ſometimes called *ſupporters*, are more properly called *cotiſes.* See COTICE.

The *ſupporters* of the Engliſh arms are a lion and an unicorn; ſome of the former kings had a leopard and an unicorn; others griffons; others eagles. See ARMS.

The *ſupporters* of the French arms are angels; which are ſaid to have been firſt introduced by Philip VI. his device being an angel over-throwing a dragon: the dragon being at that time the device of the king of England.

Thoſe of the prince of Monaco, are Auguſtine monks: Thoſe of the family of the Urſini, bears, in alluſion to their names.

In England, none below the degree of a banneret are allowed *ſupporters*, which are reſtrained to thoſe called the *high nobility.* The Germans permit none but princes and noblemen of rank to bear them. Among the French the uſe is more promiſcuous.

SUPPOSITI *medium.* See the article MEDIUM.

SUPPOSITION, in muſic, is when one of the parts dwells on a note, while another part makes two or more leſſer notes equivalent to it, by conjoint degrees. See HARMONY, and COUNTERPOINT.

Suppoſition is defined by a late author the uſing of two ſucceſſive notes, of the ſame value, as to time; the one whereof being a diſcord, *ſuppoſes* the other a concord. See HARMONY.

The harmony, Mr. Malcolm obſerves, is always to be full on the accented parts of the bar, or meaſure, but on the unaccented, diſcords may tranſiently paſs, without any offence to the ear. This tranſient uſe of diſcords, followed by concords, make what we, after the French, call *ſuppoſition.* See CONCORD, and DISCORD.

There are ſeveral kinds of *ſuppoſition:* the firſt is, when the parts proceed gradually from concord to diſcord, and diſcord to concord; the intervening diſcord ſerving only as a tranſition to the following concord.

Another kind is, when the parts do not proceed gradually from the diſcord to the concord, but deſcend to it by the interval of a third.

A third kind, like the ſecond, is, when the riſing to the diſcord is gradual; but the deſcending from it to the following concord, is by the diſtance of a fourth.

A fourth kind, very different from all the reſt, is, when the diſcord falls on the accented parts of the meaſure, and the riſing to it is by the diſtance of a fourth. In which caſe it is abſolutely neceſſary to follow it immediately, by a gradual deſcent into a concord, that has juſt been heard before the harmony; to make the preceding diſcord paſs without offence, and only ſeem a tranſition to the concord.

SUPPOSITION, in arithmetic. See POSITION.

SUPPOSITORY *, SUPPOSITORIUM, in pharmacy, a ſolid medicine thruſt up the fundament, in lieu of a liquid one, or clyſter, where that would not be ſo convenient. See CLYSTER.

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* The Latins call it *balanus*, becauſe anciently made in figure of an acorn.

It is uſually compoſed of common honey, mixed up with either ſoap, or oil, and formed into pieces of the length and thickneſs of the little finger, only pyramidal.—To the compoſition is ſometimes alſo added powder of ſcammony, euphorbium, colocynthis, *&c.*

On ſome occaſions *ſuppoſitories* are only a cut of bacon, the ſtem of a leek, or the like matter, thruſt, like a tent, up the anus, to irritate the ſphincter muſcle, and oblige it to extrude the excrements.

The *ſuppoſitory* was invented for the convenience of ſuch as have an averſion to the taking of clyſters; or to be uſed where the diſeaſe does not allow thereof. See CLYSTER.

SUPPRESSION*, in law, the extinction, or annihilation of an office, right, rent, or the like. See EXTINGUISHMENT.

* The word is formed from the Latin *ſub*, and *premo*, I preſs under.

SUPPRESSION, in grammar, denotes an omiſſion of certain words in a ſentence, which yet are neceſſary to a full and perfect conſtruction.—As, "I come from my father's;" that is, "from my father's houſe." See ELLIPSIS.

Suppreſſion is a figure of ſpeech very frequent in our language; chiefly uſed for brevity and elegance. Some rules relating hereto, are as follow:

1°. Whenever a word comes to be repeated in a ſentence oftner than once, it is to be ſuppreſſed: thus we ſay, "this is my maſter's horſe;" not, "this horſe is my maſter's horſe."

2°. Words that are neceſſarily implied may be ſuppreſſed.

And, 3°. All words that uſe and cuſtom ſuppreſs in other languages, are to be ſuppreſſed in Engliſh; unleſs there be particular reaſons for the contrary.

SUPPRESSION, in medicine, is applied to the humours that are retained in the body by ſome obſtruction or ſtoppage of the uſual out-lets. See RETENTION.

We ſay, a *ſuppreſſion* of urine, of the menſes, *&c.* See ISCHURIA, URINE, MENSES, *&c.*

Fire by SUPPRESSION, in chymiſtry. See FIRE.

SUPPURATION*, in medicine, the action whereby extravaſated blood, or other humours in the body are ripened, or changed into pus. See PUS.

* The word is formed from the Latin, *ſub*, under, and *pus, puris*.

The change is begun by a diſſipation of the moſt ſubtile and ſpirituous parts of the blood: what is left behind, thickens and purifies by little and little; that is, its ſalts and ſulphurs diſengage themſelves from the groſſer parts wherein they were embarraſſed. Theſe parts thus diſengaged, and acting on one another, bruiſe and break each other, and thus excite a fermentation, which increaſes the heat of the part; whereby the matter is further digeſted, and a pain and tenſion produced. At length the blood loſes its natural colour, and becomes quite white, by the mixture of its acid, ſulphurous and acrimonious particles; as we ſee happens to ſulphurous alcalies, when mixed with acids. See DIGESTION.

SUPPURATIVES, or SUPPURATING *medicines*, are ripeners, or medicines that promote ſuppuration. See SUPPURATION.

Suppuratives are all hot; by which means increaſing the warmth of the part, they reſolve the humour into a pus. See DIGESTIVE.

Such are mallows, melilot, lily-roots, diachylon, pellitory, figs, aromatic gums, meals, *&c.*

SUPPUTATION. See the article COMPUTATION.

SUPRALAPSARY, in theology, a perſon who holds that God, without any regard to the good or evil works of men, has reſolved, by an eternal decree, to ſave ſome, and damn others. See REPROBATION.

Theſe are alſo called *antelapſaries*; and are oppoſed to ſublapſaries and infralapſaries. See SUBLAPSARY.

According to the *ſupralapſaries*, the object of predeſtination, is *homo creabilis & labilis*; and according to the ſublapſaries, *homo creatus & lapſus*. See PREDESTINATION.

The *ſupralapſaries* ſeem, in one ſingle abſolute decree, to confound two ſeveral ones which ought to be diſtinguiſhed: the one, the conditional decree preceding the fore-ſight of man's obedience, or diſobedience to the grace of God; the other, the abſolute decree following this fore-ſight. See PRESCIENCE.

The predeterminants alſo, admit an abſolute decree prior to the foreſight of original ſin, in common with the *ſupralapſaries*; but diſtinguiſh themſelves from theſe, as alſo from the infralapſaries and janſeniſts, in that their abſolute decree includes the offering a ſufficient means of ſalvation to the reprobate; ſo that, as to the point of power, nothing hinders but that they might be ſaved. See GRACE.

SUPRASPINATUS, in anatomy, a muſcle thus called from its fleſhy origination at the upper end of the baſis of the ſcapula *above the ſpine*, to the upper part whereof it is connected, as alſo to the ſuperior edge of the ſcapula; whence marching along the upper interſcapulium, or thin part of the ſcapula, which it fills, it paſſes under the acromium and articulation of the humerus.—It helps to lift the arm upwards. See *Tab. Anat.* (Myol.) fig. 7. n. 32.

SUPREMACY, in the Engliſh polity, the ſuperiority or ſovereignty of the king over the church as well as ſtate of England, whereof he is eſtabliſhed head. See KING.

The king's *ſupremacy* was firſt eſtabliſhed, or, as others ſay, recovered by king Henry VIII. in 1534, after breaking with the pope.—It is ſince confirmed by ſeveral canons, as well as by the articles of the church of England; and is paſſed into an oath, which is required as a neceſſary qualification for all offices and employments both in church and ſtate, from perſons to be ordained, from the members of both houſes of parliament, *&c.* See OATH.

This right of *ſupremacy* conſiſts chiefly in the following articles, 1°. That the archbiſhops of either province cannot ſummon the biſhops and clergy to convocation, nor enact any canons without the king's expreſs conſent, by 25 Hen. VIII. c. 19. Whereas before that act the convocation was often called, and laws made by it for governing the church, without any authority from the crown. See CONVOCATION.

2°. In that there lies now an appeal from the archbiſhop to the king in chancery; and on ſuch an appeal, a commiſſion under the great ſeal is to be directed to certain perſons, whereof commonly half are laymen, and half clergymen, which is called *the court of delegates*, and which finally determine all eccleſiaſtical cauſes, by 25 Hen. VIII. c. 19. though ſometimes a review is granted. Before this ſtatute, the appeal from the archbiſhop's court lay to the pope only. See DELEGATE, APPEAL, *&c.*

3°. The king can grant commiſſions for viſiting ſuch places as are exempt from the juriſdiction of biſhops, or archbiſhops; and appeals lie from thence to the king in chancery: whereas before 25 Hen. VIII. the pope only could viſit them, and receive appeals from thoſe courts.

4°. Perſons in holy orders are not, as formerly, exempt from the king's temporal laws, any more than laymen. See EXEMPTION, IMMUNITY, *&c.*

5°. The biſhops and clergy do not ſwear, or pay any obedience to the pope; but muſt take the oaths of allegiance and ſupremacy to the king.

SURA, in anatomy, the calf, or fleſhy part of the leg.

The word is alſo uſed by ſome for the ſhin-bone, or fibula. See FIBULA.

SURALIS. See the article MUSCLE.

SURBATING, among farriers, is when the ſole of a horſe's foot is wore, bruiſed, or ſpoiled, by beating the hoof againſt the ground in travelling without ſhoes, or going in hot ſandy lands, or with a ſhoe that hurts the ſole, lies too flat to it, or the like.

Sometimes alſo it happens by over-riding a horſe while young, before his feet are hardened; and ſometimes by the hardneſs of the ground, and high lifting his feet.

The ſigns hereof, are his halting on both fore-legs, and going ſtiffly, and creeping as if half foundered.

In the general, there is nothing better for *ſurbated* feet than tar melted into the foot; or vinegar boiled with ſoot to the conſiſtence of a broth, and put into the foot boiling hot, with hurds over it, and ſplints to keep it in.

SURCHARGE of the foreſt, is when a commoner puts more beaſts in the foreſt than he has a right to. See FOREST.

SURCINGLE, a girdle, wherewith the clergy of the church of England uſually tie their caſſocks. See GIRDLE.

SURCOAT, a coat of arms, to be wore over body armour. See COAT *of arms*.

The *ſurcoat* is properly a looſe thin taffaty coat, with arms embroidered, or painted on it.—Such as are worn by heralds, anciently alſo uſed by military men over their armour, to diſtinguiſh themſelves by. See ARMS.

SURD, in arithmetic, denotes a number that cannot be expreſſed; or a number that is incommenſurate to unity. See NUMBER.

This is otherwiſe called an *irrational*, or *incommenſurable number*. See IRRATIONAL and INCOMMENSURABLE.

When any number or quantity hath its root propoſed to be extracted, and yet is not a true figurate number of that kind; that is, if its ſquare root be demanded, and it is not a true ſquare: if its cube root be required, and itſelf be not a true cube, *&c.* then it is impoſſible to aſſign, either in whole numbers or in fractions, any exact root of ſuch number propoſed. See ROOT, SQUARE, *&c.*

And whenever this happens, it is uſual in mathematics to mark the required root of ſuch numbers or quantities, by prefixing before it the proper mark of radicality, which is $\surd$: thus $\surd : 2$ ſignifies the ſquare root of 2, and $\overset{3}{\surd} : 16$, or $\surd : (3)\ 16$, ſignifies the cubic root of 16: which roots, becauſe they are impoſſible to be expreſſed in numbers exactly, (for no effable number, either integer, or fraction, multiplied into itſelf, can ever produce 2; or being multiplied cubically, can ever produce 16) are properly called *ſurd roots*.

There is alſo another way of notation now much in uſe, whereby roots are expreſſed without the radical ſign, by their indexes: thus, as x^2, x^3, x^5, *&c.* ſignify the ſquare, cube, and fifth power of x; ſo $x^{\frac{1}{2}}$, $x^{\frac{1}{3}}$, $x^{\frac{1}{5}}$, ſignify the ſquare root, cube, *&c.* of x.

The reaſon of which is plain enough; for ſince $\surd : x$ is a geometrical mean proportional between 1 and x, ſo $\frac{1}{2}$ is an arithmetical mean proportional between 0 and 1; and therefore as 2 is the index of the ſquare of x, $\frac{1}{2}$ will be the proper index of its ſquare root, *&c.*

Obſerve alſo, that for convenience, or brevity's ſake, quantities or numbers, which are not *ſurds*, are often expreſſed in the form of *ſurd* roots. Thus, $\surd : 4$, $\surd : \frac{9}{4}$ $\overset{3}{\surd} : 27$, *&c.* ſignify, 2, $\frac{3}{2}$, 3, *&c.*

But though theſe *ſurd* roots (when truly ſuch) are inexpreſſible in numbers, they are yet capable of arithmetical operations, (ſuch as addition, ſubſtraction, multiplication, diviſion, *&c.*) which how readily to perform, the algebraiſt ought not to be ignorant.

Surds are either *ſimple* or *compound*.

Simple SURDS are thoſe which are expreſſed by one ſingle term. —As $\overset{3}{\surd} c$.

Compound SURDS are thoſe formed by the addition or ſubſtraction of ſimple *ſurds:* as $\surd : 5 + \surd : 2 : \surd : 5 - \surd : 2$, or $\overset{3}{\surd} : \overline{7 + \surd : 2}$: which laſt is called an *univerſal* root, and ſignifies the cubic root of that number, which is the reſult of adding 7 to the ſquare root of 2.

To reduce rational quantities to the form of any SURD *roots aſſigned.*—Involve the rational quantity according to the index of the power of the *ſurd*, and then prefix before it the radical ſign of the *ſurd* propoſed. Thus to reduce $a = 10$, to the form of $\surd : 15 = : b$, you muſt ſquare $a = 10$; and prefixing the ſign, it will ſtand thus, $\surd : aa = \surd : 100$, which is the form of the *ſurd* deſired.

So alſo, if 3 were to be brought to the form of $\overset{4}{\surd} : 12$, you muſt raiſe 3 up to its fourth power, and then prefixing the note of radicality to it, it will be $\overset{4}{\surd} : 81$, or $81^{\frac{1}{4}}$, which is the ſame form with $\overset{4}{\surd} : 12$.

And this way may a ſimple *ſurd* fraction, whoſe radical ſign refers only to one of its terms, be changed into another, which ſhall reſpect both numerator and denominator. Thus $\dfrac{\surd : 2}{25}$ is reduced to $\surd : \dfrac{2}{25}$ and $\dfrac{5}{\overset{3}{\surd} : 4}$, to $\overset{3}{\surd} : \dfrac{125}{4}$; where the radical ſign affects both numerator and denominator.

To reduce ſimple SURDS, *having different radical ſigns, (which are called* heterogeneal ſurds) *to others that may have one common radical ſign, or which are homogeneal.*—Divide the indexes of the powers by their greateſt common diviſor, and ſet the quotients under the dividends; then multiply thoſe indexes croſs-ways by each other's quotients, and before the product ſet the common radical ſign $\surd$: with its proper index: then involve the powers of the given roots alternately, according to the index of each other's quotient; and before thoſe products, prefix the common radical ſign before found.

To reduce $\overset{2}{\surd} : aa$ and $\overset{4}{\surd} : bb$

$$2)\ \surd : aa \quad 2)\ \overset{4}{\surd} : bb$$

$${}_{1}\mathrm{X}_{2}$$

$$\overset{4}{\surd} : bb \qquad \overset{4}{\surd} : aaaa.$$

To reduce SURDS *to the loweſt terms poſſible.*—Divide the *ſurd* by the greateſt ſquare, cube, biquadrate, *&c.* or any other higher power, which you can diſcover is contained in it, and will meaſure it without any remainder; and then prefix the root of that power before the quotient, or *ſurd*, ſo divided; this will produce a new *ſurd* of the ſame value with the former, but in more ſimple terms. Thus, $\surd : 16aab$, by dividing by $16aa$, and prefixing the root $4a$, will be reduced to this, $4a\surd : b$, and $\surd : 12$, will be depreſſed to $2\surd : 3$. Alſo $\overset{3}{\surd} : cb^3 r$ will be brought down to $b\overset{3}{\surd} : cr$.

This reduction is of great uſe whenever it can be performed: but if no ſuch ſquare, cube, biquadrate, *&c.* can be found for a diviſor, find out all the diviſors of the power of the *ſurd* propoſed; and then ſee whether any of them be a ſquare, cube, *&c.* or ſuch a power as the radical ſign denotes: and if any ſuch can be found, let that be uſed in the ſame manner as above, to free the *ſurd* quantity in part from the radical ſign. Thus, if $\surd : 288$ be propoſed; among its diviſors will be found the ſquares, 4, 9, 16, 36, and 144; by which, if 288 be divided, there will ariſe the quotients 72, 32, 18, 8, and 2; wherefore inſtead of $\surd : 288$, you may put $2\surd : 72$, or $3\surd : 32$, or $4\surd : 18$, or $6\surd : 8$, or laſtly, $12\surd : 2$, and the ſame may be done in ſpecies.—But for the entire arithmetic of *ſurds*, ſee Kerſey's *Algebra*, and others on the ſame ſubject.

Commenſurable SURDS, COMMENSURABLE.
Heterogeneous SURDS, See HETEROGENEOUS.
Homogeneous SURDS, HOMOGENEOUS.

SURDESOLID. See the article SURSOLID.

SURETY *of the peace*, an act whereby a perſon in danger of hurt from another, is ſecured by a bond, or recognizance, acknowledged by the other to the king, and bail bound with him, for keeping the peace. See SUPPLICAVIT, and SECURITATE *pacis*.

This ſecurity, a juſtice of the peace may command, either as a miniſter, when commanded thereto by higher authority; or as a judge, when he doth it of his own power, derived from his commiſſion. See PEACE, and JUSTICE.

It differs from *ſurety of good abearing*, in that whereas the peace is not broken without an affray, or ſuch like; the *ſurety de bono geſtu* may be broken by the number of a man's company, or by his or their weapon, or harneſs.

SURFACE, in geometry, *&c.* See SUPERFICIES.

SURFEIT, an indiſpoſition cauſed by exceſs in eating or drinking, that is, by over-charging the ſtomach: uſually attended with eruptions, and ſometimes with a fever. See PLENITUDE.

SURFEIT-*water*, is a water diſtilled from poppies, and other herbs, proper to cure indigeſtions. See WATER.

SURGE. The ſailors call a wave, or billow of the ſea a *ſurge*. See WAVE.

Alſo, when they are heaving at the capſtan, if the cable happen to ſlip back a little, they ſay, *the cable ſurges.*

SURGERY. See the article CHIRURGERY.

SURMOUNTED, in heraldry, is when one figure is laid over another. As the pile ſurmounted of a chevron, in *Tab. Herald.* fig. 84.

SURNAME, or SIRNAME, a name added to the proper or baptiſmal name, to denominate the perſon of ſuch a family. See NAME.

It was the Romans firſt introduced the uſe of hereditary names; and that on occaſion of their league with the Sabines; for the confirmation whereof, it was agreed, that the Romans ſhould prefix Sabine names, and the Sabines, Roman names, to their own.

Theſe new names became family names, or *ſurnames*, and the old ones continued perſonal names. The former they called *cognomina*, and *gentilitia nomina*; and the latter *prænomina*. See PRENOMEN.

When the former came to be uſed among the French and Engliſh, they were called *ſurnames*, or *ſirnames*, not becauſe they are the names of the ſire, or father; but, according to Camden, becauſe they are ſuper-added to the perſonal name; or, rather, with Du Cange, becauſe at firſt, this family name was wrote over *(Sur)* the other name, thus:
de Bourbon
Louis.

In lieu of *ſurnames*, the Hebrews, to keep up the memory of their tribes, uſed the name of their father, with the addition of *Ben*, ſon; as *Melchi Ben-Addi*, *Addi Ben-Coſam*, &c. ſo the Greek, Ικαρος του Δαιδαλου; Icarus, the ſon of Dædalus; Dædalus, the ſon of Eupalmus, *&c.*

So, alſo, the ancient Saxons, *Ceonred*, *Ceolwalding*, *Ceolwald cuthing*, that is, Ceonred, ſon of Ceolwald, ſon of Cuth: and in the ſame ſenſe, the Welſh uſe *ap* for *mab*, ſon; as, *ap Owen*, *Owen ap Harry*, *Harry ap Rheſe*; and the Iriſh, *Mac*, as *Donald Mac Neal*, *Neal Mac Con*, &c. and the old Normans, *Fitz*, as, *John Fitz Robert*, *Robert Fitz Ralph*, &c.

Scaliger adds, that the Arabs uſed their father's name, or *ſurname*, without their perſonal name; as, *Aven-Pace*, *Aven-Zoar*, &c. *q. d.* ſon of Pace, ſon of Zoar, *&c.* As, if Pace had a ſon at his circumciſion called *Haly*, he would be called *Aven-Pace*, concealing Haly; but his ſon, however he were named, would be called *Aven-Haly*, &c.

The Romans, in time, multiplied their *ſurnames:* beſides the general name of the race, or family, called *gentilitium*; they took a particular one, to diſtinguiſh the branch of the family, called alſo *cognomen*; and ſometimes a third, on account of ſome perſonal diſtinction; as that of *Africanus*, by Scipio; of *Torquatus*, by Manlius.

Theſe three different kinds of *ſurnames* had alſo their different names, *viz. nomen*, alſo *cognomen*, *agnomen:* but theſe laſt were not hereditary; being, in effect, a kind of ſobriquets, or nick-names, if that word be indifferent with reſpect to good and evil. See the ſubject of the Roman names and *ſurnames* accurately treated of by Spanheim, *de Præſt. & uſu Numiſm.* Diſſ. 10. See alſo AGNOMEN.

In theſe, too, they have been imitated by later times: thus, in our Engliſh hiſtory, we find that Edgar was called the *Peaceable*; Ethelred, the *Unready*; Edmond, *Iron-ſide*; Harold, *Hare-foot*; William, *the Baſtard*; Henry I. *Beauclerk*;

John, *Lackland*, &c.—But as theſe names were never bore by the ſons, Camden, and others, think it ſtrange, that *Plantagenet* ſhould be accounted the *ſurname* of the royal family of England, till Henry VII; or *Tydur*, or *Tudor*, that from Henry VII. to king James I. or that of *Steward* from king James I. to king George; or, that *Valoys* ſhould be eſteemed the *ſurname* of the late family of French kings; or *Bourbon* of the preſent; or *Oldenburg* of the kings of Denmark; or *Hapsbourg* of the emperors. See PLANTAGENET.

Du Cheſne obſerves, that *ſurnames* were unknown in France before the year 987; when the lords began to aſſume the names of their demeſnes.—Camden relates, that they were firſt taken up in England, a little before the conqueſt, under king Edward the confeſſor: but he adds, they were never fully eſtabliſhed among the common people, till the time of Edward II. till then they varied with the father's name; if the father, *e. gr.* was called *Richard*, or *Roger*, the ſon was called *Richardſon*, or *Hodgſon*; but from that time they were ſettled, ſome ſay, by act of parliament.

The oldeſt *ſurnames*, are thoſe we find in *Domeſday-Book*, moſt of them taken from places, with the addition of *de*: as Godefridus *de* Mannevilla, Walterus *de* Vernon, Robert *de* Oyly, *&c.* others from their fathers, with *filius*, as Gulielmus *filius* Oſberni; others from their offices, as Eudo *Dapiſer*, Gulielmus *Camerarius*, Giſlebertus *Cocus*, &c. But the inferior people are noted, ſimply, by their chriſtian names; without any *ſurnames* at all.

In Sweden, till the year 1514, no body took *ſurnames*; and the common people there, have none to this day; nor even the native Iriſh, Poles, and Bohemians, *&c.*—It is very late that the Welſh have had any; and thoſe they have, are generally only formed, by leaving out the *a* in *ap*, and annexing the *p* to their father's name; as in lieu of *Evan ap Rice*, they now ſay, *Evan Price*; for *ap Howel*, *Powel*, &c. Du Tillet maintains, that all *ſurnames* were originally given by way of ſobriquets, or nick-names; and adds, that they are all ſignificant and intelligible to thoſe who underſtand the ancient dialects of the ſeveral countries.—The greateſt part of our *ſurnames*, and thoſe of greateſt account, Camden ſhews, are local, and borrowed from the places in Normandy, *&c.* where the reſpective perſons, who came over with the conqueror, and firſt bore them, had their poſſeſſions, or their births: ſuch as *Mortimer*, *Warren*, *Albigny*, *Piercy*, *Devereux*, *Tankervil*, *Nevil*, *Tracy*, *Montfort*, &c. He adds, that there is not a village in Normandy, but gives name to ſome family in England.—Others were taken from places in England, as *Aſton*, *Sutton*, *Wotton*, &c.

The Saxon common people generally took their father's or mother's chriſtian name, with the addition of *ſon*: though many were *ſurnamed* from their trade, as *Smith*, *Carpenter*, *Taylor*, *Weaver*, *Fuller*, &c. others from their offices, as, *Porter*, *Shepherd*, *Carter*, *Cook*, *Butler*, &c. others from their complexions, as *Fairfax*, i. e. fair hair; *Blunt* or *Blond*, i. e. flaxen, or yellow; others from birds, as *Wren*, *Finch*, &c. others from beaſts, as *Lamb*, *Hare*, *Hart*, &c. others from the winds; others from ſaints, *&c.*

SURPLUSAGE, in common law, ſignifies a ſuperfluity, or addition of more than needeth; which ſometimes is the cauſe that a writ abateth.—But in pleading it is frequently ſet aſide; the reſt remaining good.

SURPLUSAGE is ſometimes alſo applied to matters of accounts, and denotes a greater diſburſement than the charge of the accomptant amounteth to. See ACCOUNT.

SURREBUTTER, in law, a ſecond rebutter; or the replication of the plaintiff to the defendant's rebutter. See REBUTTER.

SURREJOYNDER, is a ſecond defence of the plaintiff's declaration; by way of anſwer to the defendant's rejoynder. See REJOYNDER.

SURRENDER, in common law, an inſtrument in writing, teſtifying, that the particular tenant of lands and tenements for life or years, doth ſufficiently conſent and agree, that he, who has the next or immediate remainder or reverſion thereof, ſhall have the preſent eſtate of the ſame in poſſeſſion; and that he hereby yields and gives up the ſame to him. See REVERSION, and REMAINDER.

There may alſo be a *ſurrender* without writing: whence, *ſurrender* is uſually divided into that in *deed*, and that in *law*.

SURRENDER *in deed*, is that which is really made by expreſs words in writing.

SURRENDER *in law*, is that wrought by operation of the law, and which is not actual.—As if a man have a leaſe of a farm for life, or years; and during the term, he accepts of a new leaſe: this act is in law, a *ſurrender* of the former. There is alſo a cuſtomary *ſurrender* of the copy-hold, as may be ſeen in Coke ſup. Littlet. ſect. 74.

SURREPTITIOUS. See the article SUBREPTITIOUS.

SURROGATE, SURROGATUS, a perſon ſubſtituted or appointed in room of another; moſt commonly of a biſhop, or biſhop's chancellor. See SUBSTITUTE, SUFFRAGAN, COMMISSARY, *&c.*

SURROGATION. See the article SUBROGATION.

SURSOLID, or SURDESOLID, in arithmetic, the fifth power of a number, or the fourth multiplication of any number, conſidered as a root. See POWER.

The number 2, for inſtance, conſidered as a root, and multiplied by itſelf, produces 4, which is the ſquare, or ſecond power of 2; and 4 multiplied by 2, produces 8, the third power, or cube, or ſolid number of 2; 8, again, multiplied by 2, produces 16, the fourth power, or quadratoquadratum of 2; and 16 multiplied once more by 2, produces 32, the fifth power, or *ſurſolid*, or *ſurdeſolid* number of 2.

SURSOLID *problem*, is that which cannot be reſolved, but by curves of an higher kind than the conic ſections. See PROBLEM.

Thus, *e. gr.* to deſcribe a regular endecagon, or figure of eleven ſides in a circle, it is required to deſcribe an iſoſceles triangle on a right line given, whoſe angles at the baſe, ſhall be quintuple to that at the vertex; which may eaſily be done by the interſection of a quadratrix, or any other curve of the ſecond gender, as they are by ſome called, but not by any lower curve. See QUADRATRIX, CURVE, *&c.*

SURVEYING, the art or act of meaſuring lands; *i. e.* of taking the dimenſions of any tract of ground, laying down the ſame in a map or draught; and finding the content or area thereof. See MEASURING, MAP, *&c.*

Surveying, called alſo *geodæſia*, is a very ancient art; it is even held to have been the firſt, or primitive part of geometry, and that which gave occaſion to, and laid the foundation of all the reſt. See GEOMETRY.

Surveying conſiſts of three parts or members; the firſt, is the taking of the neceſſary meaſures, and making the neceſſary obſervations on the ground itſelf: the ſecond, is the laying down of theſe meaſures and obſervations on paper: and the third, the finding the area or quantity of the ground thus laid down.

The firſt is what we properly call *ſurveying*: the ſecond we call *plotting* or *protracting*, or *mapping*: and the third *caſting up*.

The firſt, again, conſiſts of two parts, *viz.* the making of obſervations for the angles, and the taking of meaſures for the diſtances.

The former of theſe is performed by ſome one or other of the following inſtruments, *viz.* the theodolite, circumferentor, ſemi-circle, plain-table, or compaſs: the deſcription and manner of uſing each whereof, ſee under its reſpective article, THEODOLITE, CIRCUMFERENTOR, PLAIN-TABLE, COMPASS, *&c.*

The latter is performed by means either of the chain or the perambulator: the deſcription and manner of applying each whereof, ſee under its reſpective article, CHAIN, and PERAMBULATOR.

The ſecond branch of *ſurveying* is performed by means of the protractor, and plotting ſcale: the uſe, *&c.* whereof, ſee under PROTRACTOR, PLOTTING *ſcale*, &c. See alſo MAP.

The third is performed by reducing the ſeveral diviſions, incloſures, *&c.* into triangles, ſquares, trapeziums, parallelograms, *&c.* but eſpecially triangles; and finding the areas or contents of theſe ſeveral figures, by the rules delivered under the articles AREA, TRIANGLE, SQUARE, *&c.*

SURVEYING *croſs*, is an inſtrument little known, and leſs uſed in England; though in France, *&c.* it ſerves in lieu of a theodolite or the like inſtrument: it conſiſts of a braſs circle, or rather a circular limb, graduated, and again divided into four equal parts, by two right lines cutting each other at right angles in the centre. At each of the four extremities of the lines, and in the centre are fixed ſights. The whole is mounted on a ſtaff. See CROSS.

SURVEYING *quadrant*. See the article QUADRANT.

SURVEYING *wheel*. See the article PERAMBULATOR.

SURVEYOR, one that hath the overſight and care of conſiderable works, lands, or the like. See SUPERVISOR.

Such are the *ſurveyor* general of the king's manors; *ſurveyor* of the king's exchange; *ſurveyor* general of the works; *ſurveyor* general of the crown lands, *&c.*

SURVEYOR *of the melting*, is an officer of the mint, whoſe buſineſs is to ſee the bullion caſt out; and that it be not altered after the delivery of it to the melter. See MINT, and COINAGE.

SURVEYOR *of the navy*, is an officer, whoſe buſineſs is to know the ſtate of all ſtores, and ſee the wants ſupplied; to ſurvey the hulls, maſts and yards of ſhips; to audit the boatſwains and carpenters accounts, *&c.* See NAVY.

SURVEYOR *of the ordinance*, is an officer, whoſe charge is to ſurvey all the king's ordinance, ſtores, and proviſions of war, in the cuſtody of the ſtore-keeper of the tower of London; to allow all bills of debts, to keep checks on labourers and artificers works, *&c.* See ORDINANCE.

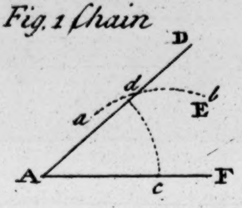
SURVEYOR is alſo uſed for a gauger.—And alſo for a perſon who meaſures and makes maps of lands. See SURVEYING, and GAUGING.

SURVIVOR, in law, ſignifies the longer liver of two joint tenants; or of any two perſons joined in the right of any thing.

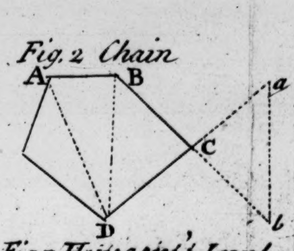
SUSPENSE, SUSPENSIO, in common law, denotes a tempo-

TAB. S

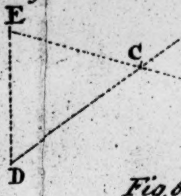
Fig,1 Chain



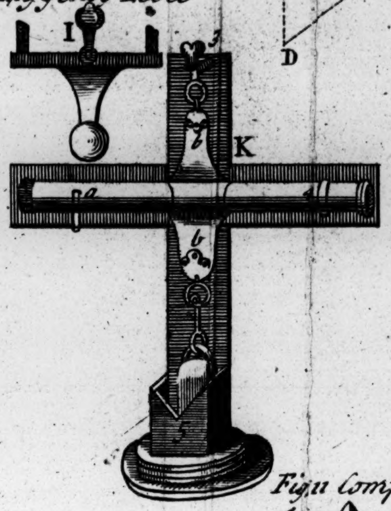
Fig,2 Chain



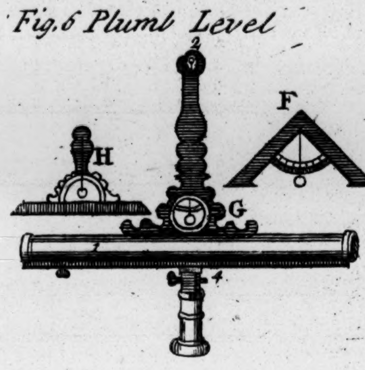
Fig,3 Chain



Fig,7 Huygens's Level

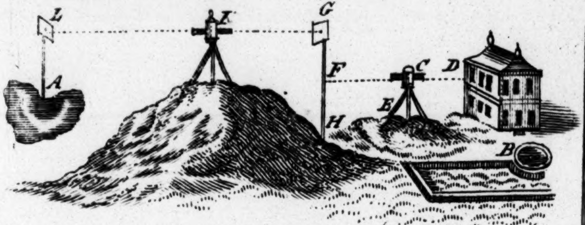


Fig,6 Plumb Level

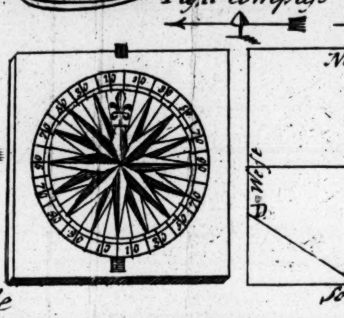


Fig,6

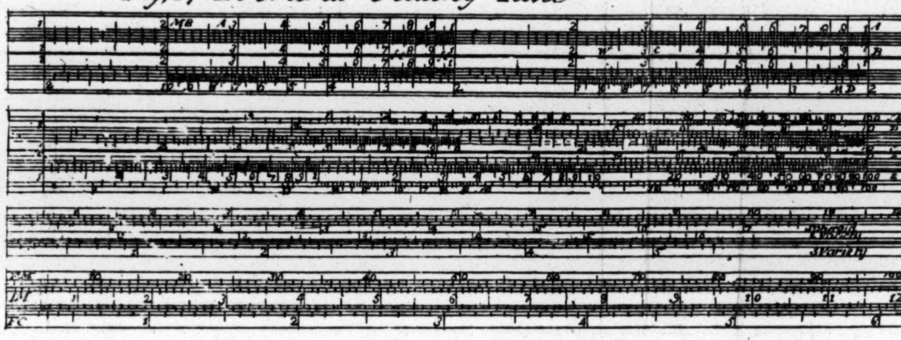
Fig,11 Levelling



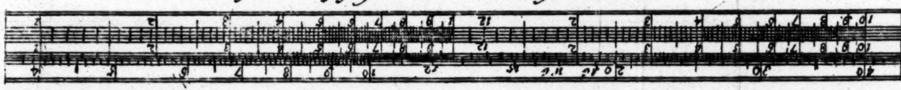
Fig,11 Compass



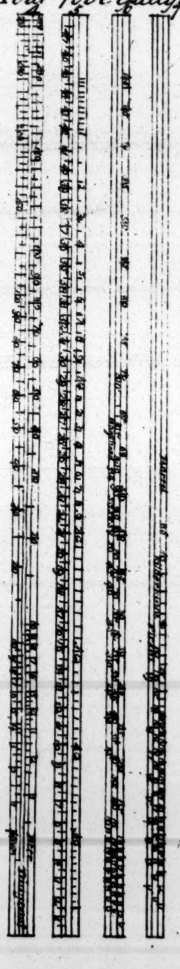
Fig,17 Everards Sliding Rule



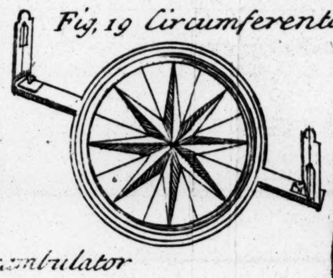
Fig,18 Coggeshals Sliding Rule



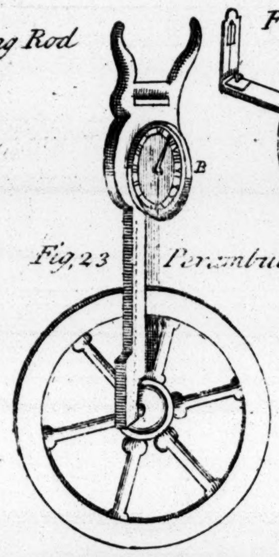
Fig,18 Nº 2.
Four foot Gauging Rod

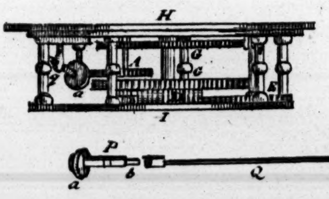


Fig,19 Circumferentor

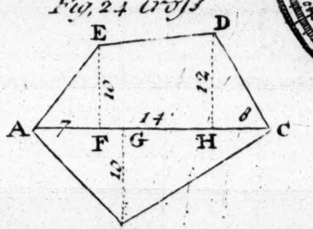


Fig,23 Perambulator





Fig,24 Cross



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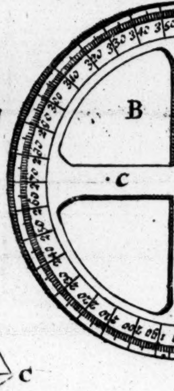
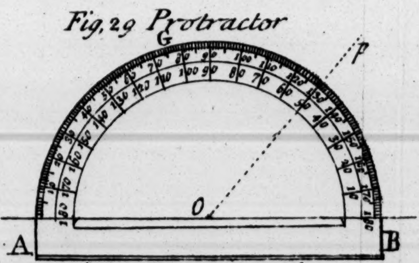
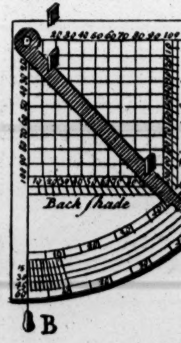
Fig,25 Th



Fig,29 Protractor

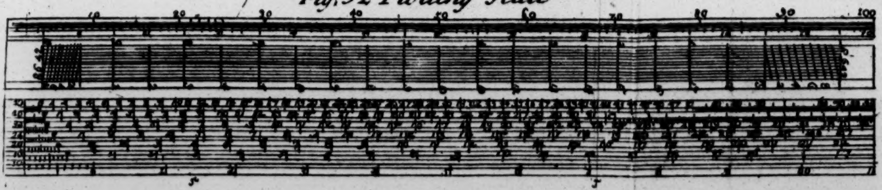


Fig,30 Quadra

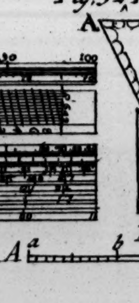


Back shade
B

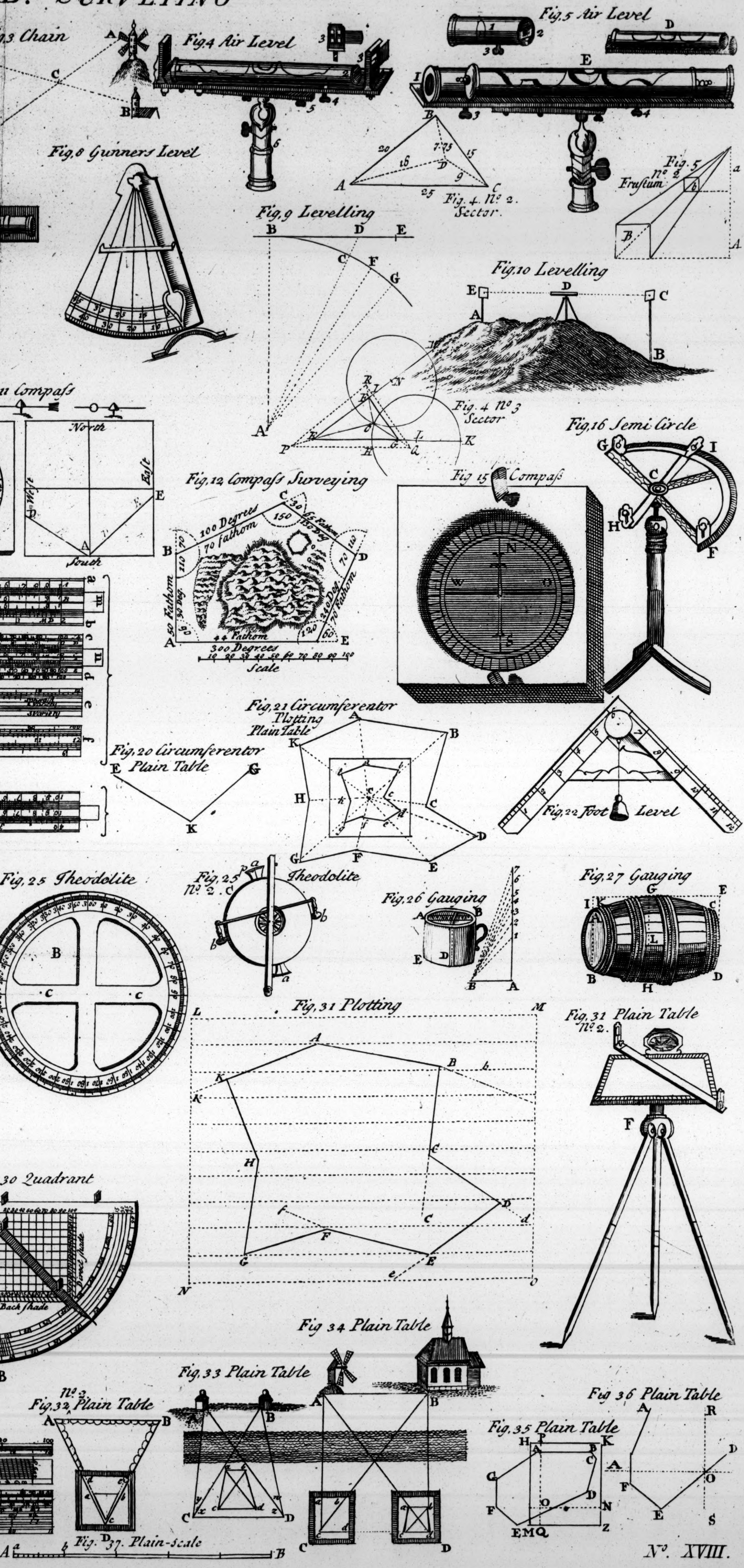
Fig,32 Plotting Scale



Nº
Fig,32



IB. SURVEYING


3 Chain
A
B
C
Fig.4 Air Level
1
2
3
4
5
6
Fig.5 Air Level
D
E
I
Fig.8 Gunners Level
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40
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B
A
C
D
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16
7.75
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9
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Fig. 4 No 2.
Sector.
Fig. 5
No 2
Frustum
a
A
Fig.9 Levelling
B
D
E
C
F
G
A
Fig.10 Levelling
E
D
C
A
B
Fig. 4 No 3
Sector
R
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Q
11 Compass
North
West
East
South
D
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Fig.12 Compass Surveying
C
30
150
65 Fathom
130 Deg
100 Degrees
70 fathom
B
70
110
D
70
110
50 Fathom
30 Deg.
90
240 Deg.
70 Fathom
120
60
A
44 Fathom
E
300 Degrees
10 20 30 40 50 60 70 80 90 100
Scale
Fig 15 Compass
N
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Fig.16 Semi Circle
G
I
C
H
F
Fig.21 Circumferentor
Plotting
Plain Table
A
B
K
H
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a
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c
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h
i
Fig.20 Circumferentor
Plain Table
E
G
K
Fig.22 Foot Level
Fig.25 Theodolite
B
c
c
Fig.25
No 2. C
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Theodolite
Fig.26 Gauging
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Fig.27 Gauging
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Fig.31 Plotting
L
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Fig.31 Plain Table
No 2.
F
30 Quadrant
Back shade
B
Fig 34 Plain Table
A
B
C
D
Fig.33 Plain Table
A
B
C
D
No 2.
Fig.32 Plain Table
A
B
C
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Fig. 37. Plain-scale
A
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b
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Fig 36 Plain Table
A
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S
Fig.35 Plain Table
H
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No. XVIII.

temporary ſtop or ceſſation of a man's right for a time.

As, when the rent, or other profits of land, by reaſon of the unity of poſſeſſion of the rent, and the land out of which it iſſues, is not in eſſe for a certan time, but *tunc dormit*, or remains aſleep: but ſo as it may be revived or awaked.—By which, *ſuſpenſion* differs from *extinguiſhment*, where the right dies for ever. See EXTINGUISHMENT.

SUSPENSION, SUSPENSIO, the act of preventing the effect, or courſe of any thing, for a certain time.

The principal point urged in the philoſophy of the Scepticks and Pyrrhonians, is a *ſuſpenſion* of mind. See SCEPTICKS, PYRRHONIANS, ACATALEPSY, &c.

SUSPENSION *of arms*, in war, is a ſhort truce which the contending parties agree on, for the burial of their dead, the waiting for ſuccours, or the order of their maſters, &c.

In rhetoric, *ſuſpenſion* is a keeping the hearer attentive and doubtful, in expectation of what the ſpeaker will conclude in: as, "O God! darkneſs is not more oppoſite to light, "tempeſts to calms, pain to pleaſure, or death to life, than "ſin to thee."

SUSPENSION, in mechanics.—*Points of* SUSPENSION in a ballance, are thoſe points in the axis or beam wherein the weights are applied; or from which they are ſuſpended. See BALLANCE.

SUSPENSION, in the common law, is what we otherwiſe call the *minor excommunication*, viz. a cenſure inflicted by way of puniſhment, on an eccleſiaſtic, for ſome conſiderable fault. See CENSURE, and EXCOMMUNICATION.

It is of two kinds, *viz. ab officio*, and *à beneficio*.

SUSPENSION *ab officio*, is that whereby a miniſter is, for a time, forbidden to execute the office of a miniſter.

SUSPENSION *à beneficio*, is when a miniſter is, for a time, deprived of the profits of his benefice. See BENEFICIO.

Where the fault is more notorious, the two kinds of *ſuſpenſions* are ſometimes joined; and the perſon both *ſuſpended ab officio* and *à beneficio*. See DEPRIVATION, &c.

SUSPENSOR *Teſticuli*, in anatomy, a muſcle called alſo *cremaſter*. See CREMASTER.

SUSPIRAL, a ſpring of water, paſſing under ground towards a conduit or ciſtern.—Alſo a breathing hole, or ventiduct. See VENTIDUCT.

SUTE, SUYTE, or *ſuite*. See the article SUITE.

SUTH-DURE, in ancient cuſtoms, denotes the ſouth door of a church; mentioned in old authors, as the uſual place where canonical purgation was performed.—That is, when a fact could not be proved by ſufficient evidence, the party accuſed, came to the ſouth door of the church; and there, in the preſence of the people, made oath that he was innocent. See PURGATION.

This was called *judicium dei*.—And it is for this reaſon that large porches were anciently built at the ſouth doors of churches. See PORCH.

SUTTON's *quadrant*. See the article QUADRANT.

SUTURE, SUTURA, in anatomy, a peculiar kind of juncture, or articulation, of certain bones in the animal body; thus called, as reſembling a ſeam. See ARTICULATION.

There are two kinds of *ſuture*; one called the *true* or *genuine ſuture*: wherein bones are indented like ſaws, and reciprocally received into each other.

The other, called *falſe*, *ſpurious*, or *ſquammons ſuture*; wherein the bones are laid over each other, like the ſcales of fiſhes. See SQUAMMOUS.

The bones of the cranium are uſually joined by three genuine *ſutures*: the *coronal*, reaching acroſs from one temple to the other. See *Tab. Anat.* (Oſteol.) fig. 1. lit. g. fig. 2. lit. h. and the article CORONAL.—The *ſaggital*, joining the oſſa parietalia. See *Tab. Anat.* (Oſteol.) fig. 1. lit. f. fig. 2. lit. i. and the article SAGITTAL.—And the *lambdoidal*; thus called from its reſembling the Greek Λ, lambda. See LAMBDOIDES.

Beſides theſe, is a fourth *ſuture*, of the ſpurious or ſquammous kind, ſuppoſed, though falſely, to have no indentures: it joins the oſſa temporum to the os ſphenoides, occipitis, &c. and is alſo called the *temporal ſuture*.—See *Tab. Anat.* (Oſteol.) fig. 2. lit. k. See alſo SQUAMMOUS.

Natural hiſtorians tell us, that in Perſia it is frequent to have people without any *ſutures* at all in the ſkull; but the whole one ſolid bone; yet without any apparent inconvenience: and M. Flechier, in his life of cardinal Ximenes, affirms the ſame of that cardinal: yet it ſhould ſeem that great diſorders muſt ariſe therefrom; as the perſpiration can be but very imperfectly effected; whence heavineſs and ſwimming in the head. See CRANIUM.

Sphenoidal **SUTURE**. See the article SPHENOIDAL.

SUTURE, in chirurgery, denotes a ſeam made to cloſe the lips of a wound, in order to its healing. See WOUND.

The ancients invented a great variety of *ſutures*, which they reduced to three kinds; *incarnatives*, *reſtrictives*, and *conſervatives*.

Incarnative **SUTURE**, is thus called, becauſe, by rejoining the edges of a wound, and keeping them together by means of a thread run acroſs them with a needle, they grow together, and incarnate as before. See INCARNATIVE.

This they ſubdivided into five kinds, *viz.* the *interrupted*, *intertwiſted*, *penned* or *feathered*, *with claſps*, and the *dry ſuture*.

Of theſe five, two are perfectly diſuſed, *viz.* the *feathered ſuture*, and the *ſuture with claſps*, as being too barbarous; and at the ſame time unneceſſary. The firſt was called *pinned*, when little pins were made uſe of; and *feathered* when the barrels of feathers or quills.

To perform it, two or three needles threaded with a double thread, were paſſed through the lips of the wound, at a finger's breadth from each other, and a pin or feather put in the ſtitch; and another pin or feather bound with the ends of the ſame thread, that the feathers might keep the lips of the wound cloſe together.

To perform the ſecond, they had large, crooked claſps, pointed at each end; one of which they thruſt into the upper part of the wound, the other into the lower, to bring the lips together.

Theſe *ſutures*, cruel as they were, are yet known to be uſeleſs; for in the only caſes where they ſhould ſeem ſerviceable, *viz.* in deep wounds, where the contraction of the fleſhy parts keeps the lips far aſunder, and in wounds of tendons; they expoſe the patient to terrible convulſions and ſhudderings, which are avoided, by diminiſhing the dilatation of the wounds, by moderate compreſſions, and waiting till the fibres relax.

Reſtrictive **SUTURES**, were thoſe wherewith they endeavoured to ſtop the flux of blood from large wounds, where any conſiderable veſſels were cut.

To this end, they invented ſeveral kinds, in the number whereof, were the *ſhoe-makers*, *taylors*, *ſkinners*, and other *ſeams*, each more impertinent than other. It is evident, the very deſign of ſuch a *ſuture* is blameable: for ſuppoſing the wound ſo exactly ſewed up, that no blood could eſcape through the lips thereof; yet will it ſtill flow out of the veſſels; and will thus be forced to make its way between the laminæ of the muſcles, by which means the part will ſwell, rot, and gangrene. Yet the *ſkinners ſuture*, *ſutura pellionum*, is ſtill in uſe for wounds of the inteſtines: it is thus called, becauſe the ſkinners uſe the like, in ſewing up the holes made by the butchers, in fleaing off the ſkin.

Conſervative **SUTURE**, is that kind of ancient *ſuture*, whereby the lips of large wounds, wherein there was a loſs of ſubſtance, were prevented from receding too far. But a bandage, now, ſuffices.

Intertwiſted **SUTURE**, is thus called, becauſe the needles being left ſticking in the wound, the thread is wound around them; much after the ſame manner as the taylors do the threaded needles they keep in their ſleeves, &c. This *ſuture* is performed two ways; for either the needles are paſſed acroſs the wound, or they are ſtuck on the ſides thereof.

All the *ſutures* hitherto mentioned, are made with needle and thread: beſide which, there is another kind called *dry ſutures*, which are performed with glue or ſize; or other proper viſcous matter.

The *dry* **SUTURE** is ordinarily made with ſmall pieces of leather, on linnen cloth, indented like a ſaw, ſo that the teeth may fall between each other, and the whole row may be cloſed. The cloth, before it is cut into this form, is ſpread with ſome proper plaiſter, in order to its firm adheſion.

The plaiſters thus prepared, being cut into the form, are applied on the firm fleſh, according to the length of the wound, reaching from it to the diſtance of ſome inches; and after they are dried, or well faſtened to the part, the lips of the wound being approached, they may conveniently be held together by the *ſuture* in that poſture.

This kind of *ſuture* is principally uſed for wounds in the face, to prevent unſightly ſcars: it is likewiſe convenient when the fibres of the muſcles are cut a-croſs; and where it is difficult or impoſſible to apply a bandage.

In the other kinds of *ſutures*, the ſtitches ought always to be taken of a depth proportionable to that of the wound; care being had to avoid the nerves as much as poſſible. In long wounds they are beſt begun at the ends; but in ſhort ones at the middle.

SWABBER, the title of an inferior officer on board a man of war, whoſe office is to take care the ſhip be kept neat and clean.

In order to this, he is to ſee her waſhed well once or twice a week at leaſt; eſpecially about the gun-wales and chains. He ought alſo to burn pitch, or ſome ſuch thing, now and then between decks, to prevent infection; and to acquaint the captain with ſuch of the men as are naſty and offenſive.

SWAIN, } See { BOATSWAIN and COCKSWAIN.
SWAINMOTE, } See { SWANIMOTE.

SWALLOWING. See the article DEGLUTITION.

Among the rarities in the anatomy hall at Leyden, is preſerved a knife ten inches long, *ſwallowed* by a peaſant, and cut out of his ſtomach; after which he lived eight years.

A lady, mentioned by Mr. Greenhill in the *Philoſophical Tranſactions*, got a large and painful tumour in the umbilicus, with *ſwallowing* prune-ſtones; which, upon the tumour's breaking of itſelf, came out in great quantity: yet, notwithſtanding all imaginable care, ſhe died of it.—A lad, ſixteen years of age, near Hall in Saxony, playing with a knife ſix inches and half long, accidentally *ſwallowed* it. The curioſity of the caſe led Wolfgang Chriſt. Weſenon, phyſician of the elector of Brandenbourg, to take care of him. The knife was felt to have changed its poſition ſeveral times, and in a few months ceaſed to be very troubleſome; and in a year was ſo much diminiſhed, as ſcarce to be felt from without. At length it was drawn out (exceedingly diminiſhed every way) through an abſceſs which its point occaſioned, three fingers breadth below the pit of the ſtomach, and the boy was perfectly well; *Philoſophical Tranſactions*, Nº 219.

“ Some people, (ſays Dr. Sloan, from an inſtance of an unhappy perſon who had *ſwallowed* great quantities of pebbles to eaſe him of the wind, and which remaining in his ſtomach to the number of two-hundred, had brought him into a very ſad condition,) “ from their ſeeing birds languiſh, unleſs they ſwallow gravel, or ſmall ſtones, take “ up an opinion, that the *ſwallowing* of ſtones helps the ſtomach to digeſt its food; but I have been always againſt “ that practice: for though the ſtomachs, or gizzards of “ birds (they wanting teeth to grind their food) are made “ very ſtrong, muſculous, and defended on the inſide with “ a coat, by the help whereof, and theſe ſtones, their victuals are ground; yet the ſtomachs of men being very different, it is not reaſonable to think they ſhould be of uſe “ (or even inoffenſive) to them.

“ I knew, adds he, one Mr. K———, who for many “ years ſwallowed nine or ten ſtones every day, nearly as “ large as wallnuts, and without any apparent harm, as “ they always paſſed; but he afterwards died ſuddenly.”

SWALLOWS-TAIL, in fortification, a kind of out-work only differing from a ſingle *tenaille*, in that its ſides are not parallel as thoſe of the tenaille, but narrower towards the fortified place, than towards the country. See Queue d'aronde, and Tenaille.

Swallows-tail, in joinery and carpentry, denotes a particular way of faſtening together two pieces of timber, ſo ſtrongly as they cannot fall aſunder. See Dove-*tail*.

SWANIMOTE, or Swainmote, a court touching matters of the foreſt, kept, by the charter of the foreſt, thrice in every year, before the verderers, as judges. See Foreſt. This court is as incident to a foreſt, as a court of pie-powder to a fair. See Court.

SWATH, *faſcia*, among ſurgeons, a long and broad band to bind up any diſeaſed member, or part. See Bandage.

SWEAT, a ſenſible moiſture iſſuing out of the pores of the ſkins of animals, through too much heat, exerciſe, or weakneſs; or through the action of certain medicines called *ſudorifics*. See Sudorific.

Sweat is either the conſequence of an acceleration of the blood's motion, by ſtimuli, or exerciſe; or of a relaxation of the pores of the cutis; by means of either whereof, the matter which before perſpired inſenſibly, is now rendered ſenſible. See Perspiration.—The former is the caſe in natural and medicinal *ſweats*, and the latter in morbid, fainting, and cold *ſweats*. See Sudor.

The principal organs of *ſweat* are the miliary glands; which are ſpread over the whole ambit of the body; and furniſhed, each, with a vein, artery, and nerve, beſides an excretory duct, through the orifice whereof the *ſweat* is caſt out under the cuticle. This duct is covered with a little round valve, lying immediately under the cuticle, whereby the *ſweat* is occaſionally either retained or tranſmitted. See Miliary *gland*.

The *ſweat* thus ſecreted, is various, according to the variety of the weather, ſoil, ſex, age, temperament, emunctory, diet, time of digeſtion, *&c.* as in the urine. See Urine.

In a ſound body, *ſweat* is ſcarce ever found, but from a fault in ſome of the ſix non-naturals: its immediate effect is always hurtful; by accident ſometimes it does good.

The phyſicians order *ſweats* in cold and inveterate diſeaſes, as the palſy, rheumatiſm, ſciatica, and many other diſeaſes. Diſeaſes alſo frequently have their criſes in *ſweats*.

Sweating is indicated by the beginning of a critical *ſweat*, to carry off the diſeaſe; by the tenuity of the morbid matter diſperſed through all the veſſels, as in the plague, a venomous bite, or the French diſeaſe, before yet fixed; by the particular temperature of the patient, and by various obſtructions to be removed in the ſeveral parts of the body; particularly in ſubcutaneous diſeaſes, the itch, pſora, leproſy, *&c.*

Matthiolus tells us, that the *ſweat* of all quadrupedes, as horſes, aſſes, *&c.* is venomous; and that that of other beaſts is unwholſome.—Tachenius adds, that the *ſweat* of horſes, particularly, is ſo acid, that it pierces the ſtrongeſt and firmeſt boots, which are proof againſt all water.—Some naturaliſts affirm, that dogs and cats never *ſweat*, how hot ſoever they be, becauſe they are not found to have any pores in the cuticle. See Pore.

Engliſh Sweat, or the Sweating *ſickneſs*. See Sudor *Anglicanus*.

SWEDISH *allum*,	See the articles	Allum.
Swedish *coins*,		Coin.
Swedish *meaſures*,		Measure.

Swedish *moneys*. See the article Money.

SWEEP, among refiners, the almond furnace. See Almond and Furnace.

Sweep, among goldſmiths, moniers, *&c.* See Washing.

Sweep, in the ſea-language.—The ſeamen call the mould of a ſhip, when ſhe begins to compaſs in at the rung-heads, the *ſweep* of her, or the *ſweep* of the ſuttock.

SWEEPING at ſea, ſingnifies dragging along the ground, at the bottom of the ſea or channel, with a three fluked grapnel, to find ſome hawſer or cable which is ſlipped from an anchor.

SWEET *almonds*,	See	Almond.
Sweet *ſublimate of mercury*,		Mercury.
SWELLED *columns*,		Column.
Swelled *hoof*,		Hoof.

SWELLING.—*Diameter of the* Swelling. See Diameter.

SWIFTEST.—*Line of the* Swiftest *deſcent*. See Line.

SWIMMING, the act or art of ſuſtaining the body in water, and of advancing therein by the motion of the arms, legs, *&c.* See Animal.

Man alone learns to *ſwim*; all other perfect animals ſeem to take it naturally; though ſeveral of the imperfect *ſwim* not at all.

Among the ancient Greeks and Romans, *ſwimming* made ſo eſſential a part of the diſcipline of their youth, that to repreſent a man perfectly rude and uneducated, they uſed to ſay proverbially, he had neither learned to read nor to *ſwim*.

In fiſhes, it is the tail that is the grand inſtrument of *ſwimming*, not the fins, as is generally imagined: for this reaſon fiſhes are more ſtrong and muſculous in that part, than in all the reſt of their body; according as we find it in all other animals; the motive parts whereof are ſtill the ſtrongeſt, as the thighs of men for walking, the pectoral muſcles of birds for flight, *&c.* See Flying, *&c.*

The manner wherein fiſhes row themſelves forwards by the tail, is well explained by Borelli *de Motu Animal.* part 1. cap. 23.—The fins of fiſhes ſerve only to keep the body well poiſed and ballanced, and prevent vacillation. See Fin and Tail.

M. Thevenot has publiſhed a curious piece in French, called *L'Art de Nager*, the art of *ſwimming* demonſtrated by figures. Before him, Everard Digby, an Engliſhman, and Nicholas Winman, a Dutchman, had laid down the rules of this art: Thevenot has done little more than copy from them.—Had he but read, with half that application, Borelli's treatiſe *de Motu Animalium*, he would ſcarce have maintained, as he has done, that men would *ſwim* naturally, like other animals, were they not prevented by fear, which magnifies their danger.

We have abundant experience againſt this: Throw any brute, newly born, into a river, and it *ſwims*: throw an infant in, before it is yet capable of fear, and it *ſwims* not, but is drowned. The reaſon is, that the human machine differs very notably in its ſtructure and configuration from that of brutes; and particularly, which is very extraordinary, in the ſituation of its center of gravity. In man, the head is exceedingly heavy, with regard to the reſt of the body; by reaſon the head is furniſhed with a very great quantity of brain, and has, beſides, a deal of fleſh and bones, and no cavities only filled with air: ſo that the head immerging under water by its own gravity, the noſe and ears are ſoon filled: thus the heavy carrying down the light, the man ſoon drowns, and is loſt.

But in brutes it is otherwiſe: for the head, here, having but little brain, and there being abundance of ſinus's therein; its weight, with regard to the reſt of the body, is much leſs conſiderable; ſo that they are eaſily able to keep their noſe above water, and thus reſpiring freely, are out of danger of drowning, on the principles of ſtatics.

In effect, the art of *ſwimming*, which is no otherwiſe to be acquired but by exerciſe, conſiſts principally in keeping the head above water, ſo, that the noſe and mouth being at liberty, reſpiration may be carried on: for, as to the feet and hands, it is enough to ſtir them, and to uſe them as oars to conduct the veſſel.

Swimming-*bladder*, popularly called Swim, a veſicle of air incloſed in the bodies of fiſhes, by means whereof they are enabled to ſuſtain themſelves at any depth of water. See Air, and Fish.

For the air in that bladder being more or leſs compreſſed, according to the depth the fiſh *ſwims* at, takes up more or leſs ſpace; and conſequently the body of the fiſh, part of whoſe bulk this bladder is, is greater or leſſer, according to the ſeveral depths; and yet retains the ſame abſolute weight. Now the rule *de inſidentibus humido*, is, that a body heavier than ſo much water as is equal in quantity to the bulk of it, will neceſſarily ſink; a body that is lighter, will *ſwim*; and a body of equal weight, will reſt in any part of the water. See Fluid, Specific *gravity*, &c.

By this rule, if the fiſh in the middle region of the water be of equal weight with water, bulk for bulk; the fiſh will reſt there without any natural tendency either upwards or downwards.

And if the fiſh be deeper in the water, its bulk becoming leſs by the greater compreſſion of the bladder; it will ſtill remain commenſurate to the gravity of the water in that part.

If the fiſh be higher than the middle region; the air dilating itſelf, and the bulk of the fiſh conſequently increaſing, but not the weight; the fiſh will riſe upwards, and reſt atop of the water.

It is probable the fiſh, by ſome action, can emit air out of its bladder, and take freſh in. Mr. Ray obſerves, that in moſt fiſhes, there is a manifeſt channel leading from the gullet to the *ſwimming* bladder, which doubtleſs ſerves for the conveyance; and that there is a muſculous power in the coat of the bladder, whereby the fiſh can contract it when it liſts. The ſame author adds, in confirmation of this doctrine, that it is found, if the *ſwimming* bladder of any fiſh be pricked or broke, the fiſh immediately ſinks to the bottom, and can neither ſupport nor raiſe itſelf. And that in flat fiſhes, as ſoles, plaiſe, *&c.* which lie always groveling at the bottom, there is no *ſwimming* bladder at all.

SWINE-*pox*. See the article POX.

SWOONING, a kind of lipothymia, or fainting, wherein the patient loſes all his ſtrength, as well as ſenſe, and underſtanding. See LIPOTHYMIA, DELIQUIUM, *&c.*

Swooning may be occaſioned by any thing that alters, corrupts, or diſſipates the vital ſpirits; as, long watching, violent pains, great and ſudden evacuations, putrid vapours ariſing from abſceſſes in the noble parts, *&c.*

SWORD, an offenſive weapon, worn at the ſide, ſerving either to prick, or cut, or both. See FENCING, ARMS, *&c.*

Its parts are the blade, guard, hand, or graſp, and pummel; to which may be added, the bow, ſcabbard, hook and chape. —The maſters of defence divide the *ſword* into the *upper*, *middle*, and *lower* part; or the *fort*, *middle*, and *foible* or ſmall, and weak part.

Anciently, there were a kind of two-handed *ſwords*, called *ſpado's*, and which were to be managed with both hands; which in thoſe days they could brandiſh ſo nimbly, as to cover the whole body therewith,

The ſavages of Mexico, when firſt viſited by the Spaniards, had a kind of wooden *ſwords*, which would do as much execution as ours.—In Spain, *ſwords* are only allowed of ſuch a length, determined by authority.—The ancient cavaliers gave names to their *ſwords*; *joyeuſe* was that of Charlemaign; *durandal* that of Orlando, *&c.*

SWORD-*bearers*,	See	PORTEGLAIVE.
Mills for SWORD *blades*,	See	MILL.
Pleas of the SWORD,	See	PLEA.
S. James of the SWORD,	See	JAMES.

SYCOPHANT *, ΣΥΚΟΦΑΝΤΗΣ, a Greek term, originally uſed at Athens, for perſons who made it their buſineſs to inform againſt thoſe who ſtole figs, to the owners; or againſt thoſe who, contrary to the law which prohibited the exportation of figs, practiſed the thing, and deceived the officers, the inſpectors of the ports, *&c.*

* The word is formed from συκος, a fig, and φαινω, *indico*, I ſhow, diſcover.

At length, the term became uſed in the general for all informers, tale-bearers, paraſites, flatterers, *&c.* eſpecially thoſe in the courts of princes: and at laſt, for lyer, impoſtor, *&c.*

SYCOPHANTIC *plants*. See the article PARASITES.

SYLLABIC, in the Greek grammar.—There are two kinds of augments; the firſt called *ſyllabic*, which is when the word is increaſed by a *ſyllable*; the other *temporal*, which is when a ſhort ſyllable becomes long. See AUGMENT.

SYLLABLE *, SYLLABA, in grammar, a part of a word, conſiſting of one or more letters which are pronounced together. See LETTER and WORD.

* The word is derived from the Greek, συλλαβη, which literally denotes comprehenſion, or aſſemblage.

Or, a *ſyllable* is a compleat ſound, uttered in one breath, conſiſting either of a vowel alone, or of a vowel and one or more conſonants, not exceeding ſeven. See VOWEL, CONSONANT, *&c.*

Scaliger defines a *ſyllable* to be an element under one tone or accent, that is, which can be pronounced at once.

Priſcian, more intelligibly, calls it a comprehenſion of ſeveral letters falling under one accent, and produced at one motion of the breath.—But ſome grammarians reject this definition, as excluding all *ſyllables* of one letter.

Another defines *ſyllable*, a literal or articulate voice, of an individual ſound. See VOICE.

In every word, therefore, there are as many *ſyllables* as there are vocal ſounds; and as many vocal ſounds, as there are ſimple or compound vowels; each whereof requires a diſtinct motion of the pectoral muſcles.—Thus, *a*, *a*, *a*, make three *ſyllables*, formed by ſo many motions, diſtinguiſhed by ſmall ſtops betwixt each expiration.

In the Hebrew, all the *ſyllables* begin with conſonants; allowing aleph to be one; nor has any *ſyllable* more than a ſingle vowel. See VOWEL and POINTS.

From the number of *ſyllables* in words they become denominated *monoſyllables*, *biſſyllables*, *triſſyllables*, and *polyſyllables*, q. d. words of one *ſyllable*, two *ſyllables*, three *ſyllables*, and many *ſyllables*. See WORD, MONOSYLLABLE, *&c.*

As it is the number of *ſyllables* that conſtitutes the meaſure of Engliſh verſe; it were to be wiſhed, we had fixed and ſettled rules to determine the preciſe number of *ſyllables* in each word: for we have words very dubious in that reſpect; and there are even ſome which have more *ſyllables* in verſe, than in proſe. Many of the words ending in *ious*, give a deal of embaraſs to ſuch as pique themſelves on exactneſs; as odious, precious, *&c.* See FOOT, QUANTITY, MEASURE, *&c.*

SYLLABUB, a kind of compound beverage, moſt affected in the ſummer-ſeaſon; ordinarily made of white-wine, and ſugar, into which is ſquirted new milk with a ſyringe, or wooden cow.

Sometimes it is made of canary, in lieu of white-wine; in which caſe the ſugar is ſpared, and a little lemon and nutmeg added in lieu of it.

To prepare it the beſt way, the wine and other ingredients, excepting the milk, are to be mixed over night, and the milk or cream added in the morning. The proportion is, a pint of wine to three of milk. For

Whipt SYLLABUB, to half a pint of white wine or rheniſh, is put a pint of cream, with the whites of three eggs. This they ſeaſon with ſugar, and beat with birchen rods. The froth is taken off as it riſes, and put into a pot; where, after ſtanding to ſettle two or three hours, it is fit to eat. Ruſt.

SYLLEPSIS, in grammar, *conceptio*, a figure whereby we conceive the ſenſe of words otherwiſe than the words import; and thus make our conſtruction, not according to the words, but the intention of the author.

The *ſyllepſis*, ſays an ingenious author, is a figurative conſtruction, which agrees rather with our ideas, than with the words; and expreſſes rather the ſenſe of our mind, than the ſenſe of the terms themſelves.

SYLLEPSIS is alſo uſed for the agreement of a verb, or adjective, not with that word next it, but with the moſt worthy in the ſentence: as, *rex & regina beati*.

Some authors call the *ſyllepſis*, *ſyntheſis*; others *ſubſtitution*. See SUBSTITUTION.

It is a figure of conſiderable uſe for the well underſtanding of authors.—Scioppius divides it into two kinds, *ſimple* and *relative*.

Simple SYLLEPSIS, is when the words of a diſcourſe either diſagree in gender, or number, or both.

Relative SYLLEPSIS, is when the relative is referred to an antecedent which is not expreſſed; but which we conceive by the ſenſe of the whole period.

SYLLOGISM, ΣΥΛΛΟΓΙΣΜΟΣ, in logic, an argument, or form of reaſoning, conſiſting of three propoſitions; having this property, that the concluſion neceſſarily follows from the two premiſes: ſo that if the firſt and ſecond propoſitions be granted, the concluſion muſt be granted in like manner; and the whole allowed for a demonſtration. See ARGUMENT, PREMISES, CONCLUSION, *&c.* See alſo PROSYLLOGISM.

If the premiſes be only probable, or contingent, the *ſyllogiſm* is ſaid to be *dialectical*; if they be certain, *apodictical*; if falſe, under an appearance of truth, *ſophiſtic*, or *paralogiſtic*. See DIALECTICAL, APODICTICAL, SOPHISM, *&c.*

As often as the mind obſerves any two notions to agree to a third, which is done in two propoſitions; it immediately concludes that they agree to each other: or if it find that one of them agrees, and the other diſagrees, which is likewiſe done in two propoſitions; it immediately pronounces that they diſagree to each other.—And ſuch is a *ſyllogiſm*; which, it hence appears, is nothing but a mental diſcourſe, or reaſoning, whereby, from any two propoſitions granted, a third is neceſſarily deduced. See PROPOSITION, REASON, *&c.*

Hence, as the Greeks call it *ſyllogiſm*, the Latins call it *collectio*, or *ratiocinatio*, as being a kind of computation, which, either by adding, or ſubſtracting, gathers either the ſum or the remainder: for, as if we add two to three, we thence collect five; ſo if to this propoſition, "man is an "animal," you add this, "every animal thinks;" you thence deduce this, "therefore man thinks." See REASONING.

Of the three propoſitions whereof a *ſyllogiſm* conſiſts; the firſt is by way of eminence, called the *propoſition*, as being propoſed for the baſis of the whole argument; the ſecond is called the *aſſumption*, as being aſſumed to aſſiſt in inferring the third: though they are both called *ſumptiones*, becauſe aſſumed for the ſake of the third; and both *premiſes*, as being premiſed to it; and for the ſame reaſon both are called *antecedents*, only the firſt the *major*, and the latter the *minor*. See ASSUMPTION, PREMISES, MAJOR, MINOR, *&c.*

The third is called the *concluſion*, as being the cloſe of the whole argumentation; and ſometimes *complexio*, as including the two notions, before ſeparately compared; and *conſequens*, becauſe it follows from the antecedents; and laſtly, *illatio*, becauſe inferred from the premiſes by means of the illative particle *ergo*, therefore, *&c.* See CONCLUSION, CONSEQUENCE, *&c.*

As the concluſion is the principal part of a *ſyllogiſm*, it hence ariſes, that though both the propoſition and aſſumption conſiſt each of its ſubject and attribute; yet the ſubject and attribute of a *ſyllogiſm*, are properly underſtood of thoſe of the concluſion. See SUBJECT and ATTRIBUTE.

Again, in the inſtance above-mentioned, *animal* being uſed both as ſubject and attribute, it is held a kind of intermediate between the two, and frequently called *medium*; in reſpect to which, both the ſubject and attribute, *man* and *thinks* are called *extremes*, or *terms*; only the ſubject *the greater extreme*, and the attribute *the leſs*. See MEDIUM, EXTREME, TERM, *&c.*

A *ſyllogiſm*, whether ſimple, or compound, may either be *categorical*: as that already inſtanced, wherein both premiſes are poſitive.

Or, *hypothetical*, wherein one or both of the premiſes are only ſuppoſed: as, "if the ſun ſhines, it is day: but the ſun "does ſhine, therefore it is day." See HYPOTHETICAL.

Or, *analogical*: as, "as the baſe is to the column; ſo is "juſtice to the commonwealth: but if the baſe be withdrawn, the column is overturned; therefore if juſtice be "taken away, the commonwealth is overturned." See ANALOGY.

Or, *diazeuctic* or *disjunctive*; as, "either they mean to "pleaſe or to profit: but they do not aim to pleaſe; there"fore they aim to profit." See DISJUNCTIVE.

The moſt convenient form of a perfect *ſyllogiſm*, is to have the medium in the middle, placed between the ſubject and the attribute; as in the inſtance above-mentioned.

Of this form there are two figures,—the one *coherent*, or *conjunct* and *affirmative*; founded on this canon, "that what "agrees with any thing, likewiſe agrees with that where"with this neceſſarily agrees."

The other *incoherent* or *disjunct*, and *negative*; founded on this canon, "that what agrees with any thing, diſagrees with "that wherewith this diſagrees."

Of each of theſe figures there are three modes, *viz. general*, *particular*, and *mixed*. See MOOD and FIGURE.

A *ſyllogiſm*, wherein one of the premiſes is ſuppreſſed, but ſo as to be underſtood; is called an *enthymeme*; *e. gr.* "every "animal thinks, therefore man thinks;" wherein the propoſition, "man is an animal," is underſtood. See ENTHYMEME.

The demonſtrations of mathematicians, it is obſerved, are only ſeries's of enthymemes: ſo that every thing in mathematics is concluded or proved by *ſyllogiſm*; only omitting ſuch premiſes as occur of their own accord, or as are referred to by the citations. See DEMONSTRATION.

For *the uſe* SYLLOGISM *is of to reaſon*, Mr. Locke obſerves, that of four things, which reaſon is employed about, *viz.* the finding out of proofs, the regular diſpoſition of them ſo as their connexion may appear, the perceiving their connexion, and the making a right concluſion; *ſyllogiſm* only aſſiſts in one, *viz.* ſhewing the connexion of the proofs in any inſtance. Nor is it of any great uſe even here; ſince the mind can perceive ſuch connexion, where it really is, as eaſily, nay, perhaps, better, without it. We ſee men reaſon very ſtrongly, who do not know how to make a *ſyllogiſm*.

Indeed, *ſyllogiſm*, the ſame author adds, may ſerve to diſcover a fallacy in a rhetorical flouriſh, or by ſtripping an abſurdity of the cover of wit and good language, ſhew it in its natural deformity. But it only ſhews the weakneſs or fallacy of ſuch a diſcourſe by the artificial form it is put into, to thoſe who have thoroughly ſtudied mood, and figure, and have ſo examined the many ways three propoſitions may be put together in, as to know which of them does certainly conclude right, and which not, and upon what grounds they do ſo.

The mind is not taught to reaſon by theſe rules: it has a native faculty of perceiving the coherence or incoherence of its ideas, and can range them right, without ſuch perplexing repetitions.—Add, that to ſhew the weakneſs of an argument, there needs no more, than to ſtrip it of the ſuperfluous ideas, which, blended and confounded with thoſe on which the inference depends, ſeem to ſhew a connexion where there is none; or at leaſt hinder the diſcovery of the want of it: and then to lay the naked ideas, on which the force of the argumentation depends, in their due order. In this poſition, the mind taking a view of them, ſees what connexion they have, and ſo is able to judge of their inference, without any need of *ſyllogiſm* at all.

Nor muſt it be omitted, that *ſyllogiſms* are as liable to fallacies, as the plainer ways of argumentation; for which one might appeal to common obſervation, which has always eſteemed theſe artificial methods of reaſoning, more adapted to catch and intangle the mind, than to inſtruct and inform the underſtanding. And if it be certain that fallacy can be couched in a *ſyllogiſm*, as no body will deny but it may; it muſt be ſomething elſe, and not a *ſyllogiſm*, that muſt diſcover it.

The ſame author proceeds to ſhew, that this way of reaſoning diſcovers no new proofs, nor makes any diſcoveries; but is wholly converſant in the marſhalling and ranging thoſe we already have: a man muſt know, before he be able to prove *ſyllogiſtically*; ſo that the *ſyllogiſm* comes after knowledge, when we have but little need of it. See REASON and LOGIC.

Reduction of SYLLOGISMS. See the article REDUCTION.

SYLLOGISTIC *form*. See the article FORM.

SYLVA, or SILVA, in poetry, a poetical piece compoſed, as it were, at a ſtart; in a kind of rapture or tranſport, without much thought or meditation.—Such are the *ſylvæ* of Statius, which, he aſſures us, were all compoſed after this manner.

Quintilian extends the uſe of the word *ſylva* to any writing done in haſte, and on the ſpot.

The word is Latin, and literally ſignifies *foreſt*; whence its chief uſe, in our language is, metaphorically, to expreſs certain collections of poetical pieces, of various kinds, and on various ſubjects; as a foreſt is an aſſemblage of trees of different ſorts.

SYMBOL*, SYMBOLUM, a ſign, or repreſentation of any moral thing, by the images or properties of natural things. See SIGN, FIGURE, IMAGE, *&c.*

* The word is formed from the Greek, συμϐολον, a mark, ſign, or badge, and that from the verb συμϐαλλειν, *conferre*, to compare.

Thus we ſay, the lion is the *ſymbol* of courage; the pellican of paternal love, *&c.*—*Symbols* were in great repute among the ancient Hebrews, and eſpecially among the Egyptians; and ſerved to cover a great part of their moral myſteries; being uſed not only to repreſent moral things by natural; but even natural by natural. See HIEROGLYPHIC.

Symbols are of various kinds; as types, ænigma's, parables, fables, allegories, emblems, hieroglyphics, *&c.* each whereof, ſee under its reſpective article, TYPE, ÆNIGMA, PARABLE, FABLE, *&c.*

The Chineſe letters are moſt of them *ſymbols*, or ſignificative. See LETTER.—The *ſymbols* in algebra, *&c.* are arbitrary. See CHARACTER.

Medaliſts alſo apply the term SYMBOL to certain marks or attributes peculiar to certain perſons, or deities.—The thunder-bolt, for inſtance, accompanying the heads of certain emperors, is a ſign or *ſymbol* of the ſovereign authority, and of a power equal to that of the gods: the trident is the *ſymbol* of Jupiter; the peacocks, of Juno; a figure ſeated on an urn, of a river, *&c.* See ATTRIBUTE.

SYMBOL, among chriſtians, is particularly uſed for the creed, or the articles of religion which every chriſtian is to know, and believe. See CREED.

Fleury obſerves, that till the time of St. Gregory, the *ſymbol* was never uſed to be rehearſed in the office of the Roman church; in regard that church, having never been infected with any hereſy, did not need to make any profeſſion of faith. Suicer notes, that ſeveral words and clauſes have been occaſionally added to the *ſymbol*, upon the riſing of new hereſies.

Though it be a common opinion, that the *ſymbol* is the work of the apoſtles; and though, on the footing of ſuch opinion, we call it the *apoſtles creed*; yet, du Pin obſerves, there are ſeveral very cogent arguments to render the opinion highly improbable.

In the emperor's library is a Greek MS of the *ſymbol* of the apoſtles, divided into twelve articles, with the names of the reſpective apoſtles, who are ſaid to have compoſed each article. The firſt is attributed to St. Peter, and the reſt ſucceſſively to Andrew, James major, John, Thomas, James minor, Philip, Bartholomew, Matthew, Simon, Thaddeus, and Matthias.

But the teſtimony of that MS does not much confirm the opinion, that each apoſtle compoſed an article of the *ſymbol*; yet the opinion is, at leaſt, as old as St. Leo, who ſeems to have believed it.

Authors are in doubt why the name *ſymbol* ſhould be given to this compendium of the articles of the chriſtian faith: ſome ſay, it is thus called, as being the mark or characteriſtic of a chriſtian.—Others derive it from an aſſembly or conference of the apoſtles, where each expreſſing his ſenſe of the faith, and what each had chiefly preached, the creed was framed, and called by the Greek word συμϐολον, which ſignifies *collation* or *conference*.—It is added, that St. Cyprian is the firſt who appears to have uſed the word *ſymbol* in this ſenſe.

SYMBOLICAL *characters*,	See	CHARACTER.
SYMBOLICAL *column*,		COLUMN.
SYMBOLICAL *fountain*,		FOUNTAIN.
SYMBOLICAL *freezes*,		FREEZE.
SYMBOLICAL *philoſophy*,		HIEROGLYPHIC.
SYMBOLICAL *phyſics*,		PHYSICS.

Clemens Alexandrinus, Euſebius, *&c.* obſerve, that the Ægyptians had two ways of repreſenting their *ſymbolical* myſteries; one by the virtues of animals, herbs, *&c.* the other by geometrical figures.—Thus, the ſun and moon were repreſented, in the firſt manner, by the beetle and Ibis; and in the latter, by their own figures.—Again, the four elements they repreſented, after the firſt manner, by four animals which have qualities correſponding thereto; and after the ſecond manner by +. See HIEROGLYPHIC.

SYMMETRY*, ΣΥΜΜΕΤΡΙΑ, the relation of parity, both in reſpect of height, length, and breadth of the parts neceſſary to compoſe a beautiful whole.

* The word is formed from the Greek, συν, with, and μετρον, meaſure.

Symmetry, according to Vitruvius, conſiſts in the union and conformity of the members of a work, to their whole, and of the beauty of each of the ſeparate parts to that of the entire work; regard being had to ſome certain meaſure: ſo that the body is framed with *ſymmetry*, by the due relation which the arm, elbow, hand, fingers, *&c.* have to each other, and to their whole.

Symmetry ariſes from that proportion which the Greeks call *analogy*, which is the relation of conformity of all the parts of a building, and of their whole, to ſome certain meaſure; whereupon depends the nature of *ſymmetry*. See ANALOGY.

Uniform SYMMETRY, in architecture, is that where the ſame ordonnance reigns throughout the whole pourtour.

Reſpective SYMMETRY, is that where only the oppoſite ſides are equal to each other.

SYMPATHETIC, ΣΥΜΠΑΘΗΤΙΚΟΣ, ſomething that has a ſympathy; or that acts, or is acted on by ſympathy. See SYMPATHY.

SYMPATHETIC, is particularly applied to all diſeaſes which have two cauſes; the one remote, the other near.

In which ſenſe, the word is oppoſed to *idiopathetic*. See IDIOPATHY.

Thus, an epilepſy is ſaid to be *ſympathetic* when produced by a remote cauſe; *i. e.* when the diſorder in the brain, embarraſſed with blood, is preceded and produced by ſome other diſeaſe. See EPILEPSY.

There is a *ſympathetic* palpitation of the heart, and an idiopathetic one.—There is but one idiopathetic cauſe of the palpitation; but there are ſeveral *ſympathetic* ones. See PALPITATION.

Among chymiſts and alchymiſts, the term *ſympathetic* is principally applied to a kind of powder, and of ink.

SYMPATHETIC *inks*, are ſuch as can be made to appear and diſappear very ſuddenly, by the application of ſomething which ſeems to work by ſympathy. See INK.

Of theſe we have ſome very curious inſtances and experiments, given us by Lemery and Mr. Boyle; to the following effect.

1°. To two or three parts of unſlaked lime put one of yellow orpiment; powder and mix the two, adding fifteen or ſixteen times as much water as there was orpiment; ſtop up the vial with a cork and bladder, and ſet it in warm embers. Shake the vial now and then for five hours, and warily decant the clear part, or rather filtrate it. In the mean time, burn a piece of cork thoroughly, and when well inflamed, quench it in common water, or rather in brandy. Being thus reduced into a friable coal, grind it with fair water, wherein gum arabic has been diſſolved; and it will make a liquor as black as the common ink.

While theſe are doing, diſſolve in three times as much diſtilled or ſtrong vinegar, over warm embers, a quantity of red lead; or of ſaccharum ſaturni, in thrice the quantity of water; for three or four hours, or till the liquor have a ſweet taſte. This liquor will be as clear as common water.

The liquors thus prepared: write any thing on paper with this laſt ſort, dry it, and nothing will appear. Over the place, write what you pleaſe with the ſecond liquor; it will appear as if written with common ink: when dry, dip a ſmall piece of rag or ſpunge in the firſt liquor, rub it over the written place, and the black writing will vaniſh; and that wrote with the inviſible ink, appear black and legible.

Again, take a book four or five inches thick, and on the firſt leaf write any thing with the laſt liquor: turn to the other end of the book, and rub there with a rag, dipt in the firſt liquor, on that part, as near as you can gueſs, oppoſite to the writing; and leave alſo the rag there, clapping a paper over it; then nimbly ſhutting the book, ſtrike four or five ſmart ſtrokes thereon with your hand, and turning the other ſide uppermoſt, clap it into a preſs, or lay it under a good weight for a quarter of an hour, or even half that time: then will the writing done with the inviſible ink be found white and legible.

2°. Diſſolve white or green vitriol in water, and writing with the ſolution, nothing will appear. Boil galls in water, and dip a linen rag in the decoction, and with it rub the place before writ, and it will appear black and legible. Rub it over again with ſpirit of vitriol, or its oil, and the writing will diſappear again: rub it over again with oil of tartar per deliquium, the letters will appear again, but of a yellow colour.

SYMPATHETIC *powder*, a powder once very much famed; ſuppoſed to have this wonderful property, that if ſpread on a cloth dipt in the blood of a wound, the wound will be cured, though the patient be any number of miles off. See WEAPON-*ſalve*.

This powder, M. Lemery tells us, is nothing but Roman vitriol, opened by the ſun-beams penetrating it, and imperfectly calcining it, in the middle of ſummer. See VITRIOL.

But it is now generally allowed a mere piece of charletanery, whatever Sir Kenelm Digby, and others before him, and after, plead in its favour.

Sir Kenelm, in an expreſs treatiſe on the ſubject, where he gives inſtances of cures performed by it, accounts for the manner of its operation thus: the ſun's rays, ſays he, attract and draw the ſpirits of the blood at a great diſtance; by which means the atoms thereof are driven and diſperſed far and near in the air. Now, the ſpirits of vitriol, incorporated with the blood, fly along with them, and the two together form a kind of train of corpuſcles. On the other ſide there is continually iſſuing and exhaling from the wound abundance of fiery ſpirits, which attract the neighbouring air; and this air, by a continued concatenation, attracting ſtill the next air, at length, meets the atoms, with the ſpirits of the blood and vitriol. Thus the ſpirits of the blood finding their ſource again, re-enter into their primitive ſeat, and being joined with the vitriolic ſpirits, the wound is comforted and healed, imperceptibly.

But, to the confuſion of all this fine reaſoning, it is found by experience, that the powder is ſo far from this effect at a great diſtance, that it is ſcarce perceived, if done in the ſame room with the patient. Though it is poſſible, as the parts of the vitriol are in continual motion, if the cloth be applied juſt by the patient, ſome of the effluvia thereof may enter the wound, and help to ſtop the bleeding. See VITRIOL.

SYMPATHY*, ΣΥΜΠΑΘΕΙΑ, an agreement of affections and inclinations; or a conformity of natural qualities, humours, temperaments, *&c.* which make two perſons pleaſed and delighted with each other. See ANTIPATHY.

* The word is formed from the Greek, συν, with, and παθος, paſſion, *q. d.* compaſſion, fellow-feeling.

SYMPATHY is alſo uſed with regard to inanimate things; intimating ſome propenſion they have to unite, or to act on one another. See CONSENT *of parts*.

In this ſenſe, naturaliſts ſay, there is a *ſympathy* between the vine and the elm; between the loadſtone and iron; the two poles of a loadſtone, *&c.*

Several authors have wrote on the *ſympathies* and antipathies between animals; but the greateſt part of what they ſay is fabulous: Such, *e. gr.* is that antipathy between chords made of ſheeps and wolfs guts; a lute, they ſay, being ſtrung with theſe two kinds of chords, they can never be brought into tune with each other: ſuch alſo is that of eagles feathers, which mixed with thoſe of other birds, are ſaid to devour and conſume them. See ANTIPATHY.

The alchymiſts talk much of the powder of *ſympathy*. See SYMPATHETIC *powder*.

SYMPATHY, in medicine, an indiſpoſition befalling one part of the body, through the defect or diſorder of another; whether it be from the affluence of ſome humour, or vapour ſent from elſewhere; or from the want of the influence of ſome matter neceſſary to its action. See CONSENT *of parts*.—For the force and effect of *ſympathy*, in the production of monſters, ſee MONSTER.

SYMPHONIACO *ſtylo*. See the article STYLE.

SYMPHONY*, ΣΥΜΦΩΝΙΑ, in muſic, properly denotes a conſonance, or concert of ſeveral ſounds agreeable to the ear; whether they be vocal or inſtrumental, or both; called alſo *harmony*. See HARMONY and CONSONANCE.

* The word is formed from the Greek, συν, with, and φωνη, ſound.

Some authors reſtrain *ſymphony* to the ſole muſic of inſtruments: in this ſenſe, ſay they, the recitativo's in ſuch an opera were intolerable, but the *ſymphonies* excellent. See OPERA.

The *ſymphony* of the ancients went no further than to two or more voices or inſtruments ſet to uniſon; for they had no ſuch thing as muſic in parts; as is very well proved by M. Perrault: at leaſt, if ever they knew ſuch a thing, it muſt be allowed to have been loſt. See SYNAULIA.

It is to Guido Aretine we owe the invention of compoſition: it was he firſt joined in one harmony ſeveral diſtinct melodies; and brought it even the length of four parts, *viz.* baſs, tenor, counter-tenor and treble. See HARMONY and MELODY.

SYMPHYSIS*, in medicine, one of the manners of articulating, or jointing the bones. See ARTICULATION.

* The word is Greek, συμφυσις, and ſignifies a natural coherence or connexion.

Symphyſis is a natural union, whereby two ſeparate bones coaleſce, and grow together; ſo, as neither retains any proper, diſtinct motion.

Such are moſt of the junctures of the epiphyſes, and many others of bones, which in children are ſeparate, but with age grow together; as the os ethmoides, the bones of the cranium, os ſacrum, *&c.* See BONE, EPIPHYSES, *&c.*

The *ſymphyſis*, or natural union of bones, is of two kinds; either *with a medium*, or *without*.

SYMPHYSIS *without a medium*, is where two bones unite, and grow together of themſelves without the intervention of any third thing.—Such are the *ſymphyſes* of the epiphyſes with the principal bones; ſuch alſo are thoſe of the lower jaw.

This union is effected much after the ſame manner as that of a graft and a tree. See ENGRAFTING.

The SYMPHYSIS *with a medium*, is of three kinds, called *ſynneuroſis*, *ſyſſarcoſis*, and *ſynchondroſis*; each whereof ſee under its proper article, SYNNEUROSIS, *&c.*

SYMPOSIAC*, ΣΥΜΠΟΣΙΑΚΟΝ, a conference or converſation of philoſophers at a banquet.

* The word is formed from the Greek, συμποσιον, *convivium*, feaſt.

Plutarch has nine books which he calls *ſympoſiacs*; or, *ſympoſiac* queſtions, *q. d.* diſputations at table.

SYMPTOM, ΣΥΜΠΤΩΜΑ, in medicine, is ordinarily confounded with *ſign*, and defined an appearance, or aſſemblage of appearances, in a diſeaſe, which ſhew or indicate its nature and quality; and from which one may judge of the event thereof. See SIGN.

In which ſenſe, a delirium is held a *ſymptom* of a fever.—Pain, waking, drowſineſs, convulſions, ſuppreſſion of urine, difficulties of breathing and ſwallowing, coughs, diſtaſtes, nauſeas, thirſt, ſwoonings, faintings, looſeneſs, coſtiveneſs, drineſs, and blackneſs of the tongue, are the principal *ſymptoms* of diſeaſes.

Boerhaave gives a more juſt notion of *ſymptom:* every præternatural thing ariſing from a diſeaſe, as its cauſe, in ſuch manner, however, as that it may be diſtinguiſhed from the diſeaſe itſelf, and from its next cauſe, is properly a *ſymptom* of that diſeaſe. See DISEASE.

If it ariſe, after the ſame manner, from the cauſe of the diſeaſe, it is called a *ſymptom of the cauſe.* See CAUSE.—If it ariſe from ſome former *ſymptom* as its cauſe, it is properly called a *ſymptom of a ſymptom.*

Whatever happens to a diſeaſe, from any other cauſes than thoſe mentioned, is more properly called an *epigennema.*

Hence it appears, that the *ſymptoms* above-recited are really diſeaſes themſelves.—They are various as to number, effect, *&c.* Though, after the ancients, they may be conveniently enough reduced to faults in the functions, excretions, and retentions.

Under the firſt come all diminutions, abolitions, increaſes, and depravations of animal actions, particularly with regard to hunger and thirſt, ſleeping and waking. See HUNGER, THIRST, *&c.*

Under the ſecond come nauſea's, vomitings, lienteries, cœliac affections, diarrhœas, dyſenteries, illiac paſſions, *&c.*

Under the third come the jaundice, ſtone, dropſy, fever, iſchuria, ſtrangury, aſthma, catarrh, *&c.* Each whereof ſee under its reſpective article, HUNGER, NAUSEA, LIENTERY, DIARRHOEA, JAUNDICE, DROPSY, STONE, FEVER, *&c.*

Critical SYMPTOMS. See the article CRITICAL.

SYMPTOMATICAL, in medicine, is a term often uſed to denote the difference between the primary and ſecondary cauſes in diſeaſes.—As, a fever from pain is ſaid to be *ſymptomatical*, becauſe it riſes from pain only; and therefore the ordinary means in fevers are not, in ſuch caſes, to be had recourſe to; but to what will remove the pain; for when that ceaſes, the fever will ceaſe, without any direct means taken for it. See FEVER.

SYNÆRESIS, ΣΥΝΑΙΡΕΣΙΣ, *contraction*; in grammar, a figure, whereby two ſyllables are united in one.—As, *vemens* for *vehemens.* See CONTRACTION.

SYNAGOGUE*, SYNAGOGA, a particular aſſembly of Jews, met to perform the offices of their religion.—Alſo, the place wherein they meet. See JUDAISM.

* The word is Greek, συναγωγη, which literally imports aſſembly, congregation-

Some authors take the uſe of *ſynagogues* to be of no old ſtanding among the Jews; and maintain, that it was not till after their return from the Babyloniſh captivity, that the opinion firſt got footing, that the worſhip of God was not ſo reſtrained to the temple at Jeruſalem, that it could not be held any where elſe. The conſequence of which new opinion was, that the Jews began to build them *ſynagogues* in all their cities.

Others hold, that there were *ſynagogues* even in the time of David.—But be this as it will, no aſſemblies of the Jews appear to have been called *ſynagogues* till a little before the coming of Jeſus Chriſt; who is ſaid to have preached in the middle of the *ſynagogue.*

There were reckoned four hundred and eighty *ſynagogues* in the ſingle city of Jeruſalem.—There are ſtill *ſynagogues* ſubſiſting at London, Amſterdam, Rotterdam, Avignon, Metz, *&c.*

SYNALŒPHA, ΣΥΝΑΛΟΙΦΗ, in grammar, a contraction of ſyllables, performed principally, by ſuppreſſing ſome vowel or diphthong at the end of a word, on account of another vowel or diphthong at the beginning of the next.—As, *ill' ego*, for *ille ego*, &c. See ELISION.

SYNANCHE*, ΣΥΝΑΓΧΗ, in medicine, a kind of quinzy, wherein the internal muſcles of the fauces, or pharynx, are attacked. See ANGINA and QUINZY.

* The word is formed from the Greek, συν, with, and αγχειν, to conſtringe, ſuffocate.

When the external muſcles of the ſame part are ſeized, it is called a *paraſynanche.* See PARASYNANCHE.

SYNARTHROIDALIS *diarthroſis.* See the article DIARTHROSIS.

SYNARTHROSIS*, ΣΥΝΑΡΘΡΩΣΙΣ, in anatomy, a kind of articulation, or jointure of the bones of the body; wherein they remain without any, at leaſt apparent motion. See ARTICULATION.

* The word is formed from the Greek, συν, with, and αρθρον, *articulus*, joint.

The *ſynarthroſis* is when the bones are bound ſo faſt together, that they are rendered immoveable with regard to each other.—In which view it ſtands oppoſed to *diarthroſis.* See DIARTHROSIS.

It is divided into three kinds: the firſt, *ſutura*; which is ſometimes in form of two combs, or ſaws, the teeth whereof enter into one another; and ſometimes in form of ſcales, one ledge lapping over the other. See SUTURE.

The ſecond kind is called *harmonia*; which is when the bones meet in an even line, whether it be right or circular. See HARMONIA.

The third, called *gomphoſis*, is when one bone is fixed into another, like a nail or peg into a hole. See GOMPHOSIS.

To theſe three kinds of *ſynarthroſis*, ſome add ſeveral others, as *ſymphyſis*, *ſyntenoſis*, and *ſynneuroſis.* See SYMPHYSIS, *&c.*

SYNAULIA, ΣΥΝΑΥΛΙΑ, in the ancient muſic, a conteſt of pipes, or flutes, performing alternately, without voices.

Mr. Malcolm, who doubts whether the ancients had properly any ſuch thing as inſtrumental muſic, that is, muſic compoſed wholly for inſtruments, without any ſinging; yet quotes the practice of the *ſynaulia* from Athenæus. See SYMPHONY, HARMONY, MUSIC, *&c.*

SYNCATEGOREMA, ΣΥΓΚΑΤΗΓΟΡΗΜΑ, in logic, denotes a word, which ſignifying little or nothing of itſelf, yet when joined with others, adds force thereto: as, *all*, *none*, *certain*, &c. See CATEGOREMA.

SYNCELLUS*, or SINCELLUS, an ancient officer in the family of the patriarchs, and other prelates of the eaſtern church.

* The word, in the corrupt Greek, συγκηλλος, ſignifies a perſon who lies in the chamber with another: a chamber-fellow, or chum.

The *ſyncellus* was an eccleſiaſtic, who lived with the patriarch of Conſtantinople, to be a witneſs of his conduct; whence it is, that the *ſyncellus* was called the *patriarch's eye*, becauſe his buſineſs was to obſerve and watch.

The other prelates had alſo their *ſyncelli*, who were clerks living in the houſe with them, and even lying in the ſame chamber, to be witneſſes of the purity of their manners.

Afterwards the office degenerated into a mere dignity; and there were made *ſyncelli* of churches.—At laſt it became a title of honour, and was beſtowed by the emperor on the prelates themſelves; whom they called *pontifical ſyncelli*, and *ſyncelli auguſtales.*

There were alſo *ſyncelli* in the weſtern church, particularly in France. The ſixth councel of Paris ſpeaks with a deal of indignation of ſome biſhops who aboliſhed the office of *ſyncelli*, and lay alone; and ſtrictly enjoins them, that, for the future, to take away all occaſion of ſcandal, they make the office of *ſyncelli* inſeparable from that of biſhops.

SYNCHONDROSIS*, ΣΥΓΧΟΝΔΡΩΣΙΣ, in anatomy, a kind of articulation of the bones of the body; being a ſpecies of ſymphyſis. See SYMPHYSIS.

* The word is formed from the Greek, συν, with, and χονδρος, cartilage. See CARTILAGE.

The *ſynchondroſis* ſignifies the union of two bones by means of a cartilage: in which manner the ribs are joined to the ſternum, and the parts of the os pubis to one another.

SYNCHRONISM*, ΣΥΓΧΡΟΝΙΣΜΟΣ, the being or happening of ſeveral things in the ſame time. See CONTEMPORARY and TIME.

* The word is formed from the Greek, συν, and χρονος, time.

The happening or performing of ſeveral things in equal times, as, the vibrations of pendulums, *&c.* is more properly called *iſochroniſm:* though ſome authors confound the two. See ISOCHRONAL.

SYNCOPATION, in muſic, denotes a ſtriking or breaking of the time; whereby the diſtinction of the ſeveral times or parts of the meaſure is interrupted. See TIME, MEASURE, *&c.*

SYNCOPATION, or SYNCOPE, is more particularly uſed for the connecting the laſt note of one meaſure or bar with the firſt of the following meaſure; ſo as only to make one note of both.

A *ſyncope* is ſometimes alſo made in the middle of a meaſure.

SYNCOPATION, is alſo uſed when a note of one part ends or terminates on the middle of a note of the other part.

This is otherwiſe denominated *binding.*

SYNCOPATION is alſo uſed for *driving a note*; that is, when ſome ſhorter note at the beginning of a meaſure or half meaſure is followed by two, three, or more longer notes, before another ſhort note occurs, equal to that which occaſioned the driving, to make the number even—*e. gr.* when an odd crotchet comes before two or three minims, or an odd quaver before two, three, or more crotchets.

In *ſyncopated* or driving notes, the hand or foot is taken up, or put down while the note is ſounding.

SYNCOPE*, ΣΥΓΚΟΠΗ, in medicine, a deep, and ſudden ſwooning, wherein the patient continues without any ſenſible heat, motion, ſenſe, or reſpiration; is ſeized with a cold ſweat over the whole body, and all the parts turn pale, and cold, as if dead. See DELIQUIUM.

* The word is formed from the Greek, συν, and κοπτειν, to cut, or ſtrike.

There are ſeveral cauſes of *ſyncopes:* 1°. Too great an exhauſtion of ſpirits; as after long diets, exceſſive evacuations, violent exerciſes, long bathings, *&c.*—2°. The irregular motion of the ſpirits preventing their due influx into the parts; as ſometimes happens in fear, wrath, and other violent paſſions.—3°. Immoderate hæmorrhages.—4°. An ill conſtitution of blood; as in cacochymias, or in perſons who have taken ſomething that either diſſolves or coagulates the blood. —5°. Secret diſeaſes, as abſceſſes, or polypus's of the heart, worms, *&c.*

In very numerous, crouded aſſemblies, people ſometimes fall into *ſyncopes*, through the hot, thick, impure air, they breathe.—Some women are liable to them upon the ſmell of muſk, civet, *&c.*

For *ſyncopes*, give volatile ſpirits, and aromatics. Heurnius recommends treacle-water, and cinnamon-water; and Etmuller the volatile ſalt of vipers, ſpirit of ſal ammoniac, oil of amber, and ſometimes bleeding.

SYNCOPE, in grammar, denotes an eliſion, or retrenchment of one or more letters, or ſyllables from a word.

As when we ſay *virûm* for *virorum*; and *manet alta mente repoſtum*, for *repoſitum*.

SYNDESMUS*, in anatomy, is ſometimes uſed for a ligament. See LIGAMENT.

* The word in the original Greek, συνδεσμος, ſignifies a joining together.

In grammar, *ſyndeſmus* is uſed for a conjunction. See CONJUNCTION.

SYNDIC*, in government and commerce, an officer in divers countries, intruſted with the affairs of a city, or other community; who calls meetings, makes repreſentations and ſolicitations to the miniſtry, magiſtracy, *&c.* according to the exigency of the caſe.

* The word is formed from the Latin, *ſyndicus*, and that from the Greek, συνδικος, which ſignifies the ſame.

The *ſyndic* is appointed to anſwer and account for the conduct of the body; makes and receives propoſals for the advantage thereof; controuls and corrects the failings of particular perſons of the body, or, at leaſt, procures their correction at a public meeting.—In effect, the *ſyndic* is, at the ſame time, both the agent and cenſor of the community. Almoſt all the companies in Paris, *&c.* as the univerſity, companies of arts and trades, have their *ſyndics*; and ſo have moſt of the cities of Provence and Languedoc.

SYNDIC is alſo uſed for a perſon appointed to ſollicit ſome common affair, wherein he himſelf has a ſhare; as happens particularly among ſeveral creditors of the ſame debtor, who fails, or dies inſolvent. See ADVOCATE, *&c.*

The chief magiſtrate of Geneva is alſo called *ſyndic.* There are four *ſyndics* choſe every year; the eldeſt of whom preſides in the council of twenty-five, which is the chief council of the city, wherein all affairs are diſpatched both civil and political: thus the other three elect cannot all come at the office till the four years end; ſo that the ſyndicate rolls among ſixteen perſons, all choſen out of the council of twenty-five.

SYNDROME, ΣΥΝΔΡΟΜΗ, the concourſe or combination of ſymptoms in any diſeaſe. See SYMPTOM.

SYNECDOCHE*, ΣΥΝΕΚΔΟΧΗ, in rhetoric, a kind of figure, or rather trope, frequent among orators, and poets. See FIGURE.

* The word is Greek, formed of συνεκδεχομαι, I take together.

There are three kinds of *ſynecdoches:* by the firſt, a part is taken for the whole; as the point for the ſword; the roof for the houſe; the ſails for the ſhip, *&c.*

By the ſecond, the whole is uſed for a part.—By the third, the matter whereof the thing is made, is uſed for the thing itſelf; as ſteel for ſword, ſilver for money, *&c.*

To which may be added another kind, where the ſpecies is uſed for the genus, or the genus for the ſpecies.—As, he bore the ſin of many, *i. e.* of all.

SYNECPHONESIS, or SYMPHONESIS, in grammar, a coalition, whereby two ſyllables are pronounced as one. See SYLLABLE.

It is much the ſame thing as *ſynalœpha*, or *ſynæreſis.* See SYNALOEPHA, SYNÆRESIS, *&c.*

SYNEDRIN, or SYNEDRION. See SANHEDRIN.

SYNEMMENON *note.* See the article NOTE.

SYNNEUROSIS*, in anatomy, a kind of articulation, or jointure of the bones. See ARTICULATION.

* The word is formed from the Greek, συν, with, and νευρον, nerve.

The *ſynneuroſis* is reckoned a branch of the ſymphyſis; and is when the bones are connected together by a ligament: as is the os femoris, to the os iſchium; the patella to the tibia. See SYMPHYSIS.

SYNOCHA, a name given by ſome to a continual fever, which admits of intentions and remiſſions. See FEVER and CONTINUAL.

SYNOCHUS, ΣΥΝΟΧΟΣ, denotes a continent fever, which proceeds without any remiſſion to the end. See CONTINENT and FEVER.

SYNOD*, in aſtronomy, a conjunction, or concourſe of two or more ſtars, or planets in the ſame optical place of the heavens. See CONJUNCTION.

* The word is formed from the Greek, συνοδος, convention, aſſembly; compounded of συν, with, and οδος, *via*, way.

SYNOD, SYNODUS, in church hiſtory, a council; or a meeting, or aſſembly of eccleſiaſtics, to conſult on matters of religion. See COUNCIL.

Of theſe there are four kinds, *viz.*

General, or *oecumenical*, where biſhops, *&c.* meet from all nations. See OECUMENICAL.

National; where thoſe of one nation only come together.

Provincial; where they of one only province meet. And

Dioceſan; where thoſe of but one dioceſe meet. See CONVOCATION.

SYNODALS, or SYNODIES, were pecuniary rents (commonly of two ſhillings) paid to the biſhop, or archdeacon, at the time of their Eaſter viſitation, by every pariſh prieſt.

They were thus called becauſe uſually paid in ſynods: for that anciently biſhops uſed to viſit and hold their dioceſan ſynods at once.—For the ſame reaſon, they are ſometimes alſo denominated *ſynodalica*, but more uſually *procurations.* See PROCURATION.

SYNODALES *teſtes*, an appellation anciently given to the urban and rural deans; from their informing againſt, and atteſting the diſorders of, the clergy and people in the epiſcopal ſynod. See DEAN.

When theſe ſunk in their authority, in their ſtead roſe another ſort of *ſynodal* witneſſes, who were a ſort of impanelled jury, conſiſting of a prieſt, and two or three laymen for every pariſh: though at length two for every dioceſe were annually choſen; till at laſt the office came to be devolved on the churchwardens. See CHURCHWARDEN.

Some think our queſt-men, who are aſſiſtants to the churchwardens, were called *ſideſmen*, quaſi, *ſynodſmen.* See SIDESMEN, and QUEST-*men.*

SYNODALE *inſtrumentum*, a ſolemn oath or engagement that theſe ſynodical witneſſes took; as our churchwardens now are ſworn to make juſt preſentments.

SYNODICAL, ΣΥΝΟΔΙΚΟΣ, ſomething belonging to a ſynod. See SYNOD.

SYNODICAL *epiſtles*, are circular letters wrote by ſynods to the abſent prelates and churches; or even thoſe general ones directed to all the faithful, to inform them of what had paſſed in the ſynod.

In the collection of councils are abundance of theſe *ſynodical* epiſtles. See COUNCIL.

SYNODICAL *month*, is the period or interval of time, wherein the moon, departing from the ſun at a ſynod or conjunction, returns to him again. See MOON.

Kepler found the quantity of the mean *ſynodical* month, twenty-nine days, twelve hours, forty-four minutes, three ſeconds, eleven thirds. See MONTH.

This period is alſo called a *lunation*; in regard, in the courſe hereof, the moon puts on all her phaſes or appearances. See LUNATION.

SYNODIES. See the article SYNODALS.

SYNOD's-*men*, *teſtes ſynodales.* See SYNODALES, and SIDES-*men.*

SYNOECIA, ΣΥΝΟΙΚΙΑ, in antiquity, a feaſt celebrated at Athens, in memory of Theſeus's having united all the petty communities of Attica, into one ſingle commonwealth; the ſeat whereof was Athens; where all the aſſemblies were to be held.

The feaſt was dedicated to Minerva; and, according to the ſcholiaſt of Thucydides, was held in the month Metagitnion.

SYNONYMOUS, SYNONYMUS, is applied to a word or term that has the ſame import, or ſignification with another. See SYNONYMY.

Some ſevere critics condemn all uſe of *ſynonymous* terms in the ſame period; but this is to condemn all antiquity: ſo far is the uſe thereof from being vicious, that it is frequently neceſſary; as ſynonyma's contribute both to the force and clearneſs of the expreſſion. If the firſt word ſketch out the reſemblance of the thing it repreſents, the ſynonym that follows, is, as it were, a ſecond touch of the pencil, and finiſhes the image.

Indeed they muſt be uſed with a deal of diſcretion and œconomy. The ſtile muſt be raiſed and brightened, not ſtuffed or loaded with *ſynonymous* terms. They muſt be uſed as ornaments, and to render the expreſſion the more forcible, without making a ſhew of the riches thereof, or heaping ſynonyma's on ſynonyma's.

But, though *ſynonymous* words be laudable; *ſynonymous* phraſes are inexcuſable: the reaſon is, that two *ſynonymous* phraſes keep the mind at reſt, and let it flag, and languiſh.

SYNONYMY*, SYNONYMIA, in rhetoric, a figure whereby ſynonyms, or ſynonymous terms, that is, various words of the ſame ſignification, are made uſe of, to amplify the diſcourſe. See SYNONYMOUS and AMPLIFICATION.

* The word is formed from the Greek, συν, with, and ονομα, name.

Such is that paſſage in Cicero, *abiit*, *evaſit*, *effugit*, *erupit*, he went off, he eſcaped, he run away, *&c.* See SYNONYMOUS.

SYNOVIA, or SINONIA, in medicine, a term uſed by Paracelſus and his ſchool, for the nutritious juice proper and peculiar to each part. See NUTRITION.

Thus they talk of the *ſynovia* of the joints, of the brain, *&c.* Others uſe *ſynovia* for the gout, and other diſeaſes in the joints, ariſing from a vice in the nutritious juice.

Others reſtrain it to the oozing out of the nutritious juice through a wounded part; eſpecially a joint.

Van Helmont defines *ſynovia*, a kind of tranſparent mucilage, like ſeed, ſuch as iſſues from the legs of a calf upon cutting off the feet.

SYNTAGMA, ΣΥΝΤΑΓΜΑ, the diſpoſing, or placing of things in an orderly manner. See COMPOSITION.

SYNTAX, ΣΥΝΤΑΞΙΣ, in grammar, the conſtruction or connexion of the words of a language into ſentences, or phraſes. See WORD, SENTENCE, PHRASE, *&c.*

F. Buffier more accurately defines *ſyntax*, the manner of conſtructing one word with another, with regard to the different terminations thereof, preſcribed by the rules of grammar. See CONSTRUCTION.

Some authors, as M. Vaugelas, *&c.* confound *ſyntax* with ſtyle; but there is a real difference. See STYLE.

The office of *ſyntax*, is to conſider the natural ſuitableneſs of words with reſpect to one another; in order to make them agree in gender, number, perſon, mood, *&c.* See CONCORD. To offend in any of theſe points, is called to offend againſt *ſyntax:* and ſuch kind of offence, when groſs, is called a *ſolеciſm*; and when more ſlight, a *barbariſm*. See SOLECISM and BARBARISM.

The ſeveral parts of ſpeech, are, with regard to language, what materials are with regard to a building. How well prepared ſoever they may be, they will never make a houſe, unleſs they be placed conformably to the rules of architecture. It is properly the *ſyntax* that gives the form to language; and it is that on which turns the moſt eſſential part of grammar. See GRAMMAR, LANGUAGE, *&c.*

There are two kinds of *ſyntax*; the one of *concord*, wherein the words are to agree in gender, number, caſe, and perſon. See CONCORD.

The other, of *regimen* or *government*, wherein one word governs another, and occaſions ſome variation therein. See REGIMEN.

The firſt, generally ſpeaking, is the ſame in all languages, as being the natural ſeries of what is uſed almoſt every where, the better to diſtinguiſh diſcourſe. Thus, the diſtinction of two numbers, ſingular and plural, has rendered it neceſſary to make the adjective agree with the ſubſtantive in number; that is, to make the one ſingular or plural, when the other is ſo: for, as the ſubſtantive is the ſubject confuſedly, though directly, marked by the adjective; if the ſubſtantive expreſs ſeveral, there muſt be ſeveral ſubjects expreſſed in that form by the adjective; and by conſequence it ought to be in the plural: as *homines docti*, learned men: but there being no variety of termination in the adjective in Engliſh to diſtinguiſh the number, it is only implied. See NUMBER.

The diſtinction of maſculine and feminine gender, obliges the languages which have diſtinct terminations, to have a concordance or agreement between the ſubſtantive and adjective, in gender as well as number: and for the ſame reaſon, the verbs are to agree with the nouns and pronouns in number and perſon. If at any time we meet with any thing that ſeems to contradict theſe rules, it is by a figure of ſpeech, *i. e.* by having ſome word underſtood, or by conſidering the thoughts rather than the words themſelves. See GENDER.

The *ſyntax* of government, on the contrary, is generally arbitrary; and, on that account, differs in moſt languages. One language, for inſtance, forms their regimen by caſes; as the Latin and Greek: others uſe particles in lieu thereof; as the Engliſh, French, Italian, Spaniſh, *&c.* See CASE and PARTICLE.

One or two general rules, however, may be here noted, which obtain in all languages. 1°. That there is no nominative caſe, but has a relation to ſome verb, either expreſſed or underſtood; ſince we do not only ſpeak to expreſs what we perceive, but to expreſs what we think of what we perceive, which is done by the verb. See NOMINATIVE.

2°. That there is no verb but has its nominative caſe either expreſſed or underſtood; for the office of the verb being to affirm, there muſt be ſomething to affirm of; which is the ſubject or nominative caſe of the verb; except before an infinitive, where it is an accuſative; as *ſcio Petrum eſſe doctum*, I know Peter to be learned. See VERB.

3°. That there is no adjective but has a relation to ſome ſubſtantive; in regard the adjective marks confuſedly the ſubſtantive, which is the ſubject of the form or quality diſtinctly marked by the adjective. See ADJECTIVE.

4°. That there never comes any genitive caſe but what is governed by ſome other noun. See GENITIVE.

5°. The government of verbs is frequently taken from various ſorts of references, included in the caſes, according to the caprice of cuſtom or uſage; which yet does not change the ſpecific relation of each caſe, but only ſhews that cuſtom has made choice of this or that.—Thus, the Latins ſay, *juvare aliquem & opitulari alicui*; the French, *ſervir quelqu' un & ſervir a quelque choſe*; and in the Spaniſh, the generality of verbs govern indifferently a dative and an accuſative caſe.

SYNTEXIS, ΣΥΝΤΕΞΙΣ, in medicine, an attenuation or colliquation of the ſolids of the body; ſuch as frequently happens in atrophies, inflammations of the bowels, colliquative fevers, *&c.* wherein a fatty uliginous matter is voided with the excrements by ſtool. See COLLIQUATION, ATTENUATION, *&c.*

SYNTHESIS*, ΣΥΝΘΕΣΙΣ, *compoſition*, or the putting of ſeveral things together: as in making a compound medicine of ſeveral ſimple ingredients, *&c.* See COMPOSITION.

* The word is formed from the Greek, συν, with, and θεσις, *poſitio*.

SYNTHESIS, in logic, denotes a branch of method, oppoſite to analyſis. See METHOD.

In the *ſyntheſis*, or *ſynthetic method*, we purſue the truth by reaſons drawn from principles before eſtabliſhed, or aſſumed, and propoſitions formerly proved; thus proceeding by a regular chain, till we come to the concluſion.

Such is the method in Euclid's *Elements*, and moſt demonſtrations of the ancient mathematicians, which proceed from definitions and axioms, to prove propoſitions, *&c.* and from thoſe propoſitions proved, to prove others.

This method we alſo call *compoſition*, in oppoſition to *analyſis* or *reſolution*. See COMPOSITION.

SYNTHESIS, in grammar. See SYLLEPSIS.

SYNTHESIS, in chirurgery, an operation, whereby divided parts are re-united; as in wounds, fractures, *&c.*

SYNTHETIC *method*. See SYNTHESIS and METHOD.

SYNUSIASTS*, SYNUSIASTÆ, ΣΥΝΟΥΣΙΑΣΤΑΙ, a ſect of heretics, who maintained, that there was but one nature, and one ſingle ſubſtance in Jeſus Chriſt.

* The word is formed from the Greek, συν, with, and ουσια, ſubſtance.

The *Synuſiaſts* denied, that the word aſſumed a body in the womb of the virgin; but held, that a part of the divine word being detached from the reſt, was there changed into fleſh and blood.—Thus they taught, that Jeſus Chriſt was conſubſtantial to the Father, not only as to his divinity, but even as to his humanity and very body.

SYPHILIS*, is a term uſed by ſome writers for the lues venerea. See VENEREAL.

* Some derive it from συν, *cum*, with, and φιλια, *amor*, or *amicitia*, love, or friendſhip; becauſe it proceeds from the infectious intercourſe of lovers in coition. Others will have it come from the name of a ſhepherd ſo called, who was remarkably afflicted with this diſeaſe.—However, divers authors of note uſe the term; particularly Fracaſtorius, a famous Italian phyſician, who uſes it for the title of a fine poem, which he wrote upon that diſtemper.

SYPHON, or SIPHON. See the article SIPHON.

SYRENS, SIRENES, in antiquity. See SIREN.

SYRIAC *bibles*. See the article BIBLE.

SYRIAN *year*. See the article YEAR.

SYRINGE*, an inſtrument ſerving to imbibe, or ſuck up a quantity of any fluid, and to ſquirt or expel the ſame with violence. See SUCTION, *&c.*

* The word is formed from the Greek, συριγξ, or Latin, *ſyrinx*, pipe.

The *ſyringe* is made of a hollow cylinder, as ABCD (*Tab. Hydroſtatics*, *fig.* 26.) furniſhed with a little tube at bottom, EF. In this cylinder, is an embolus, K, made, or at leaſt covered with leather, or other matter that eaſily imbibes moiſture; and ſo filling the cavity of the cylinder, as that no air or water may paſs between the one and the other.

If, then, the little end of the tube F be put in water, and the embolus drawn out; the water will aſcend into the cavity left by the embolus: and upon thruſting back the embolus, it will be violently expelled again through the ſame tube EF: and ſtill, the greater impetus will the water be expelled withal, and to the greater diſtance, as the embolus is thruſt down with the greater force, or the greater velocity.

This aſcent of the water, the ancients, who ſuppoſed a plenum, attributed to nature's abhorrence of a vacuum: but the moderns, more reaſonably, as well as more intelligibly, attribute it to the preſſure of the atmoſphere on the ſurface of the fluid. See AIR and VACUUM.

For, by drawing up the embolus, the air left in the cavity of the cylinder muſt be exceedingly rarified; ſo that being no longer a counter-balance to the air incumbent on the ſurface

face of the fluid; that prevails, and forces the water through the little tube, up into the body of the *ſyringe*.

In effect, a *ſyringe* is only a ſingle pump, and the water aſcends in it on the ſame principle, as in the common ſucking pump; whence it follows, that water will not be raiſed in a *ſyringe*, to a height exceeding thirty-one feet. See PUMP and SUCTION.

Syringes are of conſiderable uſe in medicine and chirurgery. By them clyſters are adminiſtred: injections of medicinal waters, &c. made into wounds, &c. They alſo ſerve to inject coloured liquors, melted wax, &c. into the dried veſſels of the parts of animals, to ſhew the diſpoſition, texture, ramifications, &c. thereof. See INJECTION.

SYROP*, SYRUPUS, or SIRUPUS, in pharmacy, an agreeable liquor, or compoſition of a moderately thick conſiſtence, made of juices, tinctures, or waters of fruits, flowers, or herbs boiled up, and ſweetned with ſugar, or honey; and taken either for health or pleaſure.

* Menage derives the word from the Arabic, *elſchorab*, potion, formed from the root *ſcherebe*, to drink.—Others derive it from the Greek, συρω, I draw, and οπος, juice. Eſthius, from συρια οπον, in regard theſe kind of liquors were much in uſe among the Syrians, a very delicate people. According to d'Herbelot, the words *ſyrop*, and *ſherbet* or *ſorbet*, come both from the Arabic, *ſcharab*, which ſignifies any kind of drink in the general.

There are various kinds of *ſyrops*, denominated from the various fruits, &c. they are extracted from; as *ſyrop* of violets, of elder, of wormwood, of poppies, &c. emetic *ſyrops*, lienteric, and antinephritic *ſyrops*, &c. chologogue, phlegmagogue *ſyrops*, &c.

SYROP *of Sapor*, is an ancient medicament, the baſe whereof is apples, with juices of bugloſs, aniſe, ſaffron, &c. thus called from Sapor king of Perſia, who overcame the emperor Valerian, ſuppoſed to be the inventer thereof.

SYROP *of ſugar*. See the article SUGAR.

SYSSARCOSIS*, in anatomy, a particular ſpecies of the kind of articulation called *ſymphyſis*. See SYMPHYSIS.

* The word is Greek, compounded of συν, with, and σαρξ, fleſh.

The *ſyſſarcoſis* is a natural union of two bones, by means of fleſh or muſcles: ſuch is that of the os hyoides, and omoplata.

SYSTEM*, SYSTEMA, in the general, denotes an aſſemblage, or chain of principles, and concluſions: or the whole of any doctrine, the ſeveral parts whereof are bound together, and follow or depend on each other.

* The word is formed from the Greek, συςημα, compoſition, compages.

In this ſenſe, we ſay, a *ſyſtem* of philoſophy; a *ſyſtem* of motion; a *ſyſtem* of fevers, &c.—Divines have framed abundance of *ſyſtems* of grace: the *ſyſtems* of intermediate ſcience, and predetermination, are invented to explain that of grace. See GRACE, &c.

Among phyſicians, ſome follow the *ſyſtem* of alkali and acid; others that of the four qualities, &c.—Dr. Woodward accounts for moſt things on his *ſyſtem* of the bile. See HYPOTHESIS, ACID, ALCALI, BILE, &c.

Des Cartes's *ſyſtem* is held deſtructive to religion. See CARTESIANISM, CAUSE, OCCASIONAL, &c.—Gaſſendus renewed the ancient *ſyſtem* of atoms; which was that of Democritus, followed by Epicurus, Lucretius, &c. See CORPUSCULAR, ATOMIC, &c.—Sir Iſaac Newton's doctrine of colours, M. Leibnitz's *protogæa*, and ſome diſcourſes of M. Juſſieu, in the academy of ſciences, to ſhew that there are bodies whoſe parts are not to be deſtroyed by any natural agents; are very favourable to the *ſyſtem* of Gaſſendi. See ATOM, PARTICLE, HARDNESS, MATTER, &c.

Experiments and obſervations are the materials of *ſyſtems*: an infinity are required to build one. See EXPERIMENT and EXPERIMENTAL.

SYSTEM, in aſtronomy, denotes an hypotheſis or ſuppoſition of a certain order, and arrangement of the ſeveral parts of the univerſe; whereby aſtronomers explain all the phænomena or appearances of the heavenly bodies, their motions, changes, &c. See ASTRONOMY, COELESTIAL, STAR, PLANET, &c.

This is more peculiarly called *the ſyſtem of the world*, and ſometimes the *ſolar ſyſtem*. See WORLD, SOLAR, &c.

Syſtem and *hypotheſis* have much the ſame ſignification; unleſs, perhaps, hypotheſis be a more particular *ſyſtem*; and *ſyſtem* a more general hypotheſis. See HYPOTHESIS.

Some late authors, indeed, furniſh a freſher diſtinction: an hypotheſis, ſay they, is a mere ſuppoſition, or fiction; founded rather on imagination, than reaſon: a *ſyſtem* is only built on the firmeſt ground, and raiſed by the ſevereſt rules: it is founded on aſtronomical obſervations, and phyſical cauſes, and confirmed by geometrical demonſtrations.

The moſt celebrated *ſyſtems* of the world, are the *Ptolemaic*, and the *Copernican*; to which may be added, the *Tychonic*: the œconomy of each whereof, is as follows.

Ptolemaic SYSTEM places the earth at reſt, in the centre of the univerſe; and makes the heavens revolve round the ſame from eaſt to weſt, and carry all the heavenly bodies, ſtars and planets, along with them. See PTOLEMAIC.

For the order, diſtances, &c. of the ſeveral bodies in this *ſyſtem*, ſee *Tab. Aſtron. fig.* 43.

The principal aſſerters of this *ſyſtem* are Ariſtotle, Hipparchus, Ptolemy, and many of the old philoſophers, followed by the whole world, for a great number of ages; and ſtill adhered to in divers univerſities, and other places, where free philoſophizing is excluded: but the late improvements have put it out of all countenance; and we do not even want demonſtration againſt it. See EARTH, &c.

Copernican SYSTEM places the ſun at reſt, nearly in the centre of the *ſyſtem*; excepting for a vertiginous motion about his own axis. See SUN.

Around him move, from weſt to eaſt, in ſeveral orbits, firſt Mercury, then Venus, the Earth, Mars, Jupiter, and Saturn. See PLANET.

About the earth, in a pecular orbit, moves the moon; accompanying the earth, in its whole progreſs, round the ſun. See MOON.

And after the ſame manner do four ſatellites move round Jupiter; and five round Saturn. See SATELLITES.

A-thwart the planetary ſpace do the comets move round the ſun; only in very excentric orbits, probably parabola's, in one of whoſe foci is the ſun. See COMET.

At an immenſe diſtance beyond the planetary and cometary ſpaces, are the fixed ſtars, which have all a proper motion from weſt to eaſt. See STAR.

The *ſolar*, or *planetary* SYSTEM, is uſually confined to narrower bounds: the ſtars, by their immenſe diſtance, and the little relation they appear to bear to us, being reputed no part thereof. It is highly probable, that each ſtar, is, itſelf, a ſun; and the centre of a particular *ſyſtem*, ſurrounded with a company of planets, &c. which, in different periods, and at different diſtances, perform their courſes round their reſpective ſuns; and are enlightened, warmed, and cheriſhed thereby: hence we have a very magnificent idea of the world, and the immenſity thereof: hence alſo ariſes a kind of *ſyſtem* of *ſyſtems*. See UNIVERSE and PLANETARY.

The planetary *ſyſtem*, here deſcribed, is the moſt ancient in the world. It was the firſt that we know of, introduced into Greece and Italy by Pythagoras; whence, for many ages, it was called the *Pythagorean ſyſtem*. It was followed by Philolaus, Plato, Archimedes, &c. but loſt under the reign of the peripatetic philoſophy; till happily retrieved above two hundred years ago by Nic. Copernicus; whence its new appellation of *Copernican ſyſtem*.—For the œconomy of this *ſyſtem*, ſee the ſcheme thereof, *Tab. Aſtron. fig.* 44. See alſo COPERNICAN.

Tychonic SYSTEM, in moſt reſpects, coincides with the Copernican; except in this, that, ſuppoſing the earth to be fixed, its orbit is omitted, and in lieu thereof, the ſun's orbit is drawn round the earth, and made to interſect the orbit of Mars; that Mars may be nearer the earth than the ſun.—But as there is not any reaſon, or foundation in nature, for ſuch a manifeſt ſhift; and as the author was only led thereto from a ſuperſtitious perſuaſion, that to ſuppoſe the ſun at reſt, and the earth to move, is contrary to ſcripture; the true *ſyſtem* is not much prejudiced hereby. See EARTH.—For the order and œconomy of the Tychonic *ſyſtem*, ſee the ſcheme in *Tab. Aſtron. fig.* 45. See alſo TYCHONIC.

SYSTEM, in poetry, denotes a certain hypotheſis, or ſcheme of religion, from which the poet is never to recede.—*E. gr.* Having made his choice either in the heathen mythology, or in chriſtianity, he muſt keep the two apart; and never mix ſuch different ideas in the ſaid poem. See INVOCATION, MUSES, &c.

Thus, after invoking Apollo and the Muſes, he muſt bid adieu to the language of chriſtianity, and not confound the two *ſyſtems*.—The fabulous ſtile, indeed, is the richer and more figurative; but a pagan god makes but a miſerable figure in a chriſtian poem.—The *ſyſtem* of poetry, Bouhours obſerves, is itſelf wholly fabulous and pagan.

SYSTEM, in muſic, denotes a compound interval; or an interval compoſed, or conceived to be compoſed of ſeveral leſſer.—Such as is the *octave*, &c. See INTERVAL.

The word is borrowed from the ancients; who call a ſimple interval, *diaſtem*, and a compound one *ſyſtem*. See DIASTEM.

As there is not any interval in the nature of things; ſo we can conceive any given interval, as compoſed of, or equal to, the ſum of ſeveral others. This diviſion of intervals, therefore, only relates to practice; ſo that a *ſyſtem* is properly an interval which is actually divided in practice, and where, along with the extremes, we conceive always ſome intermediate terms.

The nature of a *ſyſtem* will appear plain, by conceiving it as an interval whoſe terms are in practice, taken either in immediate ſucceſſion; or the ſound is made to riſe and fall, from the one to the other, by touching ſome intermediate degrees: ſo that the whole is a *ſyſtem* or compoſition of all the intervals between one extreme and the other.

Syſtems of the ſame magnitude, and conſequently of the ſame degree of concord and diſcord, may yet differ in reſpect of their compoſition; as containing and being actually divided into more, or fewer intervals: and when they are equal in that reſpect, the parts may differ in magnitude. Laſtly, when they conſiſt of the ſame parts, or leſſer intervals, they may differ as to the order and diſpoſition thereof between the two extremes.

There are ſeveral diſtinctions of *ſyſtems*; the moſt remarkable is, into *concinnous* and *inconcinnous*.

Concinnous SYSTEMS, are thoſe conſiſting of ſuch parts as are fit for muſic; and thoſe parts placed in ſuch an order between the extremes, as that the ſucceſſion of ſounds, from one extreme to the other, may have a good effect. See CONCINNOUS.

Inconcinnous SYSTEMS, are thoſe, where the ſimple intervals are inconcinnous, or ill diſpoſed betwixt the extremes.

Syſtems, again, are either *particular* or *univerſal*.

Univerſal SYSTEM, is that which contains all the particular *ſyſtems* belonging to muſic; and makes what the ancients call the *diagramma*, and we the *ſcale of muſic*. See DIAGRAMMA, SCALE, GAMMUT, *&c.*

The ancients alſo diſtinguiſh *ſyſtems* into *perfect* and *imperfect*.—The diſdiapaſon, or double octave, was reckoned the perfect *ſyſtem*, becauſe withing its extremes are contained examples of all the ſimple and original concords, and in all the variety of order wherein their concinnous part ought to be taken; which variety conſtitutes what they call the *ſpecies*, or *figures of conſonances*. See DISDIAPASON.—All the *ſyſtems*, leſs than the diſdiapaſon, were reckoned imperfect.

The double octave was alſo called *ſyſtema maximum*, and *immutatum*; becauſe they took it to be the greateſt extent or difference of time that we could go in making melody; though ſome added a fifth to it, for the greateſt *ſyſtem*: but the diapaſon, or ſimple octave, was reckoned the moſt perfect, with reſpect to the agreement of its extremes; ſo that how many octaves ſoever were put into the greateſt *ſyſtem*, they were all to be conſtituted or ſub-divided the ſame way as the firſt: ſo that when we know how the octave is divided, we know the nature of the diagramma or ſcale: the varieties whereof, conſtituted the genera melodiæ, which were ſub-divided into ſpecies. See GENUS and SPECIES.

SYSTOLE, ΣΤΣΤΟΛΗ, in medicine, the contraction of the heart of an animal; whereby the blood is driven out of its ventricles into the arteries. See HEART, BLOOD, ARTERY, *&c.*

The *ſyſtole* of the heart is well accounted for by Dr. Lower, who ſhews, that the heart is a true muſcle, the fibres whereof are acted on like thoſe of other muſcles, by means of certain branches of the eighth pair of nerves inſerted into it, which bring the animal ſpirits from the brain hither. By a flux of theſe ſpirits, the muſcular fibres of the heart are inflated, and thus ſhortened; the length of the heart diminiſhed, its breadth or thickneſs increaſed, the capacity of the ventricles cloſed, the tendinous mouths of the arteries dilated, thoſe of the veins ſhut up by means of their valves, and the contained juice forcibly expreſſed into the orifices of the arteries. See MUSCLE.

And this we call συϛολη, or contraction of the heart; the oppoſite ſtate to which is called the *diaſtole*, or dilatation of the heart. See DIASTOLE and PULSE.

Dr. Drake adds to Dr. Lower's account, that the intercoſtal muſcles and diaphragm, contribute to the *ſyſtole*, by opening the blood a paſſage from the right ventricle of the heart to the left through the lungs, to which it could not otherwiſe paſs: by which means, the oppoſition the blood contained in that ventricle muſt neceſſarily have made to its conſtriction, is taken off. See CONTRACTION.

Lower and Drake make the *ſyſtole* the natural ſtate or action of the heart, and the diaſtole the violent one: Boerhaave, on the contrary, makes the *ſyſtole* the violent, and the diaſtole the natural ſtate.

SYXHINDEMEN, or SIXHINDEMEN, a term purely Saxon, literally ſignifying ſix-hundred-men, or men worth ſix-hundred ſhillings a-piece.

In the time of our anceſtors, all men were ranked into three claſſes; the *loweſt*, the *middle*, and the *higheſt*; and were valued according to their claſs: that if any injury were done, ſatisfaction might be made to the value, or worth of the man it was done to. See HINDENI.

The *loweſt* were called *twyhindemen*, *q. d.* valued at two hundred ſhillings; the *middle*, *ſixhindemen*, *q. d*, valued at ſix hundred ſhillings; and the *higheſt*, *twelveindemen*, *i. e.* valued at twelve hundred ſhillings. See TWIHINDI and TWELVEHINDI.

SYZYGY*, SYZYGIA, in aſtronomy, a term equally uſed for the conjunction and oppoſition of a planet with the ſun. See CONJUNCTION and OPPOSITION.

[*] The word is formed from the Greek, συζυγια, which properly ſignifies *conjunctio*.

On the phænomena and circumſtances of the *ſyzygies*, a great part of the lunar theory depends. See MOON.

For, 1°. It is ſhewn in the phyſical aſtronomy, that the force which diminiſhes the gravity of the moon in the *ſyzygies*, is double that which increaſes it in the quadratures: ſo that in the *ſyzygies*, the gravity of the moon from the action of the ſun is diminiſhed by a part, which is to the whole gravity as 1 to 89,36; for in the quadratures, the addition of gravity is to the whole gravity as 1 to 178,73. See QUADRATURE.

2°. In the *ſyzygies*, the diſturbing force is directly as the diſtance of the moon from the earth, and inverſely as the cube of the diſtance of the earth from the ſun. And at the *ſyzygies*, the gravity of the moon towards the earth receding from its centre, is more diminiſhed, than according to the inverſe ratio of the ſquare of the diſtance from that centre. Hence, in the motion of the moon from the *ſyzygies* to the quadratures, the gravity of the moon towards the earth is continually increaſed, and the moon is continually retarded in its motion; and in the motion from the quadratures to the *ſyzygies*, the moon's gravity is continually diminiſhed, and its motion in its orbit accelerated. See GRAVITY.

3°. Further, in the *ſyzygies* the moon's orbit or circle round the earth is more convex than in the quadratures; for which reaſon the moon is leſs diſtant from the earth at the former than the latter. When the moon is in the *ſyzygies*, her apſides go backwards, or are retrograde. See ORBIT, APSIS, and RETROGRADATION.

When the moon is in the *ſyzygies*, the nodes move in antecedentia faſteſt; then ſlower and ſlower, till they become at reſt when the moon is in the quadratures. See NODE.

Laſtly, when the nodes are come to the *ſyzygies*, the inclination of the plane of the orbit is leaſt of all. See INCLINATION.

Add, that theſe ſeveral irregularities are not equal in each *ſyzygy*, but all ſomewhat greater in the conjunction than the oppoſition. See PLANET, MOON, *&c.*

T

T, A conſonant, and the nineteenth letter in the alphabet. See LETTER, and CONSONANT.

The *T*, in ſound, bears a near reſemblance to the D, for which reaſon they are often put for each other; and Quintilian even rallies thoſe who made any ſcruple of writing the one indifferently for the other: as, *at* for *ad*, *ſet* for *ſed*, *haut* for *haud*, &c. See D.

The *T* is one of the five conſonants which the abbot de Dangeau calls *Palatal*, and which are *D-T*, *G-K*, and *N*: the four firſt whereof have the ſame relation to each other, as the labials *B-P* and *V-F* have. *D*, for inſtance, having the ſame relation to *T*, that *B* has to *P*, or *V* to *F*.

The *T*, the ſame author obſerves, is a letter of a ſtrong ſound; ſo that a feeble one cannot be heard before it: hence, to form the ſupine of *rego*, the *T* of *tum* changes the *g*, and ſtrengthens it to the ſound of a *c*; ſo that we ſay *rectum*; as in the preterperfect tenſe *rexi*, which we pronounce *rekſi*.

T among the ancients was uſed as a numeral letter, ſignifying 160; according to the Verſe,

T quoque centenos & ſexaginta tenebit.

When a daſh was added a-top, thus, $\bar{T}$, it ſignified 160 thouſand.

When the tribunes approved of the decrees of the ſenate, they teſtified their conſent by ſubſcribing a *T*.

T, in muſic, is ſometimes uſed to mark the tenor part or pitch. See TENOR.

T is alſo a mark, or brand, which by ſtatute 4 Hen. VII. every perſon convicted of any felony, ſave murder, and admitted to the benefit of the clergy, ſhall be marked withal, on the brawn of the left thumb. See CLERGY.

T, or TAU, in heraldry, is a kind of croſs potent, or truncated; found in all the armories of the commanders of the order of St. Antony. See CROSS.

The azure *T*, or *Tau*, is ſeen in arms above 400 years old: its origin, according to ſome authors, is taken from the Apocalypſe; where the ſame is a mark that the angel impreſſes on the foreheads of the elect. Others take it to repreſent a crutch; a ſymbol proper enough for this order, which was ſworn to hoſpitality. But the truth, F. Meneſtrier obſerves, is, that it is the top of a Greek crozier.

The biſhops and abbots of the Greek church wear it ſtill; and if it be found on the habit of St. Antony, it is only to ſhew that he was an abbot.

TABACCO. See the article TOBACCO.

TABBY, in commerce, a kind of coarſe taffety, watered.

It is manufactured like the common taffety, excepting that it is ſtronger and thicker both in the woof and warp. See TAFFETY.

The watering is given it by means of a calender, the rolls whereof are of iron or copper, variouſly engraven, which bearing unequally on the ſtuff render the ſurface thereof unequal, ſo as to reflect the rays of light differently. See CALENDER.

TABBYING, the paſſing a ſtuff under the calender, to make a repreſentation of waves thereon, as on a tabby. See CALENDER, and TABBY.

It is uſual to *tabby* mohairs, ribbands, &c.—*Tabbying* is performed without the addition of any water or dye; and furniſhes the modern philoſophers with a ſtrong proof, that colours are only appearances. See COLOUR.

TABELLA, or TABLET, TABULATUM, in pharmacy, a ſolid kind of electuary, or confection, made of dry ingredients, uſually with ſugar, and formed into little flat morſules, or ſquares; more uſually called *Lozenges*, and ſometimes *Morſelli*, *Troches*, &c. See LOZENGE, MORSELLUS, TROCHE, &c.

Powders, fruits, ſalts, &c. are diſſolved in ſugar, and made into *Tabulæ*; as thoſe of the juice of liquorice for colds, &c. See CONSERVE, &c.

We have *cordial*, *ſtomachic*, *aperitive*, and *hepatic Tablets*. Jellies and broths are ſometimes reduced into *Tablets*, to be carried in the pocket.

Tabellæ Manus Chriſti, are made of ſugar of roſes pearled.

Tabellæ Magnanimitatis, are thoſe taken by feeble old men, when matched with young wives, to aſſiſt and bear them out in the affair of generation.

TABELLIO, TABULARIUS, in the Roman law, a *Scrivener*; a kind of officer often confounded with *notary*, *notarius*. Yet did the two differ in this; that the notaries only drew up, and kept the minutes of acts and inſtruments on paper, and in notes, or ſhort-hand; whereas the *Tabelliones* delivered them engroſſed fair on parchment, in full executory form.—The ſame alſo put the ſeals to contracts, and rendered them authentic.

The domeſtic clerks of theſe *Tabelliones*, who, at firſt, wrote under them, in proceſs of time came to be called notaries. See NOTARY.

Paſquier obſerves, that the *Tabelliones* at Rome were public ſlaves, appointed for the keeping of contracts made between private perſons.—According to Loyſeau, a contract wrote by a notary was not perfect or obligatory, till the *Tabellio* had wrote it fair: after which the parties ſubſcribed it, *i. e.* they wrote at bottom that they approved the contents; for ſignatures were not then in uſe.[*] See SIGNATURE.

[*] *Quoniam* Tabellionum *uſus in regno Angliæ non habetur, propter quod magis ad ſigilla authentica credi eſt neceſſe, ut eorum copia facilius habeatur, ſtatuimus ut ſigillum habeant non ſolum archiepiſcopi, & epiſcopi, ſed eorum officiales.* See SEAL.

TABERNACLE,[*] TABERNACULUM, among the Jews, the place wherein the ark of the covenant was lodged; both while they were in tents, during their journey from Egypt; and when fixed in Jeruſalem, and the ark kept in the temple. See ARK.

[*] The word is formed from the Latin *Tabernaculum*, a tent.

Philo deſcribes the Jewiſh *Tabernacle* thus: it was a fabric compoſed of 48 cedar boards, lined with maſſive gold; under each whereof was a ſilver ſtand, or foot, and at the top a capital of gold: it was encompaſſed with ten pieces of rich tapeſtry, of different colours, purple, ſcarlet, hyacinth, &c.—The length of the *Tabernacle* was 30 cubits; its breadth 10, *Joſephus* ſays 12.

The ark was placed in a ſecret oratory, in the middle of this *Tabernacle*; and was gilt both within ſide and without: the top whereof, being a kind of lid, was called *propitiatory*, becauſe it appeaſed the wrath of God. See PROPITIATORY.

The *Tabernacle* was encompaſſed with ſeveral veils, or curtains, ſtretched over it, with hooks, and buckles of gold.

Feaſt of TABERNACLES. See SCENOPEGIA.

TABERNACLE is alſo uſed of late for a ſort of temporary church, or chapel, contrived to ſerve the immediate purpoſe of the pariſhioners, &c. while their proper church is repairing, rebuilding, or the like.

TABES, in medicine, a general name for conſumptions of all kinds. See CONSUMPTION, PHTHISIS, ATROPHY, MARASMUS, &c.

TABES *Dorſalis*, is a kind, or rather a degree, of conſumption, proceeding ſometimes from an exceſſive application to venery.

The patient has neither a fever, nor loſs of appetite; but a ſenſation, as if there were a number of piſmires running from the head down the ſpinal marrow; and when he evacuates, either by urine or ſtool, there flows a liquid matter like ſemen. After any violent exerciſe his head is heavy, and his ears tingle; and at length he dies of a lipyria, *i. e.* a fever, where the external parts are cold, and the internal burn at the ſame time.

TABLATURE, in anatomy, a diviſion or parting of the ſcull into two tables. See TABLE, and CRANIUM.

TABLATURE, TABLATURA, in muſic, in the general, is, when, to expreſs the ſounds, or notes of a compoſition, we uſe letters of the alphabet, or cyphers, or any other characters, not uſual in the modern muſic. See SCORE.

TABLATURE, in its ſtricter ſenſe, is the manner of writing a piece for a lute, theorba, guitarre, baſs-viol, or the like—which is done by writing on ſeveral parallel lines (each whereof repreſents a ſtring of the inſtrument) certain letters of the alphabet; whereof, A marks that the ſtring is to be ſtruck open, *i. e.* without putting the finger of the left hand on the head; B ſhews, that one of the fingers is to be put on the firſt ſtop; C on the ſecond; D on the third, &c. See VIOL, THEORBA, &c.

The *Tablature* of the lute is uſually wrote in letters of the alphabet; that of the harpſicord in the common notes. See LUTE, HARPSICORD, &c.

TABLE, TABULA, a moveable, uſually made of wood, or ſtone, ſupported on pillars, or the like; for the commodious reception of things placed thereon.

Moſes made a *Table* in the tabernacle, for laying the ſhew-bread upon, deſcribed by Philo Judæus as two cubits long, one bread, and one and half high.

Among Chriſtians, the *Table*, or *Lord's Table*, ſignifies the Sacrament of the Supper. See EUCHARIST.

Round TABLE—*Knights of the Round* TABLE, a military order, ſuppoſed to have been inſtituted by Arthur the firſt king of the britons, in the year 516. See KNIGHT.

They are ſaid to have been 24 in number; all picked from among the braveſt of the nation.

The *Round Table*, which gave them their title, was an invention of that prince, to avoid diſputes about the upper and lower end; and to take away all emulation as to places.

Leſly aſſures us, he has ſeen the *Table* at Wincheſter; at leaſt, ſays he, if we may believe the keepers thereof, who ſtill ſhew it with a deal of ſolemnity. He adds, that the names of a great number of knights wrote around it, ſeem to confirm the truth of the tradition.

Larrey, and ſeveral other authors, make no ſcruple to relate this fable as matter of hiſtory: but that it is a fable is certain; F. Papebroch having ſhewn, that there was no ſuch thing as an order of knights before the VIth century. See KNIGHT, ORDER, &c.

Camden obſerves, that the *Table* at Wincheſter is of a ſtructure much more modern than the VIth century. It is added, that Arthur himſelf is no more than a fabulous prince.

In effect, the *Round Table* does not appear to have been any military order, but rather a kind of juſt, or military exerciſe, between two perſons, armed with lances. Several authors ſay, that Arthur, duke of Bretagne, renewed it. See Matthew Paris, the abbot Juſtiniani, and F. Helyot.

Paulus Jovius ſays, it was under the empire of Frederic Barbaroſſa, that the knights of the *Round Table* firſt began to be talked of: others attribute their origin to the factions of the Guelphs and Gibellins.—K. Edward built a houſe called the *Round Table*, the court whereof was 200 foot in diameter.

TABLE, in architecture, a ſmooth, ſimple member, or ornament, of various forms; but moſt uſually in that of a long ſquare. See the article PLATBAND, *&c.*

Projecting TABLE, is ſuch a one as ſtands out from the naked of the wall, pedeſtal, or other matter it adorns.

Raked TABLE, is that which is hollowed in the die of a pedeſtal, or elſewhere, and which is uſually encompaſſed with a moulding. See RAKING.

Razed TABLE, an emboſſment in a frontiſpiece, for the putting an inſcription or other ornament in ſculpture. This is what M. Perrault underſtands by *Abacus* in Vitruvius.

Crowned TABLE, that covered with a cornice, and wherein is cut a baſſo relievo, or a piece of black marble incruſtated for an inſcription.

Ruſticated TABLE, that which is picked, and whoſe ſurface ſeems rough, as in grotto's, *&c.*

Water TABLE. See the article WATER.

Plain TABLE, a ſurveying inſtrument. See PLAIN *Table.*

TABLE, in perſpective, denotes a plain ſurface, ſuppoſed to be tranſparent, and perpendicular to the horizon. See PERSPECTIVE.

It is always imagined to be placed at a certain diſtance between the eye and objects, for the objects to be repreſented thereon by means of viſual rays paſſing from every point thereof through the *Table* to the eye. See PERSPECTIVE.

Whence it is alſo called *Perſpective Plane.* See PLANE.

TABLE, in anatomy.—The cranium is ſaid to be compoſed of two *Tables*, or laminæ, *i. e.* it is double, as if it conſiſted of two bones laid one over another. See CRANIUM.

TABLE *of Pythagoras*, called alſo *Multiplication Table*, is a ſquare, formed of an hundred leſſer ſquares, or cells, containing the products of the ſeveral digits, or ſimple numbers, multiplied by each other. See MULTIPLICATION.

As it is abſolutely neceſſary, thoſe who learn arithmetic have the ſeveral multiplications contained in this *Table* off by heart, we have thought fit to ſubjoin it here; with an example, to ſhew the manner of uſing it.

Table of Pythagoras, *or* Multiplication *Table.*

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Example: Suppoſe it were required to know the product of 6, multiplied by 8, look for 6 in the firſt horizontal column, beginning with 1; then look for 8 in the firſt perpendicular column, beginning likewiſe with 1; the ſquare or cell wherein the perpendicular column from 6, meets with the horizontal one from 8, contains the product required, *viz.* 48.

Laws of the Twelve TABLES, were the firſt ſet of laws of the Romans; thus called, either by reaſon the Romans then wrote with a ſtyle on thin wooden *Tablets*, covered with wax; or rather, becauſe they were engraven on *Tables*, or plates of copper, to be expoſed in the moſt noted part of the public forum. See LAW.

After the expulſion of the kings, as the Romans were then without any fixed, certain ſyſtem of law; at leaſt had none ample enough to take in the various caſes that might fall between particular perſons; it was reſolved to adopt the beſt and wiſeſt laws of the Greeks.

One Hermodorus was firſt appointed to tranſlate them; and the Decemviri afterwards compiled and reduced them into ten *Tables*. After a world of care and application, they were at length enacted and confirmed by the ſenate, and an aſſembly of the people, in the year of Rome 303.

The following year they found ſome things wanting therein, which they ſupplied from the laws of the former kings of Rome, and from certain cuſtoms, which long uſe had authorized; theſe being engraven on two other *Tables*, made the *Law of the Twelve Tables*, ſo famous in the Roman Juriſprudence; the ſource and foundation of the civil or Roman law. See CIVIL *Law.*

The laws of the twelve *Tables* were alſo called *Decemviral Laws*, from the officers entruſted with the compoſing them. See DECEMVIR.

It is great pity, this ſyſtem of law ſhould have periſhed through the injuries of time: we have now nothing of it, but a few fragments diſperſed in divers authors. J. Gothofred has collected them together, and we have them in Roſinus, and ſome other authors. — The Latin is very old and barbarous, and remarkably obſcure.

New TABLES, TABULÆ *Novæ*, an edict occaſionally publiſhed in the Roman commonwealth, for the aboliſhing all kinds of debts, and annulling all obligations.

It was thus called, in regard all antecedent acts being deſtroyed, there were nothing but new ones to take place.

TABLE, among jewellers. A TABLE *Diamond*, or other precious ſtone, is that whoſe upper ſurface is quite flat, and only the ſides cut in angles: in which ſenſe a diamond cut *Tablewiſe* is uſed in oppoſition to a roſe-diamond. See DIAMOND.

TABLE *Glaſs*. See the article GLASS.

TABLE is alſo uſed for an index or repertory, put at the beginning or end of a book, to direct the reader to any paſſage he may have occaſion for.

Thus we ſay, *Table of Matters*; *Table of Authors quoted*; *Table of Chapters*, &c.——*Tables*, of themſelves, ſometimes, make large Volumes; as that of *Dravitz* on the civil and canon laws.

TABLES *of the Bible*, are called *Concordances.* See CONCORDANCE.

TABLE *Rents.* See the article BORD *Lands.*

TABLE *of Houſes*, among aſtrologers, are certain *Tables* ready drawn up for the aſſiſtance of practitioners in that art, for the erecting or drawing of figures or ſchemes. See HOUSE, *&c.*

TABLES, in mathematicks, are ſyſtems of numbers, calculated to be ready at hand for the expediting aſtronomical, geometrical, *&c.* operations. See CANON.

Aſtronomical TABLES, are computations of the motions, places, and other phænomena of the planets, both primary and ſecundary. See PLANET, SATELLITE, and MOON.

The oldeſt *Aſtronomical Tables* are the Ptolemaic, found in Ptolemy's *Almageſt*; but theſe no longer agree with the heavens. See ALMAGEST.

In 1252, Alphonſo XI. king of Caſtile, undertook the correcting them, chiefly by the aſſiſtance of Iſaac Hazan, a Jew; and ſpent 400 thouſand crowns therein. Thus aroſe the *Alphonſine Tables*, to which that prince himſelf prefixed a preface.

But the deficiency of theſe was ſoon perceived by Purbachius and Regiomontanus; upon which Regiomontanus, and after him Waltherus and Warnerus, applied themſelves to cœleſtial obſervation, for the further amending them: but death prevented any progreſs therein.

Copernicus, in his books of the cœleſtial revolutions, inſtead of the *Alphonſine Tables*, gives others of his own calculation, from the later, and partly from his own obſervations.

From Copernicus's obſervations and theories, Eraſ. Reinholdus afterwards compiled the *Prutenic Tables*, which have been printed ſeveral times, and in ſeveral places.

Tycho de Brahe, even in his youth, became ſenſible of the deficiency of the *Prutenic Tables*; which was what determined him to apply himſelf with ſo much vigour to cœleſtial obſervation. Yet all he did thereby, was to adjuſt the motions of the ſun and moon; though Longomontanus, from the ſame, to the theories of the ſeveral planets publiſhed in his *Aſtronomia Danica*, added *Tables* of their motions, now called the *Daniſh Tables*; and Kepler likewiſe, from the ſame, in 1627, publiſhed the *Rudolphine Tables*, which are now much eſteemed.

Theſe were afterwards, *Anno* 1650, turned into another form, by Maria Cunitia, whoſe aſtronomical *Tables*, comprehending the effect of Kepler's phyſical hypotheſis, are exceedingly eaſy, and ſatisfy all the phænomena, without any trouble of calculation, or any mention of logarithms; ſo that the *Rudolphine* calculus is here greatly improved.

Mercator made a like attempt in his *Aſtronomical inſtitution*, publiſhed in 1676; and the like did J. Bap. Morini, whoſe abridgment of the *Rudolphine Tables* was prefixed to a Latin verſion of Street's *Aſtronomia Carolina*, publiſhed in 1705.

Lanſbergius, indeed, endeavoured to diſcredit the *Rudolphine Tables*, and framed *Perpetual Tables*, as he calls them, of the heavenly motions; but his attempt was never much regarded by the aſtronomers; and our countryman Horrox gave an abundant check to his arrogance, in his defence of the Keplerian aſtronomy.

Nor was the authority of the *Rudolphine Tables* impaired by the *Philolaic Tables* of Bullialdus, the *Britannic Tables* of Vincent Wing, calculated on Bullialdus's hypotheſis; or the *Britannic Tables* of Newton; or the French ones of the count de

Pagan, or the *Caroline Tables* of Street, all calculated on Dr. Ward's hypotheſis, or the *Novalmageſtic Tables* of Ricciolus. Among theſe, however, the *Philolaic* and *Caroline Tables* are eſteemed the beſt; inſomuch, that Mr. Whiſton, by the advice of Mr. Flamſteed (a perſon of undoubted authority in ſuch caſes) thought fit to ſubjoin the *Caroline Tables* to his aſtronomical lectures.

The lateſt *Tables* are the *Ludovician*, publiſhed in 1702, by M. de la Hire, wholly from his own obſervations, and without the aſſiſtance of any hypotheſis; which, before the invention of the micrometer, teleſcope, and the pendulum-clock, was held impoſſible.

Another ſet of *Tables*, the aſtronomical world is in daily expectation of from Dr. Halley, aſtronomer royal, *&c.* It were needleſs to prepoſſeſs the public in their favour: the author's name, and the preſent ſtate of aſtronomy, will leave no doubt on any body but that they will have the laſt degree of juſtneſs and preciſion, and ſuch as poſterity itſelf ſhall ſcarce be able to amend. They have been in the preſs ſeveral years, and what it is retards their publication is not known, unleſs it be the rendring them more ample. See ASTRONOMY.

Sexagenary TABLES. See the article SEXAGENARY.

For TABLES *of the Stars*, ſee CATALOGUE.

TABLES *of Sines*, *Tangents*, and *Secants*, of every degree and minute of a quadrant, uſed in trigonometrical operations, are uſually called *Canons*. See CANON. See alſo SINE, TANGENT, *&c.*

TABLES *of Logarithms*, *Rhumbs*, *&c.* uſed in geometry, navigation, *&c.* See LOGARITHM, RHUMB, SAILING, TRAVERSE, *&c.*

Loxodromick TABLES, are *Tables* wherein the difference of longitude and quantity of the way run in any rhumb, are exhibited to every ten minutes of every degree of the quadrant variation of the latitude. See RHUMB.

TABLE, in heraldry. Coats, or eſcutcheons, containing nothing but the mere colour of the field, and not charged with any bearing, figure, moveable, *&c.* are called *Tables d'Attente*, *Tables of Expectation*, or *Tabulæ Raſæ*.

TABLET, in pharmacy, *&c.* See TABELLA.

TABLING *of Fines*, is the making a table for every county, where his majeſty's writs run; containing the contents of every fine paſſed each term. See FINE.

It is to be done by the chirographer of fines of the common-pleas, who every day of the next term, after engroſſing any ſuch fine, fixes one of the ſaid *Tables* in ſome open place of the ſaid court, during its ſitting; and likewiſe delivers to the ſheriff of each county, a content of the ſaid *Tables* made for that reſpective county, the term before the aſſizes, to be affixed in ſome place in the open court, while the juſtices ſit, *&c.* See CHIROGRAPHER.

TABOR, TABOURIN, a ſmall Drum. See DRUM.

Privilege of the TABOURET, in France, is a privilege ſome great ladies enjoy, to ſit or have a ſtool in the queen's preſence.

TABORITES, or THABORITES, a branch or ſect of the ancient Huſſites. See HUSSITE.

The Huſſites, towards the cloſe of the XVth century, dividing into ſeveral parties, one of them retired to a little mountain or rock, ſituate in Bohemia, 15 leagues from Prague, and there put themſelves under the conduct of Ziſca; building themſelves a fort or *caſtle*, which they called *Tabor*, or *Thabor*, either from the general word *Thabor*, which in the Sclavonic language ſignifies caſtle; or from the mountain *Tabor*, mentioned in ſcripture: and hence they became denominated *Thaborites*.

Theſe carried the point of reformation farther than Huſs had done; rejected purgatory, auricular confeſſion, the unction at baptiſm, tranſubſtantiation, *&c.*

They reduced the ſeven ſacraments of the Romaniſts to four, *viz.* baptiſm, the euchariſt, marriage, and ordination.

They maintained a ſtout war with the emperor Sigiſmund. Pope Martin V. was obliged to publiſh a croiſade againſt them. Nor did this ſucceed: at length, however, in 1544, their caſtle of *Thabor* was taken, and they diſperſed.

TABULARIUS. See the article TABELLIO.

TABULARUM *Apertura*, } See the articles { APERTURA.
TABULATUM, } { TABELLA.

TACAMAHACA, or TACAMACHA, a kind of reſinous gum, diſtilling from the trunk of a very large tree, growing in New Spain; but, in greateſt abundance, in the iſland of Madagaſcar. See GUM.

It is not unlike our poplar-tree, only bigger and taller, its leaves ſmall and green, its fruit red, of the ſize of our wallnuts, exceedingly reſinous, and containing a ſtone like our peaches.

The wood of the tree makes good timber for ſhips, and the gum it yields ſerves for their caulking; though its chief uſe is in medicine.

There are three kinds of *Tacamahaca*; the *Sublime*, called alſo *Tacamacha* in the pod; *Tacamacha* in the maſs, and *Tacamacha* in tears.

The firſt is the natural reſin, as it oozes of itſelf, without any inciſion made in the tree: the good is dry, reddiſh, tranſparent, of a bitter taſte, and a ſtrong ſmell reſembling that of lavender. The iſlanders gather it in little gourds divided in two, and covered with a palm leaf.

The *Tacamacha's* in tears, and in the maſs, are thoſe which flow from the tree by inciſions: they muſt be choſen dry and clear, and their ſmell reſembling that of the firſt kind.

Gum *Tacamacha* is found good for digeſting and reſolving tumours, and aſſuaging pains.—Burnt upon coals, it is reckoned good for hyſteric fits in women, and likewiſe applied to the belly in form of a plaiſter. Some apply it to the temples in the ſame manner, and to the nape of the neck, for pains in the head, defluxions of rheum upon the throat, and inflammations of the eyes, as alſo in the tooth-ach. It is of ſo ſubtle and penetrating a nature, that it is greatly uſed in external applications, to ſuppurate and diſperſe tumours; and is accounted effectual, even in thoſe which are ſcrophulous.

It is likewiſe uſed externally in arthritical pains, with ſucceſs; in effect, the Indians uſe it for all kinds of pains. Schroder affirms, that he has ſeen intolerable pains in the leg removed by it.

TACHYGRAPHY,* the art of faſt, or ſhort writing. See BRACHYGRAPHY.

* The word is formed from the Greek ταχυς, *ſwift*, and γραφη, *writing*.

There have been various kinds of *Tachygraphy* invented: among the Romans, there were certain notes uſed, each whereof ſignified a word. See NOTE, and NOTARY.

The Rabbins have a kind of *Tachygraphy* formed by abbreviations, which make a kind of technical words; wherein each conſonant ſtands for a whole word, as, רמבם, *Rambam*; which expreſſes *Rabbi Moſes*, *Son of Maiemon*; רשי, *Raſchi*; which ſtands for *Rabbi Schelomoh Jarri*. See ABBREVIATION.

In France, *&c.* the only *Tachygraphy* uſed is the retrenching of letters, or even whole ſyllables of words; as in *ſdm* for *ſecundum*, *aut* for *autem*, *d* for *ſed*, *o* for *non*, *participaon* for *participation*, &c.

The firſt printers imitated theſe abbreviations: at preſent they are almoſt laid aſide, except among ſcriveners, *&c.*

In England, we have great variety of methods of *Tachygraphy*, or ſhort-hand; more by far, and thoſe too, much better, eaſier, ſpeedier, and more commodious, than are known in any other part of the world: witneſs Shelton's, Wallis's, Webſter's, and Weſton's ſhort-hands.

TACIT *Acceptance*, } See the articles { ACCEPTANCE.
TACIT *Community*, } { COMMUNITY.

TACK *about*, in navigation, a term uſed at ſea when a ſhip's head is brought about, ſo as to lie the contrary way.

To effect this, they firſt make her *ſtay*; which done, ſhe is ſaid to be *paid*.—They then let *riſe*, and *hale*, *i. e.* let the lee-tack riſe, and hale aft the ſheats, and ſo trim all the ſails by a wind as they were before.

TACKLE, or TACKLING, in navigation, includes all the ropes or cordage of a ſhip, with their furniture, whereby the ſails are managed.—See *Tab. Ship*, *fig.* 1. See alſo the articles CORDAGE and ROPE.

TACKLES, are more particularly uſed for ſmall ropes running in three parts, having at one end a pendant with a block faſtened to them, or elſe a lannier; and at the other end, a block and hook, to hang goods upon, that are to be heaved into the ſhip, or out of it.

There are ſeveral kinds of theſe *Tackles*: as, the *Boat Tackles*, ſerving to hoiſt the boat, *&c.* in and out: the *Tackles* belonging to the maſts, ſerving as ſhrouds to keep the maſts from ſtraining: the *Gunner's Tackles*, with which the ordnance are hoiſted in and out.—See *Tab. Ship. fig.* 1. *n.* 39, 40, 59, 61, 82, 93, and 103.

Ground TACKLE, } See the articles { GROUND.
Wind TACKLE *Blocks*, } { WIND.

TACTICKS,* the art of diſpoſing forces in form of battle, and of performing the military motions and evolutions. See EVOLUTION.

* The word is Greek, τακτικα, formed from ταξις, *order*.

The Greeks were very ſkilful in this part of the military art, having public profeſſors of it, called *Tactici*, who taught and inſtructed their youth therein. Ælian hath a particular book on this ſubject; and there is a great deal of it in Arrian, in his hiſtory of Alex. M. and in Mauritius, and Leo Imperator. Voſſius *de ſcient. Mathemat.* mentions 24 ancient authors on the ſubject of *Tacticks*.

TACTICKS is alſo uſed for the art of inventing, and making machines for throwing of darts, arrows, ſtones, fire-balls, *&c.* by means of ſlings, bows, and counter-poiſes. See MACHINE. Vegetius, Hero, *&c.* have wrote on theſe machines; and we have them deſcribed, and figured by Lipſius. See ARIES, BALLISTA, CATAPULTA.

TACTILE, or TANGIBLE, in the ſchools, ſomething that may fall under the ſenſe of feeling. See FEELING.

Though atoms be corporeal, yet are they not either *tactile* or viſible, by reaſon of their ſmallneſs. See CORPUSCLE.

The principal *tangible* qualities are heat, cold, dryneſs, hardneſs, and humidity. See each under its proper article, HEAT, COLD, HARDNESS.

TACTION, in the ſchools. See FEELING.

TACTION, in geometry. See TOUCHING, and TANGENT.

TÆNIA, or **TENIA**,* in architecture, a member of the Doric architrave, reſembling a ſquare fillet, or reglet; and ſerving in lieu of a cymatium. See DORIC, and CYMATIUM.

* The word is Greek, ταινια, which literally denotes, a *ſwath*, *bandage*, *fillet*, or the like.—Barbaro renders it by *liſtel*; but Palladio uſes the old name *Tænia*. See LISTEL.

Leon Baptiſt. Alberti calls the *Tæniæ*, Regulæ and Faſciolæ; and Daviler, Bandelettes. See REGLET, BANDELET, &c. Philander ſays, there are two kinds, *viz.* that above-mentioned, which he calls the *lower*; and an *upper*, which ſerves as a capital to the triglyphs.

TAFFAREL, or **TAFFEREL**, in a ſhip, the uppermoſt part, frame, or rail, abaft, over the poop.—See *Tab. Ship. fig.* 2. *n.* 97. *fig.* 1. *lit.* See alſo the article SHIP.

TAFFETY, or **TAFFATY**, in commerce, a kind of fine, ſmooth, ſilken ſtuff; having, uſually, a remarkable luſtre, or gloſs. See SILK, &c.

ALAMODE, }
LUSTRING, } the Taffetas Noirs of Lyons.

TAFFETAS noir luſtré is our Alamode.—Non luſtré is our Luſtring.

There are *Taffaties* of all colours, ſome plain, others ſtriped with gold, ſilver, ſilk, &c. others checquered, others flowered, others in the Chineſe point, others the Hungarian; with various others, to which the mode, or the caprice of the workmen give ſuch whimſical names, that it would be as difficult, as it is uſeleſs, to rehearſe them; beſides that, they ſeldom hold beyond the year wherein they firſt roſe. The old names of Taffeties, and which ſtill ſubſiſt, are *Taffeties* of Lyons, of Spain, of England, of Florence, of Avignon, &c.

The chief conſumption of *Taffeties* is in ſummer-dreſſes for women, in linings, ſcarves, coifs, window-curtains, &c.

There are three things which contribute chiefly to the perfection of *Taffeties*, *viz.* the ſilk, the water, and the fire. The ſilk is not only to be of the fineſt kind, but it muſt be worked a long time, and very much, before it be uſed. The watering, beſide that it is only to be given very lightly, ſeems only intended to give that fine luſtre, by a peculiar property not found in all waters. Laſtly, the fire, which is paſſed under it to dry the water, has its particular manner of application, whereon the perfection of the ſtuff depends very much.

Octavio May, of Lyons, is held the firſt author of the manufacture of gloſſy *Taffeties*; and tradition tells us the occaſion of it.—Octavio, it ſeems, going backwards in the world, and not able to retrieve himſelf by the manufacture of *Taffeties*, ſuch as were then made, was one day muſing on his misfortunes, and, in muſing, chanced to chew a few hairs of ſilk which he had in his mouth. His reverie being over the ſilk he ſpit out ſeemed to ſhine, and on that account engaged his attention. He was ſoon led to reflect on the reaſon; and, after a good deal of thought, concluded, that the luſtre of that ſilk muſt come, *1ſt*, From his having preſſed it between his teeth. *2dly*, From his having wet it with his ſaliva, which had ſomething glutinous in it: and, *3dly*, From its having been heated by the natural warmth of his mouth. All this he executed upon the next *Taffeties* he made; and immediately acquired immenſe riches to himſelf, and to the city of Lyons the reputation it ſtill maintains, of giving the gloſs to *Taffeties*, better than any other city in the world.

It will not, we conceive, be leſs uſeful than curious, to give here the deſcription of the engine contrived by Octavio to give the gloſs to *Taffety*; to add the manner of applying it, and the compoſition of the water uſed therein.

The machine is much like a ſilk loom, except that inſtead of iron points, here are uſed a kind of crooked needles, to prevent the *Taffety* from ſlipping: at the two extremities, are two beams; on one of which is rolled the *Taffety*, to take the gloſs; and on the other, the ſame *Taffety* as faſt as it has received it. The firſt beam is kept firm by a weight of about 200 pounds; and the other turned by means of a little lever paſſing through mortiſes at each end. The more the *Taffety* is ſtretched, the greater luſtre it takes; care, however, is to be uſed it be not over-ſtretched.

Beſides this inſtrument for keeping the ſtuff ſtretched, there is another to give it the fire: this is a kind of carriage, in form of a long ſquare, and the breadth of the *Taffeties*. It moves on trundles, and carries a charcoal fire under the *Taffety*, at the diſtance of about half a foot.

The two machines prepared, and the *Taffety* mounted, the luſtre is given it by rubbing it gently with a ball, or handful of liſts of fine cloth, as it rolls from one beam to the other; the fire, at the ſame time, being carried underneath it to dry it. As ſoon as the piece has its luſtre, it is put on new beams to be ſtretched, a day or two; and the oftner this laſt preparation is repeated, the more it increaſes the gloſs.

For black *Taffeties*, the gloſs is given with double beer, and orange or lemon juice; but this laſt is the leaſt proper, as being apt to whiten. The proportion of the two liquors is a gallon of orange juice to a pint of beer, to be boiled together to the conſiſtence of a broth. For coloured *Taffeties* they uſe gourd-water, diſtilled in an alembic.

TAIL, *Cauda*, that part of an animal which terminates its body behind. See ANIMAL, &c.

The *Tail* is different both in figure, and uſe, in the various ſpecies: in land-animals, it ſerves to rid them of flies, and is uſually covered with hair, and ſtrengthened with bones: in fiſhes it is cartilaginous, and ſerves them as a helm to ſteer their courſe withal in ſwimming. See FISH and SWIMMING. In birds it is covered with feathers, and greatly aſſiſts in all aſcents and deſcents in the air; as alſo to render their flight ſteady, by keeping the body upright in that ſubtile and yielding medium, by its readily turning and anſwering to every vacillation of the body. See BIRD, and FLYING.

TAIL, in anatomy, is uſed for that tendon of a muſcle which is fixed to the moveable part.—In oppoſition to which the tendon fixed to the immoveable part is called the *Head*. See MUSCLE.

Dove-**TAIL**, or *Swallow's*-**TAIL**, among carpenters, is one of the ſtrongeſt manner of jointing; wherein a piece of wood that grows larger towards the end is inſerted into another piece; ſo that it cannot ſtir out, by reaſon the hole in the one is narrower than the lower end of the other: as in the figure of a *Dove's-Tail*. See QUEUE *d'Aronde*, SWALLOW's-*Tail*, DOVE-*Tail*, and COUNTER-*Swallow-Tail*.

Peacock's **TAIL**, a term applied to all circular compartiments, which go enlarging from the centre to the circumference; imitating, in ſome meaſure, the feathers of a peacock's *Tail*, when ſpread.

Dragon's **TAIL**, *Cauda Draconis*, in aſtronomy, the deſcending node of a planet; thus characterized ☋. See NODE. The aſtrologers take care to put it in all their horoſcopes. See HOROSCOPE.

Horſe's **TAIL**, among the Tartars and Chineſe, is the enſign or flag under which they make war. See ENSIGN, FLAG, &c. Among the Turks it is the ſtandard bore before the grand viſier, the baſhaws, and ſangiacs; in order to which, it is fitted on the end of a half-pike, with a gold button, and is called *Toug*.

There are baſhaws of *one*, others of *two*, others of *three Horſe's Tails*.—The *Horſe's Tail* placed on a general's tent, is a ſignal of battle. For the original of this cuſtom, it is related, that in a certain battle, the ſtandard being taken by the enemy, the general of the army, or, as others ſay, a private horſeman, cut off the *Tail* of his horſe, and faſtening it to the end of a half-pike, encouraged the troops, and gained the victory. In memory of which noble action, the grand ſignior appointed that ſtandard to be bore for the future, as a ſymbol of honour. *Ricaut*.

TAIL, in heraldry, &c. is particularly uſed for the tail of an hart; thoſe of ſeveral other creatures having peculiar and diſtinct names.

As, that of a buck, roe, or any other deer, is called the *Single*; of a boar, the *Wreath*; of a fox, the *Buſh*; of a wolf, the *Stern*; and of a hare and coney, the *Scut*.

TAIL *of a Comet*. When a comet darts his rays forwards, or towards that part of the heavens, whither his proper motion ſeems to be carrying him, thoſe rays are called its *Beard*: on the contrary, when its rays are ſhot behind, towards that part from whence it appears to move, the rays are called the *Tail of the Comet*. The various phænomena whereof, with their phyſical cauſes, ſee under the article COMET.

TAIL *of the Trenches*, in the military art, is the poſt or place where the beſiegers begin to break ground, to cover themſelves from the fire of the town. See APPROACHES.

The *Tail* of the trench is the firſt work which the beſiegers make at the opening of the trenches; as the head of the attack is that carried on toward the place. See TRENCH.

TAIL, or **TAILE**, in common law, ſignifies a limited fee; as oppoſite to fee-ſimple. See FEE.

It is thus called from the French *tailler*, to cut, by reaſon ſuch fee is ſo minced, or parted, as it were, that it is not in the owner's free power to diſpoſe of; but is by the firſt giver *cut*, *taille*, and divided from all others, and tied to the iſſue of the donee.

The limitation of *Tail* is either *general* or *ſpecial*.

TAIL *General*, is that whereby lands and tenements are limited to a man, and to the heirs of his body begotten, or to be begotten.

This is called *general*, becauſe how many wives ſoever the tenant holding by this title ſhall have, one after another, in lawful marriage, his iſſue by them all have a poſſibility to inherit one after another.

TAIL *Special*, is when lands or tenements are limited to a man and his wife, and the heirs of their two bodies together.

It is called *ſpecial*, becauſe if the man bury his wife before iſſue, and take another; the iſſue by his ſecond wife cannot inherit the land, &c. See DOCKING, FINE, RECOVERY, &c.

Alſo, if the land be given to a man and his wife, and their ſon *R.* for ever, this is called *Tail Special*.

TAIL *after Poſſibility of Iſſue extinct*, is where land being given to a man and his wife, and the heirs of their two bodies, and the one over-lives the other, without iſſue between them begotten: upon which the ſurvivor ſhall hold the land for term of his own life in quality of tenant in *Taile after the poſſibility of iſſue extinct*; and notwithſtanding he does waſte, ſhall not be impeached of it.—And if he alien, he in the reverſion ſhall not have a writ of entry in conſimili caſu, but may enter, and his entry is lawful.

Fee TAIL, } See the articles { FEE *Tail.*
Several TAIL, } SEVERAL.

TAIL, or TAILE, is alſo uſed for what we vulgarly call a *Tally*, *Taille de Bois*, or a cloven piece of wood to nick up an account on. See TALLY.

TAILLE', or TAILLEE, in heraldry. See TRANCHE'.

TAILLOIR, in architecture, a term which ſome of our writers, after the French, uſe for *Abacus*. See ABACUS.

TAINT, in law, ſignifies either, ſubſtantively, a conviction; or, adjectively, a perſon convicted of felony, treaſon, &c. See ATTAINT.

TAKE *and Leave*, in the ſea language.—The ſailors ſay, a ſhip can *take and leave upon her when ſhe will*; when ſhe ſails ſo well that ſhe can come up with another, or out-ſail her at pleaſure.

Thiſtle-TAKE, } See the articles { THISTLE.
TAKERS—*Carr*-TAKERS, } CARR.

TALBOT, a ſort of dog, frequent in coat-armour, noted for its quick ſcent, finding out the tracks, lodgings, and forms of beaſts, and purſuing them with open mouth, and continual cry, with ſuch eagerneſs, that if not taken off by the huntſmen he is often ſpoiled. See HOUND, and HUNTING.

TALC, or TALK,* in natural hiſtory, a ſhining, ſquamous, fiſſile, ſpecies of ſtone, eaſily ſeparable into thin tranſparent ſcales or leaves. See STONE.

* The word is German, where it ſignifies the ſame.

Anciently, *Talc* was only found in Spain; but ſince, mines thereof have been found in Cyprus, Cappadocia, and ſince that in Arabia and Africa: at preſent, they dig it in the Alps and Apennines, ſeveral mountains in Germany, and even in England, particularly in Northamptonſhire.

We uſually diſtinguiſh two kinds of *Talc*, *viz. White Talc of Venice*, and *Red of Muſcovy:* to which may be added *Parget*, or the *Engliſh Talc*. See GYPSUM, and PLASTER.

That from Venice is the moſt eſteemed: it is brought in large ſhining greeniſh ſtones; but becomes white, and exceedingly tranſparent, when wrought. It appears greaſy to the touch, though there is ſcarce any ſtone dryer; yet, in ſpite of its dryneſs, it pulverizes with difficulty; nor is it eaſily calcined.

Its chief uſe is as a ſcreen or cover for paintings in miniature and crayons; to which purpoſe thin ſlices thereof are uſed: it is ſometimes alſo uſed for a fucus; in order to which, by reaſon of the difficulty of pulverizing it, &c. they content themſelves to raſp it with the ſkin of a ſea-dog, and to paſs the raſping through a ſieve.

Pliny, in his *Natural Hiſtory*, *lib.* 36. *cap.* 22. obſerves, that the Romans not only uſed it for window-lights, but they alſo paved the circus with the ſame. See SPECULARIS.

The *Talc* brought from Muſcovy is reddiſh when in the ſtone; but it ſeldom comes to us otherwiſe than in leaves, which are very hard, ſmooth, gloſſy, and exceedingly tranſparent: it is found in quarries in Muſcovy and Perſia, and is uſed to make lanterns, to cover paintings, &c.

Some chymiſts, and other empirics, have held, that *Talc* might be uſed for many more important purpoſes; and pretend to draw from it that precious oil, ſo much boaſted of by the ancients, particularly the Arabs, called *Oil of Talc*, which is ſuppoſed a wonderful coſmetic, and preſerver of the complexion: but the truth is, the word *Talc*, among them, ſignified no more than an equal diſpoſition of the humours, which keep the body in good temperament and perfect health. Now, as nothing contributes more than health to the preſerving of beauty, this has given occaſion to the chymiſts to ſearch this *Oil of Talc*, which is to maintain the body in this diſpoſition, and to engage the ladies to be at the expence of the ſearch.

Some have alſo pretended, that yellow or ruddy *Talc* contained the ſeeds of gold, and that a menſtruum might be drawn from it, to tranſmute metals into gold or ſilver, to fix mercury, &c. but this is mere charletanery.

TALENT, TALENTUM, a weight, and a coin, both very famous among the ancients; but very different in different countries. See COIN, and Weight.

The value of the *Talent* is very hard to aſſign in Engliſh money, as being uſed among all the people throughout the eaſt; and its value, and the manner of computation, different among each. A difficulty abundantly ſhewn by Budæus, in his learned treatiſe *de Aſſe*.

There were various kinds of *Talents*, both with regard to weight and to ſpecies; the value of theſe laſt ſtill increaſing, as the metal whereof it conſiſted was purer: tho' the *Talent* weights did all contain the ſame number of pounds and drachms.

For as the French have a livre pariſis, and a livre tournois, each whereof contains alike 20 ſols; yet theſe compared together, the Paris livre contains 25 ſols of the Tournois livre; the Paris ſol exceeding that of Tours by one fifth; ſo all *Talent* weights were equally 60 minæ, and the mina 100 drachmæ; but the drachma of one place exceeding that of another, there hence aroſe a difference in the *Talents*. See WEIGHT.

The Attic drachma, for inſtance, was 60 Attic oboli, and that of Ægina 10 of the ſame oboli; whence the Æginean *Talent*, computed on the foot of the Attic weight, was 100 minæ; whereas, reckoned on the foot of its own drachma, it was no more than 60. See DRACHMA.

The common Attic *Talent* then (the *Talent* weight we mean) contained 60 Attic minæ, or 62 a[illegible]half Attic pounds, or 6000 Attic drachmæ; equal, according to Dr. Arbuthnot's reduction, to 56 pounds 11 ounces Engliſh Troy weight. Some authors, as Priſcian, mention another Attic *Talent* of 100 minæ; but this is to be underſtood of antient minæ, as they ſtood before Solon, each only worth 75 drachmæ.

The Syrian *Talent* contained 15 Attic minæ; that of Alexandria 96 Attic minæ, or 91 lib. Troy. The Babylonic, Perſian, and Antiochic *Talents*, were the ſame with the Ægyptian.

Among the Romans there were two kinds of *Talents*, the *little*, and the *great Talent:* the little was the common *Talent*; and whenever they ſay, ſimply, *Talentum*, they are to be underſtood of this: the little *Talent* was 60 minæ, or Roman pounds; the mina, or pound, eſtimated at 100 drachmæ, or denarii: it was alſo eſtimated at 24 great ſeſterces, which amounted to 60 pounds.

The great *Talent* exceeded the leſs by one third part. Budæus computes, that the little *Talent* of ſilver was worth 75 pounds ſterling; and the greater, 99 *l.* 6 *s.* 8 *d.* ſterling.—The greater *Talent* of ſilver he makes worth 99 *l.* ſterling.—The greater of gold worth 1125 *l.* ſterling.

TALENT, *as a ſpecies, or money*, among the Hebrews, was ſometimes uſed for a gold coin, the ſame with the ſhekel of gold, called alſo *Stater*, and weighing only 4 drachms. See SHEKEL.

The Hebrews reckoned by theſe *Talents* as we do by pounds, &c. Thus a million of gold, or million of *Talents* of gold, among them, was a million of ſhekels, or nummi; the nummus of gold being the ſame weight with the ſhekel, *viz.* 4 drachms.

Yet the Hebrew *Talent* weight of ſilver, which they called *Cicar*, was equivalent to that of 3000 ſhekels, or 113 pounds Engliſh Troy weight, according to Arbuthnot's computation.

TALES, in law, a ſupply or addition of men impannelled on a jury of inqueſt, and not appearing, or at their appearance challenged by either party as not indifferent. See JURY.

In ſuch caſe, the judge, upon motion, grants a ſupply to be made by the ſheriff, of one or more *Tales*, ſuch as are preſent in court, equal in reputation to thoſe impannelled.—This act of ſupplying is called a *Tales de circumſtantibus:* and the perſons thus ſupplied, *Taleſmen*.

He that has had one ſuch *Tales*, either upon default, or challenge, may not have another containing ſo many as the former: for the firſt *Tales* muſt be leſs than the principal pannel, except in a cauſe of appeal; and ſo every *Tales* leſs than other, till the number be made up of ſuch as are unexceptionable.

TALIO, *Lex* TALIONIS, or *Pœna* TALIONIS, a retribution, or puniſhment, whereby an evil is returned perfectly like that committed againſt us by another—which is what we uſually expreſs by the words *eye for eye, tooth for tooth*.

The *Pœna Talionis* was enjoyned by the law of Moſes, juſt as it is in the Goſpel: it was eſteemed a natural piece of juſtice, and yet the Romans ſet it aſide, inaſmuch as ſuch a parity or equality of puniſhment could not always be obſerved. For this reaſon, the prætor allowed ſuch as had ſuffered any injury to make an eſtimate thereof in money, that juſtice might be done him that way; only reſerving to himſelf the power of moderating the ſame. And this was what was conſtantly practiſed, and thus the *Pœna Talionis* became quite diſuſed—except in the caſe of falſe witneſſes and accuſers.

TALISMANS,* magical figures engraven, or cut under certain ſuperſtitious obſervances of the characteriſms and configurations of the heavens; to which ſome aſtrologers, hermetical philoſophers, and other adepts, attribute marvellous virtues, particularly that of calling down cœleſtial influences. See THERAPHIM.

* The word is pure Arabic; though Menage, after Salmaſius, thinks it may come from the Greek τελεσμα, *operation*, or *conſecration*. Borel ſays, it is Perſian, and ſignifies literally an *engraven conſtellation*. Others derive it a *Talamaſcis literis*, which are myſterious characters, or cyphers uſed by ſorcerers; thus called from *Talamaſca*, a *fantom*, or *illuſion*.

The author of a book entitled, *Taliſmans Juſtifiez*, ſays, a *Taliſman* is the ſeal, figure, character, or image of a heavenly ſign, conſtellation or planet, engraven on a ſympathetic ſtone, or on a metal correſponding to the ſtar, &c. in order to receive its influences.

The *Taliſmans* of the Samothracians, ſo famous of old, were pieces of iron, formed into certain images, and ſet in rings, &c.

They were held preſervatives againſt all kinds of evils.—There were other *Taliſmans* taken from vegetables, and others from minerals.

In the general, we uſe to diſtinguiſh three kinds of *Taliſmans: Aſtronomical*, which are known by the ſigns, or conſtellations of the heavens engraven thereon, with other figures, and ſome unintelligible characters.—*Magical*, which bear very extraordinary figures, with ſuperſtitious words and names of angels unheard-of.—And *Mixt*, which conſiſt of ſigns and barbarous words, but have no ſuperſtitious ones, or names of angels.

Some rabbins maintain, that the brazen ſerpent, raiſed by Moſes in the wilderneſs, for the deſtruction of the ſerpents that annoyed the Iſraelites, was a *Taliſman*.

All the miraculous things wrought by Apollonius Tyanæus are attributed to the virtue and influence of *Taliſmans:* that wizard is even ſaid to have been the inventor of *Taliſmans*.

Some authors take ſeveral Runic medals, at leaſt medals whoſe inſcriptions are in Runic characters, for *Taliſmans*; it being notorious, that the northern nations, in their heathen ſtate, were much devoted thereto. M. Keder, however, has ſhewn, that the medals here ſpoke of are quite otherguiſe things than *Taliſmans*. See Runic.

TALK. See the article Talc.

TALKING. See Speaking, Speech, and Voice.

TALLAGE, Tallagium, a certain rate, according to which barons and knights were anciently taxed by the king towards the expences of the ſtate, and inferior tenants by their lords, on certain occaſions. See Tax.

This latter *Tallage* of the cuſtomary tenants was ſometimes fixed and certain, and ſometimes at the pleaſure of the lord; and was alſo ſometimes compounded for. See Subsidy.

Tallages were anciently called *Cuttings*; which name is ſtill retained in Ireland, though in a different ſignification.

Tallage, ſays Sir Ed. Coke, is a general name including all taxes. See Tax.

TALLOW, a ſort of animal fat, melted down, and clarified. See Fat, and Suet.

There are ſcarce any animals but a ſort of *Tallow* may be prepared from; but thoſe which yield the moſt, and whereof the moſt uſe is made, are the horſe, bullock, ſheep, hog, goat, deer, bear, and viper.—Some of which *Tallows*, or fats, are uſed in medicine. See Axungia.

Moſt of the reſt are uſed in the making of ſoap, the dreſſing of leather; but chiefly in the making of candles. See Soap, Currying, &c.

For candles, the beſt compoſition is half ſheeps *Tallow*, and half cows or bullocks *Tallow*, without any mixture of other kinds of fat, which only ſerve to turn the candles yellow, make them run, and ſpoil the clearneſs of their light. See Candle.

Tallow-Tree, in China, is a tree growing in great plenty in that country, which produces a ſubſtance like our *Tallow*, and ſerving for the ſame purpoſe.

It is about the height of a cherry-tree; its leaves in form of a heart, of a deep, ſhining, red colour, and its bark very ſmooth. Its fruit is incloſed in a kind of pod, or cover, like a cheſnut, and conſiſts of three round white grains, of the ſize and form of a ſmall nut, each having its peculiar capſula, and within a little ſtone.

This ſtone is encompaſſed with a white pulp, which has all the properties of true *Tallow*, both as to conſiſtence, colour, and even ſmell: and accordingly the Chineſe make their candles of it; which would, doubtleſs, be as good as thoſe in Europe, if they knew how to purify their vegetable *Tallow*, as well as we do our animal *Tallow*.

All the preparation they give it, is to melt it down and mix a little oil with it, to make it ſofter, and more pliant.——It is true, their candles made of it yield a thicker ſmoak, and a dimmer light, than ours; but thoſe defects are owing, in a great meaſure, to the wicks, which are not of cotton, but only a little rod, or ſwitch of dry light wood, covered with the pith of a ruſh, wound round it; which being very porous, ſerves to filtrate the minute parts of the *Tallow*, attracted by the burning ſtick, which by this means is kept alive.

TALLY, or Taile, Taille, a piece of wood, whereon retail traders uſe to ſcore or mark, by notches or inciſions, the ſeveral quantities of goods they deliver out on credit, to ſave the trouble of writing down ſo many little articles in books. See Tail.

Each ſcore conſiſts of two pieces of wood, or rather of a ſingle piece cleft length-wiſe, the parts whereof falling in with one another, the things delivered are ſcored on both at the ſame time; the ſeller keeping one, and the buyer the other.

Tallies are taken as evidences in courts of juſtice, as much as books. The ancient way of keeping all accounts was by *Tallies*; the debtor ſtill keeping one part, and the creditor the other. See Account, and Book-Keeping.

There are three kinds of *Tallies* mentioned in our ſtatutes, and long uſed in the Exchequer—*viz.*

Tallies *of Loans*, one part whereof is kept in the Exchequer, and the other part given to particular perſons, in lieu of an obligation for the monies they have lent to the government on acts of parliament.—This laſt part is called the *Stock*, and the former the *Counter-ſtock*, or counter-tail. See Teller.

The *Tallies* are numbered, bear the perſon's name, and the ſum lent: thus we ſay, the *Tallies*, No. have been paid, diſcharged: *Tallies* are riſen, fallen 4, 5, *&c.*

Tallies, or **Tailes** *of Debt*, which are a kind of acquittances for debts paid the king.

E. gr. the univerſity of Cambridge pays yearly 10 *l.* for ſuch things as are by charter granted them in fee-farm. He that pays this, receives a *Taile* or *Tally* for his diſcharge, with which, or a note of it, he repairs to the clerk of the pipe, and there for the *Tally* receives a full diſcharge on parchment. See Pipe-*Office*.

Tallies *of Reward*, or allowance, made to ſheriffs, for ſuch matters as (to their charge) they have performed in their office, or ſuch money as is by courſe caſt on them in their accounts, but which they cannot levy.

Counter-Tally,	See the articles	Counter.
Cutter of the Tallies,		Cutter.
Petty Tally,		Petty.
Writer of Tallies,		Writer.

TALMUD, or Thalmud, a Jewiſh book, wherein is collected all that relates to the explication of their law. See Judaism.

The *Talmud* is the body of the Hebrew law; a compilation of expoſitions of the duties impoſed on that people, either in ſcripture, or by tradition, or by authority of their doctors, or by cuſtom, or even by ſuperſtition: to ſpeak more plainly ſtill, it is the courſe of caſes of conſcience, or of moral theology, wherein the duties are explained, and the doubts cleared, not by reaſoning, but generally by authority, by the cuſtom of the nation, and by the deciſions of the moſt approved of the ancient doctors.

The *Talmud* conſiſts of two general parts: the one called the *Miſchna*, the other the *Gemara*; which ſecond part is alſo frequently called abſolutely *the Talmud*, the general name of the whole work. See Mischna, and Gemara.

The Jews divide their law into *written*, which is that contained in the books of Moſes; and *unwritten*, which is that conveyed by tradition.—This latter is, in effect, no other than a gloſs or interpretation of the former, given by the ancient Rabbins. See Tradition, and Rabbin.

The *Talmud* then contains the traditions of the Jews, their polity, doctrine and ceremonies, which they obſerve as religiouſly as the law of God itſelf: they would never put it in writing till they were compelled to it by the deſtruction of Jeruſalem, and till they ſaw themſelves diſperſed throughout the world.

They had two famous ſchools; the one at Babylon, and the other at Jeruſalem: in theſe they made two ſeveral collections of thoſe traditions; the firſt at Jeruſalem, the other at Babylon; but both called *Talmud*, and both exceedingly reverenced, eſpecially the Babylonian, though full of extravagancies. It was compiled by the Jews of Meſopotamia, about 500 years after Chriſt.

The *Talmud* of Jeruſalem is the leaſt eſteemed.—It was compiled by the Jews of that City 300 years after Chriſt.

The Babylonian *Talmud* conſiſts of two parts; the one the text, the other the gloſs or comment; the comment, called the *Gemara*, contains the deciſions of the Jewiſh doctors, and their expoſitions of the text.——This we find ſtuffed with dreams and chimæra's; a deal of ignorance, and a world of impertinent queſtions and diſputations: the ſtyle very coarſe.—On the contrary: the text, called the *Miſchna*, is wrote in a pretty pure ſtyle, and the reaſonings generally much more ſolid.

The Jews pretend it was compoſed by Rabbi Juda, ſurnamed the *Saint*; and that God revealed to him the doctrine and the chief myſteries thereof.—But this is only to be underſtood of the *Miſchna*, not of the *Gemara*, the compilation whereof was not begun till the VIth century after the deſtruction of the ſecond temple.

Rabbi Juda is ſaid to have compoſed the *Miſchna* under the empire of Antoninus, in the IId century; but they do not all agree about this antiquity, ſome carrying it back much further.

It is the *Talmud* of Babylon that is uſually read, and moſt frequently conſulted among the Jews; ſo that when they ſay ſimply the *Talmud*, they always mean this: never quoting the other without the addition of Jeruſalem.

Rabbi Moſes, ſon of Maiemon, has made an abridgment of the *Talmud*, which Scaliger prefers to the *Talmud* itſelf; as being purged of many of the fables wherewith the other is full. It is a ſyſtem of the laws and cuſtoms of the Jews, both their civil and their canon law, and the beſt of their traditions.

About the year 1236, a Jew of Rochel, well verſed in the Hebrew, becoming Chriſtian, made a journey to pope Gregory IX. and diſcovered to him a number of errors in the *Talmud:* theſe the pope ſends, in 39 articles, to the archbiſhops of France, with a letter, appointing them to ſeize the books of the Jews, and to burn all ſuch as ſhould contain thoſe errors; in conſequence of which order, about 20 cart-loads of

Hebrew books were burnt. He wrote to the ſame effect to the kings of England, France, Arragon, Caſtile, *&c.*

His ſucceſſor, Innocent IV. giving commiſſion to his legate Eudes de Chateauroux to examine the *Talmud*, and other Jewiſh books more carefully, and to tolerate ſuch errors as were not contrary to the Chriſtian religion; the legate wrote to the pope, that to tolerate them was to approve them; and the 15th of May, 1248, he condemned them juridically to the flames.

TALON,* in architecture, a kind of moulding, conſiſting of a cymatium, crowned with a ſquare fillet; frequently found to terminate ornaments of joyners-work, as thoſe of doors, *&c.* See CYMATIUM.

* The word is French, and literally ſignifies *heel*.

The *Talon*, more properly ſo called, is a moulding concave at the bottom, and convex a-top; having an effect juſt oppoſite to the doucine. — See *Tab. Archit. fig.* 26. *lit. p. fig.* 28. *lit. c. g. n. fig.* 32. *lit. l. n. fig.* 40. *lit. d.* See alſo DOUCINE.

When the concave part is a-top, it is called an *Inverted Talon.* See *Tab. Archit. fig.* 7.

The *Talon* is uſually called by our Engliſh workmen *Ogee*, or *O. G.* and by authors an *upright* or *inverted Cymatium.* See OGEE.

TALPA, in medicine and chirurgery, a tumour of the œdematous kind, called alſo *Teſtudo.* See TESTUDO.

The *Talpa*, and *Nata*, chiefly ariſe about the head, as the conſequence of ſome venereal diſorder. See NATTA.

The *Talpæ* elevate the ſkin from the pericranium, and generally denote a foulneſs in the ſubjacent bone of the ſkull.

TALUS, in anatomy, a bone of the foot, called alſo *Aſtragalus.* See ASTRAGALUS, and FOOT.

The *Talus*, in its upper part, has a convex head, which is articulated with the two fociles of the leg by ginglymus, it being divided by a little ſinus, which receives the ſmall protuberance in the middle of the ſinus of the tibia.—Without this articulation, we muſt always, in going, have trod on the heel with our fore-foot, and our toes with the hind-foot. See TIBIA.

The fore-part of the *Talus*, which is alſo convex, is received into the ſinus of the os naviculare. See NAVICULARE.

Below, towards the hind-part of its under-ſide, it has a pretty large ſinus, which receives the upper and hind-part of the os calcis: and towards the fore-part of the ſame ſide it has a protuberance, which is received into the upper and fore-part of the ſame bone.— Betwixt this ſinus, and this protuberance, there is a cavity, which anſwers to another in the os calcis; in which is contained an oily and mucous ſort of ſubſtance, for moiſtening the ligaments, and facilitating the obſcure motion of theſe bones when we go.

TALUS, or TALUT, in architecture, the inclination or ſlope of a work; as of the outſide of a wall, when its thickneſs is diminiſhed by degrees, as it riſes in height, to make it the firmer. See TALL.

TALUS, in fortification.—*Talus of a Baſtion*, or *Rampart*, is the ſlope or diminution allowed to ſuch a work; whether it be of earth, or ſtone; the better to ſupport its weight. See RAMPART.

The *exterior Talus* of a work, is it ſlope on the ſide towards the country; which is always made as little as poſſible, to prevent the enemies ſcalado; unleſs the earth be bad, and then it is abſolutely neceſſary to allow a conſiderable *Talus* for its parapet.

The *interior Talus* of a work, is its ſlope on the inſide, towards the place.

TAMARINDS, TAMARINDI, a kind of medicinal fruit, of a tart agreeable taſte, brought from the Eaſt as well as Weſt-Indies, and called by ſome *Indian Dates*, and by others the *Indian Acacia*.

The tree which yields it, called by the Indians *Tamarinds*, and the Portugueſe *Tamarindos*, is not unlike our aſh, or wall-nut-tree; its leaves reſemble thoſe of female fern: its flowers are joined eight or ten together, like thoſe of the orange-tree. Its fruit is in a pod the length of a finger, and the thickneſs of the thumb, covered at firſt with a green rind, which afterwards becomes brown, and contains a blackiſh acid pulp, among which are found ſeeds reſembling lupines.—It is this pulp alone that is brought to us, and uſed in medicine.

Tamarinds muſt be choſen big, of a jet colour, a briſk taſte, not too dry, and ſuch as have not been laid in the cellar, nor falſified with molaſſes of ſugar and vinegar.

They are found laxative, cooling, and good to quench thirſt. In burning fevers they are preſcribed to moiſten, and cool the mouth.

TAMBAC, or TAMBAQUA, a mixture of gold and copper, which the people of Siam hold more beautiful, and ſet a greater value on, than gold itſelf.

Some travellers ſpeak of it as a metal found in its peculiar mines; but upon what authority we do not know. The abbe de Choiſy, in his *Journal of Siam*, doubts whether it may not be the *electrum*, amber, of Solomon.

The embaſſadors of Siam brought ſeveral works in *Tambac* to Paris, in the reign of Louis XIV. which were not found ſo beautiful as was expected.

TAMBOUR, in architecture, a term applied to the Corinthian and compoſite capitals, as bearing ſome reſemblance to a drum, which the French call *Tambour.*—See *Tab. Archit. fig.* 22. *lit. a.* See alſo CAPITAL, and COLUMN.

Some chuſe to call it the *Vaſe*, and others *Campana*, or the bell. See VASE, *&c.*

TAMBOUR is alſo uſed for a little box of timber-work, covered with a cieling, within-ſide the porch of certain churches; both to prevent the view of perſons paſſing by, and to keep off the wind, *&c.* by means of folding-doors, *&c.*

TAMBOUR alſo denotes a round courſe of ſtone, ſeveral whereof form the ſhaft of a column, not ſo high as a diameter.

TAMPION, TOMPION, TAMKIN, or TOMKIN,* a kind of plug or ſtopple, ſerving to cloſe a veſſel; particularly to keep down the powder in a fire-arm, *&c.* See WADDING.

* The word is formed from the French, *tampon*, a *bung, ſtopple, &c.* Some derive it from the Engliſh, *tap.*

In charging a mortar, or the like, over the powder is uſually put a thin round piece of wood to keep the ſhot, ball, ſhell, or the like, from the gun-powder. This piece is called a *Tampion*, and by means hereof the ſhot is exploded with the greater vehemence. See CHARGE, *&c.*

TAN, the bark of the oak, chopped, and ground, by a tanning-mill, into a coarſe powder; to be uſed in the *tanning* or dreſſing of ſkins. See BARK, and TANNING.

New Tan is the moſt eſteemed; when old and ſtale, it loſes a deal of its effect, which conſiſts in condenſing or cloſing the pores of the ſkins; ſo that the longer the ſkins are kept in *Tan*, the greater ſtrength and firmneſs they acquire.

In effect, not only the bark, but every part of the oak-tree, of what age or growth ſoever, all oaken coppice, *&c.* cut in barking-time, makes good *Tan*; as good, at leaſt, as the beſt bark.

This, when got, is to be well dried in the ſun, houſed dry, and kept ſo. To uſe it, the greater wood may be ſhaved ſmall, or cleft, fit to be cut ſmall by a *tanning* engine for the purpoſe; which done, it is well dried again on a kiln, and then ground by the mill. See MILL.—Where oak is ſcarce, thorns may ſupply the defect.

TANGENT, in geometry, a right line, which touches a circle, that is, meets it in ſuch manner, as that though infinitely produced, it would never cut the ſame; that is, never come within the circumference. See CIRCLE, and TOUCHING.

Thus the line A D (*Tab. Geom. fig.* 50.) is a *Tangent* to the circle, in D.

It is demonſtrated in geometry; 1. That if a *Tangent* A D, and a ſecant A B, be both drawn from the ſame point A; the ſquare of the *Tangent* will be equal to the rectangle, under the whole ſecant A B, and that portion thereof A C, which falls without the circle. See SECANT.

2. That if two *Tangents* A D, A E, be drawn to the ſame circle from the ſame point A, they will be equal to each other.

TANGENT, in trigonometry.—*A* TANGENT *of an Arch*, is a right line, raiſed perpendicularly on the extreme of the diameter, and continued to a point, where it is cut by a ſecant, that is by a line, drawn from the centre through the extremity of the arch whereof it is a *Tangent.* See ARCH.

A Tangent of an Arch E A (*Tab. Trigonom. fig.* 1.) is a part of a *Tangent* of a circle (that is, of a right line which touches a circle without cutting it) intercepted between two right lines, drawn from the centre C, through the extremes of the arch E and A.

Hence, the *Tangent* F E is perpendicular to the radius E C.

And hence the *Tangent* F E is the *Tangent of the angle* A C E, as alſo of that A C I; ſo that two adjacent angles have only the ſame common *Tangent.*

Co-TANGENT, or TANGENT *of the Complement*, is the *Tangent* of an arch which is the complement of another arch to a quadrant. See COMPLEMENT.

Thus, a *Tangent* of the arch A H, is the *Co-tangent* of the arch A E, or the *Tangent* of the complement of the arch A E.

To find the Length of the TANGENT *of any Arch*; the ſine of the arch being given: ſuppoſe the arch, A E; the given ſine, A D; and the *Tangent* required, E F. Since both the ſine and *Tangent* are perpendicular to the radius E C, they are parallel to each other. Wherefore, as the coſine D C is to the ſine A D, ſo is the whole ſine to the *Tangent* E F. See SINE.

Hence, a canon of ſines being had, a *Canon of Tangents* is eaſily conſtructed therefrom. See CANON.

Artificial TANGENTS, are the logarithms of the *Tangents* of arches. See LOGARITHM.

Line of TANGENTS, is a line uſually placed on the ſector and Gunter's ſcale; the deſcription and uſes whereof, ſee under the articles SECTOR and GUNTER'S *Scale*.

TANGENT *of a Conic Section*, as of a parabola, is a right line, which only touches or meets the curve in one point, and does not cut or enter within the curve. See CONIC *Section*, CURVE, *&c.*

Method of TANGENTS, a method of determining the quantity of the *Tangent* of any algebraic curve; the equation defining that curve being given.

This method is one of the great reſults of the *Calculus Differentialis*. See **Differential**.

Its uſe is very great in geometry; becauſe in determining the *Tangents* of curves, we determine at the ſame time the quadratures of the curvilinear ſpaces: on which account it well deſerves to be here particularly inſiſted on. See **Quadrature**, and **Sub-tangent**.

To find the **Sub-tangent** *in any Algebraic Curve.*—Let the ſemiordinate pm be infinitely near another PM (*Tab. Anal. fig.* 13.) then will P p be the differential of the abſciſs; and letting fall the perpendicular $MR = Pp$; R m will be the differential of the ſemiordinate. Draw, therefore, the *Tangent* T M: the infinitely little arch M m, will not differ from a right line; and therefore M m R will be a right-lined, right-angled triangle, uſually called the *Characteriſtic Triangle of the Curve*, in regard curve lines are diſtinguiſhed from each other hereby. See **Characteristic**.

Now, by reaſon of the parallelism of the right lines PM and pm; the angle $MmR = TMP$. Wherefore the triangle M m R is ſimilar to the triangle T M P. Let therefore $AP = x$, $PM = y$, then will $Pp = MR = dx$, and $Rm = dy$. Conſequently,

$$Rm : MR :: PM : PT$$
$$dy : dx :: y : \frac{ydx}{dy}$$

If, then, from the given equation of any curve, you ſubſtitute the value of dx to $ydx : dy$, in the general expreſſion of the *Sub-tangent*, P T; the differential quantities will vaniſh, and the value of the *Sub-tangent* come out in common quantities; whence the *Tangent* itſelf is eaſily determined.—This we ſhall illuſtrate in a few examples:

1° The equation defining the common parabola, is,

$$ax = y^2$$

Hence, $$adx = 2ydy$$

$$dx = 2ydy : a$$

$PT = ydx : dy = 2y^2 dy : ady = 2y^2 : a = 2ax : a = 2x$.
That is, the *Sub-tangent* is double the abſciſs.

2° The equation defining a circle is,

$$ax - xx = yy$$
$$adx - 2xdx = 2ydy$$
$$dx = 2ydy : (a - 2x)$$

$PT = dx : ydy = 2y^2 dy : (a - 2x)\, dy = 2y^2 : (a - 2x) = (2ax - 2xx) : (a - 2x) = (ax - xx) : (\tfrac{1}{2}a - x)$ that is, PC : PB :: AP : PT.

Therefore $AT = (ax - xx) : (\tfrac{1}{2}a - x) - x = (ax - xx - \tfrac{1}{2}ax + xx) : (\tfrac{1}{2}d - x) = \tfrac{1}{2}ax : (\tfrac{1}{2}a - x)$ that is, PC : PA :: CA : AT.

3° The equation defining an ellipſis, is;

$$ay^2 = abx - bx^2$$

Hence, $$2aydy = abdx - 2bxdx$$

$$2aydy : (ab - 2bx) = dx$$

$PT = ydx : dy = 2ay^2 : (ab - 2bx) = (2abx - 2bx^2) : (ab - 2bx) = (2ax - 2ax^2) : (a - 2x)$ that is, as the diſtance of the ſemiordinate from the centre, is to the half axis, ſo is the abſciſs, to the portion of the *Sub-tangent* intercepted between the vertex of the ellipſis and the *Tangent*.

Laſtly, for all algebraic curves, the equation being,

$$aym + bx^n + cy^r x^ſ + d = 0$$
$$may^m - 1\,dy + nbx^n - 1\,dx + ſcy^r x^ſ - 1\,dx + rcy^r - 1\,x^ſ dy = 0$$
$$nbx^n - 1\,dx + ſcy^r x^ſ - 1\,dx = -may^m - 1\,dy - rcy - 1\,x^ſ dy$$
$$dx = \frac{-may^m - 1\,dy - rcy^r - 1\,x^ſ dy}{nbx^n - 1 + ſcy^r x^ſ - 1}$$
$$PT = \frac{ydx}{dy} = \frac{-may^m - rcy^r x^ſ}{nbx^n - 1 + ſcy^r x^ſ - 1}$$

Suppoſe, *e. gr.* $y^2 - ax = 0$; then, by comparing with the general formula,

$$ay^m = y^2 \qquad bx^n = -ax$$
$$a = 1 \,.\, m = 2 \qquad b = -a \,.\, n = 1$$
$$cy^r x^ſ = 0 \qquad ſ = 0$$
$$c = 0,\ r = 0,\ ſ = 0$$

Theſe values being ſubſtituted in the moſt general formula of the *Sub-tangent*, we have the *Sub-tangent* of the parabola of the firſt kind, $(-2 \,.\, 1y^2 - 0 \,.\, 0y^0 x^0) : (1 - ax1 - 1 + 0 \,.\, 0y^0 x^0) = -2y^2 : a = 2y^2 : a$.

Suppoſe $y^3 - x^3\ axy = 0$, then will

$$ay^m = y^3 \quad bx^n = -x^3$$
$$a = 1 \quad m = 3 \quad b = 1 \quad n = 3$$
$$cyrx^ſ = -axy \quad ſ = 0$$
$$c = -a r = 1 \quad ſ = 1$$

Theſe values being ſubſtituted in the general formula of the *Sub-tangent*, we have the *Sub-tangent* of the curve, whoſe equation is given, $PT = (-3 \,.\, 1y^3 - 1 \,.\, -ayx) : (3 \,.\, -1x^3 - 1 + 1 \,.\, -ayx^1 - 1) = (-3y^3 + ayx) : (-3x^2 - ay) = (3y^3 - axy) : (3x + ay.)$ Conſequently, $AT = (3y^3 - axy) : (3x^2 + ay) - x = (3y^3 - axy - 3x^3 - axy) : (3x^2 + ay) = (3axy - 2axy) : 3x^2 + ay.$ The value of $y^3 - x^3$, that is, $axy : (3x^2 + ay)$ being ſubſtituted from the equation to the curve.

In the *Philoſophical Tranſactions*, we have the following method of drawing *Tangents* to all geometrical curves, without any labour, or calculation, by M. Sluſius.

Suppoſe a curve, as D Q (*fig.* 14.) whoſe points are all referable to any right line given, as E A B, whether that right line be the diameter or not; or whether there be more given right lines than one, provided their powers do but come into the equation. In all his equations he puts v for the line D A, y for B A; and for E B, and the other given lines, he puts b, d, &c. that is, always conſonants.

Then, ſuppoſing D C to be drawn touching the curve in D, and meeting with E B produced in C; he calls the ſought line C A, by the name of a.

To find which, he gives this general method: 1. Reject out of the equation all members, which have not either v or y in them; then put all thoſe that have y, on one ſide; and all thoſe which have v, on the other; with their ſigns + or —; and the latter, for diſtinction and eaſe ſake, he calls the right, the former, the left ſide. 2. On the right ſide, let there be prefixed to each member, the exponent of the power, which v hath there; or, which is all one, let that exponent be multiplied into all the members. 3. Let the ſame be done alſo on the left ſide, multiplying each member there by the power of the exponent of y. Adding this moreover, that one y muſt, in each part, be changed into a. This done, the equation thus reformed, will ſhew the method of drawing the required *Tangent* to the point D; for, that being given; as alſo y, v, and the other quantities expreſſed by conſonants, a cannot be unknown. Suppoſe an equation $by - yy = vv$, in which E B is called b; $BA = y$, $DA = v$, and let a, or AC be required ſo as to find the point C, from whence C D being drawn, ſhall be a true *Tangent* to that curve Q D in D. In this example, nothing is to be rejected out of the equation, becauſe y or v are in each member: it is alſo diſpoſed, as required by the rule 1; to each part therefore, there muſt be prefixed the exponent of the powers of y or v, as in rule 2; and on the left ſide, let one y be changed into a, and then the equation will be in this form, $ba - 2ya = 2vv$, which equation reduced, gives eaſily the value of $a = \frac{2vv}{b - 2y} = AC$.

And ſo the point C is found, from whence the *Tangent* D C may be drawn.

To determine which way the *Tangent* is to be drawn, whether towards B or E, he directs to conſider the numerator and denominator of the fraction. For, 1. If in both parts of the fraction, all the ſigns are affirmative; or if the affirmative ones are more in number; then the *Tangent* is to run towards B. 2. If the affirmative quantities are greater than the negative in the numerator, but equal to them in the denominator, the right line drawn through D, and touching the curve in that point, will be parallel to A B: for in this caſe, a is of an infinite length. 3. If in both parts of the fraction, the affirmative quantities are leſs than the negative, changing all the ſigns, the *Tangent* muſt be drawn now alſo towards B: for this caſe, after the change, comes to be the ſame as the firſt. 4. If the affirmative quantities are greater than the negative in the denominator, but in the numerator are leſs, or *vice verſa*, then changing the ſigns in that part of the fraction where they are leſs, the *Tangent* muſt be drawn a contrary way; that is, A C muſt be taken towards E. 5. But whenever the affirmative and negative quantities are equal in the numerator, let them be how they will in the denominator, a will vaniſh into nothing: and, conſequently, the *Tangent* is either A D itſelf, or E A, or parallel thereto; as will eaſily be found by the data. This he gives plain examples of, in reference to the circle; thus: let there be a ſemicircle, whoſe diameter is E B; in which there is given any point; as D, (*fig.* 15.) from which the perpendicular D A is let fall to the diameter. Let $DA = v$, $BA = y$, $BE = b$: then the equation will be $by - yy = vv$, and drawing the *Tangent* D C, we have A C, or $a = \frac{2vv}{b - 2y}$. Now, if b be greater than $2y$, the *Tangent* muſt be drawn towards B; if leſs, towards E; if it be equal to it, it will be parallel to E B, as was ſaid in the firſt, ſecond, and fourth rules.

Let there be another ſemicircle inverted; as N D D, (*fig.* 16.) the points of whoſe periphery are referred to the right line B E, parallel and = to the diameter. Let N B be called d; and all things elſe as before; then the equation will be $by - yy = dd + vv - 2dv$; which being managed according to his rules, you have $a = \frac{2vv - 2dv}{b - - 2y}$. Now, ſince v here is ſuppoſed to be always leſs than d; if b be greater than $2y$, then the *Tangent* muſt be drawn towards E; if equal, it will be parallel to B E; if leſs, changing all the ſigns, the *Tangent* muſt be drawn towards B, as by rules fourth, fifth, and third. But there could be no *Tangent* drawn, or at leaſt E B would be it, if N B had been taken equal to the diameter. Let there be another ſemicircle, whoſe diameter N B (*fig.* 17.) is perpendicular to E B, and to which its points are ſuppoſed to be refer'd. Let N B be called *b*, and all things elſe as above; the equation will be $yy = bv - vv$, and $a = \frac{bv - 2vv}{2y}$. If, now, *b* be greater than $2v$, the *Tangent* muſt be drawn towards B, if leſſer, towards E, if equal, D A will be the *Tangent*, as by rules 1, 4, and 5, appears.

Inverſe Method of TANGENTS, is a method of finding the equation, or the conſtruction, of any curve; from the *Tangent* or any other line whoſe determination depends on the *Tangent*, given.

This method is one of the great reſults of the new *Calculus Integralis*. See CALCULUS.

Its application we ſhall give in what follows.—The differential expreſſions of the *Tangent*, *Sub-tangent*, *&c.* being delivered under the laſt article: if you make the given value equal to the differential expreſſion, and either ſum up the differential equation, or, if that cannot be, conſtruct it, the curve required, is had.—For example:

1° *To find the curve line, whoſe* Sub-tangent $= 2yy : a$

Since the *Sub-tangent* of an algebraic line is $= ydx : dy$ we have

$$\underline{ydx : dy = 2yy : a}$$
$$\underline{aydx = 2y^2\,dy}$$
$$\underline{adx = 2ydy}$$
$$ax = y^2$$

The curve ſought, therefore, is a parabola; whoſe conſtruction is ſhewn under the article PARABOLA.

2° *To find the curve, whoſe* Sub-tangent *is a third proportional to* $r - x$ *and* y.

Since $$r - x : y = y : \frac{ydx}{dy}$$

We have $$\underline{r - x : y = dy : dx}$$
$$\underline{rdx - xdx = ydy}$$
$$\underline{rx - \tfrac{1}{2}x^2 = \tfrac{1}{2}y^2}$$
$$2rx - xx = y^2$$

The curve ſought therefore, is a circle.

3° *To find a line wherein the* Sub-tangent *is equal to the ſemiordinate.*

Since $$\underline{ydx : dy = y}$$
$$\underline{ydx = ydy}$$
$$\underline{dx = dy}$$
$$x = y$$

Hence it appears, that the line ſought, is a right line, which reſpects the cathetus of an equicrural triangle, as an axis or the hypothenuſe of an equicrural, rectangled triangle. If *x* had been taken for the arch of a circle, the ſought line had been a cycloid. See CYCLOID.

TANGERE—*Noli me* TANGERE. See NOLI.

TANGIBLE. See the article TACTILE.

TANISTRY, TANISTRIA, an ancient municipal law, or tenure, which allotted the inheritance of lands, caſtles, *&c.* held by this tenure, to the oldeſt and moſt worthy and capable perſon of the deceaſed's name and blood; without any regard to proximity.*—This, in reality, was giving it to the ſtrongeſt; which naturally occaſioned bloody wars in families: for which reaſon it was aboliſhed under K. James I.

* Sir John Davis deſcribes it thus; *Quant aſcun perſon moruſt ſeiſie des aſcuns caſtlês, manors, terres ou tenements del* nature *&* tenure de taniſtry; *que donques meſmes les caſtles,* &c. *doent deſcender, & de temps dont memory ne court ont uſe de deſcender,* Seniori & digniſſimo viro ſanguinis & cognominis *de tiel perſon,* &c.

TANNED *Hide*. See the article HIDE.

TANNING, the preparing of ſkins or hides in a pit, with *Tan* and water, after having firſt taken off the hair, by ſteeping them in lime-water. See TAN, SKIN, HIDE, *&c.*

Method of TANNING cows, calves, and horſe-hides—The ſkin being flead off the carcaſs, if it is intended to be kept, it is ſalted with ſea ſalt and allum, or with a kind of ſaltpetre, called *natron*; if it is not for keeping, the ſalting is ſaved, as being of no uſe, but to prevent the hide from corrupting before it can be conveniently carried to the *Tan-houſe*.

Whether the hide have been ſalted or not, the *Tanner* begins with taking off the horns, the ears, and the tail; after which it is thrown into a running water for about 30 hours, to waſh off the blood, and other impurities adhering to the inſide.

This done, it is laid over-night in a lime-pit, already uſed; whence it is taken, and left to drain three or four days on the edge of the pit.

This firſt and ſlighteſt preparation over, it is returned into a ſtrong lime-pit for two days, then taken out for four more; and thus for 6 weeks alternately, taken out and put in, twice a week. At the ſix weeks end, it is put into a freſh pit, where it continues eight days, and is taken out for ſo many; and this alternately for a year or eighteen months, according to the ſtrength of the leather, or the weather: for in great heats, they put in freſh lime twice a week; and in froſt they ſometimes do not touch them for three months. Every freſh lime-pit they throw them into, is ſtronger and ſtronger.

At four, five, or ſix weeks ends the *Tanner* ſcrapes off the hair on a wooden leg, or horſe, with a kind of knife for that purpoſe. And after a year or eighteen months, when the hair is perfectly gone, he carries it to a river to waſh, pares off the fleſh on the leg with a kind of cutting-knife, and rubs it briſkly with a kind of whet-ſtone, to take off any remains of fleſh or filth on the ſide of the hair.

The ſkin is now put into *Tan*; that is, covered over with *Tan*, as it is ſtretched in the pit, and water let in upon it: if the ſkin be ſtrong, five coverings of *Tan* will be required; for weaker, three or four may ſuffice. When the ſkin has not been kept long enough in lime, or the *Tan-pit*, upon cleaving it in the middle, is ſeen a whitiſh ſtreak, called the *horn*, or crudity of the ſkin; and it is this is the reaſon why the ſoals of ſhoes, boots, *&c.* ſtretch ſo eaſily, and take water.

When the hides are ſufficiently *tanned*, they are taken out of the pit, to be dried, by hanging in the air: then the *tan* is cleaned off them, and they are put in a place neither too dry, nor too moiſt; they are well ſtretched over one another, with weights a-top, to keep them tight and ſtraight; and in this condition are ſold, under the denomination of *bend leather*.

This is the method of *tanning* bullocks or oxes hides.

Cows, calves, and horſes ſkins are *tanned* much after the ſame manner as thoſe of oxen, except that the former are only kept four months in the lime-pit; and that before they be put in the *tan*, there is a preparation required, thus: cold water is poured into a wooden fat or tub, wherein the ſkins are put, which are kept ſtirring while ſome other water is warming in a kettle; and as ſoon as that water is a little more than luke-warm, it is poured gently into the fat, and upon this is caſt a baſket of *tan*; during which time, the ſkins are ſtill kept turning, that the water and *tan* may not ſcorch them.

After an hour, they are taken out, and caſt for a day in cold water, then returned into the former fat, and the ſame water they had been in before; and here they are left eight days; which expired, they are put in the *tan-pit*, and three coverings of *tan* given them, the firſt of which laſts five weeks, the ſecond ſix, and the third two months.

The reſt of the proceſs is in all reſpects the ſame as that above delivered. In ſome countries, as in Champagne, *&c.* the *Tanners* give the firſt preparation with barley inſtead of lime.

TANTAMOUNT, ſomething that amounts to, or is equivalent to ſome other. See EQUIVALENT.

TANTUM *decies*. See the article DECIES.

TAP, among hunters:—a hare is ſaid to *tap*, or beat, when ſhe makes a particular noiſe at rutting-time. See RUT.

TAPASSANT, among hunters, denotes *lurking* or *ſquatting*. Hence alſo, to *tappy*, is to lie hid, as a deer may do.

TAPER, TAPERING, is underſtood of a piece of timber, or the like, when broad at one end, and gradually diminiſhing to the other;—as is the caſe in pyramids, cones, *&c.* See PYRAMID.

To meaſure *taper* Timber, *&c.* See the articles TIMBER, SLIDING-*Rule*, *&c.*

TAPER-BORED, is applied to a piece of ordnance, when it is wider at the mouth than towards the breech. See ORDNANCE.

TAPER, alſo denotes a kind of tall wax candle, placed in a candleſtick, and burnt at funeral proceſſions, and in other church-ſolemnities. See CANDLE.

Tapers are made of different ſizes: in ſome places, as Italy, *&c.* they are cylindrical; but in moſt other countries, as England, France, *&c.* they are conical, or *taper*, whence, poſſibly, the name: unleſs we rather chuſe to derive *Taper* in the adjective ſenſe from the ſubſtantive *Taper*, in the Saxon, Taper, or Tapor, *cereus*, a wax candle.

Both kinds are pierced at bottom, for a pin in the candleſtick to enter. See CANDLE.

The uſe of lights in religious ceremonies, is of a long ſtanding: the ancients, we know, uſed flambeaux in their ſacrifices, and particularly in the myſteries of Ceres; and they had *Tapers* placed before the ſtatues of their Gods.

Some ſuppoſe, that it was in imitation of this heathen ceremony, that lights were firſt introduced into the Chriſtian church; others take it, that the Chriſtians borrowed the practice from the *Jews*: but recourſe need not be had to the one or the other.

Doubtleſs, as in the firſt days of Chriſtianity they had their meetings in obſcure ſubterraneous vaults, there was a neceſſity for *Tapers*, *&c.* and there was even occaſion for them after they had the liberty of building churches; thoſe being contrived in ſuch manner, as only to receive very little light, that they might inſpire the greater awe and reſpect by the obſcurity.

This original of *Tapers* in churches is the moſt natural; but it is now a long time ſince the uſe of *Tapers*, which neceſſity at firſt introduced, is become a mere ceremony. St. Paulinus, who lived at the beginning of the fifth century, obſerves that the Chriſtians of his days were ſo fond of *Tapers*, that they even painted them in their churches.

There are two ways of making TAPERS: the firſt with the *ladle*, the ſecond by *hand*.

In the firſt, after the wicks (which are uſually half cotton half flax) have been well twiſted, and cut of the due length; a dozen of them are hung, at equal diſtances, around an iron hoop, directly over a large copper baſon full of melted wax.

Then taking an iron ladle-full of the wax, they pour it gently over the wicks, a little below the tops thereof, one after another; ſo that the wax running down them, they become quite covered therewith, and the ſurplus returns into the baſon, under which is a pan of coals to keep it in fuſion.

Thus they continue to caſt on more and more wax for ten or twelve times, till the *Tapers* be brought to the required dimenſions. The firſt caſt only ſoaks the wick, the ſecond begins to cover it, and the reſt give it the form and thickneſs; in order to which, they take care that every caſt, after the fourth, be made lower and lower below the wicks, to make them *taper*.

The *Tapers* thus formed, are laid, while yet hot, one againſt another, in a feather-bed folded double to preſerve them ſoft; and taken out thence, one after another, to be rolled on a long ſmooth table, with an oblong inſtrument of box, poliſhed at bottom, and furniſhed with a handle above.

The *Taper* thus rolled and poliſhed, a piece of its big end is cut off, and a conical hole bored therein, with a boxen inſtrument, into which the pin, or point of the candleſtick is to be received.

While the broach is yet in the hole, they uſe to ſtamp the maker's name, and the weight of the *Taper*, with a boxen ruler, whereon proper characters are cut. The *Taper* is then hung up to dry, and harden; after which it is fit for uſe.

Making of TAPERS *by hand.* The wicks being diſpoſed, as in the former manner, they begin to ſoften the wax by working it in hot water, in a narrow, deep copper veſſel. They then take a quantity of this wax out with the hand, and apply it gradually on the wick, which is faſtened to a hook in the wall by the end oppoſite to the wick: ſo that they begin to form the *Taper* by the big end; and proceed, ſtill leſſening the thickneſs, to the neck or collet.

The reſt is performed after the ſame manner as in *Tapers* made with the ladle, except that they do not lay them in the feather-bed, but roll them on the table as faſt as formed.

Two things there are to be obſerved in the two kinds of *Tapers:* the firſt, that in the whole proceſs of *Tapers* with the ladle, they uſe water to moiſten the table, and other inſtruments uſed therein, that the wax may not ſtick; and that in the other, they uſe oil of olives or lard for the ſame end.

Paſchal TAPER, among the Romaniſts, is a large *Taper*, whereon the deacon applies five bits of frankincenſe, in holes made for the purpoſe, in form of a croſs; and which he lights with new fire in the ceremony of Eaſter Saturday.

The Pontifical makes pope Zoſimus the author of this uſage; but Baronius will have it more ancient, and quotes a hymn of Prudentius to prove it. That pope he ſuppoſes to have only eſtabliſhed the uſe thereof in pariſh churches; which, till then, had been reſtrained to the greater churches.

F. Papebroch explains the origin of the paſchal *Taper* more diſtinctly in his *Conatus Chronico-Hiſtoricus*, &c. It ſeems, though the council of Nice regulated the day whereon Eaſter was to be celebrated, it laid it on the patriarch of Alexandria to make a yearly canon thereof, and to ſend it to the pope. As all the other moveable feaſts were to be regulated by that of Eaſter, a catalogue of them was made every year, and wrote on a *Taper*, *Cereus*, which was bleſſed in the church with much ſolemnity.

This *Taper*, according to the abbot Chaſtelain, was not a wax candle, made to be burnt: it had no wick: nor was is any thing more than a kind of column of wax, made on purpoſe to write the liſt of moveable feaſts on, and which would ſuffice to hold it for the ſpace of a year.

For among the ancients, when any thing was to be wrote to laſt for ever, they engraved it on marble or ſteel; when it was to laſt a long while, they wrote it on Egyptian paper; and when it was only to laſt a ſhort time, they contented themſelves to write it on wax. In proceſs of time, they came to write the liſt of moveable feaſts on paper, but they ſtill faſtened it to the paſchal *Taper*; which practice is obſerved to this day at Notre-Dame in Rouen, and throughout the order of Cluny. —Such is the original of the benediction of the paſchal *Taper*.

TAPESTRY, or TAPISTRY, a curious kind of manufacture, ſerving to adorn a chamber, or other apartment, by hanging, or lining the walls thereof.

Some uſe *Tapeſtry* as a general name for all kinds of hangings, whether woven, or wrought with the needle; and whether ſilken, woollen, linnen, leathern or of paper; (in which they are countenanced by the etymology of the word, formed from the French *tapiſſer*, to line, of the Latin *tapes*, a cover of a bed, *&c.*) But in the common uſe of our language, the term is now appropriated to a kind of woven hangings, of wooll and ſilk, frequently raiſed and enriched with gold and ſilver, repreſenting figures of men, animals, landſkips, *&c.*

The invention of *Tapeſtry* ſeems to have come from the Levant; and what makes this the more probable is, that formerly the workmen concerned herein, were called, at leaſt in France, *Sarazins*, or *Sarazinois*.

It is ſuppoſed that the Engliſh and Flemiſh, who were the firſt that excelled therein, might bring the art with them from ſome of the croiſades, or expeditions againſt the Sarazens. See CROISADE.

Be this as it will, it is certain thoſe two nations, particularly the Engliſh, were the firſt who ſet on foot this noble and rich manufacture in Europe; now one of the fineſt ornaments of palaces, baſilicæ, churches, *&c.*

Hence, if they be not allowed the inventors, they have, at leaſt, the glory of being the reſtorers of ſo curious and admirable an art, as gives a kind of life to woolls and ſilks, in no reſpect inferior to the paintings of the beſt maſters.

It was late before the French applied themſelves to *Tapeſtry:* the firſt eſtabliſhment of that kind, was under Henry IV. in the year 1607, in the Fauxbourg, S. Michael. But this fell with the death of that prince. Under Lewis XIV. the manufacture was retrieved by the care and addreſs of the great M. Colbert, to whom the eſtabliſhment of the Gobelins is owing, a royal *Tapeſtry* manufacture, which has produced works in this kind ſcarce inferior to the fineſt Engliſh or Flemiſh *Tapeſtry*, either with regard to the deſign, the colours, or the ſtrength. See GOBELINS.

The *Tapeſtry-men* diſtinguiſh two kinds of work, *viz. Tapeſtry* of the *high*, and the *low warp*; though the difference is rather in the manner of working, than in the work itſelf, which is, in effect, the ſame in both; only the looms, and conſequently the warps, are differently ſituate: thoſe of the *low warp* being placed flat, and parallel to the horizon; and thoſe, on the contrary, of the *high warp*, erected perpendicularly.

The Engliſh anciently excelled all the world in their *Tapeſtry* of the *high warp*; and they ſtill retain their former reputation, though with ſome little change: their *low warps* are ſtill admired; but as for the *high ones*, they are quite laid aſide in our nation. See COMMERCE, WOOLLEN *Manufacture*, *&c.*

The French have three conſiderable *Tapeſtry* manufactures beſides that of the Gobelins; the firſt at Aubuſſon in Auvergne, the ſecond at Felletin in the Upper Marche, and the third at Beauvois: they were all equally eſtabliſhed for the *high* and the *low warp*, but have all laid aſide the former, excepting the Gobelins.

There are admirable *low warps* in Flanders, generally exceeding thoſe of France; the chief, and almoſt only Flemiſh manufactories, are at Bruſſels, Antwerp, Oudenard, Liſle, Tournay, Bruges, and Valenciennes.

At Bruſſels and Antwerp they ſucceed both in human figures, in animals, and landſkips; and that both with reſpect of the deſigning, and the workmanſhip. At Oudenard their landſkips and animals are good, but their human figures naught. Liſle, and the other cities named, come behind Oudenard. The French manufacture of Felletin does tolerably well in landſkips, Aubuſſon in figures, and Beauvois in both.

The uſual widths of *Tapeſtries*, are from two ells to three ells and half, Paris meaſure.

The manufacture of *Tapeſtry* of each kind, is too curious to be here paſſed over, without a ſhort deſcription.—We ſhall give each under its ſeparate article.

Manufacture of TAPESTRY *of the high Warp.*——The loom whereon it is wrought, is placed perpendicularly: it conſiſts of four principal pieces; two long planks or cheeks of wood, and two thick rollers or beams. The planks are ſet upright, and the beams acroſs them, one a-top, and the other at bottom, a foot diſtance from the ground. They have each their trunnions, by which they are ſuſpended on the planks, and are turned with bars. In each roller is a groove, from one end to the other, capable of containing a long round piece of wood, faſtened therein with hooks. Its uſe is to tie the ends of the warp to. The warp, which is a kind of worſted, or twiſted woollen thread, is wound on the upper roller; and the work, as faſt as wove, is wound on the lower.

Within-ſide the planks, which are ſeven or eight foot high, fourteen or fifteen inches broad, and three or four thick, are holes pierced from top to bottom, in which are put thick pieces of iron, with hooks at one end, ſerving to ſuſtain the coat-ſtave: theſe pieces of iron have alſo holes pierced; by putting a pin in which, the ſtave is drawn nearer, or ſet farther off; and thus the coats, or threads, are ſtretched or looſened at pleaſure. The coat-ſtave is about three inches diameter, and runs all the length of the loom: on this are fixed the coats, or threads, which make the threads of the warp croſs each other. It has much the ſame effect here, as the ſpring-ſtave and treddles have in the common looms. The coats are little threads faſtened to each thread of the warp, with a kind of ſliding-knot, which forms a ſort of marſh, or ring. They ſerve to keep the warp open, for the paſſage of broaches wound with ſilks, woollens, or other matters uſed in the piece of *Tapeſtry*.

Laſtly, there are a number of little ſticks, of different lengths, but all about an inch diameter, which the workman keeps by him in baſkets, to ſerve to make the threads of the warp croſs each other, by paſſing them a-croſs: and that the threads thus croſſed may retain their proper ſituation, a packthread is run among the threads, above the ſtick.

The loom thus formed, and mounted with its warp, the firſt thing the workman does, is to draw, on the threads of this warp, the principal lines and ſtrokes of the deſign to be repreſented on the piece of *Tapeſtry*; which is done by applying cartoons made from the painting he intends to copy, to the ſide that is to be the wrong ſide of the piece; and then with a black-lead pencil following and tracing out the contours thereof on the thread of the right ſide; ſo that the ſtrokes appear equally both before and behind. As to the original deſign the work is to be finiſhed by, it is hung up behind the workman, and wound on a long ſtaff; from which a piece is unrolled from time to time, as the work proceeds.

Beſides the loom, *&c.* here deſcribed, there are three other principal inſtruments required for working the ſilk, or wooll of the woof within the threads of the warp. Theſe are a broach, a reed, and an iron needle.

The broach is of hard wood, 7 or 8 inches long, and two-thirds of an inch thick, ending in a point, with a little handle. It ſerves as a ſhuttle, the ſilks, woollens, gold or ſilver, to be uſed in the work, being wound on it. The reed or comb is alſo of wood, eight or nine inches long, and an inch thick at the back; whence it uſually grows leſs and leſs, to the extremity of the teeth, which are more or leſs a-part, according to the greater or leſs degree of fineneſs of the intended work.

Laſtly, the needle is in form of a common needle, only bigger and longer. Its uſe is to preſs cloſe the wooll and ſilks, when there is any line or colour that does not fit well.

All things being prepared for the work, and the workman ready to begin, he places himſelf on the wrong ſide the piece, with his back towards the deſign; ſo that he works, as it were, blind-fold, ſeeing nothing of what he does, and being obliged to quit his poſt, and go to the other ſide the loom, whenever he would view and examine the piece, to correct it with his preſſing-needle.

To put any ſilk, *&c.* in the warp, he firſt turns, and looks at his deſign: then taking a broach full of the proper colour, he places it among the threads of the warp, which he brings a-croſs each other with his fingers, by means of the coats or threads faſtened to the ſtaff: this he repeats every time he is to change his colour.

The ſilk or wooll being placed, he beats it with his reed or comb; and when he has thus wrought in ſeveral rows over each other, he goes to ſee the effect they have; in order to reform the contours with his needle, if there be occaſion.

As the work advances they roll it up on the lower beam, and unroll as much warp from the upper beam, as ſuffices them to continue the piece: the like they do of the deſign behind them. When the pieces are wide, ſeveral workmen may be employed at once.

We have but two things to add: the firſt, that this *high warp Tapeſtry* goes on much more ſlowly than the *low warp*, and takes almoſt double the time and trouble. The ſecond, that all the difference the eye can obſerve between the two kinds conſiſts in this, that in the *low warp* there is a red fillet, about one twelfth of an inch broad, running on each ſide, from top to bottom; which is wanting in the *high warp*.

Manufacture of TAPESTRY *of the low warp.*—The loom or frame whereon the low warp is wrought, is much like that of the weavers: the principal parts thereof are two ſtrong pieces of wood forming the ſides of the loom, and bearing a beam or roller at each end: they are ſuſtained at bottom with other ſtrong pieces of wood, in manner of treſtles; and, to keep them the firmer, are likewiſe faſtened to the floor with a kind of buttreſſes, which prevent any ſhaking, though there are ſometimes four or five workmen leaning on the fore-beam at once.

The rollers have each their trunnions, by which they are ſuſtained: they are turned by large iron pins, three foot long. Along each beam runs a groove, wherein is placed the wich, a piece of wood of above two inches diameter, and almoſt the length of the roller: this piece fills the groove entirely, and is faſtened therein, from ſpace to ſpace, by wooden pins. To the two wiches are faſtened the two extremities of the warp, which is wound on the further roller; and the work, as it advances, on the nearer.

A-croſs the two ſides, almoſt in the middle of the loom, paſſes a wooden bar, which ſuſtains little pieces of wood, not unlike the beam of a ballance: to theſe pieces are faſtened ſtrings, which bear certain ſpring-ſtaves, wherewith the workman, by means of two treddles under the loom whereon he ſets his feet, gives a motion to the coats, and makes the threads of the warp riſe and fall alternately. Each loom has more or fewer of theſe ſpring-ſtaves, and each ſtaff more or fewer coats, as the *Tapeſtry* conſiſts of more or fewer threads. See LOOM.

The deſign, or painting the *Tapeſtry-man* is to follow, is placed underneath the warp; where it is ſuſtained from ſpace to ſpace with ſtrings, by which the deſign is brought nearer the warp. See DESIGN.

The loom being mounted, there are two inſtruments uſed in working of it, *viz.* the reed, and the flute. The flute does the office of the weavers ſhuttle: it is made of a hard, poliſhed wood, three or four lines thick at the ends, and ſomewhat more in the middle, and three or four inches long. On it are wound the ſilks, or other matters to be uſed as the woof of the *Tapeſtry*. The comb or reed is of wood, or ivory; it has uſually teeth on both ſides; it is about an inch thick in the middle, but diminiſhes each way to the extremity of the teeth: it ſerves to beat the threads of the woof cloſe to each other, as faſt as the workman has paſſed and placed them with his flute among the threads of the warp.

The workman is ſeated on a bench before the loom, with his breaſt againſt the beam, only a cuſhion or pillow between them; and in this poſture, ſeparating, with his fingers, the threads of the warp, that he may ſee the deſign underneath, and taking a flute, mounted with the proper colour, he paſſes it among the threads, after having raiſed or lowered them, by means of the treddles moving the ſpring-ſtaves and coats.

Laſtly, to preſs and cloſe the threads of the ſilk or yarn, *&c.* thus placed, he ſtrikes each courſe (*i. e.* what the flute leaves in its paſſing and coming back again) with the reed.

What is very remarkable in the manufacture of the *low warp* and which is common to it with the *high*, is, that it is all wrought on the wrong ſide; ſo that the workman cannot ſee the right ſide of his *Tapeſtry*, till the piece be finiſhed and taken off the loom.

TAPIS. See TUNICA.

TAPPING, the act of piercing a hole in a veſſel, and applying a tube, or cannula in the aperture, for the commodious drawing off the liquors contained therein.

TAPPING, in agriculture, is the making an inciſion in the bark of a tree, and letting out the juice. See BARK.

To *tap* a tree at the root, is to open it round about the root. See TREE, ROOT, *&c.*

Ratray, the learned Scot, affirms that he has found by experiment, that the liquor which may be drawn from the birch in the ſpring-time, is equal to the whole weight of the tree, branches, roots and all together.

In the *tapping* of trees, the juice certainly aſcends from the root, and after it is concocted and aſſimilated in the branches, *&c.* deſcends like a liquor in an alembic, to the orifice or inciſion where it iſſues out.

One of the moſt effectual ways of *tapping*, ſo as to obtain the greateſt ſtore of ſap in the ſhorteſt time, is, not only to pierce the bark, nor yet to cut the body of the tree almoſt to the pith, with a chiſſel (as ſome have directed) but quite through all the circles, and the inner rind itſelf, on both ſides the pith; leaving only the outermoſt circle, and the bark on the north-eaſt ſide unpierced.

But this hole is to be bored ſloping upwards, as large as the largeſt augre you can get will make; and that alſo through and under a large arm, near the ground. So will it not need any ſtone to keep open the orifice, nor *tap* to direct the ſap into the receiver.

This way, the tree will, in ſhort time, afford liquor enough to brew withal; and with ſome of this ſweet ſap, one buſhel of malt will make as good ale as four buſhel of malt with ordinary water. Sycamore is ſaid to yield the beſt brewing ſap, being very ſweet and wholeſome.

To preſerve the Sap for brewing.—Inſolate it by a conſtant expoſure to the ſun in glaſſes or other veſſels, till the reſt be gathered and ready; otherwiſe it will contract an acidity: when you have enough, put into it as much very thin cut, and hard toaſted rye-bread, as will ſerve to ferment it; and when it works, take out the bread, and bottle up the liquor. A few cloves in each veſſel that receives the ſap, as it oozes from the tree, will certainly preſerve it a twelve-month. Dr. Tonge in the *Philoſophical Tranſactions*.

TAPPING, in chirurgery. See the articles PARACENTESIS, DROPSY, *&c.*

TAP-TOO. See the article TAT-TOO.

TAR, or **TARR**, a groſs, pitchy liquor, iſſuing from the trunks of old pines, or firrs. See PITCH.

When theſe trees are on the turn, and only fit for burning, they cut off the bark all around towards the root, and through theſe inciſions, there continues flowing, for a conſiderrble time, a blackiſh liquor, which is the *Tar*.—When this ceaſes, it is a ſure indication the pine is quite dead, and only fit for the fire.

The chief uſe of *Tar*, is for the coating and caulking of ſhips. See CAULKING, *&c.*—Of *Tar* is alſo made roſin. See ROSIN.

TARANTISMUS, in medicine, the diſeaſe or affection of thoſe bit by the *Tarantula*. See TARANTULA.

The patients under this malady are denominated *Tarantati*.

Dr. Cornelio, in the *Philoſophical Tranſactions*, repreſents this as an imaginary diſeaſe; and tells us, that the *Tarantati*, or thoſe who think themſelves ſeized with it (excepting ſuch as for particular ends feign themſelves ſo) are moſt of them young wanton girls, whom the Italian writers call *Donne di ſale*, who falling, from ſome particular indiſpoſition, into melancholy madneſs, perſuade themſelves, according to the vulgar prejudice, that they have been ſtung by a tarantula.

But the evidence on the other ſide the queſtion, is too ſtrong to be thus overturned, as will appear from the following article.

TARANTULA, or **Tarentula**, in natural hiſtory, a venomous inſect, whoſe bite gives name to a new diſeaſe. See Tarantismus.

The *Tarantula* is a kind of ſpider, denominated from the city of Tarentum, in Apulia, where it is chiefly found: it is about the ſize of an acorn; and is furniſhed with eight feet, and as many eyes; its colour various; but it is ſtill hairy: from its mouth ariſes two horns, or trunks, made a little crooked, with the tips exceedingly ſharp, through which it conveys its poiſon.

Theſe horns, M. Geoffroy obſerves, are in continual motion, eſpecially when the animal is ſeeking for food; whence he conjectures they may be a kind of moveable noſtrils.

The *Tarantula* is found in ſeveral other parts of Italy, and even in the iſle of Corſica; but thoſe of Apulia alone are dangerous: even theſe, when removed thence, are ſaid to become harmleſs: it is added, that even in Apulia, none but thoſe found on the plains are much to be feared; the air being hotter there, than on the mountains.

M. Geoffroy adds it as an opinion of ſome, that the *Tarantula* is never venomous but in the coupling ſeaſon; and Baglivi, that it is never ſo but in the heat of ſummer, particularly in the dog-days, when, becoming enraged, it flies on all that paſs by.

The bite occaſions a pain, which at firſt appears much like that felt on the ſtinging of a bee, or an ant: in a few hours, the patient feels a numbneſs, and the part affected becomes marked with a little livid circle, which ſoon after riſes into a very painful tumour: a little longer, and he falls into a profound ſadneſs, breaths with much difficulty, his pulſe grows feeble, his ſenſe fails; at length he loſes all ſenſe and motion, and dies, unleſs relieved. But theſe ſymptoms come ſomewhat differently, according to the nature of the *Tarantula*, and the diſpoſition of the patient. An averſion for black and blue; and, on the contrary, an affection for white, red, and green, are other unaccountable ſymptoms of this diſeaſe.

All the aſſiſtance medicine has been able to diſcover by reaſoning, conſiſts in ſome chirurgical applications on the wound, in cordials, and ſudorificks; but theſe are of little efficacy: a thing that avails infinitely more, is, what reaſon could never have thought of, muſic. See Music.

As ſoon as the patient has loſt his ſenſe and motion, a muſician tries ſeveral tunes on an inſtrument; and when he has hit on that, the tones and modulations whereof agree to the patient, he is immediately ſeen to make a faint motion: his fingers firſt begin to move in cadence, then his arms, then his legs, by degrees his whole body: at length he riſes on his feet, and begins to dance; his ſtrength and activity ſtill increaſing. Some will continue the dance for ſix hours without intermiſſion.

After this, he is put to bed; and when he is judged ſufficiently recruited of his firſt dance, he is called out of bed, by the ſame tune, for a ſecond.

This exerciſe is continued for ſeveral days, ſix or ſeven at moſt; in which time the patient finds himſelf exceedingly fatigued, and unable to dance any longer; which is the characteriſtic of his being cured: for as long as the poiſon acts on him, he would dance, if one pleaſed, without any diſcontinuation, till he died of the mere loſs of ſtrength.

The patient perceiving himſelf weary, begins to come to himſelf; and awakes, as out of a profound ſleep; without any remembrance of what had paſſed in his paroxyſm, not even of his dance.

Sometimes the patient, thus recovering from his firſt acceſs, is quite cured; if he be not, he finds a melancholy gloom hanging on him; he ſhuns the ſight of men, and ſeeks water; and if he be not carefully looked to, throws himſelf into ſome river. If he do not die, the fit returns at that time twelvemonth, and he is driven to dancing again. Some have had theſe returns regularly for 20 or 30 years.

Every *Tarantatus* has his particular and ſpecific tune; but, in the general, they are all very briſk, ſprightly tunes, that work cures. See Tune.

This account was given into the royal academy of ſciences, by M. Geoffroy, at his return from Italy, in 1702; and confirmed by letters from F. Gouye. The like hiſtory is given us by Baglivi, in an expreſs diſſertation on the *Tarantula*, publiſhed in 1696.

To ſuch extraordinary facts, it is no wonder a few fables ſhould be added; as, for inſtance, that the patient is no longer affected than while the inſect lives; and that the *Tarantula* itſelf dances, all the while, the ſame air with the perſon bitten.

Theory of the effects of the Tarantula's *bite, by* M. Geoffroy.—The poiſonous juice injected by the *Tarantula*, M. Geoffroy conceives, may give the nerves a degree of tenſion, greater than is natural to them, or than is proportionate to their functions: and hence ariſes a privation of knowledge and motion. But, at the ſame time, this tenſion, equal to that of ſome ſtrings of an inſtrument, puts the nerves in uniſon to certain tones, and obliges them to ſhake, after being agitated by the undulations, and vibrations of the air proper to thoſe tones. And hence this wonderful cure by muſic: the nerves thus reſtored to their motion, call back the ſpirits thither, which before had abandoned them. See Unison and Concord.

It may be added, with ſome probability, and on the ſame principles, that the patient's averſion for ſome colours ariſes hence, that the tenſion of his nerves, even out of the paroxyſm, being ſtill different from what it is in the natural ſtate, the vibrations thoſe colours occaſion in the fibres of the brain, are contrary to their diſpoſition, and occaſion a kind of diſſonance, which is pain.

Theory of the effects of the Tarantula's *bite, by* Dr. Mead.—The malignity of the poiſon of the *Tarantula* ſeems to conſiſt in its great force and energy, whereby it immediately raiſes an extraordinary fermentation in the whole arterial fluid; by which its texture and craſis is conſiderably altered: the conſequence of which alteration, when the ebullition is over, muſt neceſſarily be a change in the coheſion of its parts, by which the globules, which did before with equal force preſs each other, have now a very differing and irregular niſus, or action; ſo that ſome of them do ſo firmly cohere together, as to compoſe moleculæ, or ſmall cluſters: upon this account, as there is now a greater number of globules contained in the ſame ſpace, than before, and the impulſe of many of theſe, when united together, differing according to the conditions of their coheſion, as to magnitude, figure, *&c.* the impetus, with which this fluid is drove towards the parts, will not only be at ſome ſtrokes greater than ordinary, but the preſſure upon the blood-veſſels muſt be very unequal, and irregular; and this will be particularly felt in thoſe which are moſt eaſily diſtended, as thoſe of the brain, *&c.*

Upon this the nervous fluid muſt neceſſarily be put into various undulatory motions, ſome of which will be like thoſe, which different objects acting upon the organs or paſſions of the mind do naturally excite in it; whereupon ſuch actions muſt follow in the body, as are uſually the conſequences of the ſeveral ſpecies of ſadneſs, joy, deſpair, or the like determinations of thought, See Passions.

This, in ſome degree, is a coagulation of the blood, which will the more certainly, when attended with uncommon heat, as is the caſe in thoſe countries where theſe creatures abound, produce ſuch like effects as theſe: becauſe the ſpirits ſeparated from the blood thus inflamed, and compounded of hard, fixed and dry particles, muſt unavoidably ſhare in this alteration; that is, whereas their fluid conſiſts of two parts, one more active and volatile, the other more viſcid and glutinous, which is a kind of vehicle to the former; their active part will bear too great a proportion to the viſcid; conſequently they muſt have more than ordinary volatility and force, and will therefore, upon the leaſt occaſion imaginable, be irregularly determined to every part.

Whereupon will follow, tumblings, anger, or fear, upon a light cauſe; extreme pleaſure at what is trivial, as particular colours, or the like: and on the other hand, ſadneſs at what is not agreeable to the ſight; nay, laughter, obſcene talk and actions, and ſuch like ſymptoms as attend perſons bit; becauſe in this conſtitution of the nervous fluid, the moſt ſlight occaſion will make as real a reflux and undulation of it to the brain, and preſent as lively ſpecies there, as the ſtrongeſt cauſe and impreſſion can produce in its natural ſtate and condition; nay, in ſuch a confuſion, the ſpirits cannot but ſometimes, without any manifeſt cauſe at all, be hurried towards thoſe organs, to which at other times they have been moſt frequently determined; and every one knows which theſe are in hot countries.

The effects of muſic on perſons touched with this poiſon, confirms the doctrine above delivered.—For muſcular motion, we know, is no other than a contraction of the fibres, from the arterial fluid's making an efferveſcence with the nervous juice, which, by the light vibration and tremor of the nerve, is derived into the muſcle. See Muscular.

Thus there is a two-fold effect and operation of the muſic, that is, upon the body and the mind: a briſk harmony excites lively ſpecies of joy and gladneſs, which are always accompanied with a more frequent and ſtronger pulſe, or an increaſed influx of the liquor of the nerves into the muſcles; upon which ſuitable actions muſt immediately follow.

As for the body, ſince it was ſufficient to put the muſcles into action, to cauſe thoſe tremors of the nerves by which their fluid is alternately dropped into the moving fibres, it is all one whether it be done by the determination of the will, or the outward impreſſions of an elaſtic fluid.

Such is the air; and that ſounds are the vibrations of it, is beyond diſpute: theſe, therefore, rightly modelled, may ſhake the nerves as really, as the *imperium voluntatis* can do, and conſequently produce the like effects.

The benefit of muſic ariſes not only from their dancing to it, and ſo evacuating, by ſweat, a great part of the inflammatory fluid; but beſides this, the repeated percuſſions of the air hereby made, by immediate contact ſhaking the contractile fibres of the membranes of the body, eſpecially thoſe of the ear, which being contiguous to the brain, communicate their tremblings to its membranes and veſſels; by theſe continued ſucuſſions and vibrations, the coheſion of the parts of the blood is perfectly broken, and the coagulation prevented: ſo that the heat being removed by ſweating, and the coagulation by the contraction of the muſcular fibrillæ, the wounded perſon is reſtored to his former condition.

If any one doubts of this force in the air, he may conſider, that it is demonſtrated in mechanics, that the ſmalleſt percuſſion of the ſmalleſt body, may overcome the reſiſtance of any the greateſt weight, which is at reſt; and that the languid tremor of the air, which is made by the ſound of a drum, may ſhake the vaſteſt edifices.

But beſides this, we muſt allow a great deal to the determinate force, and particular modulation of the trembling percuſſions; for contractile bodies may be acted upon by one certain degree of motion in the ambient fluid, though a greater degree of it, differently qualified, may produce nothing at all of the like effect: this is not only apparent in two common-ſtringed muſical inſtruments tuned both to the ſame height; but alſo in the trick which many have of finding the tone or note peculiarly belonging to any wine-glaſs, and, by accommodating their voice exactly to that tone, and yet making it loud and laſting, make the veſſel, though not touched, firſt to tremble, and then to burſt; which it will not do, if the voice be either too low, or too high. See SOUND.

This makes it no difficult matter to conceive, why different perſons infected with this ſort of venom, do require a different ſort of muſic, in order to their cure; inaſmuch as the nerves and diſtractile membranes have different tenſions, and conſequently are not all alike to be acted upon by the ſame vibrations.

TARE and *Tret* in commerce, any defect, waſte or diminution in the weight, the quantity, or the quality of goods. See NEAT.

The ſeller is uſually to account to the buyer for the *Tare* and *tret*. See TRET.

TARE is more particularly uſed for an abatement, or deduction in the price of a commodity, on account of the weight of cheſts, caſks, bags, frails, &c. See DISCOUNT.

The *Tare* is very different, in different merchandizes: in ſome there is none at all allowed.—It is a thing much more regarded in Holland than in England, or elſewhere: a modern author, M. Ricard, treating of the commerce of Amſterdam, obſerves, that the *Tares* are one of the moſt conſiderable articles a merchant is to be acquainted withal, if he would trade with ſecurity.

Sometimes, the *Tare* is, as it were, regulated by cuſtom; but generally, to avoid all diſpute, the buyer and ſeller make a particular agreement about it. We ſhall here add, from the fore-mentioned author, ſome inſtances of *Tares* allowed at Amſterdam, referring the reader for a more ample account to his *Negoce d'Amſterdam*, edit. 1722.

Spaniſh wools are ſubject to a kind of double *Tare:* for, firſt, they deduct the *Tare* marked on the bales; and after that, 24 pounds *Tare* for every 175 pound weight, beſides the rebate for prompt payment. Indeed, for the common wools, the ſeller will ſeldom allow above 14 *per cent.* for the whole *Tare*; for which reaſon, the bargain is to be agreed on before.

TARE of Roman alum is 4 *lib. per* ſack.
of Iriſh, &c. butter, 20 *per cent.*
of crude borax, 15 *lib. per cent.*
of cinnamon, 17 *lib.* the burthen.
of capers, 33 *per cent.*
of white pepper, 40 *lib. per* barrel.
of black pepper, 5 *lib.* &c.

TARENTULA. See the article TARANTULA.

TARGET, a *ſhield*; thus called from the Latin, *tergum*, back, becauſe originally made of leather, wrought out of the back of an ox's hide. See SHIELD, BUCKLER, and ESCUTCHEON.

TARGUM, in the ſacred literature, a name which the *Jews* give to their Chaldee gloſſes, and paraphraſes on the ſcripture. See PARAPHRASE.

As the Jews, during their long captivity in Babylon, had forgot their ancient language, the Hebrew; and now underſtood nothing but the language of their maſters, the Chaldeans: there was a neceſſity of explaining the prophets in that language; and to this neceſſity, is owing the firſt beginning of the Chaldee paraphraſe to make the ſenſe of the text underſtood. See HEBREW.

Each doctor made a paraphraſe of ſome part thereof in the vulgar tongue; and as theſe ſeveral interpretations, in time, became very voluminous, certain rabbins undertook to collect them together: and this collection they called the *Targum*.

The *Jewiſh* doctors do not agree about the antiquity of the *Targum*; for the more modern Jews having blended their own comments with thoſe of the ancients, no certain age or æra can be fixed for the whole work.

It is commonly believed, that R. Jonathan, who lived under the reign of Herod the Great, made the firſt Chaldee verſion of the prophets; and with this verſion mixed the interpretations borrowed from tradition.—Onkelos, it is certain, tranſlated the pentateuch almoſt word for word; and without any paraphraſe; and another verſion of the pentateuch is aſcribed to Jonathan, but without much certainty. See PENTATEUCH.

For the *Targum* or paraphraſe on the other books; we know little of the authors, no more than of thoſe of the *Targum* of Jeruſalem, which is another imperfect paraphraſe on the five books of Moſes: ſo that in ſtrictneſs, the *Targum* of Jonathan and Onkelos, is the only paraphraſe of any authority. See PARAPHRASE.

The account aſcribed to Scaliger, is this: the Hebrew was tranſlated under the reign of Tiberius into Caldee, by Jonathan; the prophets by Onkelos; and the books of Moſes into good old Hieroſolymitan, which was then uſed at Jeruſalem, much as Latin is among us.

It is certain, there was a *Targum Hieroſolymitanum* ſtill extant: it was wrote in the vulgar tongue; but that being then greatly corrupted, we have now much ado to underſtand it.

Thoſe *Targumiſts* might have ſeen Jeſus Chriſt; it is certain they lived long before the taking of Jeruſalem. *Scaligerana.*

TARIF, or TARIFF, *book of rates*; a table, or catalogue, drawn, uſually, in alphabetical order, containing the names of ſeveral kinds of merchandize, with the duties or cuſtoms to be paid for the ſame, as ſettled by authority, and agreed on between the ſeveral princes and ſtates, that hold commerce together. See DUTIES, CUSTOMS, &c.

TARNISHING, a diminution of the natural luſtre of any thing, eſpecially a metal. See LUSTRE.

Gold and ſilver, when *tarniſhed*, reſume their brightneſs, by ſetting them over the fire with certain lies. Copper, pewter, &c. that are *tarniſhed*, recover their luſtre with tripoli and pot-aſhes.

The breath of women, under their monthly purgations, Ariſtotle aſſerts, *tarniſhes* all mirrors, &c. See MENSES.

TARPAULIN, or TARPAWLING, is a piece of canvaſs, well pitched and tarred over, to keep off the rain from any place. The term is alſo uſed in deriſion for a perſon bred at ſea, and educated in the mariner's art.

TARPEIAN, TARPEIUS, in antiquity, an epithet given to a rock in ancient Rome, of conſiderable height; whence, by the law of the twelve tables, thoſe guilty of certain crimes were precipitated.[*]—It was on this rock the capitol was built. See CAPITOL.

It took its name from a veſtal, called *Tarpeia*, who betrayed the capitol, whereof her father was governor, to the Sabines; on condition they would give her all they bore on their left arms, meaning their bracelets.—But inſtead of bracelets, they threw their bucklers (which were likewiſe borne on their left arm) upon her head, and cruſhed her to death.

Others aſcribe the delivery of the capitol to her father, Spurius Tarpeius; and add, that he was precipitated down this rock by Romulus's order; and that this henceforward became the puniſhment of all criminals of the like kind.

TARPEIAN *Games*, *Ludi* TARPEII, were games inſtituted by Romulus, in honour of Jupiter Feretrius; and called alſo *Capitolini Ludi*. See CAPITOLINE.

TARRACE, TARRASS, or TERRACE, a coarſe ſort of plaiſter, or mortar, durable in the weather, chiefly uſed to line baſons, ciſterns, wells, and other reſervoirs of water. See MORTAR, CISTERN, &c. See alſo TERRACE.

TARSUS, ΤΑΡΣΟΣ, in anatomy, is what we vulgarly call the *inſtep*; being the beginning of the foot, or the ſpace between the ancle and the body of the foot, which is called *Metatarſus*. See FOOT, and METATARSUS.

The *Tarſus* anſwers to the wriſt of the hand.—It conſiſts of ſeven bones: the firſt whereof is called *aſtragalus*, and by the Latins *talus*, and *os baliſtæ*. See ASTRAGALUS, and TALUS. The ſecond called the *calx*, or *calcar pedis*, or *calcaneum*; the third *naviculare*, and by the Greeks *ſcaphoides*; the fourth, fifth, and ſixth are generally called *innominata*, but by Fallopius, from their figure, *cuneiformia*: laſtly, the ſeventh, the *cuboides*. See each deſcribed under its proper article, CALX, NAVICULARE, INNOMINATA, &c.

TARSUS is alſo a name given by ſome anatomiſts to the cartilages which terminate the palpebræ, or eye-lids; and from which the cilia, or hairs ariſe. See PALPEBRA.

They are exceedingly thin and fine, which makes them light and flexible.—Their form is ſemicircular: that of the upper eye-lid, is ſomewhat longer than that of the under: they ſerve alike to cloſe the eyes. See CILIA.

TARTANE, a kind of bark uſed for fiſhing and carriage; having neither a raiſed poop, nor prow; and alſo uſing oars.

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[*] The *Tarpeian* Rock might formerly be ſteep enough on one ſide to break a man's neck; but it cou'd never have been of that ſurprizing height, mention'd by ſome writers; if any judgment can be form'd from its appearance at preſent. See *Burnet*'s Letters, p. 238. and *Miſſon*'s N. Voyage, p. 103.

Tartanes are common in the Mediterranean; they have only a mainmaſt, and a mizzen: their ſails are triangular. When they put up a ſquare ſail, it is called *a ſail of fortune.*

TARTAR, **TARTARUS**, or **TARTARUM**, in chymiſtry, a kind of ſalt which riſes from wines, and ſticking to the top and ſides of the caſks, forms a cruſt, which hardens to the conſiſtence of a ſtone. See SALT, and CRYSTAL.

Tartar, ſays an ingenious author, has the juice of the grape for its father, fermentation for its mother, and the caſk for its matrix. See WINE, *&c.*

Its goodneſs rather depends on the number of repeated fermentations, which a ſucceſſion of new wines in the ſame caſk for ſeveral years makes, than on the ſoil or climate where the wine is produced.

Tartar is either *white*, or *red*, according to the colour of the wine it is raiſed from.—That brought from Germany is the beſt, as being taken out of thoſe monſtrous tuns, ſome whereof hold a thouſand pipes of wine; ſo that the ſalt has time to come to its conſiſtence, one of the chief qualities to be regarded in *Tartar.*—That of Montpellier is the next in order; then that of Lyons, Paris, *&c.*

White Tartar is preferred to red, and is really better; as containing leſs of the droſſy, or earthy part.—The marks of good *Tartar* of either kind are, its being thick, brittle, brilliant, little earthy.

Tartar is of conſiderable uſe among the dyers, as ſerving to diſpoſe the ſtuffs to take their colours the better. See COLOUR, and DYING.

The chymiſts make abundance of preparations from *Tartar*; as *Cream*, or *Cryſtal of Tartar*, which is nothing but *Tartar* powdered, and reduced by means of boiling water, a ſtraining bag, and a cellar, into little cryſtals. See CREAM *of Tartar*.

Salt of TARTAR is made of *Tartar* waſhed, ground, purified, and calcined, by a reverberatory fire; or it is made by pulverizing what remains in the retort after the diſtillation of *Tartar*, and calcining it as above by a reverberatory fire, to make it yield its ſalt when put into hot water, *&c.*—On the one or the other of theſe preparations, they pour a great quantity of hot water, to make a lye of it; this they filtrate, and evaporate the liquor by a ſand heat, till the fixed ſalt be found at the bottom of the veſſel.—This is the alkali, or fixed ſalt of *Tartar*. See SALT.

Oil of TARTAR, is the ſalt of *Tartar* expoſed to the air for ſome days, in an open veſſel, in a moiſt place, till it diſſolve into an oil; though it is improperly called an oil, being no more than a diſſolved ſalt. See DELIQUIUM.

Oil of *Tartar per deliquium*, is held the beſt counter-poiſon to corroſive ſublimate. See ANTIDOTE, *&c.*

TARTAR *Chalybeated*. See the article CRYSTAL.

TARTAR *Emetic*. See EMETIC, and CRYSTAL.

TARTAR *Foliated*, is a preparation of *Tartar* with diſtilled vinegar, which reduces it into white leaves.

TARTAR *Soluble*. See the article SOLUBLE.

TARTAR *Vitriolated*, which ſome call *Magiſtery of Tartar*, is oil of *Tartar* mixed with rectified ſpirit of vitriol: upon mixing the two, there ariſes a great evaporation, by means whereof, of liquids they become ſolids.

TARTARIZING, a term uſed by ſome writers, for the act of refining or purifying, by means of ſalt of *Tartar*. See TARTAR.

TASSEL, a ſort of pendant ornament, at the corners of a cuſhion, or the like thing.—Alſo a ſmall ribband or ſilk ſewed to a book, to be put between the leaves.

TASSELS, in a building, thoſe pieces of board that lie under the ends of the mantle-trees. See MANTLE.

TASSEL, or TIERCELET, is alſo uſed in falconry for a male hawk. See HAWK, and FALCON.

TASSELS are alſo a kind of hard burrs uſed by clothworkers in dreſſing cloth. See TEAZLE.

TASTE, *Savour*, a ſenſation, excited in the ſoul by means of the organ of *Taſte*; *viz.* the papillæ of the tongue, *&c.* See SENSATION, and TASTING.

Dr. Grew, in a lecture on the diverſity of *Taſtes*, before the Royal Society, diſtinguiſhes them into *Simple* and *Compound*.

By Simple TASTES, he underſtands ſuch as are ſimple modes of *Taſte*, although mingled with others in the ſame: thus the *Taſte* of a pippin is aci-dulcis; of rhubarb, amar-aſtringent, and therefore compounded, in both; but yet in the pippin the acid is one ſimple *Taſte*, and the ſweet another, as diſtinct as the bitter and aſtringent are in the rhubarb.

Two faults, he obſerves, have here been committed: the firſt, a defective enumerating of ſimple *Taſtes*; the ſecond, reckoning them indiſtinctly among ſuch as are compounded.

Simple Taſtes, of which we uſually only reckon ſix or ſeven ſorts, are at leaſt ſixteen: 1. *Bitter*, as in wormwood; whoſe contrary is, 2. *Sweet*, as in ſugar. 3. *Sour*, as in vinegar; whoſe contrary is, 4. *Salt*. 5. *Hot*, as in cloves; to which is oppoſite, 6. *Cold*, as in ſal prunella; for we may as properly ſay a cold *Taſte*, as an hot one, ſince there are ſome bodies which do manifeſtly impreſs the ſenſe of cold upon the tongue, though not to the touch. 7. *Aramotick*; to which is contrary, 8. *Nauſeous*, or malignant. 9. *Soft*, which are either vapid, as in water, ſtarch, whites of eggs, *&c.* or unctuous, as in oils, ſat, *&c.* 10. *Hard*, of which he reckons four kinds; as, 11. *Penetrant*, which worketh itſelf into the tongue without any pungency; as is found in the root and leaves of wild cucumber. 12. *Stupefacient*, as in the root of black hellebore, which being chewed, and for ſome time retained upon the tongue, affects that organ with a numbneſs, or paralytic ſtupor. 13. *Aſtringent*, as in galls: and, 14. *Pungent*, as in ſpirit of ſal armoniac; which two laſt *Taſtes* he makes contrary to the unctuous, as penetrant and ſtupefacient are contrary to the vapid one.

The Compound TASTES are very numerous; but we have words to expreſs but ſix of them: 1. *Auſtere*, which is aſtringent and bitter, as in the green and ſoft ſtones of grapes. 2. *Acerb*, properly ſo called, which is aſtringent and acid, as in the juice of unripe grapes. 3. *Acrid*, which is pungent and hot. 4. *Muriatick*, which is ſalt and pungent, as in common ſalt. 5. *Lixivious*, which is ſaltneſs joined with ſome pungency and heat. 6. *Nitrous*, which is ſaltneſs joined with pungency and cold. See AUSTERE, ACERB, *&c.*

TASTE is alſo uſed, in a figurative ſenſe, for the judgment and diſcernment of the mind. See JUDGMENT, and DISCERNING.

We talk, and we hear talk, every day, of *Taſte*, of *good Taſte*, and of *bad Taſte*; and yet without well underſtanding what we mean by the word: in effect, a *good Taſte* ſeems at bottom to be little elſe but right reaſon, which we otherwiſe expreſs by the word *judgment*. See REASON.

To have a *Taſte*, is to give things their real value, to be touched with the good, to be ſhocked with the ill; not to be dazzled with falſe appearances; but, in ſpight of all colours, and of every thing that might deceive or amuſe, to judge ſoundly.

Taſte and judgment then ſhould be the ſame thing; and yet it is eaſy to diſcern a difference: the judgment forms its opinions from reflection; the reaſon, on this occaſion, fetches a kind of circuit to arrive at its end: it ſuppoſes principles, it draws conſequences, and it judges; but not without a thorough knowledge of the caſe: ſo that after it has pronounced, it is ready to render a reaſon of its decrees.—*Good Taſte* obſerves none of theſe formalities; before it has time to conſult, it has taken its reſolution: as ſoon as ever an object is preſented it, the impreſſion is made, the ſentiment formed; aſk no more of it. As the ear is wounded with a harſh ſound, as the ſmell is ſoothed with an agreeable odor, before ever the reaſon have meddled with thoſe objects, to judge of them; ſo the *Taſte* is ſtruck at once, and prevents all reflection.

Reflections may come afterwards to confirm it, and diſcover the ſecret reaſons of its conduct; but it was not in its power to wait for them. Frequently, it happens not to know them at all; and what pains ſoever it uſe, cannot diſcover what it was that determined it to think as it did.

This conduct is very different from that which the judgment obſerves in its deciſions; unleſs we chuſe to ſay that *good Taſte* is, as it were, a firſt motion, or a kind of inſtinct of right reaſon, which hurries us on with rapidity, and conducts us more ſecurely than all the reaſonings we could uſe. It is a firſt glance of thought, which diſcovers to us the nature and relations of things as it were by intuition.

In effect, *Taſte* and judgment are one and the ſame thing, one and the ſame diſpoſition and habitude of the ſoul, which we call by different names, according to the different manners wherein it acts: when it acts by ſenſation, by the firſt impreſſion of objects, we call it *Taſte*; and when by reaſoning, after having examined the thing by all the rules of art, *&c.* we call it judgment: ſo that one may ſay, *Taſte* is the judgment of nature, and judgment the *Taſte* of reaſon. See JUDGMENT.

Good Taſte, as defined by Madem. Scudery and Madem. Dacier, in an expreſs treatiſe *of the corruption of Taſte*, is an harmony between the mind, and reaſon; and a perſon has more or leſs of this *Taſte*, as that harmony is more or leſs juſt.

One might perhaps improve on this hint, and ſay, that *good Taſte* is nothing elſe but a certain ratio or relation between the mind, and the objects preſented to it.

Right reaſon cannot but be moved and affected with things conformable thereto, and wounded by thoſe contrary: there is, then, a kind of ſympathy which unites them as ſoon as ever they meet; and their union, their good underſtanding, diſcover each other.—Make a fine diſcourſe; uſe only the richeſt and nobleſt expreſſions; if they contain an unhappy thought, or an incoherent reaſoning, that thought, this reaſoning, will immediately be felt by a perſon of *Taſte*: and the antipathy will ſhew itſelf by a movement of averſion, as ſudden, as lively, and as natural as that which nature inſpires us withal for toads or ſpiders. See BEAUTY, DEFORMITY, SENSE, *&c.*

TASTING, the ſenſe whereby we diſtinguiſh ſavours; or the perception which the ſoul has of external objects, by means of the organ of *Taſte*. See SENSE, and TASTE.

Authors differ much as to the *Organ of Taſting*: Bauhin, Bartholin, Veſlingius, *&c.* place it in the laxer fleſhy parts of the tongue; Dr. Wharton in the glands at the root of the tongue; Laurentius in the thin tunic covering the tongue; others in the palate, *&c.* But the great Malpighi, and, after him, all the lateſt writers, place it in the papillæ chiefly lying about the tip and ſides of the tongue. See TONGUE.

Theſe papillæ ariſe from the corpus nervoſum which covers the muſcular fleſh of the tongue; whence, paſſing through the corpus reticulare, they ſtand up under the external membrane of the tongue, erect, covered with vaginæ, or ſheaths of the ſaid membrane, to defend them from objects too violent. See PAPILLA.

Theſe vaginæ are porous, and ſtick out ſo far, that when the aliment is ſqueezed, they enter within the ſame, to receive the object, or the matter of *Taſte.*

Theſe papillæ, Boerhaave conjectures to ariſe from the ninth pair of nerves; and theſe, he aſſerts, are the only organ of *Taſte:* thoſe others, whether of the tongue, palate, or jaws, *&c.* he obſerves, contribute nothing thereto; though probably thoſe of the cheeks next the dentes molares may. See PALATE, *&c.*

The *object of Taſting*, is any thing, either in animals, vegetables, or minerals, from which ſalt or oil may be extracted. See SALT.

Taſting, then, is performed by the objects being attenuated, and mixed with ſaliva, warmed in the mouth, and applied to the tongue; where, inſinuating into the pores of the membranous vaginæ of the nervous papillæ, and penetrating to the ſurface of the papillæ themſelves, it affects and moves them; by which means a motion is communicated along the capillaments of the nerve to the common ſenſory, and an idea excited in the mind, of ſalt, acid, ſweet, bitter, hot, aromatic, auſtere, or the like; according to the figure of the particles that ſtrike the papillæ, or the diſpoſition of the papillæ to receive the impulſe. See SENSATION.

TATH, in old laws, a privilege which ſome lords of manors enjoyed, of having their tenants ſheep folded at night on their demeſne lands, for the improvement of the ground.

TATIANITES, TATIANITÆ, a ſect of ancient heretics; thus called from Tatian, a diſciple of Juſtin Martyr.

This Tatian, who has the character of one of the moſt learned men of all antiquity, was perfectly orthodox during the life of his maſter. He was, like him, a Samaritan, by nation, not by religion, as Epiphanius ſeems to inſinuate. They both belonged to thoſe Greek colonies ſpread throughout the country of the Samaritans.

Juſtin being dead, Tatian gave into the errors of the Valentinians; and formed a ſect called ſometimes *Tatianites*, and ſometimes *Encratitæ.* See ENCRATITÆ.

TAT-TOO, *q. d.* TAP-TO, a beat of a drum, at night, to advertiſe the ſoldiers to retreat, or repair to their quarters in a garriſon, or to their tents in a camp. See DRUM.

TAU,* in our ancient cuſtoms, ſignifies a croſs. See CROSS.

TAU, or TAW, in heraldry, an ordinary, in figure of a T, ſuppoſed to repreſent St. Andrew's croſs, or a croſs potence, the top part cut off. See CROSS.

It is thus called from the name of the Greek T, *tau.* See T.

TAUGHT, or TAU'T, *Tight*, in the ſea language, is the ſame as ſtiff, or faſt.—Thus they ſay, *ſet taught* the ſhrouds, the ſtays, or any other ropes, when they are too ſlack and looſe. See WIND-TAUGHT.

TAUNT, a ſea-term.—When the maſts of a ſhip are too tall for her, the ſailors ſay, ſhe is *taunt-maſted.*

TAURI *liberi libertas.*—In ſome ancient charters, *Taurus liber* ſignifies a common bull to all tenants within ſuch a manor, or liberty.—*Cum libertate faldiæ, liberi* Tauri, *& liberi Apri*, &c.

TAURUS, in aſtronomy, the *Bull;* one of the twelve ſigns of the zodiac, and the ſecond in order. See SIGN, and CONSTELLATION.

The ſtars in the conſtellation *Taurus*, in Ptolemy's catalogue are 44; in Tycho's catalogue 41; in the Britannic catalogue 135. The longitudes, latitudes, magnitudes, *&c.* whereof are as follow:

Names and Situation of the Stars.	Signs	Longitude ° ′ ″	Latitude. ° ′ ″	Mag.
South of 4 in the ſection	♉	16 49 36	9 21 47 S	4
That following it		17 33 43	8 49 48 S	4
That following this		18 44 58	7 28 29 S	6
North of 4 in the ſection		19 15 18	5 57 13 S	5
That fol. this in preced. ſhoulder 5		18 47 41	9 30 27 S	6
		22 50 08	5 02 24N	6
		23 06 10	3 41 37N	7
Preced. inform. under the foot		17 38 38	18 27 41 S	4
		24 26 24	5 32 51 S	7
10		19 03 08	16 04 57 S	7
		23 30 49	0 00 50 S	7
		23 50 24	0 07 15 S	7
		24 47 09	3 03 43N	7
Preced. of ſquare of pleiades		25 07 05	4 19 25N	6
In weſt angle of ſquare 15		25 05 21	4 09 05N	5
Moſt north of pleiades		25 18 52	4 50 42N	7
North of ſquare		25 14 42	4 29 02N	5
		25 21 31	4 21 25N	6
		25 25 13	4 31 33N	7
20		25 26 40	4 29 49N	7
South of ſquare		25 22 30	3 54 47N	5
		25 38 32	4 01 39N	7
Lucida pleiadum		25 40 08	4 00 37N	3
		25 56 00	3 41 45N	7
In eaſt angle 25		26 01 52	3 52 37N	5
A leſs, contiguous to it		26 03 19	3 57 34N	6
Preceding in the foot		21 13 06	13 30 06 S	6
Subſeq. in preced. ſhoulder		23 00 15	8 40 36 S	5
Subſequent in foot		22 54 17	13 22 57 S	6
30		27 25 21	1 58 32N	7
		27 36 33	2 38 2[illegible]N	7
		28 00 57	0 10 38 S	7
That in the breaſt		26 17 31	7 59 37 S	4
		29 26 17	3 13 26N	7
In the middle of the neck 35		29 07 19	1 13 20N	5
In the heel of the preceding foot		25 35 08	14 29 50 S	4
		25 37 51	15 04 02 S	7
Precede the ſquare of the neck	♊	0 36 09	6 33 06N	6
North of ſquare of the neck		0 57 25	7 54 38N	5
Preceding of 2, at the knee 40	♉	29 40 52	1 24 06 S	6
Prec. of the mid. ones in the ſq. of neck	♊	1 19 32	5 16 41N	6
	♉	27 32 58	15 21 10 S	7
		28 32 05	13 17 55 S	7
		28 55 38	11 47 39 S	7
That precede 1ſt of the hyades 45	♊	0 27 43	5 50 14 S	7
That in the preceding cheek	♉	29 14 12	12 13 17 S	4
Subſequent of two at knee	♊	1 43 42	0 47 26 S	6
		2 09 33	0 08 53N	7
Subſeq. of mid. ones in the ſqua. of neck		3 32 59	5 46 12N	5
50		2 19 18	0 19 23 S	7
Firſt of the hyades in noſtrils		1 27 34	5 46 22 S	3
		2 42 21	0 15 00N	7
That under the 1ſt of the hyades		1 13 39	7 20 42 S	6 7
		1 33 11	6 19 57 S	7
South of ſquare of the neck 55		3 46 56	3 58 41N	5
		1 42 49	7 23 02 S	7
Between the noſtrils and n. eye		2 31 27	4 00 34 S	4
		3 53 21	2 37 06N	7
Second		2 47 13	4 09 04 S	5
North of the ſouth in the ear 60		3 51 53	0 35 21N	4
In the heel of the hind foot		1 24 57	12 01 21 S	5
South of ſouth in the ear		3 51 37	0 29 46N	5
Third and ſmall betw. noſtr. and ear		3 11 42	3 43 27 S	6
Preceding of north in the ear		4 09 42	1 04 06N	5
65		2 54 01	5 41 50 S	7
		3 02 12	6 02 44 S	7
Subſequent		4 25 18	1 12 36N	6
Preceding below the hyades		2 56 57	6 56 53 S	5
In north eye		4 07 11	2 35 58 S	3 4
70		3 39 12	5 23 43 S	7
		3 22 25	6 59 01 S	7
Double one betwixt noſtr. and ſ. eye		3 36 25	5 47 16 S	5
		3 36 51	5 52 55 S	5
In the following ſhoulder		3 12 31	8 40 32 S	5
75		3 56 42	6 06 26 S	6
		4 07 06	5 37 49 S	7
		3 57 22	6 42 04 S	7
		3 44 57	8 04 25 S	7
		4 05 43	6 43 28 S	7
80		4 22 35	6 00 53 S	7
Middle, beneath the hyades		4 42 07	7 05 06 S	5
South eye, *palilicium, aldebaran*		5 27 00	5 29 49 S	1
In the following leg		4 27 10	11 46 51 S	5
		5 54 15	6 03 20 S	7
Preceding in the hind knee 85		5 24 30	9 32 32 S	5
		6 07 14	6 19 19 S	7
Subſequent beneath hyades		6 09 52	6 12 35 S	6
		5 49 58	9 55 14 S	6
Subſequent in hind knee		7 49 20	0 40 23N	5
In root of north horn 90		8 41 32	6 27 25N	7
In root of ſouth horn		9 24 58	3 40 35 S	6
		11 40 58	2 19 03N	6
		10 42 09	6 18 31 S	7
		11 06 31	6 38 25 S	7
Preced. of 3 over ſouth horn 95		12 27 36	1 14 34 S	4
More ſouth in the ſouth horn		13 09 18	4 16 08 S	6
More north		13 27 04	2 30 59 S	6
		13 38 52	3 05 34 S	6
Middle of 3 over ſouth horn		15 22 54	0 48 00 S	6
In the middle of the horn 100	♊	16 14 58	1 03 03 S	6

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* *Tradendo dicto comiti* Thau *eboreum.* So Mr. Selden, in his notes upon Eadmerus, p. 159. *Ego Eadgiſa prædicti regis ava hoc opus egregium crucis Taumate conſolidavi.* See Mon. 3. Tom. p. 121.

Names and Situation of the Stars.	Signs	Longitude °	′	″	Latitude °	′	″	Mag.
	♊	17	37	31	5	42	51N	7
		16	54	06	6	30	25 S	7
		17	04	29	5	50	14 S	6
In extremity of north horn		18	13	56	5	21	34N	2
		17	29	44	6	33	02 S	6
105								
Hindmoſt of 3 over ſouth horn		18	10	06	1	20	12 S	5
		17	49	31	5	18	04 S	7
		17	59	37	6	01	45 S	7
		18	42	56	1	51	14N	7
		19	03	45	4	43	55 S	6
110								
		19	22	21	4	48	10 S	7
		19	15	54	9	02	19 S	7
Preced. of inform. foll. n. horn		20	03	55	0	40	32N	6
		20	08	47	6	20	26 S	7
In extrem. of ſouth horn		20	27	55	2	14	24 S	3
115								
Auriga, in Tycho Inform.		21	06	07	2	29	23N	4 5
North under ſouth horn		21	09	28	6	52	43 S	6
		21	36	56	4	26	14 S	6
		21	59	23	7	20	57 S	6
South below ſouth horn		22	27	01	7	38	01 S	6
120								
		22	39	50	5	43	23 S	6
		22	32	16	8	57	39 S	6
Inform. of Auriga		23	10	03	1	06	31N	4 5
		22	38	44	9	33	28 S	6
		23	04	03	10	48	50 S	6
125								
		23	19	48	9	09	37 S	6
Inform. of Auriga		24	10	37	4	08	15N	4 5
		23	46	29	9	18	02 S	6
		23	46	54	9	31	13 S	6
Al. preced. in Orion's club		24	22	03	3	12	03 S	6
130								
Another more ſouth		24	28	58	3	44	03 S	6
Inform. of Auriga		25	12	28	2	28	05N	4 5
		25	46	35	0	35	03 S	7
		26	03	40	1	04	43 S	6
Al. ſubſeq. in Orion's club	♊	26	36	02	3	20	40 S	6
135								

TAURUS, in ſome ancient cuſtoms, ſignifies a huſband.* See HUSBAND.

* Leg. H. 1. cap. 7. *Videtur autem matris ejus, cujuſcunque* Taurus *alluſerit* —

TAUTOLOGICAL *Echo's*, are ſuch echo's as repeat the ſame ſound or ſyllable many times. See ECHO.

TAUTOLOGY, in grammar, a needleſs repetition of the ſame thing in different words.—Such, *e. gr.* is that of Virgil;

> —— *Si fata virum ſervant, ſi veſcitur aura*
> *Ætherea, neque adhuc crudelibus occubat umbris.*

Some people, particularly the Jeſuits, write and pronounce it *Taſtology.* The difference ariſes from the different pronunciation of the Greek *upſilon* in ταυτολογια. The modern Greeks, it is true, pronounce the υ as *f*; and it is argued the ancients did the like: but as cuſtom is the ſtandard of a language, this plea avails but little with regard to the Engliſh.

TAW. See the article TAU.

TAWING, *Skinning*; the art or manner of preparing or dreſſing ſkins in white, to fit them for uſe in divers manufactures, particularly gloves, purſes, &c. See SKIN.

All kinds of ſkins may be *tawed*; but it is chiefly thoſe of ſheep, lambs, kids, and goats, that are uſed to be dreſſed this way; as being thoſe fitteſt for gloves. See GLOVE.

Method of TAWING, *or drawing ſkins in white.*—The wool or hair being well got off the ſkins, by means of lime, &c. (as deſcribed under the article SHAMMY) they are laid in a large vat of wood or ſtone ſet in the ground, full of water, wherein quick lime has been ſlacked; wherein they continue a month or ſix weeks, as the weather is more or leſs hot, or as the ſkins are required to be more or leſs ſoft and pliant.

While in the vat, the water and lime is changed twice, and they are taken out and put in again every day. When taken out for the laſt time, they are laid all night to ſoak in a running-water, to get out the greateſt part of the lime; and, in the morning, are laid, ſix together, on the wooden leg, to get off the fleſh, by ſcraping them ſtoutly, one after another, on the fleſh ſide, with a cutting two-handed inſtrument, called a knife; and while this is in hand, they cut off the legs, and other ſuperfluous parts about the extremes.

This done, they are laid in a vat or pit with a little water; where being well fulled with wooden peſtles for a quarter of an hour, the vat is filled up with water, and the ſkins rinſed therein. They are next thrown on a clean pavement to drain; which done, they are caſt into a freſh pit of water, where being well rinſed, they are taken out, and laid on the wooden leg, ſix at once, with the hair ſide outermoſt, over which they rub a kind of whetſtone very briſkly, to ſoften, and fit them to receive four or five more preparations given them on the leg, both on the fleſh ſide and the hair ſide, with the knife, after the manner above-mentioned.

Theſe over, they are put in a pit with water and wheat-bran, and ſtirred about therein, with wooden poles, till the bran is perceived to ſtick to them; and then they are left; as they riſe of themſelves to the top of the water by a kind of fermentation, they are plunged down again to the bottom; and, at the ſame time, fire is ſet to the liquor, which takes as eaſily as if it were brandy, but goes out the moment the ſkins are all covered.

This operation is repeated as often as the ſkins riſe above water; and when they riſe no more, they are taken out, laid on the wooden leg, the fleſh ſide outermoſt, and the knife paſſed over it to ſcrape off the bran. The bran thus cleared, the ſkins are laid in a large baſket, where they are loaden with huge ſtones to promote their draining; and when ſufficiently drained, their feeding is given them, which is performed after the following manner:

For a hundred large ſheep-ſkins, and for ſmaller in proportion, they take eight pounds of alum, and three of ſea ſalt, and melt the whole with water in a veſſel over the fire; pouring the diſſolution out while yet lukewarm into a kind of trough, wherein is twenty pounds of the fineſt wheat flower, with eight dozen yolks of eggs; of all which is formed a kind of paſte, a little thicker than childrens pap; which, when done, is put into another veſſel, to be uſed in manner following:

A quantity of hot water being poured into the trough wherein the paſte was prepared, two ſpoonfuls of the paſte is mixed therewith; in order to which, they uſe a wooden ſpoon, which contains juſt what is required for a dozen ſkins: and when the whole is well diluted, two dozen of the ſkins are plunged therein: care being taken, by the way, that the water be not too hot, which would ſpoil the paſte, and burn the ſkins.

Having ſtaid ſome time in the trough, they are taken out, one after another, with the hand, and ſtretched out; which is repeated twice: when they have all had their paſte, they are put in tubs, where they are fulled afreſh with wooden peſtles.

Then they are put in a vat, where they remain five or ſix days, or more; and are at laſt taken out in fair weather, and hung out to dry on cords or racks; the quicker they dry the better; for if they be too long a drying, the ſalt and alum within them, are apt to make them riſe in a grain, which is an eſſential fault in this kind of dreſſing.

When the ſkins are dry, they are put up in bundles, and juſt dipt in fair water; from which being taken out and drained, they are thrown into an empty tub; and, after ſome time, are taken out, and trampled under foot.

They are then drawn over a flat iron inſtrument, the top whereof is round like a battledore, and the bottom fixed into a wooden block, to ſtretch and open them: when opened, they are hung in the air upon cords to dry; and when dry, are opened a ſecond time by repaſſing them over the ſame inſtrument.

Laſtly, they are laid on a table, pulled out, and laid ſmooth; and are thus in a condition for ſale, and uſe.

After the ſame manner are dreſſed horſes, cows, calves ſkins, &c. for the ſadlers, harneſs-makers, &c. as alſo dogs, wolves, bears-ſkins, &c. excepting that in theſe the uſe of the paſte is omitted, ſalt and alum-water being ſufficient.

TAWNY, in heraldry. See TENNE'.

TAX,* a tribute ſettled on every town, after a certain rate; and paid yearly towards the expences of the government. See TRIBUTE, and IMPOST.

* The word is formed from the Greek ταξις, *order.*

The rate, &c. of the *Tax* was anciently called *Tallage*, from the French *taille*, *Tax*. See TALLAGE, and TALLY.

The ancient *Tax* was what the ſubſidy now is; excepting that the *Tax* was fixed to a certain ſum, *v. gr.* the *fifteenth* part of what the place was anciently valued at, whereas the ſubſidy is variable according to occaſion; and that the *Tax* was levied on cities and towns, but the ſubſidy on perſons. See SUBSIDY.

Anciently, the *Tax* ſeems to have been impoſed by the king at his pleaſure; but Edward I. bound himſelf, and his ſucceſſors, from that time forward, not to levy it but by conſent of the realm. See FIFTEENTH; ſee alſo GILD and BENEVOLENCE.

The people of France were ſtrangers to *Tailles*, or *Taxes*, till the time of St. Louis, when they were firſt impoſed in form of ſubſidies neceſſary for the ſupport of the war in the Holy Land. See CROISADE.

They were then extraordinary levies, and were raiſed by capitation; but were afterwards made perpetual under Charles VII. Philip the Fair, to raiſe money without diſturbing the people, called the people, as a third eſtate, into the general councils of the realm. See ESTATE.

The name *Taille* is derived from the tally of petty tradeſmen; in regard the country people appointed to collect it, not being able to write, ſcored down what they received, on tallies. See TALLY.

TAX alſo denotes the tribute which tenants were occaſionally to pay their lord. See LORD, and TENANT.

Moſt lords had a right of *taxing* on four occaſions, *viz.* when the lord was taken priſoner in a juſt war; when he made his eldeſt ſon a knight; when he married his eldeſt daughter to a gentleman; and when he made the voyage of the Holy Land. See AID, and CROISADE.

Naude ſhews the extravagant riſe of this kind of *Taxes*: thoſe, he obſerves, which under Charles VI. only amounted to the ſum of 40000 livres, were increaſed, under Charles VII. to the ſum of 1800000 livres; under Louis XI. to 4740000 livres; under Charles VIII. to 6000000; under Louis XII. to 7640000 livres.

Taxes were diſtinguiſhed into *free*, which were thoſe due, in the four caſes, by freemen, or thoſe who held free lands; and *ſervile* and *baſe*, which were thoſe due from perſons of baſe condition.

They were alſo diſtinguiſhed into *real* and *perſonal*. The *perſonal* were impoſed on the head of the ſervant or man in main-morte, and ſo followed him where-ever he went. See POLL, CAPITATION, &c.

TAXERS, two officers yearly choſen in Cambridge, to ſee the true gauge of all weights, and meaſures obſerved.

The name took beginning from *taxing* and rating the rents of houſes, which was anciently the duty of their office.

TAXIS, ΤΑΞΙΣ, in the ancient architecture, ſignifies the ſame with *Ordonnance* in the new, and is deſcribed by Vitruvius to be that which gives every part of a building its juſt dimenſions, with regard to its uſe. See ORDONNANCE, PROPORTION, and SYMMETRY.

TAYL, in heraldry, &c. See the article TAIL.

TCHA. See the article TEA.

TCHELMINAR, or TCHILMINAR; or, as we pronounce it, *Chelminar*, one of the moſt celebrated piles of ruins in the world; being the remains of a palace, ſuppoſed to have ſtood in the middle of the city Eſtekhar, the ancient Perſepolis, capitol of the kings of Perſia. See CHILMINAR.

TEA, THEA, or as the Japaneſe call it, TCHA, the leaf of a tree or ſhrub, growing in ſeveral provinces of China, Japan, and Siam; whoſe infuſion is in general uſe as a drink.

The *Tea* plant affects valleys, and the feet of mountains, and a ſtony ſoil. Its ſeed is uſually ſown in places expoſed to the ſouth; and bears three years after ſown. The root reſembles that of the peach-tree: the leaves are green, longiſh at the point, and pretty narrow, an inch and half long, and jagged all around. The flower is much like that of the wild roſe. The fruit is of different forms, ſometimes round, ſometimes long, ſometimes triangular; of the ordinary ſize of a bean; containing two or three peas, of a mouſe colour, including each a kernel. Theſe peas are the ſeeds by which the plant is propagated.

The tree is of various heights, from one foot to an hundred: ſome there are which two men cannot fathom, while others ſcarce exceed the feebleſt ſhrub in a garden.

The beſt time to gather the leaves of *Tea*, is while they are yet ſmall, young, and juicy: when gathered, they are paſſed over the ſmoak of boiling water to moiſten them; then they are laid on copper-places, which are heated; and thus, the leaves drying, they curl up in the manner they are brought to us.

It is very rare to find *Tea* perfectly pure; the Chineſe always mixing other herbs with it, to increaſe the quantity. Indeed, the price it is ſold for among them is moderate enough; uſually it is about three-pence a pound ſterling, never more than nine-pence.

The Chineſe know nothing of *Imperial Tea*, *Flower of Tea*, and many other names, which in Europe ſerve to diſtinguiſh the goodneſs, and the price of this faſhionable commodity; and yet beſide the common *Tea*, they diſtinguiſh two other kinds, *viz.* the *Voui* and *Soumlo*, which are reſerved for people of the firſt quality, and ſick folks.

We have two kinds of *Tea* in Europe: *viz.*

Green TEA, which is the common *Tea* of the Chineſe, &c. F. le Compte calls it *Bing Tea*, and ſays it is gathered from the plant in April.—It is held very digeſtive, and a little corroſive: it gives a pale greeniſh tincture to water; and its leaves are much twiſted.—The ſecond is,

Bohea TEA, which is the *Voui Tea*, or *Bou Tcha* of the Chineſe.—F. le Compte makes this only to differ from the *Green Tea*, by its being gathered a month before it, *viz.* in March, while in the bud; and hence the ſmallneſs of the leaves, as well as the depth of the tincture it gives water. Others take it for the *Tea* of ſome particular province; the ſoil being found to make an alteration in the properties of the *Tea*, as much as the ſeaſon of gathering it.—It is all bought at Nanquin; and it is but lately that the Dutch have introduced it into Europe, where it begins to be much in vogue.

Savory alſo ſpeaks of a ſort of *Red Tea*, or *Tartar Tea*, called *Honan Tcha*, which tinges the water with a pale red, and which is ſaid to be extremely digeſtive: by means hereof it is that the Tartars are ſaid to be able to feed on raw fleſh. Its taſte is earthy, and much the leaſt agreeable of them all; but ſcarce known in *England*.

Tea is to be choſen green, of the briſkeſt ſmell, as whole as poſſible; and the greateſt care taken that it have not been expoſed to the air to pall, and evaporate.

The drink, *Tea*, is made in *China*, and throughout the greateſt part of the eaſt, after the ſame manner as in Europe; *viz.* by infuſing the leaves in boiling water, and drinking the infuſion hot.—Indeed, among us, it is uſual to temper its bitterneſs with ſugar, which the orientals uſe little or none of. However, the Japaneſe are ſaid to prepare their liquor a ſomewhat different way, *viz.* by pulverizing it, ſtirring the powder in hot water, and drinking it as we do coffee.

The Chineſe are always taking *Tea*, eſpecially at meals: it is the chief treat wherewith they regale their friends. The moſt moderate take it at leaſt thrice a day; others, ten times, or more: and yet it is computed, the conſumption of *Tea* among the Engliſh and Dutch is as great in proportion as among the Orientals. In France, the uſe of *Tea* is much declined, and coffee is now become the prevailing liquor. See COFFEE.

As to the properties of *Tea*, they are ſtrangely controverted: the eaſtern nations are at leaſt as much poſſeſſed with them as the Europeans; but it is, perhaps, becauſe imagination bears as great a ſway there as here. The reaſon why the gout and ſtone are unknown in China, is aſcribed to the uſe of this plant; which is ſaid further to cure indigeſtions of the ſtomach, to carry off a debauch, and to give new ſtrength for drinking; to diſpel wind, to cure the vapours, &c.

Sim. Pauli, phyſician of the king of Denmark, in an expreſs treatiſe on this plant, endeavours to ſhew, that theſe virtues aſcribed to it in the Eaſt, are local, and do not hold with the inhabitants of Europe. According to him, thoſe paſt their 40th year ſhould never uſe it, as being too deſiccative: that *Tea* has no other virtues but thoſe of betony: and adds, with Bauhin, that it is only a ſpecies of myrtle, found in Europe as well as the Indies.

But this opinion is refuted by Pechlin, in a treatiſe of *Tea*, intitled, *Theophilus Bibaculus, ſive de Potu* Theæ *Dialogus*; where he maintains, that it is good to prevent ſcorbutic diſeaſes; that its gentle aſtringent virtues ſtrengthen the tonic motion of the inteſtines, &c. But he blames the drinking it with milk, and eſpecially after a full meal, or after much wine.

TEAM, THEAM, or THAME, in our ancient cuſtoms, ſignifies a royalty granted by the king's charter to the lord of a manor, for the having, reſtraining, and judging bondmen, neifs, and villains, with their children, goods, and chattels, in his court.

TEARS, *Lachrymæ*, a watry humour, iſſuing out at the corners of the eye, by the compreſſion of the muſcles; ſerving to moiſten the cornea, to expreſs our grief, and even to alleviate it. See LACHRYMAL.

The ancients had an opinion, that the *Tears* of the living were of uſe, at leaſt of pleaſure, to the dead; for which reaſon they took great care to procure them abundance at their funerals; ſo much, as to inſtitute a profeſſion or trade of weepers, as judging thoſe of their own families inſufficient. See LACHRYMATORY, and FUNERAL.

Deer, when at bay, are commonly ſaid to ſhed *Tears*: indeed, they ordinarily do yield a ſort of *Tears*, which oozing into the two clefts underneath, called *Lachrymatories*, are there condenſed into a kind of yellow liquor, or gum; which diluted in white wine or carduus water, is reputed a ſovereign remedy for fits of the mother, and the falling-ſickneſs.

Virgil makes the horſe of Pallas ſhed *Tears* at the funeral pomp of his maſter: this is one of the paſſages which the modern critics cenſure as a breach of probability. See PROBABILITY.

TEAZEL, or TEASEL, *Carduus Fullonum*, or the *Fullers Thiſtle*, a kind of plant much uſed by the fullers, cloth-workers, and ſtocking weavers, to card, or draw out the wool or nap from the thread or ground of ſeveral kinds of cloths, ſtuffs, ſtockings, &c. in order to render them cloſer, and warmer. See THISTLE.

This plant is cultivated with great care in ſeveral parts of France, particularly Normandy; and the exportation thereof prohibited, by reaſon of the vaſt uſe thereof in the woollen manufacture.

The ſtem of the plant is very high: and its extremity, as alſo thoſe of its branches, bear an oblong prickly yellowiſh ball or bur, which is the part uſed.

The largeſt burs, and thoſe moſt pointed, are eſteemed the beſt, and are now called *Male Teazles*, moſtly uſed in the dreſſing and preparing of ſtockings and coverlets; the ſmaller kind, properly called the *Fullers* or *Drapers*, and ſometimes the *Female Teazle*, are uſed in the preparation of the finer ſtuffs, as cloths, rateens, &c.

The ſmalleſt kind ſometimes, called *Linnots Heads*, are uſed to draw out the nap from the coarſer ſtuffs, as bays, &c.

TECHNICAL,* TECHNICUS, ſomething that relates to art. See ART.

* The word is formed of the Greek τεχνικος, *artificial*, of τεχνη, *art.*

In this ſenſe we ſay, *Technical Words*, *Technical Verſes*, &c.—And in this ſenſe Dr. *Harris* intitles his dictionary of arts and ſciences, *Lexicon Technicum*.

TECHNICAL, is more particularly applied to a kind of verſes, wherein are contained the rules or precepts of any art, thus digeſted to help the memory to retain them. See MEMORY.

Technical Verſes are uſed in chronology, &c.—Such, *e. gr.* are thoſe expreſſing the order and meaſures of the calends, nones, &c. See CALENDS.—Thoſe expreſſing the ſeaſons; ſee under AUGUST.—Thoſe expreſſing the order, &c. of the ſigns; ſee under SIGN.

F. Labbe has compoſed a ſet of *technical* Latin verſes, including all the epochas in chronology; and F. Buffier, after his example, has put both chronology and hiſtory in French verſe; and ſince, geography too.

Technical Verſes are commonly compoſed in Latin: they are generally wretched ones, and often barbarous; but it is utility is all that is aimed at: to give ſome idea hereof, we will here add a few inſtances.—The caſuiſts include all the circumſtances which make us partakers with another in a theft, or other crime, in theſe two *Technical* verſes:

Juſſio, concilium, conſenſus, palpo, recurſus,
Participans, mutus, non obſtans, non manifeſtans.

The firſt of F. Buffier's *Technical* verſes of the hiſtory of France, are theſe:

Ses loix en quatre cents Pharamond introduit,
Clodion Chevelu, qu Aetius vanquit,
Merovee; avec lui combatit Attila;
Childeric fut chaſſee, mais on le rappella.

TECHNICAL *Words*, are what we otherwiſe call *Terms of Art.* See TERM.

TECUM *Duces.* See the article DUCES.

TE DEUM, a kind of hymn, or ſong of thankſgiving, uſed in the church; beginning with the words *Te Deum laudamus, We praiſe thee, O God.*—It is uſually ſuppoſed to be the compoſition of St. Auguſtin, and St. Ambroſe.

It is uſed to be ſung in the Romiſh church with extraordinary pomp and ſolemnity, upon the gaining a battle, or other happy event; and ſometimes even to conceal a defeat.

TEETH, *Dentes*, in anatomy. See the article TOOTH.

Canine TEETH, } See the articles { CANINE.
Wolves TEETH, } { WOLVES.

TEGUMENT. See the article INTEGUMENT.

TEINTS,* and *Semi*-TEINTS, in painting, denote the ſeveral colours uſed in a picture, conſidered as more or leſs high, or bright, or deep, or thin, or weakened, and diminiſhed, &c. to give the proper relievo, or ſoftneſs, or diſtance, &c. to the ſeveral objects. See COLOURING.

*. The word is pure French, where it ſignifies the ſame.

TEIRCE, or TEIRS. See the article TIERCE.

TEKUPHÆ, or THEKUPHÆ, in the Jewiſh chronology, are the times wherein the ſun proceeds from one cardinal point to the next. See CARDINAL *Point.*

The term is alſo applied to the moments wherein the ſun enters a cardinal point: theſe four terms, or *Tekuphæ*, are obſerved among the Jews with a world of ceremony: the reaſon, as we are informed by Munſter, is this:

That people have a notion, that in each *Tekupha* the ſun has a ſeveral angel appointed to guard, and direct it; and that in the very point wherein the ſun finiſhes one *Tekupha*, and enters upon another, before the one director has taken place of the other, the devils have a power to exerciſe all kinds of tyranny in the water.

And hence, they ſay, that if any body drinks the ſmalleſt quantity of water at that time, he will infallibly have a dropſy, or ſome other grievous diſtemper.

TELAMONES,* a name given by the Romans to what the Greeks called *Atlantes, viz.* the figures of men ſupporting entablatures, and other projectures. See ATLAS.

* A late author thinks, that the word *Telamon*, which he deduces from the Greek τλημων, *a wretch that bears miſfortunes with patience*, does not diſagree with thoſe ſtatues, which, in architecture, ſuſtain ſuch loads. See PERSIAN, and CARYATIDES.

TELESCOPE, an optical inſtrument, conſiſting of ſeveral glaſſes, or lens's, fitted into a tube; through which remote ſubjects are ſeen as if nigh at hand. See LENS, and OPTIC *Glaſs.*

In *Teleſcopes*, the lens or glaſs turned towards the object, is called the *Object-glaſs*; and that next the eye, the *Eye-glaſs*; and if the *Teleſcope* conſiſts of more than two lens's, all but that next the object are called *Eye-glaſſes*. See OBJECT *Glaſs*, &c.

The invention of the *Teleſcope* is one of the nobleſt, and moſt uſeful theſe ages have to boaſt of: by means hereof, the wonders of the heavens are diſcovered to us, and aſtronomy brought to a degree of perfection, which former ages could have no notion of. See ASTRONOMY.

Indeed, the diſcovery is owing rather to chance, than to thought; ſo that it is the good fortune of the diſcoverer, rather than his ſkill or ability, we are indebted to: on this account it concerns us the leſs to know, who it was firſt hit on this admirable invention. It is certain it muſt be caſual, ſince the theory it depends on was not then known.

Johannes Baptiſta Porta, a noble Neapolitan, is aſſerted by Wolfius to be undoubtedly the firſt that made a *Teleſcope*; from this paſſage in his *Magia Naturalis*, printed in 1549: "If you do but know how to join the two (*viz.* the concave "and convex glaſſes) rightly together, you will ſee both re"mote and near objects, much larger than they otherwiſe ap"pear, and withal very diſtinct. In this way we have been "of good help to many of our friends, who either ſaw re"mote things dimly, or near ones confuſedly; and have "made them ſee every thing perfectly."

But it is certain, Porta did not underſtand his own invention, and therefore neither troubled himſelf to bring it to greater perfection, nor ever applied it to cœleſtial obſervation. What is more, the account Porta gives of his concave and convex lens's is ſo dark and indiſtinct, that Kepler, who examined it, by particular command of the emperor Rudolphus, declared to that prince, that it was perfectly unintelligible.

Fifty years afterwards, a *Teleſcope*, 12 inches long, was made and preſented to prince Maurice of Naſſau, by a ſpectacle-maker of Middlebourg; but authors are divided about his name. Sirturus, in a treatiſe of the *Teleſcope*, printed *anno* 1618, will have it to be John Lipperſein: and Borel, in an expreſs volume on the inventor of the *Teleſcope*, publiſhed in 1655, ſhews it to be Zacharis Janſen, or, as Wolfius has it, Hanſen.

Joh. Lapreius, another workman of the ſame town, paſſes for a third inventor; having made one in 1610, on the mere relation given him of that of Zachary.

In 1620, James Metius, brother of Adrian Metius, profeſſor of mathematics at Franeker, came with Drebel to Middlebourg, and there bought *Teleſcopes* of Zachary's children, who had made them public; and yet Adr. Metius has given his brother the honour of the invention; in which he is miſtakenly followed by Des Cartes.

But none of theſe artificers made *Teleſcopes* of above a foot and half: Simon Marius in Germany, and Galileo in Italy, firſt made long ones fit for cœleſtial obſervations.

Le Roſſi relates, that Galileo being then at Venice, was told of a ſort of optic glaſs made in Holland, which brought objects nearer: upon which, ſetting himſelf to think how it ſhould be, he ground two pieces of glaſs into form as well as he could, and fitted them to the two ends of an organ-pipe, and ſhewed, at once, all the wonders of the invention to the Venetian nobleſſe on the top of the tower of St. Mark. That author adds, that from this time Galileo devoted himſelf wholly to the improving and perfecting of the *Teleſcope*; and that he thereby almoſt deſerved all the honour uſually done him, of being reputed the inventor of the inſtrument, and of its being denominated from him *Galileo's Tube.*

F. Mabillon, indeed, relates, in his travels through Italy, that in a monaſtery of his own order, he ſaw a manuſcript copy of the works of Commeſtor, written by one Coradus, who lived in the XIIIth century; in the third page whereof, was ſeen a portrait of Ptolemy viewing the ſtars through a tube of four joints or draws: but that father does not ſay that the tube had glaſſes in it. In effect, it is more than probable, that ſuch tubes were then uſed for no other purpoſe but to preſerve and direct the ſight, or to render it more diſtinct, by ſingling out the particular object looked at, and ſhutting out all the foreign rays reflected from others, whoſe proximity might have rendered the image leſs preciſe.

This conjecture is verified by experience; we having often obſerved, that without a tube, by only looking through the hand, or even the fingers, or a pin-hole in a paper, objects ſhall appear more clear and diſtinct than otherwiſe.

Be this as it will, it is certain the optical principles, whereon *Teleſcopes* are founded, are contained in Euclid, and were well known to the ancient geometricians; and it is for want of attention thereto, that the world was ſo long without that admirable invention; as, no doubt, there are numerous others lying hid in the ſame principles, only waiting for reflection or accident to bring them forth.

Teleſcopes are of ſeveral kinds, diſtinguiſhed by the number and form of their lens's, or glaſſes, and denominated from their particular uſes, &c. ſuch are the *Terreſtrial* or *Land Teleſcope, the Cœleſtial* or *Aſtronomical Teleſcope*: to which may be added, the *Galilean* or *Dutch Teleſcope*, the *Reflecting Teleſcope*, and the *Aerial Teleſcope.*

Galileo's, or the Dutch TELESCOPE, is a *Teleſcope* conſiſting of a convex object-glaſs, and a concave eye-glaſs. See CONCAVE, and CONVEX.

This, of all others, is the moſt ancient form, being the only kind made by the inventors, Galileo, &c. or known, before Huygens: whence its name. Its conſtruction, perfections, imperfections, &c. are delivered in what follows:

Conſtruction of Galileo's, or the Dutch TELESCOPE.—In a tube prepared for the purpoſe (the ſtructure whereof ſee under the article TUBE) at one end is fitted a convex object lens, either a plain convex, or convex on both ſides, but a ſegment of a very large ſphere: at the other end is fitted an eye-glaſs, concave on both ſides, and the ſegment of a leſs ſphere: ſo diſpoſed, as to be the diſtance of the virtual focus before the image of the convex lens. See FOCUS.

Theory of Galileo's TELESCOPE.—Now, in an inſtrument thus framed, all people, except myopes, or thoſe ſhort-ſighted, muſt ſee objects diſtinctly in an erect ſituation, and increaſed in the ratio of the diſtance of the virtual focus of the eye-glaſs, to the diſtance of the focus of the object-glaſs.

But for myopes to ſee objects diſtinctly through ſuch an inſtrument, the eye-glaſs muſt be ſet nearer the object-glaſs. The reaſon of theſe effects will appear from what follows:

For, 1° ſince it is far diſtant objects that are to be viewed with a *Teleſcope*, the rays proceeding from the ſame point of the object, will fall on the object-glaſs parallel, and conſequently by their refraction through the convexity, will be thrown converging on the eye-glaſs; but by their refraction through the concavity hereof, they will be again rendered parallel, and in ſuch diſpoſition will enter the eye. See RAY, CONCAVITY, CONVEXITY, and CONVERGING.

But all, excepting myopes, ſee objects diſtinctly by parallel rays. See VISION, and PARALLEL. Therefore the firſt point is clear.

2° Suppoſe A (*Tab. Optics*, *fig*. 41.) to be the focus of the object-glaſs; and ſuppoſe A C the furtheſt ray on the right hand of the object that paſſes through the tube: after refraction, it will become parallel to the axis B I, and conſequently after a ſecond refraction through the concave lens, will diverge from the virtual focus. Wherefore ſince all the rays coming from the ſame extreme to the eye placed behind the concave lens, are parallel to L E; and thoſe from the middle of the object, parallel to F G (as obſerved in what went before) the middle point of the object will be ſeen in the axis G A; and the right extreme, on the right ſide, *viz.* in the line L N, or parallel thereto; that is, the object will be erect: which is the ſecond point.

3° Since all right lines parallel to L N cut the axis under the ſame angle, the ſemi-diameter of the object will be ſeen through the *Teleſcope*, under the angle A F N or E F I: the rays L E and G I entering the eye in the ſame manner; as if the pupil were placed in F. If now the naked eye were in A, it would ſee the ſemi-diameter of the object under the angle c A b or C A B. But ſince the object is ſuppoſed very remote, the diſtance A F in reſpect hereto is nothing, and therefore the naked eye, even in F, would ſee the ſemi-diameter of the object under an angle equal to A.

The ſemi-diameter of the object therefore, ſeen with the naked eye, is to that ſeen through the *Teleſcope*, as IM to IE. But it is demonſtrated that I M : I E :: I F : A B; that is, the ſemi-diameter ſeen with the naked eye, is to that viewed through the *Teleſcope*; in the ratio of the diſtance of the virtual focus of the eye-glaſs F I, to the diſtance of the focus of the object-glaſs A B: which was the third point.

Laſtly, myopes have their retina too far from the cryſtallin humour; and diverging rays concur at a greater diſtance than parallel ones; and thoſe that were parallel become diverging by bringing the eye-glaſs nearer the object-glaſs; by means of ſuch approach, myopes will ſee objects diſtinctly through a *Teleſcope*: which is the fourth point.

Hence, 1° to have the whole object viſible, the ſemi-diameter of the pupil muſt not be leſs than the diſtance of the rays L E and G I; and therefore the more the pupil is dilated, the greater field or compaſs will be taken in by the *Teleſcope*, and *vice verſa*; ſo that coming out of a dark place, or ſhutting the eye for ſome time before you apply it to the glaſs, you will take in a greater field at firſt glance than afterwards, when the pupil is again contracted by the increaſe of light. See PUPIL.

2° Since the diſtance of the rays E L and I G is greater, at a greater diſtance from the lens, the compaſs taken in by the eye at one view, will be greater as the eye is nearer the concave lens.

3° Since the focus of a plano convex object lens, and the virtual focus of a plano concave eye lens, is at the diſtance of the diameter; and the focus of an object-glaſs convex on both ſides, and the virtual focus of an eye-glaſs concave on both ſides, is at the diſtance of a ſemi-diameter; if the object-glaſs be plano convex, and the eye-glaſs plano concave, the *Teleſcope* will increaſe the diameter of the object, in the ratio of the diameter of the concavity to that of the convexity; if the object-glaſs be convex on both ſides, and the eye-glaſs concave on both ſides, it will magnify in the ratio of the ſemi-diameter of the concavity to that of the convexity; if the object-glaſs be plano convex, and the eye-glaſs concave on both ſides, the ſemi-diameter of the object will be increaſed in the ratio of the diameter of the convexity to the ſemi-diameter of the concavity. And laſtly, if the object-glaſs be convex on both ſides, and the eye-glaſs plano concave, the increaſe will be in the ratio of the diameter of the concavity to the ſemi-diameter of the convexity.

4° Since the ratio of the ſemi-diameters is the ſame as that of the diameters, *Teleſcopes* magnify the object in the ſame manner, whether the object-glaſs be plano convex, and the eye-glaſs plano concave, or whether the one be convex on both ſides, and the other concave on both.

5° Since the ſemi-diameter of the concavity has a leſs ratio to the diameter of the convexity than its diameter has, a *Teleſcope* magnifies more if the object-glaſs be plano convex, than if it be convex on both ſides.

6° The greater the diameter of the object-glaſs, and the leſs that of the eye-glaſs, the leſs ratio has the diameter of the object viewed with the naked eye, to its ſemi-diameter viewed with a *Teleſcope*; and conſequently the more is the object magnified by the *Teleſcope*.

7° Since the ſemi-diameter of the object is increaſed in the ratio of the angle E F I, and the greater the angle E F I is, the leſs part of the object does it take in at one view; the *Teleſcope* exhibits ſo much a leſs part of the object, as it increaſes its diameter more.

And this is the reaſon that determined the mathematicians to look out for another *Teleſcope*, after having clearly found the imperfection of the firſt, diſcovered by chance. Nor were their endeavours vain, as appears from the *aſtronomical Teleſcope* hereafter to be deſcribed.

If the ſemi-diameter of the eye-glaſs have too ſmall a ratio to that of the object-glaſs, an object through the *Teleſcope* will not appear ſufficiently clear, by reaſon the great divergency of the rays will occaſion the ſeveral pencils repreſenting the ſeveral points of the object on the retina to conſiſt of too few rays. This too is found, that equal object lens's will not bear the ſame eye lens's if they be differently tranſparent, or there be a difference in their poliſh. A leſs tranſparent object-glaſs, or one leſs accurately ground, requires a more ſpherical eye-glaſs than another more tranſparent, &c.

Hence, though it be found by experience that a *Teleſcope* is good, if the diſtance of the focus of the object-glaſs be ſix inches, and the diameter of the plano concave eye-glaſs be one inch and one line, or of one equally concave on both ſides one inch and a half; yet is it by no means expedient to recommend to the maker either this, or any particular combination, but to try ſeveral eye-glaſſes, both greater and ſmaller, with the ſame object-glaſs, and take that through which objects appear moſt clear and diſtinct.

Hevelius recommends an object-glaſs convex on both ſides, whoſe diameter is four Dantzick feet; and an eye-glaſs concave on both ſides, whoſe diameter is 4½ digits or tenths of a foot. An object-glaſs, equally convex on both ſides, whoſe diameter is five feet, he obſerves, will require an eye-glaſs of five ½ digits; and adds, that the ſame eye-glaſs will alſo ſerve an object-glaſs of eight or ten feet.

Hence, as the diſtance of the object-glaſs and eye-glaſs is the difference between the diſtance of the virtual focus of the eye-glaſs, and the diſtance of the focus of the object-glaſs; the length of the *Teleſcope* is had by ſubſtracting that from this. That is, the length of the *Teleſcope* is the difference between the diameters of the object-glaſs and eye-glaſs, if that be plano convex and this plano concave; or the difference between the ſemi-diameters of the object-glaſs and eye-glaſs, if that be convex on both ſides, and this concave on both; or the difference between the ſemi-diameter of the object-glaſs and eye-glaſs, if that be convex on both ſides, and this concave on both; or the difference between the ſemi-diameter of the object-glaſs, and the diameter of the eye-glaſs, if that be convex on both ſides, and this plano concave; or the difference between the diameter of the object-glaſs, and the ſemi-diameter of the eye-glaſs, if that be plano convex, and this concave on both ſides.

Thus, *e. gr.* if the diameter of an object-glaſs on both ſides, be four foot, and that of an eye-glaſs concave on both ſides, be four and a half digits or tenths of a foot; the length of the *Teleſcope* will be one foot eight digits.

Aſtronomical TELESCOPE, is a *Teleſcope* conſiſting of an object-glaſs, and an eye-glaſs, both convex. See CONVEXITY.

It has its name, from its being wholly uſed in aſtronomical obſervations.

Conſtruction of the aſtronomical TELESCOPE.—The tube being prepared, an object-glaſs, either plano convex, or convex on both ſides, but to be a ſegment of a large ſphere, is fitted in at one end, At the other end, an eye-glaſs convex on both ſides, which is the ſegment of a ſmall ſphere, is fitted into the other end, at the common diſtance of the foci.

Theory of the aſtronomical TELESCOPE.—Now, an eye placed near the focus of the eye-glaſs, will ſee objects diſtinctly, but inverted, and magnified in the ratio of the diſtance of the focus of the eye-glaſs to the diſtance of the focus of the object-glaſs.

For 1° ſince it is very remote objects are viewed through *Teleſcopes*, the rays from any point of the object fall parallel on the object-glaſs; and, conſequently, after refraction, will meet in a point behind the glaſs, which point is the focus of the eye-glaſs. From this point they begin to diverge, and fall diverging on the eye-glaſs, where being refracted, they enter the eye parallel.

Hence, as all but myopes ſee diſtinctly by parallel rays, a *Teleſcope*, thus diſpoſed, will exhibit remote objects diſtinctly.

Suppoſe the common focus of the lens's in F (*Fig*. 44.) and make A B = B F. Since one of the rays A C, proceeding from the right ſide of the object, paſſes through A; the ray C E will be parallel to the axis A I, and therefore after refraction in the eye-glaſs, will fall in with it in its focus G. Since then, the eye is placed near it, and all the other rays proceeding from the ſame point of the object with E G, are refracted parallel thereto; the point in the right ſide of the object, will be ſeen in the right line E G.

After the like manner it appears, that the middle point of the object is ſeen in the axis G B, ſo that the object appears inverted.

3° From what has been already ſhewn, it appears that the ſemi-diameter of the object will be ſeen through the *Teleſcope*, under the angle E G I, which to the naked eye placed in A, is ſeen under the angle b A c. Suppoſe, now, I F equal to the diſtance of the focus I G; ſince the right angles at I are equal, E G F = E F I. Therefore drawing F M parallel to A C, we ſhall have I F M = B A C. The ſemi-diameter, therefore, viewed with the naked eye, is to that viewed through the *Teleſcope*, as I M to I E. Draw K E parallel to F M; we ſhall have I M : I E : : I F : I K. But by reaſon of the parallelism of the lens's; C E = B I = B F + F I = A B + F I; and by reaſon of the parallelism of the right lines C A, and E K; C E = A K, therefore B I = A K, conſequently, A B = I K. And therefore I M : I E : : I F : A B; that is, the ſemi-diameter ſeen with the naked eye, is to the ſemi-diameter view'd through the *Teleſcope*, in the ratio of the diſtance of the focus of the eye-lens I F, to the diſtance of the focus of the object-glaſs A B. *Q. e. d.*

Hence, 1°, as the *aſtronomical Teleſcope* exhibits objects inverted; it ſerves, commodiouſly enough, for obſerving the ſtars (it mattering little, whether they be ſeen erect or inverted) but for terreſtial objects, it is much leſs proper, as the inverting frequently prevents their being known.

2° If between the eye-glaſs, and its focus G, be a plain well poliſhed metal ſpeculum L N, of the length of an inch, and of an oval figure, inclined to the axis under an angle of 45°, the rays E P and M Q will be reflected in ſuch manner, as that concurring in *g*, they make an angle P g Q, equal to P G Q: and therefore the eye being placed in *g*, will ſee the object of the ſame magnitude as before, only in an erect ſituation. By the addition therefore of ſuch a ſpeculum, the *aſtronomical Teleſcope* is rendered fit to obſerve terreſtial objects. See Mirror.

3° Since the focus of a glaſs convex on both ſides, is diſtant from the glaſs itſelf a ſemi-diameter; and that of a plano convex glaſs, a diameter; if the object-glaſs be convex on both ſides, the *Teleſcope* will magnify the ſemi-diameter of the object, in the ratio of the ſemi-diameter of the eye-glaſs to the ſemi-diameter of the object-glaſs; but if the object-glaſs be a plano convex, in the ratio of the ſemi-diameter of the eye-glaſs, to the diameter of the object-glaſs.

4° Wherefore, ſince the ſemi-diameter of the eye-glaſs has a greater ratio to the ſemi-diameter of the object-glaſs, than to its diameter; a *Teleſcope* magnifies the ſemi-diameter of the object more, if the object-glaſs be a plano convex, than if convex on both ſides.

5° The ratio of the ſemi-diameter of the eye-glaſs, to the diameter or ſemi-diameter of the object-glaſs, is the leſs, as the eye-glaſs is a ſegment of a leſs ſphere, and the object-glaſs of a greater. A *Teleſcope* therefore magnifies the diameter of the object more, as the object-glaſs is a ſegment of a greater, and the eye-glaſs of a leſſer ſphere.—And yet the ratio of the ſemi-diameter of the eye-glaſs to the object-glaſs muſt not be too ſmall; if it be, it will not refract rays enough to the eye from each point of the object; nor will it ſeparate thoſe coming from different points ſufficiently: by which means the viſion will be rendered obſcure and confuſed. To this may be added, what we have ſhewn, of the ratio of the object-glaſs to the eye-glaſs in the Dutch *Teleſcope*.

De Chales obſerves, that an object lens of $2\frac{1}{4}$ feet will require an eye-glaſs of $1\frac{1}{2}$ digit or tenth of a foot; and an object-glaſs of eight or ten feet, an eye-glaſs of four digits; in which he is confirmed by Euſtachio de Divinis.

Huygens's great *Teleſcope*, wherewith Saturn's true face, and one of his ſatellites were firſt diſcovered, conſiſts of an object-glaſs of 12 feet, and an eye-glaſs of a little more than three digits. Though he frequently uſed a *Teleſcope* of 23 feet long, with two eye-glaſſes joined together, each in diameter $1\frac{1}{2}$ a digit; ſo that the two were equal to one of three digits. The ſame author obſerves, that an object-glaſs of 30 foot, requires an eye-glaſs of $3\frac{3}{10}$ digits; and gives us a table of proportions, for the conſtructing of *aſtronomical Teleſcopes*; an abridgment whereof we ſhall here give the reader.

Diſt. of Foc of Obj. Glaſs.	Diam. of Aperture	Diſt. of F. of E. Glaſs.	Magn. Diam.
Rhinland Feet.	Digits & Dec.	Digit. and Dec.	
1	0 55	0 61	20
2	0 77	0 85	28
3	0 95	1 05	34
4	1 09	1 20	40
5	1 23	1 35	44
6	1 34	1 47	49
7	1 45	1 60	53
8	1 55	1 71	56
9	1 64	1 80	60
10	1 73	1 90	63
15	2 12	2 33	72
20	2 45	2 70	89
25	2 74	3 01	100
30	3 00	3 30	109
40	3 46	3 56	126
50	3 87	4 26	141
60	4 24	4 66	154
70	4 58	5 04	166
80	4 90	5 39	178
90	5 05	5 56	183
100	5 48	9 03	199

If in two or more *Teleſcopes*, the ratio between the object and eye-glaſs be the ſame, the object will be magnified the ſame in both.

Hence ſome may conclude the making of large *Teleſcopes* a needleſs trouble. But it muſt be remembered, what we have already laid down: an eye-glaſs may be in a leſs ratio to a greater object-glaſs, than to a ſmaller: thus, *e. gr.* in Huygens's *Teleſcope* of 25 feet, the eye-glaſs is three digits. Now, keeping this proportion in a *Teleſcope* of 50 feet, the eye-glaſs ſhould be ſix digits; but the table ſhews, four and a half are ſufficient. Hence, from the ſame table it appears, that a *Teleſcope* of 50 feet magnifies in the ratio of 1 : 141; whereas that of 25 feet, only magnifies in the ratio of 1 : 100.

Since the diſtance of the lens's is equal to the aggregate of the diſtance of the foci of the object and eye-glaſſes; and the focus of a glaſs convex on each ſide is a ſemi-diameter's diſtance, and that of a plano convex, a diameter's diſtance, from the lens; the length of a *Teleſcope* is equal to the aggregate of the ſemi-diameters of the lens's, if the object-glaſs be convex on both ſides; and to the ſum of the ſemi-diameter of the eye-glaſs, and of the diameter of the object-glaſs, if the object-glaſs be a plano convex.

But as the ſemi-diameter of the eye-glaſs is very ſmall, in reſpect of that of the object-glaſs, the length of the *Teleſcope* is uſually eſtimated from the diſtance of the object-glaſs, *i. e.* from its ſemi-diameter, if it be a convex on both ſides, or its diameter, if plano convex. Thus a *Teleſcope* is ſaid to be 12 feet, if the ſemi-diameter of the object convex-glaſs on both ſides be 12 feet, &c.

Since myopes ſee near objects beſt; for them the eye-glaſs is to be removed nearer the object-glaſs, that the rays refracted through it may be the more diverging.

To take in the larger field at one view, ſome uſe two eye-glaſſes, the foremoſt whereof is a ſegment of a larger ſphere than that behind: to this it muſt be added, that if two lens's be joined immediately together, ſo as one touch the other, the focus is removed to double the diſtance which that of one of them would be at.

To ſhorten the aſtronomical Teleſcope, *i. e.* to conſtruct a *Teleſcope* ſo, as that, though ſhorter than the common one, it ſhall magnify as much:

1° Having provided a drawing tube, fit in an object lens E G (*Fig.* 43.) which is a ſegment of a moderate ſphere; let the firſt eye-glaſs B D be concave on both ſides, and ſo placed in the tube, as that the focus of the object-glaſs A may be behind it, but nearer to the centre of the concavity G. Then will the image be thrown in Q, ſo as that G A : G I : : A B : Q I. Laſtly, fit in another object-glaſs, convex on both ſides, and a ſegment of a leſſer ſphere, ſo as that its focus may be in Q.

This *Teleſcope* will magnify the diameter of the object, more than if the object-glaſs were to repreſent its image at the ſame diſtance E Q, and conſequently a ſhorter *Teleſcope* conſtructed this way, is equivalent to a longer in the common way. The demonſtration may be ſeen in Wolfius.

Sir Iſ. Newton furniſhes us with another method of contracting the *Teleſcope*, in his catoptrical or reflecting *Teleſcope*; the conſtruction whereof ſee hereafter.

Land Teleſcope, or *Day* Teleſcope, a *Teleſcope* conſiſting of more than two lens's, commonly of a convex object-glaſs, and three convex eye-glaſſes; or, a *Teleſcope* that exhibits objects erect, yet different from that of Galileo.

It has its name from its being uſed to view objects in the day-time, on or about the earth.

To conſtruct a Land or Day Teleſcope.—A tube being provided, fit in an object-glaſs, which is either convex on both ſides, or plano convex, and a ſegment of a large ſphere: to this add three eye-glaſſes, all convex on both ſides, and ſegments of equal ſpheres; diſpoſing them in ſuch manner, as that the diſtance of any two may be the aggregate of the diſtances of their foci.

Theory of a Land Teleſcope.—Then will an eye applied to the laſt lens, at the diſtance of its focus, ſee objects very diſtinctly, erect, and magnified in the ratio of the diſtance of the focus of one eye-glaſs L K (*Fig.* 44.) to the diſtance of the focus of the object-glaſs A B.

For, 1° the rays, from what has been already ſaid, falling on the object parallel, the image of the object will be repreſented invertedly at the diſtance of the principal focus: wherefore, ſince this image is in the focus of the firſt eye-glaſs, the rays, after a ſecond refraction, will become parallel; and thus falling on the third lens, after a third refraction, they exhibit the inverted image invertedly, that is, an erect image of the object. Since then this image is in the focus of the third eye-glaſs, the rays, after a fourth refraction, will become parallel; and in this diſpoſition the eye will receive them, and conſequently there will be diſtinct viſion, and the object will appear erect.

2° If I Q = I K, that is, equal to the diſtance of the focus of the object-glaſs, an eye placed in M, will ſee the ſemi-diameter of the object increaſed in the ratio of L M to K I; but the ray A Q, proceeding from the focus Q of the object lens A B, after refraction becomes parallel to the axis I L, conſequently the firſt eye lens C D joins it to the axis in M the diſtance of a ſemi-diameter.

And ſince the focus of the ſecond eye-glaſs E F, is alſo in M, the ray F H, after refraction, will be parallel to the axis N O, and therefore the third eye-glaſs will join it at the axis in P; but the ſemi-diameters of the lens's G H and C D are ſuppoſed equal; therefore P O = L M. Wherefore ſince the right angles at O and L are equal, as alſo H O = C L, the angle O P H is equal to C M L. The ſemi-diameter of the object therefore appears the ſame in P as in M, and is conſequently magnified in the ratio of L M, or P O to K I.

Hence, 1° an *aſtronomical teleſcope* is eaſily converted into a *land teleſcope*, by uſing three eye-glaſſes for one; and the *land teleſcope*, on the contrary, into an aſtronomical one, by taking away two eye-glaſſes, the faculty of magnifying ſtill remaining the ſame.

2° Since the diſtance of the eye-glaſſes is very ſmall, the length of the *teleſcope* is much the ſame as if you only uſed one.

3° From the conſtruction, it is evident, that the length of the *teleſcope* is found by adding five times the ſemi-diameter of the eye-glaſſes to the diameter of the object-glaſs, if a plano convex; or its ſemi-diameter, if convex on both ſides.

Huygens firſt obſerved, both in the *aſtronomical* and *land teleſcope*, that it contributes conſiderably to the perfection of the inſtrument, to have a ring of wood or metal, with an aperture, a little leſs than the breadth of the eye-glaſs, fixed in the place where the image is found to radiate upon the lens next the eye: by means hereby the colours, which are apt to diſturb the clearneſs and diſtinctneſs of the object, are prevented, and the whole compaſs taken in at a view, perfectly defined.

Some make *land teleſcopes* of three lens's, which yet repreſent objects erect and magnified as much as the former. But ſuch *teleſcopes* labour under very great inconveniencies, both as the objects herein are tinged with falſe colours, and as they are diſtorted about the margin.

Some again uſe four lens's, and even more; but ſince ſome part of the rays is intercepted in paſſing every lens, objects are hereby exhibited dim and feeble.

Reflecting, or catoptric, or cata-dioptric TELESCOPE, is a *teleſcope* which, inſtead of lens's, conſiſts chiefly of mirrours, and exhibits remote objects by reflection, inſtead of refraction. See CATOPTRICKS, &c.

This inſtrument is the invention of the great Sir Iſ. Newton: what determined him to apply his thoughts this way, was the different refrangibility, which, in his new doctrine of light and colours, he found the rays of light were of. In effect, as he found the ratio between the greateſt and leaſt refractions of the different rays to be nearly as 28 to 27, it eaſily followed, that the rays could never be all refracted parallel from any lens, but would ſome of them divaricate more, ſome leſs; beſide that the foci would be diſturbed; the focus of the moſt refrangible rays being nearer the lens than that of the leaſt refrangible ones, by a diſtance which is the 27th part of the diſtance between the object-glaſs, and the focus of the leaſt refrangible ones. See RAY, and REFRANGIBILITY.

Hence he concluded, that refraction was too unequal a principle; and that lens's, of whatever figures, whether ſpherical, parabolical, or any of the other conic ſections, and how truly ſoever ground, would never ſuffice for the perfection of *teleſcopes*.

Upon this he had recourſe to another more equable principle, *viz. reflection*; and made a *teleſcope*, conſiſting of ſpecula, or mirrours: the firſt hint whereof he owns he took from Dr. Gregory's optics.

Conſtruction of a reflecting TELESCOPE.—Provide a tube A B C D (*Fig.* 45.) open in A D, and cloſed in B C, well blacked within-ſide, and of a length equal to the diſtance of the focus from the concave ſpeculum E F. To the bottom B C, is to be fitted a concave metallic ſpeculum *a b*, poliſhed to the greateſt poſſible perfection; or rather, to have the objects clearer, and more diſtinct, let it be a glaſs ſpeculum, concave on its fore-ſide, and equally convex on the hind-ſide; for unleſs it be of the ſame thickneſs every where, it will reflect the images of objects tinged with a ſpurious colour, and indiſtinct. Towards the other end of the tube is fixed an iron piece H L, to which is cemented a plain metallic ſpeculum; or, which is better, a triangular priſm of glaſs or cryſtal G, whoſe upper angle G is a right angle, the two others half right; the faces or planes that meet in the angle G to be ſquare, and the third a parallelogram. This priſm is to be ſo diſpoſed, as that a ray reflected from the ſpeculum, paſſing through the middle of the face G M, may cut it at right angles; but be inclined to the rectangle M N in an angle of 45°. Its diſtance from the concave ſpeculum E F, is to be ſuch, as that the rays *a c* and *b d* reflected from the concave ſpeculum, may, after a ſecond reflection from the baſe of the priſm, concur in the point *e*; that is, the diſtance of the focus *e* from the reflecting ſurface of the priſm, and the diſtance of that from the concave ſpeculum, is to be equal to the diſtance of the focus from the concave ſpeculum. In I is placed a plano convex lens, whoſe focus is in *e*, that the reflected rays may enter the eye parallel. Laſtly, this lens is covered with a thin braſs or leaden plate, having a little round perforation therein, for the eye to look through, by which means all foreign rays are excluded, which would otherwiſe occaſion confuſion.

In the firſt *teleſcope* of this kind which the inventor made, the ſemi-diameter of the concave metallic ſpeculum was 12 $\frac{2}{3}$ digits, or tenths of an inch; from which, therefore, the focus was 6 $\frac{1}{2}$ digits diſtant. The diameter of the eye-glaſs was $\frac{1}{6}$ of a digit; ſo that it magnified the diameter of the object in the ratio of 1 to 38: but he found that objects were ſhewn ſomewhat obſcure hereby; on which account, he afterwards recommended glaſs ſpecula inſtead of metallic ones; adding, that there is nothing more required to the perfection of this *teleſcope*, but that the art of poliſhing glaſs be brought to greater perfection; for that ſome inequalities which do not hurt lens's, are found to affect ſpecula, and prevent objects being ſeen diſtinctly.

The ſame author obſerves, that if the length of the inſtrument be 6 feet, and conſequently the ſemi-diameter of the concave ſpeculum 12, the aperture of the ſpeculum is to be 6 inches; by which means the object will be increaſed in the ratio of 1 to 200 or 300.

If it be longer or ſhorter, the aperture muſt be as the cube of the quadrato quadrate root of the length, and its magnifying power as its aperture. The ſpeculum he orders to be an inch or two broader than the aperture.

Aerial TELESCOPE, a kind of *aſtronomical teleſcope*, the lens's whereof are uſed without a tube.

In ſtrictneſs, however, the *aerial teleſcope* is rather a particular manner of mounting and managing long *teleſcopes* for cœleſtial obſervations in the night-time, whereby the trouble of long unweildy tubes is ſaved, than a particular kind of *teleſcope*: the contrivance we owe to the noble Huygens.

Conſtruction of the aerial TELESCOPE.—1° a tall poll or maſt A B (*Fig.* 46. N° 2.) the length the tube ſhould be of is fixed perpendicularly in the ground. Before the erecting it, one ſide is planed ſmooth, and upon it two rulers fixed parallel to each other an inch and half apart, including a kind of groove or channel between them, reaching from top almoſt to bottom. At the top of the pole is fitted a little truckle A, moveable on its axis, and over it is drawn a cord G g, double the length of the pole, and the thickneſs of the little finger, returning into itſelf, and furniſhed with a piece of lead, H, equal in weight to the lens and a moveable arm to be ſuſtained thereby.

Then a wooden lath C D, two foot long, is framed ſo as that it may ſlide freely in the channel; and in the middle thereof is affixed a wooden arm E, ſtanding out a foot from the pole, and on its extremity bearing another, F f, a foot and half long, fixed to it at right angles, both of them parallel to the horizon.

2° An object-glaſs is included in a hollow cylinder I K, three inches long: to this cylinder is fixed a ſtaff K L, near an inch thick, and a foot long, which reſts on a braſs ball M, that moves freely in its cup or ſocket underneath: only, on occaſion, the ball and ſocket are fixed by a ſcrew. That the lens thus equally ballanced, may be moved with a ſmall force, a weight N I of about a pound, is ſuſpended by a ſtrong wire N F, by bending of which the common centre of gravity of the weight and the lens is eaſily made to coincide with that of the ball. To the ſtaff K L, is fixed a braſs ſtyle L, which is bent downwards till its point be as much below the centre of the ſtaff, as the centre of the ball is. To the point is tied a fine ſilken thread L V, which of conſequence will be parallel to the ſtaff K L.

3° An eye-glaſs O is included in a ſhort cylinder, and the ſtaff P V fixed to the ſame. To this is hung a little weight S, ſufficient to make a balance. In Q is fixed a handle R, which carries a tranſverſe axis, to be held in the obſerver's hand, and the ſtaff P V directed towards the object-glaſs, is tied to the thread L V. The thread paſſed through a hole V, is wound about a little peg T, fixed in the middle of the ſtaff, by the turning whereof the length of the thread is ſhortened or prolonged at pleaſure.

4° That the obſerver may be able to hold the eye-glaſs ſteady, he has a fulcrum or prop under his arm, the ſtructure whereof appears from inſpection of the figure. Laſtly, to keep off the feeble light flowing from the air upon the eye, it is conveniently covered with a circle Y, perforated in the middle, fitted on to a moveable and flexible arm.

Binocular TELESCOPE. See the article BINOCULAR.

TELESCOPICAL *ſtars* are ſuch as are not viſible to the naked eye; but diſcoverable only by the help of a *teleſcope*. See STAR.

All ſtars leſs than of the ſixth magnitude, are *teleſcopic* to a middling eye.

TELLER, an officer in the exchequer, of which there are four; whoſe buſineſs is to receive all monies due to the crown, and thereupon to throw down a bill through a pipe into the tally-court, where it is received by the auditor's clerks, who attend there to write the words of the ſaid bill upon a tally, and then deliver it to be entered by the clerk of the pells, or his clerk. See EXCHEQUER, TALLY, &c.

The tally is then ſplit or cloven by the two deputy-chamberlains, who have their ſeals, and whilſt the ſenior deputy reads the one part, the junior examines the other part with the other two clerks.

The *tellers* places are in the king's gift, and they have, beſides their chief clerk or deputy, four other clerks, for the diſpatch of buſineſs. See Exchequer.

TELLONIUM. See the article Thelonium.

TELLUS, *Terras*, ♁, in aſtronomy. See Earth.

TEMPER, in a physical / musical / mechanical ſenſe. See Temperament / Temperament *in muſic*. / Tempering.

TEMPERAMENT, Temperamentum, Temperature, in phyſics, that habitude or diſpoſition of a body ariſing from the proportion of the four primary elementary qualities it is compoſed of. See Quality and Element.

The notion of *temperament* ariſes from that of mixture, where different elements, as earth, water, air and fire (or, to ſpeak more juſtly in the peripatetic way, hot, cold, moiſt and dry) are blended together; by their oppoſition, they tend mutually to weaken and encroach on each other: and from the whole ariſes a ſort of temperate craſis, or coalition of them all in this or that proportion; whence, according to the quality that prevails or predominates, we ſay a *hot* or *cold*, a *moiſt* or *dry temperament*. See Mixture, Crasis, &c.

It is controverted among the ſchool-men, whether the *temperament* properly comprehends all the four primary qualities? or, whether thoſe do not all ceaſe, and a new one, a fifth, ſimple quality, reſult from the total alteration made in the other four, by their mutual action on each other?

Authors diſtinguiſh two kinds of *temperaments*, viz. *uniform* and *difform*.—The firſt, wherein all the qualities are mixed in an equal degree.—The ſecond, where in an unequal one.

The uniform *temperament* can only be one; the difform admits of eight different combinations, ſince either any one, or any two of the qualities may prevail; whence *hot* and *moiſt*, *cold* and *moiſt*, &c.—Further, ſome conſidering that the qualities which do prevail, may not be in equal degree; and the like of thoſe which do not prevail, make ſeveral other combinations or *temperaments*; and add 12 more to the number.—In effect, as there are infinite degrees between the higheſt and loweſt pitch of any one of the elements, the different *temperatures* may be ſaid to be infinite. See Degree.

Temperament, in medicine, is more particularly underſtood of the natural habitude and conſtitution of the body of man, or the diſpoſition of the animal humours in any ſubject. See Constitution and Humour.

The notion of *temperament* ariſes hence, that the blood flowing in the veins and arteries, is not conceived to be a ſimple fluid, but a ſort of imperfect mixt, or an aſſemblage of ſeveral other fluids: for it does not only conſiſt of the four ſimple, or primary qualities, but of four other ſecondary ingredients compounded thereof, into which it is ſuppoſed to be reſolvable, *viz. choler*, *phlegm*, *melancholy* and *blood*, properly ſo called. See Blood, Choler, Bile, Phlegm, &c.

Hence, as this or that ingredient humour prevails in a perſon, he is ſaid to be of a choleric, phlegmatic, melancholic, ſanguine, &c. *temperament*. See Sanguine, Melancholy, Choleric, &c.

The ancient phyſicians brought theſe animal *temperaments* to correſpond with the univerſal *temperament* above deſcribed: thus the *ſanguine temperament* was ſuppoſed to coincide with *hot* and *moiſt*, the *phlegmatic* with *cold* and *moiſt*, the *melancholic* with *dry* and *cold*, &c.

Galen introduced the doctrine of *temperaments* into phyſic from the peripatetic ſchool, and made it as it were the baſis of all medicine. The whole of curing diſeaſes conſiſted in *tempering* the degrees of the qualities, humours, &c. See Galenical, Degree, &c.

On the footing medicine now ſtands, the *temperaments* are much leſs conſidered. Dr. Quincy and other mechanical writers pare away the greateſt part of the Galenic doctrine, as uſeleſs and uncertain, and conſider the *temperaments* as no other than thoſe diverſities in the blood of different perſons, whereby it becomes more apt to fall into certain combinations in one body than another, whether into choler, phlegm, &c. whence, according to them, people are denounced *choleric*, *phlegmatic*, &c. See Blood.

The ancients diſtinguiſhed two kinds of *temperaments* in the ſame body: the one *ad pondus*, in reſpect of weight; the other *ad juſtitiam*.

Temperamentum *ad pondus*, is where the elementary qualities are found in equal quantities, and in equal proportions; ſuch as they are ſuppoſed to be in the ſkin of the fingers, without which thoſe parts would want the power of diſtinguiſhing objects with ſufficient accuracy.

Temperamentum *ad juſtitiam*, is that which contains unequal portions of thoſe qualities, but yet in ſuch proportion as is neceſſary for the diſcharge of the function proper to the part.—Such is the *temperament* in a bone, which contains more earthy than aqueous parts, to make it more hard and ſolid for its office of ſuſtaining.

Galen obſerves, that the *temperament ad pondus* is only imaginary; and that though it were real, it could not ſubſiſt above one moment.

Dr. Pitcairn looks on the *temperaments*, or conſtitutions, as ſo many native diſeaſes; according to him, any one indued with whatever *temperament* has the ſeeds of a real diſeaſe within him; a particular *temperament* ſuppoſing that ſome ſecretions are in greater proportion than is proper for life indefinitely long.

As the diverſities of *temperaments* are no other than diverſities of proportion in the liquids, which may be diverſified infinite ways; ſo there may be an infinite number of *temperaments*: though authors have only ſuppoſed four. The ſanguine, which is uſually reckoned a *temperament*, Pitcairn ſays, is no other than a plethora. See Plethora.

Temperament, Temperamento, in muſic, denotes a rectifying or mending the falſe or imperfect concords, by transferring to them part of the beauty of the perfect ones. See Concord.

The degrees of the octave, which may be called its *elements*, as being the ſmalleſt intervals it is reſolvable into, are two greater ſemitones, two leſſer tones, and three greater tones. See Tone, Octave and Degree.

Now the different ſituation of theſe elements, with reſpect to each other, occaſions that intervals or concords of the ſame name, as thirds, fourths, &c. do not conſiſt of the ſame degrees or elements, though there be always the ſame number of them: but one fourth, for inſtance, is agreeable and perfect, and another not.

To mend theſe imperfect concords, the muſicians have bethought themſelves to *temper*, *i. e.* give them part of the agreeableneſs of perfect ones. In order to this, they take a medium between the two, and this they call a *temperament*, which neceſſarily produces a new diviſion of the octave, or which amounts to the ſame, new elements.

For inſtance, whereas naturally its elements are the greater ſemitone, and the greater and leſſer tone; they take a middle tone formed of the greater and the leſs: and the only elements now are the greater ſemitone, and this mean tone, which renders the five intervals that are tones equal, and thoſe that are ſemitones leſs unequal to theſe.

One might alſo divide each of the five tones of the octave into ſemitones, which, joined to the two it naturally has, make twelve: in which caſe, the whole octave would be divided into twelve equal parts, which would be mean ſemitones.

It is eaſy to form various other kinds of *temperaments*: all the difficulty is to find ſuch as are free from two great inconveniencies, *i. e.* which do not alter either all the concords too much, or, at leaſt, ſome of them.

All ſuch diviſions of the octave are called *tempered*, or *temperative ſyſtems*. See Scale *of Muſic*.

TEMPERATE *Zone*. See the article Zone.

TEMPERATURE. See the article Temperament.

TEMPERING, in the mechanic arts, the preparing of ſteel and iron, ſo as to render them more compact, hard, and firm; or even more ſoft and pliant; according to the reſpective occaſions. See Iron, and Steel.

Theſe metals are *tempered* by plunging them, while red-hot, in ſome liquor prepared for the purpoſe: ſometimes pure water is uſed for that purpoſe; and, in effect, lockſmiths, &c. ſcarce uſe any other.

Sometimes a compoſition of divers juices, liquors, &c. is uſed; which is various, according to the manner and experience of the workman; as vinegar, mouſe-ear-water, nettle, or ſpaniſh reddiſh-water, the water oozing from broken glaſſes, ſoot, ſalt, oil, diſtilled wine, ſal armoniac, &c.

To harden and *temper* Engliſh, Flemiſh, and Swediſh ſteel, you muſt give them a pretty high heat, then ſuddenly quench them in water to make them hard: but Spaniſh and Venice ſteel will need but a blood-red heat before it be quenched. See Heat.

If the ſteel be too hard, or brittle for an edge-tool, &c. let it down by rubbing a piece of grindſtone or whetſtone hard upon the work, to take off the black ſcurf: then brighten, or heat it in the fire; and as it grows hotter, you will ſee the colour change by degrees, coming firſt to a ſtraw, or light goldiſh colour, then to a darker goldiſh colour, and at laſt to a blue colour. Chuſe ſuch of theſe colours as the work requires, then quench it ſuddenly in water.

The light gold colour is for files, cold chiſſels, and punches, that punch iron and ſteel: the dark goldiſh colour for punches to uſe on braſs, &c. The blue colour gives the *temper* for ſprings, &c.

The *tempering* of files and needles is performed in a peculiar manner. See File, and Needle.

The ancients appear to have had ſome better method of *tempering* than any of the moderns are acquainted withal; witneſs their works in porphyry; a ſtone ſo hard, that none of our tools make any impreſſion upon it. See Porphyry.

TEMPEST, Tempestas, a ſtorm, or violent commotion of the air, with or without rain, hail, ſnow, &c. See Wind, Hurricane, Whirlwind, Water-*ſpout*, Earthquake, &c.

TEMPLARS, Templers, or *Knights of the* Temple, a religious-military order, firſt eſtabliſhed at Jeruſalem, in favour of pilgrims travelling to the Holy Land. See Knight.

The original of this order, the firſt military order in the world, is this: In 1118, ſome pious noble perſons devoted themſelves to the ſervice of God, in the preſence of the patriarch of Jeruſalem; promiſing to live in perpetual chaſtity, obedience, and poverty, after the manner of canons.

The two principal perſons were Hugo de Paganis, and Geoffroy of St. Omers. Baldwin II. then king of Jeruſalem, gave them an apartment in his palace: near the temple, at Jeruſalem, nor far from the ſepulchre of our ſaviour; whence their denomination *Templars*.

Soon afterwards, the canons of the temple gave them a piece of ground hard by the ſaid temple, to build them regular houſes on; and the king, the lords, the patriarch, and the prelates, each gave them ſomewhat out of their revenue, for food and cloaths.

Their firſt undertaking, and what they had firſt in view at their inſtitution, was to guard the highway againſt robbers, *&c.* chiefly for the ſafety of pilgrims and croiſes. See CROISE.

The principal articles of their rule were: That they ſhould hear the holy office throughout every day; or, that when their military duties ſhould prevent this, they would ſupply it by a certain number of pater noſters: that they would abſtain from fleſh four days in the week, and on Fridays from eggs and milk-meats: that each knight might have three horſes, and one eſquire; and that they ſhould neither hunt, nor fowl.

Their firſt rule was that of St. Bernard. Nine years after their foundation, a particular rule was preſcribed them in the council of Troyes.

In every nation they had a particular governor, called *maſter of the temple*, or of the *militia of the temple*. Their grand maſter had his reſidence at Paris.

The order of *templars* was aboliſhed at the beginning of the XIVth century, under Clement V. Edward II. of England, and Philip the Fair of France. In 1607, thoſe in England were all arreſted, and ſeven burnt alive. And in 1312, the order was quite ſuppreſſed in the council of Vienne, and 50 burnt alive.

The crimes they were charged withal were apoſtatizing to the Saracens, and holding correſpondence with them. Some authors will have it, theſe crimes were only pretended; and that the true reaſon of the ſuppreſſion of the order, was the immenſe riches they were poſſeſſed of. But though this might be ſome reaſon for their ſuppreſſion, it could be none for burning them alive: add to this, that their effects were given to the hoſpitallers, or knights of St. John. What then did the kings of England, *&c.* get by their ſuppreſſion? And what was it to them which of thoſe orders had the effects? See HOSPITALLER.

TEMPLE,* TEMPLUM, a public building, erected in honour of ſome deity, either true or falſe; and wherein the people meet to pay religious worſhip to the ſame. See GOD, WORSHIP, BUILDING, *&c.*

* The word is formed from the Latin, *templum*, which ſome derive from the Greek, τεμενος, ſignifying the ſame thing; and others from τεμνω, *abſcindo, I cut off, I ſeparate*, in regard a *temple* is a place ſeparated from common uſes; others with more probability derive it from the old Latin word *templare, to contemplate*. It is certain, the ancient augurs gave the name *templa* to thoſe parts of the heavens which they marked out for the obſervation of the flight of birds.—Their formula was this: *templa teſqua ſunto*. See AUGUR.

Clemens Alexandrinus and Euſebius refer the origin of *temples* to the ſepulchres built for the dead. Herodotus and Strabo will have the Ægyptians to have been the firſt who built *temples* to the gods. The firſt, erected in Greece, is aſcribed to Deucalion, by Apollonius, *Argonaut. lib.* 3.

In antiquity we meet with many people who would not build any *temples* to their gods, for fear of confining them to too narrow bounds. They performed their ſacrifices in all places indifferently, from a perſuaſion, that the whole world is the *temple* of God, and that he requires no other.—This was the doctrine of the magi, followed by the Perſians, the Scythians, the Numidians, and many other Nations mentioned by Herodotus, lib. 1. Strabo, lib. 15. and Cicero in his ſecond oration againſt Verres. See MAGI, *&c.*

The Perſians, who worſhipped the ſun, believed it would wrong his power, to incloſe him in the walls of a *temple* who had the whole world for his habitation: and hence, when Xerxes ravaged Greece, the Magi exhorted him to deſtroy all the *temples* he met with.

The Sicyonians would build no *temple* to their goddeſs Coronis; nor the Athenians, for the like reaſon, erect any ſtatue to Clemency, who, they ſaid, was to live in the hearts of men, not within ſtone-walls.

The Bithynians had no *temples*, but the mountains to worſhip on; nor the ancient Germans any other but the woods. See DRUID, *&c.*

Even ſome philoſophers have blamed the uſe and building of *temples*, particularly Diogenes, Zeno, and his followers the Stoics.—But it may be ſaid, that if God have no need of *temples*, men have need of places to meet in for the public offices of religion! Accordingly, *temples* may be traced back even into the remoteſt antiquity. See Hoſpinian, *de Origine Templorum*.

The Romans had ſeveral kinds of *temples*; whereof thoſe built by the kings, *&c.* conſecrated by the augurs, and wherein the exerciſe of religion was regularly performed, were called, by way of eminence, *templa, temples.*—Thoſe that were not conſecrated, were called *ædes*.—The little *temples*, that were covered or roofed, they called *ædiculæ*.—Thoſe open, *ſacella*.—Some other edifices conſecrated to particular myſteries of religion, they called *fana* and *delubra*.

All which kinds of *temples*, Vitruvius tells us, had other particular denominations, according to the form and manner of their conſtruction; as will be hereafter ſpecified.

Indeed, the Romans out-did all nations in the point of *temples*: they not only built *temples* to their gods, to their virtues, to their diſeaſes, *&c.* but alſo to their emperors, and that in their life-time; inſtances whereof we meet withal in medals, inſcriptions, and other monuments. Horace compliments Auguſtus hereupon, and ſets him above Hercules, and all the heroes of fable; in that thoſe were only admitted into *temples* after their death, whereas Auguſtus had his *temples* and altars while living *. See APOTHEOSIS, and CONSECRATION.

> *Præſenti tibi maturos largimur honores;*
> *Jurandaſque tuum per nomen ponimus Aras.* Epiſt. ad Aug.

* Suetonius, on this occaſion, gives an inſtance of the modeſty of that emperor, who would allow of no *temples* being erected to him in the city; and even in the provinces, where he knew it uſual to raiſe *temples* to the very proconſuls, refuſed any but thoſe erected in the name of Rome as well as his own. Vid. Suet. in Octav. c. 52.

TEMPLE, in architecture.—The ancient *temples* were diſtinguiſhed, with regard to their conſtruction, into various kinds; as,

TEMPLE *in antæ, Ædes in antis*. Theſe, according to Vitruvius, were the moſt ſimple of all *temples*, having only angular pilaſters, called *antæ*, or *paraſtatæ*, at the corners, and two tuſcan columns on each ſide the doors. See ANTA, and PARASTATA.

Tetraſtyle-TEMPLE, or ſimply *tetraſtyle*, was a *temple* that had four columns in front, and as many behind—as, the *temple* of Fortuna Virilis at Rome. See TETRASTYLE.

Proſtyle-TEMPLE, that which had only columns in its front, or fore-ſide—as that of Ceres at Eleuſis, in Greece. See PROSTYLE.

Amphiproſtyle, or double proſtyle-TEMPLE, that which had columns both before and behind, and which was alſo tetraſtyle. See AMPHIPROSTYLE.

Periptere-TEMPLE, that which had four rows of inſulated columns around, and was hexaſtyle, *i. e.* had ſix columns in front—as the *temple* of Honour at Rome. See PERIPTERE.

Diptere-TEMPLE, that which had two wings, and two rows of columns around, and was alſo octoſtyle, or had eight columns in front—as that of Diana at Epheſus. See DIPTERE.

Pſeudo Diptere TEMPLE, } See { PSEUDO *Diptere*.
Hypæthros TEMPLE, } See { HYPÆTHROS.
Monoptere TEMPLE, } See { MONOPTERE.

TEMPLES, among us, denote two inns of court, thus called, becauſe anciently the dwelling-houſe of the *knights-templars*. See TEMPLAR.

At the ſuppreſſion of that order, they were purchaſed by ſome profeſſors of the common law, and converted into hoſpitia, or inns. See INN.

They are called the *inner* and *middle temple*, in relation to Eſſex-houſe, which was alſo a part of the houſe of the *templars*, and called the *outer temple*, becauſe ſituate without Temple-Bar.

In the *middle temple*, during the time of the *templars*, the king's treaſure was kept: as was alſo that of the kings of France in the houſe of the *templars* at Paris.

The chief officer was the maſter of the *temple*, who was ſummoned to parliament in 49 Hen. III. And from him the chief miniſter of the *temple*-church is ſtill called *maſter of the temple*. See MASTER.

TEMPLERS. See the article TEMPLARS.

TEMPLES, TEMPORA, in anatomy, a double part of the head, reaching from the forehead and eyes to the two ears. See HEAD.

The *temples* are chiefly formed of two bones, called *oſſa temporis*. See TEMPORIS *Oſſa*.

Theſe parts, according to phyſicians, were called *tempora*, from their ſhewing the age or time of man, by the colour of the hair, which turns white in this part before any other; which Homer ſeems to have been aware of, by his calling men *Poliocrotaphi, q. d.* grey-templed.

TEMPORAL, TEMPORALIS, a term frequently uſed for *ſecular*—in which ſenſe it ſtands oppoſed to *eccleſiaſtical*. See SECULAR.

Pope Boniface wrote to Philip the Fair of France, that he was ſubject to him both in ſpirituals, and *temporals*.—At preſent all the doctors on this ſide the Alps own the ſupremacy of kings in temporals. See SUPREMACY.

TEMPORAL *Action*, } See the articles { ACTION.
TEMPORAL *Augment*, } See the articles { AUGMENT.

TEMPORALIS, in anatomy, a muſcle, which ariſes by a ſemi-circular fleſhy beginning, from a part of the os frontis, the lower part of the parietale, and upper part of the temporale; from whence going under the zygoma, and gathering together, as in a centre, it is inſerted, by a ſhort and ſtrong tendon, into the proceſſus corone of the lower jaw, which it pulls upwards.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 12, *fig.* 6. *n.* 2. *fig.* 7. *n.* 1.

This muſcle is alſo called *crotaphytes*, and is covered with a ſtrong tendinous faſcia. See CROTAPHYTES.

TEMPORALITIES, or TEMPORALTIES, the temporal revenues of an eccleſiaſtic; particularly, ſuch lands, tenements, or lay-fees, tithes, &c. as have been annexed to biſhops ſees by our kings, or other perſons of high rank in the kingdom. See BISHOP, and CUSTOS.

The *temporalities* of a biſhop, &c. ſtand oppoſed to his ſpiritualities. See SPIRITUALITIES.

The canoniſts on the other ſide the Alps anciently gave the pope a power over the *temporalities* of kings. Yet pope Clement V. owned frankly, that his predeceſſor Boniface VIII. had exceeded the juſt bounds of his authority, in meddling with the *temporalities* of the king of France. Fevret.

TEMPORALIUM *Cuſtos*,	See	CUSTOS.
TEMPORALIUM *Reſtitutione*,		RESTITUTIONE.
TEMPORARY *Fortification*,		FORTIFICATION.
TEMPORARY *Hours*,		HOUR.

TEMPORIS *Os*, TEMPLE-*Bone*, a bone on each ſide the head: thus denominated from its ſituation in the temples. See TEMPLE.

The figure of the *os temporis* is nearly circular: the fore and upper parts are very thin, conſiſting only of one table: the lower and hind parts are thick, hard, and uneven. See CRANIUM.

It is joined to the os ſincipitis, by the ſquammous ſuture; whence, in that part, it is called *os ſquammoſum*. Its lower part is joined to the os occipitis, and ſphenoides: to which latter, as likewiſe to the bones of the upper jaw, it is joined by means of certain proceſſes, and in that part is called *os petroſum*.—See *Tab. Anat.* (Oſteol.) *fig.* 2. *lit. b.* & *fig.* 13. *lit. a.* See alſo the article PETROSUM.

Each of the *oſſa temporum* has two ſinus's; the exterior whereof is lined with a cartilage, and receives the proceſs of the lower jaw; the interior receives the lower part of the ſinus lateralis of the dura mater. Each likewiſe has four proceſſes; the *os jugale*, *proceſſus mamillaris*, *ſtyloides*, and *os petroſum*. See each deſcribed under its proper article, MAMILLARIS, &c.

TEMPTATION, TENTATIO, in theology, an induction, or ſolicitation to evil; whether ariſing from the world, the fleſh, or the devil.

Myſtic divines ſpeak of *profitable temptations*, which are thoſe trials the ſoul is to paſs through, before it arrive at the unitive life, and the peace within.—When it ſurmounts that dryneſs and darkneſs it falls into, through a ſuſpenſion of the effects of divine love, and can reſiſt the world, and all the allurements it preſents; thoſe *temptations* are called *tentationes utiles* and *fructuoſæ*.

TEMPTATION, TENTATIO, in our ancient law books, is uſed for a trial, proof, or aſſay.—*Tentatio panis fiat bis in anno.* Chart. Edw. I. See ASSAY, &c.

TENABLE,* in the military art, ſomething that may be defended, kept, and held againſt aſſailants.

* The word is French, formed from *tenir*; as that from the Latin, *tenere, to hold.*

Tenable is little uſed, but with a negative: when a place is open on all ſides, and its defences all beaten down, it is no longer *tenable*. When the enemy has gained ſuch an eminence, this poſt is not *tenable*.

TENAILLE, in fortification, a kind of out-work, conſiſting of two parallel ſides, with a front, wherein is a re-entering angle. See OUT-WORK, and ANGLE.

In ſtrictneſs, that angle, and the faces which compoſe it, are the *tenaille*. See QUEUE *d'aronde*.

The *tenaille* is of two kinds: *ſimple* and *double*.

Simple, or ſingle TENAILLE, is a large out-work, as DABCE, conſiſting of two faces or ſides AB and CB, including a re-entering angle B.—See *Tab. Fortif. fig.* 6. & *fig.* 21. *lit. d.*

Double, or flanked TENAILLE, is a large out-work conſiſting of two ſimple *tenailles*, or three ſalians, and two re-entering angles, FGH and HIK.—See *Tab. Fortif. fig.* 7 and 21. *lit. e.* See alſo FLANKED.

The great defects of *tenailles* are, that they take up too much room, and on that account are advantageous to the enemy; that the angle B is undefended; the height of the parapet hindering the ſeeing down into it, ſo that the enemy can lodge there under covert: and that the ſides AD and CE are not ſufficiently flanked.

For theſe reaſons, *tenailles* are now excluded out of fortification by the beſt engineers; and never made, but where there wants time to form a horn-work.

TENAILLE *of the Place*, is the front of the place, comprehended between the points of two neighbouring baſtions; including the curtin, the two flanks raiſed on the curtin, and the two ſides of the baſtions which face one another. See BASTION, CURTIN, &c.

So that the *tenaille* is the ſame with what is otherwiſe called the *face of a fortreſs*. See FACE, and FORTIFIED *Place*.

TENAILLE *of the Ditch*, is a low work raiſed before the curtin, in the middle of the foſs or ditch. See DITCH.

It is of three ſorts: the firſt is compoſed of a curtin, two flanks, and two faces: the rampart of the curtin, including the parapet and talus, is but five fathom thick, but the rampart of the flanks and faces ſeven.—See *Tab. Fortif. fig.* 21. *lit. e.*

The ſecond, which Vauban ſaith he found to be of very good defence, is compoſed only of two faces, made on the lines of defence, whoſe rampart and faces are parallel.

The third ſort only differs from the ſecond in this, that its rampart is parallel to the curtin of the place.

All three ſorts are good defences for the ditch, and lie ſo low, that they cannot be hurt by the beſiegers cannon, till they are maſters of the covert-way, and have planted their artillery there.

TENANCY, a habitation or houſe to live in, or a tenement, or poſſeſſion held of another. See TENEMENT, and TENANT.

Entire TENANCY. See the article ENTIRE.

TENANT, or TENENT, TENENS, in law, one that holds or poſſeſſes lands and tenements of ſome lord or landlord, by any kind of right either in fee, for life, years, or at will. See POSSESSION, TENURE, LORD, &c.

The term *tenant* is uſed with divers additions—thus, *Tenant in dower*, is ſhe that poſſeſſes lands by virtue of her dower. See DOWER,

Tenant per ſtatute-merchant, he that holds land forfeited to him by virtue of a ſtatute. See STATUTE-*Merchant*.

Tenant in frank-marriage, is he that holds lands or tenements by virtue of a gift thereof made to him upon marriage between him and his wife. See FRANK-*Marriage*.

Tenant by courteſy, holds for his life, by reaſon of a child begotten by him of his wife, being an inheritrix and born alive. See COURTESY.

Tenant by elegit, holds by virtue of the writ called an *elegit*. See ELEGIT.

Tenant in mortgage, holds by means of a mortgage. See MORTGAGE.

Tenant by verge, in ancient demeſne, is he who is admitted by the rod in court to lands in ancient demeſne. See VERGE, and *Ancient* DEMESNE.

Tenant by copy of court-roll, is one admitted *tenant* of any lands, &c. within a manour, which time out of mind have been demiſed according to the cuſtom of the manour. See COPYHOLD.

Tenant paravail. See the article PARAVAIL.

Tenant by charter, is he that holdeth by feoffment in writing or other deed. See CHARTER, and FREEHOLD.

Tenant in capite or chief, holdeth of the king in right of his crown. See CAPITE.

Tenant of the king, is he that holdeth of the perſon of the king.

Joint TENANTS, thoſe who have equal right in lands or tenements by virtue of one title. See JOINTENANT.

TENANTS *in common*, thoſe who have equal right, but hold by divers titles.

Particular TENANT, he that holds only for his term.

Sole TENANT, is he who hath no other joined with him. See SOLE.

TENANT *by execution*, is he who holds by virtue of an execution upon any ſtatute, recognizance, &c.

Cuſtomary TENANTS,	See the articles	CUSTOMARY.
Terre-TENANT,		TERRE-*Tenant*.
Very TENANT,		VERY.

Anciently, there were alſo *tenant by knight-ſervice*, *tenant in burgage*, *tenant in ſocage*, *tenant in frank-fee*, *tenant in villenage*—and there are ſtill *tenant in fee-ſimple*, *tenant in fee-tail*, *tenant upon ſufferance*, &c. See KNIGHTS *Service*, BURGAGE, SOCAGE, VILLENAGE, FEE-*Simple*, TAIL, SUFFERANCE, &c.

TENANT, or TENAN, in heraldry, is uſed for ſomething that ſuſtains, or holds up the ſhield, or armory; and is generally ſynonymous with *ſupporter*. See SUPPORTER.

The difference which ſome authors make between the two is, that *tenants* are ſingle, and *ſupporters* double, one placed on each ſide the ſhield. But the proper diſtinction ſeems to conſiſt in this, that *tenants* are human figures, and ſupporters figures of beaſts.

There are various forms of *tenants*, as well as of ſupporters, *viz.* angels, maids, religious, ſavages, Moors, &c.

The firſt *tenants*, F. Meneſtrier obſerves, were trunks or branches of trees; to which the eſcutcheons were faſtened by ſtraps and buckles. Afterwards, the knights were repreſented as holding their own eſcutcheons, which were either hung to their neck, or elſe they leaned on them.

The origin of *tenants* and ſupporters is referred to the ancient tournaments, wherein the cavaliers had their arms bore by ſervants diſguiſed like ſavages, Moors, fabulous deities, bears, lions, &c. See SUPPORTER.

TENAR, in anatomy. See the article THENAR.

TENCH-*Fiſhing*. See the article *Tench*-FISHING.

TENDER, in a legal ſenſe, ſignifies as much, as to offer, or endeavour the performance of any thing, in order to ſave the penalty or forfeiture incurred by non-performance. See UNCORE.

Thus, to *tender rent*, is to offer it at the time and place where and when it ought to be paid: which will ſave the condition for that time, though the landlord refuſe to accept it. See ACCEPTANCE.

TENDER, in the ſea language, is a veſſel, attending on ſome other larger, and more conſiderable one. See BOAT, SHALOOP, &c.

TENDINOSUM *Centrum.* See the article CENTRUM.

TENDON, TENDO, in anatomy, that hard, white extreme part of a muſcle, whereby it is faſtened to the bone. See MUSCLE.

Moſt muſcles have, at leaſt, two *tendons*, one at each extreme: that faſtened to the part toward which the motion is to be performed, is called the *head of the muſcle*; and that faſtened to the part drawn toward the other, the *tail of the muſcle*. See HEAD, and TAIL.

The fibres, whereof the *tendons* conſiſt, have been ſuppoſed to be nervous; but they are now found to be no other than productions of the ſame fibres, which make the belly or body of the muſcle. All the difference between them is, that in the belly of the muſcle they are lax, and at a diſtance from each other; whereas in the *tendon*, they are more cloſely and firmly connected. See FIBRE.

Their whiteneſs proceeds wholly from the blood's being excluded, by the tightneſs of their contexture: in effect, there is the ſame difference between them, that there is between a ſkein of thread, and a cord made of the ſame thread.

The fibres of the *tendons* undergo no contraction, or dilatation, as thoſe of the belly of the muſcle do; they act as mere cords, to draw the parts towards each other.

Suture of a TENDON, is a very delicate operation in chirurgery. It had been abandoned a long time, and was not re-eſtabliſhed till the laſt century by J. Bienaiſe. See SUTURE.

TENDON *of Achilles*. See the article ACHILLES.

Mr. Cowper (in the *Philoſophical Tranſactions*) gives us an account of a cure of the *great tendon*, or *tendon* of Achilles, above the heel, after an entire diviſion, by ſtitching.

Puncture of a TENDON. See the article PUNCTURE.

TENEBRÆ, *Darkneſs*, in the Romiſh church, a ſervice performed on the Wedneſday, Thurſday, and Friday before Eaſter, in commemoration of the agony of our Saviour in the garden.

TENEMENT, TENANCY, in law, a houſe or lands, depending on a manour or lordſhip; or a fee, or farm, held of a ſuperior lord, and which he may recall, when the term or condition is expired. See LORD, TENANT, MESSUAGE, &c.

Frank TENEMENT, is any lands, houſe, office, or the like wherein a man has eſtate for life, or in fee. See FRANK, &c.

Baſe TENEMENT, is where a man holds lands, &c. at the will of the lord. See BASE.

Yet Kitcin, Briton, &c. make *frank tenement* and *baſe tenement* oppoſites; on which footing *frank tenement* ſhould be where the tenant is at liberty to quit it when he pleaſes.

TENEMENTARY *Lands*, among our anceſtors, were the outlands of manours, which the Saxon thanes or nobles let out to tenants under arbitrary rents, and ſervices. See TENANT.

TENEMENTIS *Legatis*, in law, a writ which lies in London and other places, where the cuſtom is to deviſe *tenements* by laſt will, as well as perſonal goods and chattels, for the hearing of any cauſe relating thereto.

TENENT. See the articles TENANT, and TENET.

TENENTES *Nativi*. See the article NATIVI.

TENENTIBUS *in aſſiſa non onerandis*, a writ which lies for him to whom a diſſeiſſor has made-over land, whereof he diſſeiſſed another; requiring that he be not diſturbed in aſſiſe for the damages awarded, if the diſſeiſſor have wherewithal to ſatisfy them.

TENESMUS,* ΤΕΙΝΕΣΜΟΣ, in medicine, a continual painful inclination to go to ſtool; yet without voiding any thing, unleſs, ſometimes, a little purulent, bloody ſlime.

* The word is formed from the Greek, *τεινειν*, *tendere*, *to ſtretch*, *bend*, in regard thoſe attacked with this diſeaſe feel a continual tenſion in the fundament.

The cauſe of the *teneſmus* is a ſharp, pungent humour, irritating the inteſtinum rectum, and exciting thoſe troubleſome endeavours to evacuate.—Thoſe affected with the ſtone are alſo ſubject to the *teneſmus*, from the communication, or conſent between the bladder and the rectum.

The cure of a *teneſmus* depends on proper evacuations and aſtringents; the former always preceding the latter; ſuch are bleeding, if plethoric; and gentle cathartics, eſpecially of the powder of rhubarb, &c.—An emetic of the Indian root, *ipecacuanha*, has been found of great ſervice in a long ſtanding *teneſmus*; for the augmenting one evacuation is the leſſening of another, and it becomes ſo much the more ſerviceable, as they happen to be contraries.

The reſtringents are ſuch as are of uſe in other fluxes. See DIARRHÆA, DYSENTERY, &c.

TENET, or TENENT, a particular opinion, dogma, or doctrine, profeſſedly held by ſome divine, philoſopher, &c. See DOGMA, OPINION, &c.

The diſtinguiſhing *tenets* of the ſeveral ſects in religion and philoſophy, ſee under the names of the ſects themſelves. See alſo PHILOSOPHER, SECT, &c.

TENIA. See the article TÆNIA.

TENMENTALE, or TENMANTALE, in our ancient cuſtoms, originally ſignifies the number of ten men; which number, in the time of the Engliſh Saxons, was called a *decennary*; and ten decennaries made what we call a hundred. See FRIBURGH, FRANK-PLEDGE, HUNDRED, &c.

Theſe ten men were bound for each other to preſerve the public peace; and if any of them was found guilty of a breach thereof, the other nine were to make ſatisfaction, or to bring the criminal before the king. See DECENNIER, TITHING, &c.

TENMENTALE was alſo uſed for a duty, or tribute paid to the king, conſiſting of two ſhillings for each plough-land; probably thus called, by reaſon each perſon of the decennary was bound to ſee it paid.

TENNE', TENNY, or TAWNY, in heraldry, a bright colour, made of red and yellow mixed; ſometimes alſo called *bruſk*, and expreſſed in engraving by thwart or diagonal ſtrokes or hatches beginning from the ſiniſter chief, like purpure, and marked with the letter T. See PURPURE.

In the coats of all below the degree of nobles, it is called *tenny*; but in thoſe of nobles, it is called *hyacinth*; and in princes coats, the *dragon's head*.

TENON, in building, &c. the ſquare end of a piece of wood, or metal, diminiſhed by one third of its thickneſs, to be received into a hole in another piece, called the *mortiſe*, for the jointing or faſtening the two together. See MORTISE.

Among joiners, &c. the *tenon* is made in various forms, ſquare, dove-tailed, for double mortiſes, &c.

Vitruvius calls the *tenons*, *cardines*; dove-tailed *tenons* he calls *ſubſcudes*, or *ſecuriculæ*. See DOVE-*tail*.

TENON-*Saw*. See the article SAW.

TENOR, TENOUR, the purport, or contents of a writing, or inſtrument in law, &c.

Warrants iſſued for the confirmation of ſentences, expreſs, that they ſhall be executed according to their form, and *tenor*.—It was impoſſible to retain ſo long a ſpeech word for word, but the ſubſtance, the *tenor* is this.

TENOR, TENORE, in muſic, the firſt mean or middle part; or that which is the ordinary pitch or tenor of the voice, when not either raiſed to the treble, or lowered to the baſs. See PART, MUSIC, and COUNTER-TENOR.

The *tenor* is frequently marked in thorough baſſes with the letter T.—The *tenor* is a part which almoſt all grown perſons can ſing. But as ſome have a greater compaſs of voice upwards, others downwards, others are confined to a kind of medium, and others can go equally either higher or lower; hence the French muſicians make a variety of *tenors*—as, a *counter tenor*, or *low tenor*; a *mean tenor*, a *natural tenor*, and an *upper tenor*: to which is alſo added, a *re-acting tenor*, *viol tenor*, *violin tenor*, &c.

The Italians uſually diſtinguiſh no more than two kinds of *tenors*; viz. *tenore primo*, or P° or I°, which anſwers to our *upper tenor*; and *tenore ſecundo*, or 2° or II°, which is our *natural tenor*; confounding the *counter tenors*, &c. under the name *baritono*.

TENOR, or TENORISTA, is alſo uſed for a perſon who ſings the *tenor* part in concert—alſo for an inſtrument proper to play it.

TENORE *Indictamenti mittendo*, is a writ whereby the record of an indictment and the proceſs thereupon is called out of another court into the King's-bench.

TENOUR. See the article TENOR.

TENSE, TIME, in grammar, an inflexion of verbs, whereby they are made to ſignify, or diſtinguiſh the circumſtance of time of the thing they affirm, or attribute. See VERB.

The affirmations made by verbs are different as to point of time; ſince we may affirm a thing *is*, or *was*, or *will be*: hence, a neceſſity of a ſet of inflections, to denote thoſe ſeveral times; which inflections, our Engliſh grammarians call by a barbarous word *tenſes*, from the French *temps*; moſt other languages call them ſimply *times*.

There are but three ſimple *tenſes*: the *preſent*, as *I love*, *amo*; the *preter*, *preterit*, or *paſt*, as, *I have loved*, *amavi*; and the *future*, as, *I will love*, *amabo*. See PRESENT, &c.

But in regard, in the *preter tenſe* one may either expreſs the thing as juſt done or paſt, or indefinitely and barely that it was done: hence, in moſt languages, ariſe two kinds of *preterits*; the one *definite*, marking the thing to be preciſely done; as, *I have written*, *I have ſaid*: and the other *indefinite*, or *aoriſt*, denoting a thing done indeterminately; as, *I wrote*, *I went*. See PRETER, AORIST, &c.

The *future tenſe* admits of the ſame variety. See FUTURE.

Beſide the three ſimple *tenſes*, others have been invented, called *compound tenſes*; expreſſing the relation of the ſimple ones to each other.—The firſt expreſſes the relation of the *paſt* to the *preſent*, and is called the *preterimperfect tenſe*, becauſe it does not mark the thing ſimply, and properly as done, but as imperfect,

perfect, and preſent with reſpect to another thing paſt: as, *I was at ſupper when he entered*; *Cum intravit, cænabam.* See Imperfect.

The ſecond compound *tenſe* marks the time paſt doubly, and is therefore called *pluſquamperfect tenſe*; as, *I had ſupped, cænaveram.*

The third compound *tenſe* denotes the future with reſpect to the paſt; as, *I ſhall have ſupped, cænavero.*

The ſeveral *tenſes* or times, it is to be obſerved, are properly denoted in the Greek and Latin by particular inflexions; in the Engliſh, French, and other modern tongues, the auxiliary verbs *to be* and *to have*, *etre* and *avoir*, are called in.

As to the oriental languages, they have only two ſimple *tenſes*, the *paſt* and *future*, without any diſtinctions of imperfect, more than perfect, *&c.* which renders thoſe languages ſubject to abundance of ambiguities which others are free from.

TENSION, Tenſio, the ſtate of a thing bent, or the effort made to bend it. See Distention.

Animals only ſuſtain and move themſelves by the *tenſion* of their muſcles, and nerves. A chord or ſtring gives an acuter or a deeper ſound, as it is in a greater or leſs degree of *tenſion*. See Chord, Sound, *&c.*

TENSOR, in anatomy. See the article Extensor.

TENT,* Tabernacle, a pavillion, or portable lodge, under which to ſhelter in the open field, from the injuries of the weather. See Tabernacle.

* The word is formed from the Latin, *tentorium*, of *tendo*, *I ſtretch*, in regard *tents* are uſually made of canvas ſtretched out, and ſuſtained by poles, with cords and pegs.

Armies encamp under *tents:* moſt of the Tartars and Arabs are wandering people, that lodge under *tents*. See Hord, Nomades, *&c.*

The Hebrews lodged forty years under *tents* in the deſart; which gave occaſion to the ſcenopegy or feaſt of tabernacles. See Scenopegy.

Dark Tent. See the article Dark.

Tent, Turunda, in chirurgery, is a roll of lint, made in a particular form, put into wounds whoſe ſuppuration is not perfect, or where there is a quantity of matter contained in the tumour, more than what comes out at the firſt dreſſing, *&c.* See Wound, *&c.*

Tents are uſed in order to hinder the cloſing too ſoon. But ſeveral chirurgical writers, and particularly the author of the *Hoſpital Surgeon*, gives us numerous inſtances, wherein the uſe, eſpecially of hard *tents*, has proved prejudicial in protracting the cure, bringing on inflammations, ſinus's, mortifications, *&c.* in wounds and ulcers.—To remedy this, he propoſes, that the liniments, *&c.* be made of a liquid conſiſtence, either naturally, or by warming them? and that where *tents* may ſeem indiſpenſably neceſſary, as in large cavities, the orifice may be enlarged, and ſoft doſils put in inſtead of them, which will prevent the miſchiefs commonly attending *tents.* See Ulcer.

TENTATIVE, is ſometimes uſed adjectively: thus we ſay, a *tentative method*, meaning a kind of unartful or indirect method, which only proceeds by trying.

Tentative is alſo uſed ſubſtantively, for an eſſay, or effort, whereby we try our ſtrength, or ſound an affair, *&c.* to ſee whether or no it will ſucceed.

In the French univerſities, Tentative is the firſt theſis or act which a ſtudent in the theology ſchool holds to ſhew his capacity: if he anſwers well, the degree of bachelor is conferred on him. See Act, Thesis, Degree, Bachelor, *&c.*

TENTER, Tryer, or Prover, a machine uſed in the cloth manufactory, to ſtretch out the pieces of cloth, ſtuff, *&c.* or only to make them even, and ſet them ſquare. See Cloth, *&c.*

It is uſually about four feet and a half high, and for length exceeds that of the longeſt piece of cloth.—It conſiſts of ſeveral long ſquare pieces of wood, placed like thoſe which form the barriers of a manege, ſo, however, as that the lower croſs-piece of wood may be raiſed or lowered, as is found requiſite, to be fixed at any height, by means of pins.—Along the croſs-pieces, both the upper and under one, are hooked nails, called *tenter-hooks*, driven in from ſpace to ſpace.

To put a piece of cloth on the Tenter: while the piece is yet quite wet, one end is faſtened to one of the ends of the *tenter*; then it is pulled by force of arms towards the other end, to bring it to the length required: that other end being faſtened, the upper liſt is hooked on to the upper croſs-piece, and the loweſt liſt to the lower croſs-piece, which is afterwards lowered by force, till the piece have its deſired breadth.—Being thus well ſtretched, both as to length and breadth, they bruſh it with a ſtiff hair-bruſh, and thus let it dry.—Then they take it off; and till they wet it again, it will ſtill retain the width and breadth the *tenter* gave it.

TENTH, *Decima.* See the article Tith.

Tenth *pair of Nerves.* See the article Nerve.

TENURE, Tenura, in law, the manner or condition wherein a tenant holds lands, or tenements of his lord; or the ſervices performed to the lord, in conſideration of the uſe and occupancy of his lands. See Tenant, Lord, *&c.* See alſo Non-*tenure.*

The kinds of ſervice, and conſequently of *tenures*, are almoſt infinite. See Service.

Thoſe for lands held of the king, are either *great*, or *petty ſerjeanty*, in *capite*, *knights-ſervice*, &c. See Serjeanty, Capite, Knights-Service, *&c.*

Thoſe held of the lords were very various, *baſe*, *frank*, &c. by *homage*, *ſocage*, &c. See Base, Frank, *&c.*—The common *tenures* at this day are fee-ſimple, fee-tail, by curteſy, in dower, for life, or for years, and by copy of court-roll. See Fee-tail, Courtesy, Dower, Copyhold, *&c.*

Barons by ancient Tenure. See the article Baron.

TEREBINTHINA, in medicine, natural hiſtory, *&c.* See the article Turpentine.

TEREBRA. See Trepanum.

TERES, in anatomy, a name given to two muſcles of the arms, called alſo *rotundi*; diſtinguiſhed by *major*, and *minor.*

Teres, or *rotundus major*, ariſes from the lower angle of the baſis of the ſcapula, and aſcending obliquely upwards, in a round ſmooth body, under the head of the longus, is inſerted with a ſhort flat tendon into the neck of the os humeri.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 40.

Teres, or *rotundus minor*, called alſo *tranſverſalis*, is frequently wanting, or at leaſt, ſo confounded with the infraſpinatus, that it is loſt therein. It ariſes from the inferior angle of the ſcapula, and aſcending obliquely in a round fleſhy body, paſſes over the upper head of the longus, and is inſerted by a ſhort flat tendon below the os humeri.

Teres *Pronator Radii.* See the article Pronator.

TERGIFŒTOUS *Plants*, ſuch as bear their ſeeds on the backſides of their leaves. See Plant, and Seed.

Such are the capillaries. See the article Capillary.

TERM, Terminus, the extreme of any thing, or that which bounds and limits its extent. See Extreme.

Term, in geometry, is ſometimes uſed for a point, ſometimes for a line, *&c.*—A line is the *term* of a ſuperficies: and a ſuperficies, of a ſolid. See Point, Line, Surface, *&c.*

This is what the ſchools call *terminus quantitatis.*

Term, in law, ſignifies a boundary or limitation of time, or eſtate.

In this ſenſe we ſay, a leaſe for term of life, for term of years, *&c.* See Lease, and Post-Term.

Terms,* Termes, Termini, in architecture, denote a kind of ſtatues, or columns adorned a-top with the figure of a man's, woman's, or ſatyr's head, as a capital; and the lower part ending in a kind of ſheath, or ſcabbord. See Column, *&c.*

* Some write the word *thermes*, from *hermes*, a name the Greeks gave the god Mercury; whoſe ſtatue, made after this manner, was placed in ſeveral of the croſs-ways in the city of Athens, *&c.* Others bring the etymology of the word from the Roman god *Terminus*, the protector of land-marks, whoſe ſtatue (made without hands or feet, that he might not change his place) was uſed to be planted at the bounds of lands to ſeparate them.

Terms are ſometimes uſed as conſoles, and ſuſtain entablatures; and ſometimes as ſtatues, to adorn gardens. See Statue.

Of theſe *termini*, the architects make great variety, *viz. angelic*, *ruſtic*, *marine*, *double*, in *buſt*, &c.

Milliary Terms, *termini milliaries*, among the ancient Greeks, were the heads of certain divinities, placed on ſquare land-marks of ſtone, or on a kind of ſheath, to mark the ſeveral ſtadia, *&c.* in the roads. Theſe are what Plautus calls *lares viales.* See Viales.

They were uſually dedicated to Mercury, whom the Greeks believed to preſide over the highways.

Some of them were repreſented with four heads; ſuch as we ſtill ſee in Rome, at the end of the Fabrician bridge, which is hence called *ponte de quattro capi.* It is known that Mercury was thus repreſented; and alſo called by the Latins *Mercurius quadrifons*, as being ſuppoſed the firſt who taught men the uſe of letters, muſic, wreſtling, and geometry. See Hermes.

Terms are alſo uſed for the ſeveral times or ſeaſons of the year, wherein the tribunals, or courts of judicature, are open to all who think fit to complain of wrong, or to ſeek their own by due courſe of law, or action. See Court, Day, Law, Fastus, *&c.*

In contra-diſtinction to theſe, the reſt of the year is called *vacation.* See Vacation.

Of theſe *terms* there are four in every year, during which time matters of juſtice are diſpatched, *viz.* See Non-Term.

Hillary Term, which, at London, begins the 23d day of January; or if it be Sunday, the next day after, and ends the 12th of February following.

Eaſter-Term, which begins the Wedneſday fortnight after Eaſter-day, and ends the Monday next after Aſcenſion-day.

Trinity-term, beginning the Friday next after Trinity-ſunday, and ending the Wedneſday fortnight after.

Michaelmas-Term, which begins the 23d of October, and ends the 28th of November following.

Each of theſe *terms* have alſo their returns. See Returns.

Oxford-Terms. *Hillary* or *Lent-term* begins January 14, and ends the Saturday before Palm-ſunday.—*Eaſter-term* begins the 10th day after Eaſter, and ends the Thurſday before Whitſunday.—*Trinity-term* begins the Wedneſday after Trinity-ſunday, and ends after the act, ſooner or later, as the vice-chancellor and convocation pleaſe.—*Michaelmas-term* begins October the 10th, and ends December the 17th.

Cambridge-TERMS. *Lent-term* begins January the 13th, and ends the Friday before Palm-ſunday.—*Eaſter-term* begins the Wedneſday after Eaſter-week, and ends the week before Whitſunday.—*Trinity-term* begins the Wedneſday after Trinity-ſunday, and ends the Friday after the commencement.—*Michaelmas-term* begins October the 10th, and ends December the 16th.

Scottiſh-TERMS. In Scotland, *Candlemas-term* begins January the 23d, and ends February the 12th.—*Whitſuntide-term* begins May the 25th, and ends June the 15th.—*Lammas-term* begins July the 20th, and ends Auguſt the 8th.—*Martinmas-term* begins November the 3d, and ends November the 29th.

Iriſh-TERMS. In Ireland the *terms* are the ſame as at London, except *Michaelmas-term*, which begins October the 13th, and adjourns to November the 3d, and thence to the 6th.

TERM, in grammar, denotes ſome word, or expreſſion, in a language. See WORD.

The word *term*, *terminus*, is borrowed metaphorically, by the grammarians and philoſophers, from the meaſurers or ſurveyors of lands: as a field is defined and diſtinguiſhed by its *termini*, or limits, ſo is a thing or matter ſpoken of by the word or *term* it is denoted by. See DEFINITION.

Some of our philoſophers complain loudly of the great uſe, or rather abuſe, of vague and general *terms*, which have no preciſe, definite ſignification.—To diſtinguiſh theſe, F. Malebranche obſerves, that every thing that is, (whether it have actual exiſtence, or not) and of conſequence every thing that is intelligible, is either a being, or a mode and manner of being: where, by being, is meant whatever is abſolute, or which may be conceived alone, and without relation to any other thing; and by manner of being, whatever is relative, or which cannot be conceived alone.

Now, there are two kinds of manners of being; the one conſiſting in the relation of the parts of a whole, to ſome part of the ſame whole; the other in the relation of one thing to another: of the firſt kind is the roundneſs of a piece of a wax; and of the ſecond, the motion or ſituation of that ſame wax. If then, every thing, that is intelligible, be reducible either to beings, or manners of being, it is evident, every *term* which does not ſignify either of thoſe things, ſignifies nothing; and that every *term* which does not ſignify either a being, or a manner of being, is an obſcure and confuſed *term*.

In metaphyſics, the uſe of ſuch *terms* is ſometimes neceſſary and allowable, as in ſpeaking of the divine perfections, &c. But in phyſics it is always miſchievous, and yet nothing more common; *e. gr.* when we ſay, that bodies tend to their centre, that they fall by their weight, that they riſe by their levity, that they move by their nature, that they change ſucceſſively their forms, that they act by their virtues, qualities, faculties, &c. we uſe *terms* which ſignify nothing; and all theſe propoſitions are abſolutely falſe in the ſenſe moſt philoſophers underſtand them.

There is no centre, in the ſenſe commonly meant; and the *terms*, *weight*, *form*, *nature*, *quality*, and the like, do not awaken any idea either of a being, or manner of being: they are *terms* void of ſenſe, and which perſons of underſtanding ſhould always avoid.

Scientia inſenſati inenarrabilia verba.

TERM, in the arts, or TERM *of art*, is a word which, beſides the literal and popular meaning which it has, or may have in common language, bears a further and peculiar meaning in ſome art, or ſcience. See ART.

Or, a *term* is a word which has one or more meanings beſide its grammatical one; or which has a peculiar force or import in the language of ſome particular ſcience, or art.

A word then becomes a *term* when its idea is rendered more complex, conſiſts of more parts, and includes more ſpecial circumſtances on ſome occaſions than on others.

It is this greater complexneſs, this exceſs of conſtituent parts in the idea, that denominates it a *term* in the general.

Further, as the parts of the idea ſignified by any word are arbitrary, and as one may not only add new parts to thoſe contained in the literal meaning, but alſo ſuper-add others to them, alter them, extend them, and otherwiſe modify them at pleaſure: hence the ſame word becomes a *term* of this or that art, or both, as the inventors and improvers of thoſe arts have thought fit to adopt it for the common baſis of certain ideas, and to modify and circumſtantiate its meaning to the uſe of their reſpective arts.

See the nature and office of a *term* further illuſtrated in the preface to this work. See alſo the article DEFINITION.

Complex TERMS	See the articles	COMPLEX.
Equivalent TERMS		EQUIVALENT.
General TERMS		GENERAL.
Relative TERMS		RELATIVE.
Univocal TERMS		UNIVOCAL.

TERM *in Logic.*—A propoſition is ſaid to conſiſt of two *terms*, *i. e.* two principal and eſſential words, the *ſubject* and the *attribute*. See PROPOSITION.

A ſyllogiſm conſiſts of three *terms*, the *major*, *minor*, and *concluſion*. A ſyllogiſm containing four *terms*, is vicious. See SYLLOGISM.

TERMS *of an Equation*, in algebra, are the ſeveral monomes or members of which it is compoſed, wherein the unknown letter is found, but in different powers and degrees; for if the ſame unknown letter be found in ſeveral members in the ſame degree or power, they all paſs but for one *term*. See EQUATION.

Thus in this equation $a\,a + a\,b = R$; the three *terms* are $a\,a$, $a\,b$, and R: and in this $a\,a + a\,b + a\,c = R\,d + d\,c$, the *terms* are $a\,a$, $a\,b + a\,c$, and $R\,d + d\,c$, which are but three, becauſe $a\,b + a\,c$ having a in the ſame dimenſion in both parts, is taken but for one *term*.

The *firſt term* in any equation, is that where the unknown letter or root hath the higheſt dimenſion:—that term which hath the root in it of one dimenſion or power lower, is called the *ſecond term*; and ſo on.

TERMS *of Proportion* in mathematics, are ſuch numbers, letters or quantities as are compared one with another. See PROPORTION.

Thus if $\begin{matrix} 4 : 8 :: 6 : 12 \\ a : b :: c : d \end{matrix}$ then a, b, c, d, or 4, 8, 6, 12, are called the *terms* of the proportion: of which a or 4 is called the firſt *term*, b or 8 the ſecond *term*, &c. See SECOND.

A and *c* are alſo called the *antecedents*, and *b* and *d* the *conſequents*. See ANTECEDENT, and CONSEQUENT.

TERMS, or courſes in medicine, the menſes, or woman's monthly purgations. See MENSES.

TERMINALIA,* in antiquity, feaſts celebrated by the Romans, in honour of the God Terminus. See FEAST.

* Varro is of opinion this feaſt took its name from its being at the *term* or end of the year: but Feſtus is of a different ſentiment, and derives it from the name of the deity in whoſe honour it was held. See TERMS.

In reality, the *terminalia*, or feaſt of land-marks, was held in honour of Jupiter, conſidered in the capacity of conſervator of land-marks or bounds. Dionyſius Halicarnaſſeus tells us, that it was Numa Pompilius who firſt conſecrated land-marks to Jupiter; and adds, that the ſame prince appointed an anniverſary day, wherein the country people aſſembling together on the bounds of the lands, ſhould offer ſacrifices in honour of the tutelary gods thereof.

The *terminalia* were held on the ſeventh, or, as Struvius will have it, on the tenth of the calends of March. No animal was to be ſacrificed herein, it being deemed unlawful to ſtain the land-marks with blood: they only offered ſacrifices of the firſt-fruits of the earth, and this in the open air, and on the ſpot where the land-marks were.

TERMINANDO & *Audiendo*. See the article AUDIENDO.

TERMINATION, TERMINATIO, in grammar, the ending of a word; or the laſt ſyllable thereof. See WORD, &c.

It is the different *terminations* of one and the ſame word on different occaſions, that conſtitute the different caſes, numbers, tenſes and moods, &c. See CASE, NUMBER, TENSE, &c.

TERMINER in law. See the article OYER.

TERMINISTS, TERMINISTÆ, a ſect or party among the Calviniſts, whoſe particular tenets are reducible to five points.

1° That there are ſeveral perſons, both in and out of the church, to whom God has fixed a certain *term* before their death, after which he no longer wills their ſalvation, how long ſoever they live afterwards. 2° That God has fixed this fatal *term* of grace by a ſecret decree. 3° That this *term* once elapſed, he makes them no further offer of repentance or ſalvation, but takes away from his word all the power it might have to convert them. 4° That Pharoah, Saul, Judas, moſt of the Jews, and many of the Gentiles were of this number. 5° That God ſtill bears with ſeveral of theſe ſort of people, and even confers benefits on them after the *term* expired; but that he does not do it with any intention they ſhould be converted. See CALVINISM, &c.

All the other proteſtants, and particularly the Lutherans, look on theſe articles with abhorrence, as repugnant to the goodneſs of God, as deſtructive to all Chriſtian virtue, and as contrary to ſcripture, particularly the following texts, Ezek. xviii. 23, 30, 31, 32. xxxiii. 11. 1 Tim. iv. 1, 16. 2 Pet. iii. 9. Acts xvii. 30, 31. Matt. xi. 28. Iſa. lxvi. 2. Heb. iii. 7, 13. Rom. ii. 5, &c.

TERMINUS, τερμα, ſignifies a bound or limit.

TERMINUS *a quo*,* (in metaphyſics) denotes the place, from whence any motion commences; in contra-diſtinction from the other extreme, which is called the *Terminus ad quem*.

* The ſchool-men call privation *a terminus a quo*, in ſpeaking of generation, which they conſider as a ſpecies of motion.

Ad TERMINUM *qui præteriit*. See AD.

Infra TERMINUM *quare ejecit*. See QUARE.

TERNARY *Meaſure*. See the article MEASURE.

TERRA, in geography	See EARTH.
TERRA, in chymiſtry	
TERRA, in natural hiſtory	

Terra *Damnata*	See	Caput Mortuum & Damnata.
Terra *Lemnia*		Lemnian.
Terra *Japonica*		Japon *Earth & Catechu.*
Terra *Sigillata*		Sigillata.
Terra *Merita*		Turmeric.

Terra *Petita.* See the article Summons.

TERRA, in our ancient law-books, occurs in the ſenſe of land, or ground, joined with divers additions; as, *Terra Normanorum*, the lands of ſuch Norman noblemen as were forfeited to the crown, by the owners taking part with the French king againſt king Henry III.—*Terra fruſca*, ſuch land as has not been lately ploughed. *Terra gilliflorata*, land held by the tenure of paying a gilliflower yearly. See Service.—*Terra veſtita*, land ſown with corn, and the crop ſtill remaining thereon.—*Terra teſtamentalis*, land held free from feudal ſervices, and deviſable by will.—*Terra culta*, land that is tilled and manured, in contradiſtinction to *terra inculta*.—*Terra affirmata*, land let out to farm.—*Terra dominica*, or *indominicata*, demain land of a manour. See Demain.—*Terra hydata*, was land ſubject to the payment of hydage. See Hidage.—*Terra lucrabilis*, land that may be gained from the ſea, or incloſed out of a waſte or common to particular uſes.—*Terra wainabilis*, tillage land.—*Terra warecta*, fallow land.—*Terra boſcalis*, wood land, &c. See Land.

Terra *extendenda*, is a writ directed to the eſcheator, &c. ordering him to inquire and find out the true yearly value of any land, &c. by the oath of twelve men, and certify the extent in Chancery. See Extent.

TERRA *Firma*, in geography, is ſometimes uſed for a continent, in contradiſtinction to iſlands. See Continent.

Thus Aſia, the Indies and South America, are uſually diſtinguiſhed into *terra firma's* and iſlands. See Island.

TERRA *a terra.*—Galleys and other veſſels are ſaid to go *terra a terra*, when they never go far from the coaſts. See Coasting.

The phraſe is alſo applied in the manage to horſes which neither make curvets nor balotades, but run ſmoothly on the ground on a preſſed gallop, only making little leaps or riſings with the fore feet.

The *terra a terra* is properly a ſeries of very low, eaſy leaps, which a horſe makes forward, bearing ſidewiſe, and working on two treads.—In this motion he lifts both legs at once; and when thoſe are on the point of deſcending, they are accompanied by the hind legs with a ſhort and quick cadence, always bearing and ſtaying on the haunches, ſo that the motions of the hind quarters are very ſhort and quick.

The term is alſo applied by the French to dancers, who cut no capers, nor ſcarce quit the ground.

And hence it is alſo figuratively applied to authors, whoſe ſtyle and diction is low and creeping.

TERRÆ *Ager*	See	Ager.
Terræ *Aratrum*		Aratrum.
Terræ *Aratura*		Aratura.
Terræ *Denariatus*		Denariatus.
Terræ *Legem Amittere*		Amittere.
Terræ *Lex*		Lex.
Terræ *Librata*		Librata.
Terræ *Obolata*		Obolata.
Terræ *Quadrantata*		Quadrantata.
Terræ *Quadrugata*		Quadrugata.
Terræ *Trinoda*		Trinoda.
Terræ *Uncia*		Uncia.

TERRÆ-*Filius*, ſon of the earth, a ſtudent in the univerſity of Oxford, formerly appointed in public acts to make jeſting and ſatyrical ſpeeches againſt the members thereof, to tax them with any growing corruptions, &c. See Act.

TERRACE, or Terras, a walk, or bank of earth raiſed in a garden or court, to a due elevation for a proſpect. See Walks.

The *terrace* is an earth-work uſually lined, and breaſted with a ſtrong wall, in compliance with the natural inequality of the ground.—Sometimes it is made in talus, or aſlope, and covered with turf.

Counter Terrace, is a *terrace* raiſed over another to join two grounds, or raiſe a parterre.

Terrace is alſo applied to the roofs of houſes that are flat, and whereon one may walk: as alſo to balconies that project. See Roof.

The *terrace* is properly the covering of a building which is in plat-form; as that of the periſtyle of the Louvre, or that of the obſervatory, paved with flint and mortar. All the buildings of the oriental nations are covered with *terraces*, to take the freſh air on, and even to lie on. See Plat-Form.

TERRACE, or Terras, uſed for mortar. See Tarrace.

TERRAGE, Terragium, anciently ſignified a ſervice, in which a tenant or vaſſal was bound to his lord, to plough and reap the ground for him. See Precariæ.

Others will have it money paid for digging, or breaking the ground in fairs and markets. See Pickage.

Quieti ſint de thelonio, pavagio, paſſagio, laſtagio, tallagio, carvagio, priſagio & terragio.

TERRAQUEOUS,* an epithet given to our globe or earth, conſidered as conſiſting of land and water; which together conſtitute one maſs. See Globe, and Earth.

* The word, like the thing, is a compound of *terra* and *aqua*, earth and water.

Some philoſophers, particularly Dr. Burnet, tax the frame and faſhion of the *terraqueous* globe as rude, unartful and diſorderly; and conclude it highly abſurd to ſuppoſe it came thus out of the hands of the Creator, and therefore have recourſe to a deluge to make it thus. See Deluge.

But others can perceive a world of art and conveniency, even in this apparent diſorder: Mr. Derham particularly obſerves, that the diſtribution of land and water is admirable, the one being laid over the other ſo ſkilfully all the world over, that there is a juſt equipoiſe or ballance of the whole globe.—Thus the northern ocean ballances the ſouthern, and the American continent is a counterpoiſe to the European, African and Aſiatic. See Ocean, &c.

And what ſome may object, that the waters occupy too great a part of the globe, which they imagine would be of more uſe were it dry land, he obviates, by ſhewing that this would deprive the world of a due quantity of vapours and rain: for if the cavities which contain the ſea and other waters were deeper, though the quantity of water were the ſame, and only the ſurface leſſer and narrower, the evaporations would be ſo much the leſs, inaſmuch as they are made from the ſurface, and conſequently are in proportion thereto. See Vapour, Cloud, Rain, &c. See alſo Mountain, &c.

TERRAR. See the article Terrier.

TERRAS	See the articles	Terrace, and Pavement.
Marble Terras		Marble.

TERRE-Plein, in fortification, the top, plat-form, or horizontal ſurface of the rampart whereon the cannon are placed, and the defenders perform their office. See Rampart.

It is thus called, as lying level, having only a little ſlope outwardly to bear the recoil of the canon.

It is terminated by the parapet on that ſide towards the campaign, and by the inner talus on the ſide towards the place:—its breadth is from 24 to 30 feet. See Parapet, &c.

Terre-Tenant, is he who hath the actual poſſeſſion of the land, otherwiſe called the *occupant*. See Tenant and Occupant.

Thus a lord of a manour having a freeholder, who letteth out his freehold to another to be occupied: this occupier, who has the actual poſſeſſion, is called the *terre-tenant*.

TERRELLA, ΜΙΚΡΟΓΗ, *little earth*, is a magnet turned of a juſt ſpherical figure, and placed ſo as that its poles, equator, &c. do exactly correſpond to thoſe of the world. See Magnet.

It was thus firſt called by Gilbert, as being a juſt repreſentation of the great magnetic globe we inhabit. See Globe.

Such a *terella*, if nicely poiſed, and placed in a meridian like a globe, it was ſuppoſed, would be turned round like the earth in 24 hours by the magnetic particles pervading it; but experience has ſhewn this to be a miſtake. See Magnetism.

TERRESTRIAL *Birds*	See	Birds.
Terrestrial *Globe*		Globe.
Terrestrial *Line*		Line *Terreſtrial.*
Terrestrial *Paradiſe*		Paradise.
Terrestrial *Roads*		Road.

TERRIER, or Terrar, in our ancient cuſtoms, a collection of acknowledgments of the vaſſals, or tenants of a lordſhip, containing the rents, ſervices, &c. they owe their lord; and ſerving as a title or claim for demanding and executing the payment thereof. See Manour, &c.

At preſent, by *terrier* we mean no more than a book or roll, wherein the ſeveral lands, either of a private perſon, or of a town, college, church, &c, are deſcribed.

The *terrier* ſhould contain the number of acres, the ſcite, boundaries, tenants names, &c. of each piece or parcel.

Terrier alſo denotes the lodge or hole which foxes, badgers, rabbets, &c. dig themſelves under ground, and wherein they ſave themſelves from the purſuit of the hunters.—Hence

Terrier is alſo uſed for a kind of little hound to hunt thoſe animals, which, like a ferret, creeps into the ground, and by that means affrights and bites them; either tearing them with his teeth, or elſe haling them by force out of their holes. See Hound.

TERRIS *bonis & catallis rehabendis poſt purgationem*, a writ for a clerk to recover his lands, goods, or chattels formerly ſeized, after having cleared himſelf of a felony, upon ſuſpicion whereof he was convict, and delivered to his ordinary to be purged.

Terris *& catallis tentis ultra debitum levatum*, a writ judicial for the reſtoring lands or goods to a debtor, who is diſtrained beyond the quantity of the debt. See Distress.

Terris *liberandis*, a writ lying for a man convicted by attaint, to bring the record and proceſs before the king, and take a fine for his impriſonment, and deliver him his lands and tenements again, and releaſe him of the ſtrip and waſte.

TERRITORY, *Diſtrict*; the extent or compaſs of land within the bounds, or belonging to the juriſdiction of any ſtate, city or other diviſion. See District.

It is a maxim, that the church has no *territory*, *i. e.* it has no temporal juriſdiction; ſo that an eccleſiaſtical judge cannot arreſt any body, not even a prieſt.

Much in this ſenſe, Cujas ſays, the church has an auditory, but no *territory*.

TERSION,* TERSIO, the act of wiping or rubbing a thing. See ATTRITION, and ABRASION.

* The word comes of *tero*, I wear.

TERTIAN, TERTIANA, a fever or ague intermitting every other day; ſo that there are two fits in three days. See FEVER, AGUE, &c.

The method of curing *tertians*, as well as other agues, is by the cortex, either given in ſubſtance or decoction: this laſt is beſt in weak conſtitutions, and where the fits are not ſo regular; but the ſubſtance more to be depended on as to certainty in other caſes. See AGUE, &c.

TERTIARY *canons*. See the article CANON.

TERTIATE, in gunnery.—To *tertiate* a great gun, is to examine the thickneſs of the metal at the muzzle, whereby to judge of the ſtrength of the piece, and whether it be ſufficiently fortified or not. See GUN, CANNON, ORDNANCE, &c.

This is uſually done with a pair of calliper compaſſes, and if the piece be home-bored, the diameter leſs by the height, divided by 2, is the thickneſs at any place. See CALIBER.

TERTII *internodii pollicis extenſor*	See	EXTENSOR.
TERTIO *adjacente propoſitio de*		PROPOSITION.
TERTIUS *Scalenus*		SCALENUS.

TERUNCIUS, in antiquity, a very ſmall braſs coin in uſe among the Romans. See COIN.

The inconvenience of ſuch very ſmall pieces being ſoon found, the *teruncius* became diſuſed, but its name was ſtill retained in reckoning; and thus it became a money of account. See MONEY.

The *teruncius*, at firſt, was a quarter of the *as*, or *libra*; hence, as the *as* contained 12 ounces, the *teruncius* contained three; whence the name, which is formed of the Latin, *tres unciæ*.

Teruncius was alſo uſed for a quarter of the denarius, ſo that when the denarius was at ten as's, the *teruncius* was worth two and a half; and when the denarius was riſen to 16, the *teruncius* was worth four. See DENARIUS.

TESSELLATED *pavement*, *pavimentum* TESSELLATUM, a rich pavement of moſaic work, made of curious ſmall ſquare marbles, bricks or tyles, called *teſſelæ*, from the form of dies. See MOSAIC *work*.

Teſſellated pavements were much uſed in the tents of the Roman generals. See PAVEMENT, &c.

TESSARA-COSTA, in our ancient writers. See the article QUADRAGESIMA.

TEST,* or TEST *oath*, a form of oath, whereby the doctrine of tranſubſtantiation, the ſacrifice of the Maſs, the invocation of ſaints, &c. are abjured. See OATH.

* The word ſignifies *proof* or *trial*, being formed of the Latin, *teſtis*, *witneſs*; this oath being a mark or evidence that the perſon is not a Roman catholic.

The *teſt* oath was firſt introduced by authority of parliament in 1672; and they who refuſed to take it, were excluded the privilege of holding any public offices.

TEST, among chymiſts and refiners, the ſame with cuppel, or coppel, an inſtrument uſed in the purifying gold and ſilver. See COPPEL.

TESTA *ſepiæ*. See the article SEPIUM.

TESTACEOUS, in natural hiſtory, an epithet given to a ſpecies of fiſh, which are covered with a ſtrong, thick ſhell; as tortoiſes, oyſters, pearl-fiſh, &c. See FISH.

In ſtrictneſs, however, *teſtaceous* is only applied to fiſh whoſe ſtrong and thick ſhells are entire and of a piece: thoſe which are ſoft, thin, and conſiſt of ſeveral pieces jointed, as the lobſter, &c. being called *cruſtaceous*. See SHELL.

But, in medicine, all preparations of ſhells, and ſubſtances of the like kind, are called *teſtaceous powders*.—Such are powders of crabs claws and eyes, harts-horn, pearl, &c.

Dr. Quincy, and others, ſuppoſe the virtue of all *teſtaceous* medicines to be alike; that they ſeldom or never enter the lacteals, but that the chief of their action is in the firſt paſſages; in which caſe they are of great uſe in abſorbing acidities. See ABSORBENT.

Hence they become of uſe in fevers, and eſpecially in rectifying the many diſtempers in children, which generally owe their origin to ſuch acidities. See *diſeaſes of* CHILDREN.

TESTAMENT,* TESTAMENTUM, in law, a ſolemn and authentic act, whereby a perſon declares his will, as to the diſpoſal of his eſtate, effects, burial, &c. See WILL.

* The word is formed from the Latin, *teſtamentum*, which the lawyers uſually derive from *teſtatio mentis*.

A *teſtament* has no effect till after death, and is always revocable till then. As *teſtaments* are acts, of all others the moſt ſubject to deceits, ſurpriſe, &c. it was neceſſary to uſe all kinds of precautions to prevent the wills of the deceaſed from being eluded, and the weakneſs of dying perſons from being abuſed.

The moſt ancient *teſtaments* among the Romans were made *viva voce*, the teſtator declaring his will in the preſence of ſeven witneſſes: theſe they called *nuncupative teſtaments*; but the danger of truſting the will of the dead to the memory of the living ſoon aboliſhed them, and all *teſtaments* were ordered to be in writing. See NUNCUPATIVE.

The French legiſlators thought holographic teſtaments, *i. e.* teſtaments wrote wholly with the teſtator's hand, an abundant ſecurity; but the Roman law, more ſevere, did not admit of teſtaments without further ſolemnity.

The eaſieſt, and moſt favourable, is the 21ſt law in the *code de teſtamentis*, which permits ſuch as are unwilling to truſt the ſecret of their *teſtaments* to others, to write it with their own hand, and to cloſe it in the preſence of ſeven witneſſes, declaring to them that it is their *teſtament*, after which it is to be ſigned by all the ſeven witneſſes.

Otherwiſe, to make a ſolemn teſtament, it was raquired to be atteſted by ſeven witneſſes, and ſealed with their ſeals. See SOLEMN.

Yet the *military teſtament* was not ſubject to ſo many formalities: the ſoldier was ſuppoſed too much employed in defending the laws, to be ſubject to the trouble of knowing them. His tumultuary profeſſion excuſed him from obſerving all the rules. See MILITARY.

Add, that *teſtaments*, wherein fathers diſpoſed of their eſtates among their children, had particular privileges, and were diſpenſed from moſt of the ordinary formalities.

Probate of a TESTAMENT. See the article PROBATE.

TESTAMENTARY *adoption*	See	ADOPTION.
TESTAMENTARY *ſucceſſion*		SUCCESSION.
TESTAMENTARY *tutorage*		TUTORAGE.

TESTATOR or TESTATRIX, the perſon who makes his, or her, will and teſtament. See TESTAMENT.

M. Gillet ſhews, that a perſon incapable of a legacy, cannot demand any ſum which the *teſtator* in his teſtament declares himſelf indebted to him in; in regard ſuch a declaration of debt is preſumed a fraud, againſt the intention of the law.

TESTA NEVILLI, or TESTA DE NEVIL, an ancient record kept by the king's remembrancer in the Exchequer, containing the king's fees throughout the greateſt part of England, with inquiſitions of lands eſcheated, and ſerjeanties.

It was denominated from its compiler, Johan. de Nevil, one of the itinerant juſtices under king Henry III.

TESTATUM, in law, a writ in perſonal actions; where, if the defendant cannot be arreſted on a capias in the county where the action is laid, but is returned *non eſt inventus* by the ſheriff, this writ ſhall be ſent into any other county, where ſuch perſon is thought to be, or to have wherewithal to ſatisfy the demand.

It is called *teſtatum*, becauſe the ſheriff has before teſtified, that the defendant was not to be found in his Bailiwick.

TESTE, a term commonly uſed in the cloſe of a writ, where the date is contained, which begins with *teſte meipſo*, if it be an original writ; or if judicial, *teſte Mattheo Hale*, *Mil.* or *Franciſco North*, *Mil.* &c. according to the court whence it comes.—In ſome ancient formula's, we read *teſte cuſtode Angliæ*. See WRIT.

TESTES, in anatomy, two white, ſoft, oval bodies, ſerving for generation; uſually called, diminutively, *teſticles*. See TESTICLE.

TESTES, of the brain, are two little, round, hard bodies, between the third and fourth ventricle, near the pineal gland. See BRAIN.

TESTES *ſynodales*,	See the articles	SYNODALES.
TESTIBUS *hiis*,		HIIS.

TESTICLE,* *teſtis*, a double part in animals of the male kind, ſerving for the office of generation.—See *Tab. Anat.* (*Splanch*) *fig.* 1. *lit. w. w.* See alſo GENERATION.

* They are called *teſticles*, by diminution, of *teſtes*, *witneſſes*; as giving teſtimony of virility: they are what we properly call *genitoreis*, *genetaliæ*.—The Greeks call them *didymi*, or *twins*.

In man, and moſt animals, the *teſticles* are exterior; in ſome, as fowls, interior. See GENITAL.—Some men have only one, ordinarily they have two, ſome have naturally had three; nay, anatomiſts aſſure us they have known four.

The *teſticles* are ſoft, white bodies, of an oval figure, and about the ſize of a pigeon's egg: they have been thought to be of a glandulous ſubſtance, and, according to the preſent doctrine of the glands, they may be allowed to be ſo ſtill. See GLAND.

They are formed of a convolution of divers kinds of veſſels, particularly the ſpermatic veins and arteries, the latter of which bring the blood whence the ſeed is to be ſecreted in the meanders of the *teſticles*, and the former return it back again after the ſecretion made. See SEED, and SPERMATIC.

The reſt of the *teſticle* is made up of ſeed-veſſels, which indeed are but one continued ſeries or rope, intricately convoluted and wound up as it were into a bottom, but adhering ſo laxly, that it is eaſily drawn out into length, and in rats ſhaken from its cloſe contexture.——Theſe ſeminal veſicles terminate in the paraſtatæ. See PARASTATA.

The *teſticles*, with the paraſtatæ, are ſaid to beincloſed in three proper coats; the firſt the muſculoſa, derived from the cremaſter muſcle; the ſecond the elythroides, or vaginalis, which is a continuation of the external lamina of the peritonæum;

tonæum; the third the albuginea. See each under its proper article, Musculosa, Elythroides, &c.

The common capſula or membrane including both *teſticles*, is the ſcrotum; which ſee deſcribed under the article Scrotum.

For the uſe of the *teſticles*, in preparing and ſecreting the ſeed. See Seed.

TESTIMONIAL, a kind of certificate, ſigned either by the maſter and fellow of the college where a perſon laſt reſided, or by three, at leaſt, reverend divines, who knew him well for three years laſt paſt; giving an account of the virtues, uniformity, and learning of the perſon. See Certificate.

Such a *teſtimonial* is always required before holy orders are conferred, and the biſhop even ordinarily demands one of a prieſt before he admits him to a benefice. See Ordination, &c.

Testimonial is alſo a certificate under the hand of a juſtice of peace, teſtifying the place and time when and where a ſoldier or mariner landed, and the place of his dwelling, &c. whither he is to paſs.

TESTIMONY. See Evidence, and Witness. See alſo Faith, and Belief.

For the credibility of human *teſtimony*. See Certitude.

TESTUDO, in natural hiſtory. See Tortoise.

Testudo, in antiquity, was particularly uſed among the poets, &c. for the ancient lyre; by reaſon it was originally made, by its inventor Mercury, of the black or hollow ſhell of a *teſtudo aquatica*, or ſea tortoiſe, which he accidentally found on the banks of the river Nile. See Lyre.

Dr. Molyneux has an expreſs diſcourſe, in the *philoſophical tranſactions*, to ſhew that the tortoiſe-ſhell was the baſis of the ancient lyre, and that the whole inſtrument had thence the denomination *teſtudo*; which account lets ſome light into an obſcure paſſage in Horace, ode 3. lib. 4. miſtaken by all the commentators:

> *O, teſtudinis aureæ*
> *Dulcem quæ ſtrepitum, Pieri, temperas;*
> *O mutis quoque piſcibus*
> *Donatura cygni, ſi libeat, ſonum.*

Testudo, *tortoiſe*, in the military art of the ancients, was a kind of cover or ſcreen which the ſoldiers, *e. gr.* a whole company, made themſelves of their bucklers, by holding them up over their heads, and ſtanding cloſe to each other.

This expedient ſerved to ſhelter them from darts, ſtones, &c. thrown upon them, eſpecially thoſe thrown from above when they went to the aſſault.

Testudo was alſo a kind of large wooden tower which moved on ſeveral wheels, and was covered with bullocks hides flead, ſerving to ſhelter the ſoldiers when they approached the walls to mine them, or to batter them with rams.

It was called *teſtudo*, from the ſtrength of its roof, which covered the workmen as the ſhell does the tortoiſe.

Testudo, in medicine, denotes a ſoft broad tumour, or gathering of impure humours between the ſkull and the ſkin, called alſo *talpa*, as reſembling the ſubterraneous windings of a tortoiſe or mole. See Talpa.

Testudo *veliformis quadrabilis*, a hemiſpherical vault, or ceiling of a church, &c. wherein four windows are ſo contrived, as that the reſt of the vault is quadrable, or may be ſquared. See Vault, Quadrature, &c.

The determining of theſe windows was a problem propoſed to the great mathematicians of Europe, particularly the cultivators of the new calculus differentialis, in the *acta eruditorum Lipſiæ*, by Sig. Viviani, under the fictitious name of A. D. *pio liſci puſillo geometra*, which was the anagram of *poſtremo Galilæi diſcipulo*.

It was ſolved by ſeveral perſons, particularly M. Leibnitz, the very day he ſaw it: and he gave it in the Leipſic acts in an infinity of manners; as alſo did M. Bernoulli, the marquis del Hoſpital, Dr. Wallis, and Dr. Gregory.

TETANUS, ΤΕΤΑΝΟΣ,* in medicine, a kind of tonic ſpaſmus, or convulſion, wherein the fore and hind muſcles of the head are rendered rigid and inflexible; ſo that it can neither bend one way nor the other. See Convulsion.

* The word is formed from the Greek τεινειν, *to ſtretch, ſtrain.*

Tetanus, or **Tetanos**, is alſo uſed, in a more general ſenſe, for an univerſal convulſion or rigidity ſeizing the whole body at once.

In this ſenſe, the *tetanos* is ſub-divided into emproſthotonus and opiſthotonus. See Emprosthotonos and Opisthotonos.

TETRACHORD,* **Tetrachordon**, in the ancient muſic, a concord conſiſting of three degrees, tones, or intervals, or four ſounds or terms; called alſo by the ancients διατεσσαρων, and by the moderns a *fourth*. See Fourth.

* The word is formed of the Greek, τετρα, of τετταρα, *four times*, and χορδη, a *chord*, or *ſtring*.

This interval had the name *tetrachord* given it with reſpect to the lyre, and its chords or ſtrings. See Chord. See alſo Diatessaron.

Ancient authors make frequent mention of the ſynaphe, or conjunction; and diazeuxis, or disjunction of *tetrachords*—To conceive their meaning, it muſt be obſerved, that two *tetrachords* were ſaid to be *joined*, when the ſame chord was the higheſt of the firſt, or loweſt inſtrument, and the loweſt of the ſecond; as was the caſe in the two *tetrachords* that compoſe the ancient heptachord or ſeventh. See Conjoint.

But when two *tetrachords* had no common chord; but, on the contrary, had each their different ones to begin and end withal, ſo that between the two there were two intervals of a tone, then the *tetrachords* were ſaid to be *disjoined*, which was the caſe in the two *tetrachords* that compoſe the octachord or octave. See Octave.

TETRACTYC, *arithmetic*. See the article Arithmetic.

TETRACTYS, in the ancient geometry.—Pythagoric *tetractys* is a point, a line, a ſurface, and a ſolid.

TETRADIAPASON, *quadruple diapaſon*, a muſical chord, otherwiſe called a quadruple eighth, or a nine and twentieth. See Diapason.

TETRADITÆ, **Tetradites**, in antiquity, a name given to ſeveral different ſects of heretics, out of ſome particular reſpect they bore to the number four, called in Greek, τετρα.

Thus the Sabbathians were called *tetraditæ*, from their faſting on Eaſter-day, as on the fourth day, or Wedneſday. See Sabbathian.

The Manichees, and others, who admitted a quaternity inſtead of a trinity in the Godhead, or four perſons in lieu of three, were alſo called *tetraditæ*. See Manichee.

The followers of Petrus Fullenſis bore the ſame appellation of *tetraditæ*, by reaſon of the addition they made to the triſagion, to countenance an error they held, that in our Saviour's paſſion, it was not any particular perſon of the Godhead, *e. gr.* the ſon, that ſuffered, but the whole Deity. See Trisagion.

The ancients alſo gave the name *tetraditæ* to children born under the fourth moon, and theſe they believed unhappy.

TETRAEDRON,* or **Tetrahedron**, in geometry, one of the five regular or platonic bodies, or ſolids, comprehended under four equilateral and equal triangles. See Solid.

The *tetraedron* may be conceived as a triangular pyramid of four equal faces. See Pyramid.—Such is that repreſented (*Tab. Geomet. Fig.* 59.) See Regular *Body*.

It is demonſtrated by mathematicians, that the ſquare of the ſide of a *tetraedron*, is to the ſquare of the diameter of a ſphere wherein it may be inſcribed in a ſubſequialteral ratio: whence it follows, that the ſide of a *tetraedron* is to the diameter of a ſphere it is inſcribed in, as $\surd 2$ to the $\surd 3$, conſequently they are incommenſurable.

TETRAGON,* ΤΕΤΡΑΓΩΝΟΣ, in geometry, a quadrangle, or a figure with four angles. See Quadrangle.

* The word is formed from the Greek τετρα, *four*, and γωνια, *angle*.

Thus a ſquare, parallelogram, rhombus, and trapezium, are *tetragonal* figures. See Square, &c.

Tetragon, in aſtrology, denotes an aſpect of two planets with regard to the earth, when they are diſtant from each other a fourth part of a circle, or 90°—as, A D (*Tab. Aſtron. Fig.* 3.)—See Aspect.

The *tetragon* is expreſſed by the character □. See Quadrat.

TETRAGONIAS, a name given to a meteor, whoſe head is of a quadrangular figure, and its tail or train long, thick and uniform; not much different from the trabs or beam. See Meteor.

TETRAGONISM, ΤΕΤΡΑΓΩΝΙΣΜΟΣ, a term which ſome authors uſe to expreſs the quadrature of the circle. See Quadrature.

TETRAGONUS, in anatomy, a muſcle, called alſo *quadratus genæ*. See Quadratus.

TETRAGRAMMATON, ΤΕΤΡΑΓΡΑΜΜΑΤΟΝ, a denomination given by the Greeks to the Hebrew name of God, יהוה, *Jehova*, becauſe conſiſting of four letters. See God.

TETRAMETER,* in the ancient poetry, an Iambic verſe conſiſting of four feet. See Iambic.

* The word is formed from the Greek, τετρα, *four*, and μετρον, *meaſure*, *q. d.* four metres—We meet with none of theſe but in the comic poets, as Terence.

TETRASPASTON,* in mechanics, a machine wherein are four pullies. See Pully.

* The word is formed from the Greek τετρασπαστον. See Polyspaston.

TETRAPETALOUS, in botany, an epithet given to flowers that conſiſt of four ſingle petala or leaves placed around the piſtil. See Petala.

Theſe M. Juſſieu calls *polypetalous* flowers. See Polypetalous.

Mr. Ray, who calls them *tetrapetalous*, makes them conſtitute a diſtinct kind, which he divides into

1°. Such as have an uniform *tetrapetalous* flower, and their ſeed-veſſels a little oblongiſh, which he therefore calls *ſiliquoſe*; as the keiri or leucoium luteum, and the other common leucoium, the dentaria, the leucoium ſiliquoſum, alyſſon, viola lunaris, paronychia, heſperis, alliaria, rapa, napus, ſinapis, rapiſtrum, eruca ſpuria, eryſimum, cardamine, turritis, piloſella ſiliquoſa, and the raphanus ruſticanus and aquaticus.

2°. Such as have their veſſel ſhorter, which therefore, for diſtinction ſake, he calls *capſulatæ* and *ſiliculoſæ*; as the myagrum, draha, leucoium ſiliqua ſubrotunda, cochlearia, naſturtium,

tium, lepidium vulgare, thlapſi, braſica marina, glaſtum, eruca marina, *&c.*

3°. Such as have a ſeeming *tetrapetalous* flower, that is, a monopetalous one, divided deeply into four partitions, which he particularly calls *anomalous*; as the papaver, agremony, veronica, tithymallus, plantago, coronopus, pſyllium, lyſimachia ſiliquoſa, alſine ſpuria, *&c.*

TETRAPHARMACUM,* ΤΕΤΡΑΦΑΡΜΑΚΟΝ, in the general, denotes any remedy conſiſting of four ingredients.

* The word is compounded of τετρα, *four*, and φαρμακον, *drug*, or *remedy*.

TETRAPLA,* in church hiſtory, a bible diſpoſed by Origen under four columns, in each whereof was a different Greek verſion, *viz.* that of Aquila, that of Symmachus, that of the Seventy, and that of Theodotion. See BIBLE.

* The word is formed from the Greek τετραπλος, *quadruplex*, *four-fold*.

Sixtus of Sienna confounds the *tetrapla* with the hexapla; but the *tetrapla* is a different work, compoſed after the hexapla, in favour of ſuch as could not have the hexapla. See HEXAPLA.

Some authors are of opinion, that the order wherein the four verſions of the *tetrapla* were ranged, was different from that wherein we have rehearſed them; and particularly that the ſeptuagint was in the firſt column: but S. Epiphanius ſays expreſly to the contrary, and places it in the third.—He even gives us Origen's reaſon for putting it there, which was, ſays he, that the beſt verſion might be in the middle, that the others might be the more eaſily confronted therewith, and corrected from it.

Baronius, however, in his annals for the year 231, takes the ſeptuagint to have been in the third place in the hexapla, but the firſt in the *tetrapla*; yet Epiphanius gives it the ſame place in both.

TETRAPTOTE, TETRAPTOTON, in grammar, a name given to ſuch defective nouns as have only four caſes:—ſuch are aſtus, repetundæ, *&c.* See CASE, APTOTE, *&c.*

TETRARCH,* TETRARCHA, a prince who holds and governs a fourth part of a kingdom.

* The word is originally Greek τετραρχης, formed of τετρα, *four*, and αρχη, *rule*, *dominion*.

Such, originally, was the import of the title *tetrarch*; but it was afterwards applied to any petty king, or ſovereign, and became ſynonymous with *ethnarch*, as appears from the following conſideration: 1°. That Pliny makes mention of ſix *tetrarchies* within the cities of Decapolis. 2°. That Herod's kingdom was only divided into three parts, which yet were called *tetrarchies*, and the ſovereigns thereof, Luke iii. 1. *tetrarchs*. 3°. Joſephus, *Antiq. Jud. lib.* 14. *c.* 23. tells us, that after the battle of Philippi, Anthony going into Syria, conſtituted Herod *tetrarch*; and on medals the ſame Herod is called *ethnarch*. See ETHNARCHA.

TETRASTICH, ΤΕΤΡΑΣΤΙΚΟΝ, a ſtanza, epigram, or poem conſiſting of four verſes. See DISTICH.

TETRASTYLE,* in the ancient architecture, a building, and particularly a temple, with four columns in its front. See TEMPLE.

* The word is formed from τετρα, *four*, and στυλος, *column*.

TETRASYLLABICAL, a word conſiſting of four ſyllables. See WORD, and SYLLABLE.

TEUTONIC, ſomething belonging to the *Teutons*, an ancient people of Germany, inhabiting chiefly along the coaſts of the German ocean.

TEUTONIC *language*, is the ancient language of Germany, which is ranked among the mother-tongues. See LANGUAGE, and MOTHER *Tongue*.

The *Teutonic*, now called the *German* or *High-Dutch*, is diſtinguiſhed into *upper* and *lower*.

The *upper* has two notable dialects, *viz.* 1°. the Scandian, Daniſh, or perhaps Gothic; to which belong the languages ſpoke in Denmark, Norway, Sweden, and Iceland. 2°. The Saxon; to which belong the ſeveral languages of the Engliſh, Scots, Friſian, and thoſe on the north of the Elbe. See ENGLISH, *&c.*

To the *lower* belong the Low Dutch, Flemiſh, *&c.* ſpoke through the Netherlands, *&c.* See FLEMISH.

TEUTONIC *order*, a military-religious order of knights, eſtabliſhed towards the cloſe of the XIIth century; and thus called, becauſe conſiſting principally of Germans, or *Teutons*. See KNIGHT, and ORDER.

The origin, *&c.* of this order was thus: the Chriſtians under Guy of Luſignan, laying ſiege to Acre, or Acon, a city of Syria, on the borders of the Holy Land; at which ſiege were preſent, Richard king of England, Philip Auguſtus of France, *&c.* ſome Germans of Bremen and Lubec, touched with compaſſion for the ſick and wounded of the army, who wanted common neceſſaries, ſet on foot a kind of hoſpital under a tent, which they made of a ſhip's ſail; and here betook themſelves to a charitable attendance on the ſick.

This ſtarted a thought of eſtabliſhing a third military order, in imitation of the templars, and the hoſpitalers. See TEMPLAR, and HOSPITALER.

The deſign was approved by the patriarch of Jeruſalem, the archbiſhops and biſhops of the neighbouring places, the king of Jeruſalem, the maſters of the temple and the hoſpital, and the German lords and prelates then in the Holy Land, *&c.* And by common conſent, Frederic, duke of Suabia, who was then at their head, ſent embaſſadors to his brother Henry, king of the Romans, to ſolicit the pope to confirm the new order.

Calixtus III. who then governed the church, granted it by a bull of the 23d of February, 1192; and the new order was called, *The order of* Teutonic *knights of the houſe of* St. Mary *of* Jeruſalem.

The pope granted them all the privileges of the templars, and the hoſpitalers of St. John; excepting that they were to be ſubject to the patriarchs, and other prelates; and that they ſhould pay tithe of what they poſſeſſed.

The firſt maſter of the order, Henry Walpot, elected during the time of the ſiege of Acre, after the taking of that city, purchaſed a garden, wherein he built a church and an hoſpital, which was the firſt houſe of the *Teutonic order*. Such is the account given by Peter of Duiſbourg, a prieſt of this order.

Jacques de Vitry differs a little herefrom; and relates, that the *Teutonic order* was eſtabliſhed at Jeruſalem before the city of Acre was beſieged.

Theſe two opinions Hartknoch, in his notes on Duiſbourg, reconciles, by ſaying, that the order was firſt inſtituted by a private perſon, a German, at Jeruſalem; that it was confirmed by the pope, the emperor, and the princes, at the ſiege of Acre; and that after the taking that city, it was become ſo conſiderable, that it was known all over the world.

If it be true, that it was a private perſon who firſt ſet on foot the order, and that thoſe people of Bremen and Lubec only joined with them, as ſome authors aſſert, we do not know the preciſe year of its origin.

The order made no great progreſſes under the three firſt grand maſters; but under the fourth, Herman de Salza, it became very powerful; inſomuch, that Conrade, duke of Mazovia and Cujavia, about the year 1230, ſent an embaſſy to him, to ſolicit his friendſhip and aſſiſtance, offering him and his order the provinces of Culmes and Livonia, with all the lands they could recover from the idolatrous Pruſſians, who harraſſed him exceedingly with their continual incurſions, and againſt whom he intended this new militia; his own knights of the order of *Chriſt*, or of Dobrin, inſtituted for the like purpoſe, being found too weak.

De Salza accepted the donation, and Gregory IX. confirmed it; and to aid the knights in reducing the Pruſſians, Innocent IV. publiſhed a croiſade.—With this help, in a year's time, they ſubdued the provinces of Warmia, Natangia, and Barthia; the inhabitants whereof renounced the worſhip of idols; and in the courſe of fifty years more, they reduced all Pruſſia, Livonia, Samogitia, Pomerania, *&c.*

In 1204, duke Albert had founded the order of ſword-bearers, port-glaives, which now became united to the *Teutonic* knights, and the union was approved by pope Gregory IX. See PORT-GLAIVE.

Waldemar III. king of Denmark, ſold to the order the province of Eſtein, the cities of Nerva and Weſſemberg, and ſome other provinces.

A new union ſome time afterwards occaſioned great diviſions and troubles in the order: it was with the biſhops and canons of Pruſſia and Livonia, who hereupon took the habit of the *Teutonic order*, and ſhared the ſoveraignty with the knights, in their reſpective dioceſes.

The order, thus maſter of all Pruſſia, built the cities of Elbing, Marienbourg, Thorn, Dantzic, Koningſberg, and ſome others: the emperor Frederic II. permitted them to add to the arms of the order, the imperial eagle; and S. Louis, in 1250, allowed them to quarter the flower-de-luce.

After the city Acre had been recovered by the infidels, the grand maſter of the *Teutonic order* removed his ſeat from that city to Marienbourg. As the order grew in power, the knights took more ſtate on them; and at length, inſtead of friars, brothers, as at firſt, would be called *lords*. And though the grand maſter Conrade Zolnera, of Rotenſteine, oppoſed this innovation, his ſucceſſor Conrade Wallerod not only approved it, but even procured himſelf to be treated with honours only rendered to the greateſt princes.

Diviſions being got into the order, the kings of Poland made their advantage of them: the Pruſſians revolted to them; and after ſeveral wars between the knights and the Poles, the former yielded to king Caſimire the upper Pruſſia, and did homage to him for the lower.

Laſtly, at the time of the reformation, Albert, marquis of Brandenbourgh, then grand maſter, becoming Lutheran, renounced the dignity of grand maſter, diſſolved the commanderies, and drove the knights out of Pruſſia.

Moſt of the knights followed his example, and embraced the reformation: the reſt transferred the ſeat of their order to Margentheim, or Mariendal in Franconia, which they ſtill retain.

They there elected Walter of Cromberg their grand maſter, formed a proceſs againſt Albert, and the emperor put him to the ban of the empire. The order, however, could never recover their domains; but are now little more than the ſhadow of what they formerly were, having only three or four commanderies, ſcarce ſufficient for the ordinary ſubſiſtence of the grand maſter and his knights.

The officers of the *Teutonic order*, when in its ſplendour, were the grand maſter, who reſided at Marienbourg; under him were the grand commander; the grand marſhal, who had his reſidence at Koningſberg; the grand hoſpitaler, who reſided at Elbing; the draper, who took care to furniſh the habits; the treaſurer, who lived at the court of the grand maſter; and ſeveral commanders, as thoſe of Thorn, Culme, Brandenbourg, Koningſberg, Elbing, *&c.*

They had alſo their commanders of particular caſtles, and fortreſſes; advocates, proveditors, intendants of mills, proviſions, *&c.*

Waiſſelius in his annals ſays, they had 28 commanders of cities, 46 of caſtles, 81 hoſpitalers, 35 maſters of convents, 40 ſtewards, 37 proveditors, 93 maſters of mills, 700 brothers or knights to take the field, 162 brothers of the choir, or prieſts, 6200 ſervitors or domeſtics, *&c.*

TEXT, a relative term, contra-diſtinguiſhed to *gloſs* or *commentary*; and ſignifying an original diſcourſe, excluſive of any note, or interpretation. See NOTE, ANNOTATION, *&c.*

Infinite pains have been taken by the critics, to reſtore, reconcile, ſettle, explain, *&c.* the text of the bible, and the claſſics.

Mr. Whiſton accounts for all thoſe miſunderſtandings between the new and old teſtament, particularly as to the propheſies in the old, cited as fulfilled in the new, to the corruption of the *text* of the old teſtament; and to obviate objections made againſt Chriſtianity on that head, has publiſhed an *Eſſay towards reſtoring the true* text *of the Old Teſtament*, &c. See QUOTATION.

This reſtoration he is to effect from the Samaritan pentateuch, the Roman pſalter, the apoſtolical conſtitutions, *&c.* But all our criticks take this corruption of the *text* to be imaginary, and look out for other ways of ſolving thoſe difficulties. See PROPHECY.

TEXT is particularly uſed for a certain paſſage of ſcripture choſe by a preacher to be the ſubject of his ſermon. See HOMILY.

Anciently, the lawyers began all their pleadings with like *texts* of ſcripture.

A *text-book*, in ſeveral univerſities, is a claſſic author wrote very wide, by the ſtudents, to give room for an interpretation dictated by the maſter or regent, to be inſerted in the inter-lines.

In this ſenſe, the French ſay, proverbially, *Gloſe d'Orleans plus obſcure que le* texte.

The Spaniards give the name *text* to a kind of little poem, or ſet of verſes, placed at the head of a gloſs, and making the ſubject thereof; each verſe being explained, one after another, in the courſe of the gloſs. See GLOSS.

TEXT, in ancient law-authors, is appropriated to the book of the four goſpels, by way of eminence.—This was written in gold letters, and carefully preſerved in the churches.

Codex aurato conſeptus grammate ſcriptus,
Auctus evangelicum conſervat corpore textum.

TEXTUARIES, TEXTUARII, a name given the ſect of the Caraities, among the Jews. See CARAITES.

Hillel ſhone among the traditionaries, and Schammai among the *textuaries*: See TRADITIONARY.

The civil and canon lawyers, ſometimes alſo call a book containing the bare text, without any gloſs or commentary, a *textuary*, *textuarium*.

TEXTUS *Roffenſis*, is an ancient manuſcript, containing the rights, cuſtoms, tenures, *&c.* of the church of Rocheſter, granted by the laws of Ethelbert, Hhlothere, Eadred and Withred kings of Kent, collected by Ernulf, the venerable biſhop of Rocheſter, about the year 1100. See LAW.

TEXTURE,* TEXTURA, properly denotes the arrangement and coheſion of ſeveral ſlender bodies or threads interwoven, or intangled among each other; as in the webs of ſpiders, or in cloths, ſtuffs, *&c.* See WEB, and WEAVING.

* The word is Latin, formed of *texo*, *I weave.*

TEXTURE is alſo uſed in ſpeaking of any union or coheſion of the conſtituent particles of a concrete body; whether by weaving, hooking, knitting, tying, chaining, indenting, intruding, compreſſing, attracting, or any other way. See COHESION, PARTICLE, BODY, *&c.*

In this ſenſe, we ſay a cloſe, compact *texture*; a lax, porous *texture*; a regular, or irregular *texture*, *&c.* See PORE, RAREFACTION, CONDENSATION, *&c.*

A great deal depends on the *texture* of the component parts of a body; hence moſt of its particular properties, its ſpecific gravity, colour, *&c.* See COLOUR, *&c.*

THABORITES, or TABORITES. See TABORITE.

THACK *Tyles*,	See the articles	TYLES.
THAIN, THANUS,		THANE.

THALAMI *nervorum opticorum*, in anatomy, two oblong prominences of the lateral ventricles of the brain; medullary without, but a little cineritious within. See BRAIN.

They are thus called, becauſe the optic nerves riſe out of them. See OPTIC.

THALMUD. See the article TALMUD.

THAME. See the article TEAM.

THANE, or THAIN, THANUS, the name of an ancient dignity among the Engliſh, or Anglo-Saxons. See NOBILITY. Skene makes *thane* to have been a dignity equal with that of the ſon of an earl: Camden will have it, that *thanes* were only dignified by the offices which they bore.

There were two kinds or orders of *thanes*: the *king's thanes*, and the *ordinary thanes.*—The firſt were thoſe who attended our Engliſh-Saxon kings in their courts, and who held lands immediately of the king: whence, in domeſday-book, they are promiſcuouſly called *thani*, and *ſervientes regis*.

Soon after the conqueſt, the name was diſuſed; and inſtead thereof they were called the *king's barons*, *barones regis*. See BARON.

Their origin is referred to king Canutus, who, taking the chief of the Daniſh nobility, to the number of 3000, for his guard; and arming them with battle-axes and ſabres with gilt handles, called them *thing-lith*, from the two Daniſh words *theing* or *thein*, body of nobility, and *lith*, order of battle.

The ordinary *thanes*, or *thani minores*, were the lords of manours, who had particular juriſdiction within their limits, and over their own tenants. See LORD, and MANOUR.

Theſe two changed their name for that of barons; and hence their courts are called *courts baron* to this day. See COURT, and BARON.

In old authors, charters, *&c.* we alſo meet with THANE, as ſignifying a nobleman; ſometimes a freeman; and ſometimes a magiſtrate.

THANE-LANDS, were lands granted by charter of the Saxon kings to their *thanes*. See THANE.

THAUMATURGUS,* *worker of miracles*; an appellation which the Romaniſts give to ſeveral of their ſaints, eminent for the number and greatneſs of their miracles. See SAINT, and MIRACLE.

* The word is formed from the Greek, *ϑαυμα*, *wonderful thing*, and *εργον*, *work.*

St. Gregory *Thaumaturgus*, or Gregory of Neocæſarea, was a diſciple of Origen, about the year 223, and afterwards biſhop of Cæſarea in Pontus; and in that capacity aſſiſted at the firſt council of Antioch, and at that of Epheſus againſt Paulus Samoſatenus.—St. Leo of Catanea is alſo called *Leo Thaumaturgus*. He lived in the VIIIth century; and his body is ſtill honoured at Rome in the church of St. Martin de Tours.—St. Francis Paul, and St. Francis Xavier, are the great *thaumaturgi* of theſe laſt ages. See MIRACLE.

THAWING, the reſolution of ice into its former fluid ſtate, by the warmth of the air, *&c.* See ICE, and FREEZING.

THEANDRIC, ΘΕΑΝΔΡΙΚΟΣ, *Dei-virile*; a term ſignifying divine and human under one—formed from Θεος, *God*, and *ανηρ*, *man*. See DEI-VIRILE.

S. Dionyſius, biſhop of Athens, firſt uſed the word *theandric*, to expreſs a double operation, or two operations united in Jeſus Chriſt; the one divine, the other human.*—The Monophyſites afterwards abuſed it, to ſignify the one only operation which they admitted in Jeſus Chriſt; in whom they believed there was a mixture of the divine and human nature, whence reſulted a third nature, which was a compound of the one and the other, whoſe operations followed the eſſence and qualities of the mixture, and were neither divine nor human; but both at once, or, in one word, *theandric*. See OPERATION, and MONOTHELITE.

* *Θεανδρικη ενεργεια*, *theandric* or *Dei-virile* operation, in the ſenſe of Dionyſius and Damaſcenus, is thus exemplified by Athanaſius. When Chriſt heal'd the perſon who was born blind, the ſpittle, he voided, was human, but the opening of the eyes was done by his divine power. And thus, in raiſing Lazarus, he called as man, but awaked him from the dead as God.

The term *theandric*, and the dogma of *theandric* operations, were examined with great care and attention, at the council of Lateran, held in 649; where pope Martin ſolidly refuted the notion of *theandric* operations, and ſhewed, that the ſenſe wherein St. Dionyſius firſt uſed the word, was catholic, and quite remote from that of the Monophyſites and Monothelites. See PERSON, and TRINITY.

THEANTHROPOS,* ΘΕΑΝΘΡΩΠΟΣ, *God-man*; a term ſometimes uſed in the ſchools, to ſignify Jeſus Chriſt, who is God-man, or two natures in one perſon. See PERSON, and TRINITY.

* The word is formed from the Greek, Θεος, *Deus*, and *ανθρωπος*, *homo*, *man.*

THEATER,* or THEATRE, THEATRUM, among the ancients, a public edifice, for the exhibiting of ſcenic ſpectacles or ſhews to the people. See SPECTACLE, and SCENIC.

* The word is formed from the Greek, *θεατρον*, *ſpectacle*, *ſhew*, of *θεαομαι*, *ſpecto*, *video*, *I ſee.*

Under the word *theater* was comprehended, not only the eminence whereon the actors appeared, and the action paſſed; but alſo the whole area, or extent of the place, common to the actors and ſpectators.

In this ſenſe, the *theater* was a building encompaſſed with portico's, and furniſhed with ſeats of ſtone, diſpoſed in ſemicircles, and aſcending gradually over one another; which encompaſſed a ſpace called the *orcheſtra*, in the front whereof was the proſcenium, or pulpitum, whereon the actors performed, and which is what we properly call the *theater*, or ſtage. See ORCHESTRA, and PULPITUM.

On the proſcenium ſtood the ſcena, a large front, adorned with orders of architecture, behind which was the poſtſcenium, or place where the actors made themſelves ready, retired, &c. So that the ſcena, in its full extent, comprehended all the part belonging to the actors. See SCENE, &c.

In the Greek *theaters*, the orcheſtra made a part of the ſcena; but in the Roman *theaters*, none of the actors ever deſcended into the orcheſtra; which was taken up by the ſeats of the ſenators.

The moſt celebrated *theaters* remaining of antiquity, are the *theater* of Marcellus, and that of Pompey; which are alſo called *amphitheaters*. See AMPHITHEATER.

At Athens are ſtill ſeen the remains of the temple of Bacchus, which was the firſt *theater* in the world, and a maſter-piece in architecture.—All *theaters* were conſecrated to Venus and Bacchus.

THEATER, among the moderns, more peculiarly denotes the ſtage, or place whereon the drama, or play is exhibited: anſwering to the proſcenium of the ancients. See DRAMA, &c.

In its full latitude, however, the THEATER includes the whole play-houſe: in which ſenſe, it is a ſpacious room, or hall, part whereof is taken up by the ſcena, which comprehends the ſtage, the decorations, and the machines; and the reſt diſtributed into a ſpace, called the *pit*, or *parterre*, which is covered with ſeats, boxes, &c. and terminated with an elevation of one or two galleries, diſpoſed into benches aſcending over one another. See STAGE; ſee alſo COMEDY, TRAGEDY, &c.

THEATER is alſo uſed in architecture, chiefly among the Italians, for an aſſemblage of ſeveral buildings, which, by a happy diſpoſition and elevation, repreſents an agreeable ſcene to the eye.

Such as are moſt of the vineyards at Rome; but particularly that of Monte Dragone, at Freſcati; and in France, the new caſtle of St. Germain en Laye.

Anatomical THEATER, in a ſchool of medicine and chirurgery, is a hall, with ſeveral rows of ſeats, diſpoſed in the circumference of an amphitheater; having a table, bearing on a pivot, in the middle, for the diſſection of bodies.

Such is the anatomical *theater* of the royal garden of plants at Paris, &c.

The THEATER at Oxford is a beautiful building, erected by archbiſhop Sheldon, for the uſe of ſcholaſtic exerciſes.

THEATINES, an order of nuns, under the direction of the *Theatins*. See THEATINS.

There are two kinds of *Theatines*, under the title of *ſiſters of the immaculate conception*, who form two different congregations, the one engaged by ſolemn vows, and the other only by ſimple vows.—Their common foundreſs was Urſula Benincaſa.

Thoſe who make the ſimple vows are the moſt ancient, and are called abſolutely *Theatines of the congregation*: they had their riſe at Naples, in 1583.

The others are called *Theatines of the hermitage*: the whole buſineſs of theſe is praying in retirement, and an auſtere ſolitude, to which they engage themſelves by ſolemn vows.

The *Theatines* of the firſt congregation take care of the temporal concerns of theſe laſt. Their houſes ſtand together, and communicate by a large hall. Their foundreſs drew up their conſtitutions, and laid the foundation of their houſe at Naples, but died before it was finiſhed.

Gregory the XVth, who confirmed the new inſtitute under the rule of St. Auguſtin, appointed that they ſhould be under the direction of the *Theatins*. Urban VIII. revoked this article by a brief in 1624, and ſubjected them to the nuncio of Naples; but Clement IX. annulled this brief, and ſubmitted them anew to the *Theatins* by a brief in 1668.

THEATINS, a religious order of regular prieſts; thus called from their firſt ſuperior Don John Pietro Caraffa, archbiſhop of Chieſi, in the kingdom of Naples, which was anciently called *Theate*.

The ſame archbiſhop was afterwards pope, by the name of Paul IV. after having been a companion of Gaëtan, a Venetian gentleman, the firſt founder of this order, at Rome, in 1524.

The *Theatins* were the firſt who aſſumed the title of *regular clercs*. They have not only no lands, or fixed revenues, either in common or in propriety; but they do not even aſk or beg any thing; but wait for what Providence ſhall ſend them for their ſubſiſtance.

They employ themſelves much in foreign miſſions; and in 1627 entered upon Mingrelia, where they have an eſtabliſhment: they have had the like in Tartary, Circaſſia, and Georgia, which they have ſince abandoned, by reaſon of the little fruit they perceived thereof.

Their firſt congregation appeared at Rome in 1524, and was confirmed the ſame year by Clement VII.—Their conſtitutions were drawn up at a general chapter in 1604, and approved by Clement VIII.—They wear the prieſts habit.

THEATRE. See THEATER, and AMPHITHEATER.

THEBAID, THEBAIS, a famous heroic poem of Statius, the ſubject whereof is the civil war of Thebes between the two brothers Eteocles and Polynices; or Thebes taken by Theſeus. See EPIC, HEROIC, &c.

Statius was twelve years in compoſing his *Thebaid*, which conſiſts of twelve books: he wrote under Domitian.—He is cenſured by the beſt critics, as Boſſu, &c. for a vicious multiplicity of fables and actions, for too much heat and extravagance, and for going beyond the bounds of probability. See FABLE, POLYMYTHY, and PROBABILITY.

Several Greek poets had compoſed *Thebaids* before him; the principal were, Antagoras, Antiphanes of Colophon, Menelaus the Ægean, and an anonymous author mentioned by Pauſanias, *lib.* 9.

Ariſtotle, praiſing Homer for the ſimplicity of his fable, oppoſes to him the ignorance of certain poets, who imagined that the unity of fable or action was abundantly provided for by the unity of the hero, and who compoſed *Theſeids*, Herculeids, &c. in each whereof they collected every thing that had ever happened to their principal perſon. See HERO, ACTION, &c.

THEFT, *Furtum*, in law, an unlawful, felonious taking away another man's moveable and perſonal goods, againſt the owner's will, with an intent to ſteal them. See LARCENY.

It is divided into *theft*, or larceny, properly ſo called, and *petit theft*, or petty larceny; the former whereof is of goods above the value of 12 *d.* and is deemed felony.—The other, which is of goods under that value, is not felony. See PETTY-LARCENY, FELONY, &c.

Open *theft* from the perſon, or in preſence of the owner, is properly called *robbery*. See ROBBERY.

THEFTBOTE, the receiving a man's goods again from a thief, or other amends by way of compoſition, and to prevent proſecution, that the felon may eſcape unpuniſhed; the puniſhment whereof is impriſonment, and not loſs of life, or member. See THEFT.

THEISM. See DEISM, POLYTHEISM, and TRITHEISM.

THEKUPHÆ. See the article TEKUPHÆ.

THELONIUM, TELONIUM, ſignifies toll. See TOLL.

Breve eſſendi quieti de THELONIO, a writ lying for the citizens of a city, or burgeſſes of a town, that have a charter or preſcription to free them from toll; againſt the officers of any town or market, who would conſtrain them to pay it, contrary to the ſaid grant or preſcription.

THEME, THEMA, a ſubject or topic, to write or compoſe on. See SUBJECT, &c.

THEME, among aſtrologers, denotes the figure they conſtruct when they draw the horoſcope; repreſenting the ſtate of the heavens for a certain point, or moment required; *i. e.* the places of the ſtars, and planets, for that moment. See HOROSCOPE.

The celeſtial *theme* conſiſts of 12 triangles, incloſed within two ſquares, and called the *twelve houſes*. See HOUSE.

THENAR, in anatomy, a muſcle, whoſe office is to draw the thumb from the fore-finger; whence it is alſo denominated *abductor pollicis manus*.

There is a ſimilar muſcle belonging to the great toe, ſometimes alſo called *thenar*, or *abductor pollicis pedis*. See ABDUCTOR.

The antagoniſts to theſe are called *antithenars*. See ANTITHENAR.

THENOPSYCHITES. See THNETOPSYCHITES.

THEOCATAGNOSTÆ,* a ſect of heretics, or rather blaſphemers, who dared to find fault with certain words and actions of God, and to blame many things in the ſcriptures.

* The word is formed from the Greek, Θεος, *God*, and καταγινωσκω, *I judge*, or *condemn*.

Marſhal, in his tables, places theſe heretics in the VIIth century; for what reaſon we know not; Damaſcenus being the only author that mentions them, but without taking any notice of the time of their appearance.

Add to this, that in Damaſcenus's treatiſe of hereſies, we meet with heretics that were not ſo much the authors of ſects ſubſiſting at any certain time, as wicked perſons, ſuch as are found in all times, and all ages.

THEOCRACY,* a ſtate governed by the immediate direction of God alone. See GOVERNMENT.

* The word is formed from Θεος, *God*, and κρατος, *power*, *empire*.

According to Joſephus, the ancient Government of the Jews was *theocratic*; God himſelf ordering and directing every thing belonging to the ſoveraign authority. See JUDGE.

This *theocracy* laſted till the time of Saul; when the Iſraelites, weary thereof, deſired they might have a king like other nations: and thenceforward the ſtate became monarchic.

There was alſo a kind of imaginary *theocracy* at Athens: while the ſons of Codrus were diſputing the ſucceſſion, the Athenians, wearied out with the miſeries of an inteſtine war, aboliſhed the royalty, and declared Jupiter the only king of the people of Athens.

THEODOLITE, a mathematical inſtrument, much uſed in ſurveying, for the taking of angles, diſtances, altitudes, &c. See ANGLE, SURVEYING, &c. See alſo PLOTTING.

It is made varioully; ſeveral perſons having their ſeveral ways of contriving it, each more ſimple and portable, more accurate and expeditious, than others. The following one is not inferior to any we have ſeen: it conſiſts of a braſs circle, about a foot diameter, cut in form of *Fig.* 25. *Tab. Surveying*; having its limb divided into 360 degrees, and each degree ſubdivided either diagonally, or otherwiſe, into minutes.

Underneath, at *c c*, are fixed two little pillars *b b*, (*fig.* 25. *n.* 2.) which ſupport an axis, whereon is fixed a teleſcope, conſiſting of two glaſſes, in a ſquare braſs tube; for the viewing of remote objects.

On the centre of the circle, moves the index C, which is a circular plate, having a compaſs in the middle, whoſe meridian line anſwers to the fiducial line *a a*: at *b b* are fixed two pillars to ſupport an axis, which bears a *teleſcope* like the former, whoſe line of collimation anſwers to the fiducial line *a a*.—At each end of either teleſcope is fixed a plain ſight for the viewing nearer objects. See SIGHT.

The ends of the index *a a* are cut circularly, to fit the diviſions of the limb B; and when that limb is diagonally divided, the fiducial line at one end of the index ſhews the degrees and minutes upon the limb. The whole inſtrument is mounted with a ball and ſocket, upon a three-legged ſtaff.

Moſt *theodolites* have no teleſcopes, but only four plain ſights, two of them faſtened on the limb, and two on the ends of the index.

The uſe of the *theodolite* is abundantly ſhewn in that of the ſemicircle, which is only half a *theodolite*. See SEMICIRCLE.—And in that of the plain-table, which is occaſionally made to be uſed as a *theodolite*. See PLAIN-*Table*.

Note, the index and compaſs of the *theodolite* likewiſe ſerve for a circumferentor, and are uſed as ſuch. See CIRCUMFERENTOR.

THEOGONY,* that branch of the heathen theology which taught the genealogy of their gods. See GOD.

* The word is formed from Θεος, *God*, and γονη, *geniture, ſeed, offspring*.

Heſiod gives us the ancient *theogony*, in a poem under that title. Among the ancient writers, Dr. Burnet obſerves, *theogony* and coſmogony ſignified the ſame thing. In effect, the generation of the gods of the ancient Perſians, fire, water, and earth, is apparently no other than that of the primary elements. See CHAOS, and CHAOLOGY.

THEOLOGICAL *Criticiſm*, } See { CRITICISM.
THEOLOGICAL *Prebend*, } See { PREBEND.

THEOLOGIUM,* in the ancient theater, was a place, or little ſtage, above that whereon the ordinary actors appeared. See THEATER.

* The word is Latin, formed from Θεος, and λογος, *ſpeech, diſcourſe*.

The *theologium* was the place where the Gods appeared—It alſo included the machines whereon they deſcended, and from which they ſpoke. See MACHINE.

There was a *theologium* required for the repreſentation of the Ajax of Sophocles, the Hippolitus of Euripides, &c. *Scal. Poet. lib.* I. *cap.* I.

THEOLOGY,* *Divinity*; a ſcience which inſtructs us in the knowledge of God, and divine things; or which has God, and the things he has revealed, for its object. See GOD, DIVINE, &c.

* The word is compounded of Θεος, *God*, and λογος, *diſcourſe*.

Theology is a ſcience which ſhews us what we are to believe of God, and the manner wherein he would be ſerved.—It is divided into two branches, *natural*, and *revealed* or *ſupernatural*.

Natural THEOLOGY, is the knowledge we have of God from his works, by the light of nature, and reaſon. See NATURE, and REASON.

Supernatural THEOLOGY, is that which we learn from revelation. See REVELATION.

Poſitive THEOLOGY, is the knowledge of the holy ſcriptures, and of the ſignification thereof, conformably to the opinions of the fathers and councils; without the aſſiſtance of any argumentation. Some will have it, that this ought to be called *expoſitive*, rather than *poſitive*. See POSITIVE.

Moral THEOLOGY, is that which teaches us the divine laws relating to our manners and actions. See MORAL.

Scholaſtic, or School THEOLOGY, is that which proceeds by reaſoning; or that derives the knowledge of ſeveral divine things from certain eſtabliſhed principles of faith. See SCHOLASTIC.

The ancients had a three-fold *theology*; the firſt, μυθικη, *mythic*, fabulous, which flouriſhed among the poets; and was chiefly employed in the theogony, or genealogy of the gods. See FABLE, MYTHOLOGY, THEOGONY.

The ſecond, πολιτικη, *political*, which was that chiefly embraced by the politicians, prieſts, and people, as moſt ſuitable and expedient to the ſafety, quiet, and proſperity of the ſtate.

The third, φυσικη, *natural*, chiefly cultivated by the philoſophers, as moſt agreeable to nature and reaſon.—The phyſical or natural *theology* acknowledged one only ſupreme God; to which it added dæmons, as mediators between him and man. See DÆMON.

Bachelor in THEOLOGY, } See the articles { BACHELOR.
Myſtic THEOLOGY, } See the articles { MYSTIC.

THEOPASCHITES, THEOPASCHITÆ, a ſect of heretics in the Vth century, the followers of Petrus Fullenſis, or Peter the Fuller; whence they are ſometimes alſo denominated *Fulloniani*. See TRISAGION.

Their diſtinguiſhing doctrine was, that the whole trinity ſuffered in the paſſion of Jeſus Chriſt. See PATRIPASSIANS.

This hereſy was embraced by the Eutychian monks of Scythia; who uſing their utmoſt efforts to make it obtain, raiſed great diſorders towards the beginning of the following century.

It was condemned, at its firſt riſe, in the councils of Rome and Conſtantinople, held in 483: it was revived in the IXth century, and again condemned in a council at Rome, held in 862 under pope Nicholas I.

F. le Quien, in his notes on Damaſcenus, ſays, that the ſame error had been taught before Fullenſis, by Apollinarius, whoſe diſciples were the firſt that were called *theopatitæ*, or *theopaſchitæ*. See APOLLINARIAN.

THEORBA,* THIORBA, or TIORBA, a muſical inſtrument, made in form of a large lute; except that it has two necks, or juga, the ſecond and longer whereof ſuſtains the four laſt rows of chords, which are to give the deepeſt ſounds. See LUTE.

* The word is formed from the French, *teorbe*, or *theorbe*, and that from the Italian, *tiorba*, which ſignifies the ſame; and which ſome will have to be the name of the inventor.

The *theorba* is an inſtrument which for theſe laſt ſixty or ſeventy years, has ſucceeded to the lute, in the playing of thorough-baſſes: it is ſaid to have been invented in France by the ſieur Hotteman, and thence introduced into Italy, &c.

The only difference between the *theorba* and the lute is, that the former has eight baſs or thick ſtrings, twice as long as thoſe of the lute; which exceſs of length renders their ſound ſo exceedingly ſoft, and keeps it up ſo long a time, that it is no wonder many prefer it to the harpſicord itſelf. At leaſt it has this advantage, that it is eaſily removed from place to place, &c.

All its ſtrings are uſually ſingle; though there are ſome who double the baſs-ſtrings with a little octave, or the ſmall ſtrings with an uniſon; in which caſe, bearing more reſemblance to the lute than the common *theorba*, the Italians call it the *arcileuto*, or *arch-lute*. See ARCILEUTO.

THEOREM, in the mathematical method, a propoſition which terminates in theory, and which conſiders the properties of things already made, or done. See THEORY, and PROPOSITION.

Or, a *theorem* is a ſpeculative propoſition, deduced from ſeveral definitions compared together.—Thus, if a triangle be compared with a parallelogram ſtanding on the ſame baſe, and of the ſame altitude, and partly from their immediate definitions, and partly from other of their properties already determined, it is inferred, that the parallelogram is double the triangle; that propoſition is a *theorem*. See DEFINITION, &c.

Theorem ſtands contradiſtinguiſhed from *problem*. See the article PROBLEM.

There are two things to be chiefly regarded in every *theorem*, *viz.* the propoſition, and the demonſtration: in the firſt is expreſſed what agrees to ſome certain thing under certain conditions, and what does not. See PROPOSITION.

In the latter, the reaſons are laid down, by which the underſtanding comes to conceive that it does or does not agree thereto. See DEMONSTRATION.

Theorems are of various kinds.

Univerſal THEOREM, is that which extends to any quantity without reſtriction, univerſally—as this, that the rectangle of the ſum and difference of any two quantities, is equal to the difference of their ſquares.

Particular THEOREM, is that which extends only to a particular quantity—as this: in an equilateral right lined triangle, each of the angles is 60 degrees.

Negative THEOREM, is that which expreſſes the impoſſibility of any aſſertion—as, that the ſum of two biquadrate numbers cannot make a ſquare number.

Local THEOREM, is that which relates to a ſurface—as, that triangles of the ſame baſe and altitude are equal.

Plane THEOREM, is that which either relates to a rectilinear ſurface, or to one terminated by the circumference of a circle—as, that all angles in the ſame ſegment of a circle are equal. See PLANE.

Solid THEOREM, is that which conſiders a ſpace terminated by a ſolid line; that is, by any of the three conic ſections—*e. gr.* this: that if a right line cut two aſymptotic parabola's, its two parts terminated by them ſhall be equal. See SOLID.

Reciprocal THEOREM, is one whoſe converſe is true.—As, that if a triangle have two equal ſides, it muſt have two equal angles: the converſe of which is likewiſe true, that if it have two equal angles, it muſt have two equal ſides. See RECIPROCAL.

THEORETIC,* THEORETICAL, or THEORIC, ſomething relating to *theory*, or that terminates in ſpeculation.—In which ſenſe it ſtands oppoſite to *practical*.

* The word is formed from the Greek, θεωρειν, *I ſee, I view, contemplate*.

The ſciences are ordinarily divided into *theoretical*, as theology, philoſophy, &c. and *practical*, as medicine, law, &c. See SCIENCE.

Theoretic, **Theoreticus**, is an appellation peculiarly given to an ancient ſect of phyſicians contradiſtinguiſhed from the *empirics*. See Physician.

Theoretic phyſicians were ſuch as applied themſelves to a careful ſtudy and conſideration of what relates to health and diſeaſes; the principles of the human body, its ſtructure and parts, with their actions and uſes; whatever befalls it either naturally or preternaturally; the differences of diſeaſes, their nature, cauſes, ſigns, indications, *&c.* the textures, properties, *&c.* of plants, and other medicines, *&c.*——In a word, the *theoretic* phyſicians were ſuch as went on the foot of reaſon, in oppoſition to the empirical phyſicians, who went wholly on experience. See Medicine, and Empiric.

Theoretical *Arithmetic*, See Arithmetic.
Theoretical *Philoſophy*, See Philosophy.

THEORIC *Money*, in ancient authors, was what was raiſed by way of tax on the people, to defray the expences of theatrical repreſentations, and other ſpectacles. Spectacle.

There were particular queſtors or treaſurers of the *theoric money*.—By a law of Eubulus, it was made a capital crime to pervert the *theoric money* to any other uſe; even to employ it in the occaſions of war.

THEORICAL *Aſtronomy*, is that part of aſtronomy which conſiders the true ſtructure and diſpoſition of the heavens, and heavenly bodies; and accounts for their various phænomena therefrom. See Astronomy.

It is thus called in oppoſition to that part which conſiders their apparent ſtructure, or their diſpoſition as viewed by the eye; which is called *ſpherical aſtronomy*. See Spherical.

The ſeveral parts of *theorical aſtronomy*, ſee under System, Sun, Star, Planet, Earth, Moon, Satellite, Comet, *&c.*

THEORY, a doctrine which terminates in the ſole ſpeculation, or conſideration of its object, without any view to the practice, or application thereof. See Science.

To be learned in an art, *&c.* the *theory* ſuffices; to be a maſter of it, both the *theory* and practice are required.—Machines, many times, promiſe well in the *theory*, yet fail in the practice. See Machine.

We ſay, *theory* of the moon, *theory* of the rainbow, of the microſcope, the camera obſcura, the motion of the heart, the operation of purgatives, *&c.* See Moon, Rainbow, Microscope, Camera, Heart, Purgative, *&c.*

Theories *of the Planets*, *&c.* are ſyſtems or hypotheſes, according to which the aſtronomers explain the reaſons of the phænomena or appearances thereof. See Hypothesis, System, Planet, *&c.*

THEOTOCUS, *Deipara*. See Mother *of God*.

THERAPEUTÆ, ΘΕΡΑΠΕΥΤΑΙ, a Greek term, ſignifying ſervants, more eſpecially thoſe employed in the ſervice of God. The Greeks gave the appellation *therapeutæ* to ſuch as applied themſelves to a contemplative life, whether it were from the great concern they had for their ſouls, or from the particular mode and manner of their religion; the word θεραπευειν, whence *therapeutæ*, ſignifying the care a phyſician takes of his patient, and the ſervice any one renders another.

Philo, in his firſt book of the contemplative life, relates, that there were a people ſpread throughout moſt of the known world, but particularly throughout Egypt, and about Alexandria, who renounced their friends, their goods, *&c.* and who, after diſcharging themſelves of all temporal concerns, retired into ſolitary places, where they had each their ſeparate manſion, called *ſemneium*, or monaſtery. See Monastery.

He adds, that they there reſigned themſelves wholly to the exerciſes of prayer and contemplation, were continually as in the preſence of God, prayed mornings and evenings, eat nothing till after ſun-ſet, and many of them not above once in three, or even ſix days; nor then any thing but a piece of bread ſeaſoned with ſalt, or, at beſt, with hyſſop.

They carried nothing with them into their ſemneium but the books of Moſes, the prophets, the pſalms, and other like writings, wherein they ſought for myſtical and allegorical meanings, from a perſuaſion that the ſcriptures were only ſhadows or figures, the hidden meanings whereof were to be unfolded. They had alſo ſome books left them by the founders of their ſect.—They met together every ſeventh day in a large ſemneium to confer together, and partake of the myſteries.

There are two points relating to theſe *Therapeutæ* exceedingly controverted among critics, *viz.* 1°. whether they were Jews or Chriſtians; and, 2°. if they were the latter, whether they were monks or ſeculars?

As to the firſt, Scaliger *de Emend. Temp.* maintains, they were Eſſene Jews; but Valeſius on Euſebius rejects this opinion of Scaliger, 1°. becauſe Philo never calls them Eſſenes. 2°. becauſe there were no Eſſenes but in the Holy Land; whereas the *Therapeutæ* were ſpread through Greece, and all the barbarous nations. 3°. Becauſe Joſephus, who gives a very ample account of the Eſſenes, does not ſay one word of the *Therapeutæ*, or the *therapeutic life*. See Essene.

And yet Valeſius allows them to be Jews; and Photius is of his opinion: the chief reaſons Valeſius gives are what Philo ſays, that they read nothing but the law, and the prophets. 2°. that they had ſome books of their founders; and how can this quadrate with the Chriſtians, who were then in their firſt riſe? 3°. that they only prayed twice a day, whereas the Chriſtians then prayed much oftener. 4°. that the Chriſtians had no hymns or pſalms till after the time of Antoninus. Laſtly, that the Chriſtians could not be ſpread over the world.

Nevertheleſs Euſebius, *lib.* II. *Hiſt. Eccl. c.* 17. St. Jerom, Sozomen, Nicephorus, Baronius, Petavius, M. Godeau, Montfaucon, *&c.* maintain the *Therapeutæ* to have been Chriſtians; urging, that nothing can be more conformable to the practices of the church than the account given of them by Philo; that thoſe books of their founders are the goſpels, and other writings of the apoſtles; and that there are indications even of biſhops and other miniſters among them.

But M. Bouhier, preſident of the parliament of Dijon, refutes this opinion; ſuppoſing it inconſiſtent in Philo, a Jew, to write a book expreſly in praiſe of Chriſtians.

Several authors, however, as Caſſian, F. Helyot, *&c.* maintain, that the *Therapeutæ* were not only Chriſtians, but that they were alſo religious: and, in effect, M. Bouhier allows, that if they were Chriſtians, they muſt be confeſſed to have been monks.—As to his argument, that Philo would never have wrote a panegyric on the Chriſtians; it is anſwered, that they were people of his own nation, Jews, as he himſelf expreſſes it; and that he only looked on them as a ſect of Jews, who, by their extraordinary virtue, did honour to his nation.

But though the Chriſtianity of the *Therapeutæ* appears probable enough; yet their monachiſm is not made out at all. See Monk, *&c.*

THERAPEUTICE,* **Therapeutics**, that part of medicine which is employed in ſeeking out remedies againſt diſeaſes, and in preſcribing and applying them to effect a cure. See Medicine.

* The word is Greek, θεραπευτικη, formed from θεραπευειν, to *attend*, to *nurſe*, *cure*, &c.

Therapeutice teaches the uſe of diet, pharmacy, chirurgery, and the *methodus medendi*. See Diet, Medicines, Prescription, *&c.*

Therapeutice is alſo uſed figuratively, in ſpeaking of the mind, and of diſcourſes made to correct the errors and defects thereof.

Such is the *Therapeutice* or *Therapeutics* of Theodoret; being a treatiſe againſt the errors or unwholſome opinions of the Greeks, *i. e.* the heathens.

THERAPHIM, a **Teraphim**, a Hebrew term, which has given great torture to the critics.—We meet with it 13, or 14 times in ſcripture, where it is commonly interpreted *idols*: but the rabbins are not contented to have it ſimply ſignify idols, but will have it denote a peculiar ſort of idols or images for the knowledge of futurity, *i. e.* oracles.

R. David de Pomis obſerves, that they were called *theraphim*, from רפה, *raphah*, to leave, becauſe people quitted every thing to conſult them.—He adds, that the *theraphim* were in human ſhape; and that, when raiſed upright, they ſpoke at certain hours, and under certain conſtellations, by the influence of the celeſtial bodies. This is a rabbinical fable, which he has learned from Abenezra.

Others hold, that the *theraphim* were brazen inſtruments which pointed out the hours and minutes of future events, as directed by the ſtars.—De Pomis corrects Abenezra, ſaying, that the *theraphim* being made under a certain conſtellation, the devil made them ſpeak under the ſame. See Talisman.

R. Eliezer tells us the reaſon why the rabbins will have the *theraphim* to ſpeak, and render oracles: 'tis, ſays he, becauſe it is written in the prophet Zachary, x. 2. The *theraphim* have ſpoken vain things.

The ſame rabbin adds, that to make the *theraphim*, they killed a firſt-born child, clove his head, and ſeaſoned it with ſalt and oil; that they wrote on a plate of gold the name of ſome impure ſpirit, laid it under the tongue of the dead, placed the head againſt the wall, lighted lamps before it, prayed to it, and it talked with them.

Be this as it will, Vorſtius obſerves, that beſide the paſſage of Zachary juſt quoted, it appears likewiſe from Ezekiel xxi. 22. that the *theraphim* were conſulted as oracles.

De Pomis endeavours to ſhew, that the *theraphim*, which Michol put in David's bed, were not of this kind, becauſe they were not in the figure of men; but R. Eliezer is of another ſentiment.

As to the manner of making the *theraphim*, Vorſtius takes it to be a vain tradition of the rabbins, though R. Tanichuma and Jonathan, in his *Targum*, Gen. xxxi. 19. relate it after R. Eliezer.—The chief reaſon of his diſbelief, is, that Laban who had not quite loſt all notion of the true God, as appears from Gen. xxxi. 53. could not be guilty of ſo great a cruelty: but Vorſtius does not conſider that the cuſtom might not be leſs real, for its not having been eſtabliſhed ſo early as Laban; and that the Hebrews ſometimes burnt their children to Moloch.

F. Kircher directs us to ſeek the origin of the *theraphim* in Egypt; adding, that the word is Egyptian.—Spencer, in his diſſertation on the *urim* and *thummim*, maintains the word to be Chaldee, and to ſignify the ſame with *ſeraphim*; the Chaldeans being frequently known to change the ש into ת, that is, ſ into t. He adds, that thoſe images were borrowed from the Amorites, Chaldeans, or Syrians; and that the *ſerapis* of the Egyptians is the ſame thing with the *theraphim* of the Chaldeans. See Selden *de diis Syriis*, ſynt. 1. c. 2.

THERIACA, ΘΗΡΙΑΚΑ, **Treacle**, in medicine, a name given by the ancients to various compoſitions eſteemed good againſt poiſons; but now chiefly reſtrained to what, by way of diſtinction, we call *theriaca andromachi*, or *venice treacle*. See Alexipharmic, Antidote, Counter-poison, *&c.*

This is a compound of no leſs than 64 drugs, prepared, pulverized and reduced, by means of honey, into a liquid electuary. See Electuary.

The baſis, or foundation of the compoſition, is vipers fleſh. M. Charas has wrote a particular hiſtory of the animals, plants and minerals, which enter the compoſition of this famed remedy.

It is found ſoveraign againſt the bites of venomous beaſts, and in the wind-colic; and is alſo uſed in intermitting fevers, and in caſes requiring perſpiratives and diaphoretics; alſo in continual fevers, eſpecially ſuch as are malignant, and where the pulſe is low and ticking; in the ſmall-pox and meaſles: and, as moſt of the ingredients thereof are very hot, in all diſeaſes, where the natural heat is weak and languid.

Andromachus, Nero's phyſician, paſſes for the inventor of the *theriaca*; at leaſt, it was he gave the firſt deſcription thereof in elegiac verſes: his ſon did the ſame in proſe, and Democrates in iambics.

Anciently, the *treacle* made at Venice had all the vogue: and many ſtill retain the ancient prejudice: but it is now prepared at Montpellier, at Paris, and even at London, with as much advantage as at Venice.

There is another vulgar kind of *theriaca*, called *diateſſaron*, becauſe only conſiſting of four ingredients. See Diatessaron.

Treacle water, and *treacle vinegar* are found good preſervatives againſt putrid air, whether by being only ſmelt at, or by rubbing the wriſts, temples and noſe therewith.

THERMÆ,* ΘΕΡΜΑΙ, in architecture, ancient buildings, furniſhed with baths, eſpecially of the hot kind. See Bath.

* The word is formed from the Greek, θερμος, *hot*.

Among the nobleſt monuments of ancient Rome, are reckoned the *thermæ*, or baths of Diocleſian.

Thermæ, or hot ſprings, it is commonly argued, owe their heat to a colluctation, or effervefcence of the minerals in them. Though Dr. Woodward aſcribes it to the ſubterraneous heat, or fire, which communicates with them by ſome ſpiracle or canal, whereby a greater quantity of heat is derived thither than to ordinary ſprings. See Mineral, Water, Spring, Heat, *&c.*

THERMOMETER, Thermometrum, an inſtrument ſhewing, or rather meaſuring, the increaſe and decreaſe of the heat and cold of the air. See Heat, Air, *&c.*

Thermometer and *thermoſcope* are ordinarily accounted the ſame thing: Wolfius, however, makes a difference; but ſhews withal that what we call *thermometers* are, in reality, no more than *thermoſcopes*. See Thermoscope.

There are various kinds of *thermometers*, the conſtructions, defects, theory, *&c.* whereof are as follow:

Conſtruction of a Thermometer, *depending on the rarefaction of the air.*—In a tube B C, (*Tab. Pneumatics*, *fig.* 3. *n.* 2.) to which is faſtened a glaſs ball A B, is put a quantity of common water mixed with aqua regia, to prevent its freezing; and the mixture tinged with a ſolution of vitriol to give it a greenneſs. In filling the tube, care is taken that there be ſo much air left in the ball and the tube, as, that when at its greateſt condenſation in the middle of winter, it may juſt fill the ball; and yet in its greateſt rarefaction in ſummer, may not drive all the liquor out of the tube. To the other extreme of the tube is faſtened another glaſs ball C D, open to the air at D: on each ſide the tube is applied the ſcale E F, divided into any number of equal parts.

Now, as the ambient air becomes warmer, the air in the ball and the top of the tube expanding, will drive the liquor into the lower ball; and conſequently its ſurface will deſcend: on the contrary, as the ambient air grows colder, that in the ball becoming condenſed, the liquor will aſcend. See Rarefaction, and Condensation.

Conſtruction of the mercurial Thermometer.—In the ſame manner, and with the ſame caution as before, put a little quantity of mercury, not exceeding the bigneſs of a pea, into a tube BC (*fig.* 4. *n.* 2.) thus bent in wreaths, that, taking up the leſs height, it may be the more manageable, and leſs liable to harm; divide this tube into any number of equal parts to ſerve for a ſcale.

Here the approaches of the mercury towards the ball A will ſhew the increaſes of the degree of heat.—The reaſon is the ſame as in the former.

The defect of both theſe inſtruments conſiſts in this, that they are liable to be acted on by a double cauſe: for, not only a decreaſe of heat, but alſo an increaſe of weight of the atmoſphere, will make the liquor riſe in the one, and the mercury in the other; and, on the contrary, either an increaſe of heat, or decreaſe of weight of the atmoſphere, will make it deſcend. See Barometer.

Conſtruction of the Florentine or common Thermometer.—The academiſts del Cimento, conſidering the inconveniences of the *thermometers* juſt deſcribed, attempted another, that ſhould meaſure heat and cold by the rarefaction and condenſation of ſpirit of wine; though thoſe be vaſtly leſs than of air, and conſequently the alterations in the degree of heat like to be much leſs ſenſible.

The ſtructure of their *thermometer* is this: on ſome little pieces of turmeric is poured a quantity of rectified ſpirit of wine, which hereby receives a red tincture; this done, the ſpirit of wine is filtrated again and again through a brown paper, that the coarſer particles of the root may be ſeparated therefrom. With the ſpirit thus tinged and prepared, they fill a glaſs ball A B (*fig.* 5. *n.* 2.) and a tube B C; and that all the ſpirit may not deſcend in winter into the ball, it is convenient to put the ball into a lump of ſnow, mixed with ſalt: or, if the inſtrument be to be made in ſummer, into ſpring-water impregnated with ſalt-petre, that the condenſed ſpirit may ſhew how far it will retire in the extremeſt cold.

If it riſe to too great a height from the ball, part of it is to be taken out; and that the tube may not be made longer than needs, it is convenient to immerge the ball, filled with its ſpirit, in boiling water, and to mark the furtheſt point to which the ſpirit then riſes.

At this point the tube is to be hermetically ſealed by the flame of a lamp; and at the ſides is to be added a ſcale, as in the former *thermometer*.

Now, ſpirit of wine rarifying and condenſing very conſiderably; as the heat of the ambient air increaſes, the ſpirit will dilate, and conſequently will aſcend in the tube; and as the heat decreaſes, the ſpirit will deſcend: and the degree or quantity of aſcent and deſcent will be ſeen in the ſcale. Yet as the ratio of yeſterday's heat to to-day's is not hereby diſcovered, this inſtrument is not ſtrictly a *thermometer*, no more than the former.

It is to be here obſerved, 1°. that as the natural gravity of the liquor makes it tend downwards, ſo it reſiſts its aſcent out of the ball into the tube; and that the more, as it riſes higher: for which reaſon, it were beſt to have the tube B C horizontal.

2°. Since there muſt of neceſſity be ſome air left in the void part of the tube over the liquor, that air, by its elaſticity, will tend downwards, and of conſequence will reſiſt the riſe of the liquor, and be compreſſed by it as it does riſe: its elaſticity therefore is thus increaſed.

3°. Since it is found from experience, that a leſs degree of heat is communicated more eaſily to the ſpirit of wine in the ball than a greater, the rarefactions of the ſpirit of wine are not proportionable to their producing cauſes; eſpecially ſince a greater degree of heat finds more liquor in the tube than a leſs does, to which, notwithſtanding, the heat may be more eaſily communicated than to that ſtagnating in the ball.

On theſe accounts, the Florentine *thermometer*, though that commonly in uſe, is far from being an accurate meaſure of heat, *&c.* to which may be added what Dr. Halley obſerves in the *philoſophical tranſactions*, that he has learned from thoſe who have kept ſpirit of wine long, that it loſes part of its expanſive force in courſe of time.

Another great defect of theſe, and other *thermometers*, is, that their degrees are not comparable with each other. They mark, indeed, the different degrees of heat and cold, but each marks only for itſelf, and after its own manner; for that they do not proceed from any point of heat, or cold, that is common to them all. It is with them as with two clocks, which for want of having been firſt ſet to the ſame hour by the ſun, will, indeed, mark that one, two, or more hours are paſſed, but not what hour it is by the day.—Nor can we be aſſured, that when the liquor is riſen a degree in two different *thermometers*, they have both ſuffered the ſame impreſſion of an equal additional heat: ſince the ſpirit of wine may not be the ſame in both, and in proportion as this ſpirit is more or leſs rectified, it will riſe more or leſs high by the ſame heat.

Nor is this all: for in graduating *thermometers* they take equal lengths of the tube for equal aſcents of the ſpirit; whereas, ſuppoſing the diameters of the tube equal throughout, which very rarely happens, there are ſo many irregularities withinſide, that a certain length of tube ſometimes requires double the quantity of liquor to fill it, that the ſame length in another tube of the ſame diameter requires. All which ariſes from the unequal thickneſſes of the parietes of tubes in different places; and from accidental prominences and cavities, always found in the inner ſurfaces of tubes; and eſpecially from their being almoſt always bigger at one end than the other.

Hence it is, that the compariſon of *thermometers* becomes ſo precarious and defective.—Yet the moſt curious and intereſting uſe of *thermometers* is, what ought to ariſe from ſuch compariſon. It is by this we ſhould know the heat or cold of another ſeaſon, of another year, another climate, *&c.* what is the greateſt degree of heat or cold that men and other animals can ſubſiſt in.

M. de Reaumur has contrived a new *thermometer* for this purpoſe; wherein the inconveniences above recited are remedied. See its deſcription at large in *Mem. de l'Acad. R. des Scien. an.* 1730, p. 645. *hiſt.* p. 15. *item*, *an.* 1731. p. 354. *hiſt.* p. 7.

Various methods have been propoſed by various authors, for finding a fixed point, or degree of heat and cold, from which to account the other degrees, and adjuſt the ſcale; that ſo obſervations made at the ſame or different times, in different places, may be compared together.

Some note the place the liquor is at in winter, when water begins to freeze; and again, that in ſummer, when butter placed near the ball of the thermometer, melts: the intermediate ſpace they divide into two equal parts, the middle point whereof anſwers, in their graduation, to temperate heat; and each moiety they ſub-divide into ten degrees, adding four other equal degrees on each of the two extremes. But this method ſuppoſes the ſame degree of heat and cold to anſwer to the freezing of all water, and the melting of all butter; as alſo, that all *thermometers* receive the ſame impreſſions from the ſame degree of heat; all which are contrary to experience.

Others adviſe the ball of the *thermometer* to be put in a quantity of ſnow and ſalt, and the point the liquor is at to be noted. Thence the *thermometer* is to be removed into a deep cave or cellar, where no external air reaches; ſo that the liquor receiving the action of a temperate air, may ſhew the degree of temperate heat. Laſtly, they divide the intermediate ſpace into 15, or more equal parts, which they continue beyond each extreme: but this method is liable to the ſame inconveniences as the former.

Dr. Halley aſſumes that for a fixed degree of heat wherein ſpirit of wine begins to boil; but there is reaſon to ſuſpect this too of being precarious: though after him, M. Amontons retains the degree of heat anſwering to boiling water, for the graduating his mercurial *thermometer*. But as the different ſpecific gravities of water, argue a difference of maſs and texture, it is highly probable that heat of all boiling waters is not the ſame; ſo that the point is yet undetermined.

THERMOSCOPE,* an inſtrument ſhewing the changes happening in the air with reſpect to heat and cold. See AIR, WEATHER, *&c.*

* The word *thermoſcope* is generally uſed indifferently with that of *thermometer*. There is ſome difference, however, in the literal import of the two; the firſt ſignifying an inſtrument that ſhews, or exhibits the changes of heat, *&c.* to the eye, formed from θερμη, *heat*, and σκοπεω, *video, I ſee*; and the latter an inſtrument that meaſures thoſe changes, from θερμη, *heat*, and μετρειν, *to meaſure*: on which foundation the thermometer ſhould be a more accurate *thermoſcope*, *&c.* This difference the excellent Wolfius taking hold of, deſcribes all the thermometers in uſe as *thermoſcopes*; ſhewing that none of them properly meaſure the changes of heat, *&c.* none of them do more than indicate the ſame. Though their different heights yeſterday and today ſhew a difference of heat, yet ſince they do not diſcover the ratio of yeſterday's heat to to-day's, they are not ſtrictly thermometers. See THERMOMETER.

In the *Acta erudit. Lipſ.* we have a method of graduating the common thermometers ſo, as that the unequal diviſions thereof ſhall correſpond to equal degrees of heat, whereby the ratio of to-day's heat to yeſterday's will be meaſured, and conſequently the *thermoſcope* be improved into a thermometer.

The method is that of Car. Renaldinus, and is deſcribed by the Leipſic editors thus: take a ſlender tube about four palms long, with a ball faſtened to the ſame; pour into it ſpirit of wine, enough juſt to fill the ball when ſurrounded with ice, and not a drop over. In this ſtate, ſeal the orifice of the tube hermetically, and provide ſix veſſels, each capable of containing a pound of water, and ſomewhat more; and into the firſt pour 11 ounces of cold water, into the ſecond 10 ounces, into the third 9, *&c.* This done, immerge the thermometer in the firſt veſſel, and pour into it one ounce of hot water; obſerving how high the ſpirit riſes in the tube, and noting the point with unity: then remove the barometer into the ſecond veſſel, into which is to be poured two ounces of hot water, and note the place the ſpirit riſes to, with 2. By thus proceeding till the whole pound of water is ſpent, the inſtrument will be found divided into 12 parts, denoting ſo many terms or degrees of heat; ſo that at 2, the heat is double to that at 1, at 3 triple, *&c.*

But the method, though plauſible, Wolfius ſhews is deceitful, and is built on falſe ſuppoſitions: for it takes for granted, that we have one degree of heat, by adding one ounce of hot to 11 of cold water; two degrees, by adding two ounces to 10, *&c.* It ſuppoſes that a ſingle degree of heat acts on the ſpirit of wine in the ball with a ſingle force, a double with a double force, *&c.* Laſtly, it ſuppoſes that if the effect be produced in the thermometer by the heat of the ambient air, which is here produced by the hot water, the air has the ſame degree of heat with the water.

But none of theſe ſuppoſitions is true: for, as to the firſt, allowing the heat of the hot water, equally diſtributed through the cold, one degree of heat will then be diſtributed through 11 parts, two through 10, three through 9, *&c.* Taking therefore equal bulks of the water, *e. gr.* a twelfth part of each, the heat will not be double in one, triple in another, quadruple in another, *&c.*

The firſt ſuppoſition therefore is erroneous, and ſo is the ſecond; for neither is the heat of the hot water equably diffuſed throughout the cold, nor does the heat of the hot water act uniformly on the ſpirit of wine, *i. e.* not with the ſame force during all the time of its action.

For the third ſuppoſition, the heat of the ambient air acts not only on the ſpirit of wine in the ball, but alſo on that in the tube; and therefore this as well as that will be changed.

THESEA, or THESÆA, ΘΗΣΕΙΑ, in antiquity, feaſts celebrated by the Athenians, in honour of Theſeus. See FEAST.

In ſpite of the important ſervices that hero had done his country, in delivering it from a ſhameful tribute of ſo many youths of either ſex ſent yearly to be devoured by the Minotaur in Crete (as the fable has it) or ſent as ſlaves to Minos king of Crete, as the hiſtories have it; from which he freed them, by overcoming Taurus, Minos's general: he was baniſhed for ſome time, and retired to Scyro, under the protection of Lycomedes, king of that iſland, who ſlew him out of jealouſy.

The gods revenged this treatment Theſeus received from the Athenians, by afflicting them with a famine, which the oracle aſſured them ſhould not ceaſe till they had avenged his death.—Upon this they ſlew Lycomedes, brought Theſeus's bones to Athens, placed them in a temple erected to him, and appointed *theſea* to be held every eighth day of each month, wherein largeſſes were diſtributed to the people, and the day ſpent by the rich in feaſting and rejoicing.

THESIN,—*Per Arſin* & THESIN. See *Per* ARSIN.

THESIS,* in the ſchools, a general propoſition which a perſon advances, and offers to maintain. See PROPOSITION.—See alſo ECTHESIS, METATHESIS, PARATHESIS, PARENTHESIS, SYNTHESIS, *&c.*

* The word is pure Greek, θεσις, *poſition*; formed from τιθημι, *pono, I put*, or *lay down*.

In the colleges it is frequent to have placards, containing a number of theſe *theſes*.—There are *theſes* in theology, in medicine, in philoſophy, in law, *&c.*—The maintaining a *theſis*, is a great part of the exerciſe a ſtudent is to undergo for a degree. See DEGREE.

THESIS, in logic, *&c.*—Every propoſition may be divided into *theſis*, and hypotheſis, *theſis* contains the thing affirmed or denied, and hypotheſis the conditions of the affirmation or negation. See HYPOTHESIS.

Thus, in Euclid, If a triangle and parallelogram have equal baſes and altitudes, (is the hypotheſis) the firſt is half of the ſecond, the *theſis*.

Arſis and THESIS. See the article ARSIS.

THEURGY,* ΘΕΟΥΡΓΙΑ, a name which the ancients gave to that ſacred part of magic, which we ſometimes call *white magic*, or the *white art*. See MAGIC.

* The word is formed from the Greek, Θεος, *God*, and εργον, *work*, *q. d.* the art of doing divine things, or things which God alone can do, or the power of working extraordinary and ſupernatural things by invoking the names of God, ſaints, angels, *&c.*

Accordingly, thoſe who have wrote of magic in the general, divide it into three parts; the firſt whereof is called *theurgy*, as operating by divine or celeſtial means; the ſecond, *natural magic*, performed by the powers of nature; and the third, *necromancy*, which proceeds by invoking dæmons. See NECROMANCY, *&c.*

THICK *Inteſtines*. See the article INTESTINES.

THIGH, a part of the body of men, quadrupeds, and birds, between the leg and the trunk. See LEGS, *&c.*

The ſeveral parts of the *thigh* have different names: the fore and upper part is joined to the groin, or *inguen*; the ſide makes the hanch, or hip, *coxa*, *coxendix*; the upper hind-part the buttock, *clunis*; the lower and hind-part the ham, *poples*, of *poſt* and *plico*, becauſe it bends backwards; and the fore-part the knee, *genu*, of the Greek γονυ, which ſignifies the ſame.

The bone of the *thigh* is the largeſt and ſtrongeſt in the whole human body, as being to bear the whole burthen thereof: whence its name *femur*, of *fero*, *I bear*. See FEMUR.

THINKING, *Cogitation*, a general name for any act, or operation of the mind. See MIND, and THOUGHT.

Chauvin, with the Carteſians, will have *thinking* to conſiſt in a certain native, inherent motion, or agitation of the human mind, whereof itſelf is conſcious.—*Native* and *inherent*, ſince he conceives it no other than the very eſſence of the mind itſelf, or, at leaſt, its principal and fundamental property:—an *agitation*, ſince there is a new modification or change made in the mind, which we ſcarce know how to conceive without motion; add, that the origin and etymology of the word *cogitation*, according to Varro and Feſtus, implies as much; *cogito* being uſed for *coagito*. See THOUGHT.

When the mind turns its view inwards, upon itſelf, the firſt idea that offers, ſays Mr. Lock, is *thinking*; wherein it obſerves a great variety of modifications, and thereof frames to itſelf diſtinct ideas: thus the perfection annexed to any impreſſion on the body made by an external object, is called *ſenſation*. See SENSATION.

When an idea recurs without the preſence of the object, it is called *remembrance*. See MEMORY.

When ſought after by the mind, and brought again in view, it is called *recollection*. See RECOLLECTION.

When held there long under attentive conſideration, it is *contemplation*. See CONTEMPLATION.

When ideas float in the mind without regard or reflection, it is called a *revery*: when they are taken expreſs notice of, and, as it were, regiſtered in the memory, it is *attention*: and when the mind fixes its view on any one idea, and conſiders it on all ſides, it is *ſtudy* and *attention*. See ATTENTION, &c.

Theſe are the moſt obvious modes of *thinking*; but there are ſeveral others which we know of; and, doubtleſs, the mind is capable of infinite others, whereof we have no notion at all. See MODE.

The ſchool philoſophers uſually divide *thinking*, with regard to the objects it is employed about, into underſtanding, *intellectio*; and willing, *volitio*. See UNDERSTANDING, and WILL.—And hence, thoſe are ſaid to be the two powers or faculties of the human mind. See POWER, and FACULTY.

Intellectual *thinking* is farther ſubdivided into divers kinds: the firſt, when the mind merely apprehends or takes notice of a thing, called *perception*: the ſecond, when it affirms or denies a thing, called *judgment*: the third, when it gathers or infers a thing from others given, called *reaſoning*: the fourth, when the mind diſpoſes its own thoughts or ideas in order, called *method*. See PERCEPTION, JUDGMENT, REASONING, and METHOD.

Volitive *thinking*, or volition, admits of infinite different modifications, or new determinations. See WILL.

Some authors extend the idea of *thinking* further; and conſider it in God, angels, brutes, &c. whence a new diviſion of *thinking* into divine, angelical, human, and animal or ſenſitive. But the two firſt we know little or nothing of. See GOD, and ANGEL.—The third is that we have already been treating of.—As to the laſt, *viz.* animal or ſenſitive thought, it is defined to be an action of the ſoul attending to an external object, effected by means of the animal ſpirits duly agitated in the brain, to excite an idea. See SPIRITS, KNOWLEDGE, THOUGHT, &c.

The Carteſians maintain, that *thinking* is eſſential to the human ſoul; and, conſequently, that there is no time when the ſoul does not *think*: but this doctrine is overturned by Mr. Lock, who ſhews, that in ſleep without dreaming, there is an entire ceſſation of all the modes of *thinking*. See IDEA.

I think, *cogito*, according to des Cartes, is the firſt, and moſt certain of all truths; from which alone we draw this conſequence, *therefore I am*, or exiſt, *ſum*.—One might alſo ſay, *cogito, ergo Deus eſt*; *I think, therefore there is a God*. See EXISTENCE, CARTESIAN, &c.—Logic is defined the art of *thinking* juſtly. See LOGIC.

THIRD, *Tertius*. See NUMBER, and NUMERATION.

THIRD, in muſic, a concord reſulting from a mixture of two ſounds containing an interval of two degrees. See CONCORD.

It is called *third*, as containing three terms, or ſounds between the extremes. See INTERVAL.

The *third*, in Italian, *terza*, in French *tierce*, in Latin *tertia*, has no general name in the Greek: it is the firſt of the imperfect concords; *i. e.* of ſuch as admit of majority and minority, without ceaſing to be concords.—And hence it is, that it is diſtinguiſhed into two kinds.

The firſt, which the Italians call *ditono* (from the greek *ditonos*) or *terza maggiore*, and we *greater third*, is compoſed diatonically of three terms, or ſounds, containing two degrees, or intervals; one whereof, in the ancient ſyſtem, is a greater tone, and the other a leſſer tone: but in the modern temperate ſyſtem they are both equal, as *ut*, *re*, *mi*; or *ut*, *mi*. See DEGREE, TONE, SEMITONE, &c.

Chromatically it is compoſed of four ſemitones; two whereof are greater, and the *third* leſs: it takes its form from the ratio ſeſqui-quarta 4 : 5.

The ſecond *third*, which the Italians call *trihemituono*, or *ſemi-ditono*, or *terza minore*, and we *leſſer third*, is compoſed, like the former, of three ſounds or terms, and two degrees or intervals: but theſe degrees, diatonically, are only a greater tone, and a ſemitone.

Chromatically it is compoſed of three tones, two greater, and one leſs; as *re*, *mi*, *fa*; or *re*, *fa*.

It takes its form from the ratio ſeſqui-quinta 5 : 6.

Both theſe *thirds* are of admirable uſe in melody; and make, as it were, the foundation and life of harmony. See CONCORD, MELODY, and HARMONY.

They are uſed agreeably both aſcending and deſcending: and that either running over all the degrees, as *ut*, *re*, *mi*; or *re*, *mi*, *fa*; or ſkipping the middle degree, as *ut*, *mi*; or *re*, *fa*.

But it is to be obſerved, the *greater third* has ſomewhat gay and ſprightly in riſing, and ſomewhat heavy and melancholic in falling: the *leſſer third*, on the contrary, has ſomewhat ſoft and tender in riſing, and ſomewhat briſk in falling.—For the uſe of the *greater* or *leſſer third* in the ſeries of the ſcale; ſee SCALE.

There are two other kinds of *thirds* that are diſſonant and vicious; the firſt only compoſed of two greater ſemitones, and, by conſequence, of a ſemitone leſs than the *leſſer third*: this they call the *defective third*.

The ſecond, on the contrary, has a ſemitone more than the *greater third*; and this they call the *redundant third*.

The *defective third* is very frequent in Italian ſongs, eſpecially thoſe compoſed for inſtruments; but is not to be uſed without neceſſity, and a deal of diſcretion. The *redundant third* is abſolutely forbidden.

THIRD *Borough*, in our ancient law-books, denotes a conſtable. See CONSTABLE.

THIRD *Earing*, in huſbandry, the tilling or ploughing of the ground a *third* time.

THIRD *Eſtate*. See ESTATE, COMMONS, &c.

THIRD *Night-awn-hynd*: by the laws of Edward the Confeſſor, a gueſt who had lain three nights in an inn, was reputed a domeſtic, and his hoſt was anſwerable for what offence he ſhould commit. See HOGENHINE.

For one night he was accounted *uncuth*, for two nights *gueſt*, and the *third*, *awn-hynd*.—*Prima nocte incognitus, ſecunda hoſpes, tertia domeſticus cenſetur.*

THIRD *Order*, a ſort of religious order, that obſerves the ſame rule, and the ſame manner of life, in proportion, as ſome other two orders inſtituted before. See ORDER.

The *third orders* are not originally religious orders, but aſſociations of ſecular, and even married perſons, who conform, as far as their condition will allow them, to the deſign, intention, and rules of a religious order which aſſociates and directs them.

The Premonſtrantes, Carmelites, Auguſtines, and Franciſcans, diſpute among themſelves the honour of having firſt introduced *third orders*: but the pretenſions of theſe laſt appear to be the beſt founded.

The firſt contend, that the THIRD *order* of Premonſtrantes began in the life-time of their founder St. Norbert, who died in 1134. See PREMONSTRANTES.

F. Diego de Coria Maldonado, a Spaniſh Carmelite, who has a particular treatiſe on the *third order* of Carmelites, derives them immediately, as well as the Carmelites themſelves, from the prophet Elijah; and among the great men who have made profeſſion of that *third order*, reckons the prophet Obadiah, who lived 800 years before Chriſt; and among the women, our Saviour's great grandmother, under the borrowed name of St. Emerentiena. This Obadiah, he ſays, was controller-general of the houſe of king Ahab, mentioned in the firſt book of Kings, chap. xviii. and diſciple of the prophet Elijah. After ſerving that prince, and his ſucceſſors, he retired to ſerve God, and entered the prophetic order of Elijah, but without quitting his houſe, his wife, or children.

The author adds, that he was not properly of the *third order*, but of the ſecond, which conſiſted of married people, and was called *the order of eunuchs*, under the direction of Elijah. Such, according to him, is the foundation of the *third order* of Carmelites. See CARMELITE.

F. Helyot ſhews, that this *third order* was not begun till the year 1476, when Sixtus IV. gave permiſſion to the prior and provincials of the Carmelites, to give the regular habit and rule of their order, to people of both ſexes, married or unmarried, living at liberty in the world. De Coria reckons St. Louis, king of France, in the *third order* of the Carmelites.

The THIRD *order* of Auguſtins, if we credit F. Bruno, was inſtituted by St. Auguſtin himſelf: but the arguments he produces are ſo frivolous, that F. Helyot obſerves, they are not worth the refuting.

The THIRD *order* of Franciſcans was inſtituted by St. Francis in 1221, in favour of people of both ſexes, who being ſmitten with the preachings of that ſaint, demanded of him an eaſy manner of living a Chriſtian life: upon which he gave them a rule, the conſtitutions whereof are not now extant as wrote by himſelf, but only as reduced and confirmed by pope Nicholas IV. 68 years afterwards.

The firſt order of this ſaint are the monks called *minor friars*, comprehending the cordeliers, capuchins, and recollects; the ſecond comprehends the nuns of St. Clare; and the third ſeveral perſons of both ſexes, who live at liberty, and theſe are what we call the *third order*. See FRANCISCAN, &c.

Of this order, which was only eſtabliſhed for ſecular perſons, ſeveral of both ſexes, to attain the greater perfection, have ſince commenced religious, and formed various congregations, under various names, as *religious penitents of the third order*, &c.

THIRD *Point*, or TIERCE-*point*, in architecture, the point of ſection in the vertex of an equilateral triangle.

Arches or vaults of the *third point*, called by the Italians *di terzo acuto*, are thoſe conſiſting of two arches of a circle, meeting in an angle a-top. See ARCH.

THIRD *Point*, in perſpective,	See the articles	POINT.
THIRD *Rate*,		RATE.
THIRD *Subſidy-duty*.		DUTY.
Tithe of the THIRD *year*,		TITHE.

THIRDINGS, the third part of the corn or grain growing on the ground at the tenant's death, due to the lord for a heriot, within the manour of Turfat, in Herefordſhire. See HERIOT.

THIRST, a painful ſenſation, occaſioned by a preternatural vellication of the nerves of the throat or fauces, and producing a deſire of drinking. See DRINK.

Rohault accounts for *thirſt* thus: the ſtomach liquor, which ordinarily reſolves into a thick vapour, and aſcends from the ſtomach up into the throat, to moiſten it; being too much warmed and agitated, either from a want of ſome other liquor to temper and dilute it, or from any other cauſe, becoming converted into too thin, ſubtle, and penetrating a vapour, is ſo far from moiſtening and cooling the throat, that, on the contrary, it dries and heats it; and hence that motion in the nerves, the ſenſation whereof we call *thirſt*. See HUNGER.

Thirſt ſometimes alſo ariſes from a mere dryneſs of the part; and ſometimes from ſharp ſalts, more immediately vellicating the fibres of the throat.

There are various kinds of liquors which quench *thirſt*; ſome by tempering the ſtomach liquor; others by diluting, and even diſſolving the ſalt; and others by moiſtening and ſuppling the fibres.—Acids are peculiarly fitted for that end. See ACID.

Thirſt is ſometimes eluded by rolling a leaden bullet or a pebble in the mouth, which occaſions an extraordinary iſſue of ſaliva to moiſten the throat, *&c.* See SALIVA.

Mr. Boyle mentions a man who could eaſily abſtain from drinking for nine days, and yet his diet nothing more liquid than uſual; the ſecretions of urine, ſweat, *&c.* being performed all the while regularly, and in the ſame quantity as uſual.

In dropſical caſes, where there is not a right ſecretion of the urine by the renal glands, and the veſſels and parts of the body are loaded with too great a quantity of ſerous humours, a great moderation in drinking might be attended with good ſucceſs, provided ſome liquor could be found out to allay that uneaſy ſenſation: probably this would be beſt performed by mucilages acidulated with ſpirit of vitriol or ſulphur, or gellies with juice of lemon, *&c.* and that a ſmall quantity of ſuch a compoſition now and then uſed, might be of as much real ſervice in quenching *thirſt*, as draughts of liquors which increaſe the ſymptoms. See DROPSY.

THISTLE, *Carduus*, a name common to divers plants, whoſe flowers conſiſt of ſeveral little, narrow, longiſh leaves, ranged cloſe together into a ſort of head, and whoſe leaves are uſually ſquammoſe and prickly.—The moſt known of theſe plants are the *bleſſed* THISTLE. See CARDUUS *Benedictus*.

Milk THISTLE, or *our Lady's* THISTLE, *Carduus Mariæ*, the decoction whereof is by ſome recommended againſt the dropſy, jaundice, and pains of the kidneys.

Fuller's THISTLE, or *Teazel*; ſee under the article TEAZEL.

Order of the THISTLE, or of St. Andrew, is a military order in Scotland; inſtituted, as ſome ſay, by Hungus, or Hungo, king of the Picts, after a victory obtained over Athelſtan. See KNIGHT.

The legend is, that a croſs of St. Andrew (the patron of that kingdom) appearing to him at the time of the engagement, he bleſſed the happy augury, took the figure thereof into his ſtandard in honour of his protector, and inſtituted an order of knights, whoſe collar is of gold interwoven with *thiſtle* flowers, and ſprigs of rue.

From the collar hangs a medal, on which is the image of St. Andrew with his croſs on his breaſt; with this motto, *Nemo me impune laceſſet*, No body ſhall provoke me unpuniſhed.

Others give a different account of its origin, and aſſure us, it was inſtituted after the concluſion of a peace between Charles VII. of France, and the king of Scotland.

The abbot Juſtiniani goes up higher, and will have it to have been inſtituted by Achaius I. king of Scotland, in 809; who, after an alliance made with Charlemaign, took for his device the *thiſtle*, with the words *nemo me impune laceſſet*, which, in effect, is that of the order: he adds, that king James IV. renewed the order, and took St. Andrew for its protector.

The order only conſiſts of twelve knights, beſides the king, who is the chief, or ſoveraign. Their ordinary badge is a green ribbon, to which hangs a *thiſtle* of gold, crowned within a circle of gold, in which is the foreſaid motto.

Our Lady of the THISTLE, was alſo a military order inſtituted in 1370, by Louis II. duke of Bourbon.—It conſiſted of 26 knights, whereof that prince and his ſucceſſors were the chiefs: their badge was a ſky-blue girdle; and, on ſolemn occaſions, a mantle of the ſame colour, with a gold collar, interwoven with flower-de-luces, among which was the word *eſperance*, *hope*, in capitals.

THISTLE-*take*, a cuſtom in the honour of Halton, in the county of Cheſter, whereby, if in driving beaſts over the common, the driver permits them to graze, or take but a *thiſtle*, he ſhall pay a half-penny a beaſt to the lord of the fee.

At Fiſkerton, in Nottinghamſhire, by ancient cuſtom, if a native, or cottager killed a ſwine above a year old, he paid the lord one penny; which was alſo called *thiſtle-take*.

THLIPSIS, ΘΛΙΨΙΣ, is uſed by anatomiſts, for the compreſſion of any veſſel, or aperture, whereby its cavity is leſſened.

THNETOPSYCHITES,* a ſect in the ancient church, who believed the ſoul of man perfectly like that of brutes; and taught that it died with the body. See SOUL.

We meet with no account of theſe heretics any where, but in J. Damaſcenus, *hæreſ.* 90. unleſs they be the ſame with thoſe Euſebius ſpeaks of, *Hiſt. Eccleſ. lib.* 9. *c.* 38. who relates, that in Origen's time there were heretics in Arabia, who taught that the ſoul of man died with the body; but that it ſhould riſe again with it at the end of the world. He adds, that Origen refuted them in a numerous council, and reclaimed them from their errors.—St. Auguſtin and Iſidore call them Arabian heretics.

Marſhal, in his tables, has diſfigured the word, for want of underſtanding it; he writes it *thenopſychites*, inſtead of *thnetopſychites*: he likewiſe places them in the VIth century; on what grounds we cannot imagine.

THOMÆANS, THOMEANS, THOMITES, or *Chriſtians of St.* THOMAS, a people of the Eaſt-Indians, who, according to tradition, received the goſpel from the apoſtle St. Thomas. See CHRISTIAN.

Upon the arrival of the Portugueſe at Calecut, in their firſt voyage to the Indies, they met with ancient Chriſtians, who pretended to be deſcended from thoſe converted by St. Thomas. The *Thomæans* being informed of a new people arrived among them, who bore a particular veneration for the croſs, ſent embaſſadors to them to make an alliance with them, and to ſolicit their aſſiſtance againſt the Gentile princes, by whom they were greatly oppreſſed.

It is certain the *Thomæans* are Indigenæ, or originally of India: they are called *Nazarenes*; but cuſtom has affixed to that name an idea of contempt: their other name *Mappuley*, and, in the plural, *Mappuleymar*, is more honourable.

They form a very conſiderable clan, or caſt; but are always divided with factions, inveterate enmities, *&c.* The clan extends through all the country from Calecut to Travencor; not that all the tract is poſſeſſed wholly by them: ſometimes they have a whole town to themſelves, and ſometimes only a certain quarter in it.

They own themſelves ſtrangers in that country, and their tradition is, that they came thither from the country about the city of Meilapur, or St. Thomas, by reaſon they were perſecuted by the prince thereof. But the time of this tranſmigration no body knows any thing of; for they keep no monuments.

The *Thomæans* aſcribe their converſion, their diſcipline, *&c.* to St. Thomas: their breviary adds, that their apoſtle paſſed thence into China.

We ſhall not here enter into the diſpute, whether the St. Thomas ſo famed in the Indies be the apoſtle, or ſome other ſaint of that name; which latter is the opinion of ſeveral learned men, and particularly of M. Huet.

But the progreſs of the hiſtory of this church is not leſs difficult to trace than its origin: our European books mention the patriarch of Alexandria's ſending biſhops to the Indians, particularly St. Pantænus, St. Frumentius, *&c.* It may be doubted, whether or no it were to theſe Indians that they were ſent: Baronius, indeed, maintains it was; but the Portugueſe author *da Hiſtoria d'Ethiopia*, endeavours to prove it was to Ethiopia theſe ancient miſſionaries went. All we know for certain is, that the *Thomæans*, for ſeveral ages, were furniſhed with biſhops from the ſide of babylon, or Syria; and there is a kind of patriarch at babylon who continues to furniſh them.

Whether or no their apoſtle ordained them any biſhops (the order whereof may have been ſince extinct through want of proper ſubjects, as F. Bouchet imagines) is a queſtion: all we can ſay is, that the *Thomæan* church, at the firſt arrival of the Portugueſe, was wholly governed by theſe foreign biſhops.

The language they uſe, *in ſacris*, is the Chaldee, ſome ſay the Syriac: as to their ordinary language, it is the ſame with that of their neighbours.

The Chaldee was doubtleſs brought among them by their biſhops: it is added, that at the time the Eaſt was infected with Neſtorianiſm, Eutychianiſm, *&c.* the biſhops likewiſe carried them thoſe hereſies.

Such a mixture of opinions, with a total interruption of paſtors, ſometimes for ſeveral years together, occaſioned that horrible chaos their religion was in at the arrival of the Portugueſe: for a ſpecimen whereof we ſhall add their manner of celebrating the Euchariſt.

Over the altar was a kind of tribune or gallery; and while the prieſt was ſaying the beginning of the office below, a cake of flower of rice was frying in oil or butter above: when enough, the cake was let down in a baſket upon the altar, where the prieſt conſecrated it. As to the other ſpecies, for wine, they uſed a kind of brandy variouſly prepared in that country. Nor was their ordination much more regular; the archdeacon, who was ſometimes more reſpected than the biſhop himſelf, frequently ordained prieſts.

Their other abuſes were infinite: the Portugueſe, for theſe two laſt centuries, have laboured the reformation of this church; and have employed both the eccleſiaſtic and ſecular power therein: for this end they have called the *Thomæan* biſhops to the councils at Goa, have inſtructed, charged them, *&c.* and have even ſent them for inſtruction to Portugal and Rome: but they were ſtill apt to relapſe at their return; ſo that finding no good was like to be done with them, they reſolved to exclude them once for all, and to appoint an European biſhop in their room. Theſe proceedings have rendered the Portugueſe infinitely odious to the *Thomæans.*

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* The word is compoſed of the Greek, θνητος, *mortal*, and ψυχη, *ſoul*.

The perſon who contributed moſt to the reform, is Dom Frey Aleixo de Meneſes, archbiſhop of Goa, who governing the Portugueſe Indians for ſome time, in defect of a viceroy, took that occaſion to call a ſynod in the village of Diamper, where abundance of regulations were made, and the *Thomæans* united to the Roman church: he was ſeconded by the Jeſuits.

After the death of the archbiſhop, a great part of the *Thomæan* church relapſed, and thus ſtill continues, partly Roman, partly *Thomæan.*

THOMAS—*Chriſtians of St.* THOMAS, } See { CHRISTIANS.
THOMAS's *Hoſpital*, } { HOSPITAL.

THOMISM, or THOMAISM, the doctrine of St. Thomas Aquinas, and his followers the *Thomiſts*; chiefly with regard to predeſtination, and grace.

There is ſome doubt what the true, genuine *Thomiſm* is: the Dominicans pretend to hold pure *Thomiſm*; but there are other authors who diſtinguiſh the *Thomiſm* of St. Thomas, from that of the Dominicans. See DOMINICANS.

Others again make *Thomiſm* no other than a kind of Janſeniſm diſguiſed; but Janſeniſm we know has been condemned by the pope, which pure *Thomiſm* never was. See JANSENISM.

In effect, the writings of Alvarez and Lemos, who were appointed by their order to lay down and defend before the holy ſee the dogmata of their ſchool, have ſince been reputed the rule of pure *Thomiſm.*

The modern ſchool has abandoned many of the ancient *Thomiſts*, whoſe ſentiments and expreſſions appeared to Alvarez and Lemos too hard; and the new *Thomiſts*, who paſs the bounds marked by theſe two doctors, cannot give their opinions for the ſentiments of the ſchool of St. Thomas, which the pope has forbid being cenſured.

The *Thomiſm* allowed, is that of Alvarez and Lemos: thoſe two authors diſtinguiſh four claſſes of *Thomiſts:* the firſt, which they reject, deſtroys or takes away liberty; the ſecond and third do not differ from Molina. See MOLINISTS.

The laſt, which Alvarez embraces, admits a phyſical premotion, or predetermination, which is a complement of the active power, whereby it paſſes from the firſt act to the ſecond; that is, from complete and next power to action. See PREDETERMINATION.

This premotion they hold is offered in ſufficient grace: ſufficient grace is given to all men; and they have a complete, independent, next power not to act, and even to reject the moſt efficacious grace. See SUFFICIENT, and GRACE.

THOMISTS, a ſect of ſchool divines, who maintain *Thomiſm.* See SCHOOL, and THOMISM.

The avowed antagoniſts of the *Thomiſts* are the Scotiſts. See SCOTIST.

THOMITES. See the article THOMÆANS.

THORACIC, THORACICUS, in anatomy, an epithet given to two branches of the axillary artery, on account of their conveying the blood into ſome parts of the thorax. See THORAX.

The *thoracic* arteries are diſtinguiſhed into *upper* and *lower.*—There are likewiſe *thoracic* veins, an *upper* and *under*, for the reconveyance of the blood from the thorax to the axillary vein. See AXILLARY.

THORACIC *Duct*, *Ductus* THORACICUS, or *Chyliferus*, is a little canal ariſing from, or rather a continuation of, the exit or mouth of the receptaculum chyli. See RECEPTACLE.

It mounts all along the thorax, whence it takes its name, and ends in the left ſubclavian vein. It is ſometimes called *Pecquet's duct*, or *ductus Pecquetianus*, from M. Pecquet, ſuppoſed to be the firſt diſcoverer thereof.

Indeed the *thoracic* duct, Dr. Wharton aſſures us, was obſerved by Barthol. Euſtachio in 1563; but its uſe, and communication with the receptaculum chyli, was unknown, And hence it is that Pecquet, a phyſician of Dieppe, is commonly held to have firſt diſcovered it, in 1651; whence its denomination *ductus Pecquetianus:* tho' the deſcription he gives of its inſertion is faulty.—Van Horne confounds it with the receptaculum, or, as he calls it, *ciſterna chyli.*

In its progreſs through the thorax, it is furniſhed with a proper integument from the pleura, beſides the membrane it has in common with the receptaculum: at about one third of its way it divaricates, but ſoon unites again.

Dr. Drake obſerves, that it has valves in different places of its tract; Euſtachio ſays glands. Its uſe is to carry the chyle and lympha from the receptaculum into the ſubclavian, by which it is forwarded to the cava, and thence to the heart. See CHYLE.

THORAX,* ΘΩΡΑΞ, in anatomy, that part of the human body which forms the capacity of the breaſt, and wherein are included the heart and lungs.—See *Tab. Anat.* (Oſteol.) *fig.* 3. *n.* 13. 13. *fig.* 7. *n.* 15. 15.—See alſo BODY.

The *thorax* is alſo called the *ſecond* or *middle venter*, and properly the *cheſt.* See VENTER.

It is bounded a-top by the clavicles, and at bottom by the cartilago xiphoides, and the diaphragm.—Its fore-part is called the *ſternum*, or *breaſt-bone*; its ſide-parts, the *coſtæ*, or *ribs*; its hind-parts are the *ſpina dorſi*, and its *vertebræ*, with the *omoplate.* See RIBS, STERNUM, &c.

Beſide the heart and lungs, the *thorax* likewiſe contains the aſcending cava, the aorta, the pulmonary vein and artery, the trachea, œſophagus, &c.

It is lined within-ſide with a membrane called the *pleura*, and divided in the middle by another called the *mediaſtinum.* See PLEURA, and MEDIASTINUM.

THOROUGH-*Baſs*, in muſic, is that which continues quite through the compoſition. See BASS.

THOUGHT, *Sentiment*, a general name for all the ideas conſequent on the operations of the mind, and even for the operations themſelves. See THINKING.

As in the idea of *thought*, there is nothing included of what we include in the idea of an extended ſubſtance; and that whatever belongs to body, may be denied to belong to *thought:* we may conclude that *thought* is not a mode of extended ſubſtance, it being the nature of a mode not to be conceived, if the thing whereof it is the mode be denied. Hence we infer, that *thought* not being a mode of extended ſubſtance, muſt be the attribute of ſome other ſubſtance very different. See MODE.

F. Malebranche, with the ſpirit of a Carteſian, denies that a man who thinks ſeriouſly on the matter, can doubt but the eſſence of the mind conſiſts altogether in *thought*, as that of matter does in extenſion; and that according to the various modifications of *thought*, the mind ſometimes wills, ſometimes imagines, &c. as, according to the various modifications of extenſion, matter is ſometimes water, ſometimes wood, fire, &c.

By the way, by *thought* he does not mean the particular modifications of the ſoul, *i. e.* ſuch or ſuch a *thought*, but *thought* or thinking in the general, conſidered as capable of all kinds of modifications or ideas: as by extenſion he does not mean ſuch or ſuch an extenſion, as a ſquare, oval, or the like, but extenſion in the abſtract, conſidered as ſuſceptible of all kinds of modifications or figures.

He adds, that he takes it to be impoſſible to conceive a mind which does not think, though it be eaſy to conceive one which does not feel, or imagine, or will; in like manner as it is impoſſible to conceive a matter which is not extended, though it be eaſy to conceive one that is neither earth, nor metal; nor ſquare, nor round; nor that is even in motion.

Hence it may be concluded, that as it is poſſible there may be matter which is neither earth, nor metal; nor ſquare, nor round; nor even in motion: it is alſo poſſible, that a mind may neither perceive heat nor cold; nor joy nor grief; nor imagine any thing, nor will any thing; ſo that theſe modifications are not eſſential to it. Thinking alone, therefore, is the eſſence of the mind, as extenſion alone is the eſſence of matter. See ESSENCE, EXTENSION, WILL, &c.

But this doctrine no longer paſſes among us. The followers of Sir Iſaac Newton, and the new philoſophy, deny extenſion to be the eſſence of matter (ſee MATTER;) and the followers of Mr. Locke deny *thought* to be the eſſence of the mind. See SOUL.

THOUSAND. See the article NUMERATION.

THOUSAND *years reign.* See the articles MILLENNIUM, and MILLENNARIES.

THRASHING, or THRESHING, in agriculture, the act of beating the corn out of the ears. See CORN.

Thraſhing is performed two ways; or rather there are two ways of ſeparating corn from the ear—the firſt by beating it with a flail, which is properly what we call *thraſhing.*

Some authors will not by any means we ſhould call this by the Roman name *tritura*, or *trituratio*, but *flagellatio*, of *flagellum*, a *ſcourge*, or *flail.*

The other manner, ſtill practiſed in ſeveral countries, as we are informed by Liger, is to make mules or horſes trample on it backwards and forwards.—This is properly what the ancients called *tritura* and *trituratio.*

But they alſo uſed oxen therein; witneſs the Hebrews, who ſometimes yoaked four oxen together for this purpoſe.

Another way was with a kind of ſledge made of boards joined together, and loaden with ſtones or iron, upon which a man was mounted, and the whole drawn over the corn by horſes: this inſtrument was called *traba*, or *tribula.*

It is a rule among huſbandmen, that the ſeaſon for *thraſhing*, is when the corn has ſweated in the heap, or mow.

THRAVE, or THREAVE *of corn*, in moſt parts of England, is twenty-four ſheaves, or four ſhocks of ſix ſheaves to the ſhock—though in ſome counties they only reckon twelve ſhocks to the *thrave.*

King Athelſtan, anno 923, gave by charter to St. John of Beverly, four *thraves* of corn for every plough-land in the eaſt-riding of Yorkſhire.

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* It has its name from the Greek, θορειν, *ſalire, to leap*; by reaſon of the continual throbbing motion of the heart, which is contained therein.—Galen calls it *cithara*, and ſays it contains the parts that excite to love.

Ya ſou threve *be heven king,*
Of ilka plough of eſt-riding.

THREAD, in botany, is underſtood of thoſe threads uſually found in the middle of flowers; as in the lilly, tulip, roſe, &c. There are two kinds: thoſe which ſupport apices, are particularly called *ſtamina*; and thoſe which have none ſimply *threads*. See STAMINA.

Gold THREAD,	See the articles	GOLD.
Virgins THREAD,		VIRGIN.
THREADY *Marble*,		MARBLE.

THREAVE. See the article THRAVE.

THREE-*Legged Staff*, an inſtrument conſiſting of three wooden legs, made with joints, ſo as to ſhut all together, and to take off in the middle, for the better carriage; and uſually having on its top a ball and ſocket: its uſe is to ſupport and adjuſt inſtruments for aſtronomy, ſurveying, &c. See BALL and SOCKET.

THREE *Chapters*,	See the articles	CHAPTER.
Compaſſes of THREE *Legs*,		COMPASSES.
Ombre by THREE,		OMBRE.
Rule of THREE,		RULE.

THRENGI, or THRENGES, in our ancient cuſtoms, a denomination given to vaſſals, but not of the loweſt degree of thoſe who held lands of the chief lord: otherwiſe called *drengi*, and *drenches*.* See DRENCHES.

* *Quia vero non erant adhuc tempore regis* Willielmi *milites in Anglia, ſed* threnges; *præcipit rex ut de eis milites fierent ad defendendam terram: fecit autem Lanfrancus* threngos *ſuos milites*, &c. Somn. Gavelk.

The name was impoſed by the conqueror: for when one Edward Sharnbourn of Norfolk, and others, were ejected out of their lands, they complained to the conqueror; inſiſting, that they were always on his ſide, and never oppoſed him; which, upon inquiry, he found to be true; and therefore he commanded that every one ſhould be reſtored to their lands, and for ever after be called *drenches*, or *threnges*. Spelm. du Cang.

THRENODY, THRENODIA, a mournful, or funeral ſong. See FUNERAL.

THRIHING,	See the articles	TRIHING.
THRINIUM-*Gild*,		TRINIUM-*Gild*.

THROAT, the anterior part of an animal between the head and the ſhoulders, wherein is the gullet. See NECK.

Phyſicians include under the word *throat*, all that hollow or cavity which may be ſeen when the mouth is wide open. See ŒSOPHAGUS, and MOUTH.

It is ſometimes alſo called *iſthmus*, by reaſon it is narrow, and bears ſome reſemblance to thoſe ſtreights called by the geographers *iſthmi*. See FAUCES.

THROAT, in architecture, fortification, &c. See GORGE, and GULA.

THRONE, ΘΡΟΝΟΣ, a royal ſeat, or chair of ſtate, enriched with ornaments of architecture and ſculpture, made of ſome precious matter, raiſed one or more ſteps, and covered with a kind of canopy.

Such are the *thrones* in the rooms of audience of kings, and other ſoveraigns.

THROW *the Glove*,	See the articles	GLOVES,
THROWED *Silk*,		SILK.

THROWS *of Women*, the pains of child-birth. See DELIVERY, &c.

THROWSTER, one who prepares raw ſilk for the weaver; by cleanſing, and twiſting it. See SILK.

THUMMIM, in the ſcripture learning. See URIM and THUMMIM.

THUNDER, a noiſe in the loweſt region of the air, excited by a ſudden kindling of ſulphurous exhalations. See AIR, ATMOSPHERE, EXHALATION, &c.

Seneca, Rohault, and other authors, both ancient and modern, account for *thunder*, by ſuppoſing two clouds impending over one another, the upper and rarer whereof becoming condenſed by a freſh acceſſion of air raiſed thither by warmth from the lower parts of the atmoſphere, or driven upon it by the wind; immediately falls forcibly down upon the lower, and denſer cloud: by which fall, the air interpoſed between the two being compreſſed, that next the extremities of the two clouds is ſqueezed out, and leaves room for the extremity of the upper cloud to cloſe tight upon the under: thus a great quantity of air is incloſed, which at length eſcaping through ſome winding irregular vent or paſſage, occaſions that noiſe we call *thunder*. See CLOUD, &c.

But this only reaches to the phænomena of *thunder* heard without lightening; and, in effect, we have now a better ſolution: *thunder* is not occaſioned by the falling of clouds, but by the kindling of ſulphurous exhalations, in the ſame manner as the noiſe of aurum fulminans.

"There are ſulphurous exhalations, ſays Sir Iſaac Newton, "always aſcending into the air when the earth is dry; there "they ferment with the nitrous acids, and ſometimes taking "fire, generate *thunder*, lightening, &c.

That, beſide the vapours raiſed from water, &c. there are alſo exhalations carried off from ſulphur, bitumen, volatile ſalts, &c. is paſt all doubt; the vaſt quantity of ſulphurous and bituminous matter all over the ſurface of the earth, and the volatile ſalts of plants and animals, afford ſuch an ample ſtock thereof, that it is no wonder the air ſhould be filled with ſuch particles, raiſed higher or lower, according to their greater or leſs degree of ſubtility and activity; and more copiouſly ſpread in this or that quarter, according to the direction of the winds, &c. See SULPHUR.

Now, the effects of *thunder* are ſo like thoſe of fired gunpowder, that Dr. Wallis thinks we need not ſcruple to aſcribe them to the ſame cauſe: but the principal ingredients in gunpowder we know are nitre and ſulphur: charcoal only ſerving to keep the parts ſeparate, for the better kindling. See NITRE, and GUNPOWDER.

Hence, if we conceive in the air a convenient mixture of nitrous and ſulphurous particles, from the ſources above-mentioned; and thoſe, by any cauſe, to be ſet on fire; ſuch exploſion may well follow, and with ſuch noiſe and light the two phænomena of *thunder*, as in the firing of gunpowder: and being once kindled, it will run from place to place, this way or that, as the exhalations happen to lead it; much as is found in a train of gunpowder.

This exploſion, if high in the air, and remote from us, will do no miſchief; but if near us, may deſtroy trees, animals, &c. as gunpowder would do in the like circumſtances.

This nearneſs or farneſs may be eſtimated by the interval of time between the flaſh, and the noiſe. Dr. Wallis obſerves, that ordinarily the difference between the two is about ſeven ſeconds; which, at the rate of 1142 feet in a ſecond of time, gives the diſtance about a mile and half: but ſometimes it comes in a ſecond or two, which argues the exploſion very near us, and even among us. And in ſuch caſes, the reverend doctor aſſures us, he has more than once foretold the miſchiefs that befell.

Upon the whole, that there is in lightening a ſulphurous vapour, appears from the ſulphur which attends it, and from the ſultry heat in the air which uſually precedes it; and that there is a nitrous vapour along with it, the ſame author concludes hence, that we know of no other body ſo liable to a ſudden and violent exploſion. And as to the kindling of theſe materials, we know that a mixture of ſulphur and ſteel filings, with a little water, will break forth into actual flame. Nothing therefore is wanting to the exploſion, but ſome chalybeat, or vitriolic vapour; and among the various effluvia from the earth, the doctor does not doubt, but there muſt be ſome of that: but what he leaves as a probability, we can produce a kind of proof of.

In hiſtory we meet with inſtances of its raining iron in Italy, and iron ſtones in Germany: Jul. Scaliger tells us, he had by him a piece of iron rained in Savoy. Cardan reports 1200 ſtones to have fallen from heaven, ſome of them weighing 30, ſome 40, and one an hundred and twenty pound, all very hard, and of the colour of iron.

The matter of fact is ſo well atteſted, that Dr. Liſter, in the *Philoſophical Tranſactions*, builds a whole theory of *thunder* and lightening on it; maintaining, that they both owe their matter to the breath or exhalation of pyrites. See PYRITES.

That rattling in the noiſe of *thunder*, which makes it ſeem as if it paſſed through arches, or were broken variouſly, is doubtleſs owing to the ſound being excited among clouds hanging over one another, and the agitated air paſſing between them.

THUNDER-BOLT.—If what we call *lightening*, act with extraordinary violence, and break or ſhatter any thing, it is called a *thunder-bolt*; which the vulgar, to fit it for ſuch effects, ſuppoſe to be a hard body, and even a ſtone.

But that we need not have recourſe to a hard ſolid body to account for the effects commonly attributed to the *thunder-bolt*, will be evident to any one, who conſiders thoſe of pulvis fulminans, and of gun-powder. See FULMINANS.

The phænomena of the *thunder-bolt* are, that it oftener ſtrikes on high places than on low: that it frequently burns people's cloaths, without touching their bodies: that it ſometimes breaks their bones, without hurting their fleſh, or their cloaths; that it has even melted the ſword without injuring the ſcabbard, &c.

The firſt is eaſily accounted for, from the ordinary height of the clouds, out of which the lightening darts: as to the reſt, ſince exhalations may be very different from one another; ſome, *e. gr.* coming neareſt the nature of ſulphur, may only yield a very ſlight lambent flame, which will only affect ſuch things as take fire the ſooneſt; and others, on the contrary, ſo ſubtile and penetrating, as to come near the nature of volatile ſalts or aqua fortis, which ſpare ſoft bodies, and ſpend their whole force on hard ones.

The chevalier de Louville, of the French academy of ſciences, accounts for ſome of the effects of thunder upon a new principle: as to killing of animals, without burning or wounding them, it is naturally enough aſcribed to the ſulphur, which falling near enough the perſon, the fumes thereof ſtop his reſpiration. As to trees, buildings, &c. ſplit or beaten down, there muſt be another cauſe. M. de Louville, therefore, ſuppoſes, that when the thunder is ſo high, its flame is diſſipated before it arrive at the earth: and that the air being violently

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driven along by the impetuous motion of the flame, and of conſequence exceedingly condenſed, becomes as it were a hard body, capable of producing terrible effects.

Places ſtruck with *thunder-bolts*, were held ſacred among the ancients. Nigidius has a curious treatiſe on the *thunder-bolt*.—Marcilius Ficinus, and ſome others, maintain, that coral diſſipates panic fears, and keeps off *thunder-bolts* and hail: Fortunat. Licetus has endeavoured to account for it phyſically. F. le Brun proves very eaſily, that thoſe philoſophers are miſtaken.

On medals, the *thunder-bolt* is ſometimes found to accompany the emperors heads; as that of Auguſtus. In which caſe, it is a mark of ſoveraignty, and of a power equal with the gods.

Appian informs us, that the *thunder-bolt* was the principal divinity of Seleucia; adding, that it was adored, even in his time, with various hymns and ceremonies. See GOD.

THUNDERING *Legion*, *Legio Fulminans*, was a legion in the Roman army, conſiſting of Chriſtian ſoldiers, who in the expedition of the emperor Marcus Aurelius againſt the Sarmatæ, Quadi, and Marcomanni, ſaved the whole army, then ready to periſh of thirſt, by procuring, with their prayers, a very plentiful ſhower thereon; and, at the ſame time, a furious hail, mixed with lightening and thunderbolts, on the enemy. See LEGION.

This is the account commonly given by eccleſiaſtical hiſtorians: and the whole hiſtory is engraven in baſs-relievo's, on the Antonine column. And hence aroſe the denomination *thunderers:* though ſome ſay, that the legion thoſe Chriſtians were of, was called the *thundering legion* before.

THURSDAY, the fifth day of the Chriſtians week, but the ſixth of that of the Jews. See DAY, and WEEK.

Holy THURSDAY, } See { HOLY.
Maunday THURSDAY, } See { MAUNDAY *Thurſday*.

THUS. See the articles INCENSE, and FRANKINCENSE.

THYMUS, ΘΥΜΟΣ, in anatomy, a conglobate gland, ſituated in the upper part of the thorax, under the claviculæ, where the cava and aorta divide into the ſubclavian branches. See GLAND.

The *thymus* is that part which in a breaſt of veal we call the *ſweet-bread*.—This gland is big in infants, but as they grow in age, it becomes leſs; its arteries and veins are branches of the carotides and jugulars. It has nerves from the par vagum, and its lymphatic veſſels diſcharge themſelves into the ductus thoracicus.

The learned Dr. Tyſon ſuppoſes the uſe of this gland to be for a diverticulum to the chyle in the thoracic duct of a fœtus, whoſe ſtomach being always full of the liquor in which it ſwims, muſt keep the thoracic duct diſtended with chyle; becauſe the blood which the fœtus receives from the mother, fills the veins, and hinders the free entrance of the chyle into the ſubclavian veins. See FOETUS.

Mr. Cheſelden obſerves, that where the *thymus* in men is very ſmall, the thyroid glands increaſe proportionably; but in ſuch brutes as have fallen under his obſervation, it is juſt the contrary: from which he is inclined to believe that they belong to the ſame lymphatics, and that either of them increaſing as much as both ought to do, if both increaſed, anſwers the ſame end as if both did; and that the reaſon why the *thymus* increaſes rather than the thyroid glands in brutes, is, becauſe the ſhape of their thorax affords convenient room for it to lodge in; and that in men, the reaſon why the thyroid glands increaſe ſo much, is, becauſe there is no room in that part of the thorax where the *thymus* is ſeated, for a large gland to be lodged.

THYMUS, in medicine, is uſed for a kind of wart, growing on the natural parts, the fundament, and ſeveral other places of the body, with cloven aſperities like thoſe of the herb *thyme*, whence its name. See WART, and WEN.

The ordinary method of curing a *thymus*, is by ligature and deſiccative lotions, or by cauſtics; and if large, by inciſion; taking care firſt to ſecure the greater veſſels by tying them.

THYROARYTÆNOIDEUS, in anatomy, a pair of muſcles, ſituate under the cartilago thyroides; from the fore and back part of which it ariſes with a very broad head, and terminates in the arytænoides, which it conſtringes, and ſhuts the larynx. See ARYTÆNOIDES.

THYROIDEÆ *Glandulæ*, THYROID *Glands*, are two glands of the larynx. See LARYNX.

There are four pretty large glands, which ſerve to moiſten the larynx; two above, and two below.--The two latter are called *thyroideæ*; ſituate at the bottom of the larynx, aſide of the annular cartilage, and of the firſt ring of the trachea; one on each ſide.

They are in form of little pears; their colour a little more reddiſh, their ſubſtance more ſolid, more viſcous, and reſembling more the fleſh of the muſcles, than the other glands.

They receive nerves from the recurrents, arteries from the carotides; veins which paſs to the jugulars, and lymphatics, and diſcharge themſelves into the thoracic duct.

Their uſe is to ſeparate a viſcid moiſture, ſerving to line and lubricate the larynx, to facilitate the motion of its cartilages, to ſoften the acrimony of the ſaliva, and to ſweeten the voice.

THYROIDES,* ΘΥΡΟΕΙΔΗΣ, in anatomy, the firſt and largeſt of the five cartilages of the larynx; called alſo *ſcutiformis*. See SCUTIFORM, CARTILAGE, LARYNX, and HYOTHYROIDES.

* The word is formed from the Greek, *θυρεος*, *buckler*, and ειδος, *form*.

In the middle is a prominence, called *pomum adami*. The *thyroides* is uſually parted by a line running along its middle; whence ſome make two of it, though in reality it is very rare that it is found double.

It is near a ſquare, and at each angle is a proceſs: the two uppermoſt are the longeſt, and tie it by means of a nervous ligament to the os hyoides: the two lower, and ſhorter, connect it to the ſecond cartilage, called *cricoides*.

THYRSUS, ΘΥΡΣΟΣ, in antiquity, the ſcepter which the ancient poets put in the hand of Bacchus, and wherewith they furniſh the Menades in their Bacchanalia. See BACCHANALIA, *&c.*

The *thyrſus* was originally a lance, or ſpear, wrapt up in vine-leaves; wherewith Bacchus is ſaid to have armed himſelf, and his ſoldiers in his Indian wars, to amuſe and deceive the unpractiſed Indians, and make them ſuſpect no hoſtilities.

Hence it was afterwards borne in the feaſts and ſacrifices of that god; and as the ſatyrs, who were Bacchus's ſoldiers, were ſuppoſed to have fought with it, it became a cuſtom to repreſent them therewith. See SATYR, *&c.*

TIARA,* ΤΙΑΡΑ, an ornament or habit, wherewith the ancient Perſians covered their head; and which the Armenians, and kings of Pontus ſtill wear on medals; theſe laſt, becauſe deſcended from the Perſians.

* Latin authors call it indifferently *tiara*, and *cidaris*.

Strabo ſays, the *tiara* was in form of a tower; and the ſcholiaſt on Ariſtophanes's comedy, Αχαρνης, act I. ſcene 2. affirms, that it was adorned with peacock's feathers.—Some moderns, however, fancy the ſcholiaſt is here ſpeaking of the caſk which the ancient Perſians wore in war; rather than the habit which they wore on the head in the city: but they do not ſeem to have conſidered the paſſage in the poet, to which the ſcholiaſt refers: the matter there ſpoken of is peace, and embaſſadors ſent to treat of peace, with habits of pomp and ceremony, Αχθομαι γε, &c. *Theſe ambaſſadors, theſe peacocks, all theſe things of pomp and oſtentation, diſpleaſe me.* By *theſe peacocks*, ſays the ſcholiaſt, he means the *tiaræ*, which among the Perſians are ornaments of the head, wherein are peacock's feathers, *&c.*

St. Jerom on Dan. chap. iv. defines the *tiara* a kind of cap, *genus pilleoli*, wore by the Perſians and Chaldeans: and in another place, he adds, it is like Ulyſſes's cap.—The ancient ſcholiaſt on Juvenal, deſcribes it as a prieſt's cap, which deſcending over the cheeks, was tied under the chin: which agrees very well with the form of that which we ſee Mithridates wear on medals—Servius on Virgil, *lib.* 8. *Æneid*, calls the *tiara* a Phrygian cap; and Statius, *Thebaid. lib.* 8. gives it the kings of Parthia, who, doubtleſs, borrowed it from the Perſians.—Juſtin attributes the long garment and *tiara* of the Perſians, to Semiramis's diſguiſe; whereby ſhe paſſed for Ninus.

The kings of Perſia alone had the right of wearing the *tiara* ſtraight and erect: the prieſts, and great lords wore it depreſſed, or turned down on the fore-ſide. Xenophon in his *Cyropædia* ſays, that the *tiara* was ſometimes encompaſſed with the diadem, at leaſt in ceremonies; and had frequently the figure of a half moon embroidered on it: others are of opinion, that the diadem was in figure of a moon, and that it was hence the *tiara* was called *lunata:* laſtly, others think that the *tiara* itſelf was ſometimes in form of a half moon.—From what we have ſaid, it appears, that there were different forms of *tiara's*; and, in effect, Paſchalius, *de coronis*, diſtinguiſhes no leſs than five different kinds. See DIADEM.

TIARA is alſo the name of the pope's triple crown; anciently called *regnum*. See CROWN, POPE, *&c.*

The *tiara* and keys are the badges of the papal dignity; the *tiara* of his civil rank, and the keys of his juriſdiction: for, as ſoon as the pope is dead, his arms are repreſented with the *tiara* alone, without the keys.

The ancient *tiara* was a round high cap. John XXIII. firſt encompaſſed it with a crown. Boniface VIII. added a ſecond crown; and Benedict XII. a third.

TIBIA, in anatomy, the bony part of the leg, between the knee and the ankle. See FOOT.

The *tibia* conſiſts of two bones, called *fociles*, the one on the inſide the leg, called the *fibula*, or *little focil*. See FIBULA.—The other on the outſide, called by the common name *tibia*, or the *great focil*. See the following article.

TIBIA is, properly, the inner and bigger bone of the leg, called alſo *focile majus*.—See *Tab. Anat.* (Oſteol.) *fig.* 3. *n.* 22, 22. & *fig.* 7. *n.* 26, 26. See alſo the article BONE.

The *tibia* is hard and firm, having a pretty large cavity in its middle, to contain the medulla. See MEDULLA.

It is almoſt triangular; its fore, and ſharp edge being called the *ſhin:* in its upper extremity, it has two large ſinus's, tipt with a ſoft and fine cartilage, from its figure, called *cartilage* *go lunata*; which runs in between the extremities of the two bones, and grows very thin at its edge; ſerving to facilitate a ſmall ſide-motion in the knee, like that in the articulation of the lower jaw.

The ſinus's receive the two protuberances of the femur, or thigh-bone; and the production which is between the ſinus's of the *tibia*, is received into the ſinus which divides theſe two protuberances of the femur. See FEMUR.

By bending the knee, we bring the leg, in walking, in a ſtrait line forward; which we could not have done without this articulation; but like thoſe who have the misfortune to have a wooden leg, we muſt have brought our foot about in a ſemicircle, in going even upon a plain, but more evidently upon an aſcent.

On the ſide of this upper end, the *tibia* has a ſmall knob, which is received into a ſmall ſinus of the fibula; and on its fore-part, a little below the patella, it has another, into which the tendons of the extenſors of the leg are inſerted. See FIBULA.

Its lower extremity, which is much ſmaller than its upper, has a remarkable proceſs, which forms the inner ankle; and a pretty large ſinus, divided in the middle by a ſmall protuberance: the ſinus receives the convex head of the aſtragalus, and the protuberance is received into the ſinus, in the convex head of the ſame bone.—It has another ſhallow ſinus in the ſide of its lower end, which receives the fibula.

Mr. Cheſelden gives an inſtance of a boy of ſeven years of age, where both the epiphyſes at the upper end of the *tibia*, were ſo far ſeparated, that not more than half each *tibia* was joined to half the epiphyſis; which made his legs wholly uſeleſs.—This had been occaſioned by the nurſe's holding him out to ſtool by the heels and back, when very young; which is among them (as he obſerves) too common a practice.

TIBIÆ *Biceps*. See the article BICEPS.

TIBIALIS, or TIBIÆUS, in anatomy, a name given to two muſcles of the leg; diſtinguiſhed by *anticus*, and *poſticus*.

TIBIALIS *anticus*, ſprings from the exterior proceſs of the *tibia*, and becoming gradually broad and fleſhy about the middle of the *tibia*, down the fore-part of which it runs, is contracted again into a ſlender, ſmooth tendon, which paſſes under the ligamentum annulare, and is partly inſerted into the os cuneiforme majus, and partly into the bone of the metatarſus, that ſupports the great toe. Its office is to draw the foot up.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 62. *fig.* 2. *n.* 44.

TIBIALIS *poſticus*, is derived from both bones of the *tibia*, and from the ligament that binds them together; and runs with a ſmooth, ſtrong tendon through the ſinus on the inner malleolus, under the annular ligament, to the inſide of the os naviculare.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 69. *fig.* 2. *n.* 53. *fig.* 7. *n.* 43.

Its office is to draw the foot inwards: from the uſe ſailors make of it in ſailing, it is alſo called the *nauticus*.

TICHONIC *Syſtem*, or *Hypotheſis*. See TYCHONIC.

TIDE,* the ſame with time, or ſeaſon. See TIME, &c.

* The word is originally Saxon, *tid*, which ſignifies the ſame.

Shrove-TIDE,
Twelfth-TIDE, See the articles SHROVE. TWELFTH. WHITSUN-*tide*.
Whitſun-TIDE,

TIDES, two periodical motions of the waters of the ſea, called alſo the *flux* and *reflux*, or *ebb* and *flow*. See SEA, FLUX, OCEAN, &c.

When the motion of the water is againſt the wind, it is called a *windward tide*—when wind and *tide* go the ſame way, *leeward tide*—when it runs very ſtrong, it is a *tide-gate*.

To tide it over, or up into any place, is to go in with the *tide*, either ebb or flood, as long as that laſts; then to ſtay at anchor all the time of contrary *tide*; and thus to ſet in again with the return of the next *tide*.

It is ſaid to *flow tide and half tide* when the *tide* runs three hours in the offing longer than it does by the ſhore: but, by *longer*, they do not mean more hours; but, that if it be high water aſhore at 12, it will not be ſo in the offing till three.—If it ebb and flow longer, they ſay it runs *half tide* and *half quarter*.

When the moon is in the firſt and third quarter, *i. e.* when ſhe is new and full, the *tides* are high and ſwift, and called *ſpring tides*—when ſhe is in the ſecond and laſt quarter, the *tides* are lower and ſlower, and called *neap tides*. See SPRING, NEAP, &c. See alſo WINDWARD, &c.

Phænomena of the TIDES.—The ſea is obſerved to flow, for certain hours, from ſouth towards north; in which motion, or flux, which laſts about ſix hours, the ſea gradually ſwells; ſo that entering the mouths of rivers, it drives back the river-waters towards their heads or ſprings. See RIVER, &c.

After a continual flux of ſix hours, the ſea ſeems to reſt for about a quarter of an hour; after which it begins to ebb or retire back again from north to ſouth, for ſix hours more: in which time, the water ſinking, the rivers reſume their natural courſe. After a ſeeming pauſe of a quarter of an hour, the ſea again begins to flow as before, and thus alternately.

Thus does the ſea ebb twice a day, and flow as often; but not in the ſame hours thereof. The period of a flux and reflux is 12 hours 50 minutes, ſo that the *tides* return later and later each day, by 50 minutes or ¾ of an hour, 5 minutes. Now, 12 hours 50 minutes is a lunar day; *i. e.* the moon paſſes the earth's meridian later and later each day by 50 minutes. So that the ſea flows as often as the moon paſſes the meridian, both the arch above, and that below the horizon; and ebbs as often as ſhe paſſes the horizon, both the eaſtern and weſtern point thereof. See MOON.

This further agreement we obſerve between the moon and the ſea; that the *tides*, though conſtant, are not equal: but are greateſt, when the moon is in conjunction, or oppoſition to the ſun, and leaſt when in quadrature thereto.

Laſtly, thoſe *tides* are the greateſt, which happen in the new and full moon, at the times of the equinoxes.

Add, that the ſame things are obſerved throughout moſt of the coaſts of Europe; only that the *tides* are ſo much the leſs, and happen the later, as the coaſts are the more northerly.

Theſe phænomena of the *tides* are admirably accounted for, from the principle of gravitation. All we require to their ſolution is, that the earth and moon, and every particle thereof, mutually gravitate towards each other; the reaſonableneſs of which aſſumption, ſee under the article GRAVITATION.

Indeed the ſagacious Kepler, long ago, conjectured this to be the cauſe of the *tides*: "If, ſays he, the earth ceaſed to attract its waters towards itſelf, all the water of the ocean would riſe and flow into the moon: the ſphere of the moon's attraction extends to our earth, and draws up the water." Thus thought Kepler, in his *Introd. ad Theor. Mart.* This ſurmiſe, for it was then no more, is now abundantly verified, in the following theory, deduced by Dr. Halley, from the Newtonian principles.

Theory of the TIDES.—1°. As the ſurface of the earth and ſea is naturally globular; if we ſuppoſe the moon A (*Tab. Geography*, *fig.* 6.) perpendicularly over ſome part of the ſurface of the ſea, as E; it is evident the water E, which is now neareſt the moon, will gravitate towards it more than any other part of the earth and ſea in the hemiſphere FEH.

The water in E therefore muſt, by this means, be raiſed towards the moon; *i. e.* it will be lighter than uſual, and of conſequence will ſwell in E.

For the ſame reaſon the water in G being the moſt remote from the moon, will gravitate leſs towards the ſame, than any other part of the earth or ſea in the hemiſphere FGH.

The water here, therefore, muſt approach leſs towards the moon, than any other part of the globe; *i. e.* it muſt be raiſed the contrary way, as being lighter than uſual, and will therefore ſwell in G.

By this means, the ſurface of the ocean muſt neceſſarily form itſelf into a ſpheroidal, or oval figure, whoſe longer diameter is EG; its ſhorter FH. And thus, the moon ſhifting her poſition in her diurnal motion round the earth, this oval of water muſt ſhift with her; by which means are effected thoſe two floods and ebbs, obſervable every 25 hours.

2°. Since, in the conjunctions and oppoſitions of the ſun and moon, the gravitation of the water to the ſun conſpires with its gravitation towards the moon; but in the quadratures, the water raiſed by the ſun is depreſſed by the moon: hence it is that the *tides* are greateſt in the ſyzygies, and leaſt in the quadratures.

In effect, there are two *tides* every natural day, from the action of the ſun, as there are in the lunar day from that of the moon; all governed by the ſame laws: only thoſe cauſed by the ſun are much leſs than thoſe of the moon: becauſe though the ſun be ten thouſand times bigger than both the earth and moon, yet he is at ſo immenſe a diſtance, that the earth's ſemi-diameter bears no proportion thereto.

Hence, the different *tides* depending on the particular actions of the ſun and moon are not diſtinguiſhed, but confounded.

The lunar *tide* is ſomewhat changed by the action of the ſun; and this change varies every day, by reaſon of the inequality between the natural and lunar day. See DAY.

3°. Since the greateſt *tides* about the equinoxes (*viz.* thoſe happening in the ſyzygies) ariſe from the ſun and moon being in the equinoctial; and thoſe about the ſolſtices, from the ſun and moon being in the tropics; for this reaſon, thoſe greateſt *tides* about the equinoxes are greater than thoſe about the ſolſtices; ſince the greater the circle is, wherein the waters move, the greater is their agitation. And if the moon ſtood ſtill in the pole, the ſwelling would become immoveable about the pole, and the high water be fixed therein.

4°. Since the *tides* are ſomewhat changed by the libration of the waters, which uſe to retain a motion impreſſed on them for ſome time; for this reaſon the higheſt *tides* are not preciſely in the very conjunction and oppoſition of the moon, but two or three *tides* afterwards.

5°. Since the ſun is ſomewhat nearer the earth in winter than in ſummer; hence it is, that the greateſt equinoctial *tides* are obſerved to be a little before the vernal equinox, and a little after the autumnal one.

6°. Since the greateſt of the two *tides* happening in every diurnal revolution of the moon, is that wherein the moon is neareſt the zenith, or nadir: for this reaſon, while the ſun is in the northern ſigns, the greater of the two diurnal *tides* in our climates, is that ariſing from the moon above the horizon;

when the ſun is in the ſouthern ſigns, the greateſt is that ariſing from the moon below the horizon.

7°. Such would the *tides* regularly be, if the earth were covered with ſea very deep; but by reaſon of the ſhoalneſs of ſome places, and the narrowneſs of the ſtraits in others by which the *tides* are propagated, there ariſes a great diverſity in the effect, not to be accounted for, without an exact knowledge of all the circumſtances of the places; as the poſition of the land, and the breadth and depth of the channels, &c. For a very ſlow and imperceptible motion of the whole body of water, where it is (for example) two miles deep, will ſuffice to raiſe its ſurface 10 or 12 feet in a *tide's*-time; whereas if the ſame quantity of water were to be conveyed through a channel of 40 fathom deep, it would require a very great ſtream to effect it in ſo large inlets as are the channel of England and the German ocean; whence the *tide* is found to ſet ſtrongeſt in thoſe places where the ſea grows narroweſt, the ſame quantity of water being in that caſe to paſs through a ſmaller paſſage.

This is moſt evident in the ſtraits between Portland and C. de la Hogue in Normandy, where the *tide* runs like a ſluice; and would be yet more between Dover and Calais, if the *tide* coming round the iſland did not check it.

And this force being once impreſſed upon the water, continues to carry it above the level of the ordinary height in the ocean, particularly where the water meets a direct obſtacle, as it does in St. Maloes; and where it enters into a long channel, which running far into the land, grows very ſtrait at its extremity, as it does at the Severn ſea at Chepſtow and Briſtol.

This ſhoalneſs of the ſea, and the intercurrent continents, are the reaſons that in the open ocean high water is not at the time of the moon's appulſe to the meridian, but always ſome hours after it, as it is obſerved upon all the weſtern coaſt of Europe and Africa, from Ireland to the Cape of Good Hope; in all which a ſouth-weſt moon makes high water, and the ſame is reported to hold in the weſt of America.

It would be endleſs to recount all the particular ſolutions, which are eaſy corollaries from this doctrine; as, why the lakes and ſeas, ſuch as the Caſpian ſea, and the Mediterranean ſea, the Black ſea and Baltick, have no ſenſible *tides:* for lakes having no communication with the ocean, can neither increaſe nor diminiſh their water, whereby to riſe and fall; and ſeas that communicate by ſuch narrow inlets, and are of ſo immenſe an extent, cannot in a few hours time receive and empty water enough to raiſe or ſink their ſurface any thing ſenſibly.

To demonſtrate the excellency of this doctrine, the example of the *tides* in the port of Tunking in China, which are ſo extraordinary, and different from all others we have yet heard of, may ſuffice. In this port there is but one flood and ebb in 24 hours, and twice in each month, *viz.* when the moon is near the equinoctial, there is no *tide* at all, but the water is ſtagnant; but with the moon's declination there begins a *tide*, which is greateſt when ſhe is in the tropical ſigns; only with this difference, that when the moon is to the northward of the equinoctial, it flows when ſhe is above the earth, and ebbs when ſhe is under, ſo as to make high-water at moon-ſetting, and low-water at moon-riſing: but, on the contrary, the moon being to the ſouthward, makes high water at riſing, and low-water at ſetting, it ebbing all the time ſhe is above the horizon.

The cauſe of this odd appearance is ſuggeſted by Sir Iſaac Newton to ariſe from the concurrence of two *tides*, the one propagated in ſix hours out of the great South-Sea along the coaſt of China, the other out of the Indian ſea from between the iſlands, in twelve hours, along the coaſt of Malacca and Camboya. The one of theſe *tides* being produced in north latitude, is, as hath been ſaid, greater, when the moon being to the north of the equator, is above the earth, and leſs when ſhe is under the earth. The other of them, which is propagated from the Indian ſea, being raiſed in ſouth latitude, is greater when the moon declining to the ſouth, is above the earth, and leſs when ſhe is under the earth: ſo that of theſe *tides*, alternately greater and leſſer, there come always ſucceſſively two of the greater and two of the leſſer together every day, and the high water falls always between the arrival of the two greater floods, and the low water between the times of the arrival of the two leſſer floods: and the moon coming to the equinoctial, and the alternate floods becoming equal, the *tide* ceaſes, and the water ſtagnates; but when ſhe has paſſed to the other ſide of the equator, thoſe floods which in the former order were the leaſt, now becoming the greateſt, that which before was the time of the high-water, now becomes the low water, and the converſe: ſo that the whole appearance of theſe ſtrange *tides* is, without any forcing, naturally deduced from theſe principles, and is a great argument for the certainty of the whole theory.

TIDE-WAITERS, or **TIDE-MEN**, certain officers belonging to the cuſtom-houſe, appointed to watch or attend on ſhips coming from abroad, to ſee that nothing be landed till the cuſtoms be paid. See CUSTOM, &c.

They are thus called, becauſe they go aboard the ſhips at their arrival in the mouth of the Thames, and come up with the tide.

TIERCE, or **TEIRCE**, a meaſure of liquid things, as wine, oil, &c. containing the third part of a pipe, or 42 gallons. See MEASURE, GALLON, &c.

TIERCE, in muſic. See the article THIRD.

TIERCE, in gaming, a ſequence of three cards of the ſame colour. See SEQUENCE.

TIERCE, in fencing. See the article GUARD.

TIERCE *Order*. See the article THIRD *Order*.

TIERCE *point*. See the article THIRD *point*.

TIERCED, **TIERCE'**, in heraldry, denotes the ſhield to be divided by any of the partition lines, party, coupy, tranchy or tailly, into three equal parts, of different colours or metals. See QUARTERING.

If the chief and baſe be of the ſame colour when divided by a feſſe, they blazon it by expreſſing the colour, and mentioning the feſſe; otherwiſe, they ſay it is *tiercé in feſs*, and mention each of the colours; or *tiercé in pale*, if ſo divided in pale.

TIERCELET. See the article TASSEL.

TIGE, in architecture, a French term for the ſhaft or fuſt of a column, comprehended between the aſtragal and the capital. See FUST and COLUMN.

TIGHT. See the article TITE.

TILE. See the article TYLE.

TILLER, or **TILLAR**, in huſbandry, a little young tree left to grow till it be fellable. See TIMBER.

TILLER of a ſhip, is a ſtrong piece of wood faſtened to the rudder; called alſo the helm.—See *Tab. Ship. fig.* 2. n. 105. See alſo the article RUDDER.

The name is chiefly given to that which ſerves for a helm in a boat, and which in a ſhip would be called the *helm*. See HELM.

TILLING, **TILLAGE**, in gardening and agriculture, a moving or ſtirring of the ground with the plough, or ſpade; which being performed on the ſurface, enters to a certain depth, and makes the lower and upper parts change place: by which means the goodneſs of the earth is kept from being ſpent in feeding ill plants. See PLOUGHING, &c.

The rule, as to gardening in general, is, that hot and dry earth ſhould be *tilled* in ſummer, either a little before, or while it rains, or ſoon after; and that neither too often nor too deep: in hot weather it is not to be performed, unleſs watered ſoon after; but for moiſt, cold and ſtrong earth, it muſt never be *tilled* in time of rain, but rather in the greateſt heats.

As to arable lands, that which is clayey, ſtiff, cold, and moiſt, is generally thrice *tilled*; in ſpring, ſummer, and at feed-time for wheat; and four times for barley.

Theſe repeated ploughings or fallowings are very advantageous to the ſoil, both as they deſtroy weeds, and as the ground is hereby laid in ridges, which prevents its being over-drenched in wet ſeaſons, ſaves it much from blights, and bleak weather, and makes the land lighter and fitter for the ſeed to take root in, and to imbibe the nitrous dews and influences of the air, &c. See VEGETATION.

TILT. See JUST, TURNAMENT, CARROUSAL, QUADRIL, &c.

TILT-BOAT, a boat covered with a *tilt*, *i. e.* a cloth, or tarpawling, ſuſtained by bails or hoops over the ſtern, for the ſheltering of paſſengers.—Such is that which carries paſſengers between London and Graveſend. See BOAT.

TIMAR, a tract or portion of land which the Grand Signior grants to a perſon on condition of ſerving him in war, on horſeback.

Some define the *timar* a portion of land aſſigned to a ſpahi, or other perſon fit to ſerve on horſeback, to enjoy during life for his ſubſiſtence.

Meninſki deſcribes it as a ſtipend or revenue granted to old ſoldiers who have deſerved well, in lands, and poſſeſſions of caſtles, towns, villages, fields, or in tithes, and other fruits and incomes; ſometimes with the prefecture, juriſdiction, or ſigniory of the ſaid places. See BENEFICE, &c.

The *timar* is a kind of fief granted for life. See FEE.—The whole Ottoman empire is divided into ſangiackies, or banneries, under which all ſuch as hold *timars*, who are called *Timariots*, are bound to liſt themſelves when ſummoned upon any expedition. See TIMARIOT.

Timars may be reſigned as benefices among us, only obtaining the conſent of the beglerbey, or governor of the province.--Indeed, for *timars* of above 20000 aſpers *per annum*, called *zaim*, the grand vizir alone grants diſpenſations.

TIMARIOTS, thoſe who enjoy lands on the footing and tenure of timars. See TIMAR.

The *timariots* are obliged to ſerve in war perſonally, with as many men and horſes for ſervice as their timar, by the eſtimate made thereof, contains times 2500 aſpers, or about 6 pounds ſterling; and to maintain them conſtantly mounted and armed after their manner, to be ready to march at all hours when commanded, and that on pain of death; nothing, not even ſickneſs itſelf, being allowed to excuſe them.

Beſides this ſervice, they likewiſe pay an acknowledgment of one tenth of their revenue.—If they have any children of age to bear arms, and fit for the ſervice after their deceaſe, or in defect thereof, if they have any relations that have the leaſt intereſt, the timar is uſed to be continued to them on the ſame conditions; otherwiſe it is transferred to others.

If the revenue thus held of the grand ſignior exceed 15000 aſpers, or 36 pounds ſterling, they who hold it are not called *timariots*, but *ſubaſſi*, or *zaims*, and have the adminiſtration of juſtice in the place, under the ſangiac of the province.

The *timariots* have different appointments, from 4 or 5000 aſpers, equal to about 12 pounds ſterling, to 20000 aſpers: but unleſs their *timar* exceed 8000 aſpers, they are never obliged to march, except when the grand ſignior goes to the army in perſon, on which occaſion none are exempted.

The origin of the *timariots* is referred to the firſt ſultans, who being maſters of the fiefs or lands of the empire, erected them into baronies or commanderies, to reward the ſervices of their braveſt ſoldiers; and eſpecially to raiſe and keep on foot a number of troops without diſburſing any money.

But it was Soliman II. that firſt eſtabliſhed the order and diſcipline among theſe barons, or knights of the empire; and by his order it was that the number of horſemen each ſhould maintain was regulated.

This body has always been not only exceedingly powerful, but great and illuſtrious throughout all the empire; but avarice, the ordinary fault of the orientals, has occaſioned their declenſion of late years.

The viceroys and governors of provinces manage their matters ſo at court, that timars, even out of their juriſdiction, are given to their domeſtics, or to ſuch as will give the moſt money for them.

There are two kinds of *timariots*, the one appointed by the Porte, the other by the viceroy of the country; but the revenues of both are leſs than thoſe of the zaims, and their equipage and tents leſs in proportion. See ZAIM.

Thoſe who have their patents from the court, have from 5 or 6000 aſpers, to 19999 aſpers *per annum*; if they have one aſper more, they become zaims. Thoſe who receive their patents from the viceroys, have from 3 to 6000 aſpers *per annum*.

This cavalry is better diſciplined than that properly called the *ſpahis*, though the ſpahis be the neateſt, and briſkeſt. Theſe laſt only fight in plattoons; whereas the zaims and *timariots* are divided into regiments, and commanded by colonels, under the direction of baſhaws.—The baſhaw of Aleppo, when in the army, is colonel general of this militia.

TIMBER, includes all kinds of felled and ſeaſoned woods, uſed in the ſeveral parts of building; as carpentry, joinery, turnery, &c. See WOOD, and BUILDING.

The kinds of TIMBER are numerous: we ſhall only mention ſome of the moſt uſual, from Evelyn's *Sylva*, &c.—as,

1°. *Oak*, the uſes whereof need no enumerating: to endure all ſeaſons and weathers, there is no wood like it; hence its uſe in pales, ſhingles, poſts, rails, boards, &c. For waterworks it is ſecond to none; and where it lies expoſed both to air and water, there is none equal to it.

2°. *Elm*: this felled between November and February, is all ſpine or heart, and no ſap, and is of ſingular uſe in places where it is always wet, or dry; its toughneſs likewiſe makes it of uſe to wheel-wrights, mill-wrights, &c. nor muſt it be omitted, that its not being liable to break and fly in chips, makes it fit for dreſſers and planks to chop on.

3°. *Beech*: its chief uſe is in turnery, joinery, upholſtery, and the like, as being of a clean, white, fine grain, not apt to bend, nor ſlit; yet is it ſometimes, eſpecially of late, uſed for building *timber*, and if it lie conſtantly wet, is judged to out-laſt oak.

4°. *Aſh*: its uſe is almoſt univerſal; it is good for building, or other occaſions where it may lie dry; it ſerves the carpenter, cooper, turner, plough-wright, wheel-wright, gardener; as alſo at ſea for oars, hand-ſpikes, &c.

5°. *Fir*, commonly known by the name of *deal*, is of late much uſed in building, eſpecially within doors, for ſtairs, floors, wainſcot, and moſt works of ornament.

6°. *Walnut-tree* is of univerſal uſe, excepting for the outſides of buildings; none better for the joiners uſe, it being of a more curious brown colour than beach, and leſs ſubject to worms.

7°. *Cheſnut-tree*, next to oak, is the *timber* moſt ſought for by joyners and carpenters: it is very laſting.

8°. *Service-tree*, uſed in joinery, as being of a delicate grain, and fit for curioſities: it alſo yields beams of conſiderable bigneſs for building.

9°. *Poplar*, *abel*, and *aſpen*, differing very little from one another, are much uſed of late inſtead of fir: they look as well, and are tougher and harder.

10°. *Alder*, much uſed for ſewers or pipes to convey water: when always wet, it grows hard like a ſtone, but where ſometimes wet and ſometimes dry, it rots preſently.

Felling of TIMBER.—The ſeaſon uſually commences about the end of April, in regard the bark then generally riſes the freelieſt; ſo that where a quantity of *timber* is to be *felled*, the ſtatute requires it to be done then, for the advantage of tanning. See TANNING.

However, the opinions and practices of authors are very different, as to the beſt ſeaſon for felling *timber*: Vitruvius recommends an autumnal fall, others adviſe December and January: Cato was of opinion, that trees ſhould have borne their fruit before felled, at leaſt their fruit ſhould be firſt ripe; which falls in with the ſentiment of Vitruvius.

In effect, though *timber* unbarked be moſt obnoxious to worms, yet we find the wild oak, and many other kinds, if felled too late, when the ſap begins to be proud, to be very ſubject to worms; whereas about mid-winter, it neither caſts, rifts, nor twines. It were happy, therefore, if a method of tanning without bark could be invented, that trees being felled more early, the *timber* might be the better ſeaſoned.

The ancients had a great regard to the age of the moon in the felling their *timber*.—If their rules avail aught, they are theſe: Fell *timber* in the wain, or four days after new moon; ſome ſay, let it be the laſt quarter. Pliny orders it to be in the very article of the change, which happening on the laſt day of the winter ſolſtice, the *timber*, ſays he, will be immortal: Columella ſays from the 20th to the 28th day; Cato, four days after the full; Vegetius, from the 15th to the 25th for ſhip *timber*; but never in the increaſe, trees then abounding with moiſture, the only ſource of putrefaction.

Some even have a regard to the temper and time of the day; the wind to be low, neither eaſt nor weſt, neither in froſty, wet, nor dewy weather, and therefore never in the forenoon.

Laſtly, ſome regard is had to the ſpecies: fir is beſt felled when it begins to ſpring, both as it then quits its coat beſt, and as the wood, according to Theophraſtus, is by that means rendered wonderfully durable in water. Elm, ſays Mr. Worlidge, is to be felled between November and January, in which caſe it will be all heart, at leaſt the ſap will be very inconſiderable: this, he adds, is the only ſeaſon for felling aſh.

Some authors add further, that in felling *timber*, care is to be taken, only to cut it into the pith, and ſo to let it ſtand till dry; by which means the moiſture is evacuated in drops, which would otherwiſe occaſion putrefaction.

Seaſoning of TIMBER.—After felling and ſawing it, ſome adviſe it to be laid up very dry in an airy place, yet out of the wind and ſun, at leaſt free from any extremities of either; and that it may not decay, but dry evenly, they order it to be daubed over with cows dung.

It is not to ſtand upright, but to lie all along, one piece over another, only kept apart by ſhort blocks interpoſed, to prevent a certain mouldineſs, which they are apt to contract in ſweating on one another; from which frequently ariſes a kind of fungus, eſpecially if there be any ſappy parts remaining.

Others adviſe boards, planks, &c. to be laid in ſome pool, or running ſtream for a few days, to extract the ſap from them, and afterwards to dry them in the ſun or air. By this means, it is ſaid, they will be prevented from either chapping, caſting or cleaving; but againſt ſhrinking there is no remedy. Mr. Evelyn particularly recommends this method for fir.

Others again are for burying them in the earth, others in wheat, and others for ſcorching and ſeaſoning them in fire, eſpecially piles, poſts, &c. that are to ſtand either in water or earth.

Sir Hugh Platt informs us, that the Venetians burn and ſcorch their *timber* in the flaming fire, continually turning it round with an engine, till it has got a hard, black, cruſty coal upon it.

Preſerving of TIMBER.—When boards, &c. are dried, ſeaſoned, and fixed in their places, care is to be taken to defend and *preſerve* them; to which the ſmearing them with linſeed-oil, tar, or the like oleaginous matter, contributes much.

The Dutch preſerve their gates, portcullices, draw-bridges, ſluices, &c. by coating them over with a mixture of pitch and tar, whereon they ſtrew ſmall pieces of cockle and other ſhells, beaten almoſt to powder, and mixed with ſea-ſand, which incruſts and arms it wonderfully againſt all aſſaults of wind and weather.

Timber felled before the ſap is perfectly at reſt, is very ſubject to the worms; to prevent or cure which, Mr. Evelyn gives us the following ſecret, as moſt approved. Put common ſulphur in a cucurbit, with as much aqua-fortis, as will cover it three fingers deep; diſtil it to a dryneſs, which is performed by two or three rectifications.

Lay the ſulphur remaining at bottom on a marble, or in a glaſs, and with the oil it diſſolves into, anoint the *timber*. This, he adds, not only infallibly prevents or cures the wormineſs, but preſerves all kinds of woods, and even many other things, as ropes, nets, and maſts, from putrefaction, either in air, water, ſnow, &c.

For ſuch as would go a ſhorter way to work, two or three anointings with linſeed-oil may do very well. As to poſts, &c. that are to ſtand in the ground, the burning the outſides to a coal is a great preſervative.

As to the chops or clefts green *timber* is liable to after working, a very great eye-ſore in many fine buildings, they are cloſed by anointing, ſuppling, and ſoaking it with the fat of powdered beef-broth, twice or thrice repeated.—Some carpenters uſe greaſe and ſaw-duſt mingled for the ſame purpoſe.—But the former method is excellent, only it is not to be uſed while the *timber* is green.

TIMBER-*trees*, the wood of *timber*, before it be felled, particularly that of oak, &c.

For the raiſing, planting, tranſplanting, pruning, *&c.* of *timber-trees.* See NURSERY, PRUNING, TRANSPLANTING, *&c.*

TIMBER-*meaſure.*—*Timber* is uſually meaſured and eſtimated by the load or ton, which is a ſolid meaſure containing 40 feet of round *timber*, or 50 of hewn *timber.* The denomination of *load, &c.* we ſuppoſe ariſes hence, that 40 or 50 ſolid feet of ſuch *timber* weighs about a ton, *i. e.* 20 hundred weight, which is uſually accounted a cart-load.

1°. *For the meaſuring of round timber:* the practice is, to gird the tree about, in the middle of the length; and folding the line twice, to take one length or quarter of the whole, and account that for the true ſide of the ſquare: then for the length, is is counted from the but-end of the tree, ſo far up as the tree will hold *half a foot girt*, as they call it, *i. e.* ſo long as the line, twice folded, is half a foot.

The dimenſions thus taken, the quantity of *timber* is had, either by multiplying the ſide of the ſquare into itſelf, and that product by the length, by the method of croſs-multiplication. See *Croſs* MULTIPLICATION.

Or, more eaſily and ſpeedily on Gunter's line, by extending the compaſſes from 12 to the ſide of the ſquare in inches; for that extent turned twice (the ſame way) from the length in feet, will reach to the content in feet. See GUNTER's *Scale.*

Or, better ſtill, on Coggeſhal's ſliding-rule, by ſetting 12 on the girt line D, to the length in feet on the line C. Then againſt the ſide of the ſquare, on the girt line D, taken in inches, you have on the line C the content of the *timber* in feet. See Coggeſhal's SLIDING-*Rule.*

Note, 1°. this method of meaſuring round *timber*, though common, is yet erroneous, and the content found hereby, it is demonſtrated, is leſs than the true content or meaſure in the ratio of 11 to 14. How to avoid this error, and meaſure it juſtly, we have ſhewn under the uſe of Coggeſhall's *ſliding-rule.*

2°. If the tree have any great boughs that are *timber*, as the phraſe is, *i. e.* which will hold foot girt, they are commonly meaſured, and added to the reſt: the ſolidity of the whole being thus found, they divide it by 40, which brings it into loads.

3°. In meaſuring round *timber* for ſale, they uſually caſt away an inch out of the ſquare for the bark, if oak; ſo that a tree 10 inches ſquare, they only account as if 9; but for aſh, elm, beech, *&c.* an inch is too much.

4°. *For the meaſuring hewn* or *ſquared timber*; the practice is, to find the middle of the length of the tree, and there to meaſure its breadth, by clapping two rules, or other ſtraight things to the ſides of the tree, and meaſuring the diſtance between them: in the like manner they meaſure the breadth the other way. If the two be found unequal, they add them together, and take half the ſum for the true ſide of the ſquare.

The dimenſions thus taken, the content is found either by croſs-multiplication, Gunter's ſcale, or the ſliding-rule, after the manner already directed.

The content divided by 50, gives the number of loads.

Note, if the *timber* be unequally ſided, this method of meaſuring it is erroneous, always giving the content more than the truth; and the more ſo, as the difference of the ſides is greater; yet cuſtom has authorized it.

To meaſure ſuch *timber* juſtly, a mean proportional ſhould be found between the unequal ſides, and this mean be accounted the ſide of the ſquare.

For the meaſuring of taper timber, and *timber* of other forms, as cubes, priſms, pyramids, *&c.* See the article SLIDING-*Rule.*

Bearing of TIMBER, } See { BEARING.
Caſing of TIMBER *Work*, } See { CASING.

TIMBER, or TIMMER *of furs*,* as ermines, marterns, ſables, and the like, denotes 40 ſkins.—Of other ſkins, ſix ſcore. *Ruſt.*

TIMBERS *of ermine*, in heraldry, denote the ranks or rows of ermine in noblemens coats. See ERMINE.

TIMBER, in falconry. To *timber*, is to neſtle, or make a neſt, as birds of prey do.

TIMBRE, or TIMMER, in heraldry, denotes the creſt of an armoury, or whatever is placed a-top of the eſcutcheon, to diſtinguiſh the degree of nobility, either eccleſiaſtical or ſecular. See CREST.

Such is the papal tiara, cardinal's hat, the croſs, mitre, coronet, mortier, and particularly the caſks or helmets, which the ancients called more eſpecially *timbres*, from their reſembling a kind of bell without a clapper, which the French call *timbre*, or becauſe they reſounded like thoſe *timbres* when ſtruck. This is the opinion of Loiſeau, who derives the word from the Latin, *tintinnabulum.* See CASK, and HELMET.

TIME, a ſucceſſion of phænomena in the univerſe; or a mode of duration, marked by certain periods and meaſures; chiefly by the motion and revolution of the ſun. See MODE, and DURATION.

The idea of time in the general, Mr. Lock obſerves, we acquire by conſidering any part of infinite duration, as ſet out by periodical meaſures: the idea of any particular *time*, or length of duration, as a day, an hour, *&c.* we acquire firſt by obſerving certain appearances at regular, and, ſeemingly, equi-diſtant periods.

Now, by being able to repeat thoſe lengths or meaſures of *time* as often as we will, we can imagine duration, where nothing really endures or exiſts; and thus we imagine *to-morrow, next year, &c.*

Some of the latter ſchool-philoſophers define *time* to be the duration of a thing whoſe exiſtence is neither without beginning nor end: by which *time* is diſtinguiſhed from eternity. See ETERNITY.

Ariſtotle and the peripatetics define it *numerus motus ſecundum prius & poſterius*, or a multitude of tranſient parts of motion, ſucceeding each other, in a continual flux, in the relation of priority and poſteriority.

Hence it ſhould follow, that *time* is motion itſelf, or at leaſt the duration of motion, conſidered as having ſeveral parts, ſome whereof are continually ſucceeding to others: but on this principle, *time* or temporal duration would not agree to bodies at reſt, which yet no body will deny to exiſt in *time*, or to endure for a *time.*

To evade this inconvenience, the Epicureans and Corpuſcularians made *time* to be a ſort of flux, different from motion, conſiſting of infinite parts, continually and immediately ſucceeding each other, and this from eternity to eternity; but others directly explode this notion, as eſtabliſhing an eternal being, independent of God. For how ſhould there be a flux before any thing exiſted to flow? and what ſhould that flux be, a ſubſtance or an accident?

Time may be diſtinguiſhed like place, into *abſolute*, and *relative.* See PLACE.

Abſolute TIME, is *time* conſidered in itſelf, and without any relation to bodies, or their motions.—This flows equally, *i. e.* never proceeds either faſter or ſlower, but glides on in a conſtant, equable tenor.

Relative or *apparent* TIME, is the ſenſible meaſure of any duration by means of motion.—For ſince that equable flux of *time* does not affect our ſenſes, nor is any way immediately cognizable thereby, there is a neceſſity for calling in the help of ſome nearly equable motion to a ſenſible meaſure, whereby we may determine its quantity, by the correſpondency of the parts of this with thoſe of that.

Hence, as we judge thoſe *times* to be equal which paſs while a moving body, proceeding with an equable velocity, paſſes over equal ſpaces; ſo we judge thoſe *times* to be equal which flow while the ſun, moon, and other luminaries perform their revolutions, which, to our ſenſes, are equal.

But ſince the flux of *time* cannot be accelerated, nor retarded, whereas all bodies move ſometimes faſter and ſometimes ſlower, and there is, perhaps, no perfectly equable motion in all nature; it appears hence to follow, that abſolute *time* ſhould be ſomething truly and really diſtinct from motion. For let us ſuppoſe the heavens and ſtars to have remained without motion from the very creation: does it hence follow, that the courſe of *time* would have been at a ſtand? or rather, would not the duration of that quieſcent ſtate have been equal to the very *time* now elapſed?

Since abſolute *time* is a quantity uniformly extended, and in its own nature moſt ſimple, it hence comes to be repreſented by mathematicians, to the imagination, under the moſt ſimple, ſenſible magnitudes, and particularly right lines and circles, with which it bears a near analogy, in reſpect of geneſis, ſimilarity, *&c.*

It is not, indeed, neceſſary that time ſhould be meaſured by motion; any conſtant periodical appearance in ſeemingly equi-diſtant ſpaces, as the freezing of water, the blowing of a plant, *&c.* returning at ſet periods, might do as well. In effect, Mr. Lock mentions an American people, who count their years by the coming and going away of birds. See PERIOD.

Some authors diſtinguiſh *time* into *aſtronomical* and *civil.*

Aſtronomical TIME, is that taken purely from the motion of the heavenly bodies, without any other regard.

Civil TIME, is the former *time* accommodated to civil uſes, and formed and diſtinguiſhed into *years, months, days, &c.* See DAY, MONTH, WEEK, YEAR, *&c.*

Time makes the ſubject of chronology. See CHRONOLOGY.

TIME, in muſic, is an affection of ſound, whereby we denominate it *long*, or *ſhort* with regard to its continuance in the ſame degree of tune. See SOUND.

Time and tune are the great properties of ſound, on whoſe difference or proportions muſic depends: each has its ſeveral charms; where the *time* or duration of the notes is equal, the differences of tune alone are capable to entertain us with endleſs pleaſure. See TUNE.

And of the power of *time* alone, *i. e.* of the pleaſures ariſing from the various meaſures of long and ſhort, ſwift and ſlow, we have an inſtance in the drum, which has no difference of notes, as to tune. See DRUM, ACCENT, *&c.*

Time, in muſic, is conſidered either with reſpect to the abſolute duration of the notes, *i. e.* the duration conſidered in every note by itſelf, and meaſured by ſome external motion foreign to the muſic; in reſpect to which the compoſition is ſaid to be *quick*, or *ſlow*: or it is conſidered with reſpect to the relative quantity or proportion of the notes compared with one another. See NOTE.

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* *Hæc civitas (ſc. Ceſtriæ) nunc reddebat de firma* 45 *libras & tres timbrias pellium Martenarum* LL. Edw. Conf

The ſigns or characters by which the *time* of notes is repreſented, are ſhewn under the article CHARACTERS *in muſic*, where the names, proportions, *&c.* are alſo expreſſed.

A ſemi-breve, for inſtance, is marked to be equal to two minims, a minim to two crotchets, a crotchet to two quavers, and ſo on, ſtill in a duplicate ratio, *i. e.* in the ratio of 2 : 1. Now, where the notes reſpect each other thus, *i. e.* where they are in this ratio, the muſic is ſaid to be in *duple*, i. e. *double*, or *common time*.

When the ſeveral notes are triple of each other, or in the ratio 3 : 1, that is, when the ſemi-breve is equal to three minims, the minim to three crotchets, *&c.* the muſic is ſaid to be in *triple time*. See TRIPLE.

To render this part as ſimple as poſſible, the proportions already ſtated among the notes are fixed and invariable, and to expreſs the proportion of 3 : 1, a point (.) is added on the right ſide any note, which is deemed equivalent to half of it; and by this means a pointed ſemi-breve, O· becomes equal to three minims, and ſo of the reſt.

From hence ariſe ſeveral other ratios conſtituting new kinds of triple *time*; as 2 : 3 and 3 : 4, *&c.* but theſe Mr. Malcolm obſerves are of no real ſervice, and are not perceived without a painful attention. For the proportions of the *times* of notes, to afford us pleaſure, muſt be ſuch as are not difficultly perceived; on which account the only ratios fit for muſic, beſides that of equality, are the *double* and *triple*.

Common or *duple* TIME, is of two ſpecies.—The firſt, when every bar or meaſure is equal to a ſemi-breve, or its value in any combination of notes of a leſſer quantity.

The ſecond, where every bar is equal to a minim, or its value in leſſer notes. The movements of this kind of meaſure are various, but there are three common diſtinctions; the firſt *ſlow*, ſignified at the beginning by the mark C; the ſecond *briſk*, ſignified by Ȼ; the third *very quick*, ſignified by Ↄ̸.

But what that ſlow, briſk and quick is, is very uncertain, and only to be learned by practice. The neareſt meaſure we know of, is to make a quaver the length of the pulſe of a good watch, then a crotchet will be equal to two pulſes, a minim to four, and the whole meaſure or ſemi-breve to eight. This may be reputed the meaſure of *briſk time*; for the *ſlow*, it is as long again, and the *quick* only half as long.

The whole meaſure then of common *time* is equal to a ſemi-breve or a minim; but theſe are variouſly ſub-divided into notes of leſs quantities. See MEASURE.

Now to keep the *time* equal, we make uſe of a motion of the hand or foot, thus: knowing the true *time* of a crotchet, we ſhall ſuppoſe the meaſure or bar actually ſub-divided into four crotchets for the firſt ſpecies of common *time*; then the half meaſure will be two crotchets; therefore, the hand or foot being up, if we put it down with the very beginning of the firſt note or crotchet, and then raiſe it with the third, and then down to begin the next meaſure; this is called *beating of time*.

By practice, they get a habit of making this motion very equal, and conſequently of dividing the meaſure or bar into equal parts, up and down; as alſo of taking all the notes in the juſt proportion, ſo as to begin and end them preciſely with the beating. In the meaſure of two crotchets, they beat down the firſt, and the ſecond up.—Some call each half of the meaſure in common *time*, *a time*; and ſo they call this the mode or meaſure of *two times*, or the *dupla* meaſure.

Again, ſome mark the meaſure of two crotchets with a 2 or $\frac{2}{4}$, ſignifying it to be equal to two notes, whereof four make a ſemi-breve; and ſome mark it $\frac{4}{8}$ for quavers.

For triple TIME, ſee the article TRIPLE-*Time*.

TIME *in Fencing*.—There are three kinds of *time*; that of the ſword, that of the foot, and that of the whole body. All the *times* that are perceived out of their meaſure, are only to be conſidered as appeals, or feints, to deceive and amuſe the enemy. See FENCING, GUARD, FEINT, *&c.*

TIME *of Peace*,	See	PEACE.
TIME *in Grammar*,		TENSE.
TIME *in Mechanics*,		MOTION.
Periodical TIME,		PERIOD.
Equation of TIME,		EQUATION.
Kipper-TIME,		KIPPER.
Unity of TIME,		UNITY.
TIME-*Keeper*, or TIME-*Meaſure*,		CHRONOMETER.

TIMMER. See the articles TIMBER, and TIMBRE.

TIN, *Stannum*, a whitiſh metal, ſofter than ſilver, yet much harder than lead. See METAL.

The chymiſts, *&c.* hold *tin* a ſpecies of imperfect metal, generated of two different ſeeds, *viz.* that of ſilver, and that of lead; which renders it a kind of compound of both; and accordingly it is frequently found both in lead and ſilver mines.

Tin, however, has alſo its proper mines, of which our counties of Cornwall and Devonſhire are an abundant evidence: the greateſt part of the *tin* conſumed in Europe is procured from thence; and Camden even ſuppoſes this abundance of *tin*, in thoſe two provinces, to have given the original denomination *Britain* to the whole country.—In the Syriac language *varatanac* ſignifies *land of tin*; from which Bochart derives the name *Britain*.

The principal characters or properties of *tin*, enumerated by Boerhaave, are, that it is the lighteſt of all metals; very little ductile or elaſtic; the moſt fuſible and volatile of all metals; ſcarce diſſoluble by acids, unleſs the weaker ſorts; and eaſily and intimately miſcible with other metals, the ductility whereof becomes diminiſhed by ſuch mixture.

The ſame author concludes, that ſulphur is a prevailing ingredient in *tin*, and deduces ſeveral of its particular properties therefrom. He adds, that could the metal be perfectly purged of this heterogeneous ſulphur, it is probable it would be found no other than ſilver.

Several authors had before noted a great conformity, in divers particulars, between the two metals; as, that both grow bitter when diſſolved by acids; that when fuſed together, there is ſcarce any ſeparating them again, not even by lead. Add, that Mr. Boyle, and others, give us ſeveral inſtances of ſilver being actually produced in conſiderable quantity from *tin* ore. See SILVER.

Yet ſome naturaliſts judge the analogy greater between *tin* and lead, and contend that *tin* is only lead, under a leſs degree of coction; but if there be ſome marks of agreement between them, there are as many of diſagreement. The calx of lead, for inſtance, eaſily fuſes and vitrifies, but that of *tin* not without the utmoſt difficulty: if *tin* and lead be mixed by a vehement fire, a vehement colluctation enſues, and they both run into a calx: add, that *tin* is eaſily revivified; but lead with great labour. See LEAD.

The method of getting, preparing, *&c.* the *tin* in the Corniſh mines, much the beſt and moſt conſiderable in the world, is given us in the *Philoſophical Tranſactions*.—The working of the *tin* mines is very hard and difficult, not only by reaſon of the great depth which the veins deſcend to, even as low as 60 fathom; but alſo becauſe the rocks, through which paſſages are frequently to be cut, are often ſo hard, that the workman cannot dig a foot in a week. Nor is the ſoft, ſhaking earth found in the *tin* mines much leſs inconvenient to the workmen, both by reaſon of fœtid, malignant vapours it exhales, and of the currents of water often met withal therein: all theſe diſadvantages render it impracticable for the workmen to hold it above four hours together.

The mineral ſtone or ore being dug and drawn out of the mine, is there broke into pieces with large iron mallets; then brought to a ſtamping-mill, where it is ſtill pounded ſmaller with ſtampers, much like thoſe of paper-mills; and the water paſſing through it waſhes away the earthy parts, leaving the metallic ones behind: the lotion is repeated twice, to make the better ſeparation. See TRAMBLING.

This done, they dry it in a furnace on iron-plates, and grind it very fine in a craſing-mill; then waſh it again, and dry it: in this ſtate, the metallic matter is called *black tin*.

To convert it into *tin*, *i. e.* into *white tin*, they carry it to a furnace, or blowing-houſe; where, by means of a charcoal fire, kept up by huge bellows worked with water, it is ſmelted; after it has paſſed all theſe preparations, and is become cold, they forge it, which is the laſt thing done to it in the works.

The droſs or ſcoria ſcummed off the *tin* in fuſion, being melted down with freſh ore, runs into metal; and even the *cauſalty*, *i. e.* the matter waſhed and ſeparated from the metal in the mill, being thrown up in heaps, after reſting ſix or ſeven years, they fetch it over again, and it yields as good *tin* as any of that of Germany.

The workmen diſtinguiſh ſeveral kinds of *tin*; as *moor-tin*, which is the beſt ſort, a fool whereof weighs 80 pounds; and *mine-tin*, which is the next, a fool thereof weighing about 52 or 50 pounds. The *tin* got from the ſoft, gravelly earth, they call *pryan tin*, to diſtinguiſh it from that got from the ſtones, which is better by almoſt half.—Two pounds of black *tin*, when melted, yield about one of white.

There is a curioſity in theſe Corniſh mines, which the lover of natural hiſtory will be pleaſed to hear; and it is this: that in digging, at the depth of 40 or 50 fathoms, they frequently meet with large trees, ſtill entire. See SUBTERRANEOUS.

Childrey, in his *Natural Hiſtory*, goes back as far as the deluge to place them there; but without having recourſe to ſo great antiquity, they who believe that the mines, when exhauſted of their ore or mineral matter, renew and fill again in courſe of time, will ſoon ſolve the difficulty, by ſuppoſing, that in the firſt working of theſe mines, theſe trees had been let down to ſerve as props and pillars. See DELUGE.

But there are other people will think this renewal of the mines itſelf a difficulty as great as the former. However, what the former author adds, *viz.* that in ſome places in the mines they likewiſe find pick-axes, *&c.* with wooden ſhafts, as alſo braſs nails, and even a medal of Domitian, ſeems to countenance the opinion. See MINE.

Method of aſſaying TIN.—To find whether *tin* be ſoft and ductile, or harſh and brittle, there are two kinds of aſſays; the firſt, is by putting the *tin* in a mould of caſt-braſs, and there melting it. If the metal be harſh, it will be taken out heavier than before; otherwiſe it will be lighter. The ſecond, is by caſting the melted *tin* into a little mould, made of the thunder-ſtone. This mould has a little canal of moderate length, which conducts the matter into a cavity, capable of containing half a billiard ball: if the *tin* be harſh, it appears whitiſh towards the entry of the mould, otherwiſe it is tinged ſuperficially with a very faint, bluiſh brown.

For the uſe of *tin* in the compoſition of pewter, ſee PEWTER.

The chymiſts call *tin* by the name *Jupiter*: but from what analogy between the metal and the planet, we leave them to explain. See JUPITER.

By the analyſes made of *tin*, they hold it compounded of earth, ſulphur, a metallic ſalt, and mercury.—The chief chymical preparations from it are, *ſalt of tin*, *flower of tin*, and *diaphoretic of tin*.

Salt of TIN, or of *Jupiter*, is *tin* calcined, and diſtilled vinegar poured thereon; from which, by means of fire, and then of a cool place wherein it is put, a very white ſalt is drawn. See SALT.

Flower of TIN, is a kind of white coſmetic, or paint for the complexion; drawn with ſal ammoniac, by means of ſublimation. See FLOWER.

Diaphoretic of TIN, is fine *tin* and regulus of antimony melted, firſt together, and then both with ſalt-petre. Whence, after various lotions, is drawn a powder, held to be ſoveraign againſt divers diſeaſes.

Ceruſs of TIN, is a white powder, procured from *tin*, whereof a *fucus* is made, called *Spaniſh white*.—This ceruſs is not made with vinegar, as that of lead is; but with the urine of a young perſon: the powder is alſo uſed to colour Delft ware.

Calx of TIN, is the metal reduced into powder, either by means of fire, or by being diſſolved in an acid menſtruum, and precipitated with an alkali.

TIN-*Glaſs*, *or* TIN *of Glaſs*, is what we properly call *biſmuth*. See BISMUTH.

TINCTORUM *Rubia*. See the article RUBIA.

TINCTURE, TINCTURA, in pharmacy and chymiſtry, a ſeparation of the finer and more volatile parts of a mixed body, made by means of a proper menſtruum diſſolving the ſame. See MENSTRUUM, and DISSOLUTION.

TINCTURE is more particularly uſed for an extract of part of the ſubſtance of a body, eſpecially its virtue and colour, which are hereby communicated to the menſtruum. See EXTRACT, and ESSENCE.

We have cephalic *tinctures*, antiſcorbutic *tinctures*, ſtomachic *tinctures*, anticolic *tinctures*, invigorating *tinctures*, *&c.* *tinctures* drawn from roſes, from corals, *&c.* See EXTRACTION.

To make a *tincture*, the matter is uſually bruiſed, put in a matraſs, and the menſtruum, which commonly is ſpirit of wine, poured on it, to the height of two or three fingers above it. Then the glaſs is cloſed, and ſet for digeſtion, in a ſand-heat, during five or ſix days, till the ſpirit is well impregnated, and has received a high colour. See DIGESTION.

Thus are *tinctures* of odoriferous vegetables, as cinnamon, *&c.* drawn; and the ſame menſtruum ſerves for thoſe of metals, and minerals.

The *tinctures* of metals, ſo much talked of by the chymiſts and alchymiſts, are not proper *tinctures*; they are only diſſolutions, wherein the metal is divided and attenuated to a greater degree than it is in its natural and ordinary diſſolvent.

If the *tincture* were irreductible; that is, if the metal were diſſolved to ſuch a degree, as that it could not be brought back again into metal; or, which comes to the ſame, if the principles which compoſe it were diſunited, it would be what the chymiſts have ſo long and ſo earneſtly wiſhed for, and ſought with ſuch infinite pains, eſpecially with regard to gold; the irreductible *tincture* whereof is what ſhould be called *aurum potabile*. See GOLD.

But no ſuch *tincture* has ever yet been diſcovered: the potable gold in uſe among us, being only gold extremely divided; and the caſe is the ſame with the *tinctures* of other metals. See METAL, and MINERAL.

The intention of metalline *tinctures* is to rarefy and extend the ſulphur of the metal as much as poſſible, and ſo render the fixed and earthy parts as ſubtile and volatile as may be: if they are deſigned to be of uſe in medicine, ſome harmleſs and agreeable medium is to be uſed. See STEEL.

The alchymiſts give the name *grand mineral tincture* to the philoſophers ſtone; from an opinion, that all required to that operation, is to give the colour or *tincture* of gold to fixed mercury. See PHILOSOPHERS *Stone*.

Marble, alabaſter, and bones, receive *tinctures* from lixiviums, and ſharp juices; and Mr. Boyle thinks there is reaſon to hope the ſame may be done of precious ſtones: rock cryſtal, it is certain, is tinged by ſubterraneous juices; ſo is ſapphire itſelf. See GEM, *&c.*

In the memoirs of the French academy, mention is made of certain liquors, *e. gr.* ſalts drawn from wheat, which will extract *tinctures*, even out of ſome precious ſtones. It is added, they are the more capable of producing this effect, as they give a greater degree of redneſs to the ſolution of vitriol.

TINCTURE *of Amber*, } See the articles { AMBER.
TINCTURE *of Caſſia*, } { CASSIA.

TINCTURE is alſo applied by the heralds to the colours uſed in eſcutcheons, or coats of arms; under which may be likewiſe reduced the two metals, *or* and *argent*, becauſe often repreſented by yellow and white. See COLOUR, and METAL.

TINEA, in medicine, a diſeaſe called by the Arab writers *ſahafati*, and in Engliſh uſually a *ſcald-head*; nearly a-kin to achores. See ACHOR.

The *tinea* is a diſeaſe of the leprous kind: authors uſually reckon three ſpecies of it, *viz.* a *dry*, *moiſt*, and *lupinous*; which, in reality, are only ſo many degrees of the ſame diſeaſe. See LEPROSY,

Turner defines the *tinea* an ulcer ariſing in the heads of children, from a vicious, corroſive, or ſaline humour, which preying on the cutaneous glands, in time deſtroys their texture.

It has its name *tinea*, q. d. *moth*, from the ſimilitude it bears to the holes eat by that inſect in paper, *&c.*—In the firſt ſtage it is covered with a white, dry, ſcurfy, or ſquammous matter: in the ſecond the ſubjacent fleſh appears granulated: and in the third it is ulcerous.

The internal remedies proper for the *tinea* are, mercurials, proper cathartics, and dietetics, or edulcorants; and ſometimes a ſalivation, eſpecially by unction, has been efficacious, after all other methods have proved vain. The externals are fomentations made of roots of oxylapathum, birth-wort, horſe-radiſh, wormwood, *&c.* boiled in water, and ſtrained; to which are added, ſpirits of wine camphorated, *&c.* liniments of hogs lard, white precipitate mercurial ointments, with powdered brimſtone; and ſometimes powder of Roman and white vitriol, red precipitate, *&c.*

TIN-GLASS, *Biſmuth*, a mineral matter, white, ſmooth, and as to appearance, reſembling *tin*; but hard, brittle, and diſpoſed in ſhining ſcales, as if it were pieces of glaſs, whence its name. See BISMUTH.

TINGLING *of the Ear*. See the article TINNITUS.

TINNING, the covering or lining any thing with melted *tin*, or with *tin* reduced to a very thin leaf. See TIN.

Looking-glaſſes are foliated or *tinned* with thin tables of beaten *tin*, the whole bigneſs of the glaſs, applied and faſtened thereto by means of quickſilver. See FOLIATING, and LOOKING-*Glaſs*.

Kettles, ſaucepans, and other kitchen utenſils, are *tinned* with melted *tin*; and locks, bits, ſpurs, *&c.* with leaf-*tin*, by help of fire.

The plumbers uſe to *tin* or whiten their ſheets of lead; in order to which they have a *tinning* furnace, filled with live coal, at the two ſides whereof two men are placed, who hold up the ſheets over the fire to heat; and the *tin* leaves being laid over them, as faſt as the ſheets grow hot, and the *tin* melts, they ſpread it, and make it take by rubbing it with tow and roſin. See PLOMBERY.

TINNITUS *Auris*, TINGLING *or buzzing of the Ear*, a diſeaſe pretty frequent in the ear, conſiſting in the perception of a ſound which is not, or, at leaſt, is not external.

This perception is occaſioned by the beating of an artery in the ear, by an inflammation, or abſceſs of the tympanum or the labyrinth, by the admiſſion of foreign bodies, by commotions of the cranium, blows on the ears, *&c.*—Extraordinary and irregular motions of the animal ſpirits are alſo found to occaſion the *tinnitus*, as we find in deliriums, phrenſies, vertigoes, *&c.*—The *tingling* of the ear is one of the diagnoſtic ſigns of the plague.

TIPSTAVES, officers appointed by the marſhal of the King's-bench, to attend the judges with a rod or ſtaff tipped with ſilver, and take charge of ſuch priſoners, as are either committed, or turned over at the judge's chambers.

The denomination is alſo ſometimes given to thoſe more frequently called *baſtons*; who are the warden of the Fleet's officers, attending the king's courts with a painted ſtaff, for the taking into cuſtody ſuch perſons as are committed by the court; and to attend ſuch priſoners as go at large by licence. See BASTON.

TIRE, or, as the ſeamen pronounce it, TEER, *of Guns*, is a row of guns placed along a ſhip's ſide, either above, upon deck, or below: the former of which are called the *upper tire*, the latter the *lower tire*. See SHIP.

TITANS, TITANES, ΤΙΤΑΝΕΣ, in the ancient mythology, the ſons of Uranus or Cœlus, and Veſta, *i. e.* of heaven and earth, according to Heſiod and Apollodorus; or which comes to the ſame thing, of Æther and Tellus, according to Hyginus. Apollodorus reckons five *Titans*: Oceanus, Cœus, Hyperion, Crius, and Japetus; all elder brothers of Saturn: Hyginus reckons ſix, all, except Hyperion, different from the former; their names, Briareus, Gyges, Sterope, Atlas, Hyperion, and Cottus; but he ſeems to include the hundred-handed giants in the number, which Apollodorus, and the generality of mythologiſts, diſtinguiſh from the *Titans*.

The tradition is, that Cœlus, by the ſame wife, Veſta, had Briareus, Gyges, and Cottus, the hundred-handed giants, and had chained them up in Tartarus: Veſta, the earth, their mother, reſenting this treatment, raiſed the *Titans* againſt their father, her huſband: all, excepting Oceanus, made war upon him, and dethroned him, ſetting up Saturn in his place.

Saturn, it ſeems, proved no more favourable to them than his father; but continued the giants in their priſon.—Upon this, Jupiter revolted againſt Saturn; ſerving him as he had done Cœlus; and reſcued the three giants: who afterwards proved of great ſervice to him in the war which the *Titans* waged againſt him.

This war laſted ten years: but at length the *Titans* were vanquiſhed; Jupiter remained in peaceable poſſeſſion of heaven, and the *Titans* were buried under huge mountains thrown on their heads.

Hyginus gives another origin of the *Titans:* he derives them from *Titan*, Saturn's eldeſt brother, by Cœlus and Veſta; who, though preſumptive heir of heaven, yet finding his father and mother more inclined for Saturn than for him, ſurrendered to him his right of ſucceſſion, on condition he ſhould not bring up any male child, that the empire of heaven might revert to his own iſſue the *Titans.*

But Jupiter, Neptune, and Pluto having been afterwards ſaved by the artifice of Ops; *Titan* and his ſons, the *Titans*, made war on Saturn, vanquiſhed, and impriſoned him; thus he continued in the power of his enemies, till Jupiter being grown up, made war on the *Titans*, and delivered his father.

F. Pezron, in his antiquity of the Celtæ, makes that people to be the ſame with the *Titans*; and their princes the ſame with the giants in ſcripture.—He adds, that the word *Titan* is perfect Celtic, and derives it from *tit*, earth, and *den* or *ten*, man: and hence it was the Greeks alſo called them very properly γηγενεῖς, *q. d. terrigenæ*, earth-born.

The word TITAN is alſo uſed by the poets for the ſun—in which caſe it is likewiſe Celtic, though from another root, being formed from *ti*, houſe, or habitation; and *tan*, fire.

Heſychius obſerves, that *Titan* is likewiſe uſed for ſodomite—He adds, that it is one of the names of antichriſt; in which ſenſe it muſt be wrote *Teitan*, in Greek, to contain the numeral letters of 666; which in the apocalypſe xiii. 18. is the number of the beaſt.

TITE, or TIGHT—The ſeamen ſay a ſhip is *tite*, when ſhe is ſo ſtaunch as to let in but very little water.

This is known by the ſmell of the water pumped out; for if ſhe let in but little, it will always ſtink; otherwiſe not.

TITHES, TYTHS, TENTHS, *Decimæ*, or *Dixmes*, the tenth part of all profits or fruits, both predial, perſonal, and mixt; allotted to the clergy for their maintenance. See FRUIT, CLERGY, *&c.*

Of *tithes* there are three kinds, *viz. perſonal*, *predial*, and *mixt.*

Perſonal TITHES, are thoſe due or accruing from the profits of labour, art, trade, navigation, and induſtry of man. See PERSONAL.

Predial TITHES, thoſe which ariſe either from the fruits of the ground; as corn, hay, underwood, flax, hemp, *&c.* or from the fruits of trees: as apples, pears, plumbs, cherries; or from the produce of the garden. See PREDIAL.

Mixt TITHES, are ſuch as ariſe from beaſts, and other animals fed with the fruits of the earth: as cheeſe, milk, wool, lambs, calves, fowls, *&c.* See MIXT.

Predial tithes, again, are either *great* or *ſmall.*

Great TITHES, are thoſe of corn, hay, and wood.

Small TITHES, are thoſe of flax, *&c.* which are *predial*; and thoſe of wool, milk, cheeſe, lambs, ferrets, *&c.* which are *mixt.* See PARSON, RECTOR, *&c.*

The *tithes* of grounds newly broke up and cultivated, are called *decimæ novales*, and always belong to the vicar, as well as the ſmall *tithes.*—The novelty is confined to forty years before the demand. See VICAR.

The cuſtom of giving or paying *tithe* is very ancient: in Gen. xiv. 20. Abraham gives Abimelech the tenth of all the ſpoils he had taken from the four kings he had defeated: in Gen. xxviii. 22. Jacob makes a vow at Bethel, to give the tenth of all the riches he ſhall gather in that ſojourn, to God.

But theſe *tithes* were free and voluntary; and, beſide, differed in divers other reſpects from what was afterwards called *tithe:* what Melchiſedech received, was only the tenth of the ſpoils, not of Abraham's poſſeſſions; and this once, not annually; and beſide, not as maintenance, which Melchiſedech wanted not, but as homage: add, that this was only from one prieſt to another; for Abraham had not only a prieſt in his loins, but was a prieſt himſelf.—And as to Jacob, who was alſo a prieſt, what he did was the effect of a vow, voluntarily taken, to offer the tenth of all he ſhould poſſeſs; not to any other prieſt, but to God himſelf upon an altar.

Tithe was firſt legally enjoined by Moſes, Lev. xxvii. 30. Numb. xviii. 21. Deut. xiv. 21.—That legiſlator obliged the Iſraelites to ſeveral kinds of *tithes*; as, 1°. The firſt *tithe*, מעשר הראשון, which was a *tithe* of all the fruits, given to the Levites: this was not taken till after the oblation called תרומה had been made. See LEVITE.

2°. The *ſecond tithe* was a tenth part of the nine remaining after payment of the firſt *tithe.* This *tithe* was ſet apart in each family; and the maſter of the family was obliged to carry it to Jeruſalem, and to ſpend it there; or, in caſe he could not, he was to redeem it, or convert it into money: in which caſe he was to add a fifth to it, and carry the money to Jeruſalem. The Rabbins ſay, that if he did not redeem it himſelf, that is, if he did not ſubſtitute his own money in lieu of it, but ſold it to another, he was only required to carry the bare price to Jeruſalem, without any addition.

3°. The *tithe of the tithe*, was the tenth part of all the *tithes* that had been given the Levites by the people: for the Levites, after they had got all their *tithes* of the people, divided it into ten parts; and in their turn, gave a *tithe* to the prieſts.

This *tithe* the Rabbins call תרומהמעשר, *oblation of the tithe*, מעשר מיז המעשר, *tithe of tithe*, or קדשים המקר שים מעשר, *tithe of things ſanctified.*—And this the Levites were obliged to carry to the temple; the reſt was reſerved for their own ſubſiſtance.

4°. The *tithe of the third year*, was another kind of *tithe*, not much different from the ſecond *tithe*, excepting that it was leſs troubleſome, by reaſon they were not obliged to carry it to Jeruſalem. Every ſeventh year God appointed the ground ſhould lie and reſt, nor ſhould the owners even gather the fruits which it produced ſpontaneouſly: that year, therefore, they paid no *tithe*, but only the ſix preceding ones. See SABBATH. Now, every third of theſe ſix years, *i. e.* on the third, and the ſixth, they raiſed, as uſually, the firſt *tithe*; and after that a ſecond.—But this ſecond they did not carry to Jeruſalem either in kind or in money; but kept it by them to be ſpent by the Levites, the ſtrangers, the fatherleſs, and the widows of the place, Deut. xiv. 28, 29.

This was alſo called the *tithe of the poor*, and the *third tithe*; and theſe third years it was paid on, were called the *tithe years.*

All theſe *tithes* amounted to above one ſixth of the revenue of each perſon: for if, for inſtance, a maſter of a family reaped 6000 meaſures of wheat, and 100 were firſt taken away for the firſt fruits or oblation, he had only 5900 left: from this 5900, taking away the firſt *tithe* 590, there remained 5310, the tenth whereof is 531; which being taken for the ſecond *tithe*, leaves 4779 for the proprieter; who conſequently has given 1121, *viz.* 121 more than a ſixth of the whole.

Of the 590, which the Levites received for their firſt *tithe*, 59 went to the prieſt for the *tithe of tithes*; ſo that they were left 531 for their own ſubſiſtance, and that of their families.

Theſe matters are all further explained in the Talmud, wherein are two books on *tithes*, alſo in the book of benedictions, ברכות, in the commentaries of Bartenora, Maimonides, R. Schelomoh Jarrhi, in Scaliger, Amama, Selden, Friſchmuth, Quenſted, Varenius, Hottinger, Sigonius, Cunæus, Godwyn, Leidecker, *&c.*

Under the new law, it is not Jeſus Chriſt that eſtabliſhed *tithes*, as it was God himſelf did it under the old law by the miniſtry of Moſes: the chriſtian prieſts, and the miniſters of the altar of the new covenant, lived at firſt, wholly of the alms and oblations of the devout. See ALMS, OBLATIONS, *&c.*

In after times the laity gave a certain portion of their revenues to the clergy, but voluntarily, and not out of any conſtraint or obligation: the firſt inſtances we have of it, are in the IVth and Vth centuries.

This gift was called *tithe*; not that it was really a tenth part of their income, or near ſo much: but only in imitation of the *tithes* of the old law.

In the following age, the prelates in their councils, in concert with the princes, made an expreſs law to the purpoſe; and obliged the laity to give a full tenth part of their revenues, their fruits, *&c.* to the eccleſiaſtics.

This the church enjoyed without diſturbance for two or three centuries; but in the VIIIth century the laity got hold of part of theſe *tithes*, either by their own authority, or by grants and donations of the princes; and appropriated them to their own uſes. See REVENUE.

Some time afterwards they reſtored them, or applied them to the founding of monaſteries or chapters; and the church conſented, at leaſt tacitely, to this reſtitution.

In 1179, the third council of Lateran, held under Alexander III. commanded the laymen to reſtore all the *tithes* they yet held, to the church.

In 1215, the fourth council of Lateran, held under Innocent III. moderated the matter a little; and, without ſaying any thing of the *tithes* which the laity already poſſeſſed, forbad them to appropriate or take any more for the future.

Fra. Paolo, in his treatiſe of beneficiary matters, is of opinion, that the cuſtom of paying *tithes* under the new law, began in France; and affirms, that there are no inſtances of it before the VIIIth and IXth centuries: but he muſt be miſtaken; for in the 2d council of Matiſcona, held in 585, it is ſaid expreſsly, that the chriſtians had a long time kept inviolate that law of God, whereby *tithe* of all their fruits was enjoined to be given to holy places, *&c.*

In effect, Origen, Hom. XI. on Numb. thinks, that the old laws of Moſes, touching the firſt fruits and *tithes*, both of cattle, and of the fruits of the earth, are not abrogated by the goſpel; but ought to be obſerved on their ancient footing.

The Vth canon of the council of Matiſcona, orders *tithe* to be paid to the miniſters of the church according to the law of God, and the immemorial cuſtom of the chriſtians, and that upon penalty of excommunication: which is the firſt penalty we find impoſed on ſuch as would not pay *tithe*.—On which grounds it is that many among the modern clergy hold their *tithes* to be *jure divino*.

Others, on the contrary, plead, that the recompence to be given church miniſters, is differently ordained by God, according to the differences he has put between his two great diſpenſations, the law and the goſpel: under the law he gave them *tithes*; under the goſpel, having left all things in his church to charity, and chriſtian freedom, he has given them only what ſhall be given them freely, and in charity. That the law of *tithes* is in force under the goſpel, all the proteſtant divines, except ſome among the Engliſh, deny; for though hire to the labourer be of moral and perpetual right, yet that ſpecial kind of hire, the *tenth*, can be of no right or neceſſity, but to the ſpecial labour for which God ordained it: that ſpecial labour was the levitical and ceremonial ſervice of the tabernacle, Numb. xviii. 21, 31. which was aboliſhed: the right therefore of the ſpecial hire muſt be aboliſhed too.

That *tithes* were ceremonial, is evident from their not being given to the Levites till they had been firſt offered as a heave offering to the Lord. ver. 24, 28.

He, then, who by the law brings *tithes* into the goſpel, brings in likewiſe a ſacrifice, and an altar; without which, *tithes*, by the law, were unſanctified and polluted, ver. 32. And therefore were never thought of in the firſt chriſtian times, till ceremonial altars and oblations had been brought back.

The Jews themſelves, ever ſince their temple was deſtroyed, though they have rabbies and teachers of the law, yet pay no *tithes*, as having no proper Levites to whom, nor altar whereupon, to hallow them; which argues, that the Jews themſelves never looked on *tithes* as moral, but merely ceremonial.

Add, that *tithes* were not allowed to the prieſts and Levites merely for their labour in the tabernacle; but in conſideration of this likewiſe, that they were not allowed to have any other part or inheritance in the land, ver. 20, 24. and who, by that means, for a tenth, loſt a twelfth.

In effect, for the firſt three hundred years after Chriſt, no mention is made in all eccleſiaſtical hiſtory of any ſuch thing as *tithes*; though in that time, altars and oblations had been recalled, and the church had miſerably judaiſed in many other things. The churchmen confeſſedly lived all that time on free-will offerings; nor could the defect of paying *tithe* be owing to this, that there were wanting civil magiſtrates to injoin it; ſince chriſtians, having lands, might have given out of them what they pleaſed; and the firſt chriſtian emperors, who did all things by advice of the biſhops, ſupplied what was wanting to the clergy, not out of *tithes*, which were never propoſed, but out of their own imperial revenues.

The firſt authority produced, ſetting aſide the apoſtolical conſtitutions, which few of the patrons of *tithes* will inſiſt on, is a provincial ſynod at Cullen in 356, where *tithes* are voted to be God's rent: but before that time, divers other abuſes and complaints had got ground, as altars, candles at noon, *&c.* And one complaint begot another; as it is certain that *tithes* ſuppoſe altars.

It is alledged, that *tithes* are of early and ſolemn force among us; having been paid by ſtatute ever ſince the Saxon king Athelſtan, *anno* 928: to which it may be anſwered, that Romeſcot, or Peter-pence, had been likewiſe paid to the pope by ſtatute above 200 years longer, *viz.* from the year 725. And by the way it is to be noted, that theſe ancient *tithes* among our anceſtors, kept a nearer analogy to their original in the Moſaic law; for the prieſts had but a third part, the other two thirds being appointed for the poor, and to adorn and repair the churches, as appears from the canons of Ecbert and Elfric.

The cuſtom of paying *tithe*, or of offering a tenth of what a man enjoys, or of what he reaps from it, has not only been practiſed under the old and the new law, but we alſo find ſomething like it among the heathens.

Xenophon, in the 5th book of the expedition of Cyrus, gives us an inſcription upon a column near the temple of Diana, whereby the people were warned to offer the tenth part of their revenues every year to that goddeſs.

The Babylonians and Egyptians gave their kings a tenth of their revenues: See Ariſtotle in his *Oeconomics*, *lib.* 2. Diodorus Siculus, *lib.* 5. and Strabo, *lib.* 15.—Afterwards, the Romans exacted of the Sicilians a tenth of the corn they reaped; and Appian tells us, that thoſe who broke up, or tilled any new grounds, were obliged to carry a tenth of their produce to the treaſury.

The Romans offered a tenth of all they took from their enemies, to the gods; whence the name of Jupiter Prædator: The Gauls, in like manner, gave a tenth to their god Mars, as we learn in the commentaries of Cæſar.—And Feſtus *de Verb. ſignif.* aſſures us, that the ancients uſed to give *tithe* of every thing to their gods: *decima quæque veteres diis ſuis offerebant.*

Authors have been ſtrangely perplexed, to find the original of a cuſtom, eſtabliſhed among ſo many people of different manners and religions, to give a *tenth* to their kings, or their miniſters of religion. Grotius takes it to ariſe hence, that the number ten is the moſt known and the moſt common among all nations; by reaſon of the number of fingers, which is ten. On this account he thinks it is, that the commandments of God were reduced to ten, for people to retain them with greater eaſe; that the philoſophers eſtabliſhed ten categories, *&c.*

Impropriated and appropriated TITHES, called alſo *infeodated tithes*, are thoſe alienated to ſome temporal or eccleſiaſtical lord, united to their fee, and poſſeſſed as ſecular goods. See IMPROPRIATION.

By the council of Lateran, held under Alexander III. in 1179, the alienation or infeodation of *tithes* is prohibited for the future: whence all infeodations made ſince that time are generally held by the canoniſts, illegal.

Some attribute the orginal of theſe impropriated *tithes* to Charles Martel; and hold him damned for firſt giving the revenues of benefices to ſecular nobles: but Baronius will have this a fable, and refers their origin to the wars in the Holy Land; which is alſo the opinion of Paſquier.

The tribute, it ſeems, which the Romans impoſed on all the provinces of their empire, was a tenth part of all the fruits: hence ſeveral authors obſerve, that the Franks having conquered the Gauls, and finding the impoſition eſtabliſhed, they kept it on foot, and gave thoſe *tithes* in fee to their ſoldiers: and this, ſay they, was the origin of infeoffed, or impropriated or appropriated *tithes*. See FEE, and BENEFICE.

But the truth is, they are not ſo ancient; nor do we find any mention of them before the reign of Hugh Capet; even the very council of Clermont, held in 1097, as hot as it was in the intereſts of the church, does not ſay one word of them; which yet would undoubtedly have made loud complaints of ſuch an uſurpation, had it been then known.

Rate-TITHE. See the article RATE-*Tithe*.

TITHING, *Decenna*, or *Decury*; a number or company of ten men, with their families; knit together in a kind of ſociety, and all bound to the king, for the peaceable behaviour of each other. See FRIBURGH, FRANK-PLEDGE, and TRIHING.

In theſe companies there was one chief perſon, who from his office was called *teothingman*; and at this day in the weſt *tithingman*, though now no more than a conſtable; the old cuſtom of tenmentales, or *tithings*, being long ſince diſuſed. See HEAD-BOROW, DECENNIER, TENMENTALE, *&c.*

TITILLATION, TITILLATIO, the act of *Tickling*, *i. e.* exciting a ſort of pleaſurable idea, by a gentle application of ſome ſoft body, upon a nervous part; and which uſually tends to produce laughter. See LAUGHTER.

TITLE, TITULUS, an inſcription put over any thing, to make it known. See INSCRIPTION.

The word is more particularly uſed for the inſcription in the firſt page of a book, expreſſing the ſubject thereof, the author's name, *&c.* See BOOK.

What tortures abundance of authors, is to find ſpecious *titles* for their books: a *title* ſhould be ſimple, and yet clear: theſe are the two genuine characters of this kind of compoſition. Aſſuming *titles* are a prepoſſeſſion againſt the author.

The French are much addicted to fanfaronnades in their *titles*; witneſs that of M. le Pays, *Amitiez*, *Amours*, *Amourettes*; or that improvement hereon, *Fleurs*, *Fleurons*, *Fleurettes*, &c.

TITLE, TITULUS, in the civil and canon law, denotes a chapter or diviſion of a book. See CHAPTER, *&c.*

A *title* is ſubdivided into paragraphs, *&c.* See PARAGRAPH, *&c.*—Each of the 50 books of the digeſt conſiſts of a number of *titles*; ſome of more, others of leſs. See DIGEST.

TITLE is alſo an appellation of dignity, diſtinction, or pre-eminence; given to perſons poſſeſſed of the ſame. See NOBILITY, *&c.*

The *titles* of order or dignity, Loyſeau obſerves, ſhould always come immediately after the name, and before the *titles* of office. See NAME.

The king of Spain has a whole page of *titles*, to expreſs the ſeveral kingdoms, and ſigniories he is maſter of. The king of England takes the *title* of *king of Great-Britain, France, and Ireland:* the king of France, the *title* of *king of France and Navarre:* the king of Sweden entitles himſelf *king of the Swedes and Goths:* the king of Denmark, *king of Denmark and Norway:* the king of Sardinia, among his *titles*, takes that of *king of Cyprus and Jeruſalem:* the duke of Lorrain, the *title* of *king of Jeruſalem, Sicily*, &c. See KING, *&c.*

The cardinals take *titles* from the names of ſome churches in Rome: as, of St. Cecilia, St. Sabina, *&c.* and they are called cardinals of the *title of St. Cecilia*, &c. See CARDINAL.

The emperor can confer the *title* of prince, or count of the empire; but the right of ſuffrage in aſſemblies of the empire depends on the conſent of the eſtates. See ELECTOR, and EMPIRE.

The Romans gave their Scipio's the *titles* of Africanus, Aſiaticus, *&c.* and to others, they gave the *titles* of Macedonicus, Numidicus, Creticus, Parthicus, Dacicus, *&c.* in memory of the victories obtained over the people ſo called.—The king of Spain, after the like manner, gives honourable *titles* to his cities, in recompence for their ſervices, or their fidelity.

Title is alſo a certain quality aſcribed by way of reſpect to certain princes, *&c.* See Quality.

The pope has the *title* of *holineſs*; a cardinal prince of the blood, that of *royal highneſs*, or *moſt ſerene highneſs*, according to his nearneſs to the throne; other cardinal princes, *moſt eminent highneſs*; an archbiſhop, *grace* and *moſt reverend*; a biſhop, *right reverend*; abbots, prieſts, religious, *&c. reverend.* See Holiness, Eminence, Grace, Reverend, *&c.* See alſo Pope, Cardinal, *&c.*

As to ſecular powers, to the emperor is given the *title* of *imperial majeſty*; to kings, *majeſty*; to the king of France, *moſt chriſtian majeſty*; to the king of Spain, *catholic majeſty*; to the king of England that of *defender of the faith*; to the Turk, *grand ſignior*, and *highneſs*; to the prince of Wales, *royal highneſs*; to the dauphin of France, *ſerene highneſs*; to electors, *electoral highneſs*; to the grand duke, *moſt ſerene highneſs*; to the other princes of Italy and Germany, *highneſs*; to the doge of Venice, *moſt ſerene prince*; to the republic or ſenate of Venice, *ſignory*; to the grand maſter of Malta, *eminence*; to nuncio's and ambaſſadors of crowned heads, *excellency*. See Emperor, King, Prince, Duke, *&c.* See alſo Highness, Serenity, Eminence, Excellency, *&c.*

The emperor of China, among his *titles*, takes that of *tien ſu*, ſon of heaven. The Orientals, it is obſerved, are exceedingly fond of *titles*: the ſimple governor of Schiras, for inſtance, after a pompous enumeration of qualities, lordſhips, *&c.* adds the *titles* of *flower of curteſy*, *nutmeg of conſolation*, and *roſe of delight*.

Title, in law, denotes a right which a perſon has to the poſſeſſion of any thing. See Right, and Possession.

It is alſo an authentic inſtrument, whereby a man can prove and make appear his right. See Muniment, Document, Instrument, *&c.*

A preſcription of twenty years, with a *title*, is good, and of thirty without a *title*. See Prescription.

There muſt be at leaſt a colourable *title* to come into poſſeſſion of a benefice, otherwiſe the perſon is deemed an intruder. See Benefice.

Title, in the canon law, is that by virtue whereof a beneficiary holds a benefice:—ſuch is the collation of an ordinary, or a proviſion in the court of Rome founded on a reſignation, permutation or other legal cauſe. See Benefice.

The *title* of a benefice, or beneficiary, is either a true, or a colourable one.--A true or valid *title*, is that which gives a right to the benefice: ſuch is that received from a collator who has a right to confer the benefice on a perſon capable thereof, the uſual ſolemnities being obſerved. See Collation, *&c.*

Colourable *title* is a ſeeming one; *i. e.* ſuch a one as appears valid, and is not.—Such would that be founded on the collation of a biſhop, in caſe the benefice in queſtion were not in his collation.

By the canons, a colourable *title*, though falſe, produces two very conſiderable effects. 1°. That after peaceable poſſeſſion for three years, the incumbent may defend himſelf by the rule *de triennali poſſeſſione*, againſt ſuch as would diſpute the benefice with him. 2°. That in caſe he be proſecuted within three years, and obliged to ſurrender the benefice, he ſhall not be obliged to reſtore the produce of it.

Title* is alſo uſed in ſeveral ancient ſynods and councils, for the church to which a prieſt was ordained, and where he was conſtantly to reſide.

* *Nullus in preſbyterum, nullus in diaconum, niſi ad certum* titulum *ordinetur, Concil. Londin. Ann.* 1125.

There are many reaſons why a church might be called *titulus*, *title*; the moſt probable, Cowel takes to be this, that in ancient days the name of the ſaint to whom the church was dedicated was engraven on the porch, as a token that the ſaint had a *title* to that church: whence the church itſelf became afterwards to be called *titulus*. See *Clerical* Title.

Titles, or **Titular** *Churches*, M. Fleury obſerves, was formerly the denomination of a particular kind of churches at Rome. See Church.

In the VI. and VII. centuries, there were four ſorts of churches in that metropolis, *viz. patriarchal*, *titular*, *diaconal* and *oratorial*.—The *tituli*, *titular*, were, as it were, pariſhes, each aſſigned to a cardinal prieſt, with a certain diſtrict or quarter depending thereon, and a font for the adminiſtration of baptiſm in caſe of neceſſity. See Parish, Cardinal, *&c.*

Clerical or *Sacerdotal* **Title**, denotes a yearly revenue or income of the value of 50 crowns, which the candidates for prieſthood were anciently obliged to have of their own; that they might be aſſured of a ſubſiſtance. See Orders, Ordination, *&c.*

By the ancient diſcipline there were no clercs made, but in proportion as they were wanted for the ſervice of the church, which is ſtill obſerved with regard to biſhops; none being conſecrated, but to fill ſome vacant ſee. See Bishop, Priest, *&c.*

But for prieſts and other clercs, they began to make vague ordinations in the eaſt as early as the Vth century: this occaſioned the council of Chalcedon to declare all vague and abſolute ordinations null.

Accordingly, the diſcipline was pretty well obſerved till towards the end of the XIth century; but then it began to relax, and the number of prieſts was exceedingly increaſed; either becauſe the people became deſirous of the privileges of the clericate, or becauſe the biſhops ſought to extend their juriſdiction.

One of the great inconveniencies of theſe vague ordinations was poverty, which frequently reduced the prieſts to ſordid occupations, and even to a ſhameful begging. To remedy this, the council of Lateran laid it on the biſhops to provide for the ſubſiſtance of ſuch as they ſhould ordain without *title*, till ſuch time as they had got a place in the church that would afford them a ſettled maintenance.

There was alſo another expedient found out to elude the canon of the council of Chalcedon, and it was appointed that a prieſt might be ordained on the *title* of his patrimony; that is, it was not neceſſary he had any certain place in the church, provided he had a patrimony ſufficient for a creditable ſubſiſtance.

The council of Trent retrieved the ancient diſcipline in this reſpect, forbidding all ordinations, where the candidate was not in peaceable poſſeſſion of a benefice ſufficient to ſubſiſt him; and allowing no body to be ordained on patrimony or penſion, unleſs where the biſhops declare it to be expedient for the good of the church: ſo that the benefice is the rule, and the patrimony the exception.

But this rule is not regarded, even in ſome catholic countries, particularly France, where the patrimonial *title* is the moſt frequent; and the *title* is even fixed to a very moderate ſum, about 3 *l.* 15 *s. per annum* ſterling. Indeed at Paris, and in ſome other dioceſes, 150 livres are required.

As to religious, the profeſſion they make in a monaſtery ſerves them for a *title*, in regard the convent is obliged to maintain them: and as to mendicants, they are maintained upon the *title of poverty*.

Thoſe of the houſe, and ſociety of the Sorbonne, are alſo ordained without any patrimonial *title*, and on the ſole *title* of poverty, it being ſuppoſed a doctor of the Sorbonne can never want a benefice. See Sorbonne.

TITUBATION, or Trepidation, in aſtronomy, a kind of libration or ſhaking, which the ancient aſtronomers attributed to the cryſtallin heaven, to account for certain inequalities, which they obſerved in the motion of the planets. See Trepidation.

TITULAR, or Titulary, denotes a perſon inveſted with a title, in virtue whereof he holds an office or benefice, whether he perform the functions thereof or not. See Office, and Benefice.

In this ſenſe the term is uſed in oppoſition to ſurvivor, and to a perſon only acting by procuration, or commiſſion. See Procurator, *&c.*—An officer is always reputed *titular* till he have reſigned his office, and the reſignation have been admitted.

Titular is ſometimes alſo applied adjectively to a perſon who has the title and right of an office or dignity, but without having poſſeſſion, or diſcharging the function thereof.

It is ſometimes alſo uſed abuſively for a perſon who aſſumes and pretends a title to a thing, without either a right thereto, or a poſſeſſion thereof.

Titular *Churches*. See the article Title.

TMESIS,* ΤΜΗΣΙΣ, in grammar, a figure whereby a compound word is ſeparated into two parts, and one or more words interpoſed between them.

* The word is formed from the Greek, τεμνω, ſeco, *I cut*.

Thus, when Terence ſays, *quæ meo cunque animo lubitum eſt facere*, there is a *tmeſis*; the word *quæcunque* being divided by the interpoſition of *meo*.

Lucretius abounds in *Tmeſes*; as, *ſæpe ſalutantum tactu præterque meantum*: or, *diſſidio potis eſt ſejungi ſeque gregari*; and, *diſpectis diſque gregatis*.

TOBACCO, or Tabacco, a medicinal herb, not known in Europe till after the diſcovery of America by the Spaniards, and firſt imported about the year 1560.

The Americans of the Continent called it *petun*, thoſe of the iſlands *yoli*. The Spaniards, who gave it the name *tabaco*, took it from Tabaco, a province of Yucatan, where they firſt found it, and firſt learned its uſe.

The *French*, at its firſt introduction among them, gave it various names; as *nicotiana*, or the *embaſſador's herb*, from John Nicot, then embaſſador of Francis II. in Portugal, who brought ſome of it with him from Liſbon, and preſented it to a grand prior of the houſe of Lorrain, and to queen Catherine de Medicis; whence it was alſo called *queen's herb*, and *grand prior's herb*.—They alſo gave it other names, which are now all reduced to the original name *tobaco*, or *tobacco*, from *tabaco*, given it by Hernandez de Toledo, who firſt ſent it into Spain and Portugal.

Culture and preparation of Tobacco.—*Tobacco* is cultivated in ſeveral parts of America, particularly in the Caribbee Iſlands, Virginia, *&c.* where they are forced to mix aſhes with the ſoil, to prevent its riſing too thick.—After ſowing, they water it every day, and on very hot days cover it up, to prevent its being ſcorched by the ſun.

When it is riſen to a convenient pitch, they tranſplant it, much as we do lettice, only at a diſtance of three feet, and in a ſoil prepared with great care: when replanted, it is kept continually weeding, the ſtem frequently cleanſed, and the loweſt leaves and the ſuckers it puts forth, taken off, that ten or fifteen of the fineſt leaves may have all the nouriſhment.

The leaves thus reſerved being ripe, which is known by their breaking when bent, the ſtalks are cut, and left to dry two or three hours in the ſun; after which they are tied two by two, and hung up on ropes under a ſhed to be dried by the air. When the leaves are ſufficiently dried, they are pulled from off the ſtalks, and made up in little bundles; which being ſteeped in ſea-water, or for want thereof, in common water, are twiſted in manner of ropes, and the twiſts formed into rolls, by winding them with a kind of mill around a ſtick.—In which condition it is imported into Europe, where it is cut by the tobacconiſts for ſmoaking, formed into ſnuff, and the like.

Beſides the *tobacco* of the Weſt-Indies, there are conſiderable quantities cultivated in the Levant, the coaſts of Greece and the Archipelago, the iſland of Malta and Italy.—The marks of good twiſt *tobacco*, are a fine ſhining cut, an agreeable ſmell, and that it have been well kept.

Tobacco is either taken by way of ſnuff, as a ſternutatory, or as a maſticatory by chewing it in the mouth, or by ſmoaking it in a pipe. See Pipe, Sternutatory, Masticatory, Fumigation, *&c.*

It is ſometimes alſo taken in little longiſh pellets put up the noſe, where it is found to produce very good effects, to attract a deal of water or pituita, unload the head, reſolve catarrhs, and make a free reſpiration; for the ſubtile parts of the *tobacco* in inſpiration are carried into the trachea and lungs, where they looſen the peccant humours adhering thereto, and promote expectoration.

Some have left this *tobacco* in their noſes all night; but this is found to occaſion vomiting the morrow morning. Another thing charged on this way of application, is, that it weakens the ſight.

Tobacco is held a firſt rate narcotic. See Narcotic, and Opiate.—When taken in great quantities in the way of ſnuff, it is found to prejudice the ſmelling, greatly diminiſhes the appetite, and in time gives riſe to a phthiſis.

That taken in the way of ſmoak, dries and damages the brain. Borrhi, in a letter to Bartholine, mentions a perſon who through exceſs of ſmoking had dried his brain to that degree, that after his death there was nothing found in his ſkull but a little black lump, conſiſting of mere membranes.

Some people uſe the infuſion of *tobacco* as an emetic; but it is a very dangerous and unjuſtifiable practice, and often produces violent vomitings, ſickneſs and ſtupidity.

Bates and Fuller give ſome receipts, in which *tobacco* is an ingredient, with mighty encomiums in aſthmatic caſes.—A ſtrong decoction of *tobacco*, with proper carminatives and cathartics, given clyſter-wiſe, ſometimes proves of good effect in what is uſually called the *ſtone colic*, and alſo in the iliac paſſion. See Colic, and Iliac *Paſſion*.

A drop or two of the chymical oil of *tobacco* being put on the tongue of a cat produces violent convulſions, and death itſelf in the ſpace of a minute; yet the ſame oil uſed in lint, and applied to the teeth, has been of ſervice in the tooth-ach; though it muſt be to thoſe that have been uſed to the taking of *tobacco*, otherwiſe great ſickneſs, retchings, vomiting, *&c.* happens; and even in no caſe is the internal uſe of it warranted by ordinary practice.

A ſtrong decoction of the ſtalks, with ſharp-pointed dock and allom, is ſaid to be of good ſervice, uſed externally, in cutaneous diſtempers, eſpecially the itch: ſome boil them for that purpoſe in urine. The ſame is ſaid to be infallible in curing the mange in dogs.

Sig. Paulli, phyſician to the king of Denmark, in an expreſs treatiſe on *tobacco*, obſerves that the merchants frequently lay it in bog-houſes, to the end that becoming impregnated with the volatile ſalt of the excrements, it may be rendered the briſker, more fœtid and ſtronger.

Amurath IV. emperor of the Turks, the grand duke of Muſcovy, and the emperor of Perſia, have prohibited the uſe of *tobacco* in their ſtates.—Our king James I. wrote a treatiſe expreſs againſt it, entitled, *A counter-blaſt to tobacco.* By a bull of pope Urban VIII. ſuch are excommunicated as take *tobacco* in churches.

TOD *of Wool* is mentioned in the ſtatute 12 Car. II. c. 32. as a weight containing 28 pounds, or two ſtone. See Stone, Wool, *&c.*

Some will have the word derived from the French, *toilet*, a *wrapper*, within which, by uſage, two ſtone of wool is folded.

TOES, by anatomiſts called *digiti pedis*, are the extreme diviſions of the feet; anſwering to the fingers of the hand. See Foot.

The *toes* of each foot conſiſt of 14 bones; the great *toe* having two, and the reſt three each; they are like the bones of the fingers, but ſhorter. See Finger.

In the *toes* are found twelve oſſa ſeſamoidea, as in the fingers. See Sesamoidea.—The gout chiefly ſeizes the great *toe*. See Gout.

TOFT, Toftum or Tofta, in our law-books, a parcel of land, or a place where a meſſuage hath ſtood, but is decayed or caſually burnt, and not re-edified.

TOGA, in antiquity, a wide woollen gown, or mantle, without ſleeves, uſed among the Romans, both by men and women.

In proceſs of time, none wore the *toga* but lewd women, whence that of Horace.—*In matrona, peccesſve togata.*

The *toga* was of divers colours, and admitted of various ornaments: there was that called *toga domeſtica*, wore within-doors; *toga forenſis*, wore abroad; *toga militaris*, uſed by ſoldiers, tucked up after the Gabinian faſhion; and *toga picta*, or *triumphalis*, wherein the victorious triumphed, embroidered with palms: that without any ornaments, was called *toga pura*.

The *toga* was ſometimes wore open, called *aperta*; ſometimes girt or tucked up, called *præcincta*; and this cincture or girding again, according to Sigonius, was of three kinds; *laxior*, or the looſe kind, where the tail trailed on the ground; *adſtrictior*, the cloſe kind, wherein it did not reach ſo low as the feet; and *Gabinia*, where one of the ſkirts or lappets was girt round the body.

Sigonius diſtinguiſhes the ſeveral *togæ*, or Roman gowns, into *pura*, *candida*, *pulla*, *picta*, *prætexta*, *trabea* and *paludamentum*. See Prætexta, Paludamentum, *&c.*—The *toga pura* was alſo called *virilis*. See Virile.

Jus Togæ, or privilege of the *toga*, was the ſame with the privilege of a Roman citizen, *i. e.* the right of wearing a Roman habit, and of taking, as they explained it, fire and water through the Roman empire. See Citizen.

TOILES, ſnares, or nets ſet by hunters for catching of wild beaſts; as deer, *&c.*

TOILET, a fine cloth, of linnen, ſilk, or tapeſtry, ſpread over the table in a bed-chamber, or dreſſing-room, to undreſs and dreſs upon.

The dreſſing-box, wherein are kept the paints, pomatums, eſſences, patches, *&c.* the pin-cuſhion, powder-box, bruſhes, *&c.* are eſteemed parts of the equipage of a lady's *toilet*.

That of the men conſiſts of a comb-caſe, bruſhes, *&c.* To make a viſit to one at his *toilet*, is to come to entertain him while he is dreſſing or undreſſing.

Sattin, velvet, brocade, point de France, *&c.* are now ordinarily uſed for *toilets*: anciently they were made much plainer, whence the name, which is formed from the French, *toilette*, a diminutive of *toile*, any thin ſtuff.

TOISE, a French meaſure, containing ſix of their feet, or a fathom. See Fathom, and Measure.

TOISON *d'Or*, a term in heraldry for a golden fleece, which is ſometimes borne in a coat of arms. See Golden *Fleece*.

TOL, in law, a term ſignifying to defeat, or take away.—From the Latin, *tollere*, which ſignifies the ſame.

Thus, to *tol the entry*, is to take away the right of entry. See Entry.

TOL-BOOTH, or Toll-Booth, a place in a city, where goods are weighed, to aſcertain the duties or imports thereon.

TOLERATION, in religion, a term which has made a great figure in the diſputes among proteſtants, who have been exceedingly divided about the meaſures of *toleration*, or the degrees to which heretics and ſchiſmatics are, or are not to be ſuffered. See Persecution.

Many of the church of England have zealouſly oppoſed the *toleration* of preſbytery, *&c.* nor has the church of Scotland been behind-hand with them in their zeal againſt epiſcopacy.*

But all who have reaſoned conſiſtently from the principles of the reformation, have been for *toleration*; as well perceiving they had no right to oblige any body to follow their particular ſentiments: but the difficulty is, the ſetting bounds to this *toleration*. See Liberty *of Conſcience*.

M. Baſnage and ſome others diſtinguiſh *civil toleration* from *eccleſiaſtical*.—The latter allows of different, and even oppoſite ſentiments in the church, and the firſt permits them in civil ſociety.

By *civil toleration*, is meant impunity and ſafety in the ſtate for every ſect which does not maintain any doctrine inconſiſtent with the peace and welfare of the ſtate.—This civil or political *toleration* implies a right of enjoying the benefit of the laws, and of all the privileges of the ſociety, without any regard to difference of religion.

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* When a bill was brought into parliament for the toleration of all proteſtants in the exerciſe of religious worſhip; the general aſſembly of the kirk did moſt humbly beſeech; yea, they were bold in the Lord, and in the name of the church of God, earneſtly to obteſt his grace [the lord high commiſſioner] and the moſt honourable eſtates, that no ſuch motion of any legal toleration to thoſe of the prelatical principles might be entertained by the parliament. See *Life of Qu. Anne*, p. 95.

Eccleſiaſtical toleration, is an allowance of certain opinions, which not being fundamentals, do not hinder thoſe who profeſs them from being eſteemed members of the church.—But as to the quality and number of theſe fundamental points, they never could, nor in all probability ever will, be agreed upon.

TOLL, TELONIUM, a Saxon term, though derived originally from the Latin, *tollere*, to *take away*, or rather the Greek τελος, *tribute*, *tax*.—It has two acceptations, denoting, 1°. a liberty to buy and ſell within the bounds of a manour.

TOLL is alſo uſed for a tax or cuſtom paid for paſſage, or for vending goods in a market, fair, or the like. See PASSAGE, FAIR, &c.

Some records make mention of *toll thoro*, or *thorough toll*, which is money paid for paſſage in or through ſome highways, or over ferries, bridges, &c.—*Toll travers*, for paſſing or driving cattle over a private man's gound.—*Toll-turn*, or *turn-toll*, paid at the return of beaſts from fairs and markets, though they were not ſold.

By the ancient law, the buyers of corn and cattle in fairs or markets ought to pay *toll* to the lord of the market, in teſtimony of the contract theſe lawfully made in open market, becauſe privy contracts were held unlawful.

Some interpret *toll* a liberty as well to take, as to be free from *toll*; for that they who are enfeoffed with *toll*, are cuſtom-free. Of this freedom from *toll*, the city of Coventry boaſts an ancient charter, granted them by Leofrick or Luriche, earl of the Mercians in Edward the Confeſſor's time, who, at the importunity of Godeva his lady, granted this freedom to the city.

TOLLBOOTH, } See the articles { TOLBOOTH.
TOLU *Balſam*, } { BALSAM.

TOMAN, or TOUMAN, a kind of imaginary money uſed among the Perſians in the keeping of their books, and to facilitate the reduction of money in the payment of conſiderable ſums. See MONEY.

The *toman* conſiſts of fifty abaſſi's, or a hundred mamoudi's, or two hundred ſhahees, or ten thouſand dinars; which amount to about three pounds ſix ſhillings eight-pence ſterling.

D'Herbelot derives the word from the language of the Moguls, where it ſignifies the number ten thouſand.—Eben Arabſchah ſays, that the word *touman*, when uſed to expreſs a weight, or money, contains ten thouſand ſilver Arab drachmas, called *methkal*; which are a third lighter than the Attic. See DRACHM.

The Moguls, &c. frequently uſe *toman* for ten thouſand men; and ſay, *e. gr.* that the city Samarcand contains ſeven *tomans* of people fit to bear arms; and that of Andekhan nine *tomans*.

TOMB,* includes both the grave or ſepulchre, wherein a defunct is interred; and the monument erected to preſerve his memory. See SEPULCHRE, and MONUMENT.

* The word is formed from the Greek, τυμβος, *tumulus*, *ſepulchre*; or, according to Menage, from the Latin, *tumba*, which ſignifies the ſame.

Among the Romans none but the emperors, veſtals, and perſons ſignalized by great actions, were allowed to have *tombs* in the cities; the reſt were all in the country, near the high-roads; whence thoſe common words, *ſiſte*, & *abi*, *viator*; which are ſtill retained in the inſcriptions of our monuments in churches, &c. though the occaſion be no more. See EPITAPH, INSCRIPTION, &c.

At Anchiale was anciently ſeen the *tomb* of Sardanapalus, with this inſcription in verſe: *Sardanapalus built Anchiale and Tarſus in one day: go, paſſenger, eat, drink, and be merry; the reſt is nothing*. Vid. Strab. Geog. lib. 14.

The Romans had a kind of empty *tomb*, called *cenotaphium*, an *honorary tomb*, wherein no deceaſed was laid. It was uſed to be built in favour of perſons periſhing at ſea, in remote countries, &c. where no ſepulture could be had.

The occaſion hereof was a ſuperſtitious notion, that the ſouls of thoſe, whoſe bodies were not buried, wandered an hundred years by the banks of the rivers of hell, before they were admitted to paſs over.—The κενοταφιον being made, the ſame ceremonies were practiſed as at real funerals.

The cenotaphia were inſcribed with the words *ob honorem*, or *memoriæ ſacrum*; whereas other *tombs*, wherein the aſhes were really depoſited, where inſcribed D. M. S. *q. d.* ſacred to the manes.—When the words *tacito omine* were added, it declared the aſhes incloſed therein infamous for ſome crime. See FUNERAL.

Characters on TOMB-*ſtone*. See the article CHARACTER.

TOME, ΤΟΜΟΣ, a bound book, or writing that makes a juſt volume. See BOOK.

All the works of ſuch an author are compiled, and reduced into one, or more *tomes*. There are *tomes* in folio, in quarto, in octavo, duodecimo, &c.—The councils printed in the Louvre are in 37 *tomes*. Salmeron has wrote the life of Chriſt in 12 *tomes*. See VOLUME.

TOMENTUM, properly ſignifies flocks, or locks of wool; but by botaniſts is uſed for that ſoft downy matter which grows on the leaves of ſome plants, hence denominated *tomentoſe*; as, *gramen tomentoſum*, *carduus tomentoſus*, &c.

M. Winſlow obſerves a kind of *tomentum* in the ſecretory veſſels of the glands; and from this accounts for the ſecretion of the various fluids from the blood. See GLAND, and SECRETION.

TON. See the article TUN.

TOMKIN *and* TOMPION. See the article TAMPION.

TONDIN, or TANDINO, in architecture. See TORE.

TONE, or TUNE, in muſic, a property of ſound, whereby it comes under the relation of *grave* and *acute*; or, the degree of elevation any ſound has, from the degree of ſwiftneſs of the vibrations of the parts of the ſonorous body. See SOUND, GRAVITY, &c.

For the cauſe, meaſure, degree, difference, &c. of *tones*, ſee TUNE.—The variety of *tones* in human voices ariſes partly from the dimenſions of the wind-pipe, which, like a flute, the longer and narrower it is, the ſharper is the *tone* it gives; but principally from the head of the larynx, or knot of the throat; the *tone* of the voice being more or leſs grave, as the rima, or cleft thereof is more or leſs open. See VOICE.

TONE is more particularly uſed in muſic for a certain degree or interval of tune, whereby a ſound may be either raiſed or lowered from one extreme of a concord to the other; ſo as ſtill to produce true melody. See INTERVAL, and CONCORD.

Muſicians, beſide the concords, or harmonical intervals, admit three leſſer kinds of intervals, which are the meaſures and component parts of the greater, and are called *degrees*: the nature, origin, uſe, &c. whereof, ſee under the article DEGREE.

Of theſe degrees, two are called *tones*, and the third a *ſemitone*; their ratio's in numbers are 8 : 9, called a *greater tone*; 9 : 10, called a *leſſer tone*; and 15 : 16, a *ſemitone*.

The *tones* ariſe out of the ſimple concords, and are equal to their differences: thus the *greater tone* 8 : 9 is the difference of a fifth and a fourth: the *leſſer tone* 9 : 10 the difference of a leſſer third and fourth, or of a fifth and ſixth greater: and the *ſemitone* 15 : 16, the difference of a greater third and fourth. See SEMITONE.

Of theſe *tones* and *ſemitones* every concord is compounded, and conſequently is reſolvable into a certain number thereof.—Thus the leſſer third conſiſts of one *greater tone* and one *ſemitone*—the greater third of one *greater tone* and one *leſſer tone*. See THIRD.—The fourth of one *greater tone*, one *leſſer tone*, and one *ſemitone*. See FOURTH.—The fifth of two *greater tones*, one *leſſer tone*, and one *ſemitone*. See FIFTH, &c.

For the uſe of theſe *tones*, &c. in the conſtruction of the ſcale of muſic, ſee SCALE.

Diazeuctic TONE. See the article DIAZEUCTIC.

TONGUE, *Lingua*, in anatomy, an oblong member, whoſe form and ſituation are ſufficiently known, and whoſe uſe is to be the organ of taſte, and the principal inſtrument of ſpeech and deglutition. See SPEECH, &c.

It is faſtened to the os hyoides, the larynx, and to the ſauces, by means of a membranous ligament running along the lower ſide of it, about half way, called the *frænum*. See *Os* HYOIDES, &c.

The main bulk and body of the *tongue* is made up of muſcles, which are covered on the upper part with a papillary nervous ſubſtance, over which are ſpread two membranes.—The outer of theſe membranes is pretty thick and ſhort, and full of papillæ, of a pyramidal figure, eſpecially towards the tip; which papillæ ſtand pointing towards the root of the tongue in a bending poſture, which makes their figure to be concavo-convex. Theſe apices, or papillæ, are ſo very minute and ſlender in men, that they make the coat appear on the upper part to be villous, eſpecially as they approach nearer to the root. The figure of the papillæ, in human *tongues*, is not ſo plainly diſcernable to the naked eye as not to need the microſcope. In brutes they are generally larger, ſtiffer, and more conſpicuous; and in ſome almoſt cartilaginous, as may be felt in the *tongues* of cats, oxen, but more ſenſibly in lions. On the upper ſide, at a little diſtance from the tip, this membrane becomes thin, ſmooth, and glabrous, and, as it were, poliſhed by the lower parts of the mouth whereon it ſlides.

Under this lies a thin, ſoft, reticular kind of coat, punched through with innumerable holes, and always lined with a thick and white yellowiſh mucus. This membrane is ſo exceeding tender, and full of mucus, that it is not to be examined by the naked eye, unleſs boiled: by which it grows tough, and eaſily ſeparable from the external membrane, and from the nervous part of the *tongue* which lies immediately under it. After boiling, it appears like a kind of gawſe, between whoſe threads innumerable holes appear, through which the apices of the papillary body underneath it are exerted. This membrane on the upper ſide, next the outward, appears white, with a caſt towards yellow, but black on the ſide next the tongue.

Many authors do not allow this to be a membrane, and will only have it to be a mucus hardened by boiling; but ſince it has ſo much of the reſemblance of a membrane, and that authors agree in allowing two membranes to the tongue, Dr. Drake does not ſcruple to number it among them; ſince there does not appear to be any other ſecond membrane: reckoning, with Malpighi, the ſmooth part under the tongue a part of the outer membrane.

Immediately under this appears a nervous papillary body ſpreading itſelf to a pretty thickneſs over the whole ſurface of the *tongue*. This body, on the under ſide, is every-where level and ſmooth, except in ſome few places, where it is connected to the ſubjacent muſculous part by ſome nervous twigs which it ſends into it.—Malpighi diſtinguiſhes the papillæ, which make the principal part hereof, into three kinds, from their different magnitudes and figures when obſerved with the microſcope; of which, thoſe ſeated on the ſides and tip are very ſingular, reſembling little round pyramids, with globes on their tips like the horns of ſnails.—All theſe papillæ, which are the immediate organs of taſting, ſend their apices, or extremities, through the mucous membrane, into the pyramidal papillæ of the outer membrane, which are hollow to receive them, and ſeem to be nothing elſe but a kind of caſes to defend theſe nervous papillæ from injuries, which the ſalts and aſperities of thoſe bodies which we take into our mouths, might do them. See PAPILLA, TASTING, &c.

The reſt, and much the greateſt part, of the body of the *tongue* is muſculous, conſiſting of plans of fibres in different directions: the firſt, or external plan, conſiſts of ſtrait fibres, which cover the tongue from one extreme to the other; when theſe contract, they ſhorten it. Under this are ſeveral other plans, running from the under to the upper ſide, which ſerve to make it broad and thin. Theſe two kinds of fibres lie *ſtratum ſuper ſtratum*, a plate of the one, and then a plate of the other.

Authors are not agreed about the number of muſcles which compoſe the *tongue*: ſome confounding thoſe of the os hyoides with thoſe of the *tongue*, reckon eight, others nine, others ten, and more pair. Some number thoſe proper to the *tongue* alone ſix pair, others five, others four, and ſome no more than three. Of this laſt opinion is our accurate Mr. Cowper, who allows no more than three genuine pair of muſcles to the *tongue*, *viz.* the pair *genioglossum*, which pull the *tongue* forwards, and put it out of the mouth; the *ceratogloſſum*, which draws it into the mouth, or pulls it on one ſide; and the *ſtylogloſſum*, which draws the *tongue* up in the action of deglutition. See GENIOGLOSSUM, CERATOGLOSSUM, &c.

Beſides the muſcles, the *tongue* is alſo moved by a bone ſituated at its root, and making as it were its baſis, called *os hyoides*. See HYOIDES.

Down the middle of the *tongue*, lengthwiſe, runs a ſeam, called *linea mediana*, which divides it to the bottom into two equal parts, but not ſo effectually but that the blood-veſſels of one ſide communicate with thoſe of the other.—Theſe veſſels are arteries from the carotides and veins called *ranulæ*, and are very conſpicuous about the frænum under the tongue, ſerving to reconvey the blood to the external jugulars. Theſe veins are frequently opened in the angina, and are the laſt reſort of old women in this caſe.—The nerves of the tongue come from the fifth, ſixth, and ninth pairs; the two firſt of which have been called *guſtatorii*, and the latter *motorii linguæ*. See NERVE.

Howſoever neceſſary an organ the *tongue* be in ſpeech, &c. yet Jac. Rolandus has publiſhed an account of a mouth without a *tongue*, which ſpake perfectly, and performed its other natural functions; the perſon he ſpeaks of is Pet. Durand, who loſing his *tongue* by a gangreen, could yet ſpeak perfectly, as alſo taſte, ſwallow, and chew his food; which laſt, however, he could only do on that ſide he put it into, being unable to turn it to the other ſide of his mouth.

TONGUE-*grafting*, } See the articles { ENGRAFTING.
TONGUE-*tied*, } { RANULA.

TONIC,* ΤΟΝΙΚΟΣ, in medicine, is applied to a certain motion of the muſcles, wherein the fibres being extended, continue their extenſion in ſuch manner, as that the part ſeems immoveable, though in reality it be in motion. See MUSCLE.

* The word is formed from the Greek, τεινειν, *to ſtretch*.

Such is the caſe of a man ſtanding, of birds planing or ſwimming through the air, &c.—Galen ſays, that the muſcles act even when at reſt; for after having made any contraction to fix themſelves in a certain ſtate or diſpoſition, the preſerving of that contraction is what we call the *tonic motion*.

TONICAL *Echo*. See the article ECHO.

TONNAGE, } See the articles { TUNNAGE.
Duty of **TONNAGE,** } { DUTY.
TONNING. } { TUNNING.

TONSILS, TONSILLÆ, in anatomy, two round glands, ſituate near the root of the tongue, on each ſide the uvula, under the common membrane of the fauces, with which they are covered: called alſo *amygdalæ*, or *almonds of the ears*. See ALMONDS.

TONSURE,* the art or act of cutting the hair, and ſhaving the head. See HAIR.

* The word is formed from the Latin, *tondere, to ſhave*.

The *tonſure* was anciently a mark of infamy in France; inſomuch, that when they would render any prince incapable of ſucceeding to the crown, they cut off his hair, and ſhaved him. See further under the article BEARD.

TONSURE, in the Romiſh church, is uſed for the entrance, or admiſſion into holy orders. See ORDERS.

In propriety, *tonſure* is the firſt ceremony uſed for devoting a perſon to God and the church, by preſenting him to the biſhop, who gives him the firſt degree of the clericate, by cutting off part of his hair, with certain prayers and benedictions. Some hold the *tonſure* a particular order; others, as Loyſeau, only the mark and form of eccleſiaſtical orders in general. The *tonſure* ſuffices to make a clerc: the reſt is only to qualify him for the holding benefices.—A perſon is capable of the *tonſure* at ſeven years of age; hence a benefice of ſimple *tonſure* is ſuch a one as may be enjoyed by a child of ſeven years old. The *tonſure* is the baſis of all the other orders.

TONSURE is particularly uſed for the corona, which prieſts, &c. wear, as the mark of their order, and of the rank they hold in the church. See CROWN.

The barbers have the meaſures and dimenſions of the different kinds of *tonſures*, or clerical crowns; to be practiſed according to the different degrees and orders.—A clerc's *tonſure*, a ſub-deacon's *tonſure*, a deacon's *tonſure*, a prieſt's *tonſure*, are each ſucceſſively bigger than other.

TOOLS, ſimple and popular inſtruments, uſed in the more obvious operations; and particularly in the making of other more complex inſtruments. See INSTRUMENT.

Tools are divided into *edge-tools*, *ſpring-tools*, *pointed-tools*, &c. See STEEL, and TEMPERING.

TOOTH, *Dens*, in anatomy, a little, hard, ſmooth bone, ſet in the gums, and ſerving to maſticate or chew the food, to bite, &c.—See *Tab. Anat.* (Oſteol.) *fig.* 2. *lit. d, e, f.* See alſo the articles FOOD, MASTICATION, &c.

Men, and moſt terreſtrial animals, as alſo ſome fiſhes, have two rows of *teeth*, the one in the upper jaw, and the other in the lower. See GUM, and MAXILLA.

In men, the ordinary number of *teeth* is 32; ſixteen in each jaw; all fixed in peculiar ſockets, called *alveoli*, by the juncture or articulation called *gomphoſis*, and by the joiners, *pegging*. See GOMPHOSIS.

They are of three ſorts: thoſe in the fore-part of each jaw are called *inciſores*, *cutters*; and are four in number in each jaw, broad, thin, and flat: ſome call them the *primores*, becauſe they appear the firſt; others the *adverſi*; and others the *ridentes*, *laughers*, becauſe they ſhew themſelves firſt in laughing. See INCISIVI.

Behind theſe, on each ſide of each jaw, ſtand two which are a little more prominent, and pointed, called *canini*, by the people *eye-teeth*, becauſe part of the nerve which moves the eyes is inſerted into them, whence the danger of pulling them out. See CANINE.

Behind theſe are five in each jaw, called the *molares*, or *grinders*, being thoſe which in men ſerve chiefly for maſtication. See MOLARES.

The inciſores have generally only a ſingle root, or twang; the canini ſometimes two; and the molares three or four, eſpecially the hind ones, which are put to the greateſt ſtreſs.

The *teeth*, according to Peyer, are formed of convolved ſkins, hardened and bound together by a viſcid mucus: and if we view the grinders of deer, horſes, and ſheep, &c. we ſhall find great reaſon to be of his mind.

Others ſpeak of their formation otherwiſe. The ſockets, Dr. Quincy obſerves, are lined with a thin membrane, upon which are ſeveral veſſels, through which there paſſes a thick tranſparent humour, that, as it increaſes, hardens in form of *teeth*; and about the ſeventh or eighth month after birth, they begin to pierce the edge of the jaw, tear the perioſteum and gums, which being very ſenſible, create a violent pain, and other ſymptoms incident to children in the time of dentition. See DENTITION.

The *teeth* begin not to appear all at a time; but firſt the dentes inciſivi of the upper, and then thoſe of the lower jaw appear, becauſe the thinneſt and ſharpeſt; after them come out the canini, becauſe they are ſharper than the molares, but thicker than the inciſivi; and laſt of all the molares, becauſe they are thickeſt and blunteſt.

Of this viſcous tranſparent liquor, which is indurated into the ſubſtance of the *teeth*, there are two lays, one below the other, divided by the ſame membrane which covers all the cavity of the jaw: the uppermoſt lay forms the *teeth* which come out firſt; but about the ſeventh year of age they are thruſt out by the *teeth* made of the undermoſt lay, which then begin to ſprout; and if theſe *teeth* be loſt, they never grow again.

If ſome have been obſerved to ſhed their *teeth* twice, they have had three lays of this viſcous humour, which hardly ever happens.

About the one and twentieth year, the two laſt of the molares ſpring up, and are called *dentes ſapientiæ*, becauſe they ariſe when the perſon is at years of diſcretion. See SAPIENTIÆ.

The *teeth*, M. de la Hire the younger has found to have all that part which ſtands out beyond the jaw, covered with a peculiar ſubſtance called *enamel*, quite different from the reſt of the bone.

This enamel, by ſome others called the *perioſteum*, is compoſed of an infinity of little fibres, which grow to the bone by their roots, much like nails or horns. See NAIL.

This compoſition is very diſcernable in a broken *tooth*, where the origin and ſituation of the fibres are apparent. M. de la Hire is perſuaded, that the growth of theſe fibres is performed much like that of nails. If by any accident a little part of this enamel be broke off, ſo that the bone is left bare, that is, if the very roots of the fibres be taken away, the bone, in that part, will grow carious, and the *tooth* inevitably periſh; there being no bone in the body that can bear the air. See BONE.

Indeed, in ſome perſons the enamel is very much wore and ſhattered, by rubbing them much with dentrifices, &c. ſo that the bone appears through, and yet the *tooth* keeps ſound; but the reaſon is, that the bone is not quite bare, but there is ſtill a thin lay of the enamel which preſerves it; but this lay being thin enough to be tranſparent, the yellow bone is ſeen through it.

Sometimes alſo a *tooth* breaks, and the bone is left bare, yet the perſon does not find any pain or aking from it: the reaſon is, that the hole in the root or twang of the *tooth* through which a little branch of a nerve enters that renders the *tooth* ſenſible, being quite ſtopped up by age, or the like, has pinched off the nerve, and taken away all communication between the *tooth* and the origin of the nerves, and, by conſequence, all ſenſibility.

It alſo happens in ſome *teeth*, that the fibres are only in little ſheaves, or bundles, whoſe upper extremities meet, but not their lower; as is the caſe in moſt of the grinders, where the ſeparation of the bundles is apparent. Here, if the upper extreme of the fibres chance to be broken, or wore off, the ſeparation between two of the bundles often enlarges itſelf, ſo as to admit ſome hard particle of the food, by which means a little aperture being made through the enamel, the bone is laid bare, and the *tooth* ſoon rots. This inconvenience is remedied a little by ſtopping up the hole with lead, which prevents the ſharp pungent parts of the food from penetrating to the bone, and there occaſioning pain. See ODONTALGY.

What we have ſaid is illuſtrated by the figures in *Tab. Anat.* (Oſteol.) *fig.* 14. where A C F H expreſſes the extremity of the jaw the *teeth* are ſet in; A E C and F G H the roots or twangs of the *teeth* incloſed in the jaw; A D C B and F L H I I the enamel, compoſed of little fibres ranged aſide of each other, which cover all that part of the *tooth* without ſide the jaw; I I ſeveral threads joined at the upper extremity, but apart at the lower; M M holes through which the nerves enter the roots of the *teeth*; N N a *tooth* cloſed up.

The *teeth*, Mr. Derham obſerves, furniſh us with a notable inſtance of the wiſdom and goodneſs of the Creator: their peculiar hardneſs is very remarkable, conſidering the tender ſubſtance they are formed of. See BONE.

The ancients, and even Riolanus, among the moderns, have held them to be incombuſtible, and the only part of the body that was ſo; on which account they were placed with great care in the urns among the aſhes of the deceaſed: but the opinion is falſe, there having only been two found in the tombs of Weſtphalia, one of which was half calcined.

Another popular error is, that the *teeth* continue growing for ever, even in old people, to the hour of their death. M. de la Hire obſerves, it is only the enamel or poliſh that grows, which is a ſubſtance very different from the *teeth*.

The form, diſpoſition, and order of the *teeth*, are admirable: the foremoſt are weak and far from the centre, as being only preparers to the reſt; the others being to grind and mince, are accordingly ſtronger, and placed near the centre of motion.

Galen puts the caſe, that the order of the *teeth* ſhould have been inverted, and the grinders, *e. gr.* put in the place of the inciſores; and aſks, what uſe the *teeth* had then been of, and what confuſion would not there have aroſe by ſuch a ſlight overſight in the diſpoſal only? Upon which he argues, that if any perſon ſhould diſpoſe a company of 32 men, the number of the *teeth*, in a juſt order, we ſhould judge him an intelligent perſon: why then ſhould we not judge the ſame of the Creator, &c? *De uſu partium.*

Again, their various forms, in various animals, is no leſs conſiderable, being all curiouſly adapted to the peculiar food and occaſions of the ſeveral ſpecies of animals: thus in the rapacious they are fitted for the catching, holding, and tearing the prey; in herbaceous for the gathering and communition of vegetables; and in ſuch as have no *teeth*, as birds, the bill ſupplies the defect.

Add, that the temporary defect of them is no leſs obſervable in ſome: that children, for inſtance, ſhould have none while they are not able to uſe them, but to hurt themſelves, or the mother; and that at the very age when they can take in the more ſubſtantial food, and live without the breaſt, and begin to need *teeth* for the ſake of ſpeech; that then, we ſay, their *teeth* ſhould begin to appear, and gradually grow as they more and more ſtand in need of them.

Some perſons are born with all their *teeth*, as Marcus Curius Dentatus, and Cneius Papirius Carbo: others have only had one continued *tooth*, reaching the whole length of the jaw, as Pyrrhus king of Epirus, and Pruſias ſon of the king of Bithynia: others are ſaid to have had two or three rows on the ſame jaw, as Hercules.

Mentzelius, a German phyſician, aſſures us, that he ſaw an old man at Cleves, in 1666, aged 120 years, who had a new ſet of *teeth* two years before, which cut with great pain; and he ſaw an Engliſhman at the Hague, who cut a new ſet of *teeth* in his 118th year.

A Daniſh phyſician, named Hagerup, maintains in certain theſes, that one may hear with the *teeth*. See HEARING.

As to animals, there are ſome fiſhes have *teeth* on their tongues, as trouts; others have them at the bottom of the gullet, as the cod-fiſh; ſome, as the great ſea-dog, called *canis carcharias*, have three, four, or five rows of *teeth* on the ſame jaw; the requiem and crocodile have each three, and thoſe all inciſors; vipers have two large crooked canine *teeth*, which are moveable, and ordinarily lie flat, only raiſed when they would bite. See VIPER, &c. And the ſea-frog, or ſea-devil, has whole rows of the like moveable *teeth*.—The toad and cuttle-fiſh have no *teeth*, and yet bite.

Artificial TEETH, are thoſe ſet in lieu of natural ones which are wanting.—They are uſually made of ivory; but in regard ivory, in a little time, grows yellow in the mouth, Fabricius adviſes them to be made of the ſhin-bone of a bullock, which preſerves its colour.

The cuſtom of wearing ivory *teeth*, and of binding them in with a gold wire, is very ancient: Lucian and Martial ſpeak of it as practiſed among the Romans.

Guillemeau gives us the compoſition of a paſte for making *artificial teeth*, which ſhall never grow yellow: the compoſition is white wax granulated, and melted with a little gum elemi, adding powder of white maſtic, coral, and pearl.

TOOTH *in the manage*.—It is by a horſe's *teeth*, chiefly, that his age is known. See HORSE, and AGE.

The *teeth* of a horſe are of four kinds, *viz.* 24 *jaw-teeth*, or *grinders*, at the bottom of the mouth, beyond the bars; 12 on each ſide the channel, ranged ſix above, and as many below.—Theſe never fall, nor are they uſed for the diſtinction of age.

Twelve *foal-teeth*, or *milk-teeth*, which come in the fore-part of the mouth at three months old, and are uſually caſt at two years and half.

Four *tuſhes*, placed alone in the bars between the fore-*teeth* and grinders, one on each ſide below, and as many above. Mares ſeldom have tuſhes, and when they have, they are ſmall, and are reckoned an imperfection.

Twelve *gatherers*, growing before in the place of the foal-*teeth* and grinders, and with which horſes draw their fodder, cut graſs, &c. Theſe are divided into

Nippers, which are the two foremoſt *teeth* above, and as many below, which a horſe firſt changes.

Middle teeth, or *ſeparaters*, parting the nippers from the corner *teeth*, are the two next the nippers, one on each ſide of them, both above and below, and are thoſe which change next.

Outward or *corner teeth*, are thoſe next the tuſhes above and below, and which are caſt laſt.—They ſhoot forth from the gum at five years of age, and have a hollow, wherein is a black ſpeck, reſembling a bean, called the *mark*, which continues till ſeven or eight years of age, and then begins to fill up. See MARK.

TOOTH-ACH, a popular diſeaſe, by phyſicians called *odontalgy*. See ODONTALGY.

The *tooth-ach* uſually proceeds from a caries which rots the bone, and eats it hollow. For the cauſes, &c. of this caries, ſee TOOTH.

Sometimes it proceeds from a defluxion of a ſharp matter upon the gums.—For the *tooth-ach*, a paſte made of ſoft bread, and the ſeed of ſtramonium, laid on the tooth affected, abates the pain; if the tooth be hollow, and the pain great, a compoſition of equal quantities of opium, myrrh, and camphire, made up into a paſte with brandy or ſpirits of wine, and about a grain or two put into the hollow place, puts a ſtop to the caries, and blunts the acute pain of the nerve; by which it often gives immediate relief.

Chymical oils, as thoſe of origanum, cloves, tobacco, &c. are alſo of ſervice, deſtroying, by their hot cauſtic nature, the texture of the ſenſible veſſels of the tooth affected; though, from too liberal an uſe of them, frequently proceeds a defluxion of humours, and impoſtumation.

A bliſter applied behind one or both ears ſeldom fails to cure the *tooth-ach*, eſpecially when attended with a hot defluxion of humours, and ſwelling of the gums, face, &c. Liniments of ointment of marſhmallows, alder, &c. mixed with rum, brandy, or ſpirit of wine camphorated, are good, uſed outwardly, to abate the ſwelling.

Mr. Cheſelden mentions one cured of the *tooth-ach* by applying a ſmall cauterizing iron to the anthelix of the ear, after he had undergone bleeding, purging, ſalivation, ſetons, &c. to no purpoſe: the caſe was very remarkable; for when he was ſeized with it, a convulſion of that whole ſide of his face followed, whenever the pain became acute, or he attempted to ſpeak.

Scoockius, in his treatiſe of butter, maintains, that there is no better means of keeping the teeth fair and ſound, than by rubbing them over with butter: an opiate not much leſs diſtaſte-ful than that of the Spaniards, who waſh their teeth every morning with urine.

To prevent and cure the ſcurvy in the gums, it is recommended to waſh the mouth every morning with ſalt and water; and to hinder the teeth from ſpoiling or growing carious, ſome uſe only powder of hartſhorn to rub the teeth with, and then waſh the mouth with cold water: it is alledged, this is preferable to other dentifrices, on this account, becauſe their hard particles are apt to abrade that fine ſmooth poliſh, with which the ſurface of the teeth is covered, and which is their preſervative from the ill effects of air, aliment, liquors, *&c.* which occaſion ailments of the teeth when wore off.

Dentifrices are uſually compounded of powders of hartſhorn, red coral, bone of the cuttle-fiſh, burnt alum, myrrh, dragon's blood, *&c.* Some commend powder of bricks, as ſufficient to anſwer all the intentions of a good dentifrice. See DENTIFRICE.

TOP-*gallant* } See the articles { FORE-*top-gallant*.
TOP-*maſt*, } See the articles { FORE-*top-maſt*.
Heave out TOP-*ſails*, } See the articles { HEAVE.

TOPARCHY,* a little ſtate, or ſignory; conſiſting only of a few cities, or towns; or a petty country governed and poſſeſſed by a *toparch*, or lord.

* The word is formed from the Greek, τοπος, *place*, and αρχη, *command, government*.

Judæa was anciently divided into ten *toparchies*. See Pliny, *lib.* 5. *c.* 14. and Joſeph. *lib.* 3. *c.* 2. de Bel. Jud. & *lib.* 5. *&c.*--The laſt mentioned author calls the cities of Azotus, Jamna, and Phaſaelis, which Herod left by teſtament to his ſiſter Saloma, a *toparchy*.

Procopius only gives the quality of *toparchy* to the kingdom of Edeſſa; to Abgarus, the *toparch* or lord whereof there is a tradition, that Jeſus Chriſt ſent his picture, with a letter.

TOPAZ, a ſort of gem or precious ſtone; the third in order after the diamond. See GEM, and PRECIOUS *Stone*.

The *topaz* is tranſparent; its colour, a beautiful yellow, or gold colour: it is very hard, and takes a fine poliſh.—It is the true chryſolite of the ancients, and is found in ſeveral parts of the Indies, in Ethiopia, Arabia, Peru, and Bohemia. See CHRYSOLITE.

The oriental *topazes* are moſt eſteemed; their colour borders on the orange: thoſe of Peru are ſofter, but their colour much the ſame: the yellow of thoſe of Bohemia is a little blackiſh; they are the ſofteſt of all, and their poliſh the coarſeſt. Thoſe of Madagaſcar were in much eſteem, but are now held good for little.

Tavernier mentions a *topaz*, in the poſſeſſion of the great Mogul, weighing 157 carats, which coſt 20300 *l.* ſterling: and Boetius de Boot, in his treatiſe of precious ſtones, affirms to have ſeen in the cabinet of the emperor Rudolphus, whoſe phyſician he was, a *topaz* above three foot long, and ſix inches broad. Probably it might be ſome marble a little tranſparent, of a *topaz* colour.

The *topaz* is eaſily counterfeited; and there are factitious ones, which, to the eye, do not come behind the natural ones. If we might believe the ancients, the *topaz* has very notable virtues; but thoſe are now in diſcredit: and yet the *topaz* is of ſome uſe in medicine, reduced into an impalpable powder, and applied in water. See GEM.

Some ſay, it takes its name *topaz* from an iſland in the red ſea, of the ſame name, where it was firſt found by Juba, king of Mauritania; but it was known to the Hebrews before, as appears from the 118th pſalm.

TOPHUS, in medicine, a ſtony or chalky concretion in any part of an animal body; as in the bladder, kidneys, *&c.* (See STONE) or in the joints, *&c.* See GOUT, NODE, *&c.*

Dr. Rutty, in his treatiſe of the urinary paſſages, takes the ſtone to ariſe from the attraction between volatile ſaline particles: of which particles the ſtone, when viewed with a microſcope, ſeems to be made up: he thinks the fault of theſe aggregates of ſaline particles, ought generally to be ſuppoſed to begin in, or proceed from, the papillæ of the kidneys, and not from the ſediment of urine in the bladder.

The reaſon why wine-drinkers are more ſubject to the ſtone, and other concretions, than malt or water-drinkers, he ſuppoſes to be the volatile and ſaline, or earthy particles contained in the wine in greater quantities than in the ale, *&c.* A calculus, he obſerves, reduced to a caput mortuum, will upon the affuſion of warm water, diſſolve, and entirely mix; but in a ſhort time will again ſettle, and the particles thereof ſo cloſely unite or attract, as that, by repeated affuſions, they cannot be brought again to diſſolve. See LITHONTHRIPTIC.

TOPIC, in rhetoric, a probable argument, drawn from the ſeveral circumſtances and places of a fact, *&c.* See PLACE, *&c.*

TOPICE,* ΤΟΠΙΚΗ, TOPICA, expreſſes the art or manner of inventing and managing all kinds of probable argumentations. See INVENTION.

* The word is formed from the Greek, τοπικος, of τοπος, *place*: its ſubject being the *places*, which Ariſtotle calls the *ſeats* of arguments.

Ariſtotle has wrote *topics*; and Cicero a kind of comment on them, to his friend Trebatius, who, it ſeems, did not underſtand them.—But the critics obſerve, that the *topica* of Cicero agree ſo little with thoſe eight books of *topics* which paſs under the name of Ariſtotle, that it follows neceſſarily, either that Cicero was much miſtaken; which is not very probable; or that the books of *topics* attributed to Ariſtotle, are not wholly his.

Cicero defines *topica*, or *topice*, to be the art of finding arguments, *diſciplina inveniendorum argumentorum*. See ARGUMENT.

Rhetoric is ſometimes divided into two parts: judgment, called alſo *dialectice*; and invention, called *topice*. See RHETORIC.

TOPICS,* or TOPICAL *remedies*, in medicine, are commonly uſed for what we otherwiſe call *external remedies*, *i. e.* ſuch as are applied outwardly to ſome particular diſeaſed, and painful part. See MEDICINE.

* The word is formed from τοπος, *locus*, place.

Such are plaiſters, cataplaſms, bliſters, unguents, ſalves, collyriums, *&c.* See EMPLASTER, CATAPLASM, UNGUENT, *&c.*

The gout is never cured by *topics*: they may aſſuage the pain for a time; but for a cure, the ſource of the evil muſt be attacked with internals. See GOUT.

TOPOGRPHY,* a deſcription, or draught of ſome particular place, or ſmall tract of land; as that of a city or town, manour or tenement, field, garden, houſe, caſtle, or the like; ſuch as ſurveyors ſet out in their plots, or make draughts of, for the information and ſatisfaction of the proprietors. See MAP, SURVEYING, *&c.*

* The word is formed from τοπος, *place*, and γραφω, *I deſcribe*.

Topography differs from *chorography*, as a particular from more general; chorography being a deſcription of a country, a dioceſe, province, or the like. See CHOROGRAPHY.

TORCH, *Tæda*, a ſort of luminary; being, properly, a ſtick of fur, or other reſinous and combuſtible matter, as pine, linden, *&c.* more or leſs thick, and long; encompaſſed at one end with ſix wax candles, which being lighted, yield a kind of gloomy brightneſs.

Torches are uſed in ſome church ceremonies, particularly at the proceſſions of the holy ſacrament in the Romiſh church, and at the interrments of the poorer people.

Formerly they were uſed at the funerals of thoſe of the firſt rank; but tapers and flambeaux are now introduced in their ſtead; and frequently alſo called by their name. See FLAMBEAU, and TAPER.

TORCULAR, or TORCULARIS, among chirurgions, a contrivance for ſtopping bleedings in amputations. See AMPUTATION, HÆMORRHAGE, *&c.*

TORCULAR *Herophili*,* in anatomy, a name given to a part in the duplicatures of the dura mater; formed of a concourſe of a branch of the longitudinal ſinus, with the lateral ſinus's. See DURA *Mater*, DUPLICATURE, BRAIN, SINUS, *&c.*

* It has its name *torcular* from its reſembling a preſs, or ſcrew: *Herophili* is added from the diſcoverer's name.

TORE,* TORUS, in architecture, a large round moulding uſed in the baſes of columns. See BASE.

* Davilier derives the word from the Greek, τορος, a *cable*, whereof it bears ſome reſemblance; or from the Latin, *torus*, a *bed*, as being ſuppoſed to repreſent the edge of a bed or quilt, ſwelled out with the weight of the incumbent column.

The *tore* is alſo called *gros baton*, and *tondin*.—It is the bigneſs that diſtinguiſhes the *torus* from the aſtragal. See ASTRAGAL. The baſes of Tuſcan and Doric columns have but one *tore*, which is between the plinth and the liſtel.—In the Attic baſe there are two; the upper, which is the ſmaller; and an *under*, or bigger.—See *Tab. Architect. fig.* 3. & *fig.* 24. *lit. t.* & *fig.* 26. *lit. h. m.*

TOREUMATOGRAPHY, a Greek term, ſignifying the knowledge, or rather deſcription, of ancient ſculptures, and baſſo-relievo's. See SCULPTURE, BASSO-RELIEVO, ANTIQUE, *&c.*

The invention of *toreumatographia* is owing to Phidias, and its perfection to Polycletes: the Italian gravers have let a great deal of light into the *toreumatographia*.

TOREUTICE,* ΤΟΡΕΥΤΙΚΗ, that part of ſculpture, called *turning*. See SCULPTURE, and TURNING.

* The word is formed of the Greek, τορνος, *lath*, of τορεω, *terebro, perforo*.

TORIES, or TORYS, a party or faction in England, oppoſite to the whigs. See FACTION, PARTY, WHIG, *&c.*

Theſe two celebrated parties, which have ſo long divided our country, will make a conſiderable article in the Engliſh hiſtory, nothing inferior, in many reſpects, to that of the Guelfs and Gibellins.—The diviſion has gone ſo deep, that it is preſumed, no Engliſhman, who has any concern or principles at all, but inclines more to one ſide than the other: for which reaſon, we ſhall borrow our account of them from the mouths of foreigners, who may be ſuppoſed more impartial; and particularly from M. de Cize, a French officer, ſome time in the ſervice of England, who has wrote the *Hiſtory of whigiſm and toriſm*, printed at Leipſic, *anno* 1717; and M. Rapin, whoſe *Diſſertation ſur les wighs & les torys*, printed at the Hague the ſame year, is well known.

During the unhappy war, which brought king Charles I. to the ſcaffold; the adherents of that king were firſt called *cavaliers*, and thoſe of the parliament *round-heads*; which two names were afterwards changed into thoſe of *tories* and *whigs*, on the following occaſion.

A kind of robbers, or banditti in Ireland, who kept on the mountains, or in the iſlands formed by the vaſt bogs of that country, being called *tories*; a name they ſtill bear indifferently with that of rapparees; the kings enemies accuſing him of favouring the rebellion in Ireland, which broke out about that time, gave his partiſans the name of *tories*: and on the other hand the *tories*, to be even with their enemies, who were cloſely leagued with the Scots, gave them the name of *whigs*, which is that given in Scotland to another kind of banditti, or rather fanatics, in that country. See Whig.

The cavaliers, or *tories*, had then principally in view the political intereſts of the king, the crown, and the church of England: and the round-heads, or whigs, propoſed chiefly the maintaining the rights and intereſts of the people, and of proteſtantiſm. Nor have the two factions yet loſt their firſt views; though their firſt names, *cavalier* and *round-head*, be now entirely diſuſed.

This is the moſt popular account; and yet it is certain the names *whig* and *tory* were but little known till about the middle of the reign of king Charles II. M. de Cize relates, that it was in the year 1678, that the whole nation was firſt obſerved to be divided into *whigs* and *tories*; and that on occaſion of the famous depoſition of Titus Oates, who accuſed the catholics of having conſpired againſt the king and the ſtate.—The appellation *whig* was given to ſuch as believed the plot real; and *tory* to thoſe who held it fictitious.

We ſhould here confine ourſelves to the *tories*; and for what regards the *whigs*, refer to that article; but ſince by comparing and confronting the two parties together, both the one and the other will appear in the ſtronger light, it would be imprudent to ſeparate them: ſo that we rather chuſe to ſay the leſs under the word *whigs*, and refer thence hither.

The factions we are ſpeaking of, may be conſidered either with regard to the *ſtate*, or to *religion*.—The *ſtate tories* are either violent or moderate: the firſt would have the ſoveraign to be abſolute in England, as in other countries, and his will to be a law. This party, which is not very numerous, has yet been conſiderable; 1°. On account of its leaders, which have been lords of the firſt rank, and generally miniſters and favourites. 2°. In that being thus in the miniſtry, it engaged the church *tories* to maintain ſtiffly the doctrine of paſſive obedience. 3°. Becauſe the king has uſually thought it his intereſt to ſupport them.

The moderate *tories* would not ſuffer the king to loſe any of his prerogatives; but neither would they ſacrifice thoſe of the people. Theſe, ſays M. Rapin, are true Engliſhmen; have frequently ſaved the ſtate, and will ſave it again whenever it ſhall be in danger, either from the violent *tories*, or from the republican *whigs*.

The *ſtate whigs*, again, are either republican or moderate: the firſt, according to our author, are the remains of the party of the long parliament, who took in hand to change the monarchy into a commonwealth: Theſe make ſo ſlender a figure, that they only ſerve to ſtrengthen the party of the other *whigs*. The *tories* would perſuade the world, that all the *whigs* are of this kind; as the *whigs* would make us believe that all the *tories* are violent.

The moderate *ſtate whigs* are much in the ſame ſentiments as the moderate *tories*; and deſire the government may be maintained on its ancient foundation: all the difference is, that the moderate *tories* lean a little more to the ſide of the king, and the moderate *whigs* to that of the parliament and people. Theſe laſt are in a perpetual motion to prevent the rights of the people from being broke in upon; and have ſometimes taken precautions at the expence of the crown.

Before we conſider our two parties with regard to religion, it muſt be obſerved, that the reformation, as carried on to a greater or leſſer length, divided the Engliſh into epiſcopalians, and preſbyterians or puritans: the firſt contended, that the epiſcopal juriſdicton ſhould be continued on the ſame footing, and the church in the ſame form, as before the reformation: the latter maintained, that all miniſters or prieſts had equal authority; and that the church ought to be governed by preſbyteries, or conſiſtories of prieſts and lay elders. See Presbiterian, &c.

After long diſputes, the more moderate of each party relaxed a little of their ſtiffneſs, and thus formed two branches of moderate *whigs*, and moderate *tories*, with regard to religion; but there was a much greater number kept to their principles with inconceivable firmneſs: and theſe conſtituted two branches of rigid epiſcopalians and preſbyterians, ſubſiſting to this day; and now comprized under the general names of *whigs* and *tories*; in regard the firſt join the *tories*, and the latter the *whigs*.

From what has been obſerved, we may conclude, that as the names *tory* and *whig* have a regard to two different objects, they are equivocal, and of conſequence ought never to be applied without expreſſing in which ſenſe it is done—for the ſame perſon may be, in the different reſpects, both *whig* and *tory*.

A preſbyterian, for inſtance, who wiſhes the ruin of the church of England, is certainly, on that ſcore, of the party of *whigs*; yet if he oppoſe the attempts ſome of his party would make againſt the royal authority, it cannot be denied but he is effectually a *tory*.

After the like manner, the epiſcopalians ought to be eſteemed as *tories* with regard to the church; and yet how many of them are *whigs* with regard to the government?

For the reſt, the general motives that have formed and kept up the two parties, appear, in the main, to be no other than the private motives of particular perſons: ſelf-intereſt is the primum mobile of their actions; ever ſince the riſe of theſe factions, each has ſtruggled earneſtly to get the advantage over the other; inaſmuch as from ſuch ſuperiority accrue places, and honours, and promotions, &c. which the prevailing party diſtributes among its own members, excluſive of the contrary party.

As to the characters commonly attributed to the *whigs* and *tories*; the *tories*, ſays M. Rapin, appear fierce and haughty: they treat the *whigs* with the laſt contempt, and even ſomewhat hardly, when they have the advantage over them: they are very hot and vehement, and proceed with a rapidity which yet is not always the effect of heat and tranſport, but has its foundation ſometimes in good policy: they are very ſubject to change their principles, as their party prevails, or gives way.

If the rigid preſbyterians prevailed in the *whig* party, it would not be leſs hot and zealous than that of the *tories*; but it is ſaid they have not the direction thereof; which gives room to affirm, that thoſe at the head of the *whig* party are much more moderate than the chiefs of the *tories*: add, that they uſually conduct themſelves on fixed principles, proceed to their end gradually, and without violence; and their ſlowneſs is not leſs founded on good politics, than the haſtineſs of the *tories*.—Thus much, ſays our author, may be ſaid to the advantage of the moderate *whigs*, that, in the general, they maintain a good cauſe, *viz.* the conſtitution of the government as by law eſtabliſhed. See Whigs.

TORMINA, in medicine, a term ſometimes uſed to expreſs pains in the general; but more particularly a ſpecies of pain called *tormina ventris*, or *alvi*; in Engliſh, the *gripes*. See Gripes.

Young children are very often troubled with gripes; it is upon this account, that nurſes, in order to prevent or remedy them, uſually mix with their ſpoon-meats, a little brandy or ſome carminative ſeeds, as caroway ſeeds, &c. See Children.

Some children breed their teeth with violent gripes, which is apt to turn to convulſions of the bowels. See Dentition.

In adults, the dry gripes is uſually cured by the exhibition of warm cathartics, ſuch are tincture of hiera picra, elixir ſalutis, tincture of rhubarb, &c. with the aſſiſtance of opiats.

TORNADO, or Turnado, a ſudden and violent guſt of wind from all points of the compaſs; frequent on the coaſt of Guinea. See Whirlwind.

TORNESOL. See the article Turnesol.

TORPEDO, in natural hiſtory, a ſea-fiſh, famed both among the ancient and modern naturaliſts, for a remarkable numbneſs wherewith it ſtrikes the arm of ſuch as touch it.

Various are the accounts given us of this ſingular fiſh; ſome authors raiſing the effects it produces, to a kind of miracle; and others treating them as little better than chimera's; ſome ſolving the appearance this way, and ſome that. But M. Reaumur, of the French academy of ſciences, has at length cleared the point, and ſet the matter in a ſatisfactory light.

The *torpedo* is a flat fiſh, much of the figure of the thornback; ſufficiently deſcribed in moſt treatiſes of fiſhes, and commonly enough found about the coaſts of Provence, Gaſcony, &c. where the people eat it without any danger. See its figure repreſented in *Tab. Natural hiſtory*, *fig.* 9.

Phænomena of the Torpedo.—Upon touching it with the finger, it frequently, though not always happens, that the perſon feels an unuſual painful numbneſs, which ſuddenly ſeizes the arm up to the elbow, and ſometimes to the very ſhoulder and head.

The pain is of a very particular ſpecies, and not to be deſcribed by any words; yet meſſieurs Lorenzini, Borelli, Redi, and Reaumur, who all felt it ſeverely, obſerve it to bear ſome reſemblance to that painful ſenſation felt in the arm, upon ſtriking the elbow violently againſt a hard body: though M. Reaumur aſſures us, this gives but a very faint idea of it.

Its chief force is at the inſtant it begins; it laſts but a few moments and then vaniſhes entirely. If a man do not actually touch the *torpedo*, how near ſoever he holds his hand he feels nothing: if he touch it with a ſtick, he feels a faint effect: if he touch it through the interpoſition of any pretty thin body, the numbneſs is felt very conſiderably; if the hand be preſſed very ſtrong againſt it, the numbneſs is the leſs, but ſtill ſtrong enough to oblige a man ſpeedily to let go.

Theory of the Torpedo.—There are different ways of accounting for this effect: the firſt is, that of the ancients, who contented themſelves with aſcribing a torporific virtue or faculty to this animal.

The ſecond will have the effect produced by the *torpedo* to depend on an infinite number of corpuſcles iſſuing continually out of the fiſh, but more copiouſly under ſome circumſtances than others: this is the opinion moſt generally received; being adopted by Redi, Perrault, and Lorenzini.

They explain themſelves thus, as the fire emits a quantity of corpuſcles, proper to heat us, ſo the *torpedo* emits a quantity of corpuſcles fit to numb the part they inſinuate themſelves into; whether it be by their entering in too great abundance, or by their falling into tracts or paſſages very diſproportionate to their figures.

The third account, is that of Borelli, who looks on this emiſſion of corpuſcles, as imaginary: he ſays, that upon touching the fiſh, it puts itſelf into a violent tremor or agitation, and that this occaſions a painful numbneſs in the hand that touches it. But M. Reaumur aſſures us, that notwithſtanding all the attention he could view this fiſh withal, when ready to ſtrike the numbneſs, he could perceive nothing of this trembling or agitation.

The laſt and juſteſt hypotheſis, is that of M. Reaumur: the *torpedo*, like other flat fiſhes, he obſerves, is not abſolutely flat, but its back, or rather all the upper part of its body, a little convex: when it did not, or would not, produce any numbneſs in ſuch as touched it, its back, he found, always preſerved its natural convexity; but whenever it would diſpoſe itſelf to reſent a touch or thruſt, it gradually diminiſhed the convexity of the back parts of the body; ſometimes only rendering them flat, and ſometimes even concave.

The very next moment, the numbneſs always began to ſeize the arm; the fingers that touched, were obliged to give back, and all the flat and concave part of the body was again ſeen convex: and whereas it only became flat inſenſibly, it returned to its convexity ſo ſwiftly, that one could not perceive any paſſage from the one to the other ſtate.

The motion of a ball out of a muſket, is not, perhaps, much quicker than that of the fiſh reaſſuming its former ſituation; at leaſt the one is not more perceiveable than the other.

It is from this ſudden ſtroke, that the numbneſs of the arm ariſes; and accordingly, the perſon when he begins to feel it, imagines that his fingers have been violently ſtruck. It is the mere velocity of the ſtroke that produces the numbneſs.

The wonder is, how ſo ſoft a ſubſtance, as that of the fiſh, ſhould give ſo rude a blow: indeed a ſingle ſtroke of a ſoft body could never have done it; but in this caſe, there is an infinity of ſuch ſtrokes given in an inſtant. To explain the admirable mechaniſm hereof, we muſt give a view of the parts whereon it depends.

This mechaniſm, then, conſiſts in two very ſingular muſcles, *b*, *b*, deſcribed by ſeveral authors, who have given the anatomy of the *torpedo*. Redi, and after him Lorenzini, call them the *muſculi falcati*; their form is that of creſcents, and they together take up almoſt half the back of the fiſh; the one on the right ſide, and the other on the left. Their origin is a little above the mouth; and they are ſeparated from each other by the bronchia, into the laſt of which they have their inſertion.

What is ſingular in them, is their fibres; if, with the authors above-mentioned, we may give that name to a ſort of ſmaller muſcles as big as gooſe quills; of an aſſemblage whereof the two great muſcles are formed. Theſe leſſer muſcles are hollow cylinders, their length nearly equal to the thickneſs of the fiſh, and ranged a-ſide of each other; all perpendicular to the upper and lower ſurfaces of the fiſh, accounting theſe ſurfaces as two nearly parallel planes. The exterior ſurface of each of theſe cylinders, conſiſts of whitiſh fibres, whoſe direction is the ſame with that of the cylinder: but theſe fibres only form a kind of tube, whoſe parietes are not above the thickneſs of a leaf of paper. The cavity of the tube is full of a ſoft matter, of the colour and conſiſtence of pap, divided into twenty five or thirty different little maſſes, by ſo many partitions, parallel to the baſe of the cylinder; which partitions are formed of tranſverſe fibres: ſo that the whole cylinder is in ſome meaſure compoſed of twenty-five or thirty ſmaller cylinders placed over each other, and each full of a medullary ſubſtance.

We need only now remember, that when the *torpedo* is ready to ſtrike its numbneſs, it ſlowly flattens the outer ſurface of its upper part; and the whole mechaniſm, whereon its force depends, will be apparent. By that gradual contraction it bends, as it were, all its ſprings; renders all its cylinders ſhorter, and at the ſame time augments their baſes, or, which amounts to the ſame, ſtretches all the little incloſures which divides the ſoft matter. In all probability, too, the large fibres, or little muſcles, in that moment, loſe their cylindrical form, to fill the vacuities between them.

The contraction being made to a certain degree, all the ſprings unbend; the longitudinal fibres are lengthened, the tranſverſe ones, or thoſe which form the incloſures, are ſhortened; each incloſure, drawn by the longitudinal fibres which are lengthened, drives the ſoft matter it contains, upwards; in which it is apparently aſſiſted by the undulatory motion, which is in the tranſverſe fibres when contracting.

If then, a finger touch the *torpedo*, it inſtantly receives a ſtroke, or rather ſeveral ſucceſſive ſtrokes, from each of the cylinders whereon it is applied. As the ſoft matter is diſtributed into divers incloſures, it is more than probable, all the ſtrokes are not given preciſely at the ſame moment: nay, were there no incloſures to ſeparate the matter, its impreſſion would give ſtrokes, in ſome meaſure, ſucceſſive: for all parts of ſoft bodies do not ſtrike at once; the impreſſion of the laſt does not take till after the firſt have done acting. But theſe ſeveral incloſures ſerve to augment the number of the ſprings, and, of conſequence, the velocity and force of the action.

Theſe quick re-iterated ſtrokes given by a ſoftiſh matter, ſhake the nerves, ſuſpend, or change the courſe of the animal ſpirits, or ſome fluid equivalent: or, if you had rather, theſe ſtrokes produce an undulatory motion in the fibres of the nerves, which claſhes or diſagrees with that they ſhould have, in order to move the arm. And hence the inability we are under of uſing the ſame, and the painful ſenſation which accompanies it.

Hence it is, that the *torpedo* does not convey its numbneſs to any degree, except when touched on theſe great muſcles; ſo that the fiſh is very ſafely taken by the tail, which is the part by which the fiſhermen catch it.

The authors who have accounted for the effect of the *torpedo* from torporific effluvia, have been obliged to have recourſe to the ſame two muſcles; but then they only make them reſervoirs of the corpuſcles, whereby the numbneſs is effected.

Lorenzini, who has obſerved the contraction as well as Reaumur, pretends that all its uſe, is to expreſs thoſe corpuſcles from out of the hollow fibres of theſe muſcles wherein they are impriſoned; but this emanation of corpuſcles admitted by moſt authors, is diſproved by M. Reaumur, from the following conſiderations:

1°. In that no numbneſs is conveyed, if the hand be at the ſmalleſt diſtance from the *torpedo*: now, to uſe their own compariſon, if the *torpedo* numbs as the fire warms, the hands would be affected at a diſtance from the one as well as the other.

2°. In that the numbneſs is not felt till the contraction of the muſcles is over; whereas were the cauſe in torporific particles expreſſed by the contraction, the effect would be felt in the time of the contraction.

3°. In that were the numbneſs the effect of torporific particles, it would be conveyed by degrees, as the hand warms by degrees.

Laſtly, in that the *torpedo* conveys its numbneſs to the hand, through a hard, ſolid body, but does not do it through the air.

Were the only uſe the *torpedo* makes of its faculty, the ſaving itſelf from the fiſhermen, as ſome have ſuppoſed, it would ſignify but little; for it is very rare that it eſcapes their hands.

Pliny, Ariſtotle, and moſt naturaliſts, therefore agree, that it likewiſe ſerves it for the catching of other fiſhes: all we know for certain, is, that it lives on other fiſhes, and that it is generally found on banks of ſand, &c. probably to ſerve it as a foundation or ſupport for the exerting its faculty.

M. Reaumur had no fiſhes alive to examine what the *torpedo* would do to them; but an animal, next a-kin to a fiſh he tried it on, *viz.* a drake, which being ſhut up a while in water with the fiſh, was taken out dead; doubtleſs from its too frequent contacts on the *torpedo*.

In the hiſtory of Abyſſinia, we are aſſured, that if the *torpedo* kill living fiſhes, it ſeems to bring dead ones to life again; dead fiſhes being ſeen to ſtir if put in the ſame veſſel with it: but this is much leſs credible than what is told us in the ſame hiſtory, that the Abyſſinians uſe *torpedo's* for the cure of fevers, by tying down the patient to a table, and applying the fiſh ſucceſſively upon all his members, which puts him to cruel torment, but effectually rids him of his diſeaſe.

Bellonius aſſures us, that our own *torpedo's*, applied to the ſoals of the feet, have proved ſucceſsful againſt fevers.

M. du Hamel, in his hiſtory of the academy of ſciences, *anno* 1677, mentions a kind of *torpedo's*, which he compares to conger eels: M. Richer, from whom he has the account, affirms, on his knowledge, that they numb the arm ſtrongly, when touched with a ſtaff, and that their effects even go to the giving vertigo's.

TORQUE, in heraldry, a round roll of cloth twiſted and ſtuffed; ſuch is the bandage frequently ſeen in armories about the heads of moors, ſavages, &c.

It is always of the two principal colours of the coat. The *torque* is the leaſt honourable of all the enrichments wore on the helmet by way of creſt. See CREST.

TORREFACTION,* in pharmacy, a kind of roaſting or aſſation, wherein a drug is laid to dry on a metalline plate placed over coals, till it become friable to the fingers. See ASSATION.

* The word is formed from the Latin, *torrefacere, to roaſt.*

Torrefaction, is particularly uſed, when, after reducing ſome drug, as rhubarb, or myrabolans, into powder, it is laid on an iron or ſilver plate, and that placed over a moderate fire till the powder begin to grow darkiſh; which is a mark thoſe remedies have loſt their purgative virtue, and have acquired a more aſtringent one. See RHUBARB, USTION, &c.

Formerly they uſed to *torrefy* opium, to get out ſome malignant parts fancied to be in it, before they durſt uſe it in medicine; but the effect was, that its volatile ſpirits and ſulphur, wherein its greateſt virtue conſiſts, were hereby evaporated. See OPIUM.

TORRENT, TORRENS, in geography, a temporary ſtream of water, falling ſuddenly from mountains wherein there have been great rains, or an extraordinary thaw of ſnow; ſometimes making great ravages in the plains. See RIVER, &c.

TORRICELLIAN, a term very frequent among phyſical writers, uſed in the phraſes, *torricellian tube*, and *torricellian experiment*, on account of the inventor, Torricelli, a diſciple of the great Galileo.

TORRICELLIAN *Tube*, is a glaſs tube, as A B, about 3 foot long, and 3 ¼ of an inch in diameter, repreſented *Tab. Pneumatics, fig.* 6. n°. 2. whoſe upper orifice A is hermetically ſealed.

TORRICELLIAN *Experiment*, is performed by filling the *torricellian* tube A B with mercury; then ſtopping the orifice B with the finger, inverting the tube, and plunging that orifice in a veſſel of ſtagnant mercury C.—This done, the finger is removed, and the tube ſuſtained perpendicular to the ſurface of the mercury in the veſſel. See MERCURY.

The conſequence is, that part of the mercury falls out of the tube into the veſſel, and there only remains enough in the tube to fill from 28 to 31 inches of its capacity, above the ſurface of the ſtagnant mercury in the veſſel.

Thoſe 28, &c. inches of mercury are ſuſtained in the tube by the preſſure of the atmoſphere on the ſurface of the ſtagnant mercury; and according as that atmoſphere is more or leſs heavy, or as the winds blowing upwards or downwards, heave up or depreſs the air, and ſo increaſe or diminiſh its weight and ſpring, more or leſs mercury is ſuſtained from 28 inches to 31. See AIR, and ATMOSPHERE.

The *torricellian experiment* makes what we now call the *barometer*. See BAROMETER.

TORRID *Zone*, that tract of earth lying under the line, and extending on each ſide to the two tropics, or to 23 degrees and a half of latitude. See TROPIC, ZONE, &c.

The ancients believed the *torrid zone* uninhabitable; but from the late navigations we learn, that the exceſſive heat of the day there is tempered by the coldneſs of the night.

TORT, in law, denotes injuſtice, or injury: as, *de ſon tort meme*, in his own wrong, &c. See WRONG, and INJURY.

Hence alſo *tort-feaſor*, &c.—The word is pure French, where it ſignifies the ſame.

Executor de ſon TORT. See the article EXECUTOR.

TORTOISE-*Shell*, the ſhell, or rather ſcales[*] of a teſtaceous animal, called a *tortoiſe*; uſed in inlaying, and in various other works, as for ſnuff-boxes, combs, &c. See TESTACEOUS, and SHELL.

[*] Mr. Cateſby obſerves, that this hard ſtrong covering which incloſes all ſorts of tortoiſes is very improperly called a ſhell; being of a perfect bony contexture; but covered on the outſide with ſcales, or rather plates, of a horny ſubſtance: which are what the workmen call *Tortoiſe ſhell*. Phil. Tranſ. N°. 438. p. 117.

There are two kinds of *tortoiſes*, *viz.* the *land*, and *ſea tortoiſe*; *teſtudo terreſtris*, & *marina*.

The *ſea tortoiſe*, again, is of four kinds, *viz.* the *freſh tortoiſe*, the *caretta*, the *cahohanna*, and the *lager-hu*; but it is the caret alone furniſhes that beautiful ſhell, ſo much admired in Europe.

The ſhell of the caretta, or hawkſbill tortoiſe is thick, and conſiſts of two parts, the upper, which covers the back, and the lower, the belly: the two are joined together at the ſides by ſtrong ligaments, which yet allow of a little motion.—In the fore part is an aperture for the head and fore legs, and behind for the hind legs and tail.

It is the under ſhell alone is uſed: to ſeparate it from the upper, they make a little fire beneath it, and as ſoon as ever it is warm, the under ſhell becomes eaſily ſeparable from the upper with the point of a knife, and is taken off in laminæ or leaves, without killing the animal, which, it is ſaid, being turned to ſea again, gets a new ſhell.

The whole ſpoils of the caret conſiſt in 13 leaves or ſcales, 8 of them flat, and five a little bent: of the flat ones, there are 4 large ones, about a foot long, and ſeven inches broad.

The beſt *tortoiſe-ſhell* is thick, clear, tranſparent, of the colour of antimony, ſprinkled with brown and white: when uſed in marquetry, &c. the workmen give it what colour they pleaſe by means of coloured leaves which they put underneath it.

In generation, Rondeletius obſerves, the embraces of the male and female *ſea-tortoiſes* continue for a whole lunar month; and that they ſquirt water out of the noſtrils in the ſame manner as the dolphin. On the Braſilian ſhore they are ſaid to be ſo big as ſometimes to dine fourſcore men; and that in the Indian ſea the ſhells ſerve the natives for boats. De Laet notes, that in the iſland of Cuba they are of ſuch a bulk, that they will creep along with five men on their backs.

TORTOISE, in the military art. See TESTUDO.

TORTURE, a grievous pain inflicted on a criminal, or perſon accuſed, to make him confeſs the truth. See QUESTION.

The forms of *torture* are different in different countries. In ſome they uſe water, in others iron, in ſome the wheel or rack, in ſome the boot, thumbkins, &c. See RACK, BOOT, &c.

In England the uſe of all *torture* is aboliſhed, both in civil and criminal matters, and even in caſes of high treaſon; though ſomething like it ſtill obtains, where the criminal refuſes to plead. See PAINE *fort & dure*.

In France the *torture* is not practiſed in civil matters; but by an ordonnance of 1670, if a perſon be accuſed of a capital crime, he may be put to the queſtion, *i. e.* to the *torture*, if there be conſiderable proof againſt him, and yet not proof enough to convict him. See PROOF.

There are two kinds of *torture*: the one *preparatory*, appointed before ſentence paſſed; the other *definitive*, decreed by a ſentence of death.

The *preparatory torture* is ordered *manentibus indiciis*, ſo that if the accuſed do not confeſs, he cannot be condemned to death, but only *ad omnia citra mortem*.

The *definitive torture* is that which a condemned criminal is put to, to make him confeſs his accomplices. The ordinary *torture* is given at Paris with ſix pots of water, and the little treſtle; and the extraordinary, with ſix other pots, and the great treſtle.

In Scotland the *torture* is given with the boot. See BOOT.—In ſome other countries, by heating the criminals feet; in others, with wedges, &c.

The *torture*, ſays M. Bruyere, is a ſure expedient to deſtroy an innocent perſon of a weak complexion, and to ſave a criminal of a robuſt one.—It was a noble ſaying of an ancient, *They who can bear the torture will lie, and they who cannot bear it.*

TORY. See the article TORIES.

TOTAL *Cauſe*, } See the articles { CAUSE.
TOTAL *Eclipſe*, } { ECLIPSE.

TOTTED.—A good debt to the king is, by the foreign appoſer, or other officer in the Exchequer, noted for ſuch by writing the word *tot*, q. d. *tot pecuniæ regi debentur*, whence it is ſaid to be *totted*.—Alſo that which is paid is to be *totted*. See EXCHEQUER.

TOUCAN, in aſtronomy, a modern conſtellation of the ſouthern hemiſphere, conſiſting of eight ſmall ſtars; otherwiſe called *anſer Americanus*. See CONSTELLATION.

TOUCH, in muſic. An organ is ſaid to have a good *touch*, or ſtop, when the keys cloſe and lie down well, being neither too looſe nor too ſtiff. See ORGAN.

TOUCH *the wind*, in the ſea language, is when the ſteer's-man at the helm is bid to keep the ſhip as near the wind as may be. See STEERING.

TOUCHING is ſometimes uſed for the ſenſe of feeling. See FEELING.

TOUCHING, in geometry. A right line is ſaid to *touch* a circle, when it meets in ſuch a manner as, that being produced, it does not cut, but falls without the circle. See TANGENT.

TOUCH-*ſtone*, a black, ſmooth, gloſſy ſtone, uſed to try metals upon. See STONE, ESSAY, &c.

The ancients called it *lapis Lydius*, the *Lydian ſtone*, from Lydia, a country of Aſia minor, whence it was brought.

The moderns call it *touch-ſtone*, in regard the proof they make of metals, chiefly ſilver, is by touching or rubbing the metal to be tried on this ſtone, and comparing the colour of the mark it leaves thereon, with the mark of another piece of metal of the ſame ſpecies, whoſe goodneſs is paſt doubt. See METAL, and ASSAY.

TOUMAN. See the article TOMAN.

TOURNAMENT. See the article TURNAMENT.

TOUR, *turn*, a French term, often uſed among Engliſh writers for a journey.—Thus we ſay the *tour* of Paris, of Rome, &c.

TOUR *of hair*, a treſs or border of hair, going round the head, which, mingled dextrouſly with the natural hair, lengthens and thickens it. See HAIR.

Theſe *tours* are for men.—The women likewiſe uſe *tours*, and falſe hair, either to hide their age, or to ſupply the thinneſs of their natural hair on the forehead and temples.

The form is different according to the mode, ſometimes raiſed and curled, ſometimes ſtraight and laid flat along the forehead. See PERRUKE.

TOURN, in law. See the article TURN.

TOUT *temps priſt & uncore eſt*, that is, always ready, and ſo at the preſent time: a kind of plea in way of excuſe or defence for him that is ſued for any debt or duty belonging to the plaintiff. See PLEA, TENDER, UNCORE, &c.

Per my & per TOUT. See the article PER.

TOW.—Whatever is drawn or dragged after a ſhip or boat with a rope, is ſaid to be *towed*. See TOWAGE.

TOWAGE[*] the haleing or drawing a ſhip or barge by men or beaſts, or by another ſhip or boat faſtened to her, in order to make her enter a port, aſcend a river, or the like.

[*] The word is probably derived from the Saxon, *teon*, to *draw*, *drag*.

The term is alſo uſed for money, or other recompence, given by bargemen to the owner of the ground next the river where they *tow* a barge or other veſſel, for the liberty of paſſing along the ſide thereof.

TOWER, TURRIS, a tall building, conſiſting of ſeveral ſtories, are uſually of a round form, though ſometimes ſquare, or polygonal.

Before the invention of guns, they uſed to fortify places with *towers*, and to attack them with moveable *towers* of wood, mounted on wheels, to ſet the beſiegers on a level with the walls, and drive the beſieged from under the ſame.

Theſe *towers* were ſometimes 20 ſtories, and 30 fathom high: they were covered with raw ſkins, and an hundred men employed to move them.

Towers are alſo built to enable one, by their elevation, to view to a great diſtance.—Theſe are of all figures, as ſquare, round, pentagonal, *&c.* See PHAROS.—In China is a famous *tower* of Porcelain, whereof the Dutch relate wonders.

Towers are alſo built for fortreſſes, priſons, *&c.* as the *Tower* of London, the *towers* of the Baſtile, *&c.* See FORTIFIED *Place*.

The *Tower* of London is not only a citadel to defend and command the city, river, *&c.* but alſo a royal palace where our kings with their courts have ſometimes lodged; a royal arſenal, wherein are arms and ammunition for 60000 ſoldiers: a treaſury for the jewels and ornaments of the crown; a mint for coining of money; the great archive, wherein are preſerved all the ancient records of the courts of Weſtminſter, *&c.* and the chief priſon for ſtate criminals. See ARSENAL, MINT, *&c.*

In the midſt of it is the great ſquare, white *tower*, built by William the Conqueror.—Within the *Tower* is a parochial church, exempt from all juriſdiction of the archbiſhop, and a royal chapel, now diſuſed.

The chief officer of the *Tower* is the conſtable, under whom is the lieutenant, who acts by his direction, and in his abſence. He has, by grant of ſeveral of our kings, *unam lagenam*, two gallons and a pint of wine out of every veſſel, and a certain quantity out of every boat laden with lobſters, oyſters, and other ſhell-fiſh, and double the quantity out of every alien's boat paſſing by the *Tower*: to him alſo belongs a fee of 200 *l.* for every duke committed priſoner, 100 *l.* for every peer not a duke, and 50 *l.* for every commoner. See CONSTABLE, *&c.*

Under the conſtable, and in his abſence, under the lieutenant, are a *gentleman-porter*, and divers warders.--The firſt has charge of the gates to lock and unlock them, and deliver the keys every night to the conſtable or lieutenant, and receive them of him next morning: he commands the warders who are upon the day's wait, and at the entrance of a priſoner has for his fee *veſtimenta ſuperiora*, or elſe a compoſition for the ſame, which is uſually 30 *l.* for a peer, and 5 *l.* a-piece for others.

Note, the ancient allowance from the king to a duke or marquis, priſoner in the *Tower*, was 12 *l.* a week, now but 4 *l.* To all other lords anciently 10 *l.* a week, now 2 *l.* 4 *s.* 5 *d.* To knights and gentlemen anciently 4 *l.* a week, now 13 *s.* and 4 *d.* And to inferior perſons, now 10 *s.* a week.

For the yeomen warders of the *Tower*. See WARDER.

In the *Tower* is likewiſe kept a court of record every Monday, by preſcription, for the liberty of the *Tower*, of debt, treſpaſs, and other actions of any ſum. See COURT.

Beſide the ancient liberty of the *Tower*, which adjoins to it, the Old Artillery Garden by Spittle-Fields, and the Little Minories, are within the *Tower* liberty, within which the gentleman-porter has the ſame power and authority as ſheriffs within their reſpective counties. See ORDNANCE, *&c.*

Hollow TOWER, in fortification. See HOLLOW *Tower*.

TOWN, a place inhabited by a conſiderable number of people, of an intermediate magnitude and degree between a city, and a village. See VILLAGE, *&c.*

It is hard to give a tolerable definition of a *town*, in regard the idea is a little arbitrary, and unfixed. A *town* is generally without walls, which is the character that uſually diſtinguiſhes it from a city; but this does not hold univerſally. See CITY.

We have ſeveral kinds of *towns*, borough *towns*, market *towns*, county *towns*, *&c.* See BOROUGH, *&c.*

TOWN-*houſe*,	See the articles	HOUSE.
Freedom of a TOWN,		FREEDOM.
Hanſe TOWNS,		HANSE.

TOXICUM, ΤΟΞΙΚΟΝ, a ſort of poiſon, ſaid to be uſed by the Indians to their arrows, in order to render wounds made by them incurable. See POISON.

The Indians are ſuppoſed to poiſon their arrows, daggers, *&c.* with the virus of vipers, the miſchievous effects whereof continue a long time after the matter is quite dried up. See VIPER.

TRABEATION, TRABEATIO, in the ancient architecture, the ſame with entablature. See ENTABLATURE.

It conſiſts of three principal members or diviſions, *viz.* the architrave, freeze and cornice, each of which conſiſts of divers leſſer members and ornaments. See ARCHITRAVE, FREEZE, *&c.*

The proportion, members, *&c.* are different in the ſeveral orders. See ORDER; ſee alſo each order apart, TUSCAN, DORIC, *&c.*

TRACE, a mark or impreſſion which any thing leaves behind it in paſſing over another. See MARK, IMPRESSION, *&c.*

TRACES *of the brain*, among the Carteſian philoſophers; are thoſe impreſſions, more or leſs deep, which ſenſible objects make on the fine fibres of the brain, by means of the organs of ſenſe. See BRAIN.

Theſe impreſſions are alſo called *traces of the object*; the courſe of the animal ſpirits ſerves to keep them up, and to renew them. See SPIRIT.

The vivacity of the imagination ariſes from the prodigious quantity of *traces* of different objects in the brain, which are ſo linked together; that the ſpirits cannot be ſent into one of them, but they run into all the reſt; by which means the ideas occaſioned by the application of the ſpirits to thoſe ſeveral *traces*, are all excited, as it were, at once. See IMAGINATION.

Memory, according to the ſame, conſiſts in the *traces* which the animal ſpirits have impreſſed. See MEMORY, HABIT, *&c.*

TRACE *of a hare*, among hunters, is her footing in the ſnow; diſtinct from other treadings, called *doubling*, and *pricking*, *&c.*

TRACES alſo denote the tracks of ravenous beaſts, as wolves, wild beaſts, *&c.*

TRACHEA,* in anatomy, a large arterial veſſel, called alſo *aſpera*, and popularly the *wind-pipe*, being the canal or tube which carries the air into the lungs, for the uſe of reſpiration and ſpeech.—See *Tab. Anat.* (Splanch.) *fig.* 14. *lit. cc. ee. dd.* *&c.* See alſo the article ASPERA.

* Galen gave it the name *trachea*, τραχεια, becauſe of its being rough and uneven; on which account the Latins alſo called it *aſpera*.

TRACHOMA, ΤΡΑΧΩΜΑ, in medicine, a roughneſs or aſperity of the inner part of the palpebræ, attended with an itching, redneſs, and frequently with puſtles, reſembling millet-ſeeds.

Its degrees are the ſycoſis, and tyloſis, or rather thoſe are higher diſorders into which the *trachoma* is liable to degenerate.

TRACT, TRACTUS, properly denotes an extent of ground, or a portion of the ſurface of the terraqueous globe. See TERRAQUEOUS, *&c.*

TRACT, or TRACTATE, TRACTATUS, does alſo ſignify a ſmall treatiſe, or written diſcourſe upon any ſubject. See TREATISE.

TRACT, in hunting, denotes the trace or footing of a wild beaſt. See TRACE.

TRACTION, *drawing*, the act of a moving power whereby the moveable is brought nearer to the mover; called alſo *attraction*. See ATTRACTION.

TRACTRIX, in geometry, a curve line, called alſo *catenaria*. See CATENARIA.

TRADE, *traffic*, *commerce*, the act or art of dealing, buying, ſelling, exchanging, *&c.* of commodities, bills, money, *&c.* See EXCHANGE, BILL, MONEY, MERCHANDIZE, *&c.*

For the origin, progreſs, *&c.* of *trade*. See COMMERCE, and NAVIGATION.

Balance of TRADE. See the article BALANCE.

TRADE-*Winds* denote certain regular winds at ſea, blowing either conſtantly the ſame way, or alternately this way and that; thus called from their great uſe in navigation, and the Indian commerce.

The *trade-winds* are of different kinds, ſome blowing three or ſix months of the year one way, and then the like ſpace of time the oppoſite way; very common in the Indian ſeas, and called *monſoons*. See MONSOON.

Others blow conſtantly the ſame way; ſuch is that general wind between the tropics, which off at ſea is found to blow all day long from eaſt to weſt.—For the phænomena of each, with their phyſical cauſes, ſee WIND.

Dr. Liſter has a conjecture in the *Philoſophical Tranſactions*, that the tropical or *trade-winds* ariſe, in great part, from the daily and conſtant breath of a ſea-plant, called the *ſargoſſa*, or *lenticula marina*, which grows in vaſt quantities from 36° to 18° north latitude, and elſewhere upon the deepeſt ſeas.—For the matter of wind coming from the breath of one only plant, muſt needs be conſtant and uniform; whereas the great variety of trees and plants at land, furniſhes a confuſed matter of winds. Hence, he adds, it is, that theſe winds are briſkeſt about noon; the ſun quickening the plant moſt then, and cauſing it to breathe faſter and more vigorouſly. Laſtly, the direction of this wind from eaſt to weſt, he attributes to the general current of the ſea; for a gentle air is obſerved to be conſtantly led along with the ſtream of a river: nor muſt it be omitted, that every plant is, in ſome meaſure, a heliotrope, and bends itſelf, and moves after the ſun, and conſequently emits its vapour thitherward; ſo that the direction of the *trade-wind* is, in ſome meaſure, alſo owing to the courſe of the ſun.

Dr. Gordon has another hypotheſis: the atmoſphere, which ſurrounds the earth, and moves along with it in its diurnal motion, he ſuppoſes to keep pace therewith, that part of it at leaſt which is near the earth, if the remoter part ſhould be judged to loſe ground.

If then there were no changes in the atmoſphere's gravity, he ſuppoſes it would always go along with the earth from weſt to eaſt in an uniform motion, altogether inſenſible to us: but the portion of the atmoſphere under the line being extremely rarefied, its ſpring expanded, and ſo its gravity and preſſure much leſs than the neighbouring parts of the atmoſphere, it is incapable of the uniform motion towards the eaſt, and muſt therefore be preſſed weſtwards, and makes the continual breeze from eaſt to weſt between the tropics.

Trading *Society*. See the article Society.

TRADITA *Nexu*, ſee Abalienation.

TRADITION, Traditio, the act of delivering a thing into the hands of another.—The ſale of a moveable is compleated by a ſimple *tradition*. See Livery.

Tradition, in matters of religion, is applied to thoſe laws, doctrines, relations, *&c.* which have been handed down to us from our fore-fathers, without being written.

Taking *tradition* in this ſenſe, for every thing relating to faith, or the rites and ceremonies of religion thus derived down to us from the primitive church, there are two kinds, *viz. apoſtolical* and *eccleſiaſtical tradition*.

Apoſtolical Tradition, which is what we properly call *tradition*, is defined by the Romaniſts to be the unwritten word of God, deſcended from the apoſtles to us through a continual ſucceſſion of the faithful.

By this *tradition*, ſay they, it is, that the holy ſcriptures have been kept entire, both as to the letter, *i. e.* the text, and as to the ſpirit or ſenſe thereof. This *tradition* the council of Trent declares to have the ſame authority with the holy ſcripture itſelf, and pronounces every one who rejects it a heretic.

Eccleſiaſtical Traditions, are certain ſtatutes and regulations regarding the rites, cuſtoms and circumſtances of religion, introduced ſince the time of the apoſtles by councils, popes, *&c.* and continued to our time through a conſtant obſervance of the church.

The Romaniſts make another diviſion of *tradition*, *viz.* into *written* and *unwritten*.

Written Tradition, is that whereof we find ſome traces in the ancient fathers, and doctors.

Unwritten Tradition, is that whereof there appear no ſigns or ſteps in any of the fathers extant.

The church of Rome pretends to be the depoſitory of each kind: *tradition* ſhe holds to be abſolutely neceſſary in the church, grounding this neceſſity on the promiſe of infallibility which Jeſus Chriſt is pretended to have made her.

Yet others of that communion deny *tradition*, how excellent ſoever it may be for the reclaiming of heretics, to be abſolutely neceſſary; maintaining, that the church would not be leſs infallible, nor leſs the rule of doctrine, *&c.* if the fathers had never wrote at all.

TRADITIONARY, Traditionarius, a name given among the Jews, to ſuch of them as acknowledge tradition, follow it, and explain the ſcriptures thereby: in oppoſition to the Caraites, who refuſe any thing but the pure ſcriptures themſelves. See Caraite.

The *traditionaries* are what we more uſually call rabbins and rabbiniſts, or talmudiſts. See Rabbin, Rabbinists, Talmud, *&c.*—Hillel ſhone among the *traditionaries*, and Schammai among the textuaries. See Textuary.

TRADITORES, a name given in the firſt ages of the church to ſuch chriſtians as, in times of perſecution, to avoid death and martyrdom, delivered up the ſacred writings to the perſecutors.

The enemies of religion, even under the old law, made their utmoſt efforts to deprive the world of the holy ſcriptures: in that cruel perſecution which Antiochus raiſed againſt the Jews, the books of the law were very ſolicitouſly ſought after, torn, and burnt, and ſuch as kept them put to death; as we read in the firſt book of Maccab. cap. i. ver. 56, 57.

Diocleſian renewed the ſame impiety, by an edict publiſhed in the 19th year of his empire, commanding all the ſacred books to be brought to the magiſtrates, and burnt.

Many weak chriſtians, and even ſome biſhops, overcome by the fear of puniſhment, carried in their books to the perſecutors; which the church deteſting, made very ſevere laws againſt them, and gave them the infamous name of *traditores*, from *trado, I deliver, betray*.

As the great pretence of the ſchiſm of the Donatiſts was, that the catholics tolerated the *traditores*, it was decreed in the council of Arles, held in 314, that ſuch as ſhould be found guilty of having delivered up any of the holy books or veſſels, ſhould be depoſed from the order of the clergy, *&c.*

TRADUCIANS,* Traduciani, a name which the Pelagians anciently gave the catholics, becauſe of their teaching that original ſin was tranſmitted from father to children, or that it was communicated to the children by the father in the way of generation. See Original *Sin*.

* The word is formed of the Latin, *tradux*, which was made uſe of to expreſs that communication; and which comes from *traduco, I tranſmit*, or *propagate* from one to another.

At preſent ſome give the appellation *traduciani* to ſuch as hold that the ſouls are tranſmitted to the children by the father. See Soul.

TRADUCTION,* the act of tranſlating, or turning out of one language into another. See Translation, and Metaphrast.

* The word is formed of *trans, beyond*; and *duco, I lead, draw*.

TRAFFIC.* See the article Trade, and Commerce.

* The word is formed from the French, *trafic*, and that from the Italian, *traffico*, which is again borrowed from the Arabic.

The principal *traffic* in Muſcovy and the North is in furs and ſkins: the great *traffic* of the Dutch in the Eaſt is in ſpices: The *traffic* of money is moſtly carried on at the Exchange.

TRAFINE. See Trepanum.

TRAGACANTH,* or Adraganth, *Gum Dragon*, a kind of gum oozing out at inciſions, made in the trunk and larger branches of a plant or little ſhrub of the ſame name, growing in the Levant. See Gum, and Diatragacanth.

* The word is Greek, τραγακανθα; formed of τραγος, *goat*; and ακανθα, *thorn*, by reaſon the plant is beſet with prickles.

The naked hillocks of mount Ida in Candia, M. Tournefort tells us, produce a deal of the plant *tragacantha*, or goat's-thorn, which gives the gum ſpontaneouſly towards the end of June, and in the following months, when the nutricious juice of the plant, thickened by the heat, burſts moſt of the veſſels it is contained in.

This juice coagulates in threads, which make their way into the pores of the bark, where being puſhed forwards by new juice, they get through the bark, and are at length hardened in the air, either into little lumps, or into twiſted pieces in form of little worms, more or leſs long, according to the ſtore of the matter they are formed of.

It ſhould ſeem too that the contraction of the fibres contributes to the expreſſion of the gum: thoſe fine fibres, like the fibres of hemp, laid bare and trampled under foot by men and horſes, contract themſelves, and facilitate the expreſſion of the extravaſated juice.—The plant grows alſo in ſeveral places of the Levant, particularly about Aleppo.

The gum is of different colours and qualities, ſome being white, other-ſome greyiſh, ſome red, and ſome almoſt black. The white is the beſt: it muſt be choſen clear, ſmooth and twiſted worm-like.

It diſſolves eaſily in any aqueous menſtruum, which it will give the conſiſtence of a ſyrup to, in the ſmall proportion of a dram to a pint. It is ſmooth and ſoftening, and therefore good to obtund the acrimony of any humours, which makes it of ſervice in ſuch coughs as proceed from catarrhs and defluxions of rheum. It is alſo very ſtrengthening in ſome ſeminal weakneſſes, and prevalent againſt the whites in women.

TRAGEA, in pharmacy, an aromatic powder groſly beaten and mixed with ſugar; taken by way of carminative.

TRAGEDY, a dramatic poem, repreſenting ſome ſignal action performed by illuſtrious perſons, and which has frequently a fatal iſſue, or end. See Drama, and Action.

Ariſtotle more ſcientifically defines *tragedy*, the imitation of one grave and entire action, of a juſt length, and which, without the aſſiſtance of narration, by raiſing of terror and compaſſion, refines and purges our paſſions.

This definition has given the critics ſome perplexity; and Corneille declares he cannot reconcile Ariſtotle with himſelf: the inſtances Ariſtotle cites, he thinks, ruin his own definition. He even denies the purging our paſſions to be the end of *tragedy*. See Passions.

Our Engliſh authors are more favourable to the definition: by the purging our paſſions, they underſtand not the extirpating them, but the reducing them to juſt bounds; for by ſhewing the miſeries that attend a ſubjection to them, it teaches us to watch them more narrowly; and by ſeeing the great misfortunes of others, it leſſens the ſenſe of our own.

Tragedy, in its original, M. Hedelin obſerves, was only a hymn ſung in honour of Bacchus by ſeveral perſons, who, together, made a chorus of muſic with dances and inſtruments. See Chorus.

As this was long, and might fatigue the ſingers, as well as tire the audience, they bethought themſelves to divide the ſinging of the chorus into ſeveral parts, and to have certain recitations in the intervals. See Satyr.

Accordingly, Theſpis firſt introduced a perſon upon the ſtage with this view: Æſchylus finding one perſon inſufficient, introduced a ſecond to entertain the audience more agreeably by a kind of dialogue: he alſo cloathed his perſons more decently, and firſt put them on the buſkin. See Cothurnus.

The perſons who made theſe recitations on the ſcene, were called *actors*; ſo that *tragedy* at firſt was without actors. And what they thus rehearſed, being things added to the ſinging of the chorus, whereof they were no neceſſary part, were called *epiſodes*. See Episode.

Sophocles found that two perſons were not enough for the variety of incidents, and accordingly introduced a third: and here the Greeks ſeem to have ſtopped, at leaſt it is very rare that they introduce four ſpeakers in the ſame ſcence. See Person.

Tragedy and comedy were at firſt confounded with each other, but they were afterwards ſeparated; and the poets applied themſelves to the cultivating of *tragedy*, neglecting comedy. See Comedy.

When *tragedy* was got into a better form, they changed the meaſure of its verſe, and endeavoured to bring the action within the compaſs of a day, or of a revolution of the ſun. See UNITY.

For the ſeveral parts of *tragedy*, ſee ACT, SCENE, ACTION, FABLE, CHARACTER, MANNERS, *&c.*

The Engliſh received the firſt plan of their drama from the French, among whom it had its firſt riſe towards the end of the reign of Charles V. under the title of *chant-royal*, which conſiſted of pieces in verſe compoſed in honour of the virgin, or ſome of the ſaints, and ſung on the ſtage: they were called by the title *chant-royal*, becauſe the ſubject was given by the king of the year, or the perſon who had bore away the prize the year preceding.

The humour of theſe pieces run wonderfully among the people, inſomuch that in a little time there were formed ſeveral ſocieties, who began to vie with each other: one of theſe, to engage the town from the reſt, began to intermix various incidents or epiſodes, which they diſtributed into *acts*, *ſcenes*, and as many different perſons as were neceſſary for the repreſentation. Their firſt eſſay was in the Bourg St. Maur, and their ſubject the paſſion of our Saviour. The prevot of Paris prohibiting their continuing of it, they made application to court; and to render it the more favourable to them, erected themſelves into a friary, or fraternity, under the title of *brothers of the paſſion*; which title has given ſome occaſion to ſuſpect them to have been an order of religious.

The king, on ſeeing and approving ſome of their pieces, granted them letters of eſtabliſhment in 1402; upon which they built a theatre, and for an age and a half acted none but grave pieces, which they called *moralities*; till, the people growing weary of them, they began to intermix farces or interludes taken from prophane ſubjects.

This mixture of farce and religion diſpleaſing many, they were re-eſtabliſhed by an arret of parliament in 1548, on condition of their acting none but profane, lawful and decent ſubjects, without intermeddling with any of the myſteries of religion; and thus were the brothers of the paſſion deſpoiled of their religious character: upon which they mounted the ſtage no more in perſon, but brought up a new ſet of comedians, who acted under their direction.

Thus was the drama eſtabliſhed, and on this foundation arrived in England. In proceſs of time, as it was improved, it became divided into two branches, agreeable to the practice of the ancients, and the nature of things, *viz.* into *tragedy* and comedy properly ſo called; and this laſt again was ſubdivided into pure comedy and farce. See each under its proper head, COMEDY, *&c.*

Hilaro TRAGEDY. See the article HILARO *Tragedia*.

TRAGI-COMEDY, a kind of dramatic piece, repreſenting ſome action paſſed among eminent perſons, the event whereof is not unhappy or bloody, and wherein is ſometimes admitted a mixture of leſs ſerious characters.

The ancients, M. Dacier obſerves, knew nothing of ſuch compoſitions, wherein the ſerious and comic are blended; nor does the epithet M. Corneille gives them of heroic comedies, excuſe their irregularity.

Their foundation is certainly bad; for, endeavouring both to make us laugh and cry in their turns, they endeavour at contrary emotions, which the heart can never undergo; every thing that diſpoſes for the one, indiſpoſing for the other.

The *tragi-comedy* was formerly very common on the Engliſh ſtage: ſcarce ſuch a thing in the 17th century as a pure tragedy without a ſpice of comedy or farce to make the people laugh. Now, that the ſtage and our taſtes are brought nearer to the model of nature and the ancients, the *tragi-comedy* is diſuſed. *Tragi-comedy* is the only caſe, wherein comedy is allowed to introduce kings and heroes. See COMEDY.

TRAGUS, τραγος, in anatomy, one of the protuberances of the auricle, or external ear; called alſo *hircus*, becauſe uſually hairy. See EAR.

The *tragus* is that protuberance next the temple:—that on the oppoſite ſide, to which the ſoft lobe of the ear is annexed, is called the *antitragus*.

TRAJAN *Column*, a famous hiſtorical column, erected in Rome, in honour of the emperor *Trajan*. See COLUMN.

It is of the Tuſcan order, though ſomewhat irregular: its height is eight diameters, and its pedeſtal Corinthian; it was built in a large ſquare there, called theſe *forum romanum*.

Its baſe conſiſts of 12 ſtones of an enormous ſize, and it is raiſed on a ſocle or foot of eight ſteps. Within-ſide is a ſtaircaſe, illuminated with 44 windows. It is 140 foot high, which is 35 foot ſhort of the Antonine column; but the workmanſhip of the former is much more valued.

It is adorned from top to bottom with baſſo relievo's, repreſenting the great actions of that emperor againſt the Dacæ.

Several learned men have explained the bas-reliefs of the *Trajan* column, and among others Ciaconius and Fabretti.—

The late king of France, Lewis XIV. had models of all the bas-reliefs taken off in plaiſter of Paris.

TRAJECTORY of a comet, is its path or orbit, or the line it deſcribes in its motion. See ORBIT.

This Hevelius, in his *Cometographia*, will have to be very nearly a right line; but Dr. Halley rather concludes it to be a very excentrical ellipſis. See ELLIPSIS.

Sir Iſaac Newton, in prop. 41. of his third book, ſhews how to determine the *trajectory* of a comet from three obſervations; and in his laſt propoſition, how to correct a *trajectory* graphically deſcribed. See COMET.

TRAIL-BOARD, in a ſhip, is a carved board on each ſide of her beak, which reaches from the main ſtem to the figure, or the brackets.--See *Tab. Ship. fig.* 2. *n.* 4. See alſo the article SHIP.

TRAIN, the attendance of a great perſon, or the trail of a gown, or robe of ſtate.

In falconry, it denotes the tail of an hawk. See TAIL.

TRAIN is likewiſe uſed for the number of beats which a watch makes in an hour, or any other certain time. See WATCH-*Work*, *&c.*

TRAIN is alſo uſed for a line of gun-powder laid to give fire to a quantity thereof, in order to do execution, by blowing up earth, works, buildings, *&c.* See GUNPOWDER, MINE, *&c.*

TRAIN, or TRAILE *of artillery*, includes the great guns and other pieces of ordnance belonging to an army in the field. See GUN, CANNON, ORDNANCE, *&c.* See alſo ARTILLERY.

TRAIN *Oil*, the oil procured from the blubber of whales, by boiling. See OIL, and WHALE.

TRAIN-*bands*, or TRAINED-*bands*, a name given to the militia of England. See MILITIA.

TRAINING *a load*, among miners, is the ſearching for and purſuing a vein of ore. See VEIN.

TRAITOR. See the article TRAYTOR.

TRAITTE. See the article FOREIGN *Traitte*.

TRAMBLING *of tin ore*, among miners, is the waſhing it very clean: which is done with a ſhovel, and in a frame of boards. See TIN.

TRAMEL, an inſtrument or device, ſometimes of leather, more uſually of rope, fitted to a horſe's legs, to regulate his motion, and form him to an amble. See AMBLE.

It is alſo taken in many places for an iron moveable inſtrument in chimnies, to hang pots over the fire.

TRAMEL-NET,* is a long net wherewith to take fowl by night in champain-countries, much like the net uſed for the low-bell both in ſhape, bigneſs and maſhes.

* The word comes from the French, *tremail*, formed of the Latin, *tremaculum*, or *tremaclum*; of *macula*, by reaſon it is compoſed of three rows of maſhes.

To uſe it, they ſpread it on the ground, ſo as the nether or further end, fitted with ſmall plummets, may lie looſe thereon: then the other part being bore up by men placed at the fore-ends, it is thus trailed along the ground. At each ſide are carried great blazing lights, by which the birds are raiſed: as they riſe under the net, they are taken. See LOW-*Bell*.

TRAMONTANE,* or TRAMONTAIN, ſomething beyond, or on the further ſide, the mountains.

* The word is formed from the Italian, *tra*, of the Latin, *trans*, which ſignify *beyond*; and *mons* or *mont*, mountain.

The term is particularly applied by the Italian painters, to all ſuch as live on the other ſide the Alps, *i. e.* all out of Italy; as the Germans, Flemiſh, French, *&c.*

The French lawyers give the ſame title of *tramontane*, or *ultramontane* doctors to the Italian canoniſts, Gomez, Hoſtienſis, Panorm, *&c.* who go upon rules and maxims too favourable to the court of Rome, and contrary to thoſe of France, *&c.*

On the Mediterranean and in Italy, a north wind is called *tramontana*, a *tramontane wind*.

Some alſo call the pole ſtar, *tramontana*.—Hence the proverb, to *loſe the tramontane*; that is, to be out of one's aim, to be diſconcerted.

TRANCHE′, or TRENCHE′, is uſed by the French armoriſts, to expreſs that manner of partition called among us, *party per bend dexter*. See PARTY, and BEND.

A ſcutcheon is ſaid to be *tranché*, *cut*, when it is divided in two diagonally, the diviſion coming from the dexter angle of the chief to the ſiniſter angle of the point:—when it is divided contrarywiſe, it is ſaid to be *taille*, or *party per bend ſiniſter*.

TRANGLE, in heraldry, the diminutive of a feſſe, commonly called a *bar*. See BAR, and FESSE.

TRANSACTION, TRANSACTIO, in the civil law, an accommodation of ſome buſineſs or diſpute between two parties, by a mutual and voluntary agreement or contract between them. See ACCOMMODATION, COMPROMISE, ACCORD, *&c.*

Philoſophical TRANSACTIONS, are a kind of journal of the principal things that come before the royal ſociety of London. See JOURNAL, and ROYAL *Society*.

The *tranſactions* contain the ſeveral diſcoveries and hiſtories of nature and art, made by the members of the ſociety, or communicated by them from their correſpondents, with the ſeveral experiments, obſervations, *&c.* made by them, or tranſmitted to them, *&c.*

They were firſt ſet on foot in 1665 by Mr. Oldenburg, ſecretary of the ſociety, and continued by him till the year 1679. After his death Dr. Hook, the ſucceeding ſecretary, continued them under the title of *philoſophical collections*: but Dr. Grew, appointed to the ſame office in 1689, reſumed the former title of *philoſophical tranſactions*, which was retained by his ſucceſſor Dr. Plott, and ſubſiſts to this day.

They were publiſhed every month with great care by Mr. Oldenburg, and the firſt ſecretaries; but after Dr. Plott, they were frequently interrupted. In the year 1700 Dr. Sloan reſtored their regular publication monthly; in time they relapſed, and only came out once in two months; from that they fell to 3, 4 and 6 months. They were afterwards publiſhed more frequently and regularly by the care of Dr. Jurin; but are now returned into their former languiſhing ſtate.

TRANSCENDANT, or **Transcendental**, ſomething raiſed, or elevated beyond other things; or which paſſes and *tranſcends* the nature and circumſtances of other inferior beings, ſo as not to be intimately and eſſentially included under them.

The term is particularly applied to the object of metaphyſics, which conſiders being in general, or *tranſcendental* beings, as God and angels, and truths conſiſting in pure ſpeculation. See Metaphysics.

Logicians and metaphyſicians give the name *tranſcendental terms* to thoſe which are ſo general, and of a ſignification ſo extenſive and univerſal, that they paſs through all the categories, and agree to all kinds of things:—ſuch are the terms *ens, unum, verum, bonum, res*. See Ens, *&c.*

Transcendental *Art*, } See { Art.
Transcendental *Perfection*, } See { Perfection.

Transcendental *Quantities*, among ſchool-men. See the article Quantity.

Transcendental *Quantities*, among geometricians, are indeterminate ones; or ſuch as cannot be expreſſed or fixed to any conſtant equation.—Such is a *tranſcendental* curve, or the like. See Transcendental *Curve*, and Curve.

M. Leibnitz has a diſſertation in the *acta erudit. Lipſ.* wherein he endeavours to ſhew the origin of ſuch quantities, *viz.* why ſome problems are neither plain, ſolid, nor ſur-ſolid, nor of any certain degree, but do *tranſcend* all algebraical equations. See Problem.

He alſo ſhews how it may be demonſtrated without calculus, that an algebraic quadratrix for the circle or hyperbola is impoſſible: for if ſuch a quadratrix could be found, it would follow, that by means thereof any angle, ratio or logarithm, might be divided in a given proportion of one right line to another, and this by one univerſal conſtruction; and conſequently the problem of the ſection of an angle, or the invention of any number of mean proportionals, would be of a certain finite degree. See Circle, Quadratrix, Quadrature, *&c.*

Whereas the different degrees of algebraical equations, and therefore the problem, underſtood in general of any number of parts of an angle or mean proportionals, is of an indefinite degree, and *tranſcends* all algebraical equations. See Equation.

Transcendental *Curve*, in the higher geometry, is ſuch a one as cannot be defined by any algebraic equation; or which, when expreſſed by an equation, one of the terms thereof is a variable quantity. See Curve.

Theſe curves are the ſame with what Des Cartes, and after his example, ſeveral others, call *mechanical curves*, and which they would have excluded out of geometry; but Sir Iſaac Newton and M. Leibnitz are of another ſentiment. For, in effect, in the conſtruction of geometrical problems, one curve is not to be preferred to another, as it is defined by a more ſimple equation, but as it is more eaſily deſcribed than that other. See Geometrical *Line*.

And ſome of theſe *tranſcendental* or mechanical curves are found of greater uſe than all the algebraical ones together, except the circle. See Mechanical.

Add that M. Leibnitz, in the *acta eruditor. Lipſ.* gives us a kind of *tranſcendental* equations, whereby theſe *tranſcendental* curves are actually defined, and which are of an indefinite degree; that is, are not always the ſame in all the points of the curve.

Whereas algebraiſts uſe to aſſume ſome general letters or numbers for the quantities ſought, in theſe *tranſcendental* problems M. Leibnitz aſſumes general or indefinite equations for the lines ſought; *e. gr.* putting x and y for the abſciſs and ordinate, the equation he uſes for a line ſought, is $a + bx + cy + exy + fxx + gyy$, *&c.* $= 0$. By the help of which indefinite equation, which in reality is finite, for it may always be determined how far ſoever it is neceſſary to raiſe it, he ſeeks the tangent; and that which reſults, comparing with the given property of tangents, he finds the value of the aſſumed letters a, b, c, *&c.* and thus defines the equation of the line ſought.

If the compariſon above-mentioned do not proceed, he pronounces the line ſought not to be an algebraical, but a *tranſcendental* one.

This ſuppoſed, he goes on to find the ſpecies of tranſcendancy: for ſome *tranſcendentals* depend on the general diviſion or ſection of a ratio, or upon the logarithms, others upon the arcs of a circle, and others on more indefinite and compound inquiries.

Here therefore beſides the ſymbols x and y, he aſſumes a third, as v, which denotes the *tranſcendental* quantity, and of theſe three forms a general equation for the line ſought, from which he finds the tangent according to the differential method, which ſucceeds even in *tranſcendental* quantities. What he finds, he compares with the given properties of the tangent, and ſo diſcovers not only the values of a, b, c, *&c.* but alſo the particular nature of the *tranſcendental* quantity.

And though it may ſometimes happen that the ſeveral *tranſcendentals* are ſo to be made uſe of, and theſe of different natures too one from another; alſo though there be *tranſcendents* or *tranſcendentals*, and a progreſſion of theſe *in infinitum*: yet we may be ſatisfied with the moſt eaſy and uſeful one, and for the moſt part may have recourſe to ſome peculiar artifices for ſhortening the calculus, and reducing the problem to as ſimple terms as may be.

This method being applied to the buſineſs of quadratures, or to the invention of quadratrices, in which the property of the tangent is always given, it is manifeſt not only how it may be diſcovered, whether the indefinite quadrature may be algebraically impoſſible, but alſo how, when this impoſſibility is diſcovered, a *tranſcendental* quadratrix may be found; which is a thing which had not before been ſhewn. So that it ſeems that geometry is by this method carried infinitely beyond the bounds to which Vieta and Des Cartes brought it; ſince by this means a certain and general analyſis is eſtabliſhed, which extends to all the problems which are of no certain degree, and conſequently not comprehended within algebraical equations.

Again, in order to manage *tranſcendental* problems (where-ever the buſineſs of tangents or quadratures occurs) by a calculus, there is hardly any that can be imagined ſhorter, more advantageous or univerſal, than the differential calculus, or analyſis of indiviſibles and infinites.

By this method we may explain the nature of *tranſcendental* lines by an equation, *e. gr.* Let a be the arc of a circle, and x the verſed ſine: then will $a = \frac{\int dx}{\sqrt{2x - xx}}$ and if the ordinate of the cycloid be y, then will $y = \sqrt{2x - xx} + \frac{\int dx}{\sqrt{2x - xx}}$ which equation perfectly expreſſes the relation between the ordinate y and the abſciſſe x, and from it all the properties of the cycloid may be demonſtrated.

Thus is the analytical calculus extended to thoſe lines which have hitherto been excluded, for no other cauſe, but that they were thought incapable of it. See Geometrical *Line*.

TRANSCOLATION, in pharmacy, the ſame with filtration, or percolation. See Filtration, *&c.*

TRANSCRIPT, a copy of any original writing, particularly that of an act, or inſtrument, inſerted in the body of another. See Copy, Exemplification, *&c.*

In this ſenſe, we ſay, *tranſcript of a fine*, *&c.* See Fine, Duplicate, *&c.*

TRANSCRIPTO *recognitionis factæ coram juſticiariis itinerantibus*, *&c.* is a writ for certifying a recognizance into chancery, taken before the juſtice in eyre. See Recognizance.

Transcripto *pedis finis levati mittendo in cancellariam*, is a writ for certifying the foot of a fine levied before juſtices in eyre, *&c.* into chancery. See Fine.

TRANSEAT, in the ſchools, *&c.* a term purely Latin, ſignifying, *let it paſs*, or ſuppoſe a propoſition to be true, without granting it. See Hypothesis, Lemma, *&c.*

Hence the proverb, *tranſeat, græcum eſt, non legitur*: the phraſe is ſaid to have taken its riſe from ſome ancient commentators, or gloſſographers of the civil law, who, not underſtanding Greek, paſſed over all the words that occurred in that language, without explaining them.

In the Roman chancery, a *nil tranſeat* is a kind of oppoſition made to the ſealing of a bull, or to the delivery of ſome other inſtrument, till the parties againſt whoſe intereſt it is directed, have been heard againſt it.

TRANSELEMENTATION, in the ſchools, a change of the elements or principles of one body into thoſe of another. See Element.

Such is that which Roman catholics contend for in the euchariſt, where the elements of bread and wine are changed into thoſe of fleſh and blood. See Transubstantiation.

Tranſelementation, where-ever it happens, is always allowed miraculous, or an effect beyond the ordinary powers of nature. See Miracle.

TRANSFER, in commerce, *&c.* an act whereby a perſon ſurrenders his right, intereſt or property in any thing moveable, or immoveable, to another.

The ſale or donation of an inheritance, *&c.* *transfers* the property, rights, *&c.* thereof.

The term is principally uſed in the commerce of ſtocks; for the aſſigning and making over ſubſcriptions or ſhares therein, to ſuch as purchaſe them of the proprietors. See Subscription, *&c.*

In the South-Sea company, the Bank, Eaſt-India, *&c. transfers* are made, by eraſing the former proprietors names, and entering the ſtock under the name of the purchaſer, under his proper letter of the alphabet. See COMPANY, BANK, *&c.*

In order to a *transfer*, it is required the party bring another with him to ſwear he is the ſame perſon to whom the ſtock is entered. A counterfeit in this caſe is by act of parliament made a capital crime.

TRANSFIGURATION, among divines, that miraculous change wrought by Jeſus Chriſt, in preſence of St. Peter, St. James, and St. John, on mount Thabor, where he appeared in his glory, in the middle of Moſes and Elias. See the deſcription thereof in St. Matthew, chap. xvii.

The term is alſo applied to a feaſt held in the Romiſh church on the 6th of Auguſt, in commemoration of that miracle.

TRANSFORMATION, a metamorphoſis, or change of form. See METAMORPHOSIS, FIGURE, and FORM.

The chymiſts have been a long time ſeeking the *transformation* of metals, that is, their *tranſmutation*, or the manner of changeing them into gold. See TRANSMUTATION.

Among the myſtics, by *transformation*, is underſtood a change of the contemplative ſoul, whereby it is in ſome meaſure deified or converted into the ſubſtance of God, and wherein it is, as it were, loſt and ſwallowed up in the divinity, ſo as not to perceive its own diſtinction from God.

The word *transformation* is very liable to be abuſed; and, in effect, the Quietiſts and Quakers have abuſed it. But many of the myſtics uſe it innocently enough; meaning no other by it than what St. Paul did when he ſaid, *Vivo ego, jam non ego, vivit vero in me Chriſtus.*

TRANSFORMATION is alſo ſometimes uſed for what we more properly call *tranſubſtantiation*. See TRANSUBSTANTIATION.

TRANSFUSION,* TRANSFUSIO, the act of pouring a liquor out of one veſſel into another. See DECANTATION.

* The word is compounded of the Latin prepoſition *trans, beyond, farther*, and *fundo, I pour*.

In the preparations of chymiſtry and pharmacy, there are frequent *transfuſions* of liquors, ſyrups, *&c.*

TRANSFUSION *of the Blood*, is particularly uſed for the letting out the blood of one animal, ſo as to be immediately received into the body of another. See BLOOD.

Dr. Lower is uſually accounted the inventor of this *transfuſion*, and the experiment ſaid to have been firſt publicly made by him at Oxford in 1665, and the deſcription thereof publiſhed in his excellent book *de Corde*.

Yet we are informed from good hands, that it had been propoſed at Paris in 1658; that another of our countrymen had had the idea before, and that it had been known in Germany ſeveral years.—It is certain there is a paſſage in Libavius, wherein the *transfuſion* is exactly deſcribed as ſince practiſed: it is true, he diſapproves of it; and only mentions it to ridicule it.

The uſe moſt naturally expected from the operation, is, that one animal may live of the blood of another; ſo that thoſe which want blood, or have corrupt, morbid blood, may be ſupplied from others with a ſufficient quantity, and of ſuch as is good and laudable.

However, it is certain the operation has no place in the preſent practice of phyſic; but whether that be the fault of the operation itſelf, or owing to the indolence and averſeneſs of people to run into new methods, we will not undertake to ſay.

The method of *transfuſing*, Dr. Lower gives us to the following effect: take up the carotid artery of the dog, or other animal whoſe blood is to be *transfuſed* into another of the ſame, or a different kind; ſeparate it from the nerve of the eighth pair, and lay it bare above an inch. Make a ſtrong ligature on the upper part of the artery; and an inch nearer the heart another ligature with a running knot, to be looſened and faſtened as occaſion requires. Draw two threads between the two ligatures; open the artery, put in a quill, and tie up the artery again upon the quill by the two threads, and ſtop the quill by a ſtick.

Then make bare the jugular vein of the other animal, for about an inch and half in length, and at each end make a ligature with a running knot; and in the ſpace between the two knots, draw under the viens two threads, as in the other. Open the vein, and put into it two quills, one into the deſcending part of the vein, to receive the blood from the other dog, and carry it to the heart: the other quill put into the other part of the jugular, towards the head, through which the ſecond animal's own blood is to run into diſhes. The quills thus tied faſt, ſtop them up with ſticks till there be occaſion to open them.

Things thus diſpoſed, faſten the dogs on their ſides towards one another, in ſuch manner, as that the quills may go into each other: then unſtop the quill that goes down into the ſecond dog's jugular vein, as alſo that coming out of the other dog's artery; and by the help of two or three other quills put into each other, as there ſhall be occaſion, inſert them into one another.

Then ſlip the running knots, and immediately the blood runs through the quills as through an artery, very impetuouſly.

As the blood runs into the dog, unſtop the quill in the upper part of his jugular, for his own blood to run out at, though not conſtantly, but as you perceive him able to bear it, till the other dog begin to cry, and faint, and at laſt die.

Laſtly, take out both quills out of the jugular, tie the running knot faſt, and cut the vein aſunder, and ſew up the ſkin: the dog thus diſmiſſed, will run away as if nothing ailed him.

In the *Philoſophical Tranſactions* we have accounts of the ſucceſs of various *transfuſions* practiſed at London, Paris, in Italy, *&c.* Sir Edmund King *transfuſed* 49 ounces of blood out of a calf into a ſheep; the ſheep after the operation appearing as well and as ſtrong as before.

Mr. Coxe *transfuſed* 14 or 16 ounces out of a mangy into a ſound dog: the effect was, that no alteration was obſerved in the ſound dog, but the mangy one was cured.

M. Gayant *transfuſed* the blood of a young dog into the veins of an old one almoſt blind with age, and ſcarce able to ſtir; which yet, two hours afterwards, leaped and friſked about.

M. Denis *transfuſed* the blood of three calves into three dogs, which all continued briſk, and eat well as before.—The ſame perſon *transfuſed* the blood of four weathers into a horſe 26 years old, which thence received much ſtrength, and a more than ordinary appetite.

At St. Griffomi's at Udine, the blood of a lamb was *transfuſed* into the veins of a ſpaniel 13 years old, which had been quite deaf for three years, and ſo feeble as ſcarce to be able to walk at all.—After the operation he leaped from the table, and went about the houſe to ſeek his maſter.—Two days afterwards he ran up and down the ſtreets with other dogs; his ſtomach grew ſtrong, and he recovered his hearing.

TRANSGRESSION,* TRANSGRESSIO, an offence againſt ſome law; or a breach, or violation thereof. See VIOLATION, LAW, CRIME, SIN, *&c.*

* The word is compounded of *trans, beyond*, and *gradiri, to go*.

The term is chiefly uſed in reſpect of the laws of God. In the doctrine of original ſin, all mankind are ſuppoſed to ſhare with Adam in the guilt of his firſt *tranſgreſſion*. See ORIGINAL *Sin*.

Moſes threatens the *tranſgreſſors* of his law with abundance of temporal puniſhments. See PUNISHMENT.

TRANSGRESSIONE, in our law, a writ uſually called a *writ* or *action of treſpaſs*. See TRESPASS.

Of this, Fitzherbert has two ſorts: one *vicountiel*, thus called becauſe directed to the ſheriff, and not returnable, but to be determined in the county.—Its form differs from that of the other, as wanting the words *quare vi & armis, &c.* See VICOUNTIEL.

The other is termed a *writ of treſpaſs*, and to be ſued in the Common-Pleas, and King'sBench. See TRESPASS.

TRANSIENT *Action*, } See the articles { ACTION.
TRANSIENT *Air*, } { AIR.

TRANSIRE, in *ſtat. anno* 14 *Car.* II. *c.* 11. is uſed for a cuſtom-houſe warrant, or let-paſs—from the verb, *tranſeo, I go forth*.

TRANSIT,* TRANSITUS, in aſtronomy, ſignifies the paſſage of any planet, juſt by, or over a fixed ſtar; and of the moon, in particular, covering or moving over any other planet. See STAR, and PLANET.

* The word comes from the Latin, *tranſire, to paſs over*; formed of *trans*, and *eo, I go beyond*.

Mercury and Venus, *&c.* in their *tranſits* over the ſun, appear like dark ſpecks. See MERCURY, and VENUS.

TRANSITION, in muſic, is when a greater note is broken into leſſer, to ſoften the roughneſs of a leap, by a gradual paſſage to the note next following. See PASSAGE.

This is commonly called the *breaking of a note*. See NOTE.

TRANSITION, in rhetoric, a kind of connexion in diſcourſe, whereby the ſeveral different parts and members thereof are joined, ſo as to conſtitute one regular whole. See DISCOURSE, PERIOD, *&c.*

Some place *tranſition* in the number of figures; others, with Quintilian, exclude it that rank. See FIGURE.

F. de Colonia makes two kinds of *tranſitions*; the one *perfect*, the other *imperfect*.

Perfect **TRANSITION**, is that wherein we briefly intimate what is ſaid, and what remains to be ſaid—as, *Now that we have ſpoke of war, there remains ſomething to be ſaid of peace.—Satis multa de turpitudine: dicam deinceps, quod propoſui, de periculo.—Uni epiſtolæ reſpondi: venio ad alteram.—Sed hæc vetera; illud recens: Cæſarem meo conſilio interfectum.*

Imperfect **TRANSITION**, is that wherein only one of theſe is expreſſed—as, *Let us now conſider the conſequences of*, &c.—*Poſtularet hic locus ut dicerem de—ſed finis ſit; neque enim præ lachrymis jam loqui poſſum; & hic ſe lachrymis defendi negat.*

TRANSITIVE, in grammar, an epithet given to ſuch verbs as ſignify an action which paſſes from the ſubject that does it, to, or upon, another ſubject which receives it. See VERB, and ACTION.

Under the head of verbs *tranſitive*, come what we uſually call verbs active and paſſive: other verbs, whoſe action does not paſs out of themſelves, are called *neuters*, and by ſome grammarians *intranſitives*. See NEUTER.

In the Hebrew, the verb היה, *hajah*, in the Greek, εἰμι, and in the Latin, *ſum*, are verbs purely neuter or intranſitive; or, as the Latin and Greek grammarians more uſually expreſs it, verbs ſubſtantive, ſignifying the mere exiſtence of the thing, without the active or *tranſitive* conjugations.

TRANSITORY, in common law, ſtands oppoſite to local. See LOCAL.—Thus actions are ſaid to be *tranſitory* which may be laid in any county or place. See ACTION.

TRANSITORY *Choſe*, See the articles CHOSE.
TRANSITORY *Treſpaſs*, See the articles TRESPASS.

TRANSLATION,* the act of transferring or removing a thing from one place to another. See PLACE.

* The word is formed of *trans*, *beyond*, and *latio*, of *ferre*, *to carry*.

We ſay the *tranſlation* of a biſhop's ſee, a council, a ſeat of juſtice, a parliament; the *tranſlation* of the relicks of a ſaint; the *tranſlation* of the empire, *&c.*

The *tranſlations* of biſhops from one ſee to another, are prohibited by the council of Nice, which declares them null, and appoints the *tranſlated* biſhop to return to his former church.—The council of Sardica excludes *tranſlated* biſhops from communion. It had been obſerved, that no biſhop was ever removed from a greater church to a leſſer; and that thoſe who thus quitted their churches, only did it out of ambition or avarice.

This diſcipline was generally obſerved for 900 years; and the firſt inſtance of any *tranſlation* of note, was that of pope Formoſus, who was biſhop of Porto. One of his ſucceſſors took hold of this pretence to have him dug out of his grave; and a council, held ſoon after, forbad this *tranſlation* to be made a precedent.

However, the ſame church allowed of ſome legitimate cauſes of *tranſlations*; as, the apparent advantage of the church: under which pretence, *tranſlations* ſoon became ſo frequent, that for 500 or 600 years laſt paſt, they have been eſteemed a kind of common law. See BISHOP.

The *tranſlation* of a religious from one order to another, cannot be effected without the conſent of the pope: it is added, that it is not allowed to *tranſlate* from a ſeverer rule to a laxer one.

TRANSLATION is alſo uſed for the verſion of a book, or writing out of one language into another. See BOOK, VERSION, *&c.*

Tranſlators frequently endeavour to excuſe themſelves at the expence of their language; and aſk pardon for it, as if it were not rich and copious enough to expreſs all the force and beauties of the original.

Thus is the Engliſh tongue accuſed of the poverty and dryneſs which is in the *tranſlator*'s own genius; and the faults are charged on the former, which ſhould only lie at the latter's door. See ENGLISH.—The Italians have a proverb, *traduttore, traditore*.

TRANSMARINE, TRANSMARINUS, ſomething that comes from, or belongs to, the parts beyond ſea. See FOREIGN, EXOTIC, SEA, *&c.*

TRANSMIGRATION, the removal or tranſlation of a whole people into another country, by the power of a conqueror. See COLONY.

Some tranſlate the leading of the children of Iſrael captive into Babylon, the *tranſmigration* of the Iſraelites, *&c.* See MIGRATION.

TRANSMIGRATION is particularly uſed for the paſſage of a ſoul out of one body into another: the ſame with what we otherwiſe call METEMPSYCHOSIS.

The Siameſe, F. Tachard informs us, from a belief of the *tranſmigration* of ſouls into other bodies, forbear killing any beaſts; leſt, by that means, they ſhould diſpoſſeſs the ſouls of their deceaſed relations.

Ionic TRANSMIGRATION. See the article IONIC.

TRANSMISSION, in optics, *&c.* the act of a tranſparent body paſſing the rays of light through its ſubſtance, or ſuffering them to paſs; in which ſenſe the word ſtands oppoſed to reflection. See REFLECTION.

Tranſmiſſion is alſo frequently uſed in the ſame ſenſe with refraction, by reaſon moſt bodies, in *tranſmitting* the rays, do alſo refract them. See REFRACTION.

For the cauſe of *tranſmiſſion*, or the reaſon why ſome bodies *tranſmit*, and others reflect the rays, ſee TRANSPARENCY, and OPACITY.

The rays of light, Sir Iſaac Newton obſerves, are ſubject to fits of eaſy *tranſmiſſion* and each reflection. See RAY, and LIGHT.

TRANSMUTATION, the act of transforming or changing one nature into another. See TRANSUBSTANTIATION, and TRANSFORMATION.

The term is chiefly uſed in chymiſtry and medicine: it is greatly queſtioned, whether the *tranſmutation* of ſilver into gold, and of tin into ſilver, ſo much ſought by the chymiſts, be poſſible or not? See GOLD, *&c.*

The pureſt and ſubtileſt parts of the food are *tranſmuted* or aſſimilated into the proper ſubſtance of the body. For the manner how, ſee NUTRITION.

Nature, Sir Iſaac Newton obſerves, ſeems delighted with *tranſmutations*: he goes on to enumerate ſeveral kinds of *natural tranſmutations*; groſs bodies and light, he ſuſpects, may be mutually *tranſmuted* into each other; and adds, that all bodies receive their active force from the particles of light which enter their compoſition. See LIGHT, and FIRE.

For all fixed bodies, when well heated, emit light as long as they continue ſo; and again, light intermingles itſelf and inheres in bodies as often as its rays fall on the ſolid particles of thoſe bodies. See OPACITY.

Again, water, which is a fluid, volatile, taſteleſs ſalt, is by heat *tranſmuted* into vapour, which is a kind of air; and by cold into ice, which is a cold, tranſparent, brittle ſtone, eaſily diſſolvable; and this ſtone is convertible again into water by heat, as vapour is by cold. See WATER, VAPOUR, ICE, *&c.*

Earth, by heat, becomes fire; and by cold, is turned into earth again: denſe bodies, by fermentation, are rarefied into various kinds of air; and that air, by fermentation alſo, and ſometimes without it, reverts into groſs bodies. See AIR, *&c.*

Quickſilver ſometimes puts on the form of a fluid metal; ſometimes it appears in ſhape of a pellucid, fragile ſalt, called *ſublimate*; ſometimes of a pellucid, volatile, white, taſteleſs earth, called *mercurius dulcis*; by diſtillation it becomes vapour, and by agitation in vacuo, ſhines like fire, *&c.* See MERCURY, and PHOSPHORUS.

All bodies, beaſts, fiſhes, inſects, plants, *&c.* with all their various parts, grow and increaſe out of water, and aqueous and ſaline tinctures; and by putrefaction, all of them revert into water or an aqueous liquor again. See WATER.

Farther, water expoſed a while to the open air, puts on a tincture, which in proceſs of time has a ſediment and a ſpirit; and before putrefaction, yields nouriſhment both for animals and vegetables. See NUTRITION, and VEGETATION.

TRANSMUTATION, in alchymy, denotes the act of changing or exalting imperfect metals into gold or ſilver. See METAL, GOLD, *&c.*

This is alſo called the *grand operation*, and is to be effected with the philoſophers ſtone. See PHILOSOPHERS *Stone*.

Some alchymiſts hold, that the *tranſmutation* ſhould rather be called the *perfection* of imperfect metals; as holding all metals intended by nature to arrive equally at this perfection, inaſmuch as they are compoſed of the ſame matter; and that it is only the impurity of their matrices, that is, of the place wherein they are formed by nature, that has prevented their arriving thereat. See METAL.

The elixir being projected on any of thoſe metals, it is ſuppoſed to purge, and ſeparate the impure parts from the pure, and to join itſelf wholly to the mercury (which is the pure part) as being of the ſame nature. See PROJECTION.

Whether or no metals are *tranſmutable* into one another, is a point ſtrongly diſputed among the philoſophers; the alchymiſts ſtrenuouſly aſſerting the affirmative. See ALCHYMY.—Some metals, it is commonly allowed, may be changed into others; *e. gr.* iron into braſs or copper, and lead into tin; but Cardan and ſome others deny even this, and argue farther, that though iron and braſs, as being nearly alike in weight and tenacity, *&c.* provided their colour and hardneſs could be changed, might be converted into another, either really, or, at leaſt, apparently; yet would the *tranſmuting* or ripening of other metals into gold or ſilver be ſtill impoſſible; both as thoſe metals are all to be firſt calcined, after which they can never be brought again to their priſtine purity; and as there is a generation required, which is not the work of art, but nature.

Cardan *de Metall.* Lemery, Dickenſon, and others, give us accounts of the various impoſtures of Adepti in the buſineſs of *tranſmutation*; ſome, for inſtance, fixing mercury with verdigreaſe, and then heightening the colour with cadmia, turmeric, *&c.* But this, if tried with the coppel, all goes off in fumes; and, in effect, nothing produced this way ought to be adjudged true gold, unleſs it endure coppelling, cæmentation, purification, with antimony, and the depart. See PURIFICATION, ESSAYING, *&c.*

Add, that it muſt have the malleability, extreme ductility, and ſpecific gravity of gold, which is to water as 18 and half to 1. See WEIGHT.

The trick of *tranſmuting* cinnabar into ſilver is thus: the cinnabar being bruiſed groſly, is ſtratified in a crucible with granulated ſilver, and the crucible placed in a great fire; and after due time for calcination, taken off: then the matter being poured out, is found to be cinnabar turned into real ſilver, though the ſilver grains appear in the ſame number and form as when they were put into the crucible; but the miſchief is, coming to handle the grains of ſilver, you find them nothing but light friable bladders, which will crumble to pieces between the fingers. Mr. Boyle, in his *Scept. Chymiſt.* tells us, that two friends of his did, by urging mercury in a ſkilfully managed fire, turn it almoſt weight for weight into water; but does not ſay what was the ſpecific gravity of the produced water, nor of the remaining *untranſmuted* maſs of mercury.—He likewiſe aſſures us, that rain-water being diſtilled and re-diſtilled by a friend of his, near 200 times, did, after diſtillation, leave, at the bottom of the glaſs body, a conſiderable quantity of a white earth; and that more plentifully in the latter diſtillations than the former.

This he believed to be a certain quantity of water actually *tranſmuted* into earth; adding, that it was above twice as heavy ſpecifically as common water, and of ſo fixed a nature, that it lay a conſiderable time in a red-hot crucible, without loſing any thing of its weight, or emitting any ſmoak.

TRANSMUTATION, in geometry, denotes the reduction or change of one figure, or body into another of the ſame area, or ſolidity, but of a different form; as a triangle into a ſquare, a pyramid into a parallelepiped, *&c.* See FIGURE, *&c.*

TRANSMUTATION, in the higher geometry, is uſed for the converting a figure into another of the ſame kind and order, whoſe reſpective parts riſe to the ſame dimenſions in an equation, admit the ſame tangents, *&c.* See TRANSFORMATION.

If a rectilinear figure be to be *tranſmuted* into another, it is ſufficient that the interſections of the lines which compoſe it be transferred, and lines drawn through the ſame in the new figure. See REDUCTION.

If the figure to be *tranſmuted* be curvilinear, the points, tangents, and other right lines, by means whereof the curve line is to be defined, muſt be transferred. See CURVE.

TRANSMUTATION *of Plants.* See the articles SEED, and DEGENERATION.

TRANSOM, among builders, the piece that is framed acroſs a double light window. See WINDOW.

TRANSOM, among mathematicians, denotes the vane of a croſs-ſtaff; or a wooden member fixed acroſs it, with a ſquare whereon it ſlides, *&c.* See VANE, and CROSS-*Staff*.

TRANSOM, in a ſhip, is a piece of timber which lies athwart the ſtern, between the two faſhion pieces, directly under the gun-room-port.—See *Tab. Ship. fig.* 2. *n.* 109.

TRANSPARENCY, *Diaphaneity*, in phyſics, a quality in certain bodies, whereby they give paſſage to the rays of light. See LIGHT, and DIAPHANEITY.

The *tranſparency* of natural bodies, as glaſs, water, air, *&c.* ſome have imputed to the great number, and ſize of the pores or interſtices between the particles of thoſe bodies: but this account is exceedingly defective; for the moſt ſolid and opake body in nature, we know, contains a great deal more pores than it does matter; a great deal more, ſure, than is neceſſary for the paſſage of ſo infinitely fine and ſubtile a body as light. See PORE.

Ariſtotle, Des Cartes, *&c.* place *tranſparency* in the rectitude or ſtraightneſs of the pores; by means of which, ſay they, the rays are enabled to make their way through, without ſtriking againſt the ſolid parts, and being reflected back again: but this account, Sir Iſaac Newton ſhews, is lame; the quantity of pores in all bodies being ſufficient to tranſmit all the rays that fall on them, howſoever thoſe pores be ſituated with reſpect to each other.

The cauſe, then, why all bodies are not *tranſparent*, muſt not be aſcribed to their wanting rectilinear pores; but either to the unequal denſity of the parts, or to the pores being filled with ſome foreign matters, or their being quite empty; by means of which, the rays in paſſing through, undergoing a great variety of reflections and refractions, are perpetually diverted this way and that, till at length falling on ſome of the ſolid parts of the body, they are extinguiſhed and abſorbed. See RAY, and REFLECTION, *&c.*

Thus cork, paper, wood, *&c.* are opake; when as glaſs, diamonds, *&c.* are *tranſparent:* the reaſon is, that in the neighbourhood of parts equal in denſity, ſuch as thoſe of glaſs, water, diamond, *&c.* are with reſpect to each other; the attraction being equal on every ſide, no reflection or refraction enſues; but the rays which entered the firſt ſurface of the bodies, proceed without interruption quite through the body; thoſe few only excepted which chance to meet with the ſolid parts. But in the neighbourhood of parts, that differ much in denſity, ſuch as the parts of wood and paper are both in reſpect of themſelves, and of the air or the empty ſpace in their pores; as the attraction will be very unequal, the reflections and refractions muſt be very great; and therefore the rays will not be able to make their way through ſuch bodies, but will be perpetually deflected, and at laſt quite ſtopped. See OPACITY.

TRANSPARENT *Column.* See the article COLUMN.

TRANSPIRATION, the inſenſible, or almoſt inſenſible paſſage of an excrementitious matter through the pores of the ſkin; called alſo *perſpiration.* See PERSPIRATION.

There are an infinity of theſe *tranſpiratory* pores in the ſkin; the moſt conſiderable whereof are the orifices of the ducts ariſing from the miliary glands. See PORE, and SKIN.

The cauſe of *tranſpiration* is the circulation and heat of the blood.—Inſenſible *tranſpiration* is found very much to exceed all the ſenſible evacuations put together. Sanctorius even ſhews, in his *Medicina Statica*, that a perſon loſes more in one day by *tranſpiration*, than by all the other outlets in fifteen. He adds, that if the food taken by one day weigh eight pounds, the *tranſpiration* will be five of them.

Cold prevents *tranſpiration*, by its conſtringing the pores of the ſkin, and thickening the liquors circulating in the cutaneous glands: heat, on the contrary, augments *tranſpiration*, both by its opening the excretory ducts of the glands, and by its increaſing the fluidity and velocity of the humours. See COLD, *&c.*

M. Dodart, from a number of experiments made for 33 years together, aſſures us, that we *tranſpire* much more in youth than in age.—In ſome perſons, the *tranſpiration* is ſo copious, that they void but very little of the coarſer excrements, though they eat very heartily.

Tranſpiration is abſolutely neceſſary in the animal œconomy, to purify the maſs of blood, and diſcharge it of a number of uſeleſs heterogeneous particles which might corrupt it. Hence it is, that upon a ſtoppage of the uſual *tranſpiration*, there ariſe ſo many indiſpoſitions, particularly fevers, agues, itch, *&c.*

Tranſpiration is alſo of uſe to the organ of feeling, in that it prevents the papillæ of the ſkin from being dried, either by the air, or by the continual touches of external bodies.

TRANSPIRATION is alſo uſed by ſome authors, for the ingreſs or entrance of the air, vapours, *&c.* through the pores of the ſkin into the body. See AIR.

Cardan, by this kind of *tranſpiration*, accounts for the prodigy of a woman, whoſe daily urines weighed 27 pounds; though all the foods ſhe took, both dry and liquid, did not exceed four pounds.—Dr. Baynard ſuſpects ſome ſuch *tranſpiration* to be the caſe in hydropical perſons. See DROPSY.

TRANSPLANTATION, in agriculture and gardening, the act of removing trees or plants from the places where they were ſowed or bred up, and planting them in other. See TREE, PLANTING, REPLANTING, *&c.*

In the **TRANSPLANTING** *of foreſt-trees*, care is to be taken to preſerve the roots, and even the fine hairs or filaments thereof, with the earth that ſticks thereto; theſe filaments being the mouths that ſuck the nouriſhment, and transfuſe it to the tree. See ROOT, and VEGETABLE.

The pits or foſſes, into which trees are *tranſplanted*, ſhould be left open for ſome time before-hand, that the rain, froſt, and ſun may diſſolve the compacted ſalt, render the earth friable, and qualify it for nouriſhing the tree.—The ſame may be done, in ſome meaſure, by burning ſtraw in the new pits, and drenching the mould with water in dry ſeaſons, and by enriching the ground with manure. See MANURING.

Pliny was of opinion, no tree ſhould be removed under two, or above three years old. Cato would have none *tranſplanted* leſs than five fingers in diameter: but we are, now, able to *tranſplant* trees of all ages and ſizes, without danger.

To *tranſplant* old trees was reckoned ſo difficult, that *veterem arborem tranſplantare* is become a proverb for a difficult enterprize; and yet we are informed of a grove of 600 coco-trees of 80 years growth, and 60 foot high to the loweſt bough, *tranſplanted* by count Maurice, to his paradiſe of Friburg: and a great perſon in Devonſhire, Mr. Evelyn tells us, *tranſplanted* oaks, as big as twelve oxen could draw, to ſupply a defect in an avenue.

For the *tranſplantation* of grown trees, Mr. Evelyn gives the following method, as practiſed with good ſucceſs by the lord Fitzharding: chooſe trees about the thickneſs of a man's thigh; remove the earth from about them; cut through all the ſide roots, till the tree may be, by force, brought down on one ſide; ſo that the tap-roots may be conveniently come at to be cut off with the ax: then redreſs the tree, and let it ſtand covered with the mould from which it was looſened, till next year, or longer; and by that time it will have drawn new tender roots fit for *tranſplanting*, and may be taken up at a fit ſeaſon.

Otherwiſe, for very large trees, before the hard froſts come on, make a trench about the tree, at ſuch diſtance from the ſtem, as you judge ſufficient for the root; dig ſo deep, as almoſt to undermine it; place blocks, and quarters of wood to ſuſtain the earth, and caſt in as much water as may fill the trench, or ſufficiently wet it, unleſs the ground were very moiſt before. Thus let it ſtand till ſome hard froſt bind it firmly to the roots, and then convey it to its new ſtation, which may be preſerved from freezing, by placing ſtore of warm litter in it: ſo cloſe the mould the better to the ſtraggling fibres, and place the earth taken out of the pit about the root of the new-planted tree.

The common rules for *tranſplanting* are, 1°. The lighter the ſoil is, the deeper are the trees to be planted. 2°. If the ſoil be gravel, or ſand, mix clay with it, and *vice verſa.* 3°. The beſt ſeaſon is either October or February; in warm, moiſt, clear weather. 4°. The large roots to be abated, to prevent the neceſſity of digging too deep: but the ſmall fibrous ones to be ſpared. 5°. In taking up the trees to obſerve how the roots grow, and in *tranſplanting* to diſpoſe them in the ſame order, and place the tree to the ſame aſpect. 6°. To defend young trees after *tranſplantation*, both from the wind and ſun, till the roots be fixed, and they begin to ſhoot. 7°. If the ſoil you *tranſplant* into be good, do not top the trees, but lop all the boughs to one ſingle one, the moſt upright and promiſing among them: but if the ſoil be poor, top them, and when they are ſhot out again, lop off all the branches to one. See PRUNING.

Transplanting *of fruit-trees.*—After a ſummer's growth of fruit ſeedlings in the ſeminary, ſuch are pulled up as are above a foot high, and *tranſplanted* into a nurſery; the reſt to be left in the ſeed-plot till another year. See **Nursery.**

When drawn up, the ſprigs are to be cut off, from about the top, the ſtrings from the roots, and the extremities, both of the top, that it may not run too faſt upwards, and of the tap or heart-root, that it may not paſs directly downwards; leſt it go beyond the good ſoil. The holes or pits to be ſo deep, as that the plants may ſtand ſomewhat deeper in the ground, than when in the ſeed-plot; cloſe the mould about them, and if it be a dry time, water them the firſt day, and cover the ſoil with old fern.

Mr. Bradley gives us a new method of *tranſplanting* trees of all kinds and ages with ſafety, either while they are in bloſſom, or with fruit upon them, thus: the holes to receive the trees, are to be prepared before the trees are taken up; and the earth which comes out of the holes to be made very fine, and put into large tubs and mixed with water, till it be about the conſiſtence of thin batter. Then the holes wherein the trees are to be planted, are to be filled with this thus-tempered earth, before the earthy parts have time to ſettle.

The advantage hereof is, that the trees thus planted have their roots immediately incloſed and guarded from the air; and the warm ſeaſon of the year diſpoſing every part of the tree for growth and ſhooting, it will loſe very little of its vigour.—In winter it does not ſucceed.

The ſame author adds, that in conſideration of the circulation of the ſap, it is as neceſſary to preſerve the veſſels of trees entire, as thoſe in animal bodies: and therefore, in *tranſplanting* trees in the ſummer ſeaſons, it is not proper to cut off any of the branches, or wound any of the veſſels, till they have renewed their roots, which it is of abſolute neceſſity to wound in *tranſplanting* them. For the wounded roots, he has provided a plaiſter of a mixture of gums, to prevent the canker and rot, and promote their healing.

Transplantation, in natural magic, is uſed for a method of curing diſeaſes, by transferring them from one ſubject to another; much in vogue among certain chymical, or rather ſympathetical phyſicians. See **Sympathetic.**

This *tranſplantation* is effected, either by the uſe of a certain medium, called on that account a *magnet*; or without, by ſimple contact.

The firſt kind, which is that moſt properly called *tranſplantation*, is when the patient's excrement being mixed up with earth, the diſeaſe is *tranſplanted* into a vegetable, ariſing from a ſeed ſown in the ſaid compoſt; or, when the parings of the nails, *e. gr.* of a gouty perſon, are incloſed in an auger-hole made in a plant, particularly an oak.

Here the patient's excrement is the magnet, and the vital ſpirit of the plant ariſing from the ſeed is the mumia which the magnet receives; and the caſe is the ſame, in the parings of the nails, and the vital ſpirit of the oak. See **Mumia.**

The ſecond kind of *tranſplantation*, properly called *approximation*, is, when a finger ſeized with a panaris, or whit-low, is cured by rubbing it in a cat's ear, which is ſuppoſed to receive the pain.

In this caſe, the ſound ſubject receives the vital ſpirits, unites with them, and corrects their morbific ſtate: and, as certain diſeaſes are got by approximation, the infected ſpirits of a diſeaſed body, inſinuating themſelves into a ſound one, and thus infecting the ſame: ſo they are cured by approximation; when the ſpirits of a diſeaſed perſon entering a ſound body, the latter corrects and retrieves the morbific ſtate of the former.

Tranſplantation, by means of the magnet, is of five kinds, *viz.* *inſemination*, *implantation*, *impoſition*, *irroration*, and *ineſcation*; each whereof ſee under its proper article, **Inescation, Implantation,** &c.

TRANSPORT-*Ship*, is a veſſel whereon to convey proviſions, warlike ſtores, ſoldiers, &c. See **Vessel.**

TRANSPORTATION, the act of conveying, or carrying a thing from one place or country to another. See **Exportation.**

In matters of commerce, *tranſportation* is of equal import with re-exportation, *viz.* the taking up of commodities in one foreign ſtate or kingdom, bringing them hither, and paying duties for them; and then conveying them into ſome other foreign ſtate: by which it is diſtinguiſhed from *importation*, and *exportation*, where the commodities are either carried originally out of, or brought finally into, our own kingdom.

Our *tranſportation* or re-exportation of wool, butter, hides, tallow, herrings, beef, and ſalmon, which we *tranſport* from Ireland to other provinces, being the concerns of our merchants, and paying duties to his majeſty, have been reckoned at 300,000 *l.* *per annum.*

It would be tedious to enumerate the value of our *tranſportations* from Denmark, Sweden, Spain, Portugal, the Streights, Turkey, Guinea, &c. the moſt conſiderable is from the Eaſt-Indies. In the infancy of that trade, *viz.* in the year 1613, of pepper only, beſides what we conſumed at home, we *tranſported* in one year to other countries, after it had paid duty here, to the value of 200,000 *l.* and of late years our exportation of what we bring from thence, after we have ſupplied ourſelves, is computed at 500,000 *l.* ſterling. See **Navigation,** and **Commerce.**

Transportation is alſo a kind of puniſhment, or, more properly, an alleviation or commutation of puniſhment, for criminals convicted of felony, who, for the firſt offence, unleſs it be an extraordinary one, are ordinarily *tranſported* to the plantations, there to bear hard labour for a term of years, within which if they return, they are executed without farther trial. See **Felony, Punishment,** &c.

TRANSPOSITION, in algebra, the bringing any term of an equation over to the other ſide. See **Term.**

Thus, if $a+b=c$, and you may make $a=c-b$; b is ſaid to be *tranſpoſed.* See **Equation.**

Transposition, in grammar, a diſturbing or diſlocating of the words in a diſcourſe; or a changing of their natural order of conſtruction, to pleaſe the ear, by rendering the contexture more eaſy, ſmooth, and harmonious. See **Hyperbaton.**

A *tranſpoſition*, which renders the ſenſe perplexed, is vicious.—The conſtruction of the ancient languages being much more artful than that of the modern ones, allowed of much greater and more frequent *tranſpoſitions.* The Engliſh, French, &c. ſcare ever allow of them but in oratory and poetry; in which caſes they ſerve to give a force and energy to the diſcourſe or the verſe, and to prevent their languiſhing. See **Construction.**

Transposition, in muſic, is a changing of the notes of a piece of muſic, or the ſhifting a ſong from its former ſituation, to ſet it either higher or lower, or in another octave.

Of this there are two kinds; the firſt with reſpect to the *clef*, the ſecond with reſpect to the *key*.

Transposition *with reſpect to the clef*, conſiſts in changing the places or ſeats of the notes or letters among the lines and ſpaces; but ſo as that every note is ſet at the ſame letter. See **Clef.**

This is done either by removing the ſame clef to another line, or by uſing another clef, but with the ſame ſignature, by reaſon the piece is ſtill in the ſame key. See **Key.**

The practiſe is eaſy in either caſe: in the firſt, you take the firſt note at the ſame diſtance above or below the clef-note, in its new poſition as before; and all the reſt of the notes in the ſame relations or diſtances from one another; ſo that the notes are all ſet on lines and ſpaces of the ſame name.

In the ſecond, or ſetting the muſic to a different clef, it is to be obſerved, the places of the three clef notes are invariable in the ſcale, and are to one another in theſe relations, *viz.* the mean a 5th above the baſs, and the treble a 5th above the mean. Now to *tranſpoſe* to a new clef, *e. gr.* from the treble to the mean, where-ever that new clef is ſet, we ſuppoſe it the ſame individual note, in the ſame place of the ſcale, as if that piece were that part in a compoſition to which this new clef is generally appropriated; that ſo it may direct to the ſame notes we had before *tranſpoſition:* now, from the fixed relations of the three clefs in the ſcale, it will be eaſy to find the ſeat of the firſt *tranſpoſed* note; and then all the reſt are to be ſet at the ſame mutual diſtances they were at before. See **Scale.**

Suppoſe, *e. gr.* the firſt note of a ſong be *d*, a 6th above the baſs-clef; where-ever that clef is placed, the firſt note muſt be the greater 2d above it, becauſe a greater 2d above the mean is a greater 6th above the baſs-clef, the relation of thoſe two being a 5th.—So that the firſt note will ſtill be the ſame individual *d.*

The uſe of this *tranſpoſition* is, that if a ſong being ſet with a certain clef, in a certain poſition, the notes go far above or below the ſyſtem of five lines; they may, by the change of the place of the ſame clef in the particular ſyſtem, or by taking a new clef, be brought more within the compaſs of the lines,

Transposition *from one key to another*, is a changing of the key, or a ſetting all the notes of the ſong at different letters, and performing it, conſequently, in different notes upon an inſtrument. See **Key.**

The deſign hereof is, that a ſong which being begun in one note, is too high or low, or otherwiſe inconvenient for a certain inſtrument, may be begun in another note, and from that carried on in all its juſt degrees and intervals.

The clef and its poſition here remain the ſame; and the change is of the notes themſelves, from one letter, and its line or ſpace, to another.

In the former *tranſpoſition*, the notes were expreſſed by the ſame letters, but both removed to different lines, and ſpaces: in this, the letters are unmoved, and the notes of the ſong transferred to, or expreſſed by other letters, and conſequently ſet upon different lines and ſpaces, which, therefore, requires a different ſignature of the clef.

TRANSUBSTANTIATION, Transubstantiatio, in theology, the converſion or change of the ſubſtance of the bread and wine in the euchariſt into the body and blood of Jeſus Chriſt. See **Eucharist.**

Tranſubſtantiation, taken in its general and literal ſenſe, implies any change of one ſubſtance into another; thus the change of Moſes's rod into a ſerpent; of the waters of the Nile into blood; of Lot's wife into a pillar of ſalt, were preter-natural *tranſubſtantiations:* and the change of the food we eat, into the ſubſtance of our bodies, is a natural *tranſubſtantiation.* See SUBSTANCE.

But the word, in its proper and technical ſenſe, is reſtrained to the miraculous change which the Romiſh church holds is wrought in the ſacrament, by the conſecration of the prieſt.

One of the great articles of that church, rejected by the reformed, is that of *tranſubſtantiation*; the latter maintaining the *tranſubſtantiation* to be only figurative, and the former real. See PRESENCE, *&c.*

The reformed interpret *eſt, is*, in the text *hoc eſt corpus meum, this is my body*, by *ſignificat*; q. d. *this ſignifies my body:* but the council of Trent ſtand up ſtrenuouſly for the literal ſenſe of the verb: thus in *can.* 1. *ſeſſ.* 13. of that council, it is expreſly decreed, that in *tranſubſtantiation*, the body and blood of our Lord Jeſus Chriſt are truly, really, and ſubſtantially under the ſpecies of bread and wine.

It is added, that by *truly*, we mean *properly*, and not only by ſignification, as if the euchariſt were no more than a ſign of the body and blood of Jeſus Chriſt; that by *really*, we mean *in fact*, and not only in figure, as if the euchariſt were only a figure and repreſentation of the body and blood of the Saviour of the world; and that by *ſubſtantially*, we mean *in ſubſtance*, and not only in virtue and energy.—Thus is *truly* oppoſed to a ſimple ſign, *really* to a figure, and *ſubſtantially* to energy, or virtue.

TRANSUMPTION, TRANSUMPTIO, in the ſchools, a ſyllogiſm by conceſſion or agreement, uſed where a queſtion propoſed is transferred to another, with this condition, that the proof of this latter ſhall be admitted for a proof of the former.

Thus Ariſtotle, in his book *de cœlo*, undertaking to ſhew that all the ſtars are round, transfers the queſtion to the moon, and proves her rotundity from her increaſing and waining, ſuppoſing it a thing admitted by his opponents, that the ſtars are all alike.

TRANSVERSALIS, in anatomy, a name given to ſeveral muſcles, *&c.* in reſpect of their ſituation, progreſs, *&c.* as the

TRANSVERSALIS *abdominis*, a muſcle which lies under the obliqui, and ariſes from the cartilago xiphoides, from the extremities of the falſe ribs, from the tranſverſe apophyſis of the vertebræ of the loins, is fixed to the inner ſide of the ſpine of the ilium, and inſerted in the os pubis and linea alba.—See *Tab. Anat.* (Myol.) *fig.* 2. *n.* 29. *fig.* 7. *n.* 39.

This, with the obliqui, unites its tendons, as it approaches the linea alba, and is the only muſcle that is cut in the operation of the bubonocele: it has a fine and thin membrane that cloſes exactly its ring or hole through which the veſſels paſs. See OBLIQUUS.

TRANSVERSALIS *colli*, is a part of the *tranſverſalis dorſi*, which ſome divide into three, *viz.* the ſacer, ſemi-ſpinatus, and *tranſverſalis colli.*

It ariſes from the os ſacrum, and from all the tranſverſe proceſſes of the vertebræ of the loins, back and neck, except the two firſt, and is inſerted by ſo many diſtinct tendons into all their ſuperior ſpines: it moves the whole ſpine obliquely backwards.

TRANSVERSALIS *pedis placentini* comes from the bone of the metatarſus, that ſuſtains the toe next the little toe, and paſſing acroſs the other bones, is inſerted into the os ſeſamoides of the great toe: its uſe is to bring all the toes cloſe to one another.

TRANSVERSALIS *penis* ariſes from the iſchium juſt by the erectores, and runs oblique to the upper part of the bulb of the urethra.

It helps to preſs the veins upon the back of the penis, againſt the os pubis, which is the cauſe of erection. See ERECTION.

TRANSVERSALIS *Lumborum*, } See { SACER.
TRANSVERSALIS *Femoris*, } See { QUADRATUS.

TRANSVERSALIS is alſo a name given a ſuture of the cranium, becauſe of its tranſverſing or croſſing the face from one ſide to the other. See SUTURE.

It ariſes at one of the leſſer angles of the eye, and paſſing along the bottom of its orbit, and the root of the noſe, terminates in the other leſſer angle.

TRANSVERSE, ſomething that goes acroſs another from corner to corner. See TRAVERSE.

Thus bends and bars in heraldry are *tranſverſe* pieces or bearings. See BEND.—The diagonals of a parallelogram or a ſquare are *tranſverſe* lines. See DIAGONAL.

Lines which make interſections with perpendiculars, are alſo called oblique or *tranſverſe* lines. See PERPENDICULAR, OBLIQUE, *&c.*

TRANSVERSE *axis*, or *diameter*, called alſo the *firſt* or *principal axis.* See AXIS, DIAMETER, and LATUS *tranſverſum.*

The *tranſverſe* axis of an ellipſis, is the longer axis, or that which *traverſes* it lengthwiſe, in contra-diſtinction from the conjugate one. See ELLIPSIS, and CONJUGATE.

The *tranſverſe* axis of an hyperbola, is the line D K. *Tab. Conics, fig.* 17. cutting the curve in the points D and K. See HPPERBOLA.

TRANSVERSUM *Latus*, } See { LATUS.
Septum TRANSVERSUM, } See { SEPTUM.

TRANSVERSE *Muſcles*, in anatomy, are certain muſcles ariſing from the *tranſverſe* proceſſes of the vertebræ of the loins. See TRANSVERSALIS, and VERTEBRÆ.

TRANTERY, in ſome cuſtoms, denotes the money ariſing by amerciaments of ale-ſellers and victuallers for breaking the aſſize of bread and ale; particularly at Luſton, and other manours in Herefordſhire. See ASSISE.

TRAPEZIUS. See CUCULLARIS.

TRAVERSE, or TRANSVERSE, ſomething that goes athwart another, *i. e.* croſſes, and cuts it obliquely. See TRANSVERSE.

TRAVERSE is particularly uſed for a piece of wood or iron placed tranſverſely, to ſtrengthen and fortify another: ſuch are thoſe uſed in gates, windows, *&c.*

To plane a board againſt the grain, is alſo called among joiners, *&c.* to *traverſe* it.

TRAVERSE, in gunnery, ſignifies to turn or point a piece of ordnance, which way one pleaſes upon her platform. See ORDNANCE, CANNON, *&c.*

The laying or removing a piece of ordnance or a great gun, in order to bring it to bear, or lie level with the mark, is alſo called *traverſing the piece.* See GUNNERY, *&c.*

TRAVERSE, in fortification, denotes a trench with a little parapet, ſometimes two, one on each ſide, to ſerve as a cover from the enemy that might come in flank.

Traverſes are ſometimes covered over-head with planks, and loaded with earth.—They are very commodious for ſtopping an enemy's way, and to prevent being enfiladed. They likewiſe make a good defence in a dry foſs, in making the parapet on the ſide next the oppoſite flank.

TRAVERSE, in a wet foſs, is a ſort of gallery, made by throwing ſauciſſons, joyſts, faſcines, ſtones, earth, and other things into the foſs, over-againſt the place where the miner is to be put to the foot of the wall, in order to fill up the ditch, and make a paſſage over it. See GALLERY.

TRAVERSE alſo denotes a wall of earth or ſtone raiſed acroſs a work which is commanded, to cover the men.

TRAVERSE alſo ſignifies any retrenchment, or line fortified with faſcines, barrels or bags of earth, or gabions. See RETRENCHMENT.

TRAVERSE, in navigation, is the variation or alteration of a ſhip's courſe, occaſioned by the ſhifting of the winds, currents, *&c.* See COURSE.

Traverſe ſailing is uſed when a ſhip having ſet ſail from one port towards another whoſe courſe and diſtance from the port ſailed from is given or known, is, by reaſon of contrary winds, or other accidents, forced to ſhift and ſail on ſeveral courſes, which are to be brought into one courſe, to learn, after ſo many turnings and windings, the true courſe and diſtance made from the place ſailed from, and the true point or place where the ſhip is; that ſo the wind coming fair, it may be known how to ſhape a courſe for the place intended. See SAILING.

This may be performed geometrically two ways: the firſt, by drawing new meridians, through the extremity of every courſe, parallel to the firſt meridian, or north and ſouth line at firſt made, and ſetting off every courſe with a ſweep of 60, as it it were a queſtion in plain ſailing. You may alſo let fall perpendiculars to every new meridian, from the point that the ſhip ſailed to upon that courſe, by which you have the courſe, diſtance, difference of latitude, and departure to every courſe.

To illuſtrate this by an example: a ſhip being bound for a port diſtant 120 miles N. E. ½ E. ſails S. S. E. 30 miles, then N. E. by 40, then E. by N. 25, then N. N. E. 44; it is required to find the courſe and diſtance made good, and alſo the courſe and diſtance to the port bound for?

Draw the line H K (*Tab. Navigation, fig.* 17.) at pleaſure for a meridian, or north and ſouth line, and therein aſſume a point, as A, for the port ſailed from; then with 60 of the chords, and one foot in A, draw the arch L m, upon which ſet off two points (becauſe the courſe is S. S. E.) from L to m, and draw the line A m, upon which ſet off the diſtance 30, from A to B; then is the ſhip at B: thus letting fall the perpendicular B K, A K 27° 7′ is the difference of latitude, and B K 11° 5′, the departure for the firſt courſe.

For the ſecond courſe, with the diſtance K B, draw the parallel B N, and thereby with the chord of 60, as before, ſet off the ſecond courſe and diſtance, N. E. by N. 40, from B to C, and let fall the perpendicular C L, then is the ſhip at C, the difference of latitude upon that courſe is B L 33 : 3, and departure C L 22 : 2.

Proceed in the ſame manner for the third courſe, with the parallel C O, ſet off E. by N. 25, from C to D, and draw the line D P, from which ſet off the laſt courſe, N. N. E. 44, then is your ſhip at E.

Since then the ſhip came from A, and is now at E, the line A E meaſured on the ſame equal parts upon which all the other diſtances were taken, will be found 91 miles, and the arch R Q meaſured on the rhumbs, five points, *viz.* N. E. by E. ſo that the ſhip is now 91 miles N. E. by E. from the port ſailed from.

To find her courſe and diſtance to the port bound for, ſet off 4 half points upon the arch R Q from R to S, and from A through S draw the line A S F; upon which ſet off 120, the diſtance from the port ſailed from to the port bound for, from A to F; then is F the port bound for: now the port bound for being at F, and the ſhip being but at E, the line E F meaſured on the ſame equal parts that the reſt was taken from, will be found to be 31, and the arch T V meaſured on the chords, is 35° 12′, or N. E. by N. ſomewhat eaſterly, *&c.*

This method is uſeful, where the courſes tend generally one way, without interſecting one another; but if they often croſs, it is beſt to have recourſe to the ſecond method, which is without new meridians.

In order to this, obſerve how many points are between the point next to be laid down, and the point oppoſite to the courſe laſt laid down; for that is the point for laying down: then, with the chord of 60, and one foot in the point the ſhip is laſt come to, deſcribe an arch; upon which ſet off the points found by the aboveſaid rule, and through that draw the line for the next courſe, *&c.* For an example:

Draw a north and ſouth line, as in the former, as the line R M, *fig.* 17, n°. 2. in which aſſume a point, as at A, for the port ſailed from; then from A ſet off the firſt courſe and diſtance, *viz.* N. N. W. 68, from A to B; and for the ſecond courſe, with the chord of 60, and one foot in B, draw the arch T W, upon which to ſet off the next courſe S. S. W. 70, obſerve the rule above delivered, *viz.* to take the number of points between the point oppoſite to the laſt courſe ſailed, and the point you are next to ſail on. The reaſon of which rule is this: if from A to B your courſe be N. N. W. then back from B to A, muſt needs be S. S. E. the oppoſite point; and then if you were to ſail S. by E. it muſt be one point to the ſouthward of that S. S. E. line; if ſouth, it is two points, and conſequently the next courſe being S. S. W. you are to ſet off 4 points, upon which ſet off 70 miles, from B to C, and then is your ſhip at C: for the third courſe, if from B to C be S. S. W. then from C to B is N. N. E. but the next courſe being E. half N. the points between N. N. E. and E. half N. are five points and an half, and therefore with the chord of 60 and one foot in C, draw the arch X Y, upon which ſet off five points and an half from X to Y, and through Y draw the line C D, upon which ſet off 90 miles from C to D: then is your ſhip at D.

After the ſame manner lay down all the reſt, as D E, which is W. N. W. half N. 70, then E F ſouth 25, then F G, E. half S. 45; then laſtly G H, ſouth 30, which is the laſt courſe.

Thus your ſhip being at H, and the port ſailed from at A, the line A H 28 miles, is the diſtance made good; and the angle at A is four points, *viz.* S. E. but the port intended for, being S. W. 55. ſet it from A to K, and the ſhip being at H, the line H K, 62 miles, is the diſtance from the ſhip to the port bound for; and the courſe is found by meaſuring the angle at H 71° 48′ or W. S. W. more than a quarter weſterly, *&c.*

To work a Traverse *by the tables of difference of latitude and departure.*—This is the principal uſe thoſe tables are intended for; and the way of working a *traverſe* hereby, is equal to the beſt for exactneſs, and ſuperior in point of expedition.

Make a little table with ſix columns, the firſt for the courſe, the ſecond for the diſtance, the third for the northing, the fourth for the ſouthing, the fifth for the eaſting, the ſixth for the weſting. Then find the difference of the latitude and the departure to every courſe, and ſet them in their proper columns; as where the courſe is northerly, ſet the difference of the latitude under northing, or in the north column; and where the courſe is ſoutherly, ſet the difference of latitude in the ſouth column.

Again, where the courſe is eaſterly, ſet the departure in the eaſt column, and when weſterly, ſet it in the weſt column; then adding up each column by itſelf, ſubſtract the north and ſouth columns, the leſſer from the greater, the remainder is the northing or ſouthing made good. Alſo ſubſtract the eaſt and weſt columns, the leſſer from the greater, the remainder is the eaſting or weſting made good; then have you the difference of latitude and departure given, to find the courſe and diſtance.

In the firſt example above ſpecified, the firſt courſe is S. S. E. 30 miles, or two points 30 miles; for which I find the difference of latitude 27 : 7. Now the courſe being between ſouth and eaſt, I place my difference of latitude in the ſouth column, and my departure 11 : 5 in the eaſt column, leaving the north and weſt columns blank.

Then for the ſecond courſe N. E. by N. or three points 40 miles, my difference of latitude, 33 : 3 is to be placed in the north column, and the departure 22 : 2 in the eaſt column, becauſe the courſe is between the north and eaſt.

Then the third courſe being E. by N. or ſeven points, 25 miles, I place my difference of latitude 4 : 9 in the north column, and departure 24 : 5, in the eaſt column.

And ſo for the fourth courſe N. N. E. or two points 44 miles, I place my difference of latitude 40 : 6, in the north column, and my departure 16 : 8, in the eaſt column; then adding up each column, the ſum of the northing column is 78 : 8, and the ſum of the ſouthing column is 27 : 7, which ſubſtracted from the northing 78 : 8, the remainder 51 : 1, is the difference of latitude made good, which is northing, becauſe the northing was the greater number.

Again, the ſum of the eaſting column is 75 : 0, which, becauſe there is no weſting to ſubtract from it, is the eaſting made good. Thus you have the northing 51 : 1, and the eaſting 75 : 0 given, to find courſe and diſtance; and though you cannot find in the table the exact number of 51 : 1, and 75 : 0 together, yet find the neareſt you can, which is 75 : 4, and 50 : 9, over which at the top, you find 34 degrees for the courſe, which is N. E. by N. 0° 15′ eaſterly, and the diſtance 91 miles.

Traverse, in law, denotes the denial of ſome matter of fact, alledged to be done in a declaration, or pleadings; upon which the other ſide coming and maintaining that it was done, iſſue is joined for the cauſe to proceed to trial. See Issue, and Trial.

The formal words of a *traverſe* are in the law French, *ſans ceo*, in Latin, *abſque hoc*, and in Engliſh, *without that*, *&c.*

An anſwer, ſays Weſt (ſpeaking of bills in chancery) is that which the defendant pleadeth or ſaith in bar to avoid the plaintiff's bill or action, either by confeſſion and avoiding, or by denying and *traverſing* the material parts thereof. A replication is the plaintiff's reply to the defendant's anſwer, which muſt affirm and purſue his bill, and confeſs and avoid, deny or *traverſe* the defendant's anſwer.

A plea is nought which neither *traverſes* nor confeſſeth the plaintiff's title, *&c.* Every matter of fact alledged by the plaintiff, may be *traverſed* by the defendant, but not matter of law, or what is part matter of law, and part matter of fact; nor may a record be *traverſed*, as this is not to be tried by a jury.

If a matter be expreſly pleaded in the affirmative, which is expreſly anſwered in the negative, no *traverſe* is neceſſary, there being a ſufficient iſſue joined: alſo where the defendant hath given a particular anſwer in his plea, to all the material points contained in the declaration, he need not take a *traverſe*; for that when the thing is anſwered, there needs no further denial.

Traverse *of an indictment or preſentment*, is the contradicting or denying ſome chief point of it, and taking iſſue thereon. See Indictment, and Presentment.—Thus, in a preſentment againſt a perſon for a highway overflowed with water, for default of ſcouring a ditch, *&c.* he may either *traverſe the matter*, by alledging that there is no highway, or that the ditch is ſufficiently ſcoured; or he may *traverſe the cauſe*, *viz.* by alledging that he hath not the land, or that he and they whoſe eſtate, *&c.* have not uſed to cleanſe the ditch.

Traverse *of an office*, is the proving that an inquiſition made of lands or goods is defective, and untruly made. See Office, and Inquisition.

No perſon ſhall *traverſe* an office, unleſs he can make to himſelf a good right and title: and if one be admitted *to traverſe* an office, this admiſſion of the party to the *traverſe*, ſuppoſes the title to be in him, or elſe he had no cauſe of *traverſe*.

Traverse is ſometimes uſed in heraldry, for a partition of an eſcutcheon, of the figure repreſented in *Tab. Herald. fig.* 90. which they blazon parti per pal, *traverſe*, argent and gules.

Traverse *Tyles*. See the article Tyle.

TRAVESTY, or Travesti, a term which ſome late authors have introduced into poetry: it is originally French, being a participle of the word *traveſtir*, to diſguiſe one's ſelf, or to appear in maſquerade.—Hence *traveſty* comes to be applied to the diſguiſing of an author, or the tranſlating him into a ſtyle and manner different from his own; by which means it becomes difficult to know him. See Parody.

G. Battiſta Lalli has *traveſtied* Virgil, or turned him into Italian burleſque verſe. Scarron has done the ſame in French, and Cotton and Phillips in Engliſh verſe. See Burlesque.

Caſtalio is charged with having *traveſtied* the bible, by reaſon of the difference of air and ſtyle between his verſion and the original.

TRAUMATICS, ΤΡΑΥΜΑΤΙΚΑ, *Vulneraries*, or medicines good for the healing of wounds. See Vulnerary, and Agglutinant, Healing, Consolidation, *&c.*

TRAYL-BASTON, or Trail-Baston.—Edward I. in his 32d year, ſent out a new writ of inquiſition, under this denomination, againſt the intruders on other mens lands, who, to oppreſs the right owner, would make over their lands to great men; againſt batterers hired to beat men, breakers of peace, raviſhers, incendiaries, fighters, falſe Aſſiſors, and other malefactors: which inquiſition was ſo ſtrictly executed, and ſuch fines taken, that it brought in a world of treaſure to the king.

Hence alſo *juſtices of trayl-baſton*, a denomination given to the judges appointed to execute this commiſſion, either by reaſon of their ſevere and ſummary way of proceeding, or becauſe a ſtaff was delivered them as the badge of their office, and the offenders were dragged before this juriſdiction.

TRAYTOR, TRAITOR, TRADITOR, a betrayer of his king and country, or one guilty of high treaſon. See TREASON, and TRADITORES.

TRAYTEROUS, or TRAITEROUS *Poſition*, is particularly underſtood of a tenet, which ſome formerly held, of the legality of taking arms by the king's authority againſt his perſon, and thoſe commiſſioned by him: which is condemned by ſtatute 14 Car. II. c. 3.

TREACLE, in pharmacy, *&c.* See THERIACA.

TREACLE *Water*, *Aqua Theriacalis*. See WATER.

TREASON, TREACHERY, the act or crime of infidelity to one's lawful ſoveraign. See TRAYTOR.

Treaſon, in our laws, is of two ſorts, *high* and *petty*.

High TREASON, or TREASON *paramount*, is an offence committed againſt the ſecurity of the king or kingdom, whether by imagination, word, or deed.—Such are, to compaſs or imagine the death of the king, queen, or prince; or to deflour the king's wife, or his eldeſt daughter unmarried, or his eldeſt ſon's wife, or to levy war againſt the king in his realms, to adhere to his enemies, counterfeit his great ſeal, or money, to kill the king's chancellor, treaſurer, juſtices of either bench, juſtices in eyre, of aſſize, or of oyer and terminer, being in their place during their office, diminiſhing or impairing current money: ſaying that the king is a heretic or papiſt, or intends to introduce popery, *anno* 13 Car. II.

It is a maxim, that *in majori proditione, omnes ſunt principales*, there are no acceſſaries in *high treaſon*, all are principals. See ACCESSARY, and PRINCIPAL.

Alſo, that *voluntas non reputabitur pro facto, niſi in cauſa proditionis*, the will is never taken for the deed in any caſe, but that of *high treaſon*.

Though ſome *high treaſons* are much more heinous than others, yet the puniſhment appointed by law is the ſame in all (clipping and coining only excepted) which is, that the traitor be laid upon a hurdle or ſledge, drawn to the gallows, there hanged, but cut down while alive, the entrails pulled out and burnt before the criminal's face, then his head and quarters cut off, and impaled where the king ſhall judge meet.—Add to this, that he forfeits all his lands and goods whatever to the king, his wife loſes her dowry, his children their nobility, and all right of inheriting.

Even an ideot or lunatic, though judged incapable of moſt crimes, ſhall be puniſhed as a traitor, if he go about to kill the king.

For Petit or *Petty* TREASON. See PETTY *Treaſon*.

This kind gives forfeiture of lands by eſcheat to the lord of the fee. See ESCHEAT.

There is alſo mention made of *acumulative* and *conſtructive treaſon*, in the ſtatute 14 Car. II.

Miſpriſion of TREASON. See the article MISPRISION.

TREASURE, *Theſaurus*, θησαυρὸς, a ſtore or ſtock of money in reſerve. See TREASURER, and TREASURY.

TREASURE-*Trove*, q. d. *treaſure found*, in law, is when money, gold, ſilver, plate, or bullion, is found in the ground, in any place, and none knows to whom it belongs.

This ſhould naturally fall to the finder, but particular nations have made particular proviſions for it.—The Jews gave it the proprietor of the place where it was found: the Roman juriſprudence was various with regard hereto; ſometimes it was given to the maſter of the grounds, ſometimes to the finder, and ſometimes it was adjudged to the public treaſury.

In France and England the general uſage is to have ſuch *treaſure* ſequeſtered to the king, unleſs where the benefit thereof is expreſly granted or made over by the king to ſome other, as the lord of the manour.

In ſome places in France, it is divided into three parts, one for the king, one for the proprietor of the land, and one for the finder.

Briton ſays, it is every ſubject's part, as ſoon as he hath found any *treaſure* in the earth, to make it known to the coroner of the county, *&c.*

The puniſhment for concealing *treaſure* found in England, is impriſonment and fine; but if any mine of metal be found in any ground, it always appertains to the lord of the ſoil, except it be a mine of gold or ſilver, which anciently always belonged to the king, in whoſe ground ſoever it were found: but by an act of parliament, the king now hath only the præemption.

TREASURER, an officer to whom the treaſure of a prince or corporation is committed to be kept, and duly diſpoſed of in payment of officers, and other expences. See TREASURY.

Of theſe there is a great variety.—His majeſty of Great-Britain, in quality of elector of Brunſwic, is *arch-treaſurer* of the Roman empire. See ARCH-TREASURER.—In the ſtates of Poland are two *grand-treaſurers*, that of the kingdom of Poland, and that of the dutchy of Lithuania.

In England the principal officers under this denomination are the *lord high treaſurer*, the *treaſurer of the houſhold*, *treaſurer of the navy*, of *the wardrobe*, of *the king's chamber*, *&c.* See CHAMBERLAIN, *&c.*

Anciently we had likewiſe a *treaſurer of the exchequer*, *treaſurer of war*, *&c.*—In the Romiſh countries the title *treaſurer* is alſo given ſomewhat abuſively to an eccleſiaſtic, who has the keeping of the relicks, and the charters and archives of a church or monaſtery. See ARCHIVES, *&c.*

This dignity ſucceeds, in ſome meaſure, to that of the ancient deacons, who had the like charge in the primitive church. See DEACON.

Lord High TREASURER *of England*, is the third great officer of the crown; under whoſe charge and government is all the king's revenue kept in the exchequer. See REVENUE, and EXCHEQUER.

He receives the office by delivery of a white ſtaff to him from the king, and holds it during the king's pleaſure: anciently he received it by delivery of the golden keys of the treaſury.

He has the check of all the officers any way employed in collecting impoſts, cuſtoms, tributes, or other revenues of the crown. He has the gift of all the cuſtomers, comptrollers and ſearchers places in all the ports of London, and the nomination of the eſcheators in every county. See CUSTOM-*Houſe*, *&c.*

He alone, or others in commiſſion with him, letteth leaſes of all the crown lands, gives warrants to certain perſons of quality to have their wine cuſtom-free, *&c.*

The ancient ſalary was 383 *l.* but of late is ſaid to have been 8000 *l.* The office of lord *treaſurer* is now in commiſſion. See TREASURY.

Under TREASURER *of England*. See UNDER-*Treaſurer*.

TREASURER *of the houſhold* is an officer who, in the abſence of the lord ſteward, has power, with the comptroller and other officers of the green cloth, and the ſteward of the Marſhalſea, to hear and determine treaſons, felonies and other crimes committed within the king's palace. See HOUSEHOLD, GREEN-*Cloth*, *&c.*

TREASURER *of the Navy*, is an officer who receives money out of the exchequer, by warrant from the lord high *treaſurer*, or the lords commiſſioners executing that place, and pays all charges of the navy, by warrant from the principal officers of the navy. See NAVY.

TREASURY, the place wherein the revenues of a prince are received, preſerved, and diſburſed.

In England the *treaſury* is a part of the Exchequer, by ſome called the *lower exchequer*. See EXCHEQUER.

The officers of his majeſty's *treaſury*, or the lower exchequer, are the lord treaſurer, a chancellor, a ſecretary, two chamberlains, an auditor, four tellers, a clerc of the pells, uſhers of the receipt, a tally-cutter, *&c.* See each officer under his proper article, CHANCELLOR, TELLER, TALLY, *&c.*

At Rome, under the emperors, there were two kinds of *treaſuries*, the one called *ærarium*, wherein the monies deſtined to ſupport the charges of the government were kept; the other *fiſcus*, wherein were preſerved thoſe intended for the particular ſubſiſtence of the emperor and his court. In effect the ærarium belonged to the people, and the fiſcus to the prince. See ÆRARIUM, and FISCUS.

We have ſtill a reſemblance of this difference among us, but it is confounded in France, *&c.* where the king diſpoſes abſolutely of the public treaſure, *&c.*

Lords of the TREASURY.—In lieu of one ſingle director and adminiſtrator of his majeſty's revenues, under the title of lord high treaſurer; it is frequently thought proper to put that office in commiſſion, *i. e.* to appoint ſeveral perſons to diſcharge it with equal authority, under the title of lords commiſſioners of the *treaſury*. See TREASURER.

TREAT, in our old law-book, ſignifies as much as *taken out*, or *withdrawn*.—Thus a juror was challenged, becauſe he could not diſpend 40 *l.* and therefore was *treat* by the ſtatute, or diſcharged. *Old. Nat. Br.* See JUROR, *&c.*

TREATISE, TRACTATUS, a ſet diſcourſe in writing on any ſubject. See TRACT.

A *treatiſe* is ſuppoſed more expreſs, formal, and methodical than an eſſay; but leſs ſo than a ſyſtem. See ESSAY, *&c.*

TREATY, a covenant between ſeveral nations; or the ſeveral articles or conditions ſtipulated and agreed upon between ſoveraign powers. See ALLIANCE.

There are *treaties* of peace, of marriage, of confederacy, of neutrality, of capitulation, and of commerce and navigation. See PEACE, CONFEDERACY, *&c.*

The celebrated *treaties* are thoſe of Nimeguen, of Munſter, of the Pyreneans, of Weſtphalia, of Riſwick, of Utrecht, of Hanover, of Vienna, *&c.*

Treaties of commerce are uſually followed by various tarifs, to adjuſt the duties of exportation and importation of merchandizes into the reſpective dominions of the contracting powers.

The laſt *treaty* of peace, commerce, navigation, *&c.* between England and France, was ſigned at Utrecht the 1ſt of April 1713, and conſiſts of 39 articles, moſt whereof are regularly executed between the two nations, only ſome of the more particular ones cannot yet be executed, by reaſon of ſome difficulties in the tarifs. See TARIF.

Guarantee of a TREATY. See the article GUARANTEE.

TREBELLIANICA, or TREBELLIAN *Fourth*, in the Roman juriſprudence, a right belonging to an heir inſtituted by teſtament.—If the teſtator, after appointing a full and general heir, ſpent and diſpoſed of all his effects in legacies; or if he went *ultra dodrantem*, beyond three fourths thereof, in that caſe the heir was allowed to retrench and detain one fourth part of the legacies to his own uſe.—This was called the *Trebellianica*.

In like manner, if the teſtator charged his heir with a feoffment of truſt, and to reſtore the inheritance to another; in that caſe, the heir might likewiſe retain a fourth of the whole ſucceſſion, that the quality of heir might not be rendered wholly vain and fruitleſs.

TREBLE, in muſic, the higheſt or acuteſt of the four parts in ſymphony, or that which is heard the cleareſt and ſhrilleſt in a concert. See MUSICK, GRAVITY, and SYMPHONY.

In the like ſenſe we ſay, a *treble* violin, *treble* hautboy, *&c.* See VIOLIN, *&c.*

In vocal muſic, the *treble* is uſually committed to boys and girls.—Their part is the *treble*. See PART.

The *treble* is divided into firſt or higheſt *treble*, and ſecond or baſe *treble*.—The half *treble* is the ſame with the counter-tenor. See HARMONY.

TREBUCHET, TREBUCHETUM, a tumbrel, or cucking-ſtool. See CUCKING-STOOL.

TREDECILE. See the article ASPECT.

TREDDLE, or TREADLE, *Chalaza*, in natural hiſtory See the articles CHALAZA, and EGG.

TREE, *Arbor*, the firſt and largeſt of the vegetable kind, conſiſting of a ſingle trunk, out of which ſpring forth branches and leaves. See VEGETABLE, *&c.*

Standards, or TREES *in full air*, are ſuch as naturally riſe a great height, and are not topped.—For the choice of *trees* of this kind to be tranſplanted out of a nurſery, Quintiney recommends us to ſuch as are ſtraight, ſix foot high at leaſt, and five or ſix inches thick at bottom, and three or four at top; the bark pretty ſmooth and ſhining, as a token of their youth, and of the good ſoil they grew in. See TRANSPLANTATION, NURSERY, *&c.*

Dwarf TREES, are ſuch as are kept low, and never ſuffered to have above half a foot of ſtem.—Theſe are uſed to be kept vacant or hollow in the middle, that the branches ſpreading round about the ſides may form a kind of round bowl or buſh. See DWARF.

Wall TREES, are thoſe whoſe branches are ſtretched out, and nailed againſt walls. See WALL, and ESPALIER.

For dwarf and wall *trees*, ſuch are to be choſe out of the nurſery for tranſplantation, as are ſtraight, and conſiſt of a ſingle ſtem, and a ſingle graft, rather than two or three grafts in ſeveral branches: their thickneſs at bottom ſhould be two or three inches.

Fruit TREES, are ſuch as bear *fruit*. See the article FRUIT.

Timber TREES, are thoſe whoſe trunks are tall and ſtraight, whereof beams, maſts, *&c.* are uſed to be made. See TIMBER.

Coniferous TREES, are thoſe whoſe fruit is of a conical figure, as the pine, fir, larch, *&c.*—Theſe are alſo called *reſiniferous*, by reaſon coniferous *trees* are generally covered with a bark that abounds in reſin. See RESIN.

Mr. Ray, and other authors, ſpeak of ſeveral *trees* of prodigious bulk.—The jeſuit d'Acoſta, in his hiſtory of the Indies, *lib.* 4. *c.* 3. mentions a hollow *tree* at Tlacocharaya, three leagues from Gauxa in New Spain, nine fathom within-ſide near the ground, and ſixteen without-ſide. He adds, that it is under this *tree* the barbarians aſſemble to perform their religious ceremonies, dance round their idols, *&c.*—Herrera mentions another, which ſixteen men, joining hands, cannot fathom.—F. Kircher, in his *Latium*, *p.* 50. affirms, he has ſeen a *tree* near Gonzano which would lodge a whole family of 25 perſons in its cavity. The common people have a tradition, that it was planted by Auguſtus.

In the Indies there are very large foreſts conſiſting only of a ſingle *tree*, whoſe branches falling to the ground, take root, and put forth new *trees*: the fig *tree* and paretuvier are of this kind.

M. Lonvillers mentions *trees* in Peru, one part of whoſe branches produce fruit one half the year, and the other part the other half.—In China is a *tree* which bears tallow, whereof that nation make their candles. See TALLOW.

There are two or three very remarkable phænomena in the growth of *trees*, which have eſcaped the obſervation of the naturaliſts of all ages, except thoſe of our own: theſe are the perpendicularity of their trunks, or ſtems, to the horizon, and the paralleliſm of their tufts to the ſpot of earth they grow on. An account of each, ſee under the articles PERPENDICULARITY, and PARALLELISM.

For the planting, tranſplanting, ſemination, pruning, felling, grafting, ſhrowding, barking, *&c.* of *trees*; ſee the reſpective articles, PLANTING, TRANSPLANTING, SEMINATION, PRUNING, ENGRAFTING, *&c.*

Mr. Ray diſtinguiſhes the *trees* and ſhrubs of our native growth in England, into, I. Such as *have their flower disjoined, and remote from the fruit*:—which are,

1°. *Nuciferous* TREES, or ſuch as bear nuts: as the walnut *tree*, the hazle-nut *tree*, the beach, the cheſnut, and the common oak. See NUT.

2°. *Coniferous* TREES, or ſuch as bear a ſquammous or ſcaly fruit, of a conical figure, and a woody or hard ſubſtance, in which are many ſeeds; which, when they are ripe, the cone opens or gapes in all its ſeveral cells or partitions, and lets them drop out: of this kind are the Scotch firs, male and female; the pine, which, in our gardens is called the Scotch fir; the common alder *tree*, and the birch *tree*.

3°. *Bacciferous* TREES, or ſuch as bear berries; as the juniper and yew *tree*. See BACCIFEROUS.

4°. *Lanigerous* TREES, or ſuch as bear a woolly, downy ſubſtance: as the black, white, and trembling poplar, willows, and oſiers of all kinds. See LANUGO, TOMENTUM, *&c.*

5°. TREES *which bear their ſeeds*, (having an imperfect flower) *in leafy membranes and caſes*: as, the horn-beam, or hard-beam, called in ſome places the horn-beech.

II. Such as *have their fruits and flowers contiguous*; which are either with the flower placed on the top of the fruit, or adhering to the baſe or bottom of the fruit.

Of the former kind, ſome are *pomiferous*, as apples and pears; and ſome *bacciferous*, as the ſorb or ſervice *tree*, the white or haw-thorn, the wild roſe, ſweet-brier, currants, the great bilberry-buſh, honey-ſuckle, ivy, *&c.*

The latter kind are either ſuch as *have their fruit moiſt and ſoft when ripe*, as—1°. *Pruniferous* ones, whoſe fruit is pretty large and ſoft, with a ſtone in the middle; as the black thorn or ſloe *tree*, the black and white bullace *tree*, the common wild cherry, the black cherry, *&c.* See the article PRUNIFEROUS.

2°. *Bacciferous* TREES, as the ſtrawberry *tree* in the weſt of Ireland, miſletoe, water elder, the dwarf a large laurel, the viburnum or way-faring *tree*, the dogberry *tree*, the ſea black thorn, the berry-bearing elder, the privet, barberry, common elder, the holly, the buckthorn, the berry-bearing heath, the bramble, and the ſpindle *tree* or prickwood.

Or ſuch as *have their fruit dry when ripe*; as the bladder-nut *tree*, the box *tree*, the common elm and aſh, the maple, the gaule or ſweet willow, common heath-broom, dyers weed, furze or gorſe, the lime *tree*.

Heart of a TREE.	See	HEART.
Paralleliſm of rows of TREES,		PARALLELISM.

Diana's TREE, *arbor Dianæ*, among the chymiſts, is a kind of metalline vegetation, which after a long proceſs ſhoots out into branches, with the appearance of leaves, and even flowers. See ARBOR.

TREE *of Mars*, *arbor Martis*, is another very ſingular vegetation, firſt diſcovered accidentally by the younger Lemery. See ARBOR.

Dormant TREE,	See	DORMANT.
Roof TREES,		ROOF.

TREFOIL. See the article TRIFOLIUM.

TREMOR, TREMBLING, in medicine, a diſeaſe nearly akin to a convulſion, wherein there is ſomething of a convulſive motion or ſhaking, accompanying a voluntary or natural motion. See CONVULSION, and PARALYSIS.

A *tremor* is frequently found to ariſe upon the more violent paſſions, particularly anger, gluttony, venery, *&c.* but this is accidental and tranſitory.

A *tremor* is ſometimes apt to degenerate into other worſe diſeaſes, *viz.* palſey, apoplexy, lethargy, ſpaſmus, *&c.* In old men it is incurable. See TREPIDATION.

The medicine commonly made uſe of in *tremors*, and other nervous diſtempers, by the name of *palſey drops*, is no other than compound ſpirit of lavender. The moſt ſucceſsful way of uſing it, is by taking 30 or 40 drops twice or thrice a day, dropt on loaf ſugar or a little bread. It is ſuppoſed, that by this way the moſt ſpirituous and efficacious parts make their way directly by the nerves of the palate, *&c.* without undergoing the courſe of the circulation, as it is ſaid to do when taken in a liquid vehicle.

TREMOR *of the heart*. See the article PALPITATION.

TRENCH, a ditch cut, or dug in the ground, to drain off the waters in a meadow, a moraſs, or the like; or to divert the courſe of a river. See DITCH, *&c.*

Many of the bogs in Ireland have been drained, and made good ground, by only digging *trenches* around them.

TRENCHES, in fortification, are ditches which the beſiegers cut to approach more ſecurely to the place attacked; whence they are alſo called *lines of approach*.—See *Tab. Fortif. fig.* 21. *n.* 11, *&c.* See alſo DITCH, APPROACH, COUNTERTRENCH, *&c.*

They ſay, *mount the trenches*, that is, go upon duty in them.—To *relieve the trenches*, is to relieve ſuch as have been upon duty there. See MOUNTING.

The enemy is ſaid to have *cleared the trenches*, when they have driven away, or killed the ſoldiers who guarded them.

Tail of the TRENCH, is the place where it was begun. See TAIL.—And the *head* that to which it was carried. See HEAD, and ATTACK.

Trenches are of ſeveral ſorts, according to the nature of the ſoil: if the adjacent territory be rocky, the *trench* is only an elevation of bavins, gabions, wool-packs, or epaulements of earth, caſt round about the place—but where the ground may be eaſily opened, the *trench* is dug therein, and bordered with a parapet on the ſide of the beſieged. See PARAPET, *&c.*

The breadth of the *trenches* is from eight to ten foot, and the depth from ſix to ſeven; they are cut in talus, or aſlope. See TALUS.

The *trenches* are to be carried on with winding-lines, in ſome manner parallel to the works of the fortreſs, ſo as not to be in view of the enemy, nor to expoſe their length to the enemy's ſhot: for then they will be in danger of being enfiladed, or ſcoured by the enemy's cannon: this carrying of the *trenches* obliquely, they call carrying them by *coudees*, or returns. See ENFILADE.

Opening the TRENCHES, is when the beſiegers begin to work upon the line of approaches; which is uſually done in the night; ſometimes within muſket-ſhot, and ſometimes within half, or whole cannon-ſhot of the place, if there be no riſing ground about it, the garriſon ſtrong, and their cannon well ſerved. See OPENING.

The workmen that open the *trenches* are always ſupported by bodies of men againſt the ſallies of the beſieged; and ſometimes thoſe bodies lie between them and the place, as alſo on their right and left.

The pioneers ſometimes work on their knees; and the men that are to ſupport them lie flat on their faces, in order to avoid the enemy's ſhot; and the pioneers are likewiſe uſually covered with mantelets, or ſauciſſons.

To TRENCH *the ballaſt*, is a ſea phraſe, ſignifying to divide the ballaſt into ſeveral *trenches* in a ſhip's hold. See BALLAST.

TRENCHE', in heraldry. See the article TRANCHE'.

TRENCHING-*Plough*, is an inſtrument for cutting out the ſides of *trenches* and drains, or the ſides of turf, *&c.* See PLOUGH.

TRENTAL, TRIGINTAL, or TRICENNAL, a Romiſh office for the dead, conſiſting of thirty maſſes, rehearſed for thirty days ſucceſſively after the party's death.

The *trental* is thus called from the Italian, *trenta*, *triginta*, *thirty.*—It is mentioned *anno primo Ed.* VI. *Et volo, & ordino, quod executores mei ordinant ſeu ordinare faciunt unum* trental *pro ſalute animæ meæ.*

TREPANUM, TREPAN, a chirurgeon's inſtrument, ſerving to perforate a bone, eſpecially that of the cranium, and uſed as ſuch in the operation of *trepanning*. See TREPANNING.

It is alſo called *abaptiſton*, *anabaptiſton*, *modiolus*, *terebra*, *terebellum.*--*Abaptiſton*, from α privative, and βαπτίζω, *to dip*; as having a broad circle over its point, to prevent it, in the operation of trepanning, from penetrating through the membranes that inveſt the brain. — *Modiolus*, from *modus*, *a meaſure*; being contrived to enter only to a certain depth.—*Terebra*, *&c.* from τερέω, *to bore.*

It is in form of a terebellum, or ſmall wimble, only the handle indented, ſomewhat in manner of a round ſaw.

It ſerves for the cure of wounds, contuſions and fractures of the cranium, when they do not go beyond the ſecond table; for by means hereof, an amputation or exfoliation is made of what part, or quantity of a bone one pleaſes. See CRANIUM, FRACTURE, *&c.*

It has uſually a ſharp nail in the middle of its circumference, ſerving to keep it firm and ſteady during the operation.—It ſhould alſo have a kind of cope to riſe and fall as occaſion requires, that it may not go deeper in the bone than is neceſſary. There are alſo two-pointed *trepans*, others triangular, quadrangular, and hexagonal for the cure of a caries of the bones. —There are alſo perforative *trepans*, and exfoliative ones. See EXFOLIATION.

TREPANNING, in chirurgery, the operation of relieving cuts, contuſions, caries's, and fractures in the ſcull, by means of an inſtrument called the *trepanum*. See TREPANUM.

Trepanning is a very dangerous and difficult operation; not to be uſed, unleſs when the chips and prominences of the bones prick; when the upper table is entire, but depreſſed, and the lower broken; and when the extravaſated blood would endanger the perſon's being ſuffocated. See CRANIUM.

The manner of *trepanning* or opening the ſcull, is thus: the hairs being ſhaven off, the ſkin is to be cut through to the pericranium, avoiding, as much as poſſible, the muſcles of the temples, and the ſutures of the ſcull: and for this time the wound is to be bound up, unleſs there be ſo little blood ſpilt, that the pericranium may at the ſame time be pulled up from the bone.

After a few hours, ſtop the patient's ears, and take one of the inſtruments called a *male trepanum*, or *modiolus*; fix its point in the ſcull, but ſo far off the fracture, that it touch it not, much leſs the ſuture, with its teeth; though ſome ſurgeons do not mind to avoid the ſutures, but aſſure us, they have perforated them as ſucceſsfully as any other part.

Then, holding the inſtrument faſt with the left hand, turn it round with the right, till you have cut a pretty deep hole: after this take a *female trepanum*, which has no point in the middle, and turn it round as before: in the mean time, take away the duſt or chips that proceed from the perforation, and moiſten the inſtrument in oil and water to make it cool and ſlippery.

The blood appearing, will ſhew you are now gone as deep as the ſecond table, *i. e.* beyond the ſcull, to the dura mater; in which caſe you muſt preſs very gently, leſt that membrane be unadviſedly hurt.

When the bone begins to wag, put ſomething in between the ſides of the wound; looſen it, and take it out with a pair of ſurgeon's pincers, or forceps.

After the operation is over, the part is to be waſhed gently with weak red wine, and proper dreſſings applied thereon, as honey of roſes, arceus liniment, oil of St. John's wort, *&c.*— If the dura mater be corrupted, add, as occaſion requires, ſpirit of wine, tincture of myrrh and aloes, Venice turpentine, honey Ægyptiacum, *&c.*

Mr. Cheſelden takes notice, that the ſinus's and ſpine of the os frontis, make it very dangerous, if not impracticable, to apply a *trepanum* to the middle and lower part of the forehead.

TREPIDATION, in medicine, a tremor, or trembling of the nerves and members of the body. See TREMOR.

The firſt ſymptom of madneſs in dogs, is a *trepidation* of the members, *&c.* See HYDROPHOBIA.

TREPIDATION, in the ancient aſtronomy, denotes a libration of the eighth ſphere; or a motion which the Ptolemaic ſyſtem attributes to the firmament, to account for certain almoſt inſenſible changes and motions obſerved in the axis of the world; by means whereof the latitudes of the fixed ſtars come to be gradually changed, and the ecliptic ſeems to approach reciprocally, firſt towards one pole, then the other. See PTOLEMAIC, *&c.*

This motion is alſo called the motion of the firſt libration. See LIBRATION, and TITUBATION.

TRESPASS, in law, ſignifies any tranſgreſſion of the law, under treaſon, felony, or miſpriſion of treaſon. See TRANSGRESSION.

For a lord of parliament to depart from thence without the king's licence, is neither treaſon, nor felony, but *Treſpaſs. Staundford Pl. Cor.*

TRESPASS, however, is moſt commonly uſed either for that wrong or damage which is done to the king in his foreſt, or by one private man to another.

In this ſenſe it is of two ſorts: *treſpaſs general*, otherwiſe called *treſpaſs vi & armis*, where force or violence is uſed— and *treſpaſs ſpecial*, otherwiſe called *treſpaſs upon the caſe*; which ſhould be that done without force. See ACTION *on the caſe.*—But the two ſpecies are ſometimes confounded.

In an action of *treſpaſs*, the plaintiff always ſues for damages, or the value of the hurt done him by the defendant. See DAMAGES.

Treſpaſs is alſo divided into *local* and *tranſitory*.

TRESPASS *local*, is that which is ſo annexed to the place certain, that if the defendant join iſſue upon a place, and traverſe the place mentioned in the declaration, and aver it; it is enough to defeat the action. See LOCAL.

TRESPASS *tranſitory*, is that which cannot be defeated by the defendant's traverſe of the place, becauſe the place is not material.

The action of *treſpaſs*, *quare clauſum fregit*, ought to be local.

TRESSURE, in heraldry, a diminutive of an orle, uſually ſuppoſed to be half the breadth thereof. See ORLE.

It is uſually borne flory, and counter-flory; and ſometimes double, as in *Tab. Herald. fig.* 85. and ſometimes triple.

TRESTLE, TRESSEL, or TRUSSEL, is explained by Minſhieu to be a three-footed ſtool; more particularly a wooden frame or ſtand to bear up tables, ſcaffolds, or the like.

TRET, in commerce, an allowance made for the waſte, or the duſt that may be mixed with any commodity; which is always 4 pounds in every 104 pounds weight. See TARE.

TREUGA *Dei*, TREVE *de Dieu*. See TRUCE *of God*.

TRIA *prima*, among chymiſts, the three hypoſtatical principles, *viz.* ſalt, ſulphur, and mercury; of which they hold all bodies to be primarily made, and into which they are all held reſolvable by fire. See PRINCIPLE, and ELEMENT. See alſo SALT, SULPHUR, and MERCURY.

TRIAD, TRIAS, ΤΡΙΑΣ, a term ſometimes uſed for a trinity. See TRIAS, and TRINITY.

TRIAL, in law, the examination of any cauſe, whether civil or criminal, according to the laws of the realm, before a proper judge. See PROOF, *&c.*

Of this there are divers kinds: matters of fact, *e. gr.* being to be *tried* by the jurors; matters of law by the juſtice; matters of record by the record itſelf. See JURY, JUDGE, JUSTICE, RECORD, *&c.*

A lord of parliament, indicted of treaſon or felony, ſhall be *tried*, without any oath, by his peers, upon their honours and allegiance; but in appeal, at the ſuit of any ſubject, they ſhall be *tried* per bonas & legales homines. See PEER, and APPEAL.

If ancient demeſne be pleaded of a manour, and denied, this ſhall be *tried* by the record of domeſday. See ANCIENT *Demeſne*; and DOMESDAY.

Baſtardy, excommunication, lawfulneſs of marriage, and other eccleſiaſtical matters, ſhall be *tried* by the biſhop's certificate. See BASTARD, *&c.*

Before *trial* in a criminal caſe, it is uſual to aſk the criminal how he will be *tried*; which was anciently a very pertinent queſtion, though not ſo now; in regard there were formerly ſeveral ways of *trial, viz.* by *battle, ordeals,* and *jury.* See ORDEAL, and JURY.

When the criminal anſwered, by God and his country, it ſhewed he made choice to be *tried* by a jury.—But there is now no other way of *trial.*—This is alſo called *trying per pais, per patriam.*

For the ancient manner of *trial* by combat, and great aſſize, ſee COMBAT, DUEL, ASSISE, CHAMPION, &c.

TRIANGLE, in geometry, a figure comprehended under three lines, or ſides, and which of conſequence has three angles. See FIGURE, and ANGLE.

If the three lines or ſides of the *triangle* be all right, it is ſaid to be a *plain* or *rectilinear triangle.* See PLAIN, and RECTILINEAR.

If all the three ſides of the *triangle* be equal (as A B C, *Tab. Geometry, fig.* 68.) it is ſaid to be *equilateral.* See EQUILATERAL.

If only two of the ſides of the *triangle* be equal (as in D E F, *fig.* 69.) it is called an *iſoſceles*, or *equicrural triangle.* See ISOSCELES, &c.

If all the ſides of the *triangle* be unequal to each other (as in A C B, *fig.* 70.) the *triangle* is ſaid to be *ſcalenous.* See SCALENUS.

If one of the angles as K, (*fig.* 71.) of a *triangle* K M L be a right angle, the *triangle* is ſaid to be *rectangular.* See RECTANGLE.

If one of the angles as N, (*fig.* 72.) be obtuſe, the *triangle* is ſaid to be *obtuſangular*, or *amblygonous.* See AMBLYGON.

If all the angles be acute, as in A C B (*fig.* 68.) the *triangle* is ſaid to be *acutangular*, or *oxygonous.* See ACUTANGLE, &c.

If the three lines of the *triangle* be all curves, the *triangle* is ſaid to be *curvilinear.* See CURVILINEAR.

If ſome of the ſides be right, and others curve, the angle is ſaid to be *mixtilinear.*

If the ſides be all arches of great circles of the ſphere, the *triangle* is ſaid to be *ſpherical.* See SPHERICAL *triangle.*

Similar TRIANGLES,	See the articles	SIMILAR,
Baſe of a TRIANGLE,		BASE.
Canon of TRIANGLE,		CANON.
Legs of a TRIANGLE,		LEGS.

Conſtruction of TRIANGLES.—1. Two ſides, as A B and A C, *fig.* 73. being given in numbers, or otherwiſe, together with the quantity of the angle intercepted between them, A; to conſtruct a *triangle*—aſſume A B as a baſe; and in A make the given angle: on the other leg ſet off the other given line A C; laſtly, draw B C: then will A B C be the *triangle* required.

Hence, two ſides with the intercepted angle being determined, the whole *triangle* is determined.—Wherefore, if in two *triangles* A C B and *a c b*; $a = A$; and $ab : ac :: AB : AC$, the *triangles* are determined in the ſame manner, and are therefore ſimilar; conſequently $c = C$ and $b = B$, $ab : bc :: AB : BC$, &c.

2. Three ſides, A B, B C, and C A, *fig.* 68. being given, any two whereof, as A C, A B, taken together, are greater than the third, to conſtruct a *triangle.*—Aſſume A B for a baſe; and from A, with the interval A C, deſcribe an arch *y*; and from B, with the interval B C, deſcribe another arch *x*: draw the right lines A C and B C. Thus is the *triangle* conſtructed.

Hence, as of any three given right lines, only one *triangle* can be conſtructed; by determining the three ſides, the whole *triangle* is determined.

Wherefore, if in two *triangles* A C B and *a c b* (*fig.* 73.) $AC : AB :: ac : ab$; $AC : CB :: ac : bc$; the *triangles* are determined in the ſame manner, and conſequently are ſimilar, and therefore mutually equiangular.

3. A right line, as A B, and two adjacent angles A and B, which, taken together, are leſs than two right ones, being given; to deſcribe the *triangle* A B C.—On the given line A B, make the two given angles A and B: continue the ſides A C and B C till they meet in C. Then will A B C be the *triangle* required.

Hence, one ſide and two angles being given, the whole *triangle* is determined.—Wherefore, if in two *triangles* $A = a$ and $B = b$, the *triangles* are determined after the ſame manner, and therefore are ſimilar.

Menſuration of TRIANGLES.—To find the area of a *triangle*, multiply the baſe A B, *fig.* 74. by the altitude C *d*; half the product is the area of the *triangle* A B C.

Or thus: multiply half the baſe A B by the altitude C *d*; or the whole baſe by half the altitude; the product is the area of the *triangle.*

E. gr.	$AB = 342$	$AB = 342$	$\frac{1}{2}AB = 171$
	$Cd = 234$	$\frac{1}{2}CD = 117$	$Cd = 234$
	1368	2394	684
	1026	342	513
	684	342	342
	2) 80028 (	40014	40014 area
are as	40014		

Or, the area of any *triangle* is had by adding all the three ſides together, and taking half the ſum; and from that half ſum, ſubtracting each ſide ſeverally, and multiplying that half ſum and the remainder continually into one another, and extracting the ſquare root of the product.

Hence, 1. If between the baſe, and half the altitude; or between the altitude, and half the baſe, be found a mean proportional; it will be the ſide of a ſquare equal to the *triangle.*

2. If the area of a *triangle* be divided by half the baſe, the quotient is the altitude.

Properties of plain TRIANGLES.—1. If in two *triangles* A B C and *a b c* (*fig.* 73.) the angle A be $= a$; and the ſides $AB = ab$, and $AC = ac$; then will the ſide $BC = bc$, and the angles $C = c$, and $B = b$; and therefore the whole *triangles* will be equal and ſimilar.

2. If one ſide of a *triangle* A B C (*fig.* 75.) be continued to D, the external angle D A B will be greater than either of the internal oppoſite ones B or C.

3. In every *triangle*, the greateſt ſide is oppoſed to the greateſt angle, and the leaſt to the leaſt.

4. In every *triangle*, any two ſides taken together are greater than the third.

5. If in two *triangles*, the ſeveral ſides of the one be reſpectively equal to the ſides of the other, the angles will likewiſe be reſpectively equal; and conſequently the whole *triangles* equal and ſimilar.

6. If any ſide, as B C (*fig.* 76.) of a *triangle* A C B be continued to D, the external angle D O A will be equal to the two internal oppoſite ones *y* and *z* taken together.

7. In every *triangle*, as A B C, the three angles A, B, C, taken together, are equal to two right ones, or 180°.

Hence, 1. If the *triangle* be rectangular, as M K L (*fig.* 71.) the two oblique angles M and L, taken together, make a right angle, or 90°; and therefore are half right, if the *triangle* be iſoſceles.—2. If one angle of a *triangle* be oblique, the other two taken together are oblique likewiſe.—3. In an equilateral *triangle*, each angle is 60°.—4 If one angle of a *triangle* be ſubtracted from 180°, the remainder is the ſum of the other two; and if the ſum of two be ſubtracted from 180°, the remainder is the third.—5. If two angles of one *triangle* be equal to two of another, either together or ſeparately, the third of the one is likewiſe equal to the third of the other.—6. Since in an iſoſceles *triangle* D F E (*fig.* 69.) the angles at the baſe *y* and *v* are equal; if the angle at the vertex be ſubtracted from 180°, and the remainder be divided by 2, the quotient is the quantity of each of the equal angles: in like manner, if the double of one of the angles at the baſe *y* be ſubtracted from 180, the remainder is the quantity of the angle at the vertex.

8. If in two *triangles*, A B C, and *a b c* (*fig.* 73.) $AB = ab$, $A = a$ and $B = b$; then will $AC = ac$, $BC = bc$, $C = c$, and the *triangle* A C B equal and ſimilar to the *triangle a b c.*—Hence, if in two *triangles*, A C B and *a c b*, $A = a$, $B = b$, and $BC = bc$; then will $C = c$; conſequently $AC = ac$, $AB = ab$; and the *triangle* $ACB = acb$.

9. If in a *triangle* D F E the angles at the baſe *y* and *v*, *fig.* 69. be equal, the *triangle* is iſoſceles: conſequently, if the three angles be equal, it is equilateral.

10. If in a *triangle* A B C (*fig.* 77.) a right line D E be drawn parallel to the baſe, then will $BA : BC :: BD : BE :: AD : EC$. And $BA : AC :: BD : DE$. Conſequently the *triangle* B D E ſimilar to B A C.

11. Every *triangle* is inſcribable in a circle. See CIRCLE.

12. The ſide of an equilateral *triangle*, inſcribed in a circle, is in power triple of the radius. See RADIUS.

13. *Triangles* on the ſame baſe, and having the ſame height, that is, being between the ſame parallel lines, are equal. See PARALLEL.

14. Every *triangle*, as C F D (*fig.* 41.) is one half of a parallelogram A C D B on the ſame, or an equal baſe C D, and of the ſame altitude, or between the ſame parallels: or a *triangle* is equal to a parallelogram upon the ſame baſe, but half the altitude; or half the baſe, and the ſame altitude. See PARALLELOGRAM.

15. In every *triangle*, as well plain as ſpherical, the ſines of the ſides are proportional to the ſines of the oppoſite angles.

16. In every plain *triangle*, as the ſum of two ſides is to their difference, ſo is the tangent of half the ſum of the oppoſite angles, to the tangent of half their difference. See TANGENT.

17. If a perpendicular be let fall upon the baſe of an oblique angled *triangle*, the difference of the ſquares of the ſides is equal to double the rectangle under the baſe, and the diſtance of the perpendicular from the middle of the baſe.

18. The ſides of a *triangle* are cut proportionably, by a line drawn parallel to the baſe.

19. A whole *triangle*, is to a *triangle* cut off by a right line, as the rectangle under the cut ſides, is to the rectangle of the other two ſides.

20. In a right lined *triangle*, a line drawn from the right angle at the top perpendicular to the hypothenuſe, divides the *triangle* into two other right lined *triangles*, which are ſimilar to the firſt *triangle*, and to one another.

21. In every right-angled *triangle*, the ſquare of the hypothenuſe is equal to the ſum of the ſquares of the other two ſides. See HYPOTHENUSE.

22. If any angle of a *triangle* be biſſected, the biſſecting line will divide the oppoſite ſide, in the ſame proportion as the legs of the angle are to one another. See BISSECTION.

23. If the vertical angle of any *triangle* be biſſected, the difference of the rectangles, made by the ſides and the ſegments of the baſe, is equal to the ſquare of the line that biſſects the angle.

24. If a right line B E (*fig.* 78.) biſſect an angle A B C of a *triangle*, the ſquare of the ſaid line $BE = AB + BC - AE + EC$. Newt. *Arith. Univerſ.*

To divide a *triangle* into any given number of equal parts,—divide the baſe C D (*fig.* 77. *n.* 2.) into as many equal parts as the figure is to be divided into; and draw the lines A 1, A 2, *&c.*

Reſiſtance of a TRIANGLE, } See { RESISTANCE.
Characteriſtic TRIANGLE, } See { CHARACTERISTIC.

Properties of ſpherical TRIANGLES. See SPHERICAL *Triangle.*

TRIANGLE, in trigonometry.—The ſolution or analyſis of *triangles*, is the buſineſs of trigonometry. See TRIGONOMETRY. The ſeveral caſes thereof are reducible to the following problems.

Solution of plane TRIANGLES.—I. Two angles A and C (*Tab. Trigonometry, fig.* 27.) being given, together with ſide A B oppoſite to one of them, C; to find the ſide B C oppoſite to the other, A.—The rule or canon is this: as the ſine of the angle C, is to the given ſide A B, oppoſite to the ſame; ſo is the ſine of the other angle A, to the ſide required. The ſide B C, therefore, is commodiouſly found by the logarithms, from the rule for finding a fourth proportional to 3 numbers given. See LOGARITHM.

For an example: ſuppoſe C = 48° 35′, A = 57° 28′, A B = 74′. The operation will ſtand thus:

Log. of ſine of C 9.8750142
Log. of A B 1.8692317
Log. of ſine of A 9.9258681

Sum of log. of A B and of ſine of A } 11.7950998
Log. of B C 1.9200856. The number correſponding to which, in the table of logarithms, is 83, the quantity of the ſide ſought.

2. Two ſides A B and B C, together with the angle C, oppoſite to one of them given; to find the other angles A and B.—The rule is this; as one ſide A B is to the ſine of the given angle oppoſite thereto C; ſo is the other Side B C, to the ſine of the angle required oppoſite thereto.

E. gr. ſuppoſe A B = 94′, B C = 69′, C = 72° 15′.
Log. of A B 1.9731279
Log. of ſine of C 9.9788175
Log. of B C 1.8388491

Sum of log. of ſine of C and of B C } 11.8176666
Log. of ſine of A 9.9444387. The number correſponding to which, in the table of logarithms, is 61° 37′. Now the given angle C being 72° 15′, the ſum of the two 133° 52″ ſubtracted from 180, the ſum of the three, gives 46° 8′ for the other angle ſought B.

In like manner, ſuppoſe, in a right angled *triangle*, (*fig.* 28.) that beſide the right angle, A, is given the hypothenuſe B C, 49, and the cathetus A C, 36, to find the angle B; then will the operation ſtand thus:

Log. of B C 1.6901961
Log. of whole ſine 10.0000000
Log. of A C 1.5563025

Log. of ſine of B 9.8661064. The correſponding number to which, in the table of logarithms, is 47° 16′; conſequently, C = 42° 44′.

3. Two ſides B A and A C, together with the included angle A being given; to find the two remaining angles.—I. If the *triangle* A B C be rectangular; take one of the ſides including the right angle, as A B, for radius; then will C A be the tangent of the oppoſite angle B: the rule then is—As one leg A B, is to the other A C; ſo is the whole ſine to the tangent of the angle B.

E. gr. ſuppoſe B A 79, and A C 54;
Log. of B A 18976271
Log. of A C 17323938
Log. of whole ſine 100000000

Log. of tang. of B 9.8347667; the correſponding number to which, in the table of logarithms, is 34° 21′; conſequently the angle C is 55° 39′.

II. If the *angle* A be oblique (*fig.* 27.) the rule is; as the ſum of the given ſides A B and A C (*fig.* 29.) is to their difference; ſo is the tangent of half the ſum of the ſought angles C and B, to the tangent of half the difference. Adding, therefore, the half difference, to the half ſum; the aggregate will be the greater angle C; and ſubtracting the half difference from the half ſum; the remainder is the leſs angle B.

E. gr. ſuppoſe A B = 75′, A C 58′, A 108° 24′; then will
A B 75 A B 75 A + B + C 179° 60′
A C 58 A C 58 A 108 24

Sum 133 differ. 17 B + C 71 36
$\frac{1}{2}(B+C)$ 35 48

Log. of A B + A C 2.1238516
Log. of A B — A C 1.2304489
Log. of tang. $\frac{1}{2}(B+C)$ 9.8580694

Sum of logg. 12.0885183
Log. of tang. $\frac{1}{2}(C-B)$ 8.9646667. The correſponding number to which is 5° 16′.

$\frac{1}{2}(B+C) = 35°\ 48'$ $\frac{1}{2}(B+C) = 35°\ 48'$
$\frac{1}{2}(C-B) = 5°\ 16'$ $\frac{1}{2}(C-B) = 5°\ 16'$

C = 41 4 B = 30 32

4. The three ſides, A B, B C and C A (*fig.* 30.) being given, to find the angle A, B and C.—From the vertex of the angle A, with the extent of the leaſt ſide A B, deſcribe a circle: then will C D be = the ſum of the legs A C and A B; and C F their difference.—The rule then is,

As the baſe B C is to the ſum of the legs C D; ſo is the difference of the legs C F, to the ſegment of the baſe C G.—This ſegment, thus found, being ſubtracted from the baſe C B, the remainder is the chord G B. Then, from A to the chord G B let fall the perpendicular A E; thus will $BE = EG = \frac{1}{2} GB$.

Thus in a rectangled *triangle*, A E B, the ſides A B and B E being given; or, in an obliquangled *triangle*, A C E the ſides A C and C E being given: the angles B and A are found.

E. gr. ſuppoſe A B = 36, A C = 45, B C = 40.
A C = 45 A C = 45
A B = 36 A B = 36

A C + A B = 81 F C = 9
Log. of B C = 1. 6020600
Log. of A C + A B 1. 9084850
Log. of F C = 0. 9542425

Sum of logg. = 2. 8627275

Log. of C G = 1. 2606675; the correſponding number to which, in the tables, is 18.
B C = 4000 E G = 1089
C G = 1822 C G = 1822

B G = 2178 C E = 2911

B E = 1089
Log. of A B = 3.5563025
Log. of whole ſine = 10.0000000
Log. of E B = 3.0370279

Log. of ſine of E A B = 9.4807254, the correſponding number to which in the tables is 17° 36′. Conſequently the angle A B E 72° 14′
Log. of A C = 3.6532125
Log. of whole ſine 10.0000000
Log. of C E = 3.4640422

Log. of ſine of E A C = 9.8108297; to which the correſpondent number in the tables is 40° 18′; therefore A C E 49° 42′; and C A B 57° 54′.

Solution of right-angled ſpherical TRIANGLES, *by the common rules.*—I. In a right-angled ſpherical *triangle*, any two parts beſide the right-angle, being given, to find any of the reſt.

1. Conſider whether the parts, which come to the queſtion, be conjunct or disjunct. (See PART.) If the disjunct be oppoſite to each other; as, if the hypothenuſe B C, and the angle C (*fig.* 31.) be given, to find the oppoſite leg A B; then the rule is:—As the whole ſine is to the ſine of the hypothenuſe B C; ſo is the ſine of the angle C, to the ſine of the oppoſite leg A B. 2. If the disjunct parts be not oppoſite to each other; as, if A B, and the adjacent angle B be given for the oppoſite angle C; the ſides of the *triangle* are to be continued one way, till they become quadrants, that you may thus have a new *triangle*, wherein the parts that come into the queſtion are mutually oppoſite to each other; as, in our caſe, the *triangle* E B F, wherein we have given B F, the complement of the leg A B, and the angle B for E F, the complement of the angle C. The rule then is:—As the whole ſine is to the ſine of B F; ſo is the ſine of the angle B to the ſine E F, or co-ſine of C.

3. If the hypothenuſe be not among the conjunct parts, as if the legs A B and A C be given for an angle oppoſite to one of them; the rule is,—As the ſine of A C is to the whole ſine; ſo is the tangent of A B, to the tangent of C.

4. But if the hypothenuſe be found among the conjunct parts, as if the hypothenuſe B C and the angle C be given to find the adjacent ſide A C; the ſides of the *triangle* are to be continued one way till they become quadrants, that we may have a new *triangle*, wherein the hypothenuſe is not among the parts that come into the queſtion; *e. gr.* in our caſe, the *triangle* E B F,

wherein are given the complement E B of the hypothenuſe B C, and the complement of the angle C, and the angle F the complement of the leg A C. Since then, in the *triangle* E F B, the hypothenuſe does not come in the queſtion, the rule is as before:

As the ſine of E F, or co-ſine of C, is to the whole ſine; ſo is the tangent of E B, or co-tangent of B C, to the tangent of F, or co-tangent of A C.

5. When the ſides of a *triangle* are to be continued, it is the ſame thing which way ſoever they be produced, provided no acute angle come into the queſtion, otherwiſe the ſides are to be continued through the other oblique one. If both be in the connection, the ſides are to be continued through that adjacent to the ſide in queſtion.

By this means a *triangle* is always obtained wherein the thing required is found, either by the rule of ſines or tangents.

Solution of right-angled ſpherical TRIANGLES, *by one catholic rule.*—Conſider, as before, whether the parts that come in queſtion be conjunct or disjunct. See PART.

If either one, or both the ſides, including the right-angle, come into the queſtion; for it, among the data, write its complement to a quadrant.—Since then by the catholic rule, delivered under the article trigonometry, the whole ſine, with the ſine complement of the middle part, is equal to the ſines of the disjunct parts, and the co-tangents of the conjunct parts; from the ſum of thoſe data ſubſtract the third datum; the remainder will be ſome ſine or tangent, the ſide or angle correſponding to which, in the artificial canon of *triangles* is the ſide or angle ſought.

This univerſal rule being of great ſervice in trigonometry, we ſhall apply it to the various caſes thereof, and illuſtrate it with examples; which examples, in the caſe of disjunct or ſeparate parts will at the ſame time illuſtrate the common method, but in the caſe of contiguous parts admits of other ſolutions.

1. Given the hypothenuſe B C 60° and the angle C 23° 30′, to find the oppoſite leg A B (*fig.* 22.)—Since A B is the middle part, C and B C are disjunct (See PART); the whole ſine, with the co-ſine of the complement A B, *i. e.* with the ſine itſelf of A B, is equal to the ſines of C and B C.

Therefore from ſine of C 96006997
Sine of B C 99375306

Sum 195382303
Subtract whole ſine 100000000
Remain ſine of A B 9.5382303. The correſponding number to which, in the canon, is 20° 12′ 6″.

2. Given the hypothenuſe B C 60° and the leg A B 20° 12′ 6″ to find the oppoſite angle C.——It is evident from the preceding problem, that from the ſum of the whole ſine, and the ſine of the leg A B, the ſine of the hypothenuſe B C is to be ſubtracted, the remainder is the ſine of the angle C. The example therefore of the former caſe is eaſily converted into an example of this.

3. Given the leg A B 20° 12′ 6″ and the oppoſite angle C 23° 30′, to find the hypothenuſe B C.—'Tis evident from the firſt caſe, that from the ſum of the whole ſine, and the ſine of A B is to be ſubtracted the ſine of the angle C, and the remainder is the ſine of the hypothenuſe B C.

4. Given the hypothenuſe B C 60°, and one leg A B 20° 12′ 16″ to find the other leg.—Since B C is a mean part, and A B and A C are disjunct parts, the whole ſine, with the co-ſine of the hypothenuſe B C, are equal to the ſines of the complements; *i. e.* to the co-ſines of the legs A B and A C.

Therefore from the whole ſine 100000000
Co-ſine of B C 96989700

Sum 196989700
Subtract co-ſine of A B 99724279

Remains co-ſine of A C 97265421. The correſponding number to which, in the canon, is 32° 11′ 34″; therefore A C 57° 48′ 26″.

5. Given the legs A C 57° 48′ 26″ and A B 20° 12′ 6″, to find the hypothenuſe B C.—'Tis evident from the preceding caſe, that the whole ſine is to be ſubtracted from the ſum of the co-ſines of the legs A B and A C; the remainder is the co-ſine of the hypothenuſe B C. The example, therefore, of the preceding caſe is eaſily applied to this.

6. Given the leg A C 57° 48′ 26″ and the adjacent angle C 23° 30′ to find the oppoſite angle B.——Since B is a middle part, and A and C disjunct parts; the whole ſine, with the co-ſine of B, is equal to the ſine of C, and the ſine of the complement, *i. e.* to the co-ſine of A C;

Therefore from the ſine of C 96006997
Co-ſine A C 97265421

Sum 193272418
Subtract whole ſine 100000000

Remains co-ſine of B 93272418. The number correſponding to which, in the canon, is 12° 15′ 56″; therefore B 77° 44′ 4″.

7. Given the leg A C 57° 48′ 26″ and the oppoſite angle B 77° 44′ 4″ to find the adjacent angle C.—'Tis evident from the preceding caſe, that the co-ſine of A C is to be ſubtracted from the ſum of the whole ſine, and the co-ſine of B; the remainder is the ſine of C. The former example, therefore, is eaſily accommodated to the preſent caſe.

8. Given the oblique angles B 77° 44′ 4″ and C 23° 30′, to find the leg adjacent to the other, A C.—From problem the ſixth, 'tis evident that the ſine of C is to be ſubtracted from the ſum of the whole ſine, and the co-ſine of B; and that the remainder is the co-ſine of A C. The example of the ſixth problem is eaſily applied to this.

9. Given the leg A C 57° 48′ 26″ and the adjacent angle C 23° 30′, to find the oppoſite leg A B.—Since A C is a mean part, and C and A B conjunct parts; the whole ſine, with the ſine of A C, is equal to the co-tangent of C, and the tangent of A B.

Therefore from the whole ſine 100000000
Sine of A C 99275039

Sum 199275039
Subtract co-tangent of C 103616981
Remains tangent of A B 95658058. To which the correſponding number in the canon, is 20° 12′ 6″.

10. Given the leg A B 20° 12′ 6″ and the oppoſite angle C 23° 30′, to find the adjacent leg A C.—From the ſum of the co-tangent of C, and the tangent of A B, ſubtract the whole ſine; the remainder is the ſine of A C.

11. Given the legs A B 20° 12′ 6″, and A C 57° 48′ 26″, to find the angle C, oppoſite to one of them.—From the ſum of the whole ſine, and ſine of A C, ſubtract the tangent of B A; the remainder is the co-tangent of C.

12. Given the hypothenuſe B C 60°, and the oblique angle C 23° 30′, to find the adjacent leg A C.——Since C is a middle part, and B C and A C conjoint parts; the whole ſine, with the co-ſine of C, will be equal to the co-tangent of A C.

Therefore from whole ſine 100000000
Co-ſine of C 99623978

Sum 199623978
Subtract co-tangent of B C 97614394
Remains tangent of A C 102009584. The number correſponding to which, in the tables, is 57° 48′ 26″.

13. Given the leg A C 57° 48′ 26″, and the adjacent angle C 23° 30′, to find the hypothenuſe B C.

From the ſum of the whole ſine, and the co-ſine of C, ſubtract the tangent of A C, the remainder is the co-tangent of B C.

14. Given the hypothenuſe B C 60°, and the leg A C 57° 48′ 26″, to find the adjacent angle C.

From the ſum of the co-tangent of B C, and tangent of A C, ſubtract the whole ſine; the remainder is the co-ſine of C.

15. Given the hypothenuſe B C 60°, and one angle C 23° 30′, to find the other, B.

Since B C is the middle part, and B and C disjunct parts, the whole ſine, with the co-ſine of B C will be equal to the co-tangents of B and C.

Therefore from whole ſine 100000000
Co-ſine of B C 96989700

Sum 196989700
Subtract co-tangent of C 103616981
Remains co-tangent of B 93372719; the correſponding number to which, in the cannon, is 12° 15′ 56″; therefore B is 77° 44′ 4″.

16. Given the oblique angles B 77° 44′ 4″ and C 23° 30′, to find the hypothenuſe B C.—From the ſum of the co-tangents of C and B, ſubtract the whole ſine; the remainder is the co-ſine of B C.

Solution of oblique-angled ſpherical TRIANGLES.—1. In an oblique-angled ſpherical *triangle* A B C (*Tab. Trigonometry, fig.* 32.) two ſides A B and B C being given, together with an angle A, oppoſite to one of them, to find the other C: the rule is,

As ſine of the ſide B C, is to the ſine of the oppoſite angle A; ſo is the ſine of the ſide B A, to the ſine of the oppoſite angle C.

Suppoſe, for example, B C 39° 29′; A 43° 20′; B A 66° 45′; then will

Sine of B C 98033572
Sine of A 98364771
Sine of B A 99632168

197996939
Sine of C 99963367. The correſponding number to which, in the tables, is 82° 34′ 7″.

2. Given two angles C 82° 34′ 7″, and A 43° 20′, together with the ſide A B 60° 45′, oppoſite to one of them C; to find the ſide B C oppoſite to the other of them A; ſay, as ſine of angle C is to ſine of the oppoſite ſide A B;

ſo is ſine of angle A to ſine of oppoſite ſide B C.—The former example may ſuffice for the preſent caſe.

3. Given two ſides A B 66° 45′, and B C 39° 29′, together with an angle oppoſite to one of them A 45° 20′; to find the angle included by them B.—Suppoſe the angle C to be acute, ſince the other, A, is alſo acute, the perpendicular B E falls in with the *triangle*. In the rectangled *triangle* A B E, therefore, from the given angle A, and ſide A B, find the angle A B E. Since B E is aſſumed as a lateral part in the *triangle* A E B, the angle E B C is a middle part, and the ſide B C a conjoint part: the co-ſine of the angle E B C will be found by ſubtracting the co-tangent of A B from the ſum of the co-ſine of the angle A B E, and the co-tangent of B C. If then the angles A B E and E B C be added together, or in caſe the perpendicular fall without the *triangle*, be ſubtracted from each other, you will have the angle required B.

E. gr.	whole ſine	10000000
	Co-ſine of A B	95963154
	Sum	195963154
	Co-tang. of A	100252805

Co-tang. of A B E 95710349. The number correſponding to which, in the tables, is 20° 25′ 35″. A B therefore is 69° 34′ 25″.

Co-ſine of A B E	95428300
Co-tang. of B C	100141529
Sum	196269829
Co-tang. of A B	96330085

Co-ſine of E B C 99938544. The number correſponding to which, in the tables, is 80° 24′ 26″. Therefore A B C is 79° 9′ 59″.

4. Given two angles A 43° 20′, and B 79° 9′ 59″, together with the adjacent ſide A B 66° 45′, to find the ſide B C oppoſite to one of them.

From one of the given angles B, let fall a perpendicular E B, to the unknown ſide A C; and in the rectangled *triangle* A B E from the given angle A, and hypothenuſe A B, find the angle A B E; which ſubtracted from the angle A B C, leaves the angle E B C. But if the perpendicular ſhould fall without the *triangle*, the angle A B C ſhould have been ſubtracted from A B E. Since as the perpendicular B E is taken for one of the lateral parts, the middle part in the *triangle* A B E, is the angle B, and the conjoint part A B; in the *triangle* E B C the middle part is the angle B, and the conjunct part B C; the co-tangent of the ſide B C is found by ſubtracting the co-ſine of E B A, from the ſum of the co-tangent of A B, and the co-ſine of E B C.—The example of the preceding caſe is eaſily applied to this.

5. Given two ſides A B 66° 45′, and B C 39° 29′, with the angle A oppoſite to one of them, 43° 20′; to find the third ſide A C.

Letting fall, as before, the perpendicular B E; in the rectangled *triangle* A B E, from the given angle and hypothenuſe A B, find the ſide A E. Since aſſuming B E for a lateral part in the *triangle* A E B, A B is the middle part, and A E the ſeparate part; and in the *triangle* B E C, B C is the mean part, and E C a disjunct part; the co-ſine of E C is found by ſubtracting the co-ſine of A B from the ſum of the co-ſines of A E and C B. If then the ſegments A E and E C be added together, or in caſe the perpendicular fall without the *triangle*, be ſubtracted from each other, the ſide A C will be had.

6. Given two ſides A C 65° 30′ 46″, and A B 66° 45′, together with the included angle A 43° 20′; to find the third ſide B C oppoſite thereto.

Letting fall the perpendicular B E, find, in the rectangled *triangle*, the ſegment A E; which ſubtracted from A C, leaves E C. If the perpendicular fall without the *triangle*, A C is to be ſubtracted from A E. Since by aſſuming the perpendicular B E for a lateral part in the *triangle* A E B, A B becomes a middle part, and A E a ſeparate part: in the *triangle* E B C, C B is the middle part, E C a ſeparate part: the co-ſine of B C is found by ſubtracting the co-ſine of A E from the ſum of the co-ſines of A B and E C.

7. Given two angles A 43° 20′, and B 79° 9′ 59″, together with the ſide C B 39° 29′, oppoſite to one of them; to find the ſide A B adjacent to both.

Letting fall the perpendicular C D from the unknown angle C, to the oppoſite ſide A B; and that falling within the *triangle*; from the given angle B, and the hypothenuſe B C, ſeek in the rectangled *triangle* B C D for the ſegment B D. Since aſſuming the perpendicular C D for a lateral part in the *triangle* C D B, D B is the mean part, and the angle B a conjunct part; and in the *triangle* C D A, A D is the middle part, and the angle A a conjunct part: the ſine of the ſegment A D is found by ſubtracting the co-tangent of the angle B from the ſum of the ſine of D B, and the co-tangent of the angle A. If then the ſegments A D and D B be added, or in caſe the perpendicular fall without the *triangle*, be ſubtracted from each other, the reſult will be ſide A B required.

8. Given two ſides A B 66° 45′, and B C 39° 29′, with the included angle 79° 9′ 59″; to find the angle A oppoſite to one of them.

Letting fall the perpendicular C D, find the ſegment B D, as in the preceding problem. This ſubtracted from A B leaves A D. If the perpendicular fall without the *triangle*, A B is to be added to D B. And ſince by aſſuming the perpendicular C D for a lateral part in the *triangle* C D B, B D is the middle part, and the angle B a conjoint part; and in the *triangle* C D A, A D is the middle part, and the angle A a conjoint part: the co-tangent of the angle A is found by ſubtracting the ſine of D B from the ſum of the co-tangent of the angle B, and of the ſine of A D.

9. Given two angles A 43° 20′, and B 79°, 9′ 59″, together with the adjacent ſide A B 66° 45′; to find the angle C oppoſite to the ſame.

From one of the given angles B, letting fall the perpendicular B E, to the oppoſite ſide A C; in the rectangled *triangle* A B E, from the given angle A, and hypothenuſe A B, we find the angle A B E; which ſubtracted from A B C, leaves the angle E B C. In caſe the perpendicular fall without the *triangle*, A B C is to be ſubtracted from A B E. Since by aſſuming B E for a lateral part in the *triangle* C E B, the angle C is a middle part, and the angle C B E a disjunct part; and in the *triangle* A B E, the angle A is the middle part, and the angle A B E the disjoint part: the co-ſine of the angle C is found by ſubtracting the ſine of the angle A B E, from the ſum of the co-ſine of the angle A, and the ſine of E B C.

10. Given two angles A 43° 20′, and C 82° 34′, together with a ſide B A 66° 45′, oppoſite to one of them; to find the other angle.

From the ſought angle B, let fall a perpendicular B E; and in the right-angled *triangle* A E B, from the given angle A, and hypothenuſe B A, find the angle A B E. Since aſſuming the perpendicular E B for a lateral part in the *triangle* E C B, the angle C is the middle part, and the angle C B E a disjunct part; and in the *triangle* A B E, the angle A is the middle part, and the angle A B E a disjunct part: the ſine of the angle E B C is found by ſubtracting the co-ſine of A from the ſum of the co-ſine of C, and of the ſine of A B E. If then A B E and E B C be added, or in caſe the perpendicular fall without the *triangle*, be ſubtracted from each other, the reſult will be angle required A B C.

11. Given the three ſides, to find an angle oppoſite to one of them.—I. If one ſide A C, (*fig.* 16.) be a quadrant, and the leg A B leſs than a quadrant, find the angle A. Continue A B to F, till A F become equal to a quadrant; and from the pole A draw the arch C F, to cut the arch B F at right angles in F. Since in the rectangled *triangle* C B F, we have given the hypothenuſe B C, and the ſide F B, or its complement A B to a quadrant; we ſhall find the perpendicular C F, which being the meaſure of the angle C A B, that angle is found of courſe.

II. If one ſide A C be a quadrant, and the other A B greater than a quadrant, ſeek again the angle A: from A B ſubtract the quadrant A D, and from the pole A deſcribe the arch C D, cutting the arch C D at right angles in D. Since in the rectangled *triangle* C D B, the hypothenuſe B C, and ſide D B, or exceſs of the ſide A B beyond a quadrant, is given, the perpendicular C D will be found as before, which is the meaſure of the angle A required.

III. If the *triangle* be iſoſceles, and A C = C F, and the angle A C F be required; biſſect A F in D, and through D and C draw the arch D C. Since D C is perpendicular to A F, the angles A and F, and A C D and D C F are equal; from the hypothenuſe A C, and leg A D, given in the rectangled *triangle* A C D, we find the angle A C D; the double whereof is the angle required A C F: and from the ſame data may the angle A or F be found.

IV. If the *triangle* be ſcalenous, and the angle A, (*fig.* 32.) be required; from C let fall the perpendicular C D, and ſeek the ſemi-difference of the ſegments A D and D B, by ſaying, as the tangent of half the baſe A B, is to the tangent of half the ſum of the legs A C and C B; ſo is the tangent of their ſemi-difference to the tangent of the ſemi-difference of the ſegments A D and D B: add then the ſemi-difference of the ſegments to the half baſe, to find the greater ſegment; and ſubtract the ſame from the ſame for the leſs. Thus having in the rectangled *triangle* C A D, the hypothenuſe A C, and the ſide A D, the angle A is found thence. After the ſame manner is B found in the other C D B, from C B and D B given.

12. Given the three angles A, B and C, to find any of the ſides.—Since in lieu of the given *triangle*, another may be aſſumed, whoſe ſides are equal to the given angles, and the angles to the given ſides; this problem is reſolved after the ſame manner as the preceding one.

Triangle, Triangulum, in aſtronomy, a name common to two conſtellations; the one in the northern hemiſphere, called ſimply *triangulum*, or *triangulum cœleſte*; the other in the ſouthern hemiſphere, called *triangulum auſtrale*. See Constellation.

The ſtars in the northern *triangle* in Ptolemy's catalogue are 4; in Tycho's as many; in the Britannic 24: the longitudes, latitudes, magnitudes, *&c.* whereof, are as follow:

Names and Situation of the Stars.	Signs ♉	Longitude °	″	′	Latitude. °	′	″	Mag.
That preceding the vertex	♉	0	05	17	17	39	08	6
Vertex of the triangle		2	30	51	16	48	23	4
That following the vertex		6	00	25	19	28	00	6
Firſt of three in the baſe		7	59	44	20	34	17	4
5		7	18	45	17	06	18	7
Firſt of 3 inform. under triangle		6	52	35	15	59	02	6
Contig. to the laſt of the baſe		8	42	40	18	34	12	6
Middle one of the baſe		9	09	43	19	21	32	5
Laſt of the baſe		9	10	21	18	56	07	4
S. of inform. under the triang.		7	38	31	13	55	26	6
10		10	32	52	16	16	32	7
Laſt of theſe informes		9	59	15	14	13	08	6
A ſmaller contiguous to it		10	12	15	14	24	24	7
		13	08	28	20	00	37	6
15		13	15	01	18	26	18	7
Informes between the triangle and the ram's tail, which are alſo numbered among the Stars of Aries. 28th of Aries	—	10	14	15	8	49	48	7
31ſt	—	11	48	01	10	51	52	5
33d	—	12	35	47	11	17	13	4
40th	—	13	51	45	10	25	37	3
48th	—	16	13	53	8	51	55	7
50th	—	16	22	25	8	59	42	7
51ſt	—	16	39	24	7	29	04	6
54th	—	18	37	56	10	54	26	7
55th	—	18	41	07	8	58	28	7 6

TRIANGULAR *Compaſſes*, are ſuch as have three legs or feet, whereby to take off any triangle at once, much uſed in the conſtruction of maps, globes, *&c.* See COMPASSES.

TRIANGULAR *Numbers*, are a kind of polygonal numbers; being the ſums of arithmetical progreſſions, the difference of whoſe terms is 1. See POLYGONAL *Number*.

Thus—Of arithmetical progreſs 1 2 3 4 5 6
are formed triang. numb. 1 3 6 10 15 21.

TRIANGULAR *Quadrant*, is a ſector furniſhed with a looſe piece, whereby to make it an equilateral triangle. See SECTOR.

The calendar is graduated thereon, with the ſun's place, declination, and other uſeful lines; and by the help of a ſtring and a plummet, and the diviſions graduated on the looſe piece, it may be made to ſerve for a quadrant. See QUADRANT.

TRIANGULAR *Winding Stairs*. See STAIR.

TRIANGULARIS, in anatomy, a name given to two muſcles, in reſpect of their figure. See MUSCLE.

The *triangularis pectoris*, which has ſometimes the appearance of three or four diſtinct muſcles, ariſes from the inſide of the ſternum, and is implanted into the cartilages which join the four loweſt true ribs to the ſternum.

The action of this muſcle is very obſcure, ſince both the origination and inſertion are at parts not moveable, but together.—Dr. Drake conjectures it may conduce towards forming the neceſſary incurvation of the ſternum, and by its over-tenſion in children, while the cartilages are ſoft, may occaſion that morbid acumination of the ſternum ſeen in rickety children.—Others ſuppoſe it may contract the cavity of the thorax in expiration.

TRIANGULARIS *labii*. See DEPRESSOR *labii ſuperioris*.

TRIARII, in the Roman militia, a kind of infantry, armed with a pike, a ſhield, a helmet and a cuiraſs; thus called, becauſe they made the third line of battle.

The *triarii* were alſo called *poſtſignani*, becauſe ranged behind the principes who bore the ſtandard in a legion.

Polybius diſtinguiſhes four kinds of forces in the Roman army: the firſt, called *pilati*, or *velites*, were a raw ſoldiery, lightly armed.—The *haſtati* or ſpear-men were a degree older, and more experienced. The third, called *principes*, princes, were ſtill older, and better ſoldiers than the ſecond.—The fourth were the eldeſt, the moſt experienced, and the braveſt: theſe were always diſpoſed in the third line, as a corps de reſerve, to ſuſtain the other two, and to reſtore the battle, when the others were broken or defeated.

Hence their name of *triarii:* and hence the proverb *ad triarios ventum eſt*, to ſhew that one is at the laſt, and hardeſt ſtruggle.

TRIAS *Harmonica*, or the *Harmonical* TRIAD, in muſic, a compound of three radical ſounds, heard all together; two whereof are a fifth and a third above the other, which is the fundamental. See CONCORD, *&c.*

The *triad* is properly a conſonance formed of a third and a fifth; which, with the baſs, or fundamental ſound, makes three different terms, whence the name *trias.*—That of *harmonical* is doubtleſs given it from that wonderful property of the fifth, which divides itſelf naturally into two thirds, both excellent, and perfectly harmonical; ſo that this one ſound diſpoſed between two others, makes two thirds at once, and of conſequence a double harmony. See FIFTH.

Hence it is, that in *trio's*, particularly, this concord is preferred to that which divides the octave into a fifth and a fourth: in regard here, if there be a concord on one ſide, there is a diſcord on the other; whereas in the former caſe the harmony is compleat on both ſides.

Of the three ſounds which compoſe the harmonical *triad*, the graveſt is called the *fundamental*, or *baſs*; the acuteſt, *i. e.* that which makes the fifth, and which terminates the concord upwards, is called the *excluded* or *higheſt* ſound; and that which divides the fifth ſo agreeably into two thirds, is called the *harmonical mean*.

The diviſion of the fifth into two thirds, may be performed two ways, *viz.* 1. Harmonically, when the greater third is loweſt, and the leſs above; in which caſe the *triad* is perfect and natural.

2. Arithmetically, when the leſs third is loweſt, and the greater above; in which caſe the *triad* is imperfect and flat. Both are good; but the latter not to be often uſed.

TRIBE, TRIBUS, in antiquity, a certain quantity or number of perſons; when a diviſion is made of a city or people into quarters, or diſtricts.

The city of Athens was divided into ten *tribes.*—The Jewiſh nation into twelve *tribes*, the deſcendants of the twelve ſons of Jacob, *viz.* the *tribes* of Judah, of Reuben, Gad, Aſher, Dan, Naphtali, Ephraim, Manaſſeh, Simeon, Levi, Iſſachar, Zebulun, and Benjamin.

Theſe, in effect, make thirteen *tribes*, from twelve patriarchs; by reaſon the poſterity of Joſeph was divided into two *tribes*, that of Manaſſeh, and that of Ephraim. See PATRIARCH.—There were ten of theſe *tribes* that revolted and followed Jeroboam.

The Roman people was at firſt only divided into three *tribes*; and from this number *three*, *tres*, it was that the word *tribe*, *tribus*, took its riſe.—This diviſion was accommodated by Romulus, to the ſeveral nations he had united: the firſt conſiſted of the Albans, the ſecond of the Sabins, and the third of a mixture of fugitives, who came to ſeek an aſylum at Rome.

Servius Tullus, fearing this partition might occaſion ſeditions, divided the inhabitants of Rome by cantons, not by nations, accordingly, he diſtributed the city into four quarters, or *tribes*; and by reaſon a great number of citizens had retired into the country about, of thoſe he compoſed 26 other *tribes*; ſo that from his time the Roman people conſiſted of 30 *tribes*.

In after-times, the number of *tribes* was increaſed to 35; but they then ceaſed to be ranged according to the quarters of the city.—The diſtribution depended on the cenſors, who formed their liſt at diſcretion, frequently confounding the country *tribes* with thoſe of the city.

A man was never abſolutely a Roman citizen, unleſs he had the *jus tribus*, *i. e.* till he were intitled to the honours of the magiſtrature, as alſo to a right of voting in aſſemblies of the people; and this was what they called *jus quiritium.*—Hence, the inhabitants of the municipal cities were only imperfect citizens, as being of no *tribe*. See MUNICIPAL, and CITIZEN.

The freed-men were obliged to purchaſe this *right of tribe*, which did not otherwiſe belong to them, though they were citizens of Rome. See LIBERTUS.

The names of the 35 tribes were, 1. the Palatina; 2. the Suburana; 3. the Collina; 4. the Eſquilina; 5. the Romilia; 6. the Æmilia; 7. the Cruſtumina; 8. the Cornelia; 9. the Fabia; 10. the Galeria; 11. the Lemonia; 12. the Mentina, or Menenia; 13. the Ocriculana; 14. the Papiria; 15. the Pollia; 16. the Popilia; 17. the Pupinia; 18. the Sergia; 19. the Veientina; 20. the Voltinia; 21. the Claudia; 22. the Stellatina; 23. the Tromentina; 24. the Arnenſis; 25. the Sabatina; 26. the Pomptina; 27. the Publilia; 28. the Mæcia; 29. the Scaptia; 30. the Ouſentina; 31. the Falerina; 32. the Anienſis; 33. the Terentina; 34. the Velina; 35. the Quirina. In ancient authors, and inſcriptions, we meet with the names of others, *viz.* Pinaria, Sappinia, Camilla, Ceſtia, Cluentia, *&c.*

TRIBRACHYS,* in the ancient proſody, a foot of verſe, conſiſting of three ſyllables, and thoſe all ſhort—as, *Melius*.

* The word is formed from the Greek, τρεις, *three*, and βραχυς, *ſhort*. See FOOT, *&c.*

Some of the ancients call this foot *trochæus*. See TROCHÆE.

TRIBUCH, and TREBUCHET, a tumbrel, or cucking-ſtool, See CUCKING-*Stool*.

TRIBUNAL, *Judgment-ſeat*, the ſeat of a judge. See JUDGE.

The *tribunal* in a court of juſtice, is properly the ſeat or bench whereon the judge, and his aſſociates are placed, for the adminiſtration of juſtice. See BENCH, JUSTICE, *&c.*

The word is Latin, and takes its origin from a ſeat raiſed from the ground, wherein the *tribune* of the Roman people was placed to adminiſter juſtice. See TRIBUNE.

TRIBUNAL, among the ancients, was alſo a place from whence the people were harangued.

Among the Romans it was an emminence in a temple, or the forum, as that called *pro roſtris*, where the people were harangued in *tribes*.

The French architects likewiſe uſe the word *tribune* for a gallery or eminence in a church, or other place, wherein the muſic is placed for a ſymphony or concert.

TRIBUNE, Tribunus *plebis*, in antiquity, a Roman magiſtrate, choſen out of the commons, to protect them againſt the oppreſſions of the great, and to defend the liberty of the people againſt the attempts of the ſenate, and conſuls.

The tribunes of the people, were firſt eſtabliſhed in the year of Rome 259. The firſt deſign of the creation was to ſhelter the people from the cruelties of uſurers, and to engage them to quit the Aventine mount, whither they had retired in diſpleaſure.

Their number, at firſt, was but two; but the next year, under the conſulate of A. Poſthumus Aruncius and Caſſius Viſcellinus, there were three more added; and this number of five was afterwards increaſed by L. Trebonius to ten.

The appellation *tribune* was given them, by reaſon they were at firſt choſen out of the *tribunes* of the army. See the article following.

The *tribunes* were, as it were, the heads and guardians of the people.—They called aſſemblies of the people when they pleaſed; and in thoſe aſſemblies frequently annulled the decrees of the ſenate. Nothing could be concluded without their conſent, which they expreſſed by ſubſcribing the letter T at the bottom of the decree. They had it in their power to prevent the execution of any decree, without giving any reaſon for it, and merely by ſubſcribing *veto*.—They ſometimes even called the conſuls and dictator to account for their conduct before the people.

Auguſtus himſelf was *tribune* for 37 years; Tiberius aſſumed the ſame quality; as likewiſe did his ſucceſſor, ſignifying the year of their *tribunate* on their medals and coins: but their deſign, herein, was only to poſſeſs themſelves of all the authority, that there might be no body to oppoſe them. See Tribunician.

Tribune, Tribunus *militum*, or *militaris*, an officer in the Roman army, who commanded in chief over a body of forces, particularly diviſion of a legion; much the ſame with our colonel, or the French meſtre de camp. See Legion.

There is ſome diſtinction of the *tribunes*, into *laticlavii* and *anguſticlavii:* thoſe born of noble families were allowed, after they were made *tribunes* of a legion, to take the *latuſclavus.* See Latusclavus.—The reſt were only to wear the *anguſtuſclavus*; whence Suetonius takes care to inform us, that his father was *tribunus laticlavius* of the 13th legion.

Over theſe *tribunes* of legions and cohorts, there were other *tribunes* who commanded in the abſence of the conſuls, and who were inveſted with a conſular authority.—Budæus will have theſe to be much the ſame as the marſhals of France, or, at leaſt, lieutenants-general.

Romulus likewiſe eſtabliſhed a *tribune* of the cavalry, *tribunus equitum*, who was the ſame with the *magiſter equitum* under the dictators, the firſt officer after the kings. See Master.

The *tribunes* of the ſoldiery were of an elder ſtanding than thoſe of the people; thoſe latter being elected out of the former.—Varro will have it, they were called *tribunes*, becauſe, at firſt, they were only three in number in each legion, when the legion conſiſted of three thouſand men, taken out of the three tribes then on foot.—In proportion as the legion was increaſed, the number of *tribunes* was likewiſe increaſed to the number of ſix.

At firſt, the nomination lay in the general of the army; but in the year of Rome 391, it was appointed, that the people ſhould nominate one part, and the general another: the latter were called *Rufuli*, from Rutilius Rufus, who paſſed the law.

Thoſe choſe by the people in the comitia, were called *comitiati:* they were indifferently either patricians or plebeians, and had the ſame marks of honour as the conſuls themſelves.—The *tribune of the pretorian cohorts* was the captain of the guards. See Pretorian.

Tribune was alſo an appellation given to various other officers; as the, *tribuni ærarii*, *tribunes of the treaſury.*—*Tribune of the celeres*, the officer who commanded them.—*Tribuni fabricarum*, thoſe who had the direction of the making of arms.—*Tribuni marinornm*, *tribuni nolanorum*, *tribuni voluptatum*, mentioned in the Theodoſian Code, as intendants of the public ſhews and other diverſions.

The title of Tribune, Tribunus, was alſo given to the chief of each tribe. See Tribe.

TRIBUNICIAN, Tribunicius, a term among antiquaries and medalliſts.—The *tribunician power* was the dignity, office, or authority of a tribune of the people. See Tribune.

This power was aſſumed by the emperors, and makes one of the chief titles they bear on their medals: the quality was firſt introduced by Auguſtus, to keep the ſoveraign authority over the other magiſtrates, without either taking that of dictator or king. Indeed it was offered to Julius Cæſar, but he deſpiſed it. Auguſtus is the firſt who uſed it, and his ſucceſſors followed his example.—They reckon the years of their empire on their medals by thoſe of their *tribunician power*.

This power was ſometimes given them for a certain number of years, and ſometimes for ever. Sometimes the emperors would communicate the power to ſuch as they aſſociated, or as they intended to ſucceed them: and Tiberius held it fifteen years with Auguſtus. But this practice only obtained till the time of Valerian and Gallienus. After them we only find T R. P. II. in Claudius; T R. P.V. in Aurelian; and T R. P. in Probus.—This, however, is to be underſtood of medals; for in inſcriptions we find it after that time.

Cardinal Noris and F. Pagi have diſputed about this *tribunician* power, wherein it conſiſted.—The firſt maintains, that it did not at all differ from that of the ordinary tribunes, which conſiſted in three things: 1. In a right of oppoſing all the acts and reſolutions of the other magiſtrates. 2. In that it rendered their perſons ſacred and inviolable. 3. In a power of making edicts and laws.

F. Pagi aſſerts, that it made an addition to the power of the tribunes; that the privilege it conferred of making edicts, was more ample than that of the ordinary tribunes; beſides, that it carried with it a power of convening the ſenate at pleaſure.

M. Spanheim is of F. Pagi's opinion: he believes, that the *tribunician power* had much the advantage of the tribunate: 1. In that it was peculiar to the patricians, and did not reduce the perſon who held it to the degree of a plebeian. 2. In that it was not confined to the city of Rome alone, like the other, but extended throughout the empire, as well as the proconſular power, which was uſually annexed to it. 3. That the dignity of the tribunes was inferior to that of the pretors; whereas the *tribunician power* of the Cæſars conferred, according to Tacitus, a ſoveraign authority over all magiſtrates, and rendered ſuch as it was communicated to, equal to the emperors, and even their collegues in the empire: beſides the power of oppoſing the enterprizes of all the other magiſtrates, and that it rendered their perſons ſacred, and gave them a right to aſſemble and diſmiſs the ſenate, which were privileges the *tribunician power* had in common with the tribunes.

F. Hardouin thinks we ſhould diſtinguiſh two *tribunician powers*; the one civil, the other military; but the proof he brings thereof is very weak.—M. Spanheim ſays, his diſtinction is only founded on vain conjectures, none of which deſerve notice.

The learned are greatly divided as to the month and day whereon the *tribunician power* commenced! Sigonius and Petavius will have it begin on the 1ſt of January: others, as Perizonius, on the 5th of the calends of July: M. Toinard on the 4th of the ides of December: Onuphrius, cardinal Noris, F. Pagi, *&c.* on the day of the emperor's acceſſion to the empire; with this difference, that F. Pagi takes it to be on the 5th of the calends of the month wherein the emperor was proclaimed; and that this day was, for this reaſon, held ſacred among the Romans.

F. Hardouin thinks, that on medals the *tribunician power* commences on the anniverſary of the building of Rome, *viz.* the 11th of the calends of May; excepting on the Greek medals, where it begins in September, in regard this month, which began the Greek year, was near the time when the *tribunician power* was firſt conferred.

Of all theſe ſentiments the moſt probable is that of Onuphrius, *&c.* ſetting aſide the reſtriction of F. Pagi. See M. Spanheim, *Diſſert.* 12. *tom.* 2. *p.* 429.

TRIBUTA *Comitia.* See the article Comitia.

TRIBUTARY, Tributarius, one who pays tribute to another, in order to live in peace with him, or ſhare in his protection. See Tribute.

The republic of Raguſa is *tributary* to the grand Turk; ſo is the cham of Little Tartary, *&c.*

TRIBUTE, Tributum, a tax, or impoſt, which one prince or ſtate is obliged to pay to another, as a token of dependance; or in virtue of a treaty, and as a purchaſe of peace.

The Romans made all the nations they ſubdued, pay them *tribute.*—Mahomet laid it down as a fundamental of his law, that all the world ſhould pay him *tribute.*

In the ſtates of the grand Signior, Chriſtian children are taken in way of *tribute*, to make agemoglans, janizaries, *&c.* See Janizary, Agemoglan, *&c.*

Tribute is ſometimes alſo uſed for a perſonal contribution, which princes levy on their ſubjects by way of capitation, or poll-money. See Tax.

In this it differs from an *impoſt*, which is properly what is laid on merchandiſes. See Impost.

TRICENNAL. See the article Trental.

TRICEPS, in anatomy, a muſcle of the thigh, having three originations, and as many inſertions; and which may therefore be conveniently divided into three muſcles, all ariſing from the os pubis, and inſerted into the linea aſpera of the thigh-bone, whereof they poſſeſs the greateſt part.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 53. *fig.* 2. *n.* 36. *fig.* 6. *n.* 36. *fig.* 7. *n.* 26.—They alſo ſerve as adductores, and draw the thighs together.

TRICUSPIDES, in anatomy, an epithet given to three valves, ſituate at the entrance of the vena cava into the heart. See Valve.

They open from without inwards, ſo as to let the blood of the cava paſs into the heart, but prevent its reflux into the cava. See Heart.

TAB: TRIGONOMETRY.

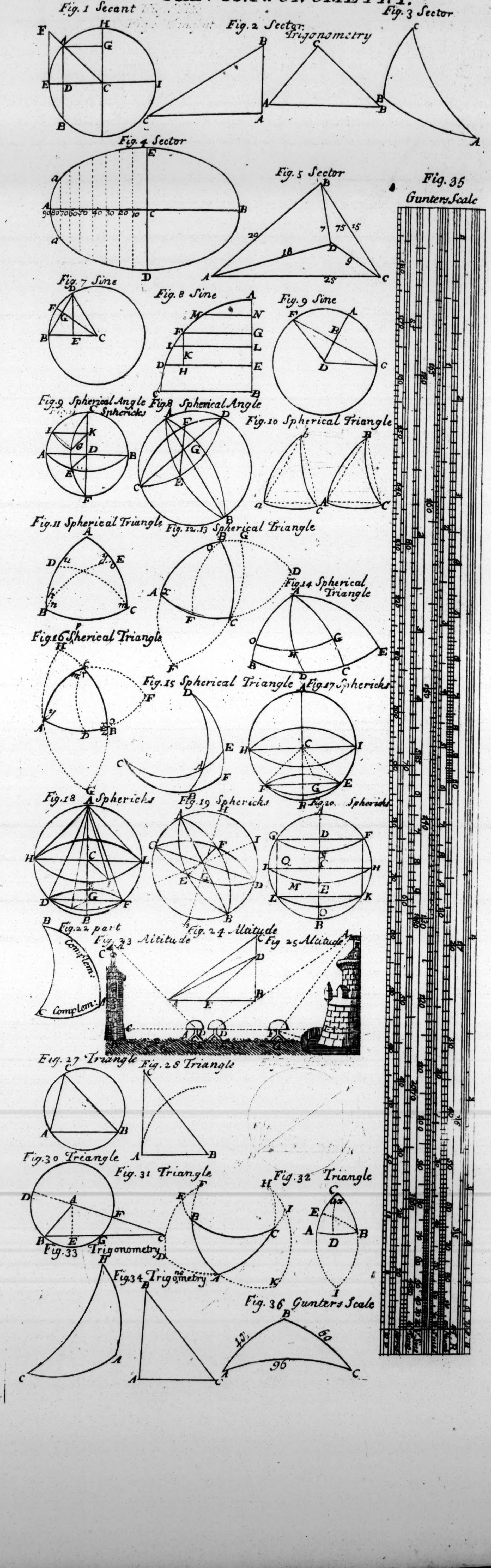
Fig. 1 Secant
Fig. 2 Sector
Trigonometry
Fig. 3 Sector
Fig. 4 Sector
Fig. 5 Sector
Fig. 35 Gunters Scale
Fig. 7 Sine
Fig. 8 Sine
Fig. 9 Sine
Fig. 9 Spherical Angle Sphericks
Fig. 8 Spherical Angle
Fig. 10 Spherical Triangle
Fig. 11 Spherical Triangle
Fig. 12.13 Spherical Triangle
Fig. 14 Spherical Triangle
Fig. 16 Sherical Triangle
Fig. 15 Spherical Triangle
Fig. 17 Sphericks
Fig. 18 Sphericks
Fig. 19 Sphericks
Fig. 20. Sphericks
Fig. 22 part
Fig. 23 Altitude
Fig. 24 Altitude
Fig. 25 Altitude
Fig. 27 Triangle
Fig. 28 Triangle
Fig. 30 Triangle
Fig. 31 Triangle
Fig. 32 Triangle
Fig. 33 Trigonometry
Fig. 34 Trigonometry
Fig. 36 Gunters Scale
F
H
G
E
D
C
I
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A
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90 80 70 60 50 40 30 20 10
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18
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75
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9
25
M
N
L
K
Complem:
Complem:
45
60
96

They are thus called from their figure, which is triangular; for which reaſon they are alſo called by the Greeks τριγλωχινες.

TRIDENT, TRIDENS, an attribute of Neptune; being a kind of ſcepter which the painters and poets put in the hands of that god, in form of a ſpear or fork with three teeth; whence the word. See SCEPTER.

The poets tell us, that Neptune makes the earth open, whenever he ſtrikes it with his *trident*.

TRIDENT, among mathematicians, is uſed for a kind of parabola, by which Cartes conſtructed equations of ſix dimenſions. See PARABOLA.

TRIEMIMERIS, ΤΡΙΗΜΙΜΕΡΗΣ, *Semiternaria*; a kind of cæſura in Latin verſe, wherein, after the firſt foot of the verſe, there remains an odd ſyllable, which helps to make up the next foot.—As in, *Ille latus niveum molli fultus hyacintho.* See CÆSURE.

TRIENNIAL, an epithet applied chiefly to offices or employments which laſt for three years.

Thus we ſay, a *triennial* government: moſt regular monaſteries have *triennial* ſuperiors; they elect new ones at the end of each three years.

In 1695, an act was made for *triennial* parliaments, *i. e.* for parliaments which ſhould be diſſolved, and the members be elected anew, every three years. Till that time, the king had it in his power to prorogue and continue his parliaments as long as he pleaſed.—This opened a door to corruption, which the *triennial* bill was intended to prevent.

The *triennial* act has, from ſome other views, been ſince repealed: the great ſtruggles uſual at elections, the great ferment it uſually puts the nation into, the great expences upon that occaſion, with other conſiderations, determined the legiſlature, in 1717, to change *triennial* parliaments for ſeptennial ones. See PARLIAMENT.

TRIENS, in antiquity, a copper-money, of the value of one third of an as, which on one ſide bore a Janus's head, and on the other a water-rat. See AS.

This was the piece of money uſed to be put in the mouths of the deceaſed, to pay Charon his fare for their paſſage into another life. Sea MONEY, and COIN.

TRIENS, or TRIENTAL, was alſo uſed for a drinking cup; and that which was ordinarily uſed.—It contained four cyathi. See MEASURE.

TRIERS. See the article TRIOURS.

TRIFOLIUM, TREFOIL, denotes any three-leafed graſs.

That moſt uſed in medicine is the *trifolium paluſtre*, or buckbean, which is very detergent, and uſed with ſucceſs in ſcorbutic, rheumatic and ſcrophulous habits.

The ordinary way of uſing it is by making a pretty ſtrong infuſion of the dried herb, in form of tea.

TRIGA, in antiquity, a kind of carr, or chariot, with three horſes. See CARR, *&c.*

The *triga*, in reality, was only drawn by two horſes; ſo that it was properly a biga; but it had, beſides, a third horſe tied to the others, like a led horſe, for change. See BIGA.—Statius calls the third horſe, *equus funalis*; Heſychius, παρηορος; and Dionyſius Halicarnaſſeus, σειραιος.

We do not find the *triga* on any ancient monument; but it was a long time in uſe among the Romans, at their ludi circenſes.—The Greeks, who firſt introduced it, ſoon abandoned it.

TRIGAMY, a third marriage; or the ſtate of a perſon who has been married three times. See MARRIAGE.

In the ancient church, *trigamy* was only allowed to ſuch as had no children by their former marriages.

If having children by one or both the former, they married again, after 40 years of age, they were excluded from communion for five years.—If they were only 40 years old, the penance was but four years. See BIGAMY.

TRIGINTAL. See the article TRENTAL.

TRIGLYPHS,* in architecture, a ſort of ornaments repeated at equal intervals in the Doric freeze. See FREEZE, *&c.* See alſo DITRIGLYPH.

Each *triglyph* conſiſts of two entire gutters, or channels, cut to a right-angle, called *glyphes*, and ſeparated by three interſtices, called by Vitruvius *femora*, from each other, as well as from two other half channels which are at the ſides.—See *Tab. Archit. fig.* 28. *lit. y.* See alſo GLYPHE.

The ordinary proportion of *triglyphs*, is to be a module broad, and one and a half high.—But this proportion, M. le Clerc obſerves, ſometimes occaſions ill-proportioned intercolumnations in portico's; for which reaſon he chuſes to accommodate the proportion of his *triglyphs* to that of the intercolumns. See INTERCOLUMNATION.

The intervals between the *triglyphs* are called *metopes*. See METOPE.—Under the channels, or glyphes, are placed guttæ, or drops. See GUTTÆ.

The *triglyphs* make the moſt diſtinguiſhing character of the Doric order.—Some imagine them originally intended for the conveyance of the guttæ that are underneath them: others fancy they bear ſome reſemblance to a lyre, and thence conjecture the ornament to have been originally invented for ſome temple ſacred to Apollo. See DORIC.

* The word is formed from the Greek, τριγλυφος, q. d. *three engravings*, from γλυφω, *ſculpo*.

Capital of a TRIGLYPH. See the article CAPITAL.

TRIGON,* TRIGONUS, in geometry, a triangle. See TRIANGLE.

* The word is formed from the Greek, τριγωνος, *triangle*.

TRIGON, in aſtronomy, denotes an aſpect of two planets, wherein they are 120 degrees diſtant from each other; called alſo *trine*. See TRINE.

The *trigons* of Mars and Saturn are by aſtrologers held malefic aſpects. See ASPECT, and TRIPLICITY.

TRIGON, TRIGONON, was alſo a muſical inſtrument, uſed among the ancients. See MUSIC.

The *trigon* was a kind of triangular lyre, invented by Ibycus. See LYRE.

TRIGONOMETRY, the art of finding the dimenſions of the parts of a triangle unknown, from other parts known: or the art whereby, from any three parts of a triangle given, all the reſt are found. See TRIANGLE.

Thus, *e. gr.* from two ſides A B and A C and an angle B, we find by *trigonometry*, the two other angles A and C with the third ſide B C, *Tab. Trigonometry, fig.* 2.

The word literally ſignifies the *meaſuring of triangles*, formed from the Greek, τριγωνος, *triangle*, and μετρον, *meaſure*.—Yet does not the art extend to the meaſuring of the area or ſurface of triangles, which comes under geometry: *trigonometry* only conſiders the lines, and angles thereof. See TRIANGLE.

Trigonometry is of the utmoſt uſe in various mathematical arts:—it is by means hereof that moſt of the operations of geometry and aſtronomy are performed; without it the magnitude of the earth and the ſtars, their diſtances, motions, eclipſes, *&c.* would be utterly unknown.—*Trigonometry*, therefore, muſt be owned an art, whereby the moſt hidden things, and thoſe remoteſt from the knowledge of men, are brought to light. A perſon ignorant hereof can make no great progreſs in mixed mathematics; but will often be gravelled, even in natural philoſophy, particularly in accounting for the phenomena of the rainbow, and other meteors.

Trigonometry, or the ſolution of triangles, is founded on that mutual proportion which is between the ſides and angles of a triangle; which proportion is known, by finding the proportion which the radius of a circle has to certain other lines, called *chords*, *ſines*, *tangents*, and *ſecants*. See RADIUS, CHORD, SINE, TANGENT, and SECANT.

This proportion of the ſines and tangents to their radius, is ſometimes expreſſed in common or natural numbers, which conſtitute what we call the *tables of natural ſines*, *tangents*, &c.—Sometimes it is expreſſed in logarithms, and in that caſe conſtitutes the tables of *artificial ſines*, &c. See TABLE, *&c.* Laſtly, ſometimes the proportion is not expreſſed in numbers; but the ſeveral ſines, tangents, *&c.* are actually laid down upon lines or ſcales; whence the *line of ſines*, *tangents*, &c. See LINE, and SCALE.

Trigonometry is divided into *plain* and *ſpherical*: the firſt conſidering rectilinear triangles; and the ſecond ſpherical ones.—The firſt is of obvious and continual uſe in navigation, meaſuring, ſurveying, and other operations of geometry. See MEASURING, SURVEYING, SAILING, *&c.*

The ſecond is only learned, with a view to aſtronomy and its kindred arts, geography and dialling.—It is generally eſteemed exceedingly difficult, by reaſon of the vaſt number of caſes wherewith it is perplexed; but the excellent Wolfius has removed moſt of the difficulties. That author has not only ſhewn how all the caſes of rectangled triangles may be ſolved the common way, by the rules of ſines and tangents; but has likewiſe laid down an univerſal rule, whereby all problems, both in plain and ſpherical rectangled triangles, are ſolved: and even obliquangular triangles he teaches to ſolve with equal eaſe.—His doctrine, ſee under the article TRIANGLE.

Plain TRIGONOMETRY, is an art whereby, from three given parts of a plain triangle, we find the reſt. See PART.

The great principle of *plain trigonometry*, is, that in every plain triangle, the ſides are, as the ſines of the oppoſite angles.—See this principle applied to the ſolution of the ſeveral caſes of plain triangles, under the article TRIANGLE.

Spherical TRIGONOMETRY, is the art whereby, from three given parts of a ſpherical triangle, we find the reſt. *E. gr.* whereby from two ſides and one angle, we find the two other angles, and the third ſide. See SPHERICS, and SPHERICAL.

The principles of *ſpherical trigonometry*, as reformed by Wolfius, are as follow: 1. In every rectangled ſpherical triangle, A B C, rectangular at A, the whole ſine is to the ſine of the hypothenuſe, B C (*Tab. Trigonom. fig.* 33.) as the ſine of either of the acute angles, C, is to the ſine of the leg, oppoſite thereto A B; or, the ſine of the angle B, to the ſine of its oppoſite leg A C; whence we deduce, that the rectangle of the whole ſine into the ſine of one leg, is equal to the rectangle of the ſine of the angle oppoſite thereto, into the ſine of the hypothenuſe.

2. In every right-angled ſpherical triangle A B C, (*fig.* 31.) none of whoſe ſides is a quadrant? if the complements of the legs A B and A C to a quadrant, be conſidered as the legs themſelves; the rectangle of the whole ſine into the co-ſine of the middle part, is equal to the rectangle of the ſines of the disjunct parts, or extremes.

Hence, 1. If the ſines be artificial, that is, the logarithms of the natural ones; the whole ſine, with the co-ſine of the middle part, will be equal to the ſines of the disjunct parts.—2. Since, in the rectilinear triangle A B C (*fig.* 34.) the whole ſine is to the hypothenuſe B C, as the ſine of the angle B or C to the ſine of the oppoſite leg A C or A B: if, inſtead of the ſines of the ſides, we take the ſides themſelves; here, too, the whole ſine, with the co-ſine of the middle part A C or A B, will be equal to the ſine of the disjunct parts B or C and B C; *i. e.* to the ſine of B or C, and B C itſelf.

This, Wolfius calls *regula ſinuum catholica*, or the firſt part of the catholic rule of *trigonometry*; by means whereof all the problems of either *trigonometry* are ſolved, when the thing is effected by ſines alone.—My lord Napier had the firſt thought of ſuch a rule; but he uſed the complements of the hypothenuſe B C (*fig.* 22.) and the angles B and C for the hypothenuſe, and angles themſelves: ſo that the tenor of his catholic rule of ſines is this:

The whole ſine, with the ſine of the middle part, is equal to the co-ſines of the disjunct, or, as he calls them, oppoſite parts.—But, in this, that harmony between plain and ſpherical *trigonometry*, viſible in Wolfius's rule, does not appear.

3. In a rectangled ſpherical triangle A B C (*fig.* 31.) none of whoſe ſides is a quadrant; as the whole ſine is to the ſine of the adjacent leg A C; ſo is the tangent of the adjacent angle C to the tangent of the leg A B.

Whence, 1. as the co-tangent of the angle, C, is to the whole ſine, as the whole ſine is to the tangent of the angle C, ſo is the ſine of A C to the tangent of A B; therefore the co-tangent of the angle C, will be to the whole ſine, as the ſine of the leg adjacent thereto, A C is to the tangent of the oppoſite one A B. 2. The rectangle, therefore, of the whole ſine, into the ſine of one leg A C, is equal to the rectangle of the tangent of the other leg A B, into the co-tangent of the angle C, oppoſite to the ſame. And, in like manner, the rectangle of the whole ſine, into the ſine of the leg A B, is equal to the rectangle of the tangent of the leg A C into the co-tangent of the angle B.

4. In every right-angled ſpherical triangle, A B C, none of whoſe ſides is a quadrant; if the complements of the legs A B and A C to a quadrant, or their exceſſes beyond a quadrant, be conſidered as the legs themſelves; the rectangle of the whole ſine, into the co-ſine of the middle part, will be equal to the rectangle of the co-tangents, of the conjunct parts.

Hence, 1. If the ſines and tangents be artificial; the whole ſine, with the co-ſine of the middle part, is equal to the co-tangents of the contiguous parts. 2. Since in a rectilinear, right-angled triangle, we uſe the tangents, when from the legs A B and A C (*fig.* 34.) given, the angle C is to be found; and in that caſe the whole ſine is to the co-tangent of C, *i. e.* to the tangent of B, as A B to A C; therefore, alſo, in a rectilinear triangle, if for the ſines and tangents of the ſides be taken the ſines themſelves; the whole ſine, with the co-ſine of the middle part, *i. e.* with A C, is equal to the co-tangents of the conjunct parts, *i. e.* to the co-tangent of C, or tangent of B and the ſide A B.

This, Wolfius calls *regula tangentium catholica*, and conſtitutes the other part of the catholic rule of *trigonometry*; whereby all problems in each *trigonometry*, where tangents are required, are ſolved.

My lord Napier's rule to the like effect, is thus:—That the whole ſine, with the ſine of the middle part, is equal to the tangents of the contiguous parts.

'Tis, therefore, a catholic rule, which holds in all *trigonometry*; that in a rectangled triangle (*notatis notandis*, *i. e.* the complements of the legs A B and A C, being conſidered as legs themſelves, and in rectilinear triangles, the ſides themſelves being taken for the ſines and tangents of the ſides.) The whole ſine with the co-ſine of the mean or middle part is equal to the ſines of the disjunct or ſeparate parts, and the co-tangents of the conjunct or contiguous parts.

For an illuſtration and application of this rule, in the ſolution of the various caſes of ſpherical triangles. See TRIANGLE.

Characters in TRIGONOMETRY. See CHARACTER.

TRIHING, or THRIHING,* from the Saxon, Đꞃihinȝe, an extent containing three, or four hundreds, or the third part of a ſhire, or province. See TITHING.

* Mr. Thoreſby thinks the word ought to be written *Thrithing*. See *Thoresb. Ducatus Leodenſ.* p. 85.

The word is alſo uſed for a court held within that circuit, which was the ſame with what we now call a *court-leet*, which is above a court-baron, and inferior to the county-court. See COURT, LEET, &c.

TRILLION, in arithmetic, the number of a billion of billions. See NUMERATION.

After billions, we reckon by *trillions*, which makes a claſs of numeration, and is divided, like the other claſſes, into three places: thus we ſay, *trillions*; *tens of trillions*; *hundreds of trillions*, &c.

TRIM of a ſhip, is her beſt poſture, proportion of ballaſt, and hanging of her maſts for ſailing.

Hence, to find the beſt way of making a ſhip ſail ſwiftly, is to find her *trim*.

To TRIM *a boat*, is to ſet the paſſengers ſo as to keep the boat even on both ſides.

TRIMACRUS, or TRIMACER, in the ancient proſody, a foot in verſe, conſiſting of three long ſyllables. See FOOT.

TRIMILCHI, a name by which the Engliſh Saxons called the month of May; becauſe they milked their cattle three times a day in that month.

TRIMMERS, in architecture, pieces of timber framed at right angles to the joints, againſt the ways for chimneys, and well-holes for ſtairs.

TRINE *dimenſion*, or *threefold dimenſion*, includes length, breadth and thickneſs. See DIMENSION.

The *trine* dimenſion is peculiar to bodies or ſolids. See BODY, SOLID, &c.

TRINE *in aſtrology*, is the aſpect or ſituation of one ſtar with regard to another, when they are diſtant 120 degrees,—as the arch A B (*Tab. Aſtronomy*, *fig.* 3.) which is a third of a circle, and its ſubtenſe A B, a ſide of an equilateral triangle A B C inſcribed in the ſphere. See ASPECT.

It is alſo called *trigon*, and ſignified by the character △. See TRIGON.

TRINGLE,* in architecture, a name common to ſeveral little ſquare members, or ornaments; as reglets, liſtels and platbands. See REGLET, LISTEL, &c.

* The word is French, where it ſignifies the ſame.

TRINGLE is more particularly uſed for a little member fixed exactly over every triglyph, under the plat-band of the architrave; from whence hang down the guttæ or pendant drops. See TRIGLYPH, and GUTTÆ.

TRINITARIANS, a term uſed very variouſly, and arbitrarily—frequently it ſtands as a common name for all heretics who have ſentiments on the myſtery of the Trinity, different from thoſe of the catholic church. See TRINITY.

Sometimes it is more immediately reſtrained to ſome one or other particular claſs of heretics.—Thus *trinitarians* are frequently confounded with *unitarians*. See UNITARIANS, SOCINIANS, &c.

Sometimes it is even applied to the orthodox themſelves, in contradiſtinction to the *antitrinitarians*, who deny or impugn the doctrine of the Trinity.—Thus the Socinians and others uſed to call the Athanaſians, *trinitarians*. See ANTITRINITARIANS.

TRINITARIANS alſo denote an order of religious, inſtituted in honour of the Trinity, for the redeeming of Chriſtian captives from the infidels; vulgarly called *mathurins*, and brothers of the *redemption*.

They are cloathed in white, and bear on the ſtomach a croſs, partly red and partly blue; by which three colours, white, red and blue, is ſuppoſed to be repreſented, the myſtery of the Trinity.

The *trinitarians* make it their buſineſs to go and ranſom Chriſtians held in ſlavery in the republics of Algiers, Tunis and Tripoly, and the ſtates of Morocco.—They have a rule peculiar to themſelves; though ſeveral hiſtorians rank them among the obſervers of the rule of St. Auguſtin.

The order had its riſe in 1198, under the pontificate of Innocent III. The founders were John de Matha and Felix de Valois: the firſt of Faucon in Provence; the ſecond, not of the royal family of Valois, as ſome have imagined; but thus called, in all probability, as being a native of the country Valois.

Gauthier of Chatillon was the firſt who gave them a place in his lands to build a convent; which afterwards became the chief of the whole order: Honorius III. confirmed their rule. Urban IV. appointed the biſhop of Paris and others to reform them: they did it; and the reform was approved, in 1267, by Clement IV.

This order poſſeſſes about 250 convents, divided into thirteen provinces; whereof ſix are in France, three in Spain, one in Italy, and one in Portugal.—Formerly, there was one in England, another in Scotland, and a third in Ireland.

In the general chapters held in 1573 and 1576, a reform was ordered, and begun ſometime afterwards by Julian de Nantonville, and Claude Aleph, two hermits of St. Michael, but now permitted by pope Gregory to take the habit of the Trinity; upon which their hermitage was converted into a houſe of the order.

In 1609, pope Paul allowed them to build new houſes, and to introduce the reform into the old ones. In 1635, Urban VIII. by a brief, appointed the cardinal de Rochefoucault to introduce the reform into all the houſes of the order; which was done accordingly, by a ſentence containing the reform in eight articles; the principal whereof were, that they ſhould obſerve the primitive rule approved of by Clement IV. ſhould abſtain from fleſh, uſe woollen ſhirts, have mattins at midnight, &c. In 1554, there was alſo a reform made among thoſe of Portugal.

The habit of the *trinitarians* is different in different countries; and that of the reformed different from the reſt.

Bare-footed TRINITARIANS, are a reform of this order, made in Spain in a general chapter, held in 1594, where it was reſolved, that each province ſhould eſtabliſh two or three houſes, where the primitive rule ſhould be obſerved, and where the religious ſhould live up to a greater auſterity, uſe coarſer cloaths, *&c.* and yet ſhould have the liberty of returning to their ancient convent when they thought fit.

Dom. Alvares Baſan, intending to found a monaſtery at Valdepegnas, and deſiring to have it occupied by bare-footed religious, it was agreed to add nudity of feet to the reform, that the *trinitarians* might have the benefit of that eſtabliſhment.—The reform afterwards grew into three provinces, and was at length introduced into Poland and Ruſſia, and thence into Germany and Italy.

There are alſo *bare-footed trinitarians* in France, eſtabliſhed by F. Jerom Hallies, who being ſent to Rome to ſolicit the firſt reform mentioned above; not content therewith, carried it further, and obtained a permiſſion of pope Gregory, to add a coarſe habit, and nudity of feet thereto. He began with the convent of St. Dionyſius at Rome, and thoſe of Aix in Provence.

In 1670 there were houſes enough of this reform to make a province, and accordingly they held their firſt general chapter the ſame year.

There are alſo nuns of the TRINITARIAN order, eſtabliſhed in Spain by St. John de Matha himſelf, who built them a convent in 1201.—Thoſe who firſt took the habit were only oblatæ, and made no vows; but in 1201 the monaſtery was filled with real religious, under the direction of the infanta Conſtantia, daughter of Peter II. king of Arragon, who was the firſt religious, and the firſt ſuperior of the order.

There are alſo bare-footed nuns of this order, eſtabliſhed at Madrid about the year 1612, by Frances de Romero, daughter of Julian de Romero, lieutenant-general in the Spaniſh army. Her deſign being to found a monaſtery of bare-footed Auguſtines, ſhe aſſembled a number of maids for that end, lodging them, for the time, in a houſe belonging to the monaſtery of bare-footed *trinitarians* in the neighbourhood.

Here, attending at the church of thoſe fathers, and being under the direction of F. John Baptiſt of the conception, their founder, the knowledge of that father, and the ſervices he did them, made them change their reſolution of becoming Auguſtines, and demand of their director the habit of his order, which he gave them.

But the order oppoſing their deſign, and refuſing to take them under its juriſdiction, they addreſſed themſelves to the archbiſhop of Toledo, who allowed them to live according to the rule of that order; ſo that they took the habit a-new in 1612, and began their noviciate.

Laſtly, there is a third order of *trinitarians.* See THIRD *Order.*

TRINITY, TRINITAS, TRIAS, TRIAD, in theology, the ineffable myſtery of three perſons in one God; Father, Son, and Holy Spirit. See GOD, PERSON, *&c.*

It is an article in the chriſtian faith, that there is one God, an unity in nature and eſſence, and a *Trinity* of Perſons.—The term *trinity* implies the unity of three, the unity of three divine perſons really different, and the identity of an indiviſible nature: the *trinity* is a ternary of divine perſons of the ſame eſſence, nature, and ſubſtance.

Theology teaches, that there is in God one eſſence, two proceſſions, three perſons, four relations, five notions, and the circuminceſſion, which the Greeks call *perichoreſis.* Of each whereof we ſhall enlarge a little.

There is, then, one ſingle eſſence, one divine nature, which is infinite, eternal, ſpiritual; which ſees all things, which knows all things, which is every where, all-mighty, and which created all things of nothing. See GOD.

In this God there are two proceſſions, or emanations, *viz.* that of the Son, and that of the Holy Spirit: the firſt is called *generation,* and the ſecond *ſpiration.* See GENERATION, *&c.*

The Son proceeds from the Father by way of knowledge; for God in knowing himſelf eternally, neceſſarily, and infinitely, produces a term, an idea, notion or knowledge of himſelf, and all his adorable perfections, which is called his *Word,* his *Son,* who is equal to him in all things, eternal, infinite, and neceſſary as his Father.—The Father regards the Son as his Word, and the Son has a regard to the Father as his principle: and in thus reſpecting each other eternally, neceſſarily, and infinitely, they love each other, and produce an act of their mutual love: the term of that love is the Holy Spirit, who proceeds from the Father and the Son by way of ſpiration, love, and impulſion; who is alſo equal in every thing to the Father and the Son. See FATHER, SON, and SPIRIT.

Each divine proceſſion eſtabliſhes two relations: the one on the ſide of the principle, or that from whence; and the other on that of the term, or that to which.—Hence, as there are two proceſſions in God, there muſt be four relations; the paternity, the filiation, the active ſpiration, and the paſſive.

The *paternity* is a relation founded in what the ſchool divines call the notional underſtanding; in which the Father ſtands related to the ſecond perſon, the Son.—The filiation is the relation wherein the ſecond perſon, *viz.* the Son, refers to the Father. See PATERNITY, *&c.*

The active ſpiration, is the relation founded in the notional act of the will, whereby the firſt and ſecond perſons regard or refer to the third:—the paſſive ſpiration or proceſſion, taken in its ſtrict ſenſe, is the relation whereby the third perſon regards, and is referred to the firſt and ſecond.—Hence it appears, that there are in God, four relations, as we have already ſaid, and five notions, as we ſhall ſhew hereafter.

Perſon is defined an individual, reaſonable, or intellectual ſubſtance; or an intellectual and incommunicable ſubſtance. See PERSON.

The hypoſtaſis, or ſubſtance, is what conſtitutes the perſon.—There are then in the holy *trinity* three perſons, Father, Son, and Holy Spirit, which have all things in common, except their relations; whence that axiom in theology comes to have place, in the divine perſons there is no diſtinction where there is no oppoſition of relation: and hence it follows, that if power be ſometimes attributed to the Father, wiſdom to the Son, and goodneſs to the Holy Spirit; or if ſins of infirmity or weakneſs be ſaid to be againſt the Father, ſins of ignorance againſt the Son, and ſins of malice againſt the Holy Spirit, it is only ſpoke by way of appropriation, and not of propriety; for all thoſe things are in common: whence that axiom, the works of the holy *Trinity* are common and undivided, (*i. e.* they agree to all the divine perſons) but not their productions *ad intra* (as they are called) by reaſon they are relative.

By appropriation we mean the giving of ſome common attribute to a certain divine perſon, on account of ſome ſuitableneſs or agreement. Thus, in the ſcriptures, in the apoſtles, and the Nicene creed, omnipotence is attributed to the Father, becauſe he is the firſt principle, and a principle without origin, or higher principle.—Wiſdom is attributed to the Son, becauſe he is the term of the divine underſtanding, to which wiſdom belongs: goodneſs is attributed to the Holy Spirit, as being the term of the will, to which goodneſs belongs.

Some divines give other reaſons of ſuch kinds of attributions and appropriations, *viz.* that it is to ſtave off thoſe imperfections from the divine perſons which are found in the creatures: for created fathers are weak, drooping, and impotent; wherefore to ward off this imperfection from the third perſon, he is peculiarly ſaid to be *almighty.*

Again, created ſons are generally imprudent; wherefore, to remove this imperfection from the ſecond perſon, he is ſaid to be *wiſe,* or *eternal wiſdom.*

Laſtly, great minds or ſpirits, among created beings, are frequently wicked; wherefore, to remove this imperfection from the third perſon, *goodneſs* is attributed to him.

The Father is the firſt perſon in the holy *trinity,* by reaſon the Father alone produces the Word by the way of *underſtanding*: and with the Word produces the Holy Spirit, by way of *will.*

Here is to be obſerved, that the Holy Spirit is not thus called from his ſpirituality, that being common and eſſential to all three Perſons, but from the paſſive ſpiration which is peculiar to him alone.

Add, that when one perſon in the holy *trinity* is called *firſt,* another *ſecond,* and another *third,* it muſt not be underſtood of a priority of time, or of nature, which would imply ſome dependance; but of a priority of origin and emanation, which conſiſts in this, that one perſon produces the other in ſuch manner, as that the perſon which produces cannot be, or be conceived, without that produced.

From theſe things it follows, that in the holy *trinity* there are five notions (underſtanding by *notion* the peculiar manner whereby one divine perſon is diſtinguiſhed from another.) The notions then whereby the Father is diſtinguiſhed from the Son and Holy Ghoſt, are innaſcibility, and paternity.—That whereby the Son is diſtinguiſhed from the two other divine perſons, is filiation.

Active ſpiration diſtinguiſhes the Father and the Son from the Holy Spirit, and paſſive ſpiration is that whereby the Holy Spirit is diſtinguiſhed from the Father and Son.

The circuminceſſion or perichoreſis, is the intimate in-exiſtence of the divine perſons, or their mutual in-dwelling in each other: for though they be really diſtinct, yet are they conſubſtantial; whence it is that Jeſus Chriſt ſays in St. John, cap. xiv. *Believe ye not that I am in the Father, and the Father in me?* Identity of eſſence, which the Greeks call ὁμȣσια, and conſubſtantiality, with a diſtinction of perſons, are neceſſary to this circuminceſſion. See CIRCUMINCESSION.

Many of the heathens ſeem to have had a notion of a *Trinity.*—*Steuch. Eugub. de Peren. Philoſ.* lib. 1. cap. 3. obſerves, that there is nothing in all theology more deeply grounded, or more generally allowed by them, than the myſtery of the *trinity.* The Chaldeans, Hebrews, Phœnicians, Greeks, and Romans, both in their writings and their oracles, acknowledged that the ſupreme being had begot another being from all eternity, which they ſometimes called the *Son of God,* ſometimes the *Word*, ſometimes the *Mind*, and ſometimes the *Wiſdom* of *God*, and aſſerted it to be the Creator of all things. See SON.

Among the ſayings of the Magi, the deſcendants of Zoroaſter, this is one; Παντα εξετελεσε πατηρ και νω παρεδωκε δευτερω: *the Father finiſhed all things, and delivered them to the ſecond Mind.*—The Egyptians called their *trinity*, *hemphta*, and repreſented it by a globe, a ſerpent, and a wing diſpoſed into one hieroglyphic ſymbol.—Kircher, Gale, *&c.* ſuppoſe the Egyptians learned their doctrine of the *trinity* from Joſeph, and the Hebrews.

The philoſophers, ſays St. Cyril, owned three hypoſtaſes or perſons; they have extended their divinity to three perſons, and even ſometimes uſed the term *trias*, *trinity:* they wanted nothing but to admit the conſubſtantiality of the three hypoſtaſes, to ſignify the unity of the divine nature, in excluſion of all triplicity with regard to difference of nature; and not to hold it neceſſary to conceive any inferiority of hypoſtaſes.

In effect, Plato, and ſome of his followers, ſpeak of a *trinity* in ſuch terms, that the primitive fathers have been accuſed of borrowing the very doctrine from the Platonic ſchool; but F. Mourgues, who has examined the point, aſſerts, that nothing can be more ſtupid, than to ſuppoſe the Platonic *trinity* brought into the church; and to have recourſe to the Platoniſm of the fathers to diſcredit their authority with regard to this dogma. See PLATONISM.

Friary or Fraternity of the Holy **TRINITY**, is a ſociety inſtituted at Rome by St. Philip Neri in 1548, to take care of pilgrims coming from all parts of the world to that capital, to viſit the tombs of St. Peter and St. Paul. See FRATERNITY.

In order to this, they had a houſe wherein they entertained them for the ſpace of three days, and not only them, but poor people who were on the recovery, and who being turned too haſtily out of the hoſpitals, were expoſed to relapſes.

It was firſt ſet on foot in the church of St. Saviour in Campo, and conſiſted only of fifteen poor perſons, who met in that church the firſt Sunday of each month, to practiſe the exerciſes of piety preſcribed by the founder, and to hear the exhortations he there gave.

In 1558 pope Paul IV. gave the fraternity the church of St. Benedict, to which they gave the title of the *Holy Trinity*. Since that time, they have built cloſe by it a very ample hoſpital for pilgrims, and perſons on the recovery.

The fraternity is now very conſiderable, and moſt of the nobleſſe of Rome, of either ſex, have done it the honour to be members of it.

Congregation of the Holy **TRINITY**, is a congregation of twelve prieſts eſtabliſhed in the hoſpital of the fraternity juſt mentioned, to take care of pilgrims and others entertained therein.

The frequent change of prieſts in the hoſpital occaſioning a deal of diverſity in the ſpiritual conduct and inſtruction of the pilgrims, to render it more uniform, the guardians and adminiſtrators eſtabliſhed a congregation of twelve prieſts, who lodge in a quarter of the hoſpital, as in a monaſtery, and live there in community.

Order of the Holy **TRINITY**. See TRINITARIAN.

TRINITY *Sunday*, is the next Sunday after Whit-ſunday; thus called, becauſe on that day was anciently held a feſtival (as it ſtill continues to be in the Romiſh church) in honour of the Holy *Trinity*.—The obſervation of this feſtival was firſt enjoined by the council of Arles in 1260.

TRINITY *Houſe*, is a kind of college at Deptford, belonging to a corporation of ſea-faring perſons, who have power, by the king's charter, to take cognizance of ſuch as deſtroy ſea-marks, to correct the faults of ſailors, *&c.* and to take care of ſeveral other things belonging to navigation and the ſeas, the examination of young officers, *&c. anno* 8° Eliz.

TRINITY *Term*. See the article TERM.

TRINIUMGELD, or THRINIUMGILD, a compenſation uſed among our Saxon anceſtors for great crimes, which were not abſolved but by paying a fine thrice nine times. See GELD.

TRINODA *neceſſitas*, in our ancient cuſtoms, a three-fold neceſſary tax, to which all lands were liable, *viz. expeditio, & reparatio pontis, & arcis*; going to the wars, repairing of bridges, and of caſtles.

Theſe were the three exceptions anciently inſerted in the king's grants of lands to the church, after the words that freed them from all ſecular ſervice. See PONTAGE.

TRINODA, or TRINODIA *terræ*, in ſome ancient writers, denotes a quantity of land containing three perches. See PERCH.

TRINOMIAL, or TRINOMINAL *Root*, in mathematics, is a root conſiſting of three parts, or monomes, connected together by the ſigns +, or —See ROOT, and SQUARE.

Such is $x + y + z$, or $a + b - c$. See BINOMIAL.

TRIO, in muſic; a part of a concert wherein three perſons ſing; or more properly a muſical compoſition conſiſting of three parts. See COMPOSITION.

Trio's are the fineſt kind of compoſition, and theſe recitativo's are what pleaſe moſt in concerts. See CONCERT, HARMONY, *&c.*

TRIOCTILE, in aſtrology, an aſpect or ſituation of two planets with regard to the earth, when they are three octants, or eighth parts of a circle, *i. e.* 135 degrees diſtant from each other.

This aſpect, which ſome call the *ſeſquiquadrans*, is one of the new aſpects ſuper-added to the old ones by Kepler. See ASPECT.

TRIONES, in aſtronomy, a ſort of conſtellation, or aſſemblage of ſeven ſtars, in urſa minor; popularly called *Charles's Wane*. See URSA *minor*.

From the *ſeptem triones* the north pole takes the denomination *ſeptentrio*. See NORTH, POLE, *&c.*

TRIOURS, or TRIERS, in law, ſuch as are choſen by the court to examine whether a challenge made to the pannel of jurors, or any of them, be juſt or no. See JURY.

TRIP, a ſea term. A ſhip is ſaid to bear her topſails *a-trip*, when ſhe carries them hoiſted up to the higheſt.

TRIPARTITE, TRIPARTITUS, ſomething divided into three parts, or made by three parties; as, an indenture *tripartite*, *&c.* See INDENTURE.

TRIPARTITION, is a diviſion by three, or the taking the third part of any number, or quantity. See PARTITION, and DIVISION.

TRIPHTHONGUE, in grammar, an aſſemblage or concourſe of three vowels in the ſame ſyllable; as in *Quae*. See SYLLABLE.

Quintilian, *lib.* I. *cap.* 6. aſſerts, that there never was any ſyllable of three vowels, but that one of them was always turned into a conſonant: Sciоppius aſſerts the contrary:—However this may be in the Latin and Greek, which were the only languages Quintilian underſtood, it is certain there are ſeveral languages in Europe, wherein *triphthongues* are in uſe. See DIPHTHONG.

TRIPLE, three-fold. See RATIO, and SUB-TRIPLE.

TRIPLE, in muſic, is one of the ſpecies of meaſure, or time. See TIME, and MEASURE.

Triple time conſiſts of many different ſpecies, whereof there are in general four, each of which has its varieties.—The common name of *triple* is taken hence, that the whole or half meaſure is diviſible into three equal parts, and is beaten accordingly.

The firſt ſpecies is called the *ſimple triple*, wherein the meaſure is equal to three ſemibreves, three minims, three crotchets, three quavers, or three ſemiquavers; which are marked thus, $\frac{3}{1}$, or $\frac{3}{2}$, $\frac{3}{4}$, $\frac{3}{8}$, $\frac{3}{16}$; but the laſt is not much uſed, except in church muſic.

In all theſe, the meaſure is divided into three equal parts or times, called thence *triple time*, or the meaſure of *three times*, whereof two are beat down, and the third up.

The ſecond ſpecies is the *mixt triple:* its meaſure is equal to ſix crotches, or ſix quavers, or ſix ſemiquavers, and accordingly marked $\frac{6}{4}$, or $\frac{6}{8}$, or $\frac{6}{16}$; but the laſt is ſeldom uſed.

The meaſure here is uſually divided into two equal parts or times, whereof one is beat down, and one up; but it may alſo be divided into ſix times, whereof the firſt two are beat down, and the third up; then the next two down, and the laſt up, *i. e.* each half of the meaſure is beat like the *ſimple triple* (on which account it may be called the *compound triple*;) and becauſe it may be thus divided either into two or ſix times (*i. e.* two *triples*) it is called *mixed*, and by ſome the *meaſure of ſix times*.

The third ſpecies is the *compound triple*, conſiſting of nine crotchets, or quavers, or ſemiquavers, marked $\frac{9}{4}$, $\frac{9}{8}$, $\frac{9}{16}$, the firſt and laſt are little uſed; ſome alſo add $\frac{9}{1}$, $\frac{9}{2}$, which are never uſed.

Some authors add other two, *viz.* ſix ſemibreves, and ſix minims, marked $\frac{6}{1}$ or $\frac{6}{2}$; but theſe are not in uſe.

This meaſure is divided either into three equal parts or times, whereof two are beat down, and one up; or each third part may be divided into three times, and beat like the ſimple *triple*; on which account it is called the *meaſure of nine times*.

The fourth ſpecies is a compound of the ſecond ſpecies, containing twelve crotchets, or quavers, or ſemiquavers, marked $\frac{12}{4}$, $\frac{12}{8}$, $\frac{12}{16}$, to which ſome add $\frac{12}{1}$ and $\frac{12}{2}$, which are never uſed; nor are the firſt and third much uſed, eſpecially the latter.

The meaſure here may be divided into two times, and beat one down, and one up; or each half may be divided, and beat as the ſecond ſpecies, either by two or three; in which caſe it will make in all twelve times, and hence is called *the meaſure of twelve times*.

The French and Italian authors make a great many more ſpecies and diviſions of *triple* time, unknown, or at leaſt, unregarded by our Engliſh muſicians, and therefore not ſo neceſſary to be dwelt upon here.

TRIPLE *quartan fever*. See the article FEVER.

TRIPLE *Inciſion*. See the article ENGRAFTING.

TRIPLICATE *Ratio*, is the ratio which cubes bear to each other. See CUBE.

This ratio is to be diſtinguiſhed from *triple* ratio, and may be thus conceived.—In the geometrical proportionals 2, 4, 8, 16, 32; as the ratio of the firſt term (2) is to the third (8) duplicate of that of the firſt to the ſecond, or of the ſecond to the third: ſo the ratio of the firſt to the fourth is ſaid to be *triplicate* of the ratio of the firſt to the ſecond, or of that of the ſecond to the third, or that of the third to the fourth, as being compounded of three equal ratio's. See RATIO.

TRIPLICATIO, TRIPLICATION, in civil law, is the ſame with ſur-rejoinder in common law. See SUR-REJOINDER.

TRIPLICITY, or TRIGON, among aſtrologers, is a diviſion of the ſigns, according to the number of the elements, each diviſion conſiſting of three ſigns. See SIGN.

Triplicity is frequently confounded with *trine aſpect*; though, ſtrictly ſpeaking, the two are very different things: as *triplicity* is only uſed with regard to the ſigns; and *trine*, on the contrary, with regard to the planets. See TRINE.

The ſigns of *triplicity* are thoſe which are of the ſame nature, and not thoſe which are in trine-aſpect.—Thus Leo, Sagittary, and Aries are ſigns of *triplicity*, becauſe thoſe ſigns are all ſuppoſed fiery.

TRIPLOIDES, a ſurgeon's inſtrument, with a three-fold baſis, uſed in the reſtoring great depreſſions of the ſcull. *Blanc.* See TREPANUM, and TREPANNING.

TRIPOD, TRIPOS, in antiquity, a famed ſacred ſeat or ſtool, ſupported by three feet, whereon the prieſts and ſibyls were placed to render oracles. See ORACLE.

It was on the *tripos* that the gods inſpired the Pythians with that divine fury and enthuſiaſm, wherewith they were ſeiſed at the delivering their predictions. See ENTHUSIASM, PYTHIAN, &c.

M. Spanheim obſerves, that on Roman medals, the *tripod* expreſſes ſome prieſthood, or ſacerdotal dignity.—A *tripod*, with a raven and a dolphin, is the ſymbol of the duumviri, deputed for keeping of the ſibyllin oracles, and for conſulting them on occaſion.

TRIPODIUM.—In the laws of Hen. I. occurs this paſſage—*In quibus vero cauſis triplicem ladam haberet, ferat judicium* tripodii, *i. e.* 60 ſolid. The meaning whereof, according to ſome, is, that as for a ſmall offence, the compoſition was twenty ſhillings; ſo for a great offence, which was to be purged *triplici lada*, the compoſition was three times twenty ſhillings, called *tripodium*.

TRIPOLI, or TRIPOLY, *terra* TRIPOLITANA, a kind of dry, ſoft ſtone, or chalk, of a citron colour, uſed in poliſhing the lapidaries, goldſmiths, copper-ſmiths, and glaſs-grinders works. See GLASS, GRINDING, POLISHING, &c.

Some imagine *tripoli* to be a common ſtone, burnt and calcined by the ſulphurous exhalations which happen to be under the mines where it is found: of theſe mines there are a number in divers parts of Europe, particularly in Italy, where the *tripoli* is very good.—Others, with more probability, take it for a native earth. See EARTH.

TRIPPING, in heraldry, denotes the quick motion of all ſorts of deer, and ſome other creatures repreſented with one foot up, as it were on a trot. See COUNTER-TRIPPING.

In ſpeaking of lions, they ſay *paſſant*, inſtead of *tripping*. See PASSANT.

TRIPTHONGUE. See the article TRIPHTHONGUE.

TRIPTOTES,* in grammar, defective nouns, which have only three caſes: ſuch is *fors, fortis, forte*; or *dica, dicam, dicas*.

* The word is compounded of τρεις, *three*, and πτωσις, *caſe*.

TRIREME, or TRIREMIS, in antiquity, a galley with three ranks of oars on a ſide. See GALLEY.

TRISACRAMENTARIANS, or TRISSACRAMENTARIANS, an appellation given to a ſect in religion, who admit of three ſacraments, and no more. See SACRAMENT.

There have been ſeveral *triſacramentarians* among the proteſtants, who allowed of baptiſm, the euchariſt, and abſolution, for ſacraments.—The Engliſh are often miſrepreſented by foreigners as *triſacramentarians*, from an opinion that they allow ordination a ſacrament. See ORDINATION.

TRISAGION,* or TRISAGIUM, in church-hiſtory, a hymn wherein the word *holy* is repeated three times. See HYMN.

* The word is Greek, τρισαγιον, compounded of τρεις, *three*, and αγιος, *ſanctus*, *holy*.

The proper *triſagion* is thoſe words *holy*, *holy*, *holy*, *Lord God of ſabaoth*, which we read in Iſaiah vi. 3. and in the Apocalypſe. From theſe words the church formed another *triſagion*, which is rehearſed in Latin and Greek, in the reſpective churches, to this effect: *Holy God*, *holy mighty*, *holy immortal! have mercy upon us.*

Petrus Fullenſis to this *triſagion* added, ὁ ϛαυρωθεις δι ἡμας, *Thou who waſt crucified for us*,—*have mercy*, *&c.* thus attributing the paſſion not to the ſon alone, but to all the three perſons of the trinity, and pronouncing anathema to all ſuch as would not ſay the ſame. See THEOPASCHITE and PATRIPASSIAN.

The uſe of the ſecond *triſagion* (excluſive of the addition of Fullenſis) began in the church of Conſtantinople, from whence it paſſed into the other churches of the eaſt, and afterwards into thoſe of the weſt.—Damaſcenus, Codin, Balſamon, and others, ſay it was in the time of the patriarch Proclus that it was firſt introduced, and on the following occaſion: there being a violent earthquake in the 35th year of the younger Theodoſius, the patriarch made a grand proceſſion, wherein, for ſeveral hours together, was ſung the Kyrie eleiſon, Lord have mercy upon us. While this was in hand, a child was taken up into the air, where, it ſeems, he heard the angels ſinging the *triſagion* juſt mentioned. He returned ſoon after, and told what he had heard: upon which they began to ſing that hymn, and the more willingly too, as they attributed the troubles they were then under, to the blaſphemies which the heretics of Conſtantinople uttered againſt the Son.—Aſclepiades, Cedrenus, pope Felix, Nicephorus, &c. relate the ſame ſtory.

Petrus Fullenſis, patriarch of Antioch, and a zealous partiſan of Neſtorius, endeavoured to corrupt the hymn, by the addition above-mentioned, *who ſuffered for us*; but in vain: it ſtill ſubſiſts in its primitive purity, both in the Latin, Greek, Ethiopic, and Mozarabic offices.

TRISECTION, or TRISSECTION, the dividing a thing into three. See DIVISION, SECTION, &c.

The term is chiefly uſed in geometry, for the diviſion of an angle into three equal parts. See ANGLE.

The *triſection of an angle* geometrically, is one of thoſe great problems, whoſe ſolution has been ſo much ſought by mathematicians for theſe two thouſand years; being, in this reſpect, on a footing with the quadrature of the circle, and the duplicature of the cube angle. See PROBLEM.

Several late authors have wrote of the *triſection* of the angle, and pretend to have found out the demonſtration thereof; but they have all committed paralogiſms. See ANGLE.

TRISMEGISTUS,* an epithet or ſurname given to one of the two Hermes's, or Mercuries, kings of Thebes, in Egypt, who was cotemporary with Moſes. See HERMES.

* The word is formed from τρις, *thrice*, and μεγιϛος, *greateſt*.

Mercury, or Hermes *Triſmegiſtus*, is the latter of the two Hermes's: the former having reigned about the time of the deluge.—They are both of them repreſented as authors of many arts and inſtitutions of the Egyptians. See HERMETIC.

TRISMOS, ΤΡΙΣΜΟΣ, or ΤΡΙΓΜΟΣ, a convulſion of the muſcles of the temples, cauſing the teeth to gnaſh. See CONVULSION, &c.

TRISOLYMPIONICA,* ΤΡΙΣΟΛΥΜΠΙΟΝΙΚΗΣ, among the ancients, a perſon who had thrice bore away the prize at the olympic games. See OLYMPIC.

* The word is compoſed of τρεις, *tres*, *three*; Ολυμπια, *Olympic games*; and νικη, *victory*.

The *triſolympionicæ*, or *triſolympionics*, had great privileges and honours allowed them.—Statues were erected to them, of the kind called *iconicæ*, which were modelled to the ſize and form of their perſons. See STATUE.

They were exempted from all taxes and incumbrances, and could never be marked with infamy.

TRISPAST,* TRISPASTON, in mechanics, a machine with three pullies; or an aſſemblage of three pullies, for raiſing great weights. See PULLY.

* The word is compounded of τρεις, *three*, and σπαω, *traho*, *I draw*.

The *triſpaſton* is a ſpecies of polyſpaſton. See POLYSPASTON.

TRISSACRAMENTARIANS. See the article TRISACRAMENTARIANS.

TRISSECTION } See the articles { TRISECTION.
TRISSECTING *Compaſſes*, } { COMPASSES.

TRISTRA,* TRUSTRA, or TRISTA, in our old law-books, an immunity, whereby a man is excuſed from attending on the lord of a foreſt, when he is diſpoſed to chaſe within the foreſt; ſo that he cannot be compelled to hold a dog, follow the chace, nor ſtand at a place appointed, which otherwiſe he might be, under pain of amercement. *Manw. P.* I. *p.* 86.

* *Sint quieti, &c. de Chevagio, Hondepenny, Buckſtol, &* Triſtis, *& de omnibus miſericordiis, &c.*—Privileg. de Semplingham.

TRISYLLABLE, or TRISSYLLABLE, in grammar, a word conſiſting but of three ſyllables. See WORD, and SYLLABLE.

TRITE, ΤΡΙΤΗ, in muſic, the third muſical chord, in the ſyſtem of the ancients. See CHORD.

There are three ſtrings under this denomination in the ancient diagramma; *viz. trite hyperboleon*, *trite diazeugmenon*, and *trite ſynemmenon*. See DIAGRAM.

TRITHEISM, the opinion of the *tritheiſts*; or the hereſy of believing three Gods. See GOD, and TRINITY.

Tritheiſm conſiſts in admitting not only of three perſons in the Godhead; but of three ſubſtances, three eſſences or hypoſtaſes, and three Gods. See PERSON, HYPOSTASIS, &c.

Several people, out of fear of giving into *tritheiſm*, have become ſabellians; and ſeveral others, to avoid ſabellianiſm, have commenced *tritheiſts*; ſo delicate and ſubtile is the medium. See SABELLIAN.

In the famous controverſy between Dr. South and Dr. Sherlock, the firſt is judged to have run into ſabellianiſm, by a too rigorous aſſerting the unity of a Godhead; and the latter into *tritheiſm*, by a too abſolute maintaining the trinity.

John the grammarian, ſurnamed Philoponus, lover of labour, is held the author of the ſect of the *tritheiſts*, under the emperor Phocas; at leaſt it appears, he was a zealous advocate thereof.—Leontius and Georgius Piſides wrote againſt him.

TRITON, in poetry, a ſea-demi-god, held by the ancients to be an officer or trumpeter of Neptune, attending on him, and carrying his orders and commands from ſea to ſea. See GOD.

The poets and painters repreſent him as half man, half fiſh, terminating in a dolphin's tail, and bearing in one hand a ſea-ſhell, which ſerved as a trumpet.

Some of the ancients make him the ſon of Neptune, and the nymph Salacia; Heſiod, of Neptune and Amphitrite; Neumenius in his book *de piſcationibus*, makes him the ſon of Oceanus and Tethys; and Lycophron, the ſon of Nereus.

But though Heſiod, and the mythologiſts, only ſpeak of one *triton*, the poets have imagined ſeveral; giving ſome of them for trumpeters to all the ſea-gods, particularly to Neptune and Venus: accordingly they were frequently introduced on the ancient theaters, and in the naumachia.

In effect, the *tritons* not only officiated as trumpeters in Neptune's retinue; but were alſo ſuppoſed to draw his chariot, *i. e.* the ſea-ſhell wherein he rode over the waters: as we find in Virgil, *Æneid* X. 209. Ovid. *Metam.* I. 333. and on a medal of Claudius.

The fable of the *tritons*, no doubt, took its riſe from ſea or mer-men; for that there are ſuch things as ſea-men, would ſeem a thing ſcarce to be doubted, after what we have ſaid under the article Mer-maid.

The poets ordinarily attribute to *triton* the office of calming the waves, and of making tempeſts ceaſe.—Thus in the 1ſt of the *metamorphoſes* we read, that Neptune deſiring to recall the waters of the deluge, commanded *Triton* to ſound his trumpet, at the noiſe whereof the waters all retired.

TRITONE, Tritono, in muſic, a falſe concord, conſiſting of three tones, or a greater third, and a greater tone. See Third, and Concord.

Its ratio, or proportion in numbers, is, of 45 to 32. In dividing the octave, we find, on one ſide, the falſe fifth, and the *tritone* on the other. See Octave.

The *tritone* is a kind of redundant fourth, conſiſting of three tones, whence its name; or, more properly, of two tones, with a greater ſemitone, and a leſſer, as of *ut* to *fa*, ſharp: of *fa* to *ſi*, flat, &c.—But it is not, as many imagine, a greater fourth; for the fourth is a perfect interval, which does not admit of any majority or minority: nor muſt the *tritone* be confounded with the falſe fifth; for the *tritone* only comprehends four degrees, *viz. ut*, *re*, *mi*, *fa*, ſharp; whereas the falſe fifth comprehends five, *viz. fa*, ſharp, *ſol*, *la*, *ſi*, *ut:* beſides, that among the ſix ſemitones, which compoſe the *tritone* chromatically, there are three greater and three leſſer; whereas among the ſix ſemitones, which compoſe the falſe fifth, there are only two leſſer, and four greater. See Fourth, Fifth, &c.

TRITURATION,* Tritura, or Tritus, in pharmacy, *grinding*; the act of reducing a ſolid body into a ſubtile powder, called alſo *levigation*, *pulveriſation*, &c. See Powder, Grinding, Levigation, &c.

* The word is formed from the Latin, *triturare, to thraſh*; of *tero, I wear, rub, grind.*

The *trituration* of woods, barks, minerals, and other hard and dry bodies, is performed in metalline mortars.

The ſame term is alſo applied to the comminuting, bruiſing, and dividing of humid matters into little parts—The *trituration* of moiſt bodies is performed in marble, or ſtone mortars, with peſtles of wood, glaſs, ivory, &c.

Trituration, Boerhaave obſerves, has a wonderful force to diſſolve ſome bodies, and will render them as fluid, as if they were fuſed by the fire.—Thus if you grind the powder of myrrh, and ſalt of tartar together, they will diſſolve each other. By rubbing new and bright filings of iron in a mortar, with double their weight of clean ſulphur, the iron will be diſſolved, ſo as by diluting it with water to afford the vitriolum martis. See Iron, and Vitriol.

Gold long ground in a mortar, with ſalt of tartar, will yield a kind of tincture; and rubbed with mercury, in a mortar of glaſs, it entirely diſſolves into a purple liquor, and becomes a moſt powerful medicine.

Dr. Langelotte has wrote a curious treatiſe of the great effects of *trituration* in chymiſtry; and deſcribes a peculiar way he employed to grind gold, whereby he could render it as fluid as the fire does, and make an aurum potabile, by the bare motion of a mill. See Gold, and Aurum.

That author, in the *Philoſophical Tranſactions*, mentions his way of grinding gold, and deſcribes two engines, or philoſophical mills for the purpoſe, with one of which, in the ſpace of fourteen natural days, he reduced a leaf of gold to a duſky powder, and putting it into a ſhallow retort placed in a ſand-heat, he thence obtained, by gradually increaſing the fire, and giving a ſtrong one at laſt, a few very red drops, which, digeſted *per ſe*, or with tartarized ſpirit of wine, afforded a pure and genuine aurum potabile.

The ſucceſs of this operation, the doctor attributes, in a great meaſure, to the ſalt of the air, which, in grinding, plentifully mixes and unites itſelf with the gold.

Trituration is alſo uſed in medicine, for the action of the ſtomach, on the food, whereby it is fitted for nutriment. See Stomach, &c.

Some phyſicians maintain that digeſtion is performed by *trituration*, and not by fermentation; or that all the ſtomach does, is to grind and comminute the food into ſmaller parts to fit it for nutrition, without any other alteration therein.—See the article Digestion, where the doctrine is laid down at large.

This ſyſtem was much talked of ſome years ago, being countenanced by Dr. Pitcairn, and others; but ſeems now much declined.—The doctrine of *trituration* is not new: Eraſiſtratus maintained it in all its latitude many ages ago; and the moderns have only revived it.

It was firſt broached in the time of Hippocrates, that is, in a time when anatomy was but little known: and it was this that rendered it current.—An opinion was entertained by ſome phyſicians of thoſe times, that the ſtomach was only the receptacle of the ſolid or dry foods; that thoſe foods, after having been diluted, and broke in the mouth, were again broke more perfectly in the ſtomach, and by this means alone were converted into a chyle: but that the drink, by reaſon of its liquidity, not being ſubject to be broken, went to the lungs, and not the ſtomach, where, by reaſon of its abundance, it would rather have prejudiced the digeſtion than have aided it. Hippocrates, we read, in the fourth book of *diſeaſes*, ſtood up ſtrenuouſly againſt an opinion ſo viſibly contrary to reaſon and experience; and he informs us, that if he gave himſelf this trouble, it was becauſe the error had already got a good number of partizans.--It could not ſtand long againſt the reaſons of Hippocrates; and its defeat was followed by the intire ruin of the ſyſtem of *trituration*, which had its foundation thereon. But Eraſiſtratus retrieved it again; and the doctrine, after having been ſupported for ſome time, fell anew into oblivion; whence ſome late authors have in vain endeavoured to recover it.

TRIUMPH, Triumphus, a ceremony, or ſolemnity, practiſed among the ancient Romans, to do honour to a victorious general, by affording him a magnificent entry into their city.

The triumph was the moſt pompous ſpectacle known among the ancients: authors uſually attribute its invention to Bacchus; and tells us, that he firſt *triumphed* upon the conqueſt of the Indians; and yet this ceremony was only in uſe among the Romans.

The *triumph* was of two kinds, the *leſſer*, and the *greater*.—The *leſſer triumph* was granted upon a victory over ſome unequal or unworthy enemy; as over pyrates, ſlaves, &c.—This they called *ovatio*; becauſe the only ſacrifices offered herein were ſheep. See Ovatio.

The *greater triumph*, called alſo *curulis*, and ſimply, the *triumph*, was decreed by the ſenate to a general, upon the conquering of a province, or gaining a ſignal battle.

The order and œconomy of the *triumph* was thus.—The general having diſpatched couriers with tidings of his ſucceſs, the ſenate met in bellona's temple to read the letters:—this done, they ſent him the title *imperator*, with orders for him to return, and to bring his victorious troops along with him. When he was arrived near the city, the general and principal officers took oath of the truth of the victory; and the day of *triumph* was appointed.

The day being arrived, the ſenate went to meet the conqueror without the gate called *capena*, or *triumphalis*, and marched in order before him to the capitol.—He was richly clad in a purple robe embroidered with figures of gold, ſetting forth his glorious atchievements: his buſkins were beſet with pearl, and he wore a crown, which at firſt was only laurel, but afterwards gold: one hand bore a laurel branch, and the other a truncheon. He was drawn in a car or chariot, adorned with ivory and plates of gold, drawn uſually by two white horſes, though ſometimes by other animals; as that of Pompey, when he *triumphed* over Africa, by elephants: that of Mark Anthony, by lions; that of Heliogabalus, by tygers; that of Aurelian, by deer; that of Nero, by hermaphrodite mares, &c.

At his feet were his children, or, ſometimes, on the chariot horſes.—It is added, that the public executioner was behind him, to remind him, from time to time, that theſe honours were tranſitory, and would not ſcreen him from the ſeverity of the laws, if he ſhould ever be found delinquent.

The cavalcade was led up by the muſicians, who had crowns on their heads: after them came ſeveral chariots, wherein were plans of the cities and countries ſubdued, done in relievo: they were followed by the ſpoils taken from the enemy, their horſes, arms, gold, ſilver, machines, tents, &c. After theſe came the kings, princes or generals ſubdued, loaden with chains, and followed by mimicks and buffoons, who inſulted over their misfortunes.—Next came the officers of the conquering troops, with crowns on their heads.

Then appeared the *triumphal* chariot; before which, as it paſſed, they all along ſtrewed flowers; the muſic played in praiſe of the conqueror amidſt the loud acclamations of the people, crying, *io triumphe*. See Acclamation.

The chariot was followed by the ſenate clad in white robes, and the ſenate by ſuch citizens as had been ſet at liberty or ranſomed.

The proceſſion was cloſed by the prieſts, and their officers and utenſils, with a white ox led along for the chief victim.

In this order they proceeded through the *triumphal* gate, along the via ſacra to the capitol, where the victims were ſlain.

In the mean time, all the temples were open; and all the altars loaden with offerings and incenſe: games and combats were celebrated in the public places, and rejoicings appeared every where.

What was horrible amidſt all this mirth, was, that the captives, when arrived at the forum, were led back to priſon and ſtrangled; it being a point of religion with them, not to touch the victims till they had taken full revenge of their enemies.—The rites and ſacrifices over, the *triumpher* treated the people in the capitol, under the portico's, and ſometimes in Hercules's temple.

TRIUMPHAL *arch*, } See the articles { ARCH.
TRIUMPHAL *column*, } { COLUMN.

TRIUMPHAL *crown* or *garland*. See CROWN.—It is ſaid to have been taken from Apollo's crowning his head with a laurel after killing the Delphian ſerpent.

TRIUMPHAL *gown*, *toga triumphalis*. See the article TOGA.

TRIUMPHANT *church*. See the article CHURCH.

TRIUMVIR, one of three perſons who govern abſolutely and with equal authority in a ſtate.

The word is little uſed but in the Roman hiſtory.—Cæſar, Craſſus and Pompey were the firſt *triumvirs*, *i. e.* the firſt who divided the government of the republic among them. See TRIUMVIRATE.

There were alſo other officers, called *triumvirs*, *triumviri*; as the *triumviri capitales*, created in the year of Rome 463, to take care of priſoners, and look to the execution of criminals.

Triumviri monetales, who were magiſtrates created at the ſame time, to look to the coinage of the money; whence that mark ſtill extant on many ancient coins, IIIVIRI.—Theſe officers were very conſiderable, and choſen out of the knights.—They made part of the *centumviri*. The title they bear on medals is, IIIVIR AAA FF. *triumvir auro*, *argento*, *ære flando*, *feriendo*, which ſignifies that they had the direction of the caſting and ſtriking of gold, ſilver, and braſs.

There were alſo—*triumviri ædibus reficiendis*, officers appointed to look to the reparation of temples:—*triumviri colonis deducendis*, for the conducting and ſettling of colonies:—*triumviri*, for the raiſing of troops:—*nocturnal triumviri*, to prevent or extinguiſh fires:—*triumviri*, to review the forces, *&c.*

In the Acilian family, we read of one M. Acilius IIIVIR VALETU. that is, *triumvir of health*, or a magiſtrate of health.—M. Spanheim takes him to have been a magiſtrate eſtabliſhed to perform ſacrifice to the gods of health, to dedicate their temples, *&c.*

Onuphrius and Vaillant read *triumvir valetudinis*; Patin, *triumvir valetudinarius*; but M. Spanheim, with much more reaſon, reads *triumvir valetudo*; in like manner, as on a medal of the Aquilian family, we read IIIVIR VIRTUS, ſignifying, that one M. Aquilius had been made *triumvir*, to repair the temple of virtue, and Acilius that of health.

TRIUMVIRATE, TRIUMVIRATUS, an abſolute government adminiſtered by three perſons, with equal authority. See TRIUMVIR.

There were two famous *triumvirates* at Rome.—Pompey, Cæſar and Craſſus eſtabliſhed the firſt; and Auguſtus, Mark Anthony, and Lepidus, the ſecond.

This latter *triumvirate* gave the laſt blow to the liberty of the republic. Auguſtus having vanquiſhed Lepidus and Anthony, the *triumvirate* ſunk into a monarchy. See MONARCHY.

TRIUNE, *tres in uno*, three in one; a term ſometimes applied to God, to expreſs the unity of the God-head, in a trinity of perſons. See TRINITY.

TROCHAIC, TROCHAICUS, in the Latin poetry, a kind of verſe conſiſting of trochees; or wherein that foot predominates; as the iambus does in the iambic. See IAMBIC, and TROCHEE.

The 18th ode of the 2d book of Horace's odes, conſiſts of ſtrophes of two verſes, the firſt whereof is *trochaic* diameter catalectic; *i. e. trochaic*, compoſed of three trochees, and a ſyllable at the end: which ſome call the *Euripedean trochaic.*

Non ebur neque aureum——
Largiora flagito.

TROCHANTER, ΤΡΟΧΑΝΤΗΡ, in anatomy, a name given to two apophyſes ſituate in the upper part of the thigh-bone. See APOPHYSIS.

The largeſt, which is above, is called the *great trochanter*; and the ſmaller, beneath, the *leſs trochanter.*——See *Tab. Anat.* (Oſteol.) *fig.* 7. *n.* 23. 23. *fig.* 3. *lit. t.* and *lit. u. fig.* 7. *n.* 24. See alſo the article FEMUR.

The word literally ſignifies *rotator*, or *roller*; formed from the Greek, *τροχαω*, *roto*, *I run*, *I turn round.*—That appellation was given them by reaſon they receive the tendons of moſt of the muſcles of the thigh, among which are the obturators, which move it round. See OBTURATOR.

TROCHE, TROCHISCUS, in pharmacy, a form of medicine, made to be held in the mouth to diſſolve gradually.

The *troche* is properly a dry compoſition, the chief ingredients whereof, after having been brought into a very fine powder, are incorporated with ſome proper liquor, as diſtilled waters, wine, vinegar, or mucilages; and reduced into a maſs, which is moulded into little cakes, or balls of any form, at pleaſure, and dried in the air, far from the fire.

There are *troches* of various kinds, and for various intentions; as, *purgative*, *alterative*, *aperitive*, *corroborative*, &c. *troches.* Latin authors call them *paſtilli*, *rotulæ*, *placentulæ*, *orbes*, and *orbiculi*; and the Engliſh, frequently, *lozenges.* See LOZENGE, PASTIL, *&c.*

The chief *troches* are thoſe of agaric, liquorice, nutmeg, amber, rhubarb, capers, myrrh, roſes, camphor, ſquillæ, vipers, *&c.*--Thoſe of coloquintida, are called *troches of alhandal*, from the Arabs, who called coloquintida *handal.*

TROCHEE, TROCHÆUS, in the Greek and Latin poetry, a kind of foot, conſiſting of two ſyllables, the firſt long, the latter ſhort:—ſuch are the words *vādĕ* and *mūſă.* See FOOT.

The *trochee* is the reverſe of the iambus, and has juſt a contrary effect; the latter being light and ſprightly, and the former weak and languid, as all thoſe meaſures are which move from a long to a ſhort ſyllable. See IAMBIC.

Some call the *trochee*, *choreus*, becauſe proper for ſongs and dances. Theſe give the denomination *trochæus* to the tubrachys. *Quint. l.* 10. *c.* 4.

TROCHILUS, in architecture, a hollow member, more uſually called by modern architects, *ſcotia*; and by our Engliſh workmen, *caſement.*—See *Tab. Archit. fig.* 4. See alſo the article SCOTIA.

TROCHITÆ, or TROCHITES, in natural hiſtory, a kind of figured foſſil ſtones, reſembling plants; vulgarly called *St. Cuttbert's beads.* See FOSSIL, and STONE.

They are uſually of an opake, dark colour, break like flint, gloſſy and ſhining, and are eaſily diſſolved in vinegar.——Their figure is generally cylindrical, ſometimes a little tapering, the circumference ſmooth, and both the flat ſides covered with fine radii drawn from a certain hole in the middle to the circumference.——See *Tab. Natural Hiſtory*, *fig.* 12. *n.* 1, 2, 3. Two or three or more of theſe *trochitæ*, joined together, conſtitute what the naturaliſts call an *entrochos.*

The *trochitæ*, or ſingle joints, are ſo ſet together, that the rays of one enter into furrows in the other, as in the ſutures of the ſcull.—They are found in great plenty in the bodies of the rocks at Braughton and Stock, two villages in Craven, at all depths under ground; alſo in Mendip hills, *&c.* ſometimes only ſprinkled here and there, and ſometimes in large ſtrata or beds of all magnitudes, from the ſize of the ſmalleſt pin, to two inches about.

They are generally found ramous or branchy, larger branches ariſing from the ſtem, or cylinder, and ſmaller from theſe. The branches being deeply inſerted into the ſtem, the tearing them off leaves great holes therein.

Dr. Liſter has diſcovered a ſort of little fragments among them, which he takes to have been the apices of the plants; and another ſort, which he ſuppoſes to have been the roots.—In effect, the *trochitæ* are generally allowed to be the bodies of rock plants, ſuch as coral is.

Mr. Beaumont, in the *philoſophical tranſactions*, aſſures us, that he has found that all the cliffs in ſome mines are made up of theſe ſtone-plants, ſome whereof have been converted into lime-ſtone rocks, while in their tender growth; while others becoming ſpar, compoſe bodies of that ſubſtance: and conſidering that all the cliffs for a very large circumference in ſome places conſiſt wholly of theſe plants, we may ſay, there have been, and, in all probability, ſtill are, whole fields or foreſts of theſe under-ground, as there are of coral in the red ſea. See CORAL.

In the courſes between the cliffs, are found of theſe plants at all ſtages and degrees of maturity, growing up in the gritty clay, and rooted in the rake-mold ſtones, many of them of the form and dimenſions of a tobacco-pipe, ſome yet crude or raw clay, others of the conſiſtence of lime-ſtone, others ſtill harder, with the evident beginnings of circles and ſutures, and others full grown, and become perfect ſpar, which is their point of maturity. See SPAR.

The pith continues ſtill white and ſoft; as the whole plant, no doubt, was at firſt; and is continually refreſhed by the mineral ſteams and moiſture which have free acceſs to it through five hollow ſlits or feet in the figured roots, or through the maſs of clay uſually lying under the plain roots.

Nor can it be denied, but theſe ſtone-plants have true life and growth.—In the curioſity of their make, they may vie with moſt of the vegetable kingdom, and are ſhaped and formed like them, having ſtem, branches, roots, an inward pith, as likewiſe joints and runnings in their grit, and ſometimes cells to ſupply the place of veins and fibres: why, then, may not they be allowed as proper vegetations, as other plants?

Indeed, it is highly probable, theſe rock-plants are lapides ſui generis, and not parts of animals or plants petrified, as many authors have imagined.—If the figured roots, whereon they ſometimes grow, give any ſuſpicion they might have belonged to an animal, particularly a ſpecies of the ſtella arboreſcens; the trunks clearly evince the contrary, and can never be looked on as parts of an animal: nor are they reducible to any known ſpecies of vegetables. Mr. Beaumont tells us, that he has by him above 20 different ſpecies of *trochites*, all of them wonderfully regular, and not to be paralleled by any vegetable he knows of in nature: and it is inconceiveable how ſo many ſpecies diffuſed through many parts of the earth, ſhould come to be loſt. See PLANT, PETRIFACTION, CORNU *Ammonis*, *&c.*

TROCHLEA, ΤΡΟΧΑΙΑ, one of the mechanical powers, uſually called a *pulley*. See PULLEY.

Hence, the cavity in the bone of the arm or ſhoulder, whereinto, when the arm is ſtretched forth, the proceſs of the undermoſt and leſſer of the long bones of the cubitus enters, is alſo called *trochlea*. See CUBITUS, *&c.*

TROCHLEARES, in anatomy, a name given to the oblique muſcles of the eye; becauſe ſerving to pull the eye obliquely upwards or downwards, as if it turned like a pulley. See OBLIQUUS, and EYE.

TROCHOID,* TROCHOÏS, or TROCHOIDES, in geometry, a curve, whoſe geneſis may be thus conceived.—If a wheel or circle be moved with a two-fold motion at the ſame time, the one in a right line, and the other circularly about its centre: and theſe two motions be equal, *i. e.* deſcribe two equal lines in the ſame time: and if in the radius, which at the beginning of the motion, reaches from the centre of the wheel, or the firſt point of the line which deſcribes the circumference; if, I ſay, in this radius a point be taken any where except in the centre, this point will deſcribe a curve, one part whereof will be below the line deſcribed by the centre, and the other above it.—This line, thus deſcribed by the point taken in the radius, is called the *trochoid*.

* The word is formed from the Greek, τροχος, *wheel*, and ειδος, *form*.

The right line which joins the two extremities of the *trochoid*, and which is either the path the wheel makes, or a line parallel to that path, is called the *baſis of the trochoid*.

The *axis of the trochoid* is the diameter of the wheel, perpendicular to the baſe in the middle of the motion; or that part of the radius between the *trochoid* and its baſe.—The point wherein the axis is cut into two parts by the line deſcribed by the centre of the wheel, is called *the centre of the trochoid*; the uppermoſt point of the axis, the *vertex of the trochoid*; and the plane, comprehended between the *trochoid* and its baſe, the *trochoidal ſpace*.

The *trochoid* is the ſame with what we otherwiſe call the *cycloid*; the properties, *&c.* whereof, ſee under the article CYCLOID.

TROGLODYTES,* TROGLODYTÆ, in the ancient geography, a people of Æthiopia, ſaid to have lived in caves under-ground.

* The word is formed of the Greek, τρωγλη, *caverna*, and δυω, *ſubeo*, *I enter*.

Pomp. Mela gives a ſtrange account of the *Troglodytes*.—He ſays, they did not ſo properly ſpeak as ſhriek; that they lived on ſerpents, *&c.*—Tzetzes calls them *ichthyophagi*. Montanus takes them to be the ſame with thoſe called in ſcripture *Ghanamim*. Pintianus in Strabo will have the name wrote without the *l*, *Trogoditæ*.

TROGLODYTES is alſo an appellation given to a ſect of Jewiſh idolaters. See SECT.

The prophet Ezekiel relates, chap. viii. ver. 8, 9, 10, *&c.* that God, among other abominations of the Iſraelites which he ſet before him, ſhewed him ſeventy old men, who with their cenſers in their hands, adored ſecretly all kinds of animals and reptiles painted on the wall.

Philaſtrius, on this viſion of the prophet, erects theſe idolaters into a ſect of Iſraelites, who, hiding themſelves under-ground and in caves, adored all kinds of idols: and the editor of Philaſtrius calls this ſect *Troglodytes*, from τρωγλη, *a cave*, and δυω, *I penetrate*, as believing, on the credit of Philaſtrius, that thoſe of this ſect hid themſelves in caves.

And yet the prophet plainly ſhews, that it was in ſecret parts of their houſes, and not in ſubterraneous caverns, that theſe 70 Iſraelites idolatrized.--The name *Troglodytes*, then, is feigned; ſo is the ſect.

TROIA, or TROJAN *games*, *ludi* TROJANI, were games inſtituted by Aſcanius, ſon of Æneas; and which afterwards paſſed to the Romans, and were celebrated in the circus by the youth of Rome. See GAMES, and CIRCUS.

One of the number who preſided over the ſolemnity, was called *princeps juventutis*; and was always of one of the firſt families in Rome. See PRINCE.

At firſt, it is ſuppoſed, they only engaged on foot, and on horſeback; becauſe Virgil, who deſcribes theſe games in the Æneid. *lib.* 5. only ſpeaks of horſes and cavaliers, without any mention of bigæ and quadrigæ, which were not in uſe at Rome, till long after Aſcanius.—And yet Dion, ſpeaking of Cæſar's games, ſays, the youth there combated in chariots: but it is thought by ſome, that theſe were not the *Trojan* games, but races and combats of a different kind, proper for young people, of a more advanced age.

TROLLING, among Anglers.—To *troll*, is to fiſh for pikes with a rod, whoſe line runs on a reel. See *Pike*-FISHING.

TRONAGE,* TRONAGIUM, an ancient cuſtom or toll paid for the weighing of wool.

* The word comes from *trona*, an old name for a beam to weigh withal. Hence,

TRONATOR, an officer of the City of London, whoſe buſineſs it was to weigh the wool brought into that city. See WEIGHER.

TRONCONNEE, or TRONCONNE', in heraldry, denotes a croſs or other thing cut in pieces and diſmembered; yet ſo as all the pieces keep up the form of a croſs, though ſet at a ſmall diſtance from one another. See CROSS.

TRONE *weight*, was the ſame with what we now call *troy-weight*. See WEIGHT.

TROOP, a ſmall body of horſe, or dragoons, uſually about 50; commanded by a captain: anſwering to a company of foot. See COMPANY, CAPTAIN, SQUADRON, *&c.*

Independent TROOP, is a *troop* that is not imbodied with, or joined with any regiment. See REGIMENT, GUARD, *&c.*

To beat the TROOP, is the ſame with beating the aſſembly. See ASSEMBLY.

TROOPS *of the houſhold*. See the article HOUSHOLD.

TROPE, TROPUS, in rhetoric, a word or expreſſion uſed in a different ſenſe from what it properly ſignifies.—Or, a word changed from its proper and natural ſignification to another, with ſome advantage. See FIGURE.

As, when we ſay an *aſs*, for a *ſtupid perſon*; *thunderbolt of war*, for a *great captain*; to *waſh the black-moor white*, for a *fruitleſs undertaking*.

This change of ſenſe is never to be uſed, but where it gives a force and dignity, or renders the diſcourſe more ſignificant, weighty and graceful.

It is called *trope*, τροπος, from the Greek, τρεπω, *verto*, *I turn*, *change*, in regard the words are here transferred from the things they properly import, to others which they only import indirectly; and that *tropes* only ſignify the things they are applied to, by reaſon of the connexion and relation thoſe things have with thoſe others, whoſe proper names they are.

This change or inverſion is performed various ways; but chiefly four; whence ariſe four principal *tropes*, *viz.* the metaphora, metonymia, ſynecdoche and ironia; each whereof, ſee under its proper article, METAPHORA, METONYMIA, SYNECDOCHE, *&c.*

Some authors confound *trope*, with figure; but they are very different things.—Moſt authors, as F. de Colonia, *&c.* make figure, the genus, and *trope*, a ſpecies; defining figure to be any ornament in diſcourſe, whereby it is raiſed above the common language; and *trope* to be that peculiar kind of ornament which conſiſts in a change of the ſenſe, *&c.*

But Voſſius makes *trope* and figure to be two collateral and independent things; defining *trope* to be the change of the ſenſe, *&c.* and figure, to be any ornament, except what becomes ſo by ſuch change, *&c.* See FIGURE.

'Tis in the *tropes*, principally, that the richneſs and variety of language conſiſts; and yet thoſe ſhould never be uſed but to expreſs what could only be repreſented imperfectly, in common and proper terms.—*Tropes* ſhould always be clear; they are vicious, if they be obſcure, or too far fetched. The idea of the *trope* ſhould be ſo connected with that of the proper name, that they ſhould follow each other; ſo that in exciting the one, the other ſhould be awakened of courſe.

Beſides the four capital *tropes* above-mentioned, there are ſeveral inferior ones.—When the *trope* is too bold, it is called an *hyperbole*; when continued, it is an *allegory*; when too obſcure, an *ænigma*; when it ſhocks us, or is too remote, a *catachreſis*. See HYPERBOLE, ALLEGORY, ÆNIGMA, *&c.*

Add to theſe, other *tropes*, as the metalepſis, antonomaſia and litotes, or extenuation. See METALEPSIS, *&c.*

Some alſo refer the ſix kinds of ſcoffing or deriſion to the *tropes*; *viz.* the ſarcaſm, diaſyrm, charientiſm, aſteiſm, mycteriſm and mimeſis; but without ſufficient reaſon. See SARCASM, IRONY, *&c.*

TROPHY,* TROPÆUM, among the ancients, a pile or heap of arms of a vanquiſhed enemy, raiſed by the conqueror in the moſt eminent part of the field of battle.

* The word is formed from the Latin, *trophæum*, or *tropæum*, which Voſſius deduces from the Greek, τροπη, *the flight of an enemy*.

The word is alſo uſed for an artificial repreſentation of ſuch a pile in marble, ſtone, or other matter.—Such were the *trophies* of Marius, and Sylla in the capitol, *&c.*

The ancient *trophies* conſiſt of Greek and Roman arms; and the modern ones of arms of the various nations now in uſe; as in thoſe inſulated ones near Blenheim, in the Fauxbourg S. Antoine, and in the caſtle of Verſailles.—Some are done in baſſo-relievo, as thoſe of the Trajan column, and the attic of the court of the Louvre.

Trophies are likewiſe frequently exhibited on medals of the emperors, ſtruck on occaſion of victories; wherein, beſides arms and ſpoils, are frequently ſeen, one or two captives by the ſides of the *trophy*.

Trophies, M. Vaillant obſerves, were, originally, nothing but trunks of trees, which the victor planted on the moſt eminent part of the conquered province, and hung them with the ſpoils of the enemy, to perpetuate the memory of his defeat.

TROPHY *money*, a duty paid annually by the houſekeepers in the ſeveral counties of England towards providing harneſs, drums, colours, *&c.* for the militia. See MILITIA.

TROPICAL *year*. See YEAR and SOLAR.

TROPICS, TROPICI, in aſtronomy, two immoveable circles of the ſphere, drawn through the ſolſtitial points, parallel to the equator. See CIRCLE, and SPHERE.

Such are the circles M E and N L, *Tab. Aſtronomy*, *fig.* 52. See SOLSTITIAL *point*.

The *tropics* may be defined, two circles parallel to the equator, at ſuch diſtance therefrom, as is equal to the ſun's greateſt receſs from the equator towards the poles; or to the ſun's greateſt declination; or the obliquity of the ecliptic. See DECLINATION, OBLIQUITY, &c.

Of the two *tropics* that drawn through the beginning of cancer E, is called the *tropic of cancer*. See CANCER.

And that through the beginning of capricorn, the *tropic of capricorn*. See CAPRICORN.

They have their name from the Greek, τροπη, *turn*, *converſion*, as being the limits of the ſun's way, or declination towards north and ſouth; ſo that when the ſun is arrived at either of them, he turns the other way.

Hence, 1. Since the declination of the ecliptic is the arch E A or L D; E N will be the diſtance of the *tropics*; which is double the greateſt declination.

2. Wherefore if the ſun's meridian altitude be obſerved, both in the winter and ſummer ſolſtice, and the latter be ſubtracted from the former, the remainder will be the diſtance of the *tropics*; half whereof is the greateſt declination of the ecliptic. See ECLIPTIC, SOLSTICE, &c.

TROPICS, in geography, are two leſſer circles of the globe, drawn parallel to the equator, through the beginnings of cancer and capricorn. See CANCER, and CAPRICORN.

Theſe *tropics* are in the planes of the cœleſtial *tropics*, and at the diſtance of 23° 29′ from the equator, which is the ſun's greateſt declination. See CIRCLE, and GLOBE.

TROPISTS, or TROPICI, the name of a ſect.—St. Athanaſius, in his letter to Serapion, gives this appellation to the Macedonians, who were alſo called *pneumatomachi* in the eaſt, and *patripaſſians* in the weſt. See PNEUMATOMACHI, &c.

The reaſon of the name *tropiſt* was, that they explained the ſcripture altogether by tropes and figures of ſpeech. See TROPE, ALLEGORY, MYSTICAL, &c.

The Romaniſts alſo give the appellation *tropiſts* to thoſe of the reformed religion; in regard of their conſtruing the words of the euchariſt figuratively. See TRANSUBSTANTIATION.

TROPITES, TROPITÆ, a ſect, who, according to Philaſtrius, maintained that the Word was turned or converted into fleſh, or into man. See INCARNATION.

This opinion they founded on that paſſage of St. John, miſunderſtood; *the Word was made fleſh*; as if it imported, that the Word was converted into fleſh, and not that he was cloathed with our fleſh, and our nature.

TROT, in the manage, one of the natural paces of a horſe, performed with two legs in the air, and two on the ground at the ſame time, croſs-wiſe, like St. Andrew's croſs; and continuing ſo alternately to raiſe the hind leg of one ſide, and the fore leg of the other ſide at once, leaving the other hind and fore leg upon the ground till the former come down.

In this motion, the nearer the horſe takes his limbs from the ground, the opener, the evener, and the ſhorter his *trot* will be.—If he takes up his feet ſlovenly, it is a ſign of ſtumbling and lameneſs; if he tread narrow, or croſs, it betokens interfering or failing; if he tread long, it ſhews over-reaching; if he ſteps uneven, it beſpeaks toil and wearineſs.

TROUBADOURS, a name anciently, and to this day, given the ancient poets of Provence. See POETRY.

Some will have the word borrowed from *trouver*, *to find*, by reaſon of their inventions; though others take them to have been called *trombadours*, by reaſon they ſung their poems on an inſtrument called a *trompe* or *trump*.

The poeſy of the *troubadours* conſiſted in ſonnets, paſtorals, ſongs, ſyrventes or ſatyrs, which were much to their taſte; and in tenſons, which were love diſputes.

Jean de Notre Dame, commonly called Noſtradamus, a procureur in the parliament of Provence, wrote an ample diſcourſe of theſe poets.—He makes the number ſeventy-ſix.

Paſquier tells us, he had an extract of an ancient book belonging to cardinal Bembo, entitled, *Los noms daquels qui firent tenſons & ſyrventes*, which made their number ninety-ſix, among which was an emperor, *viz.* Frederic I. and two kings, *viz.* Richard I. of England, and a king of Arragon, with a dauphin, ſeveral counts, &c. Not that all theſe had compoſed entire works in provincial; ſome of them had not brought forth any thing beyond epigrams.

Petrarch ſpeaks with applauſe of ſeveral *troubadours* in the IVth chapter of the triumph of love.—The Italian poets are ſaid to have borrowed their beſt pieces from the *troubadours*. Paſquier declares expreſly, that Dante and Petrarch are, indeed, the fountains of Italian poetry; but fountains which have their ſources in the provincial poetry.

Bouche, in his hiſtory of Provence, relates, that about the middle of the XIIth century, the *troubadours* began to be eſteemed throughout Europe, and that their credit and poeſy was at the higheſt about the middle of the XIVth. He adds, that it was in Provence that Petrarch learned the art of rhyming, which he afterwards practiſed, and taught in Italy.

TROVE in law. See TREASURE *trove*.

TROVER, in law, an action which a man hath againſt one that, having found any of his goods, refuſeth to deliver them upon demand.

Actions of detinue are frequently turned into actions upon the caſe *ſur trover* and converſion. See DETINUE, and DEPOSITE.

TROUGH *of the ſea*, is the hollow or cavity made between two waves or billows in a rowling ſea.

Hence, when a ſhip lies down there, they ſay ſhe lies in the *trough of the ſea*.

TROUSSEQUIN, in the manage, a piece of wood cut archwiſe, raiſed above the hinder bow of a great ſaddle, and ſerving to keep the bolſters firm.

TROUT *coloured*.—A horſe is ſaid to be of this colour when he is white, and ſpeckled with ſpots of black, bay, or ſorrel, eſpecially about the head and neck.

TROUT-*fiſhing*. See *Trout*-FISHING.

TROY *weight*, anciently called *trone-weight*. See TRONAGE, and WEIGHT.

TROY-*pound*. See the article POUND.

TRUCE,* TREUGA, a ſuſpenſion of arms; or a ceſſation of hoſtilities between two parties at war. See SUSPENSION, and ARMISTICE.

* The word, according to Menage, &c. comes from the Latin, *treuga*, which ſignifies the ſame; and which Caſeneuve derives further from the German, *traue*, or *treue*, which ſignifies *truſt*.

Truces are frequently concluded between princes, in order to come to a peace.—*Truces* of many years ſerve in lieu of treaties of peace between princes, whoſe differences cannot be finally adjuſted. See TREATY.

TRUCE *of God*, *Treuga Dei*, is a phraſe famous in the hiſtories of the XIth century, when the diſorders and licences of private wars between particular lords and families, obliged the biſhops of France to forbid ſuch violences within certain times, under canonical pains.

Thoſe intervals they called *treuga Dei*, *treve de Dieu*, q. d. *truce of God*, a phraſe frequent in the councils ſince that time.

The firſt regulation of this kind was in a ſynod held in the dioceſe of Elno in Rouſſillon, anno 1027, where it was enacted, that throughout that county, no perſon ſhould attack his enemy from the hour of nones on ſaturday, to that of prime on monday, that ſunday might have its proper honour: that no body ſhould attack, at any time, a religious prieſt walking unarmed, nor any perſon going to church, or returning from the ſame, or walking with women: that no body ſhould attack a church, or any houſe within thirty paces around it.—The whole under penalty of excommunication, which, at the end of three months, was converted into an anathema.

TRUCHMAN, *Dragoman*, or *Drogman*, in the countries of the Levant, an interpreter. See DRAGOMAN.

TRUCK, in a ſhip, a ſquare piece of wood at the top of a maſt, to put the flag-ſtaff in.—See *Tab. Ship*, *fig.* 1. *n.* 34, 79, 96, 121, 145. *lit. q.*

TRUCKING, in commerce. See PERMUTATION, EXCHANGE, COMMERCE, &c.

TRUCKS, among gunners, round pieces of wood in form of wheels, fixed on the axel-trees of carriages; to move the ordnance at ſea, and ſometimes alſo at land. See CARRIAGE.

TRUE, ſomething agreeable to the reality of things, or to truth. See TRUTH.

In this ſenſe we ſay, the *true* God, the *true* religion, *true* gold, &c.—in oppoſition to falſe, or pretended ones. See FALSEHOOD.

TRUE *place* of a planet, or ſtar, in aſtronomy, is a point of the heavens ſhewn or pointed out by a right line drawn from the centre of the earth through the centre of the planet or ſtar. See PLACE. See alſo PLANET, &c.

In this ſenſe the word ſtands oppoſed to *apparent* place, which is that found by a right line drawn from the obſerver's eye through the centre of the planet or ſtar. See APPARENT.

This point in the heavens is referred to the ecliptic or zodiac, by the planets or ſtars circle of longitude. See CIRCLE *of Longitude*.

TRUE *altitude*,	See the articles	ALTITUDE.
TRUE *anomaly*,		ANOMALY.
TRUE *horizon*,		HORIZON.
TRUE *aſthma*,		ASTHMA.
TRUE *propoſition*,		PROPOSITION.
TRUE *recovery*,		RECOVERY.
TRUE *ribs*,		RIBS.
TRUE *ſuture*,		SUTURE.

TRUFFLES,* *tubera terræ*, in natural hiſtory, a kind of ſubterraneous vegetable production, not unlike muſhrooms; ſee MUSHROOM.

* The word is formed from the French *truffe* or *truffle*; of the Latin, *tuber*, or *tuberculum*.

The ancient phyſicians, and naturaliſts, rank *truffles* in the number of roots, bulbs, or cloves; and define them to be a ſpecies of vegetables, without ſtalks, leaves, fibres, &c. Bradley calls them *under-ground edible muſhrooms*, or *Spaniſh trubbes*, and *under-ground deer's-balls* or *muſhrooms*.

They are produced moſt in dry chapped grounds, and that, as Pliny ſays, chiefly after rains and thunder, in autumn.—Their duration he limits to a year.—Their colour is uncertain; ſome being white, others black, *&c.*

In Italy, France, *&c.* they eat them as a great dainty, either fried in ſlices with oil, ſalt and pepper, or boiled over and again in their own broth.—The hogs are exceedingly fond of them, and are frequently the means of diſcovering the places where they are; whence the common people call them *ſwine-bread.*

The modern botaniſts rank *truffles* in the number of plants; though they want moſt of the uſual parts thereof.—All we know of their growth, is, that they are at firſt no bigger than a pea, reddiſh without, and within whitiſh; and that as they ripen, the white parts grow more duſky and black: only there are ſtill left a number of white ſtreaks, which all terminate at places where the outer coat is cracked, or open: and which, in all probability, are the veſſels that convey the nouriſhment into the *truffles.*

In theſe veſſels is found a whitiſh matter, which, when viewed with a microſcope, appears to be a tranſparent parenchyma, conſiſting of veſiculæ; in the middle whereof are perceived little round black grains, ſeparate from each other, ſuppoſed to be the ſeed of the *truffles.* See SEED.

When the *truffles* rot in the ground through exceſs of ripeneſs, theſe grains are the only thing that remain of them; and theſe are ſuppoſed to produce new *truffles,* which grow one after another.

What confirms the opinion of their coming from ſeed, is, that there have been *truffles* lately diſcovered in England, and this only in Northamptonſhire, and even only in one place thereof, *viz.* near Ruſhton, a place ſtocked with plants formerly brought from Languedoc; and it is only ſince then, that any *truffles* have been there obſerved: whence it is concluded, that the ſeed of theſe *truffles* was brought from France among the roots of the other plants.

Theſe Engliſh *truffles* were firſt diſcovered by Dr. Hatton.—Dr. Tancred Robinſon aſſures us, they are the true French *truffles,* the Italian *tartuffi* or *tartuffole,* and the Spaniſh *turmas de tiera,* being not noted by Mr. Ray as ever known on Engliſh ground: indeed, he adds, that he has ſeen them thrice as large at Florence, Rome, *&c.*

Thoſe obſerved in England are all included in a ſtudded bark or coat, and the inner ſubſtance is of the conſiſtence of the fleſhy part of a young cheſnut, of a paſte colour, a rank or hircine ſmell, and unſavory.

By a chymical analyſis, *truffles* are found to abound in a volatile alkali ſalt mixed with oil, upon which their ſmell, *&c.* depends. They never riſe out of the ground, but are found uſually half a foot beneath the ſurface thereof.

Dr. Hatton has obſerved ſeveral little fibres iſſuing out of ſome *truffles,* and inſinuating themſelves within the ſoil, which, in all probability, do the office of roots.—The *truffles* grow tolerably globular, as receiving their nouriſhment all around them; they being to be conſidered like ſea plants encompaſſed with their food, which they ſuck in through the pores of their bark or rind. See CORAL.

They are tendereſt and beſt in the ſpring, though eaſieſt found in autumn; the wet ſwelling them, and the thunder and lightening diſpoſing them to ſend forth their ſcent, ſo alluring to the ſwine: hence ſome of the ancients called them *ceraunia,* q. d. *thunder-ſtones.*

The depth at which the *truffles* lie, Dr. Robinſon obſerves, is no objection to their being of the vegetable tribe; that being a thing common to ſeveral other plants which ſhoot up ſtalks, particularly the lathyrus tuberoſus, commonly called *chamæbalanus* and *terræ glans,* in Engliſh *peaſe, earth-nuts,* the roots of our bulbocaſtanum, *&c.*

The ancients are exceedingly divided as to the uſe of *truffles*; ſome affirming them to be wholſome food, and others pernicious; Avicenna particularly, who will have them to cauſe apoplexies.—For my own part, ſays M. Lemery, I am of opinion they have both good and evil effects; they reſtore and ſtrengthen the ſtomach, promote the ſemen, *&c.* but when uſed too freely, they attenuate and divide the juices immoderately, and by ſome volatile and exalted principles, occaſion great fermentations, *&c.* though the pepper and ſalt they are ordinarily eaten withal, do doubtleſs contribute greatly to thoſe effects:—Their rich taſte is owing to their not putting forth any ſtalk; in effect their principles being united, and, as it were, concentred in a little bulb, muſt yield a richer and more delicious ſavour than if the juices were diſperſed by vegetation through the ſeveral parts of a common plant.—Some roaſt the *truffles* under the aſhes; others pulverize and mix them in ſauces.

TRUG,* or **TRUG-*corn*, TRUGA *frumenti*,** in our ancient cuſtoms, denotes a meaſure of wheat.

* *Tres* trug *frumenti vel avenæ faciunt 2 buſhels, inter præbendam de Hunderton in eccleſia* Heref. M. S. *de temp. E.* 3.

At Lempſter, the vicar has *trug-corn* allowed him for officiating at ſome chapels of eaſe, as Stoke and Dockly within that pariſh.

TRULLIZATION, in the ancient architecture, the art of laying on ſtrata or layers of mortar, gypſum, or the like, with the trowel, in the inſide of vaults, ceilings, *&c.*

TRULLUM, a barbarous word, ſignifying *dome*; chiefly uſed in the phraſe, *council in trullo.* See COUNCIL.

This was a council aſſembled in the year 680, againſt the Monothelites, in the dome of the palace of Conſtantinople, called *trullum*; the name whereof it has retained. It was alſo called the *Quiniſextum.* See QUINISEXTA.

The *trullum* was properly a hall in the palace of the emperors of Conſtantinople, where they uſually conſulted of matters of ſtate.*—The council held therein was the 6th œcumenical or general council, called *in trullo.*

* The term is formed from the Latin, *trulla, cup*; the hall being ſo called becauſe vaulted.

TRUMPET,* a muſical inſtrument, the moſt noble of all portable ones of the wind kind, uſed chiefly in war, among the cavalry, to direct them in the ſervice. See MUSIC.

* The word is formed from the French, *trompette.* Menage derives it from the Greek, ϛρομϐος, *turbo,* a ſhell anciently uſed for a *trumpet.* Du Cange derives it from the corrupt Latin, *trumpa,* or the Italian, *tromba,* or *trombetta*; others from the Celtic, *trompill,* which ſignifies the ſame.

It is uſually made of braſs, ſometimes of ſilver, iron, tin, and wood. Moſes, we read, made two of ſilver, to be uſed by the prieſts, Numb. x. and Solomon made 200 like thoſe of Moſes, as we are informed by Joſephus, lib. viii. which ſhews abundantly the antiquity of that inſtrument.

The ancients had various inſtruments of the *trumpet* kind; as the tubæ, cornua, and litui; ſee HORN, *&c.*

The modern *trumpet* conſiſts of a mouth-piece, near an inch broad, though the bottom be only one third ſo much.—The pieces which convey the wind are called the *branches*; the two places where it is bent, *potences*; and the canal between the ſecond bend and the extremity, the *pavilion*; the places where the branches take aſunder, or are ſoldered, the *knots*; which are five in number, and cover the joints.

When the ſound of the trumpet is well managed, it is of a great compaſs.—Indeed its extent is not ſtrictly determinable; ſince it reaches as high as the ſtrength of the breath can force it.—A good breath will carry it beyond four octaves, which is the limit of the uſual keys of ſpinets and organs.

In war there are eight principal manners of ſounding the *trumpet*: the firſt, called the *cavalquet,* uſed when an army approaches a city, or paſſes through it in a march.—The ſecond the *boute-ſelle,* uſed when the army is to decamp or march.—The third is when they ſound to horſe, and then to the ſtandard.—The fourth is the *charge.*—The fifth the *watch.*—The ſixth is called the *double cavalquet.*—The ſeventh the *chamade.*—And the eighth the *retreat.* Beſides various flouriſhes, voluntaries, *&c.* uſed in rejoicings.

There are alſo people who blow the trumpet ſo ſoftly, and draw ſo delicate a ſound from it, that it is uſed not only in church muſic, but even in chamber muſic: and it is on this account that in the Italian and German muſic we frequently find parts entitled *tromba prima,* or $\mathrm{I_a}$ firſt *trumpet, tromba* $\mathrm{II^a}$, *ſegonda,* $\mathrm{III_a}$, *terza,* ſecond, third *trumpet, &c.* as being intended to be played with *trumpets.*

There are two notable defects in the *trumpet,* obſerved by Mr. Roberts in the *philoſophical tranſactions*;--The firſt is, that it will only perform certain notes within its compaſs, commonly called *trumpet notes*: the ſecond, that four of the notes it does perform, are not in exact tune. See NOTE.—The ſame defects are found in the *trumpet marine*; and the reaſon is the ſame in both. See TRUMPET MARINE.

TRUMPET MARINE, is a muſical inſtrument conſiſting of three tables, which form its triangular body.—It has a very long neck with one ſingle ſtring, very thick, mounted on a bridge, which is firm on one ſide, but tremulous on the other.—It is ſtruck by a bow with one hand, and with the other the ſtring is preſſed or ſtopped on the neck by the thumb.

It is the trembling of the bridge, when ſtruck, that makes it imitate the ſound of a *trumpet*; which it does to that perfection, that it is ſcarce poſſible to diſtinguiſh the one from the other.—And this is what has given it the denomination of *trumpet marine,* though, in propriety, it be a kind of monochord.

The *trumpet marine* has the ſame defects with the *trumpet, viz.* that it performs none but *trumpet* notes, and ſome of thoſe either too flat or too ſharp.—The reaſon, Mr. Fr. Roberts accounts for, only premiſing that common obſervation of two uniſon ſtrings, that if one be ſtruck, the other will move; the impulſes made on the air by one ſtring, ſetting another in motion, which lies in a diſpoſition to have its vibrations ſynchronous to them: to which it may be added, that a ſtring will move, not only at the ſtriking of an uniſon, but alſo at that of an 8th or 12th, there being no contrariety in the motions to hinder each other. See UNISON and CHORD.

Now in the *trumpet marine* you do not ſtop cloſe, as in other inſtruments, but touch the ſtring gently with your thumb, whereby there is a mutual concurrence of the upper and lower part of the ſtring to produce the ſound.—Hence it is concluded, that the *trumpet marine* yields no muſical ſound, but when the ſtop makes the upper part of the ſtring an aliquot part of the remainder, and conſequently of the whole; otherwiſe the vibrations of the parts will ſtop one another, and make a ſound ſuitable to their motion, altogether confuſed. Now theſe aliquot parts, he ſhews, are the very ſtops which produce the *trumpet* notes.

Harmonical **TRUMPET**, is an inſtrument which imitates the ſound of a *trumpet*, and which reſembles it in every thing, excepting that it is longer, and conſiſts of more branches.—'Tis ordinarily called *ſackbut*. See SACKBUT.

Speaking **TRUMPET**, is a tube from ſix to fifteen foot long, made of tin, perfectly ſtrait, and with a very large aperture; the mouth-piece being big enough to receive both lips.

The mouth being applied hereto, it carries the voice to a very great diſtance, ſo as it may be heard diſtinctly a mile; whence its uſe at ſea.

The invention of this *trumpet* is held to be modern; and is commonly aſcribed to Sir Samuel Morland, who called it the *tuba ſtentorophonica*.—But Ath. Kircher ſeems to have a better title to the invention; for it is certain he had ſuch an inſtrument before ever Sir S. Morland thought of his.

Kircher, in his *phonurg.* ſays, that the tromba publiſhed laſt year in England, he invented 24 years before, and publiſhed in his *muſurgia*: he adds, that Jac. Albanus Ghibbiſius and Fr. Eſchinardus, aſcribe it to him; and that G. Schottus teſtifies of him, that he had ſuch an inſtrument in his chamber in the Roman college, with which he could call to, and receive anſwers from the porter.

Indeed, conſidering how famed Alexander the great's tube was, wherewith he uſed to ſpeak to his army, and which might be heard diſtinctly 100 ſtadia or furlongs, it is ſomewhat ſtrange the moderns ſhould pretend to the invention; the ſtentorophonic horn of Alexander, whereof there is a figure preſerved in the Vatican, being almoſt the ſame with that now in uſe. See STENTOROPHONIC.

Liſtening, or *Hearing* **TRUMPET**, is an inſtrument invented by Joſeph Landini, to aſſiſt the ear in hearing of perſons who ſpeak at a great diſtance, without the aſſiſtance of any ſpeaking trumpet. See HEARING, and EAR.

TRUMPETER, in anatomy. See BUCCINATOR.

TRUNCATED* *pyramid*, or *cone*, is one whoſe top or vertex is cut off by a plane parallel to its baſe. See PYRAMID, and CONE.

* The word is formed of the Latin, *truncare*, to cut off a part from the whole; whence alſo *truncus*, *trunchion*, &c. In heraldry they ſay *trunked*. See TRUNKED.

A *truncated* cone, or the fruſtum of that body, is ſometimes alſo called a *curty-cone*. See FRUSTUM. See alſo GAUGING.

TRUNCATED *roof*. See the article ROOF.

TRUNCHEON, of the French *troncon*, and the Latin *truncus*; a battoon; or a kind of ſhort ſtaff uſed by kings, generals, and great officers, as a mark of their command. See BATTOON.

Columns in **TRUNCHEONS**. See the article COLUMN.

TRUNDLE, is a kind of carriage with low wheels, whereon to draw heavy cumberſome burdens.

TRUNDLE *ſhot*, is an iron ſhot about 17 inches long, ſharp-pointed at both ends, with a round bowl of lead caſt upon it, about a hand breadth from each end. See SHOT.

TRUNK, TRUNKUS, the ſtem, or body of a tree; or that part between the ground and the place where it divides into branches. See STEM, BRANCH, and TREE.

In lopping of trees, nothing is left but the *trunk*. See PRUNING, SHROWDING, &c.

TRUNK is alſo uſed for the ſtump, or that part left over the root in felling.—Large trees when felled, ſhoot out from the *trunk*, and make a copſe or underwood.

'Tis by means of the *trunks* left rotting in the ground, that the waſtes in foreſts are diſcovered.

TRUNK, in anatomy is uſed for the buſto of the human body, excluſive of the head and limbs. See BUSTO.

TRUNK, *truncus*, is alſo uſed for the main body of an artery, or vein; in contra-diſtinction to the branches and ramifications thereof. See VEIN, and ARTERY.

The word is particularly applied to certain parts of the aorta and cava.—See *Tab. Anat.* (*Angeiol.*) *fig.* 5. *lit. a.* See alſo AORTA, and CAVA.

TRUNK, in architecture, is uſed for the fuſt, or ſhaft of a column.—Alſo, for that part of the pedeſtal between the baſe and the cornice, otherwiſe called the *dye*.—See *Tab. Archit. fig.* 24. *lit. y.* See alſo SHAFT, COLUMN, PEDESTAL, DYE, &c.

TRUNK, is alſo popularly uſed for the ſnout of an elephant: by naturaliſts called the *proboſcis* thereof. See PROBOSCIS.

TRUNK *roots*, of a plant, are little roots which grow out of the *trunks* of plants. See ROOT.

Theſe are of two kinds, 1. Such as vegetate by a direct deſcent, the place of their eruption being ſometimes all along the *trunk*, as in mints, &c. and ſometimes only in the utmoſt point, as in brambles.

2. Such as neither aſcend nor deſcend, but ſhoot forth at right-angles to the *trunk*; which therefore, though as to their office they are true roots, yet, as to their nature, are a medium between a *trunk* and a root.

TRUNKED, among heralds, is applied to trees cut off at each end, which are ſaid to be *trunked*, or *truncated*. See TRUNCATED.

TRUNNIONS or TRUNIONS, of a piece of ordnance, thoſe knobs or bunches of the gun's metal, which bear her up on the cheeks of the carriage. See GUN, CANNON, ORDINANCE, CARRIAGE, &c.

TRUNNION *ring*, is the ring about a cannon, next before the *trunnions*. See ORDINANCE.

TRUSS, TRUSSA, a bundle or certain quantity of hay, ſtraw, &c.

A *truſs* of hay is to contain fifty-ſix pounds, or half an hundred weight; thirty-ſix *truſſes* make a load.—In June and Auguſt the *truſs* is to weigh ſixty pounds, on forfeiture of 18 *s. per truſs*.

A *truſs* of forrage, is as much as a trooper can carry on his horſe's crupper.

TRUSS, of flowers, is uſed by floriſts to ſignify many flowers growing together on the head of a ſtalk; as, in the cowſlip, auricula, &c.

TRUSS is alſo uſed for a ſort of bandage or ligature, made of ſteel or the like matter, wherewith to keep up the parts in thoſe who have hernias or ruptures. See HERNIA, &c.

TRUSSES, in a ſhip, are ropes made faſt to the parrels of a yard; either to bind the yard to the maſt, when the ſhip rolls, or to hale down the yards in a ſtorm, &c.

TRUSSING, in falconry, is an hawk's raiſing any fowl or prey aloft, ſoaring up, and then deſcending with it to the ground. See HAWK, and FALCONRY.

TRUST. See the article CESTUI *qui truſt*.

TRUSTEE, one who has an eſtate, or money put or truſted in his hands for the uſe of another. See FIDEI *commiſſum*.

TRUSTRA. See the article TRISTRA.

TRUTH, *veritas*, a term uſed in oppoſition to *falſhood*; and applied to propoſitions which anſwer or accord to the nature and reality of the thing whereof ſomething is affirmed or denied. See PROPOSITION, &c.

Thus, when we ſay that 4 is the fourth part of twice 8; that propoſition is true, becauſe agreeable to the nature of thoſe numbers. See FALSHOOD.

Truth, according to Mr. Lock, conſiſts in the joining or ſeparating of ſigns as the things ſignified by them do agree or diſagree one with another.—Now the joining or ſeparating of ſigns, is what we call making of propoſitions.—*Truth* then, properly, belongs only to propoſitions, whereof there are two ſorts, mental and verbal; as there are two ſorts of ſigns commonly made uſe of, *viz.* ideas and words. See IDEA, and WORD.

Mental propoſitions, are thoſe wherein the ideas in our underſtanding are put together, or ſeparated by the mind perceiving or judging of their agreement or diſagreement.

Verbal propoſitions, are words put together, or ſeparated, in affirmative or negative ſentences:—So that propoſition conſiſts in joining or ſeparating of ſigns; and *truth* conſiſts in putting together or ſeparating thoſe ſigns, according as the things they ſtand for agree or diſagree.

Truth, therefore, as well as knowledge, may come under the diſtinction of *verbal* and *real*; that being only *verbal truth*, where terms are joined according to the agreement or diſagreement of the ideas they ſtand for, without regarding whether our ideas are ſuch as really have, or are capable of having any exiſtence in nature.—But it is then they contain *real truth*, when theſe ſigns are joined as our ideas agree; and when our ideas are ſuch, as we know are capable of having an exiſtence in nature; which in ſubſtances we cannot know, but by knowing that ſuch have exiſted. See SUBSTANCE.

Truth is the marking down in words the agreement or diſagreement of ideas, as it is.—Falſhood is the marking down in words the agreement or diſagreement of ideas, otherwiſe than it is: and ſo far as theſe ideas, thus marked by ſounds, agree to their archetypes, ſo far only is the *truth* real.

The knowledge of this *truth* conſiſts in knowing what ideas the words ſtand for, and the perception of the agreement or diſagreement of thoſe ideas, according as it is marked by thoſe words. See PROBABILITY, EVIDENCE, &c.

Beſides *truth* taken in the ſtrict ſenſe before-mentioned, which is alſo called *logical truth*, there are other ſorts of *truths*; as,

Moral **TRUTH**, which conſiſts in ſpeaking things according to the perſuaſion of our own minds; called alſo *veracity*.

Metaphyſical, or tranſcendental **TRUTH**, which is nothing but the real exiſtence of things conformable to the ideas which we have annexed to their names. See KNOWLEDGE. See alſo ERROR, &c.

In which ſenſe a clock may be ſaid to be *true*, when it anſwers the idea or intention of the perſon who made it.

Others will have metaphyſical *truth* to conſiſt in the agreement of a thing with the idea thereof in the divine underſtanding.

TRUTINA *hermetis*, is uſed among aſtrologers, for an artificial method of examining and rectifying a nativity, by means of the time of conception. See HOROSCOPE.

TRUTINATION,* the act of weighing or ballancing a thing. See WEIGHT, and BALANCE.

* The word is formed from the Latin *trutina*, *a pair of ſcales.*

TRYAL. See the article TRIAL.

To TRY, in the ſea language.—A ſhip is ſaid to *try*, or lie *a-try*, when ſhe has no ſails abroad but her main-ſail, or miſſen-ſail.

TRYPHERA,* Τρυφερα, in pharmacy, a denomination given to divers medicines eſpecially of the opiate kind.—The great *tryphera* is compoſed of opium, cinnamon, cloves, and ſeveral other ingredients: it is uſed to fortify the ſtomach, to ſtop fluxes, and for ſome diſeaſes of the womb.

* The word is formed from the Greek, τρυφερος, *delicate*, on account of their gentle and pleaſant operation, or according to others, becauſe they make thoſe who uſe them reſt.

The Saracenic *tryphera*, and Perſian *tryphera*, thus called, becauſe firſt introduced, the one by the Saracens, and the other by the Perſians, are both of them gentle purgatives.

TSCHIRNHAUSIANA *quadratrix.* See QUADRATRIX *Tſchirnhauſiana.*

TUB is uſed as a kind of meaſure, to denote the quantity of divers things.—A *tub* of tea, is a quantity of about 60 pounds. —A *tub* of camphire, is a quantity from 56 to 80 pounds.

TUBE, TUBUS, pipe, conduit, or canal; a cylinder, hollow within-ſide, either of lead, iron, wood, glaſs or other matter, for the air or ſome other fluid to have a free paſſage, or conveyance through.

The term is chiefly applied to thoſe uſed in phyſics, aſtronomy, anatomy, &c. On other ordinary occaſions, we more uſually ſay *pipe*. See PIPE.

In the memoirs of the French academy of ſciences, M. Varigon gives us a treatiſe on the proportions neceſſary for the diameters of *tubes*, to give preciſely any determinate quantities of water.—The reſult of his piece turns upon theſe two analogies; that the diminutions of the velocity of water, occaſioned by its friction againſt the ſides of *tubes*, are as the diameters; the *tubes* being ſuppoſed equally long: and the quantities of water iſſuing out at the *tubes*, are as the ſquare roots of their diameters, deducting out of them the quantity each is diminiſhed. See FLUID, FOUNTAIN, FRICTION, &c.

For the *tubes* of barometers and thermometers; ſee BAROMETER, and THERMOMETER.—For the aſcent of liquors in capillary *tubes*; ſee ASCENT, and CAPILLARY.

Alimentary TUBE. See DUCT.

Fallopian TUBE. See the article FALLOPIAN.

Stentorophonic TUBE. See STENTOROPHONIC.

Torricellian TUBE. See TORRICELLIAN *tube.*

TUBE, in aſtronomy, is ſometimes uſed for *teleſcope*; but more properly for that part thereof into which the lens's are fitted, and by which they are directed and uſed. See TELESCOPE.

The goodneſs of the *tube*, being of great importance to that of the teleſcope: we ſhall here add its ſtructure.

The conſtruction of a Draw-TUBE *for a teleſcope.*—The chief points to be regarded here, are, that the *tube* be not troubleſome by its weight, nor liable to warp and diſturb the poſition of the glaſſes: ſo that any kind of *tube* will not ſerve in every caſe: but

1. If the *tube* be ſmall, 'tis beſt made of thin braſs plates covered with tin, and formed into pipes or draws, to ſlide within one another.

2. For long *tubes*, iron would be too heavy; for which reaſon ſome chuſe to make them of paper, thus:—A wooden cylinder is turned, of the length of the paper to be uſed; and of a diameter equal to that of the ſmalleſt draw. About this cylinder is rolled paper, till it be of a ſufficient thickneſs: when one pipe is dry, provide others after the ſame manner; ſtill making the laſt ſerve for a mould for the next, till you have enough for the length of the *tube* deſired. Laſtly, to the extremes of the draws are to be glewed wooden ferrils, that they may be drawn forth the better.

3. Since paper draws are apt to ſwell with moiſt weather, ſo as to ſpoil their ſliding; and in dry weather to ſhrink, which renders them looſe and tottering: in both which caſes, the ſituation of the lens's is eaſily diſturbed; the beſt method of making *tubes*, is as follows: glue parchment round a wooden cylinder, and let the parchment be coloured black, to prevent the reflected rays making any confuſion. Provide very thin ſlits of beech, and bending them into a cylinder, glue them carefully to the parchment: cover this wooden caſe with white parchment, and about its outer extreme make a little ring or ferril: after the ſame manner make another draw over the former; and then another, till you have enough for the length of the *tube*.

To the inner extremes of each draw, fit a wooden ferril, that the ſpurious rays ſtriking againſt the ſides, may be intercepted and loſt. In thoſe places where the lens's are to be put, it will be proper to furniſh the ferrils with female ſcrews. Provide a wooden cover to defend the object-glaſs from the duſt, and putting the eye-glaſs in its wooden ferril, faſten it by the ſcrew to the *tube*. Laſtly, provide a little wooden *tube* of a length equal to the diſtance the eye-glaſs is to be from the eye, and fit it to the other extreme of the *tube*.

TUBER, or TUBERCEE, in botany, a kind of round turgid root, in form of a knob or turnip. See ROOT.

The plants which produce ſuch roots, are hence denominated *tuberoſe* or *tuberous plants*. See TUBEROUS.

TUBER or TUBEROSITY, in medicine, is uſed for a knob or tumor growing naturally on any part; in oppoſition to tumors which ariſe accidentally, or from a diſeaſe. See TUMOR.

The ſame term is alſo uſed for a knot in a tree. See KNOT.

TUBERA *terræ*. See the article TRUFFLES.

TUBERCULES, TUBERCLES, little tumors which ſuppurate and diſcharge pus; often found in the lungs. Quinc. See LUNGS, and PHTHISIS. See alſo PHYMA.

TUBEROUS, or TUBEROSE, an epithet given to ſuch roots as are round, and conſiſt of an uniform fleſhy ſubſtance: having neither ſkin, nor ſhell.—See TUBER, and ROOT.

Such are the roots of ſaffron, paiony, &c. See BULB.

TUBILUSTRIUM,* in antiquity, a feaſt or ceremony in uſe among the Romans.—This denomination was given to the day whereon they purified their ſacred trumpets; as alſo to the ceremony of purifying them.—It was held on the fifth and laſt day of the feaſt of Minerva called *quinquatrus*, or *quinquatria*, which was performed twice a year.

* The word is compounded of *tubus*, *trumpet*, and *luſtro*, *I purify*.

TUBULI *lactiferi*, in anatomy, is a name uſed by ſome writers, for thoſe ſmall tubes through which the milk flows to the nipples of the mammæ or breaſts. See MILK, and BREAST.

TUBULI *vermiculares*, a name ſometimes uſed by naturaliſts, for certain ſmall winding cavities on the outſides of ſhells. See SHELL.

TUESDAY. See the article HOKE *Day.*

TUFT, a term uſed by ſome authors for the buſhy part of trees; or that part ſet with branches, leaves, &c. See BRANCH.

Parallelіſm of the TUFTS *of trees.*—All trees are obſerved naturally to affect to have their *tufts* parallel to the ſpot of ground they ſhadow; an account of which phænomenon, ſee under the article PARALLELISM.

TUILERIE,* or TYLERY, a *tyle-work*; a large building with a drying-place, covered a-top, but furniſhed with apertures on all ſides, through which the wind having admittance, dries the tyles, bricks, &c. in the ſhade, which the ſun would crack, before they be put in the kiln. See BRICK, and TYLE.

* The word is pure French, formed from *tuile*, *tyle*.

The garden of the Louvre is called the *Tuileries*, as being a place where tyles were anciently made, &c.—But the term *Tuileries* does not only include the garden; but alſo a magnificent palace, whoſe front takes up the whole length of the garden: and hence it is, that they ſay, the king lodges in the *Tuileries*; the king has quitted the *Tuileries* for a few days, to reſide in the Louvre.

The palace of the *Tuileries* is joined to the Louvre by a large gallery, which runs along the banks of the river Seine, and has its proſpects thereon.

The *Tuileries* was begun in 1564, by Catherine de Medicis, wife of Henry II. in the time of her regency; finiſhed by Henry IV. and magnificently adorned by Louis XIV.—The garden of the *Tuileries* was much improved by Louis XIII.

TUMBLER, a ſort of dog, called in Latin, *vertagus*, from his quality of tumbling and winding his body about, before he attacks and faſtens on the prey.

Theſe dogs are often leſs than hounds; being lanker, leaner, and ſomewhat pricked-eared; and by the form of their bodies, might be called mungrel grey-hounds, if they were a little bigger.

TUMBREL, TUMBRELLUM, an engine of puniſhment, which ought to be in every liberty, that has a view of frank-pledge, for the correction and cooling of ſcolds and unquiet women. See CUCKING-*ſtool.*

TUMEFACTION, the act of ſwelling, or riſing into a tumor. See TUMOR.

Inflammations and *tumefactions* of the teſtes, frequently happen in the gonorrhæa; either from the weakneſs of the veſſels, violent motion, unſeaſonable uſe of aſtringents, a neglect of purging, or the like. See GONORRHÆA.

TUMOR or TUMOUR, in medicine, &c. a preternatural riſing or eminence on any part of the body.

Tumor is defined by the phyſicians, a ſolution of continuity, ariſing from ſome humor collected in a certain part of the body, which disjoins the continuous parts, inſinuates itſelf between them, and deſtroys their proper form.

This has given occaſion to the Arabs to define a *tumor* to be an indiſpoſition, compoſed of three kinds of diſeaſes, *viz.* an intemperature, an ill conformation, and a ſolution of continuity; all which they compriſe under the name *apoſthem*, from the Greek, αποςημα. See APOSTHUME.

Tumors may proceed from various cauſes.—The maſs of blood throwing off or diſcharging itſelf of any particular humor, as ſometimes happens in the criſis of a fever, pleuriſy, empyema, bubo, &c. will give riſe hereto.—And according to the nature of the humor ſo diſcharged, whether ſanguinious, watery, bilious, &c. the *tumor* is different.

Other *tumors* there are, occaſioned by flatulency, as the tympany, after the ſame manner as hydropical *tumors* are occaſioned by a collection of the lympha, or ſerum, in a particular part.—Ruptures of the inteſtines, or their ſtarting from their places, will likewiſe cauſe a *tumor*. See RUPTURE.

External injuries are another general cauſe of *tumors*.—Thus a contuſion, or a violent ſtricture of any part, a wound, fracture, diſlocation, *&c.* will make it ſwell, or riſe above its natural level. And the ſame thing may likewiſe happen from the bites of venomous creatures, *&c.* See WOUND, ULCER, CONTUSION, *&c.*

Tumors, properly ſo called, *i. e. humoral tumors*, or thoſe which contain a fluid matter, ariſe either from a ſtagnation, *i. e.* an obſtruction of the paſſage of ſome fluid, occaſioning a ſlow congeſtion, or from the tranſlation or fluxion of an humor from ſome other part; or from the generation of ſome new humor. See HUMOUR.

Tumors of the *firſt* kind are very numerous, and are uſually divided, with regard to the particular humors they are filled with, into *phlegmons*, which come from the blood. See PHLEGMON, and BLOOD.—Eryſipelas's, which are filled with bile. See ERYSIPELAS, and BILE.—Oedema's, fill'd with pituita. See OEDEMA, and PITUITA.—And ſcirrhus's, with melancholy. See SCIRRHUS.—To which may be added, flatulencies, filled with wind. See FLATUS, *&c.*

Of the *ſecond* kind, are *critical tumors*. See CRITICAL.—And of the *third* kind, are cancers, ganglions, and all *tumors* contained in a cyſtis or bag. See CANCER, GANGLION, *&c.*

Tumors alſo frequently acquire peculiar denominations from the part affected; as, ophthalmia, if in the eye; parotis about the ears; paronychia in the fingers, *&c.* See OPHTHALMIA, *&c.*

With reſpect to the cure, all *tumors* are diviſible into *ſimple*, and *compound*, *i. e.* into ſuch as are of a kindly nature, and go off, or are cured in a reaſonable time, by the uſe of common means, without the appearance of any violent or dangerous ſymptoms; and ſuch as are more malignant, or prove difficult of cure, and are attended with bad ſymptoms, and affect the adjacent parts, or the whole body.—When a *tumor* is formed by fluxion, a ſudden pain, heat, tenſion and pulſation are felt in the part, and manifeſt ſigns of a fever appear.

In thoſe formed by congeſtion, the ſwelling riſes ſlowly, and the pain and other ſymptoms come on gradually, and prove leſs violent; unleſs it happen in the joints, and other of the more ſenſible parts.

All *tumors*, except thoſe from ruptures, terminate or are removed, either by diſcuſſion, ſuppuration, putrefaction, induration, or tranſlation. See DISCUTIENT, SUPPURATIVE, *&c.*

When a *tumor* is diſcuſſed, the part that was affected, appears relaxed, or reduced to its natural ſize and figure, and is free from pain and hardneſs. See DISCUSSION.

When a *tumor* haſtens to ſuppuration, a conſiderable degree of heat, pain and pulſation is felt in the part; and if the *tumor* be large, or lie deep, a fever generally comes on: when the matter is formed, theſe ſymptoms commonly decreaſe, and ſometimes totally vaniſh. And now, if the ſituation of the parts permits it, the *tumor* appears drawn to a point, or becomes conical in the middle, or moſt depending part, where the matter collected commonly proves white.—At this time likewiſe the *tumor* appears to be more contracted, and the ſkin of the part more ſhrivelled or flaccid than before: and now, upon preſſure, if the *tumor* be ſuperficial, or by vibrating it between the fingers, the matter may be felt to quaſh from ſide to ſide. See SUPPURATION.

Tumors in the fleſhy parts of the body, tend to their ſtate or ſuppurate, faſter than *tumors* in the joints, glands, *&c.*

When a *tumor* is reſolved by induration, the ſwelling of the part and the pain decreaſe as the hardneſs comes on.—When it terminates in putrefaction or mortification, the part grows ſenſeleſs, and turns black and foetid. See MORTIFICATION.

But when a *tumor* goes off by repulſion, or a return of the matter into the blood, it diſappears at once; upon which a fever, or ſome other acute diſeaſe preſently enſues. See REPELLENT.

Windy tumors, M. Littre deſcribes as formed of air, incloſed under ſome membrane, which it dilates more or leſs in proportion to the quantity, and from which it cannot eſcape; at leaſt not for ſome time.

The difficulty is, to conceive how the air ſhould come to be collected here.—M. Littre thinks that the moſt ordinary cauſe of *windy tumors*, is the gathering of juices in ſome neighbouring part, wherein there is an obſtruction. The air, which is intimately mixed with all the juices of the body, continues to be ſo while they are in their natural fluidity and motion; but if they be collected in any part, and by conſequence have their motion and fluidity diminiſhed, the air gets its liberty, and diſengages itſelf from them. Now the membranes of the part wherein the liquor is collected, becoming dilated by this collection, and their pores enlarged, the diſengaged air eſcapes through them, but the juice is left behind, as being too much thickned by its ſtay there: it therefore runs under ſome other neighbouring membrane, which it raiſes, ſwells and extends. See TYMPANITES.

TUN*, or TON, originally ſignifies a large veſſel or caſk, of an oblong form, biggeſt in the middle, and diminiſhing towards its two ends, girt about with hoops, and uſed to put up ſeveral kinds of merchandizes in, for their better carriage; as brandy, oil, ſugar, ſkins, hats, *&c.*

* Some derive the word from *autumnus*, in regard it is then *tuns* are moſt needed: Du Cange deduces it from *tunna* or *tonna* words uſed in the baſe Latin for the ſame thing; whence alſo *tunnare*, to *tun*.

The term is alſo uſed for certain veſſels of extraordinary bigneſs, ſerving to keep wine in for ſeveral years.—In Germany there are many ſcarce ever emptied: the Heidelberg *tun* is famous.

The *tun*, we frequently call a *hogſhead*. See HOGSHEAD.

TUN, or TON, is alſo a certain meaſure for liquids; as wine, oil, *&c.* See MEASURE.

The Engliſh *tun* contains two pipes, or four hogſheads, or 252 gallons. See HOGSHEAD, GALLON, PIPE, *&c.*

The *tun* of Amſterdam contains 6 aems or awms; the aem 4 ankers, the anker 2 ſtekans, the ſtekan 16 mingles; 12 ſtekans are equal to an Engliſh barrel or 63 gallons.

The *tun* of Bourdeaux and Bayonne contains four barrels, equal to three Paris muids.—At Orleans and Berry it is about two Paris muids. See MUID.

The *tun* of Malaga, Alicant, Sevil, *&c.* is two bottas, equal to about 36 or 37 ſtekans.—The *tun* of Liſbon is two Portugueſe bottas, equal to 25 ſtekans.

TUN is alſo a certain weight, whereby the burthen of ſhips, *&c.* are eſtimated. See WEIGHT, *&c.*

The *ſea tun* is computed to weigh two thouſand pounds, or twenty quintals or hundreds weight (amounting to 2440 pounds averdupois) ſo that when we ſay a veſſel carries two hundred *tuns*, we mean it is able to carry two hundred times the weight of two thouſand pounds, *i. e.* four hundred thouſand pounds: it being found by a curious obſervation, that the ſea water, whoſe room the veſſel fills when full loaden, weighs ſo much.

To find the burthen and capacity of a ſhip, they meaſure the hold or place where ſhe is loaden; allowing 42 cubic feet to the *ſea tun*. See BURDEN, and HOLD.

The price of freight, or carriage of merchandizes, is ordinarily ſettled on the foot of the *ſea tun*: and yet though the *tun* is twenty hundred weight, there is ſome difference made therein, either on account of the weight or cumberſomneſs, or bulk of the commodities, the ſpace they take up, or the like. See FREIGHT.

Accordingly, at Bourdeaux four barrels of wine are held a *tun*, five barrels of brandy are eſtimated two *tuns*, three of ſyrup are one *tun*, four barrels of prunes one *tun*, two dozen of walnut-tree tables one *tun*, a dozen of planks one *tun*; twenty buſhels of cheſnuts are accounted one *tun*, and the like of wheat or other grain; ten bales of cork, five bales of feathers, and eight of paper, make each one *tun*.

A *tun* or load of timber is 40 ſolid feet, if the timber be round: if it be hewed or ſquare 50. See TIMBER.

TUN, TON, in the end of words or names of places, ſignifies a town, village, or dwelling-place.—From the Saxon, *tun*, *ſepes*, *vallum*, *villa*, *vicus*, *oppidum*; and this from ðon, or ðun, a hill, where they formerly built towns. See TOWN.

TUN-GREVE, a term anciently uſed for a reeve or bailiff, *qui in villis, & quæ dicimus maneriis, domini perſonam ſuſtinet, ejuſque vice omnia diſponit & moderatur. Spelman.* See BAILIF, REVE, GREVE, *&c.*

TUNE, or TONE, in muſic, is that property of ſounds whereby they come under the relation of *acute* and *grave* to one another. See GRAVITY, *&c.* See alſo TONE.

Though gravity and acuteneſs be mere terms of relation, yet the ground of the relation, the *tune* of the ſound, is ſomething abſolute; every ſound having its own proper *tune*, which muſt be under ſome determinate meaſure in the nature of the thing.

The only difference then between one *tune* and another is in degrees, which are naturally infinite, *i. e.* we conceive there is ſomething poſitive in the cauſe of ſound, which is capable of leſs and more, and contains in it the meaſure of the degrees of *tune*; and becauſe we do not ſuppoſe a leaſt or greateſt quantity of this, we conceive the degrees depending on thoſe meaſures to be infinite. See SOUND.

If two or more ſounds be compared together in this relation, they are either equal or unequal in the degree of *tune*.—Such as are equal are called *uniſons*. See UNISON.

The unequal conſtitute what we call *intervals*, which are the differences of *tune* between ſounds. See INTERVAL.

Cauſe and meaſure of TUNE, *or that whereon the* tune *of a ſound depends.*—Sonorous bodies, we find, differ in *tune*, 1. According to the different kinds of matter: thus the ſound of a piece of gold is much graver than that of a piece of ſilver of the ſame ſhape and dimenſions; in which caſe, the *tones* are proportional to the ſpecific gravities.

2. According to the different quantities of the ſame matter in bodies of the ſame figure; as a ſolid ſphere of braſs, one foot

in diameter, ſounds acuter than a ſphere of braſs two foot in diameter; in which caſe the *tones* are proportional to the quantities of matter.

Here then are different *tunes* connected with different ſpecific gravities, and different quantities of matter; yet cannot the different degrees of *tune* be referred to thoſe quantities, &c. as the immediate cauſe. In effect, the meaſures of *tune* are only to be ſought in the relations of the motions, that are the cauſe of ſound, which are no-where ſo diſcernible as in the vibrations of chords. See CHORD.

Sounds, we know, are produced in chords by their vibratory motions; not, indeed, by thoſe ſenſible vibrations of the whole chord, but by the inſenſible ones, which are influenced by the ſenſible, and, in all probability, are proportional to them.—So that ſounds may be as juſtly meaſured in the latter, as they could be in the former, did they fall under our ſenſes: but even the ſenſible vibrations are too ſmall and quick to be immediately meaſured.—The only reſource we have, is to find what proportion they have with ſome other thing: which is effected by the different tenſions, or thickneſs, or lengths of chords, which, in all other reſpects, excepting ſome one of thoſe mentioned, are the ſame. See VIBRATION.

Now, in the general, we find that in two chords, all things being equal, excepting the tenſion, or the thickneſs, or the length, the *tones* are different; there muſt therefore be a difference in the vibrations owing to thoſe different tenſions, &c. which difference can only be in the velocity of the courſes and recourſes of the chords, through the ſpaces wherein they move to and again.—Now, upon examining the proportion between that velocity, and the things juſt mentioned, whereon it depends, it is found to a demonſtration, that all the vibrations of the ſame chord are performed in equal times.

Hence, as the *tone* of a ſound depends on the nature of thoſe vibrations whoſe differences we can conceive no otherwiſe than as having different velocities, and as the ſmall vibrations of the ſame chord are all performed in equal time; and as it is found true in fact, that the ſound of any body ariſing from one individual ſtroke, though it grows gradually weaker, yet continues in the ſame *tone* from firſt to laſt; it follows, that the *tone* is neceſſarily connected with a certain quantity of time in making every ſingle vibration; or that a certain number of vibrations, accompliſhed in a given time, conſtitutes a certain and determinate *tune*: for the frequenter thoſe vibrations are, the more acute is the *tune*; and the ſlower and fewer they are in the ſame ſpace of time, by ſo much the more grave is the *tune*; ſo that any given note of a *tune*, is made by one certain meaſure of velocity of vibrations, *i. e.* ſuch a certain number of courſes and recourſes of a chord or ſtring in ſuch a certain ſpace of time, conſtitutes a determinate *tune*. See NOTE.

This theory is ſtrongly ſupported by our beſt and lateſt writers on muſic. Dr. Holder, Mr. Malcolm, &c. both from reaſon, and experience.—Dr. Wallis, who owns it very reaſonable, adds, that it is evident the degrees of acuteneſs are reciprocally as the lengths of the chords; though, he ſays, he will not poſitively affirm that the degrees of acuteneſs anſwer the number of vibrations as their only true cauſe: but his diffidence ariſes hence, that he doubts whether the thing have been ſufficiently confirmed by experiment.—Indeed, whether the different number of vibrations in a given time be the true cauſe on the part of the object, of our perceiving a difference of *tune*, is a thing which we conceive does not come within the reach of experiment; it is ſufficient the hypotheſis is reaſonable. See CONCORD, HARMONY, &c.

TUNICA, a kind of waſtecoat or under-garment wore by the ancients, both at Rome and in the eaſt.

The common people ordinarily wore only a ſingle *tunica*; but thoſe of better faſhion wore a *toga* or gown over it.—See TOGA.—The philoſophers wore a gown without a *tunica*, as profeſſing to go half naked.

The *tunica* was peculiar to the men, the under-garment of the women not being called *tunica*, but *ſtola*. See STOLE.

The ſenators wore their *tunica* enriched with ſeveral little pieces of purple, cut in form of large nails; whence it was called *laticlavia*: the knights had leſſer nails on their *tunica*, which was hence called *auguſticlavia*: the common people wore their *tunica* without any clavi at all. — And it was by theſe three different ſorts of *tunica's*, that the three different orders of the Roman people were diſtinguiſhed. See LATICLAVIA, &c.

Among religious, the woollen ſhifts, or under-garments, are ſtiled *tunica's* or *tuniques*.

TUNICA, TUNIC, in anatomy, is applied to the membranes which inveſt the veſſels, and divers others of the leſs ſolid parts of the body. — See *Tab. Anat.* (*Angeiol.*) *fig.* 7. *lit. a a. b b. c. d.* See alſo MEMBRANE.

The eye conſiſts principally of a number of humors contained in *tunics* ranged over one another: as the *tunica albuginea*, the *tunica cornea*, the *tunica retiformis*, &c. See EYE, ALBUGINEA, &c.

TUNICA *Vaginalis*. See the article VAGINALIS.

TUNNAGE, or **TONNAGE**, a duty or cuſtom due for merchandize brought or carried in *tons*, and ſuch like veſſels, from or to other nations; thus called, becauſe rated at ſo much *per tun*. See CUSTOM.

Tunnage is properly a duty impoſed on liquids according to their meaſures; as poundage is that impoſed on other commodities according to their weight. See POUNDAGE.

They were both firſt ſettled by authority of parliament under king Edward III. were re-eſtabliſhed in 1660, under the reign of king Charles II. for his life, upon abrogating all the laws made under Oliver Cromwell, and re-ordaining the execution of the ancient laws and regulations: and have been continued and renewed by the parliaments ever ſince.—By an act made in the firſt year of the reign of Queen Anne they were continued for 96 years, expiring in the year 1798.

This duty at firſt was 4 *l.* 10 *s.* ſterling *per tun*; for French wines brought into the port of London by the Engliſh, and only three for that brought into the other ports.—For the ſame wine imported by ſtrangers to London, this duty was 6 *l.* and that brought into the other ports 4 *l.* 10 *s.* ſterling. Rheniſh wine, in virtue of the ſame act, paid 7 *l.* 10 *s.* ſterling; and Spaniſh, Portugueſe, Malmſey, and Greek wines, the ſame as French wines.

But there have been divers additional duties impoſed ſince.—As the *additional duty of the old ſubſidy*, *ſeignorage*, *duty of ancient impoſt of* tunnage, *duty of additional impoſt*, *orphans money*, *new ſubſidy*, &c. See DUTY.

TUNNAGE is alſo uſed for a certain duty paid the mariners by the merchants for unloading their ſhips arrived in any haven, after the rate of ſo much *per tun*. See DUTY.

TUNNEL, or **FUNNEL**, an inſtrument through which any liquor is poured into a veſſel.

Part of the draught of a chimney, above the mantle-piece, is alſo called by the ſame name. See CHIMNEY.

TUNNEL-*Net*, is a kind of net much uſed for the catching of patridges; thus called from its form, which is a cone 15 or 18 feet long.

To uſe it, a covey of thoſe birds being found, a compaſs is taken, and the net pitched at a good diſtance from them, according to the ſituation of the ground.—Then, with a natural or artificial ſtalking horſe, they are ſurrounded, and gently driven towards the net, never coming on them in a direct line, but by windings, turnings, &c. See STALKING.

TUNNING, or **TONNING**, a part of the proceſs of brewing, or rather an operation which is the ſequel thereof. See BREWING.

The *tunning of beer*, &c. is performed various ways; ſome being of opinion it is beſt *tunned* as it cools, or begins to come; while others let it ſtand longer to become riper.

The moſt regular method is to cleanſe and *tun* juſt as it comes to a due ferment, and gets a good head; for then it has the moſt ſtrength to clear itſelf.—What works over is to be ſupplied with freſh beer of the ſame brewing.

TURBAN,* **TURBANT**, the head-dreſs of moſt of the eaſtern and mahometan nations; conſiſting of two parts, *viz.* a cap, and a ſhaſh of fine linnen, or taffaty, artfully wound in divers plaits about the cap.—See HAT, CAP, TIARA, &c.

The cap is red or green, without any brim, pretty flat, though roundiſh a-top, and quilted with cotton, but does not cover the ears. — About this is wrapped a long piece of fine thin linnen or cotton, in ſeveral wreaths variouſly diſpoſed.

There is a good deal of art in giving *turbans* the fine air; and the making them up conſtitutes a particular trade, as the making of hats does among us.

The Emirs, who pretend to be deſcended of the race of Mahomet, wear their *turbans* quite green: thoſe of the other Turks are ordinarily read, with a white ſhaſh.—Your genteel people are to have frequent changes of *turbans*.—M. de Tournefort obſerves, that the *turban*, all things conſidered, is a very commodious dreſs; and that he even found it more eaſy to him than his French habit.

The grand Seignior's *turban* is as big as a buſhel, and ſo exceedingly reſpected by the Turks, that they dare ſcarce touch it.—It is adorned with three plumes of feathers enriched with diamonds and precious ſtones: he has a miniſter on purpoſe to look to it, called *tulbentoglan*.

That of the grand vizier has two plumes: ſo have thoſe of divers other officers, only ſmaller one than another; others have only one, and others none at all.—The *turban* of the officers of the divan is of a peculiar form, and called *mugenezek*.

The ſhaſh of the Turks *turban*, we have obſerved is white linnen, that of the Perſians is red woollen. Theſe are the diſtinguiſhing marks of their different religions, Sophi, king of Perſia, who was of the ſect of Ali, being the firſt who aſſumed that colour, to diſtinguiſh himſelf from the Turks, who are of the ſect of Omar, and whom the Perſians eſteem heretics. See KIRILBASCH, &c.

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* The word is formed from the Arabic דאר, *dar*, or דור, *dur*, or דאל, *dal*, or דול, *dul*, which ſignifies to encompaſs; and בנד, *band* or *bend*, which ſignifies ſhaſh, or ſcarf, or band; ſo that *durbant*, or *turbant*, or *tulbant*, only ſignifies a ſcarf, or ſhaſh, tied round; it being the ſhaſh that gives the denomination to the whole *turban*.

TURBARY, TURBARIA, a right to dig turf in another man's ground; from *turba*, an old Latin word for a turf. See TURF.

Common of TURBARY, is a liberty which ſome tenants have by preſcription to dig on the lord's waſte. See COMMON.

TURBARIA is ſometimes alſo taken for the ground where turfs are digged. See TURF.

TURBARIA *Bruaria*, more particularly denotes flaw turf, or heath turf: mentioned in a charter of Hamon de Maſſy.

TURBINATED, is a term applied by naturaliſts to ſhells which are ſpiral, or wreathed, conically, from a larger baſis to a kind of apex. See SHELL.

TURBITH, or TURPETH, TURPETHUM, a medicinal root, brought from the Eaſt Indies, particularly Cambaya, Surat, and Goa; though others will have it, that the true *turbith* comes chiefly from Ceylon.

The *turbith* of the moderns bears ſo little reſemblance to that of the ancients, that it is difficult to ſuppoſe them the ſame.—That ſold by our druggiſts is a longiſh root about the thickneſs of the finger, reſinous, heavy, and of a browniſh hue without, and whitiſh within.—It is brought to us cloven in the middle, lengthwiſe, and the heart or woody matter taken out.

When in the ground it ſhoots out tendrils, ſome whereof creep along the ground, and the reſt wind about the neighbouring trees and ſhrubs.

Turbith is a violent purgative, and is uſed in the dropſy, palſy, and apoplexy. See PURGATIVE.—It is commonly ſuppoſed to take its name *turbith* from *turbare*, on account of the violence of its operation, as diſturbing the whole oeconomy.

It yields a deal of reſinous matter in a ſpirituous menſtruum, which Dr. Quincy obſerves, does not affect the larger paſſages much; but is very active in the ſmaller veſſels, and glandulous contorſions, which it wonderfully clears of all viſcid adheſions. See PURGATIVE.

Some apothecaries, either through ignorance or parſimony, ſubſtitute white thapſia, which they call grey *turbith*, or *turbith garganicum*, for the true *turbith*; though both as to taſte, colour, and qualities, they are very different.

Mineral TURBITH, TURPETHUM *Minerale*, is a name which the chymiſts give to a yellow precipitate of mercury, which purges violently. See MERCURY, and PRECIPITATE.

The method of preparing it is thus:—on the dry powder gained by diſſolving mercury in oil of vitriol, pour a proper quantity of warm rain water, and the powder will immediately turn of a yellow colour. Continue to waſh this powder by repeated affuſions of water, till the liquor comes away as inſipid and colourleſs as it was poured on, leaving a beautiful yellow calx at the bottom of the veſſel, which being gently dried at the fire, is called by the name of *turbith mineral*.

This powder is called *mineral turbith* from the reſemblance it bears to the vegetable *turbith* of the Arabians, in ſtrongly purging the moſt internal receſſes of the body; for though it be inſipid upon the tongue, yet it is poſſeſſed of very conſiderable virtues.—Being boiled with water, it loſes more of its ſalts, and thereby grows milder, and more ſafe; ſo it does by being deflagrated twice or thrice, or diſtilled with ſpirit of wine.

A very few grains of this *turbith* will prove emetic and purgative.—It is alſo accounted an excellent medicine in the cure of the venereal diſeaſe: but as it operates with conſiderable violence, it ought not to be given, unleſs the viſcera are known to be ſound. See PURGATIVE.

This appears to have been the grand ſecret of Paracelſus, which, in his ſcarce German book of hoſpital medicines, he praiſes ſo extravagantly for the venereal and all chronical diſeaſes.—Sydenham alſo commends it in venereal caſes, given in the quantity of ſix or eight grains, in ſtrong habits of body, ſo as to prove emetic; but when imprudently uſed, it is apt to give the dyſentery. See VENEREAL *Diſeaſe*.

TURBO, in meteorology, a whirlwind. See VORTEX, WHIRLWIND, &c.

TURCICA *Sella*. See the article SELLA.

TURCOIS,* or TURQUOIS, in natural hiſtory, a precious ſtone, of a blue colour; ordinarily opake, but ſometimes a little tranſparent. See PRECIOUS *Stone*.

There are *turcoiſes* both oriental and occidental, of the new rock and the old. The oriental partakes more of the blue tincture than the green; and the occidental more of the green than the blue.—Thoſe of the old rock are a deep blue, and thoſe of the new rock more whitiſh, and do not keep their colour.

The oriental ones come from Perſia, the Indies, and ſome parts of Turky; and ſome even ſuppoſe that it is hence they derive their modern name *turcois*.—The occidental are found in various parts of Europe, particularly Germany, Bohemia, Sileſia, Spain, and France.

Turcoiſes all grow of a round or oval figure: they cut eaſily, and beſides ſeals, which are frequently engraved on them, ſome are formed into crucifixes, or other figures near two inches high; though de Boot miſtakenly affirms, that none have been known to exceed the bigneſs of a walnut.

The ancients attribute a kind of ſympathetic virtue to the *turcois*—It is commonly ſuppoſed, that it changes colour, or breaks, at the death, ſickneſs, or even miſfortune of the perſon who bears it; that it diſagrees with married people, and even breaks on their fingers; that it marks all the changes and accidents that happen in the body of the wearer, by correſpondent changes in its colour; and that it is for this reaſon the ladies have forbore the uſe of it.—De Boot endeavours to account for all theſe effects from natural, and even probable cauſes.

The *turcois* is eaſily counterfeited; and that ſo perfectly, that it is impoſſible to diſcover the deceit, without taking it out of the collet.

In the memoirs of the academy of ſciences, we have a very curious account of the formation of the *turcois*, and the manner of giving it the blue colour, by M. Reaumur.—The *turcois*, he obſerves, is one of the ſofteſt of precious ſtones, its hardneſs ſcarce exceeding that of a cryſtal, or a tranſparent pebble; though ſome are much harder than others: and ſtill the harder, *cæteris paribus*, the more valuable, by reaſon of the vivacity of the poliſh, which is always proportionable to the hardneſs.

Roſnel, a jeweller, and the author of a ſcarce treatiſe, called *Mercure Indien*, eſtimating the ſeveral precious ſtones, ſets a hard *turcois*, whoſe blue is neither bright nor deep, on the foot of the moſt perfect emeralds, that is, on a level with a diamond.—Thoſe with any defect he only values at a French crown the carat.

Tavernier aſſures us, there are but two mines of *turcoiſes* known in all the earth, and thoſe are both in Perſia; the one called the *old rock*, near a town called Necabourg, three days journey to the north-eaſt of Meched: the other called the *new rock*, is five days journey.—The latter, he adds, are but little valued; and the king of Perſia hath for many years prohibited the digging in the former for any but himſelf.—M. Reaumur takes the old rock to be now exhauſted; in effect, the common diviſion of *turcoiſes* into the old rock, or oriental, and new rock, or occidental, is very arbitrary and precarious.—All the beſt, and moſt perfect, grow they where they will, in India or Europe, are reckoned among the former, and the reſt among the latter.

Near Simore, in the lower Languedoc, are ſeveral conſiderable mines of *turcoiſes*; but that fine blue colour admired in the *turcois*, is not natural to theſe rocks; the prevailing colour being ſometimes white, and ſometimes much like that of Tripoli of Venice. Other precious ſtones are dug out of the mine with all their colour, to the force whereof nothing can be added, though it may frequently be diminiſhed, as we ſee fire bring down the too deep colour of the ſapphire, and quite take away that of a pale ſapphire: theſe *turcoiſes*, on the contrary, are naturally whitiſh or yellowiſh, of a colour as common as that of a free-ſtone; and by oppoſing them for ſome time to the action of the fire, they aſſume a blue colour.

It ſeems a paradox, and yet M. Reaumur has made it exceeding probable, that *turcoiſes* are originally the bones of animals.—In the mines in France, pieces have ſeveral times been found of the figure of teeth, bones of the arms, legs, &c. And *turcoiſes* which are yet imperfect or half formed, are apparently compoſed of laminæ or leaves like thoſe of bones, between which ſome petrifying juice inſinuating itſelf, binds them cloſe together: and ſtill, the ſofter, and more imperfect the ſtones are, the more diſtinguiſhable are the different directions of the fibres and laminæ, with their interſections, and the greater reſemblance they bear to fractured bones, and the leſs to any kind of ſtones known.

To give them the blue colour, they dry them awhile in the air, then heat them gradually in a furnace made after a particular manner. If they be heated too haſtily, the humidity between the laminæ, wanting time to evaporate all, will ſeparate into ſcales or flaws. Some of the ſtones require a greater degree of heat to bring them to their colour than others; and even in large pieces, ſeveral parts ordinarily require ſeveral degrees of heat.

On this account a world of care is to be taken in the heating them; for the fire, which gives them their blue by degrees, if they be expoſed beyond a certain degree, takes it away again.

M. Reaumur accounts for their taking a blue colour by heat very well: when freſh cut out of the rock, it ſeems, their ſubſtance is found ſprinkled and ſtreaked all over with ſpots, veins, little circles, &c. of a dark-blue colour: theſe he takes to be remains of a deep bluiſh matter, which the fire rarefying, ſpreads and diffuſes throughout the whole ſubſtance of the ſtone.—This matter, again, he concludes to have been either originally the juice contained in the bones, ſince mixed and coagulated with the petrifying juice, or ſome other mineral matter inſinuated into the pores of the ſtone.

The great defect of all *turcoiſes* is, that in time they loſe their blue colour, and become green; and then ceaſe to be of any value.

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* The Greeks and Latins ſeem to have known it under the names *calais*, and κυανος: and it appears to have had a place in the rationale of the high prieſt of the Jews.

TURF, *Peat*; a blackiſh ſulphurous earth, uſed in ſeveral parts of England, Holland, and Flanders, as fewel. See FEWEL, and TURBARY.

In Flanders, their *turf* is dug or pared from off the ſurface of the earth, and cut in form of bricks.—The gramen, a ſpecies of graſs growing very thick on the *turf* earth, contributes greatly, when dry, to the maintenance of the fire.

The Dutch draw their *turf* from the bottom of the dikes or canals which run acroſs moſt of their lands; by which means they not only ſupply the defect of wood, which is very great in moſt of the united provinces, but alſo keep their dikes clear and navigable: this *turf* earth is very black. As they take it up from the bottoms of the dikes, they ſpread it about the edges, of ſuch a thickneſs, as that it may be reduced to three inches when moderately dried.—In this condition they cut it into pieces or *turfs* ſeven or eight inches long, and three broad; and, to compleat the drying, lay them up in heaps, and at laſt in ſtacks.

In the north of England, Scotland, &c. *turf* or peat is dug out of a ſoft, moiſt, rotten earth, called *peat-moſs*: for the formation whereof ſee MOSS.

They dig horizontally from the ſurface, to the depth of about four foot, with a ſpade, which at once faſhions and takes them out in parallelepipeds nine or ten inches long, and three ſquare; which are ſpread on the ground to drain as faſt as dug; and then ſet up an end three or four againſt each other, for the wind to blow through them; and at laſt ſtacked or houſed.—The pits or dikes in a few years fill up again, and afford a freſh crop.

TURFING-*ſpade*, among huſbandmen, is an inſtrument uſed to under-cut the *turf*, after it is marked out with a trenching-plough.

TURGESCENCE, TURGESCENCY, a ſwelling, or growing bloated. See ORGASM.

TURIONES, the firſt young tender ſhoots which plants annually put forth. See GEM, CYON, &c.

TURKISH *coins*,	See the articles	COIN.
TURKISH *meaſures*,		MEASURE.
TURKISH *moneys*,		MONEY.
TURKISH *year*,		YEAR.
TURKY *company*,	See the articles	COMPANY.
TURKY *ſilk*,		SILK.

TURLUPINADE, a term uſed chiefly among the French for a low jeſt, or witticiſm.—The occaſion of the name is derived from a famous comedian at Paris, called *Turlupin*; whoſe talent, like that of our Penkethman, conſiſted chiefly in raiſing a laugh by miſerable puns and quibbles.

TURLUPINES, TURLUPINI, a ſect of heretics, or rather of people who made public profeſſion of impudence, going naked, without ſo much as covering their privy parts, and having to do with women, like the Cynics, in open market.

They called their ſect the *fraternity of the poor*, and ſpread themſelves over England and France.—They are ſaid by ſome to have had their name *turlupins*, *quod ea tantum habitarent loca quæ lupis expoſita erant*. See ADAMITE.

They attempted to ſettle themſelves at Paris in 1372, but were a great part of them burnt, with their books; as is related by Gaguin and du Tillet in the life of Charles V.

TURMERIC, *Curcuma*, a medicinal root, uſed likewiſe by the dyers, to give a yellow colour. See YELLOW.

It is yellow both within and without ſide, very hard, as if petrified, and not unlike, either in figure or ſize, to ginger.—The leaves it produces are like thoſe of white hellebore; its flowers riſe in form of a ſpica or ear; and its fruit rough like our new cheſnuts.

It is brought chiefly from the Eaſt-Indies; though the iſland Madagaſcar does likewiſe afford it.—You are to chuſe that which is big, new, reſinous, hard to break, and heavy.

Some people have miſtakenly imagined there was a native red *turmeric*; their error was owing to this, that the yellow root, as it grows old, turns brown; and when pulveriſed reddiſh.

It is much uſed by the glovers, &c. to dye their gloves; as alſo by the founders, &c. to give a gold colour to braſs.—The Indians uſe it to dye their rice, and other foods, of a yellow colour; whence ſome call it *Indian ſaffron*.

Our dyers do not find that it gives ſo ſteady a yellow as the luteola or weld; but it is admirable to brighten and heighten the red colours died with cochineal or vermilion; as ſcarlets, &c. See DYING.

Turmeric is uſed in medicine by way of decoction, infuſion, powder, &c. with other ingredients, in hypochondriac, leucophlegmatic, and cachectical conſtitutions. It is held a ſort of ſpecific in the jaundice, and dropſy.

TURN, is uſed for a circular motion; in which ſenſe it coincides with *revolution*. See REVOLUTION.

TURN, in a clock or watch-work, particularly denotes the revolution of a wheel, or pinion. See WHEEL, PINION, &c.

In calculation, the number of *turns* which the pinion hath in one *turn* of the wheel, is commonly ſet down as a quotient in common arithmetic, thus, 5)60(12, where the pinion 5 playing in a wheel of 60, moves round 12 times in one *turn* of the wheel.—Now, by knowing the number of *turns*, which any pinion hath in one *turn* of the wheel it works in, you may alſo find how many *turns* a wheel or pinion has at a greater diſtance; as the contrat-wheel, crown-wheel, &c. by multiplying together the quotients, and the number produced, is the number of *turns*; as in this example:

5) 55 (11
5) 45 (9
5) 40 (8

The firſt of theſe three numbers has 11 *turns*, the next 9, and the laſt 8. If you multiply 11 by 9, it produceth 99; that is, in one *turn* of the wheel 55, there are 99 *turns* of the ſecond pinion 5, or the wheel 40, which runs concentrical, or on the ſame arbor with the ſecond pinion 5.—If you multiply 99 by the laſt quotient 8, it produces 792, which is the number of *turns* the third pinion 5 hath.

TURN, or TOURN, is alſo uſed for the ſheriff's court, kept twice a year in every hundred within his county, *viz.* a month after Eaſter, and within a month after Michaelmas. See SHERIFF, COURT, and COUNTY.

From this court none are exempted but archbiſhops, biſhops, earls, barons, religious men and women, and all ſuch as have hundreds of their own to be kept. See HUNDRED.

It is a court of record in all things that pertain to it; and is alſo the king's leet through all the county, whereof the ſheriff is judge; this court being incident to his office.—The attendance on it is called *ſecta regalis*, or *ſuit-royal*. See SUIT.

It is called the *ſheriff's turn*, becauſe he takes a *turn* or circuit for this purpoſe through the ſhire, holding the ſame in ſeveral places.

TURNADO, or TORNADO, a wind which on ſome coaſts blows all night from the ſhore. See WIND, WHIRLWIND, TRADE-WIND, MONSOON, &c.

TURNAMENT, or TOURNAMENT, a martial ſport or exerciſe, which the ancient cavaliers uſed to perform, to ſhew their bravery, and addreſs.

The firſt *turnaments* were only courſes on horſeback, wherein the cavaliers tilted at each other with canes, in manner of lances; and were diſtinguiſhed from *juſts*, which were courſes or careers, accompanied with attacks and combats with blunted lances and ſwords.

Others ſay, it was a *turnament* when there was only one quadril or troop; and that where there were ſeveral to encounter each other, it was a juſt.—but it is certain the two became confounded together in proceſs of time; at leaſt we find them ſo in authors. See JUST.

The prince who publiſhed the *turnament*, uſed to ſend a king at arms with a ſafe conduct, and a ſword to all the princes, knights, &c. ſignifying, that he intended a *turnament* and a claſhing of ſwords, in the preſence of ladies and damſels: which was the uſual formula of invitation.

They firſt engaged man againſt man, then troop againſt troop; and after the combat, the judges allotted the prize to the beſt cavalier, and the beſt ſtriker of ſwords; who was, accordingly, conducted in pomp to the lady of the *turnament*; where, after thanking her very reverently, he ſaluted her, and likewiſe her two maids.

Theſe *turnaments* made the principal diverſion of the XIIIth and XIVth centuries.—Munſter ſays, it was Henry the Fowler, duke of Saxony, and afterwards emperor, that firſt introduced them; but it appears from the chronicle of Tours, that the true inventor of this famous ſport, was one Geoffry, lord of Preuilli, about the year 1066.

From France they paſſed into England and Germany.—The *Hiſtoria Byzantina* tells us, that the Greeks and Latins borrowed the uſe thereof from the Franks; and we find mention made of them in Cantacuzenus, Gregorias, Beſſarion, and others of the late Greek authors.

Budæus derives the word from *trojana agmina*; others from *trojamentum*, *quaſi ludus trojæ*. Menage deduces it from the Latin, *tornenſis*, or the French, *tourner*, in regard the combatants turned and twiſted this way and that. M. Paris calls them in Latin, *haſtiludia*; Neubrigenſis, *meditationes militares*; others *gladiaturæ*, others *decurſiones ludicræ*, &c.

Pope Eugenius II. excommunicated thoſe who went to *turnaments*, and forbad them burial in holy ground.—K. Henry II. of France died of a wound received at a *turnament*.—One Chiaoux, who had aſſiſted at a *turnament* under Charles VIII. ſaid very happily, *If it be in earneſt, it is too little; if in jeſt, too much.*

It is to the exerciſe of *turnaments* that we owe the firſt uſe of armories; of which the name blazonry, the form of the eſcutcheons, the colours, principal figures, the mantlings, labels, ſupporters, &c. are undeniable evidences. See ARMS.

In Germany, it was anciently a cuſtom to hold a ſolemn *turnament* every three years, to ſerve as a proof of nobility.—For the gentleman who had aſſiſted at two, was ſufficiently blazoned and publiſhed; *i. e.* he was acknowledged noble, and bore two trumpets by way of creſt on his *turnament* caſk.—Thoſe who had not been in any *turnaments*, had no arms, though they were gentlemen. See NOBILITY, DESCENT, &c.

TURNESOL, or TORNESOL, *Heliotrope*, or the *Sun-flower*; a plant whoſe flower is ſaid to follow the motion of the ſun, and to turn ſtill towards it.

Some ſay, it is hence it takes its name, and account for the effect, by ſuppoſing that its heavy ſtalk, warmed and ſoftened with the heat which is ſtrongeſt on that ſide toward the ſun, inclines naturally towards the ſame; but others take the opinion to have had its riſe from the name, which was given it by reaſon of its appearance in the time of the greateſt heats, when the ſun is in the tropic.

Some have imagined the ſun-flower of uſe in medicine; but its reputation that way is now out of doors. Its principal uſe is in dying: in order to which, its juice is inſpiſſated and prepared with calx and urine, into blue cakes; uſed alſo with ſtarch, inſtead of ſmalt. See BLUE, SMALT, *&c.*

Its juice likewiſe furniſhes the colour wherewith the people of Languedoc and ſome other parts of France, where it grows, prepare what they call the *tourneſol en drapeux*, or *tourneſol in rags*. The proceſs whereof we owe to M. Niſſole of the royal academy of ſciences, and is as follows:

The ſummets or tops of the plants being gathered in the beginning of Auguſt, are ground in mills, not unlike our oil-mills: then, being put up in bags, the juice is expreſſed with preſſes.

This juice having been expoſed to the ſun about an hour, they dip linnen rags therein, and hang them out in the air till they be well dried again. When, moiſtening them for ſome time, over the vapour of about ten pound weight of quick lime ſlaked in a ſufficient quantity of urine, they lay them out again to the ſun to dry; to be again dipped in the juice of the ricinoides.

When they are dried for the laſt time, they are in their perfection; and are thus ſent into moſt parts of Europe, where they are uſed to tinge wines and other liquors, and give them an agreeable colour.

The Dutch prepare a kind of *turneſol* in paſtes or cakes, or ſtones; pretended to be the juice of that plant inſpiſſated: but there is reaſon to think it a cheat, and to be the juice of ſome other plant prepared after this manner; the *turneſol* being no plant of their growth.

TURNETUM, in our old law-books, a duty paid to the ſheriff for holding his turn, or county-court. See TURN, and SHERIFF.

TURNING, a branch of ſculpture; being the art of faſhioning hard bodies, as braſs, ivory, wood, *&c.* into a round or oval form, in a lathe. See LATHE.

Turning is performed by putting the ſubſtance to be *turned* upon two points, as an axis; and moving it about on that axis; while an edge-tool, ſet ſteady to the outſide of the ſubſtance, in a circumvolution thereof, cuts off all the parts that lie further off the axis, and makes the outſide of that ſubſtance concentric to the axis.

The invention of *turning* appears to be very ancient.—Some, indeed, to do honour to the age, will have it brought to perfection by the moderns; but if what Pliny, and ſome other ancient authors relate, be true, that the ancients *turned* thoſe precious vaſes, enriched with figures and ornaments in relievo, which we ſtill ſee in the cabinets of the curious; it muſt be owned, that all that has been added in theſe ages, makes but a poor amends for what we loſt of the manner of *turning* of the ancients. See SCULPTURE.

The principal inſtruments uſed in *turning*, beſide the lathe, are chiſſels and mandrels of various forms; the deſcription whereof ſee under their proper articles.

TURNING *paliſades*, } See the articles { PALISADE.
TURN-UP *compaſſes*, } { COMPASSES.

TURNPIKE, a gate ſet up acroſs a road, watched by an officer for the purpoſe, in order to ſtop travellers, waggons, coaches, *&c.* to take toll of them, towards repairing, or keeping the roads in repair. See ROAD.

TURNPIKE is alſo uſed in the military art, for a beam ſtuck full of ſpikes, to be placed in a gap, a breach, or at the entrance of a camp, to keep off an enemy. See CHEVAL *de Friſe.*

The *turnpike*, called alſo *cheval de friſe*, is a ſpar of timber, twelve or fourteen feet long, and about ſix inches diameter; of a ſexangular form, and bored with holes, one right under another, about an inch diameter; the axis of the holes being ſix inches one from another, and to go in from each ſide.—The ſpikes or pickets that are driven into the holes, are five or ſix feet long, pointed with iron; and with wedges or nails faſtened tight into the holes.

Two of theſe faſtened together with an iron chain and ſtaple, ſix inches long, are of great uſe to ſtop the enemy in the breaches or elſewhere.

Thoſe intended to be thrown into breaches, muſt be made of oak; and need not be ſo big, or the pickets ſo long.

TURPENTINE, TEREBINTHINA, a tranſparent ſort of reſin, flowing either naturally or by inciſion, from ſeveral unctuous and reſinous trees—as the terebinthus, larch, pine, fir, *&c.* See RESIN.

We diſtinguiſh ſeveral kinds of *turpentines*; as that of Chio, that of Venice, that of Bourdeaux, that of Cyprus, Straſbourg, *&c.*

The *turpentine* of Chio, or Sio, which is the only genuine kind, and that which gives the denomination to all the reſt, is a whitiſh reſin, bordering a little on green, very clear and a little odoriferous; drawn by inciſion from a tree called *terebinthus*, very common in that iſland, as alſo in Cyprus, and ſome parts of France and Spain.

The reſin muſt be choſen of a ſolid conſiſtence, almoſt without either taſte or ſmell, and not at all tenacious, which diſtinguiſhes it from the falſe *turpentine* of Venice, commonly ſubſtituted for it, which has a briſker ſmell, a bitter taſte, and ſticks much to the finger.—This *turpentine* of Chio is indiſputably the beſt; but its ſcarcity occaſions it to be little in uſe.

The *turpentine* of Venice, is falſely ſo called; for though there was a *turpentine* anciently brought from Venice, yet that now ſo called comes from Dauphiné.—It is liquid, of the conſiſtence of a thick ſyrup, and whitiſh; and flows either ſpontaneouſly, or by inciſion from the larch-tree, chiefly in the wood de Pilatze.

That flowing naturally, called by the peaſants *bijon*, is a kind of balſom, not inferior in virtue to that of Peru, for which it is frequently ſubſtituted.—That drawn by inciſion, after the tree has ceaſed to yield ſpontaneouſly, is of conſiderable uſe in ſeveral arts, and it is even of this that varniſh is chiefly made. See VARNISH.—It muſt be choſen white and tranſparent, and care be taken it have not been counterfeited with oil of *turpentine*.

The *turpentine* of Bourdeaux is white and thick as honey.—It does not ooze from the tree in the manner it is ſent to us; but is properly a compoſition, wherein, among other ingredients, is a white hard ſort of roſin called *galipot*. See PITCH.

The *turpentine* of Straſbourg, the produce of the abies or ſilver fir, is that moſt commonly uſed among us; and is preferred, by our people, to that of Venice, which it is diſtinguiſhed from by its green hue, flagrant ſmell, and citron flavour.

The uſes of *turpentine* in medicine are innumerable.—It is a great vulnerary, and very detergent, and as ſuch is preſcribed in abſceſſes, and ulcerations, *&c.* It promotes expectoration, and as ſuch is preſcribed in diſeaſes of the lungs, and breaſt: but it is moſt famous for clearing the urinary paſſages, and as ſuch preſcribed in obſtructions of the reins, in gonorrhœas, *&c.*

Oil of TURPENTINE.—There are two kinds of oils drawn from *turpentine* by diſtillation; the firſt white, the ſecond red; both eſteemed as balſoms proper for the cure of wounds, chilblains, *&c.* But they are ſo little uſed among us, that it is not eaſy to procure either of them.

What is commonly ſold under the name of *oil of turpentine*, or *etherial oil*, is only a diſtillation of the reſinous juice of the tree freſh as it is gathered.—It is uſed with ſucceſs in the cure of green wounds, as alſo by the painters, farriers, *&c.*—To be good, it muſt be clear and white as water, of a ſtrong penetrating ſmell, and very inflammable.

TURPETH, } See the articles { TURBITH.
TURQUOIS, } { TURCOIS.

TURUNDA, in medicine and chirurgery, *tent*, *pellet*, or *penecil*; a piece of lint thruſt into a wound, ulcer, or other cavity. See TENT, and PENECILLUS.

TUSCAN, in architecture, the firſt, ſimpleſt, and moſt maſſive of the five orders.—See *Tab. Archit. fig.* 24. See alſo the article ORDER.

The *Tuſcan order* takes its name from an ancient people of Lydia, who coming out of Aſia to people Tuſcany, firſt executed it in ſome temples, which they built in their new plantations.

Vitruvius calls the *Tuſcan* the *ruſtic order*; with whom agrees M. de Cambray, who in his parallel ſays, it ought never to be uſed but in country-houſes and palaces. M. le Clerc adds, that in the manner Vitruvius, Palladio, and ſome others, have ordered it, it does not deſerve to be uſed at all. But in Vignola's manner of compoſition, he allows it a beauty, even in its ſimplicity; and ſuch as makes it proper not only for private houſes, but even for public buildings, as in the piazzas of ſquares and markets; in the magazines and granaries of cities, and even in the offices and lower apartments in palaces.

The *Tuſcan* has its character and proportions, as well as the other orders; but we have no ancient monuments to give us any regular *Tuſcan* order for a ſtandard.

M. Perrault obſerves, that the characters of the *Tuſcan* are nearly the ſame with thoſe of the Doric; and adds, that the *Tuſcan* is, in effect, no other than the Doric, made ſomewhat ſtronger, by ſhortening the ſhaft of the column; and ſimpler, by the ſmall number, and largeneſs of the mouldings. See DORIC.

Vitruvius makes the whole height of the order 14 modules, wherein he is followed by Vignola, M. le Clerc, *&c.*—Serlio only makes it 12.—Palladio gives us one *Tuſcan* profile, much the ſame as that of Vitruvius; and another too rich: on which ſide Scamozzi is likewiſe faulty. Hence it is, that that of Vignola, who has made the order very regular, is moſt followed by the modern architects. See COLUMN.

Of all the orders, the *Tuſcan* is the moſt eaſily executed; as having neither triglyphs nor dentils, nor modillions to cramp its intercolumns.—On this account the columns of this order may be ranged in any of the five manners of Vitruvius, *viz.*

the pycnoſtyle, ſyſtyle, euſtyle, diaſtyle or aræoſtyle. See INTERCOLUMNATION.—For the parts and members of the *Tuſcan* order, their proportions, *&c.* ſee CAPITAL, BASE, PEDESTAL, FREEZE, *&c.*

TUSCULAN, in matters of literature, is a term which frequently occurs in the phraſe, *tuſculan queſtions*.—Cicero's *tuſculan queſtions*, are diſputations on ſeveral topics in moral philoſophy, which that great author took occaſion to denominate from *Tuſculanum*, the name of a country-ſeat or villa, where they were compoſed, and where he lays the ſcene of the diſpute.

They contain five books: the firſt on the contempt of death; the ſecond of enduring pain; the third on aſſwaging grief; the fourth on the other perturbations of the mind; and the laſt, to ſhew, that virtue is ſufficient to a happy life.

TUSKES or TUSKS of a horſe. See TOOTH.

TUSSIS. See the article COUGH.

TUT, in armory, *&c.* an imperial enſign of a golden globe, with a croſs on it.

TUTELARY, TUTELARIS, one who has taken ſomething into his patronage, and protection. See GUARDIAN, PROTECTION, *&c.*

It is an ancient opinion, that there are *tutelary* angels of kingdoms and cities, and even of particular perſons, called *guardian angels*. See ANGEL, DÆMON, GENIUS, *&c.*

The ancient Romans, it is certain, had their *tutelary* gods, whom they called *penates*. See PENATES.—And the Romiſh church to this day, hold an opinion not much unlike it: they believe that every perſon, at leaſt every one of the faithful, has, from the time of his birth, one of thoſe *tutelary* angels attached to his perſon, to defend him from all temptations; and it is on this, principally, that their practice of invoking angels is founded.

F. Anthony Macedo, a Portugueſe jeſuit of Coimbra, has publiſhed a large work in folio, on the *tutelary* ſaints of all the kingdoms, provinces and great cities of the chriſtian world: *divi tutelares orbis chriſtiani*, at Liſbon 1687. See PATRON, SAINT, *&c.*

TUTOR, in the civil law, is one choſen to look to the perſon and eſtate of children, left by their fathers and mothers in their minority. See GUARDIAN, MINOR, and PUBERTY.

By the cuſtom of Normandy, the father is the natural *tutor* of his children.—A perſon nominated *tutor*, either by teſtament, or by the relations of the minor, may decline that office, if he have five children alive; if he have any other conſiderable *tutorage*; if he be under 25 years of age; if he be a prieſt or a regent in an univerſity; or if he have any law-ſuit with the minors, *&c.* See TUTORAGE.

The marriage of a pupil, without the conſent of his *tutor*, is invalid.—*Tutors* may do any thing for their pupils, but nothing againſt them; and the ſame laws which put them under a neceſſity of preſerving the intereſt of the minors, put them under an incapacity of hurting them. See PUPIL.

Honourary TUTOR. See the article HONOURARY.

TUTOR is alſo uſed in our univerſities, for a member of ſome college or hall, who takes on him the inſtructing young ſtudents in the arts and faculties. See UNIVERSITY.

TUTORAGE, TUTELA, in the civil law, a term equivalent to guardianſhip in common law; ſignifying an office impoſed on any one, to take care of the perſon and effects of one or more minors. See MINOR, TUTOR, *&c.*

By the Roman law, there are three kinds of *tutorage*.—*Teſtamentary*, which is appointed by the father's teſtament.—*legal*, which is given by the law to the neareſt relation.—And *dative*, which is appointed by the magiſtrate.

But in all cuſtomary provinces, as *France*, *&c.* all *tutorages* are dative and elective; and though the father have by teſtament, nominated the next relation to his pupil, yet is not that nomination of any force, unleſs the choice be confirmed by that of the magiſtrate, *&c.*

By the Roman law, *tutorage* expires at 14 years of age; but in France not till 25 years. A minor quits his *tutorage*, and becomes free by marriage; in which caſe a curator is given him. See CURATOR, and GUARDIAN.

TUTTY, TUTIA or *Lapis* TUTIÆ, a kind of metallic ſoot, thrown off from braſs, in the furnace, and formed into concave flakes of different ſizes, and thickneſs; very hard, greyiſh, and full of little protuberant grains as big as pins heads. See CADMIA, POMPHOLYX, SPODIUM, *&c.*

It is found adhering to rolls of earth ſuſpended for that purpoſe over the furnaces of the founders in braſs, to receive the fumes of the melted metal. See COPPER, FOUNDERY, *&c.*

Tutty is now brought chiefly from Germany. Anciently, it came from *Alexandria*.—To prepare the *tutty* for uſe, they heat it red hot three times in a crucible, among burning coals; and quench it as often in roſe-water: then they grind it on a porphyry ſtone, mixing it with as much roſe-water, or plantain-water as is neceſſary, till it be brought to a very fine powder: then they make it up into little troches, and thus dry it.

Tutty is very deſiccative. Its principal uſe is in diſeaſes of the eyes, particularly inflammations; in order to which, it is to be diluted with roſe-water or plantain-water, and applied in form of a collyrium. See COLLYRIUM.

Some alſo uſe it incorporated with hog's lard, or freſh butter, in the form of an unguent.—In the *London Diſpenſatory*, we have a compoſition called *ointment of tutty*, good for eye-diſeaſes; and frequently alſo uſed by ſurgeons with other dryers to cicatrize ulcers.—It is alſo reputed good in the hæmorrhoids. It is made up with calamine, and unguentum roſaceum.

TWA-NIGHTS *Geſte*, in our ancient cuſtoms. See THIRD-*night-awn Hynde*.

If the *twa-nights-geſte* did any harm to any, his hoſt was not anſwerable for it, but himſelf. See HOGENHINE.

TWELF-HIND, in our ancient cuſtoms, imports much the ſame with *thane*. See THANE.

Among the Engliſh Saxons, every man was valued at a certain price; and when an injury was done, either to the perſon or goods, a pecuniary mulct was impoſed, and paid in ſatisfaction of that injury, according to the worth and quality of the perſon to whom it was done.—And hence all men were ranked in three claſſes; which ſee in HINDENI, and TWIHINDI.

Thoſe who were worth 1200 *s.* were called *twelve-hindi*, and if an injury was done to them, ſatisfaction was to be made accordingly. See SYXHINDEMEN.

TWELFTH-DAY, or TWELFTH-*Tide*, the feſtival of the Epiphany, or the manifeſtation of Chriſt to the Gentiles; ſo called, as being the *twelfth-day*, excluſive, from the nativity or Chriſtmaſs-day. See EPIPHANY.

TWELVE-MEN, *duodecim homines legales*, otherwiſe called *jury*, or *inqueſt*, is a number of *twelve* perſons, or upwards to twenty-four; by whoſe oath, as to matters of fact, all trials paſs, both in civil and criminal caſes, through all courts of the common law in this realm. See JURY, and TRIAL.

In civil caſes, when proof is made of the matter in queſtion, the point of fact, whereon they are to give their verdict, is delivered to them; which is called the *iſſue*.—Then they are put in mind of their oath, and are by the judge's ſumming the evidence, ſent out of court by themſelves, to conſider on the evidence on both ſides, till they be agreed. See ENQUEST.

In cauſes criminal, there are two ſorts of inqueſts or juries: the *grand inqueſt*, and the *inqueſt of life and death*.—The firſt is ſo called, becauſe it conſiſts of ſixteen perſons at leaſt, or becauſe all cauſes criminal or penal paſs through their hands; whereas the other inqueſt is eſpecially appointed for one or more matters. Thoſe of the grand Inqueſt are called by Bracton, *duodecim milites*, becauſe they were wont to be knights; if ſo many could be had. See KNIGHT.

Their function is to receive all preſentments of any offence, and accordingly to give their general opinion thereof, by writing either the words *billa vera* upon the bill of preſentment, which is an indictment of the party preſented: or elſe *ignoramus*, which is a doubting of the fact preſented. See IGNORAMUS, BILLA VERA, and INDICTMENT.

Laws of the TWELVE *Tables*. See the article TABLE.

TWELVE-MONTH, the ſpace of a year, according to the calendar months. See YEAR, and MONTH.

TWI-FALLOWING *of Ground*, in huſbandry, is the tilling or ploughing it a ſecond time. See TILLING, and PLOUGHING.

TWI-HINDI, or TWYHINDI, among our Saxon anceſtors, were men valued at 200 *s.* See TWELFHINDUS, and HINDENI.

Theſe men were of the loweſt degree; and if ſuch were killed, the mulct was 30 *s.*—Thus in *Leg. H.* I. *c.* 9. *de* twihindi *hominis interfecti, wera debit reddi ſecundum legem*.—Where note, that this was not an introduction of a new law, but a confirmation of the old, made in the reign of king Affred.

TWINS, two young ones delivered at a birth by an animal which ordinarily brings forth but one. See BIRTH.

It has been greatly diſputed, which of two *twins* is to be eſteemed the elder?—The faculty of Montpellier have given it, that the latter born is to be reputed the elder, becauſe firſt conceived: but by all the laws which now obtain, the firſt-born enjoys the privileges of ſeniority; and the cuſtom is confirmed by the inſtance of Eſau and Jacob.

But if two *twins* be born ſo intermixed, that one cannot diſtinguiſh which of the two appeared the firſt, it ſhould ſeem that neither the one nor the other can pretend to the right of primogeniture, which ought to remain in ſuſpence, by reaſon of their mutual concourſe.

In ſuch caſe, ſome would have the deciſion left to the father, and others to the chance of a lot. Sometimes there are born three *twins*, as in the inſtances of the *Horatii* and *Curiatii*; and ſometimes there have been known four, or even five or more. See FOETUS, and EMBRYO.

TWINS, in aſtronomy. See the article GEMINI.

TWIST *of a rope, cord, &c.* See ROPE, CORDAGE, CABLE, *&c.*

TWIST, again, is uſed for the inſide, or flat part of a man's thigh, upon which a true horſeman reſts when on horſeback. See THIGH.

To **TWIST** *a horſe*, is violently to wring or twiſt his teſticles twice about, which cauſes them to dry up, and deprives them of nouriſhent, and reduces the horſe to the ſame ſtate of impotency with a gelding. See GELDING.

TWISTED *Column*, } See the articles { COLUMN.
TWISTED *Silks*, } { SILK.

TWO *thirds Subſidy*. See the article DUTY.

TYCHONIC *Syſtem*, or *hypotheſis*, is an order or arrangement of the heavenly bodies, of an intermediate nature between the Copernican and Ptolemaic, or participating alike of them both. See SYSTEM.

It takes its name from Tycho Brahe, a noble Dane, of whom ſome account is hereafter given, under the article URANIBOURG.

In this ſyſtem, the earth is, with Ptolemy, placed in the middle, and ſuppoſed immoveable; and the ſun and moon to revolve in orbits, reſpecting the ſame as a centre: but the other five planets are ſuppoſed, with Copernicus, to revolve round the ſun as their centre.—So that the orbits of the three ſuperior planets include the earth, but not thoſe of the inferior ones, by reaſon they are nearer to the ſun than the earth is.

Accordingly, the heavens are here ſuppoſed to be fluid; and to conſiſt of three different orbs or ſpheres; the firſt moveable, ſuppoſed to make a revolution in 24 hours; the ſecond the ſphere of the planets; and the third the firmament, or region of the fixed ſtars.—See the diſpoſition of the heavenly bodies in this ſyſtem, repreſented in *Tab. Aſtronomy*, *fig.* 45.

Some later aſtronomers finding the Ptolemaic ſyſtem diſagree with phænomena; and not daring to make the earth move; but at the ſame time diſliking the *Tychonic* notion of two centres, one of them moveable, *viz.* the ſun, and the other fixed, the earth; have framed a new ſyſtem out of the Ptolemaic and *Tychonic*, called the *Semi-Tychonic*; wherein not only the Sun and Moon, but Jupiter alſo and Saturn, are ſuppoſed to move in excentrics or deferents, reſpecting the earth as a centre, though revolving at the ſame time in their reſpective epicycles.—But even here, the inferior planets are ſtill ſuppoſed to move round the ſun as their centre; their phaſes, obſerved with the teleſcope, being no otherwiſe accountable for. See SUN, MOON, PLANET, &c.

TYLE,* or **TILE**, in building, a ſort of thin, factitious, laminated ſtone, uſed in the roofs of houſes; or, more properly, a kind of fat, clayey earth, knodden and moulded of a juſt thickneſs, dried and burnt in a kiln, like a brick, and uſed in the covering and paving of houſes. See BRICK, and COVERING.

* It is thus called from the French, *tuile*, of the Latin, *tegula*, which ſignifies the ſame.

Tyles are made, ſays M. Leybourn, of better earth than brick-earth, and ſomething nearer akin to the potter's earth.—According to *Stat.* 17 Edw. IV. the earth for *tyles* ſhould be caſt up before the firſt of November, ſhired and turned before the firſt of February, and not made into *tyles* before the firſt of March; and ſhould likewiſe be tried and ſevered from ſtones, marle and chalk. — For the method of burning them, ſee BRICK.

As to the applying of *tyles*; ſome lay them dry, as they come from the kiln, without mortar or any thing elſe: others lay them in a kind of mortar made of loam and horſe-dung.—In ſome parts, as in Kent, they lay them in moſs.

There are various kinds of *tyles*, for the various occaſions of building; as *plain*, *thack*, *ridge*, *roof*, *creaſe*, *gutter*, *pan*, *crooked*, *flemiſh*, *corner*, *hip*, *dorman*, *dormar*, *ſcallop*, *aſtragal*, *traverſe*, *paving* and *dutch tyles*.

Plain or *thack* **TYLES**, are thoſe in ordinary uſe for the covering of houſes. They are ſqueezed flat, while yet ſoft, in a mould. — They are of an oblong figure, and by *Stat.* 17 *Edw.* IV. c. 4. are to be 10½ inches long; 6¼ broad, and half an inch and half a quarter thick. But theſe dimenſions are not over-ſtrictly kept to.

Ridge, *roof*, or *creaſe* **TYLES**, are thoſe uſed to cover the ridges of houſes; being made circular, breadth-wiſe, like a half cylinder.—Theſe are what Pliny calls *laterculi*, and are by ſtatute to be 13 inches long, and of the ſame thickneſs with the *plain tyles*.

Hip or *corner* **TYLES**, are thoſe which lie on the hips or corners of roofs. — As to form; they are firſt made flat, like *plain tyles*, but of a quadrangular figure, whoſe two ſides are right lines, and two ends, arches of circles; one end being a little concave, and the other convex: the convex end to be about ſeven times as broad as the concave end; ſo that they would be triangular, but that one corner is taken off: then, before they are burnt, they are bent on a mould, breadth-wiſe, like *ridge tyles*.—They have a hole at their narrow end, to nail them on by; and are laid with their narrow end upwards. By ſtatute, they are to be 10½ inches long, and of a convenient breadth and thickneſs.

Gutter **TYLES**, are thoſe which lie in gutters or valleys in croſs-buildings.—They are made like *corner tyles*, only the corners of the broad end are turned back again with two wings.—They have no holes in them, but are laid with the broad end upwards, without any nailing.—They are made in the ſame mould as *corner tyles*, and have the ſame dimenſions on the convex ſide. Their wings are each 4 inches broad and 8 long.

Pan, *crooked*, or *Flemiſh* **TYLES**, are uſed in covering of ſheds, lean-to's, and all kinds of flat-roofed buildings.—They are in form of an oblong parallelogram, as *plain tyles*; but are bent breadth-wiſe forwards and backwards, in form of an S, only one of the arches is at leaſt three times as big as the other; which biggeſt arch is always laid uppermoſt, and the leſſer arch of another *tyle* lies over the edge of the great arch of the former.—They have no holes for pins, but hang on the laths by a knot of their own earth: they are uſually 14½ inches long, and 10½ broad. By 12 G. 1. c. 25. they are to be, when burnt, not leſs than 13½ inches long, 9½ wide, and ½ an inch thick.

Dormar, or *dorman* **TYLES**, conſiſt of a plain *tyle* and a triangular piece of a plain one, ſtanding up at right angles to one ſide of the plain *tyle*, and ſwept with an arch of a circle from the other end, which end terminates in a point.—Of theſe *tyles* there are two kinds; the triangular piece, in ſome, ſtanding on the right, in others on the left ſide of the plain *tyle*.—And of each of theſe, again, there are two kinds; ſome having a whole plain *tyle*, others but half a plain *tyle*. But in them all, the plain *tyle* has two holes for the pins, at that end where the broad end of the triangular piece ſtands.

Their uſe is to be laid in the gutters, betwixt the roof and the cheeks or ſides of the dormars, the plain part lying on the roof, and the triangular part ſtanding perpendicularly by the cheek of the dormar.—They are excellent to keep out the wet in thoſe places, and yet are not perhaps known any where but in Suſſex.—The dimenſions of the plain *tyle* part are the ſame as thoſe of a plain *tyle*, and the triangular part is of the ſame length, and its breadth at one end 7 inches, and at the other nothing.

Scallop or *aſtragal* **TYLES**, are in all reſpects like plain *tyles*, only their lower ends are in form of an aſtragal, *viz.* a ſemicircle, with a ſquare on each ſide.—They are uſed in ſome places for weather *tyling*.

Traverſe **TYLES**, are a kind of irregular plain *tyles*, having the pin-holes broke out, or one of the lower corners broke off.—Theſe are laid with the broken end upwards, upon rafters, where pinned *tyles* cannot hang.

Flemiſh or *Dutch* **TYLES**, are of two kinds, *ancient* and *modern*.—The *ancient* were uſed for chimney-foot foot-paces: they were painted with antic figures, and frequently with poſtures of ſoldiers, ſome with compartments, and ſometimes with moreſque devices; but came much ſhort, both as to the deſign and colours of the modern ones.

The *modern Flemiſh tyles* are commonly uſed plaiſtered up in the jaumbs of chimneys, inſtead of chimney-corner-ſtones.—Theſe are better glazed, and ſuch as are painted (for ſome are only white) much better performed than the ancient ones.

But both kinds ſeem to be made of the ſame whitiſh clay as our white glazed earthen ware.—The ancient ones are five inches and a quarter ſquare, and about three quarters of an inch thick: the modern ones ſix inches and a half ſquare, and three quarters of an inch thick.

TYLER, one that covers or paves with tyles.

Tylers and bricklayers were *incorporated* 10 Eliz. under the name of Maſter and wardens of the ſociety of freemen of the myſtery and art of tylers and bricklayers. See BRICK.

TYLERY. See the article TUILERIE.

TYLWITH, in matters of heraldry and deſcent, is ſometimes uſed for a tribe or family branching out of another; which the modern heralds more uſually call the *ſecond* or *third houſe*.

TYMBER *of Skins*. See the article TIMBER.

TYMPAN, or **TYMPANUM**, in architecture, the area of a pediment: being that part which is in a level with the naked of the freeze.—Or it is the ſpace included between the three cornices of a triangular pediment, or the two cornices of a circular one.—See *Tab. Archit. fig.* 36. *lit. e.* See alſo the article PEDIMENT.

Sometimes the *tympan* is cut out, and the part filled with an iron lattice to give light; and ſometimes it is enriched with ſculpture, in baſſo relievo, as in the weſt front of St. Paul's, in the temple of Caſtor and Pollux at Naples, &c.

TYMPAN is alſo uſed for that part of a pedeſtal, called the *trunk* or *dye*. See PEDESTAL, and DYE.

TYMPAN, among joiners, is alſo applied to the pannels of doors. See PANNEL.

TYMPAN *of an Arch*, is a triangular ſpace or table in the corners or ſides of the arch; uſually hollowed and enriched, ſometimes with branches of laurel, olive-tree, or oak; or with trophies, &c. ſometimes with flying figures, as fame, &c. or ſitting figures, as the cardinal virtues. See ARCH.

TYMPAN, in anatomy, mechanics, &c. See the article TYMPANUM.

TYMPAN, among printers, is a double frame belonging to the preſs, covered with parchment, on which the blank ſheets are laid, in order to be printed off. See PRINTING *Preſs*.

TYMPANITES, or **TYMPANY**, in medicine, a flatulent tumor, or ſwelling of the abdomen or belly; very hard, equable, and permanent; whereby the ſkin is ſtretched ſo tight, that when ſtruck, it gives a ſound like that of a drum. See TUMOR.

The *tympanites* is a ſpecies of dropſy, by ſome called a *dry dropſy*: but what the cauſe and ſeat of the diſeaſe is, or what the morbific matter is that occaſions the tumour, phyſicians are not at all agreed. See DPOPSY.

Wind certainly makes a principal part of the morbid matter; but this is ſcarce ever found without water, excepting at the beginning; ſo that ſome will not allow of any difference between the *tympany* and the *aſcites*.

Some ſuppoſe it to ariſe from a watry humour extravaſated and rarified into vapour; and by a property common to it with common air, corrupting the parts.--But this, Boerhaave makes a particular kind of *tympanites*, or wind dropſy; and adds, that it is cured like the aſcites, or water dropſy, by tapping, *&c.* See PARACENTESIS, and ASCITES.

Others will have the *tympanites* to ariſe from the air's inſinuating itſelf through perforations in the putrified inteſtines.—A *tympanites* from this cauſe, Boerhaave, who makes it a peculiar claſs, obſerves, is almoſt always incurable.

Willis ſets aſide this latter cauſe, and accounts for the diſeaſe from an irregularity in the animal ſpirits belonging to the viſcera, which ruſhing tumultuarily into the nervous fibres, bloat them up: thus is the peritoneum inflated, the inteſtines diſtended, and the meſentery, and other viſcera, rendered turgid; and while this is doing, that the vacuities left in the tumified viſcera may be filled up, a quantity of the humour contained in them is rarified into vapour, which preſently ſpreads in blaſts through the vacant places.—Others account for the *tympanites* from a convulſion of the muſcles of the abdomen, *&c.*

M. Littre has propoſed a new ſyſtem of the *tympanites*, built on a great number of obſervations.—According to him, it does not proceed from any convulſion of the abdominal muſcles, nor from any air contained in the cavity thereof, or in the thorax, the meſentery, or epiploon; but from the air incloſed in the ſtomach and inteſtines, which ſwells them exceſſively.

This air, always carried into thoſe parts with the food, maintains a kind of equilibrium therein; oppoſing on the one hand, the too great preſſure on that long canal when empty of food; and finding, on the other ſide, in the ſpring of the coats of the ſtomach and inteſtines, an obſtacle capable of preventing its too great dilatation.

If this equilibrium chance to be deſtroyed by the irritation of the fibres, whoſe ſpring in that caſe prevails over that of the air, this latter is expelled either upwards or downwards, or both: (whence belching, *&c.*) But if the equilibrium come to be broke by the force of the air, rendered ſuperior to that of the fibres, by thoſe latter being left deſtitute of ſpirits, from the blood's being impoveriſhed after a long ſickneſs; in that caſe, the air rarifying itſelf beyond meaſure, ſwells the cavities it is contained in.

If it be demanded, why when the ſtomach and inteſtines are ſo full of wind, none of the wind eſcapes, either through the anus, or by the mouth, which uſes to be expelled by thoſe paſſages?

M. Mery ſolves the paradox thus: according to this theory, the fibres, both of the ſtomach and inteſtines have loſt their ſpring, at leaſt in part, and are in an imperfect palſy; but the winds evacuated either by the anus or mouth, are winds which thoſe viſcera expel out of their cavities, by putting them in a ſtate of contraction capable of ſurmounting the forces which oppoſe the egreſs of the matters contained in thoſe cavities.—Theſe forces are two ſphincters, one whereof ſhuts the upper orifice of the ſtomach, and the other the anus: but paralytic viſcera, *i. e.* viſcera deſtitute of ſpirits, in which alone conſiſts the ſtrength of the muſcles, cannot overcome the reſiſtance of thoſe two muſcles: whence the wind, therefore, cannot eſcape through its uſual out-lets.

The *tympanites* rarely kills of itſelf; but frequently degenerates into an aſcites.—Cathartics rather aggravate than alleviate it: antihyſterics, antiſcorbutics, chalybeats, and ſtrengthners are of uſe, before it be commenced an aſcites. Equal quantities of leek and elder leaves mixed analytically, is a famed empirical medicine, which has often proved effectual when every thing elſe had failed.

It is uſual to apply carminatives to the belly, as the emplaiſter of cummin-ſeeds, *&c.* and alſo to uſe carminatives mixed with cathartics, diuretics, *&c.* internally: but if the diſeaſe proceed from a paralytic cauſe, deſtroying the tone of the fibres of the firſt paſſages, what is of uſe in rectifying paralytic diſorders, where the tenſion of the fibres is inſufficient, will doubtleſs for the ſame reaſon be of uſe here. See PALSY.

TYMPANUM, ΤΥΜΠΑΝΟΝ, *drum*; a muſical inſtrument, which, among the ancients, conſiſted of a thin piece of leather or ſkin, ſtretched upon a circle of wood or iron, and beat with the hand. See DRUM.

TYMPANUM, **TYMPAN**, in mechanics, is a kind of wheel placed round an axis or cylindrical beam, on the top of which are two levers or fixed ſtaves, for the more eaſy turning the axis about, in order to raiſe a weight required. See WHEEL.

The *tympanum* is much the ſame with the peritrochium; but that the cylinder of the axis of the peritrochium is much ſhorter and leſſer than the cylinder of the *tympanum*. See PERITROCHIUM.

TYMPANUM of a machine, is alſo uſed for any hollow wheel, wherein one or more people, or other animals, walk to turn it; ſuch as that of ſome cranes, calenders, *&c.* See WHEEL.

TYMPANUM, in anatomy.—*Membrani* TYMPANI, is a thin tender ſkin or membrane, ſtretched upon a bony circle, in the meatus auditorius of the ear, which it ſhuts; and ſuppoſed to be the immediate organ of hearing.—See *Tab Anat.* (Oſteol.) *fig.* 13. *lit. c.* See alſo EAR.

The *tympanum*, popularly called the *drum*, with reſpect to the erect poſture of the body, is ſituate obliquely, facing downwards; whence it is that we hear ſounds coming from below, better than thoſe from above. See DRUM.

Its external ſurface is a little hollow in the middle.—It is compoſed of two membranes, or, as others will have it, of only two or more lamellæ of one.—It has a perforation, or, at leaſt a diſengaged part, which admits of the paſſage of wind, and, in ſome, of ſmoak from the meatus a palato. See FORAMEN.

Behind it, is a cavity of the os petroſum, called *tympani cavitas*, and ſometimes ſimply *tympanum*; wherein are four little bones, *viz.* the *malleolus*, *incus*, *ſtapes*, and *os orbiculare*: which ſee under their reſpective articles, MALLEOLUS, *&c.*

Within the *cavitas tympani*, Vieuſſens has diſcovered a very fine thin membrane, ſerving to ſhut the door of the labyrinth, and prevent the internal air from having any communication with the external.—The *membrana tympani* has a remarkable branch of a nerve paſſing on its internal ſurface between the incus and malleolus, called the *chorda tympani*. See CHORDA.

The *tympanum*, Dr. Willis takes to be a kind of preparatory inſtrument to hearing; and its office to be, to receive the firſt impreſſions of ſounds, or the ſenſible ſpecies, and to convey them duly modified and proportioned to the ſenſorium. See SOUND, SENSATION, *&c.*

Its office, in effect, with reſpect to the ſenſe of hearing, ſeems to be the ſame as that of the pupil of the eye with regard to ſeeing: each of them prevent the ingreſs of too many rays, temper and ſoften them, and deliver them, as it were, commenſurate to the ſenſory; upon which, if they ſhould fall immediately, they might be apt to ſpoil its delicate conſtitution. See PUPIL.

The *tympanum*, it is true, does not hear: but it contributes to the better and ſafer hearing.—That it may do the office of a porter the better, it is neceſſary its expanſe ſhould, like the pupil, be contracted and relaxed on occaſion; and to this purpoſe ſerve the four little bones above-mentioned, which have the ſame uſe in ſtraining and relaxing, as the braces of the war drum have in that inſtrument.—By means of this extenſion and retraction, the *tympanum* is made to correſpond to all ſounds loud or languid; as the pupil does to all the degrees of light. See HEARING.

The ingenious Dr. Holder has improved on this theory. He conceives that the action of the muſcle, whereby the *tympanum* is ſtretched and relaxed, does ordinarily and conſtantly draw it to a moderate tenſion; but when we have occaſion to liſten, and give a particular attention to any ſound, the action of that muſcle is then more intenſe, and the drum is drawn to a more than ordinary tenſion, to facilitate the paſſage of the ſound. See ATTENTION.

Upon theſe conſiderations, that author having a young gentleman, who was born deaf, put into his hands, and perceiving the great defect to lie in the want of a due tenſion of the *tympanum*, he adviſed his mother to conſult with phyſicians, whether by ſome aſtringent fumes, or otherwiſe, it might not be reſtored to a due tenſion.

In the mean time, he thought of a temporary way, by the pulſe of any vehement ſound; as of a drum beaten near him: which ſound, during its continuance, muſt needs give the *tympanum* a tenſion, by driving and ſwelling it outwards, as a freſh gale of wind fills the ſails of a ſhip. And the experiment ſucceeded according to expectation: for ſo long as he beat a drum faſt and loud by him, he could hear thoſe that ſtood by him call him gently by his name. But when the drum ceaſed, he could no longer hear the ſame perſons calling him very loudly. See DEAFNESS.

But what makes the uſe of the *tympanum* appear the leſs conſiderable is, that there are inſtances where the hearing has been perfect, without any uſe of a *tympanum*.—Mr. Cheſelden relates, that he broke the *tympanum* in both ears of a dog, yet it did not deſtroy his hearing; though for ſome time afterwards he received ſtrong ſounds with great horror: He adds, that Mr. St. Andre aſſured him, that a patient of his had the *tympanum* deſtroyed by an ulcer, and the auditory bones caſt out, without deſtroying his hearing.

Chorda TYMPANI. See the article CHORD.

TYMHANUM, in architecture. See the article TYMPAN.

TYMPANY, TYMPANIAS, or TYMPANITES, in medicine. See the article TYMPANITES.

TYPE,* TYPUS, a copy, image, or reſemblance of ſome model. See MODEL, IMAGE, *&c.*

* The word is formed from the Greek, τυπος, *form*, *figure.*

The term *type* is leſs in uſe than its compounds *prototype* and *archetype*, which are the originals that are made without models. See ARCHETYPE, PROTOTYPE, ECTYPE, *&c.*

TYPE is alſo a ſcholaſtic term, much uſed among divines, ſignifying a ſymbol, ſign, or figure of ſomething to come.

In this ſenſe, the word is commonly uſed with relation to *antitype*, αντιτυπος, which is the thing itſelf, whereof that is a *type* or figure. See ANTITYPE.

Thus, Abraham's ſacrifice, the paſchal lamb, *&c.* were *types* or figures of our redemption: the brazen ſerpent was a *type* of the croſs, *&c.*

Types are not mere conformities, or analogies, which the nature of things holds forth between them; nor arbitrary images ariſing merely from the caſual reſemblance of things: but there is further required a particular inſtitution of God to make a *type*; a particular declaration of his that it is ſo.

Gale divides *types* into *hiſtorical* and *prophetical.*—The firſt are thoſe uſed by the ancient prophets in their agitations and viſions: the ſecond, thoſe wherein things done, or ceremonies inſtituted in the Old Teſtament, prefigure Chriſt, or things relating to him in the New Teſtament.

The ancient fathers, as well as the modern critics, have been greatly divided about the nature and uſe of *types*, and *typical* repreſentations, in the Old Teſtament; and it is this makes one of the great difficulties in underſtanding the ancient prophecies, and in reconciling the New and Old Teſtament together. See PROPHECY.

There is no denying but that there were *types* which the divine wiſdom inſtituted to be the ſhadows and figures of things to come; and yet people run into an exceſs that way: ſome looking for *types* in every thing; like Origen, who diſcovered myſteries in the very caldrons of the tabernacle.—One ſhould be contented with the more ſenſible and obvious ones; nor propoſe any without proving them as much as poſſible; and ſhewing that they were really intended for *types*, in order to juſtify the ſolidity of the reaſoning of the apoſtles, who argued from them.

A late author maintains, that not the fathers only, but St. Paul himſelf, was of the opinion, that "Chriſtianity was all "contained in the Old Teſtament, was implied in the Jewiſh "hiſtory and law; both which are to be reputed *types* and "ſhadows of Chriſtianity."—In order to which, he quotes Hebrews viii. 5. x. 1. and Coloſ. ii. 16, 17.—He adds, "That "the ritual laws of Moſes, being in their own nature no "other than *types* and ſhadows of future good things, are to "be conſidered as having the effect of prophecies."—This is likewiſe the ſenſe of Mr. Whiſton, and others; but the ſame author even quotes our Saviour ſpeaking in behalf of this *typical* reaſoning, in that paſſage Matth. xi. 13. where he affirms, that "The law propheſies; and that he came to fulfil the "law as well as the goſpel," Matth. v. 17. *Diſc. of the Grounds*, *&c.*

An ingenious divine takes this occaſion to obſerve, that had the ancients, with the modern retainers to the *typical* way, expreſly deſigned to have expoſed Chriſtianity, they could not have done it more effectually than by thus making every thing *types* and prophecies.—It is no wonder, he adds, that atheiſts and deiſts ſcoff at the credulity of Chriſtians, and reject what is ſupported by ſuch folly and abſurdity.

Not that he denies the reality of ſuch things as *types.*—It is manifeſt, there were many under the Old Teſtament; ſuch were Zechariah's ſtaves, beauty and bands, ch. xi. 7, 10, 14; ſuch was Hoſea's adulterous wife, ch. i. 2; and ſuch were his children, ver. 4, 6.—The prophets deſigned by theſe to prefigure future events; but in theſe inſtances the reader is at once, by the declaration of the prophet, made to underſtand as much, and not left to his own conjectures about them, after the events are over.

In effect, all this is urged from ſcripture for the *typical* or allegorical interpretations of the Jewiſh law, hiſtory, ceremonies, *&c.* it is aſſerted, may be ſet aſide, without any violence to the ſacred text, which may be explained on more natural and intelligible principles, and more conſiſtently with grammar. See ALLEGORICAL.

The word τυπος, we have obſerved, literally denotes no more than a copy or impreſſion of any thing; and accordingly, in our tranſlation, we find it ſometimes rendered by *print*, ſometimes by *figure*, ſometimes by *faſhion*, and ſometimes by *form.*—Hence alſo the word is figuratively applied to denote a moral pattern; in which ſenſe it ſignifies no more than *example* and *ſimilitude.*

Again, the word αντιτυπος, in ſcripture, ſignifies any thing formed according to a model or pattern; and thus in the epiſtle to the Hebrews, the tabernacle, and holy of holies being made according to the pattern ſhewn to Moſes, are ſaid to be *antitypes* or figures of the true holy places.—In the like ſenſe, St. Peter ſpeaking of the flood and the ark, whereby eight perſons were ſaved, calls baptiſm an *antitype* thereto; by which he expreſſes no more than a ſimilitude of circumſtances.

The other words uſed in ſcripture to imply a future event, prefigured by ſome foregoing act, are—Ὑποδειγμα, rendered by *imitation* and *example*; and σκια, *ſhadow.*

This laſt word is frequently uſed by St. Paul, and applied to the Jewiſh law, ceremonies, prieſts, *&c.* which are repreſented as only ſhadows of things to come, or of heavenly things. It is from ſuch general expreſſions, that people were led to miſtake the apoſtle's deſign in theſe compariſons, and to aſſert, that all the Moſaic rites were types of, or deſigned to ſignify future events; and that the goſpel is to be found in the pentateuch.—Whereas St. Paul's intent appears no other than to ſhew the great advantage of the goſpel over the law in ſeveral particulars, wherein it has as much pre-eminence as the ſubſtance has over the ſhadow. See ACCOMMODATION.

If the ſhadow of things to come ſignify a prefiguration of future events, what are thoſe events to which the Jewiſh new moons, Col. ii. 16. or the Jewiſh meats and drinks, have a reſpect? Or, how did the law of Moſes, made of commands about perſons, times, places, and ſacrifices, prefigure a diſpenſation where regard to ſacrifices, holy perſons, times and places, are ſo far from being enjoined, that they are declared uſeleſs? Can a particular holy place in the law be deſigned a prefiguration of a ſtate where all places are equally holy?

Such being the import of all the terms uſed in the New Teſtament writers, ſeeming to imply any prefiguration of future events under the goſpel, we may obſerve,

1. That to argue from *types*, is only to argue from examples or ſimilitudes; and, conſequently, all inferences drawn from ſuch reaſonings, are no farther concluſive, than reaſonings from ſimilitudes are.—The intent of ſimilitudes is only to help to convey ſome ideas more clearly or ſtrongly; ſo that to deduce conſequences from a ſimile, or infer any thing from other parts of the ſimile than what are plainly ſimilar, is abſurd.

2. It cannot be proved that the ceremonies of the Moſaic law were ever deſigned to prefigure any future events in the ſtate of the Meſſiah's kingdom.—No ſuch declared prefigurations are mentioned in the writings of the Old Teſtament, whatever notions prevailed among the writers who immediately followed. It is granted, that the apoſtles argued from the rites in the Moſaic inſtitution; but it appears to have only been by way of illuſtration and analogy.

There is certainly a general likeneſs in all the diſpenſations of Providence; an analogy of things in the natural as well as the moral world, from which it is eaſy arguing by way of parity, and it is very juſt and uſual ſo to do: but that one of theſe diſpenſations was therefore given to preſignify another that was future, can never be proved, unleſs it be expreſly declared.—The Land of Promiſe, we know, was to be a place where the Jews were to enjoy reſt from their labours; God likewiſe did, himſelf, reſt the ſeventh day from his works: yet, whoever imagined God's reſt from the creation to be prefigurative of the Jews reſt in Canaan? and is it not equally reaſonable to ſay, that God's reſt on the ſeventh day, prefigured the entrance of the Jews into Canaan, as to ſay, that the Jews reſt in Canaan prefigured the reſt mentioned by David in the Pſalms?

This will equally imply, that all the following events in the uniform courſe of God's government, ſimilar to any preceding ones, were deſigned to be preſignified; in which ſenſe, it will readily be owned, that the reſt of the Jews was *typical* of the reſt of the Chriſtians.

It is in the ſame manner we are to underſtand St. Paul, where he ſays, "That Chriſt our paſſover is ſacrificed for us." And thus we are to underſtand John the Baptiſt, when he calls our Saviour the "Lamb of God."—There was this ſimilitude of circumſtance, that Chriſt was ſlain on the ſame day with the paſchal lamb; that he died about the ſame time of the day when the prieſts began their hillel; that not a bone of the one or the other was broken. Add, that as the paſchal lamb was without blemiſh, ſo was Chriſt without ſin.—From theſe, and other circumſtances, the apoſtle applied the term *paſſover* to Chriſt.

Thus, alſo, are we to account for what St. Paul calls the baptiſm of the children of Iſrael in the cloud, and in the ſea; and for the compariſon betwixt the high prieſt entering the holy place every year, and Chriſt entering into heaven. See QUOTATION.

TYPE,* ΤΥΠΟΣ, is alſo a name given to an edict of the emperor Conſtans II. publiſhed in 648, to impoſe a general ſilence both on the orthodox and the Monothelites. See MONOTHELITE.

* It had the name *type*, as being a kind of formulary of faith; or rather a form whereon men were to regulate their conduct.

The *type* owed its original to Paul, patriarch of Conſtantinople, who perſuaded that emperor to take away the ectheſis compiled and hung up in all the public places by Heraclius; (as occaſioning great complaints from the orthodox, by its favouring the Monothelites) and to publiſh an edict to impoſe ſilence on both parties.

But ſuch kinds of pacifications are held inexcuſable in matters of religion; accordingly pope Theodore ſoon procured the patriarch Paul to be depoſed: the *type* was examined in the council of Rome in 649, and condemned; and an anathema pronounced againſt all ſuch as admitted either the impious ecthesis or *typus*. See ECTHESIS.

TYPE, TYPUS, is alſo uſed to denote the order obſerved in the intenſion and remiſſion of fevers, pulſes, &c. See FEVER, PULSE, &c.

TYPHODES, ΤΥΦΩΔΗΣ, in medicine, a kind of ardent or burning fever uſually attending on eryſipelas's of any of the viſcera. See FEVER.

TYPHOMANIA,* ΤΥΦΟΜΑΝΙΑ, in medicine, a diſeaſe of the brain, wherein the patient not being able to ſleep, though greatly inclined thereto, lies with his eyes ſhut, talks abſurdly, and flings himſelf this way and that.

* The word is formed from the Greek, τυφος, *ſmoak*, and μανια, *madneſs*.

If he be pulled, or the like, he juſt opens his eyes, looks about, and ſinks again into a kind of dozing, which is interrupted by a train of diſagreeable imaginations.

The *typhomania* is a kind of combinatian of a phrenzy with a lethargy.—It is alſo called a *coma vigil*. See COMA, PHRENZY, and LETHARGY.

TYPOGRAPHY,* the art of printing. See PRINTING.

* The word is formed from the Greek, τυπος, and γραφη, *ſcriptura*, *writing*.

TYRANT, TYRANNUS, among the ancients, denoted ſimply a king, or monarch. See KING, and MONARCH. But the ill uſe ſeveral perſons inveſted with that ſacred character made of it, has altered the import of the word; and *tyrant* now carries with it the idea of an unjuſt and cruel prince, who invades the people's liberty, and rules in a more deſpotic manner than the laws of nature, or the country do allow of.

The term *tyrant*, we are told, became odious among the Greeks, thoſe zealous lovers of liberty, almoſt as ſoon as introduced: but Donatus aſſures us, it was never taken ſo among the Romans till the latter ages of that empire.

TYRIAN-*Purple*, } See the articles { PURPLE.
TYRO, } { TYROCINIUM.

TYROCINIUM,* TYROCINY, a novitiate or apprenticeſhip in any art or ſcience. See NOVICE, and NOVITIATE.

* The word is formed of *tyro, a raw, freſh-water ſoldier.*

We have ſeveral writings under the title of *tyrociniums*: *tyrocinium chymicum*, *tyrocinium chirurgicum*, &c. containing the rudiments of thoſe arts, accommodated to the apprehenſions of the beginners.

TYROSIS,* ΤΥΡΩΣΙΣ, in medicine, a coagulating or curdling of milk in the ſtomach; after the manner of cheeſe. See CURDLING, and COAGULATION.

* The word is formed of the Greek, τυρος *caſeus*, *cheeſe*. See CHEESE.

TYTH, or rather TITHE. See the article TITHE.

TYTHING and TYTHING-*Man*. See TITHING, DECENNIER, TENMENTALE, HUNDRED, WAPENTAKE, &c.

U.

U, The twentieth letter in the alphabet, and the fifth vowel. See LETTER, and VOWEL.

Beſides the vowel *u*, there is a conſonant of the ſame denomination, wrote *v*, or v. See CONSONANT.

The pronunciation of the *u*, as now uſed among the Engliſh, French, *&c.* is borrowed from the antient Gauliſh: for all the other weſtern people, with the Romans, pronounce it *ou*.

V is alſo a numeral letter, and ſignifies *five*; according to the verſe,

> V, *verò quinque dabit tibi, ſi rectè numerabis.*

When a daſh was added atop, V̄, it ſignified 5000.

V. R. among the Romans, ſtood for *uti rogas*, as you deſire: which was the mark of a vote, or ſuffrage for the paſſing of a law. See ROGATIO; ſee alſo A.

VACANCY, or VACUUM, in philoſophy, an empty interval, or ſpace void of matter. See VACUUM.

VACANCY, in law, *&c.* a poſt or benefice wanting a regular officer, or incumbent. See AVOIDANCE, *&c.*

The canoniſts hold, that the kind of *vacancy* is to be expreſſed in the impetration of a benefice. See BENEFICE.

A future *vacancy*, or voidance of a ſpiritual living, ſome writers call *vacatura*. — *Devolution* is a ſpecies of canonical *vacancy*. See DEVOLUTION.

VACANT *Effects*, *Prædia* VACATIA, or VACUA, are ſuch as are abandoned for want of an heir, after the death or flight of their former owner. See GOODS.

In our law-books, *vagantes terræ*, for *vacantes*, expreſſes forſaken, or uncultivated lands.

A benefice is ſaid to be *vacant in curia Romana*, when the incumbent dies in Rome, or within twenty leagues thereof; though it be only by accident that he was there.— The pope nominates to all benefices *vacant in curia Romana*, excepting thoſe of the neighbouring biſhopricks.

VACANT *Cylinder*, in gunnery. See the article CYLINDER.

VACATION, *Non-term*, in law, all the time included between the end of one term, and the beginning of the next ſucceeding one. See TERM.

This intermiſſion was called by our anceſtors *pax Dei*, and *eccleſiæ*; and ſometimes, the *time or days of the king's peace*. See PEACE.

Among the Romans, it was called *juſtitium*, or *feriæ*, or *dies nefaſti*. See DAY, NEFASTUS, FASTUS, FERIÆ, *&c.*

The time from the death of a biſhop, or other ſpiritual perſon, till the biſhoprick, or other dignity be ſupplied by another, is alſo called *vacation*. See PLENARTY.

Cicero, in his *Orations*, mentions a law, whereby the prieſts were exempted from ſervice in all wars, except only uproars, and civil tumults; which exemptions he calls *vacationes*.

VACUUM, VACUITY, in phyſics, a ſpace empty or devoid of all matter, or body. See SPACE, and MATTER.

Whether there be any ſuch thing in nature as an abſolute *vacuum*; or whether the univerſe be completely full, and there be an abſolute plenum; is a thing has been controverted by the philoſophers of all ages. See PLENUM.

The antients, in their controverſies, diſtinguiſhed two kinds; a *vacuum coacervatum*, and a *vacuum interſperſum*, or *diſſeminatum*.

VACUUM *Coacervatum*, is conceived as a place deſtitute of matter: Such, *e. gr.* as there would be, ſhould God annihilate all the air, and other bodies within the walls of this chamber.

The exiſtence of ſuch a *vacuum* is maintained by the Pythagoreans, Epicureans, and the Atomiſts, or Corpuſcularians; moſt of whom aſſert ſuch a *vacuum* actually to exiſt without the limets of the ſenſible world. — But the modern Corpuſcularians, who hold a *vacuum coacervatum*, deny that application; as conceiving, that ſuch a *vacuum* muſt be infinite, eternal, and uncreated. See UNIVERSE.

According, then, to the later philoſophers, there is no *vacuum coacervatum* without the bounds of the ſenſible world; nor would there be any *vacuum*, provided God ſhould annihilate divers contiguous bodies, than what amounts to a mere privation, or nothing: the dimenſions of ſuch a ſpace, which the antients held to be real, being by theſe held to be mere negations; that is, in ſuch a place, there is ſo much length, breadth, and depth wanting, as a body muſt have to fill it. — To ſuppoſe, that when all the matter in a chamber is annihilated, there ſhould yet be real dimenſions, is to ſuppoſe corporeal dimenſions without body; which is abſurd.

The Carteſians, however, deny any *vacuum coacervatum* at all; and aſſert, that if God ſhould immediately annihilate all the matter, *v. gr.* in this chamber, and prevent the ingreſs of any other matter, the conſequence would be, that the walls would become contiguous, and include no ſpace at all. — They add, that if there be no matter in a chamber, the walls can be conceived no otherwiſe than as contiguous; thoſe things being ſaid to be contiguous, between which there is not any thing intermediate: but, if there be no body between, there is no extenſion between; extenſion and body being the ſame thing: and if there be no extenſion between, then the walls are contiguous; and where is the *vacuum?*

But the reaſoning is built on a miſtake, *viz.* that body and extenſion are the ſame thing. See EXTENSION, and SPACE.

VACUUM *Diſſeminatum*, or *Interſperſum*, is that ſuppoſed to be naturally interſperſed in, and among bodies, in the pores of the ſame body, and in the interſtices between different bodies. See PORE.

It is this kind of *vacuum* which is chiefly diſputed among the modern philoſophers: the Corpuſcularians ſtrenuouſly aſſerting it; and the Peripatetics, and Carteſians, as ſtiffly impugning it. See CORPUSCULAR, CARTESIAN, *&c.*

The great argument the Peripatetics urge againſt a *vacuum interſperſum*, is, that there are divers bodies frequently ſeen to move contrary to their own nature, and inclination; and for no other apparent reaſon, but to avoid a *vacuum:* whence they conclude, that nature abhors a *vacuum*; and give us a new claſs of motions aſcribed to the *fuga vacui*, or nature's flying a *vacuum*. See FUGA.

Such is the riſe of water in a ſyringe, upon the drawing up the piſton; ſuch alſo is the aſcent of water in pumps, the ſwelling of the fleſh in a cupping-glaſs, *&c.*

But ſince the weight, elaſticity, *&c.* of the air have been aſcertained by ſure experiments, thoſe motions, and effects are univerſally aſcribed to the gravity, and preſſure of the atmoſphere. See AIR; ſee alſo SYRINGE, PUMP, CUPPING-*Glaſs*, &c.

The Carteſians deny not only the actual exiſtence, but even the poſſibility of a *vacuum:* and that on this principle, that extenſion being the eſſence of matter, or body, wherever extenſion is, there is matter: but mere ſpace, or vacuity, is ſuppoſed to be extended; therefore it is material. – Whoever aſſerts an empty ſpace, conceives dimenſions in that ſpace; *i. e.* conceives an extended ſubſtance in it; and therefore denies a *vacuum*, at the ſame time that he admits it.

On the other hand, the Corpuſcular authors prove, not only the poſſibility, but the actual exiſtence of a *vacuum*, from divers conſiderations; particularly, from the conſideration of motion in general; and that of the planets, comets, *&c.* in particular; from the fall of bodies; from the vibration of pendulums; from rarefaction, and condenſation; from the different ſpecific gravities of bodies; and from the diviſibility of matter into parts.

1°. It is argued, that motion could not be effected without a *vacuum*. See MOTION. — This is what Lucretius urged long ago — *Principium quoniam cedendi nulla daret res — undique materies quoniam ſtipata fuiſſet.*

The force of this argument will be increaſed from the two following conſiderations, *viz.* firſt, that all motion is either in a ſtreight line, or in a curve which returns into itſelf, as the circle, and ellipſis; or in a curve that does not return into itſelf, as the parabola, *&c.* And, ſecondly, that the moving force muſt always be greater than the reſiſtance.

For, hence it follows, that no force, even though infinite, can produce motion where the reſiſtance is infinite; conſequently, there can be no motion either in a ſtreight line, or a non-returning curve; becauſe, in either of thoſe caſes, the protruſion, and conſequently the reſiſtance, would be infinite. — There remains, therefore, only the motion in a revolving curve practicable; which muſt either be a revolution upon an axis, or an annular motion round a quieſcent body; both which are, again, impoſſible in an elliptic curve: and conſequently, all motion muſt be in circles geometrically true; and the revolving bodies muſt either be ſpheres, ſpheroids, cylinders, or portions of them, exactly geometrical; otherwiſe, their revolutions in a plenum would be impoſſible: but ſuch motions, or ſuch figured bodies, we do not know in nature. Therefore there is a *vacuum*.

2°. The motions of the planets, and comets, demonſtrate a *vacuum:* thus Sir Iſaac Newton — "That there is no " ſuch fluid medium as æther, (to fill up the porous parts of all ſenſible bodies, as the air, and interſtellar parts, and ſo make a plenum) " ſeems probable; becauſe the planets and " comets proceed with ſo regular and laſting a motion, " through the celeſtial ſpaces, both from and to all parts: " for hence it appears, that thoſe celeſtial ſpaces are void of " all ſenſible reſiſtance, and conſequently of all ſenſible mat- " ter. For the reſiſting force of fluid mediums, ariſes part- " ly from the attrition of the parts of the medium, and " partly from the inactivity of matter. — Now, that part " of the reſiſtance of any medium, which ariſes from the tenacity, or attrition of its parts, may be leſſened by dividing the matter into ſmaller parts, and by rendering thoſe parts more ſmooth and ſlippery: but that part of the reſiſtance which ariſes from the inactivity of matter, is always in proportion to the denſity of the matter; nor can be diminiſhed by dividing the matter, nor by any other means, except by diminiſhing the denſity thereof.

“ Conſequently, if the celeſtial regions were as denſe as water, or quickſilver, they would reſiſt almoſt as much as water or quickſilver; but if they were perfectly denſe, without any interſperſed vacuity, though the matter were ever ſo fluid and ſubtile, they would reſiſt more than quickſilver does; a perfectly ſolid globe, in ſuch a medium, would loſe above half its motion, in moving three lengths of its diameter; and a globe not perfectly ſolid, ſuch as the bodies of the planets and comets are, would be ſtopped ſtill ſooner. — Therefore, that the motion of the planets and comets may be regular, and laſting, it is neceſſary the celeſtial ſpaces be void of all matter, except perhaps ſome few, and much rarified effluvia of the planets and comets, and the paſſing rays of light. See Resistance, Medium, Planet, Comet, *&c.*

3°. The ſame great author deduces a *vacuum* from the conſideration of the weights of bodies; thus: “ All bodies about the earth gravitate towards the earth; and the weights of all bodies, equally diſtant from the earth's centre, are as the quantities of matter in thoſe bodies. — If the æther, therefore, or any other ſubtile matter, were altogether deſtitute of gravity, or did gravitate leſs than in proportion to the quantity of its matter: becauſe (as Ariſtotle, Des Cartes, and others argue) it differs from other bodies only in the form of the matter; the ſame body might, by the change of its form, gradually be converted into a body of the ſame conſtitution with thoſe which gravitate moſt in proportion to the quantity of matter: and, on the other hand, the moſt heavy bodies might gradually loſe their gravity, by gradually changing their form; and therefore the weights would depend upon the forms of bodies, and might be changed with them; which is contrary to all experiment. See Weight.

4°. The deſcent of bodies proves that all ſpace is not equally full; for the ſame author goes on, “ If all ſpaces were equally full, the ſpecific gravity of that fluid, with which the region of the air would in that caſe be filled, would not be leſs than the ſpecific gravity of quickſilver or gold, or any other the moſt denſe body; and therefore neither gold, nor any other body, could deſcend therein. — For bodies do not deſcend in a fluid, unleſs that fluid be ſpecifically lighter than the body. — But by the air-pump, we can exhauſt a veſſel, till even a feather ſhall fall with a velocity equal to that of gold in the open air: the medium, therefore, through which the feather falls, muſt be much rarer than that through which the gold falls. See Descent.

“ The quantity of matter, therefore, in a given ſpace, may be diminiſhed by rarefaction: and why may not it be diminiſhed in infinitum? Add, that we conceive the ſolid particles of all bodies to be of the ſame denſity; and that they are only rarefiable by means of their pores: whence a *vacuum* evidently follows. See Rarefaction, Pores, and Particle.

5°. “ That there is a *vacuum*, is evident from the vibrations of pendulums: for ſince thoſe bodies in places out of which the air is exhauſted, meet with no reſiſtance to retard their motion, or ſhorten their vibrations; it is evident there is no ſenſible matter in thoſe ſpaces, or in the occult pores of thoſe bodies. See Pendulum.

For, as to what Des Cartes urges of his materia ſubtilis, that its tenuity prevents its reſiſtance from being ſenſible, and that a ſmall body ſtriking againſt a greater, cannot in the leaſt move, or reſiſt the motion of that other; but is reflected back again with all its momentum: it is contrary to all experience. For Sir Iſaac proves, that the denſity of fluid mediums, is proportionable to their reſiſtances, very nearly; and that they are exceedingly miſtaken, who ſuppoſe the reſiſtance of projectiles to be infinitely diminiſhed, by dividing the parts of the fluid, even in infinitum. (*Princip.* Lib. II. Prop. 38.) When, on the contrary, it is clear the reſiſtance is but little diminiſhed by the ſubdiviſion of the parts; (*ibid.* Prop. 40.) and that the reſiſting forces of all fluids are nearly as their denſities — For why ſhould not the ſame quantity of matter, whether divided into a great number of ſubtile parts, or into a few larger ones, have the ſame reſiſting force? If then there were no *vacuum*, it would follow, that a projectile moving in the air, or even in a ſpace whence the air is exhauſted, ſhould move with as much difficulty as in quickſilver; which is contrary to experience. See Projectile.

6°. That there are interſperſed vacuities, appears from matter's being actually divided into parts, and from the figures of thoſe parts: for, on ſuppoſition of an abſolute plenitude, we do not conceive how any part of matter could be actually divided from that next adjoining, any more than it is poſſible to divide actually the parts of abſolute ſpace from one another: for by the actual diviſion of the parts of a continuum from one another, we conceive nothing elſe underſtood, but the placing thoſe parts at a diſtance from one another, which, in the continuum, were at no diſtance from one another: but ſuch diviſions between the parts of matter, muſt imply vacuities between. See Divisibility.

7°. As for the figures of the parts of bodies, upon the ſuppoſition of a plenum, they muſt either be all rectilinear, or all concavo-convex; otherwiſe, they would not adequately fill ſpace; which we do not find to be true in fact.

8°. The denying a *vacuum*, ſuppoſes what it is impoſſible for any one to prove to be true; *viz.* that the material world has no limits. See Universe.

Since then the eſſence of matter does not conſiſt in extenſion, but in ſolidity, or impenetrability, the univerſe may be ſaid to conſiſt of ſolid bodies moving in a *vacuum:* nor need we at all fear, leſt the phænomena of nature, moſt of which are plauſibly accounted for from a plenitude, ſhould become inexplicable when the plenum is ſet aſide. — The principal ones, ſuch as the tides; the ſuſpenſion of the mercury in the barometer; the motion of the heavenly bodies, of light, *&c.* are more eaſily and ſatisfactorily accounted for from other principles. See Tides, *&c.*

Vacuum, or *Vacuum Boyleanum*, is alſo uſed, ſomewhat abuſively, to expreſs that approach to a real *vacuum*, which we arrive at by means of the air-pump. See Air-*Pump.*

Thus, any thing put in a receiver ſo exhauſted, is ſaid to be put *in vacuo:* and thus, moſt of the experiments with the air-pump, are performed *in vacuo*, or *in vacuo Boyleano.*

Some of the principal phænomena obſerved of bodies *in vacuo*, are; that the heavieſt and lighteſt bodies, as a guinea and a feather, fall here with equal velocity: — That fruits, as grapes, cherries, peaches, apples, *&c.* kept for any time *in vacuo*, retain their nature, freſhneſs, colour, *&c.* and thoſe withered in the open air, recover their plumpneſs *in vacuo:* — All light, and fire becomes immediately extinct *in vacuo:* — The coalition of flint and ſteel *in vacuo*, produces no ſparks: — No ſound is heard, even from a bell rung *in vacuo:* — A ſquare viol, full of common air, well cloſed, breaks *in vacuo*; a round one does not: — A bladder half full of air, will heave up forty pound weight *in vacuo:* — Cats, and moſt other animals, readily expire *in vacuo.*

By experiments made in 1704, Mr. Derham found, that animals which have two ventricles, and no foramen ovale, as birds, dogs, cats, mice, *&c.* die in leſs than half a minute; counting from the firſt exſuction: a mole died in one minute, a bat lived ſeven or eight. — Inſects, as waſps, bees, graſhoppers, *&c.* ſeemed dead in two minutes; but, being left *in vacuo* twenty four hours, came to life again in the open air: ſnails continued twenty four hours *inva cuo*, without appearing much concerned.

Seeds planted *in vacuo* do not grow: — Small beer dies, and loſes all its taſte *in vacuo:* — Lukewarm water boils very vehemently *in vacuo:* — Air, ruſhing through mercury into a *vacuum*, throws the mercury in a kind of ſhower upon the receiver, and produces a great light in a dark room. See Attrition, *&c.*

The air-pump can never produce a preciſe *vacuum*; as is evident from its ſtructure, and the manner of its working: in effect, every exſuction only takes a part of the air: ſo that there will ſtill be ſome left after any finite number of exſuctions. — Add that the air-pump has no longer any effect, than while the ſpring of the air remaining in the receiver, is able to lift up the valves: when the rarefaction is come to that degree, you can come no nearer to a *vacuum.*

Sir Iſaac Newton, obſerving that a thermometer ſuſpended *in vacuo*, and in that ſtate removed to a warm or a cold room, receives the heat or cold, riſes, or falls, almoſt as ſoon as another in open air; takes thence occaſion to ſuſpect, that the heat of the warm room is conveyed through the *vacuum*, by the vibrations, of a much ſubtiler medium than air, which remained in the *vacuum* after the air was drawn out. (*Opt.* p. 323.) See Medium, Heat, *&c.*

VADARI, in the civil law, denotes a perſon to pledge, undertake, or give ſecurity in behalf of another; that he ſhall, on a certain day, appear in court, to proſecute, or anſwer. See Vouch, and Appearance.

If he fails, his ſurety has an action *vadimonii deſerti* againſt him; that is, an action for deſerting his bail. See Vadimonium, Bail, Default, *&c.*

Properly ſpeaking, *vadari reum*, among the Romans, was the act of the plaintiff himſelf, who here demanded ſurety, or bail from the defendant, that he would appear before the prætor on a certain day.

VADELECT. See the article Valect.

VADE-MECUM, or a Veni-mecum, a Latin phraſe, uſed in Engliſh, to expreſs a thing that is very handy, and familiar; and which one uſually carries about with him: chiefly applied to ſome favourite book.

Some make Virgil, others Horace, their *vade-mecum*; others an Epictetus, others a Thomas à Kempis, *&c.*

This is what the Greeks call εγχειριδιον, or *manual.*— The Arabs have a phraſe of equal import; *viz. Habib al feir, comes itineris*, friend of the journey.— In Latin it is beſt expreſſed by *comes*; as *comes theologicus, comes ruſticus*, &c.

VADIMONIUM, in the civil law, a promiſe, or bond, given for appearance before the judge upon a day appointed. See VADARI.

VADIUM. See the article PONE *per Vadium.*

VAGABOND*, a perſon that wanders about, having no certain dwelling; or a ſturdy beggar, *&c.* mentioned in divers ſtatutes.

* *De* vagabundis *& aliis hominibus mendicantibus qui ſe nominant.* — Travelling men, *&c.* Charta 22 Hen. VI. — *Item utemur quod nullus vagabundus vagetur ſeu deambulet de nocte in villa ſeu ſuburbio poſt pulſationem campanæ noſtræ communis, vocatæ Coverfeu, & ſi aliquis ibidem capiatur poſt pulſationem dictæ campanæ, ducatur ad Gaulam domini regis, & ibi morabitur uſque in craſtinum ut notitia perſonæ ſuæ habeatur,* &c. MS. Cod. de Leg. & Stat. Burgi villæ Mountgomer. Temp. Hen. II.

All itinerant beggars, fortune-tellers, collectors for goals, fencers, bearwards, players of interludes, minſtrels, juglers, gypſies, *&c.* ſhall be reputed vagabonds, rogues and ſturdy beggars, 39 *Eliz. c.* 4. See ROGUE, *&c.*

VAGINA, a Latin term, literally ſignifying a *ſheath*, or *ſcabbard*; uſed on divers occaſions. — As,

VAGINA, in architecture, is uſed for the lower part of a terminus; becauſe reſembling a ſheath, out of which the ſtatue ſeems to iſſue. See TERMES.

The *vagina* is that long part between the baſe, and the capital; and is formed in divers manners, and with divers ornaments.

VAGINA, in anatomy, denotes a canal, or cavity, leading from the pudendum, to the uterus of women. See GENERATION.

The *vagina*, called alſo *cervix uteri*, is a membranous paſſage, extended from the rima, or aperture of the labia, to the neck of the womb. — See *Tab. Anat. (Splanch.) fig.* 9. *lit. h. fig.* 11. *lit. a.* See the article CERVIX.

It lies upon the rectum, to which it finally adheres; and under the urinary bladder: its length is ordinarily ſeven or eight inches.

Its inward ſubſtance is nervous, and exquiſitely ſenſible; the outer membranous, and looſe: at its orifice it is much narrower than elſewhere; eſpecially in virgins.

Through its whole courſe it is full of rugæ, or wrinkles; eſpecially in the upper internal ſurface; which rugæ the uſe of venery renders leſs apparent, and frequent parturition almoſt obliterates: which ſhews, that they were intended, to render the part more eaſily diſtendible for parturition.

Along the whole tract of the *vagina* are pores, ar oſtia, or little ducts ſeen, which, in the act of venery, emit a liquor that has been by many miſtaken for ſeed. See SEED.

The *vagina* has a conſtrictory muſcle, inſerted under the clitoris; which, with a broad ſeries of fibres, embraces and conſtringes the lower part of the *vagina*, and puts the dimenſion of the part, in ſome meaſure, in the power of the mind. See MATRIX.

VAGINÆ *Uteri Sphincter.* See SPHINCTER *Vaginæ*, &c.

VAGINALIS *Gulæ*, in anatomy, a name ſome anatomiſts give to the muſculous coat of the gula; as ſuppoſing it a proper muſcle, conſpiring with the œſophagæus in thruſting the aliment down, when entered. See OESOPHAGÆUS, DEGLUTITION, *&c.*

VAGINALIS *Tunica*, the ſame with what we otherwiſe call *elythroides.* See ELYTROIDES.

VAGUM, in anatomy, a name given to the eighth pair of nerves of the medulla oblongata, called the *par vagum*, becauſe diſpended to divers parts of the body. — See *Tab Anat. (Oſteol.) fig.* 5. *lit. q. q.* ſee alſo the article NERVE.

VAIR, in heraldry, a kind of fur, or doubling, conſiſting of divers little pieces, argent and azure, reſembling a Dutch U, or a bell-glaſs. See VAIRY.

Vairs, have their point azure, oppoſite to their point argent, and the baſe argent to the azure.

When there are only two or three *vairs*, the antient heralds call it *great vair*; and when there are more, *ſmall vair.*

Vair is intended to repreſent a kind of ſkin, uſed antiently by the kings of France, in lieu of a fur, and wherewith the gowns of the preſidents a mortier, the counſellors of the court, the heralds coats, *&c.* were lined, till the fifteenth century.

It was properly the ſkin of a kind of ſquirrel, called alſo, in French, *vair*, and, in Latin, *ſcriveus*; which was white underneath, and dove-colour a-top. It is deſcribed by Aldrovandus, under the name of *ſcriveo varia*, and is the ſame, according to Geſner, with the *mus ponticus* of Ariſtotle and Pliny; which the Latins call *varus*, or *varius*, from the variety of its colour. — Its two ſkins joined together, make the figure of the *vairs* in armories; being naturally white and azure.

Vair, Colombiere obſerves is the ſecond ſort of fur, antiently uſed as a lining of the garments of great men; conſiſting of little pieces, ſewed by the furriers on white ſkins: and becauſe theſe pieces were uſually blue, thoſe who firſt ſettled the rules of heraldry, decreed, that this fur, in its natural blazon, ſhould always be argent and azure. — So if it be abſolutely ſaid, ſuch a family bears *vair*; it is ſuppoſed to be argent and azure.

Regularly, there muſt be but four rows or ranks of *vair* in the ſhield; if there be either more, or leſs, the number muſt be ſpecified. — The ſmalleſt number, being three rows, is called *beffroy de vair*; and the moſt, being five or ſix, is called *menu*, or *ſmall vair.*

The *beffroy* is alſo known by the firſt figure on the dexter-ſide of the eſcutcheon, being always of metal, and in form of a belt; whereas that of mere *vair* is in ſhape of a glaſs.

VAIRY, VAIRE', VERRY, or VARRY, is applied to a coat, or the bearings of a coat, when charged, or chequered, with *vair.* See VAIR.

When the colours are argent and azure, or white and blue, it is *very proper:* if it be otherwiſe, the colours are to be expreſly named; *vairy* of ſuch a colour or metal. — He bears *vairy* or, and vert: this is particularly called *vair compoſed.*

The bearings are likewiſe ſaid to be *vairy*, when they are charged with *vairs.* — When chiefs, croſſes, pales, feſſes, *&c.* happen to be *vairy*, the number of ranks are to be ſpecified.

Vairy gowns are obſerved, by Julius Pollux, to have been the habit of the antient Gauls, as ermins were of the Armenians. See ERMIN.

VAIRY *Cuppy*, or VAIRY *Taſſy*, or *Potent counterpotent*, is a bearing in heraldry, compoſed of pieces repreſenting the tops of crutches. — See *Tab. Herald. fig.* 87. ſee alſo the article COUNTERPOTENT.

In blazon, the colours muſt be expreſſed; as, azure, argent, *&c.*

VALDENSES. See the article VAUDOIS.

VALECT, or VADALECT. See the article VALET.

VALENTIAM. See the article CAPE *ad Valentiam.*

VALENTINIANS, an antient and famous ſect of Gnoſtics; thus called from their leader *Valentinian.* See GNOSTIC.

VALERE. See the article PERINDE *Valere.*

VALERIAN, VALERIANA, a plant, whoſe root is of conſiderable uſe in medicine; thus called, according to ſome, from one *Valerius*, who firſt brought it into uſe; according to others, from *valere*, to be of great virtue.

There are various kinds of *valerian*; but thoſe chiefly in uſe, are the large garden *valerian, valeriana hortenſis*; called by Dioſcorides, *phu, folio oluſatri.*— and the *valeriana ſylveſtris*, or great wild *valerian.*

The former is an ingredient in Venice treacle; its chief uſe is in diſorders of the nerves: in which reſpect, however, it is held inferior to the latter.

The *wild valerian* is warm, and aromatic, but ſomewhat of a fetid ſcent: its efficacy, as a ſudorific, is ſupported by the teſtimony of both antient and modern practice. — It has been reckoned by ſome deterſive, ſo much as to make it diuretic, and good in all obſtructions of the viſcera. — It is extolled alſo for ſtrengthening the optic nerves, and reſtoring decayed ſight; but the preſent practice acknowledges it not in any ſuch intentions. — It ſometimes does wonders in hyſterical affections; eſpecially where things of the fetid kind are good, and the ſpirits are too impetuous in their motions, ſo as to occaſion convulſions. — It is alſo aſſiſted with camphire, and ſome other things of the like nature, which are very powerful in breaking through the minuteſt obſtructions, to cure obſtinate agues. — It is efficacious in all nervous caſes; and particularly the epilepſy: which virtue in it ſeems to have been firſt diſcovered by Fabius Columna, who preſcribed it for that purpoſe in powder.

M. Merchant, in the *Memoirs of the Academy of Sciences*, has confirmed this virtue, by many inſtances within his knowledge: and what is very remarkable, is, that in the two obſervations he enlarges moſt upon, the patients voided great quantities of worms. — His cuſtom was, always to purge before he adminiſtred it.

VALESIANS, VALESIANI, antient ſectaries, ſo called from one *Valeſius*, a perſon unknown to Epiphanius, who makes mention of this ſect, *Hær.* 58. though he owns we know but very little of them; only this, that they admitted none into their ſociety but eunuchs; at leaſt, if any were admitted before caſtration, they obliged them not to eat any meat till the operation was performed. — For then, being no longer ſubjects to the motions of the fleſh, they allowed them to eat any kind of meats. See EUNUCH, *&c.*

VALET, or VALECT, a French term, antiently wrote *valet.*

In France, *valet* is a common name for all domeſtic ſervants, employed in the lower, and more ſervile offices; including what we call *grooms, footmen, coachmen, bailiffs*, &c. But the word is not uſed among us in this ſenſe, nor any otherwiſe than in the phraſe *valet de chambre*; which is a ſervant, whoſe office is to dreſs, and undreſs his maſter, to look to his bed-chamber, wait on him at table, *&c.* the ſame with what we otherwiſe call a *gentleman.*

In the hiſtory of Lewis XII. by Seiſel, we always find *varlet de chambre du roi*, *varlet de la gardrobe*, &c. But *varlet*, like *knave*, and divers other words, is now degenerated into a word of reproach.

Valet, *valect*, *vadelect*, *vadlet*, and *vallet*, Camden obſerves, were antiently uſed at our court, for a gentleman of the privy-chamber.

Selden, in his *Titles*, relates, that *valets* antiently ſignified young gentlemen, and heirs of great eſtate and quality; eſpecially ſuch as were to be knighted.

In the accounts of the Inner-temple, *valet* is uſed for a bencher's clerk, or ſervant. — The butlers of the houſe ſtill call them *varlets*.

VALETUDINARY, **VALETUDINARIUS**, a term ſometimes uſed by the writers of medicine, for a perſon of a weak, ſickly conſtitution, frequently out of order, *&c.*

Dr. Cheyne, by all means, directs the weakly, the ſtudious, the ſedentary, and the *valetudinary*, to a low, ſpare regimen. See FOOD, EXERCISE, DIET, *&c.*

VALID, a term applied to acts, tranſactions, expeditions, *&c.* which are cloathed in all the formalities requiſite to their being put into execution, and to their being admitted in a court of juſtice. See NULLITY.

A contract by a minor is not *valid*, or is *invalid*: a marriage it not *valid*, unleſs performed with the ſolemnities enjoined.

VALLAR*, **VALLARIS**, in antiquity, an epithet given to a kind of crown, which the Roman generals beſtowed on him, who, in attacking the enemies camp, firſt broke in upon the lines, or paliſades. See CROWN.

* The word is formed from *vallum*, a ſtake with branches, whereof he made the paliſade of a camp, called *lorica*.

The *corona vallaris*, was the ſame with what was otherwiſe called *corona caſtrenſis*, from *caſtra*, a camp. — Aulus Gellius aſſures us, that it was of gold, as the mural and naval crowns were: yet, though they were made of that precious metal, they were not the moſt valued: for Piny, lib. xxii. cap. 3. gives the preference to the corona obſidionalis, which yet was only of gramen, or graſs.

VALLEY, **VALE**, in geography. See MOUNTAIN.

VALORE *Maritagii*, **VALUE** *of marriage*, a writ which antiently lay for the lord, after having proffered ſuitable marriage to an infant who refuſed the ſame; to recover the value of the marriage. See MARRIAGE.

VALVASOR, or **VALVASOUR**. See VAVASOR.

VALUE, **VALOR**, in commerce, the price or worth of any thing.

Intrinſic **VALUE**, denotes the proper, real, and effective worth of any thing: and is uſed chiefly with regard to money; the popular *value* whereof may be raiſed, and lowered at the pleaſure of the prince; but its real, or *intrinſic value*, depending wholly on its weight and fineneſs, is not at all affected by the ſtamp, or impreſſion thereon. See MONEY, COIN, *&c.*

It is generally on the foot of this *intrinſic value*, that ſpecies are received in foreign countries; though in the places where they are coined, and where the ſovereign power makes them current, they generally paſs for much more. See PAR.

It is, in good meaſure, on the difference of thoſe two *values*, one whereof is, as it were, arbitrary, and the other, in ſome ſort, natural; that the difference of exchanges depends: and thoſe ſtill riſing and falling, as the rate at which a ſpecies is current, comes nearer or farther off the juſt price of the metal whereof it conſiſts. See EXCHANGE.

VALUE, in bills of exchange, is uſed to ſignify the nature of the thing, (as ready money, merchandices, bills, debts, *&c.*) which is given, as it were, in exchange from the ſum ſpecified in the bill. See BILL.

From four different manners of expreſſing this *value*, ſome diſtinguiſhed four kinds of bills of exchange.—The firſt bears *value received*, ſimply and purely, which comprehends all kinds of *value*; the ſecond, *value received in money*, or *merchandice*; the third, *value of my ſelf*; and the fourth, *value* underſtood.

The firſt is dangerous, and the fourth but little uſed: accordingly, to have the *value* well expreſſed, and to prevent the ill conſequences of overſights therein, it is well provided by the French ordonnance of 1673, that bills of exchange ſhall contain the name of the perſon to whom the contained ſum is to be paid; the time of payment; the name of him who has given the *value*; and whether it was received in money, merchandice, or other effects. See BILL *of exchange*.

VALUE, **VALOR**, or **VALENTIA**, in law. — Weſt gives us a nice difference between *value*, and *price*; the *value* (ſays he) of things in which offences are committed, is uſually compriſed in indictments; which ſeems neceſſary in theſt, to make a difference from petty larceny; and in treſpaſs, to aggravate the fault, and increaſe the fine. See THEFT, LARCENY, *&c.*

But no price of things *feræ naturæ* may be expreſſed, as of deers, hares, *&c.* if they be not in parks and warrens. — And where the number of things taken is to be expreſſed in the indictment, as of young doves in a dove-houſe, there muſt be ſaid *pretii*, or *ad valentiam*; but of divers dead things, *ad valentiam*, and not *pretii*: of coin not current it ſhall be ſaid *pretii*; but of coin current, neither *pretii*, nor *ad valentiam*; the price and *value* being certain.

VALVE*, **VALVULA**, in hydraulics, pneumatics, *&c.* is a kind of lid, or cover of a tube, or veſſel, ſo contrived, as to open one way; but which, the more forcibly it is preſſed the other way, the cloſer it ſhuts the aperture: ſo that it either admits the entrance of a fluid into the tube, or veſſel, and prevents its return; or admits it to eſcape, and prevents its re-entrance.

* The word is formed from the Latin *valvæ*, folding doors.

Valves are of great uſe in the air-pump, and other wind-engines; in which they are ordinarily made of pieces of bladder. See AIR-*Pump*, and WIND-*Gun*.

In hydraulic engines, as the emboli of pumps, they are frequently of leather; their figure round, and are fitted to the bottoms, or other parts of the barrel, *&c.* to ſhut the apertures. See EMBOLUS.

Sometimes they are made of two round pieces of leather, incloſed between two others of braſs; having divers perforations, which are covered with another piece of braſs, moveable upwards and downwards, on a kind of axis, which goes through the middle of them all.

Sometimes they are made of braſs, covered over with leather, and furniſhed with a fine ſpring, which gives way upon a force applied againſt in: but upon the ceaſing of that, returns the *valve* over the aperture. See PUMP, *&c.*

VALVE, **VALVULA**, in anatomy, a thin membrane, applied, like a door or ſhutter, on divers cavities and veſſels of the body; to afford a paſſage to ſome humour, or other matter, going one way, and prevent its re-flux towards the part whence it came. See VESSEL, *&c.*

The veins and lymphatics have *valves*, ſituate from ſpace to ſpace, which open towards the heart, but keep cloſe on that ſide towards the extremities, *i. e.* they let the blood and lymph paſs towards the heart, but prevent their returning to the extreme parts, whence they came. See VEIN, and BLOOD.

The heart has alſo its *valves*, placed at the entrance of the veſſels ariſing out of it. — Thoſe at the entrance of the vena cava, and pulmonary vein, let the blood paſs on to the heart, and prevent its return: on the contrary, thoſe at the entrance of the aorta, and pulmonary artery, let the blood paſs out of the heart, and prevent its flowing back again. — See *Tab. Anat. Angeiol.*) *fig.* 1. *lit. A.* ſee alſo HEART, CIRCULATION, CAVA, *&c.*

"In the jejunum, and ileum, the inner tunic being larger
" than the outer, is much corrugated; the looſe folds of
" which have been thought, in ſome meaſure, to do the of-
" fice of *valves*; and have therefore been called *valvulæ con-*
" *niventes*." Drake, *Anat.* p. 49.

"The lacteals, opening into the inteſtines, receive the pre-
" pared fluid part of the chyle; and appear at intervals, as it
" were, girt and ſtraightened; and when preſſed, do not admit
" of a reflux towards the inteſtines; though the liquor be
" eaſily propelled towards the glands: which argues, that there
" are *valves* in them, though too minute to be ſenſible to the
" eye." *Id. ibid.* p. 56.

The colon, has a thick *valve*, to prevent the excrements from paſſing into the ileon; and ſeveral other *valves*, to retard the deſcent of the excrements. See COLON, and EXCREMENT.

Conſtantine Varolius, a Boulogneſe, and phyſician of Gregory XIII. who died in 1570, was the firſt that obſerved the *valve* in the colon. — Bart. Euſtachio, a native of San Severino in Italy, diſcovered, about the ſame time, the *valve* at the orifice of the coronary vein; and that remarkable one at the orifice of the lower trunk of the vena cava, near the right auricle of the heart: though he did not take it for a *valve*, but merely for a membrane.

Sig. Lanciſi, phyſician to the late pope, who firſt publiſhed Euſtachio's works, takes the uſe of this *valve* to be to prevent the blood of the upper vena cava from ſtriking with too much violence againſt that of the lower: and M. Winſlow, who, has conſidered it very diligently in the *Memoirs of the Royal Academy of Sciences*, is much of the ſame opinion.

But as it gradually dwindles in children, and at length becomes quite loſt in adults, ſtill diminiſhing as the foramen ovale does; it ſhould ſeem to have ſome other office; and that, chiefly, regarding the circulation of the blood in the fœtus.

In effect, by means hereof, M. Winſlow reconciles the two oppoſite ſyſtems of the circulation of the blood in the fœtus, delivered under the article *circulation*. See CIRCULATION *of the Blood*, and FOETUS.

Great **VALVE**, *Valvula major*, is the upper part, and, as it were, the lid of the iſthmus between the teſtes, and the firſt vermicular proceſs of the cerebellum: its ſubſtance is medullary. — Its uſe is to prevent the lymph from falling on the nerves at the baſe of the cranium.

VAN, VANT, or VAUNT, (of the French *avant*, or *avaunt*, before) is a term uſed in compoſition with ſeveral words in our language. — As,

VAN-COURIERS, are light-armed ſoldiers, ſent before to beat the road, upon the approach of an enemy. See RECONNOITRE.

VAN-FOSSE, a ditch dug without the counterſcarp, and running all along the glacis; uſually full of water. See DITCH.

VAN, or VANT, or VAUNT-*Corps*. See CORPS.

VAN, or VAN-GUARD, is a military term, ſignifying the firſt line of an army, drawn up in battalia. See LINE, and ARMY.

It it the ſame with the *front* of an army, and gives the firſt charge upon the enemy. See FRONT.

Every army is compoſed of three parts, a *van-guard*, *rear-guard*, and *main body*. See GUARD.

VAN-*Lay*. See the article VAUNT.

VANEERING. See the article VENEERING.

VANES, on mathematical inſtruments, are ſights made to move and ſlide upon croſs-ſtaves, fore-ſtaves, Davis's quadrants, &c. See CROSS-STAFF, FORE-STAFF, &c.

VANES, or FANES *of Feathers*.	See	FEATHER.
Weather VANES.		WEATHER.
VANES *of Windmills*.		WINDMILL.

VANILLA, or VANELLA, a little black ſeed, growing in longiſh pods; uſed in the Weſt-Indies, France, Spain, &c. as a principal ingredient in the compoſition of chocolate; to give it ſtrength, and an agreeable flavour. See CHOCOLATE.

It is alſo uſed to perfume tobacco and ſnuff withal. See TOBACCO.

It is ſuppoſed to ſtrengthen the brain, and ſtomach; to attenuate viſcid humours, provoke urine, and the menſes.

VANT, or VAUNT. See the article VAN.

VAPORARIUM, or VAPOROSUM *Balneum*, *Vapour-bath*, in chymiſtry, a term applied to a chymiſt's bath, or heat, wherein a body is placed, ſo as to receive the fumes of boiling water. See BATH.

The *balneum vaporoſum* conſiſts of two veſſels, diſpoſed over one another in ſuch manner, as that the vapour raiſed from the water contained in the lower, heats the matter incloſed in the upper. See HEAT.

The *vapour-bath* is very commodious for the diſtilling of odoriferous waters, and the drawing of ſpirit of wine.

We alſo uſe the term *vapour-bath*, when a ſick perſon is made to receive the vapours ariſing from ſome liquid matter placed over a fire. See BATH, FUMIGATION, &c.

VAPORATION, VAPORATIO, in chymiſtry, a term applied to the action of fume, or vapour. See VAPOUR.

VAPORATION, is a kind of bathing, or rather fomentation, whereby the warmth, or humidity of a vapour is made to act on ſome other body, that is to be warmed, or moiſtened. See BATH, and HEAT.

VAPOROSUM *Balneum*. See the article VAPORARIUM.

VAPOUR, VAPOR, in meteorology, a thin veſicle of water or other humid matter, filled or inflated with air; which being rarefied to a certain degree by the action of heat, aſcends to a certain heighth in the atmoſphere, where it is ſuſpended, till it return in form of rain, ſnow, or the like. See RAIN, and SNOW.

An aſſemblage of a number of particles, or veſicles of *vapour*, conſtitutes what we call a *cloud*. See CLOUD.

Some uſe the term *vapour*, indifferently, for all fumes emitted, either from moiſt bodies, as fluids of any kind; or from dry bodies, as ſulphur, &c. — By Sir Iſaac Newton, and other authors, better diſtinguiſh between humid and dry fumes, calling the latter *exhalations*. See EXHALATION.

For the manner wherein VAPOURS *are raiſed, and again precipitated*, ſee DEW, RAIN, HEAT, COLD, and BAROMETER. — *For the effect of* VAPOUR *in the formation of ſprings*, &c. ſee SPRING, and RIVER.

The quantity of *vapour* raiſed from the ſea by the warmth of the ſun, is far greater than one would imagine. — Dr. Halley has attempted to eſtimate it.

In an experiment made with that view, and deſcribed in the *Philoſophical Tranſactions*, he found that a quantity of water, no warmer than air in ſummer, loſt in *vapour*, in the ſpace of two hours, no leſs than one fifty-third part of an inch in depth: now, for one fifty-third part in two hours, taking, for the eaſier calculation, one ſixtieth part, in the twelve hours that the ſun is up each day, it will raiſe one tenth of an inch from the ſurface of the ſea.

On this ſuppoſition, every 10 ſquare inches of the ſurface of water, yield in *vapour*, per diem, a cubic inch of water; and each ſquare foot, half a wine pint; every ſpace of four foot ſquare, a gallon; a mile ſquare, 6914 tuns; a ſquare degree, ſuppoſed of 69 Engliſh miles, will evaporate 33 millions of tuns: and if the Mediterranean be eſtimated at 40 degrees long, and four broad, allowances being made for the places where it is broader, by thoſe where it is narrower, there will be 160 ſquare degrees at ſea: and conſequently the whole Mediterranean muſt loſe in *vapour*, in a ſummer's day, at leaſt, 5280 millions of tuns.

And this quantity of *vapour*, though very great, is only the remains of another cauſe, which cannot be reduced to rule; we mean the winds; whereby the ſurface of the water is licked up, ſometimes faſter than it exhales by the heat of the ſun; as is well known to thoſe that have conſidered thoſe drying winds. See EVAPORATION.

VAPOUR-*Bath*. See VAPORARIUM, and BATH.

VAPOURS, in medicine, a diſeaſe popularly called *hypo*, or the *hypochondriacal* diſeaſe; and in men particularly, the *ſpleen*. See SPLEEN.

It is ſuppoſed to be owing to a ſubtile *vapour*, riſing from the lower parts of the abdomen, particularly the hypochondria, to the brain; which it diſturbs, and poſſeſſes with wild, delirious, but generally diſagreeable imaginations. See HYPOCHONDRIACAL *Diſeaſe*.

Vapours, ſuppoſed to be emitted from the womb, in women, are what we otherwiſe call *hyſterical affections*, or *ſuffocations*, or *fits of the mother*. See HYSTERICAL, &c.

VARI, in medicine, little, hard, ruddy tumours, whitiſh about the tips, and of the ſize of an hempſeed; frequently found on the face and neck of young people; chiefly ſuch as are much addicted to venery.

If the red be very lively, the cure is ſomewhat difficult; and though the puſtules be taken away, the redneſs remains. — To which, if an inflammation and hoarſeneſs be added, it is a ſymptom of an approaching leproſy. See LEPROSY.

VARIABLE, in geometry and analytics, is a term applied by mathematicians, to ſuch quantities as either increaſe, or diminiſh, according as ſome other quantity either increaſes, or diminiſhes.

Thus, the ſemiordinates, and abſciſſes of an ellipſis, &c. are *variable quantities*; becauſe, if the one increaſe, the other increaſes likewiſe. See SEMIORDINATE, &c.

They are thus called, in contradiſtinction to *conſtant*, or *given*, or *ſtable quantities*; which are always the ſame, though others change: as the ſemidiameter of a circle, which remains the ſame, though the abſciſſes and ſemiordinates increaſe.

Variable quantities, are uſually denoted by the laſt letters of the alphabet, *x*, *y*, *z*. See QUANTITY, CHARACTER, &c.

Some authors, inſtead of *variable*, and *conſtant* quantities, uſe the terms *fluent*, and *ſtable* quantities.

The infinitely ſmall quantity whereby a *variable* quantity is continually increaſing, or diminiſhing, is called the *fluxion*, or *difference*; the calculation whereof, is the ſubject of the new *methodus differentialis*, or *doctrine of fluxions*. See DIFFERENTIAL, and FLUXION.

VARIABLE *Winds*. See the article WIND.

VARIANCE, VARIANTIA, in law, an alteration or change of condition in a perſon, or thing; after ſome former concern, or tranſaction therewith.

Thus, if the commonalty of a town make a compoſition with a lord, and afterwards bailiffs be granted by the king to the ſame town; there, if the lord commence any ſuit for breach of the compoſition, he muſt *vary* from the word *commonalty*, uſed in the compoſition; and uſe *bailiffs and commonalty*.

VARIANCE is alſo uſed for an alteration of ſomething formerly laid in a plea; or where the declaration in a cauſe differs from the writ, or from the deed upon which it is grounded. See PLEA, DECLARATION, &c.

VARIATION, in geography, navigation, &c. a term applied to the deviation of the magnetical needle, or compaſs, from the true north point, towards either eaſt, or weſt; called alſo the *declination*. See DECLINATION.

The *variation* or declination of the needle, is properly defined, the angle which a magnetic needle, ſuſpended at liberty, makes with the meridian line on a horizontal plane; or an arch of the horizon, comprehended between the true, and the magnetical meridian. See NEEDLE.

In the ſea language, the *variation* is uſually called *north-eaſting*, or *north-weſting*. See COMPASS, &c.

All magnetic bodies, we find, range themſelves, in ſome ſort, to the meridian; but it is rare they fall in preciſely with it: in one place, they decline from the north to the eaſt, and from the ſouth to the weſt; and in another place, on the contrary, from the north to the weſt, and from the ſouth to the eaſt; and that, too, differently, at different times. See MAGNET, and MAGNETISM.

Various are the hypotheſes framed, to account for this extraordinary phænomenon: we ſhall only mention ſome of the later, and more probable. The firſt is that of Gilbert, which is followed by Cabeus, &c.

Their notion was, that it is the earth, or land, that draws the needle out of its meridianal direction; and hence they argued, that the needle varied more, or leſs, as it was more or leſs diſtant from any great continent: conſequently, that if it were placed in the middle of an ocean, equally diſtant from equal tracts of land, on each ſide, eaſtward and weſtward, it would not decline either to the one or the other; but point juſtly north and ſouth.

Thus, in the Azores iſlands, which are equally diſtant from Africa on the eaſt, and America on the weſt, there is, in effect, found no *variation*: but, as from the Azores you ſail towards Africa, the needle begins to decline from the north to the eaſt; and that ſtill more and more, till you reach the ſhore.

If you ſtill proceed eaſtward, the declination gradually diminiſhes again; by reaſon of the land left behind on the weſt, which continues to draw the needle.

The ſame holds till you arrive at a place where there are equal tracts of land on each ſide, and there, again, there is no *variation*.

The obſervations of our mariners in their Eaſt-India voyages, ſeem to confirm this ſyſtem: as they proceed towards the cape of Good Hope, the *variation* is ſtill eaſtward; at length, arriving at the cape De las Aguillas, *q. d.* of the Needles, the meridian line, then, dividing Africa into two equal parts, there is no *variation* at all: but as they proceed further, and leave the African coaſts on the weſt, the *variation* becomes weſtward.

But the misfortune is, the law does not hold univerſally: in effect, a great number of obſervations of the *variations*, in various parts, made and collected by Dr. Halley, overturn the whole theory.

Others, therefore, having recourſe to the frame and compages of the earth, conſidered as interwove with rocks and ſhelves, which being generally found to run towards the poles, the needle comes to have a general tendency that way; but which ſeldom going perfectly in the direction of the meridian, the needle, of conſequence, has commonly a *variation*. See EARTH.

Others hold various parts of the earth, to have various degrees of the magnetic virtue; as ſome are more intermixed with heterogeneous matters, which prevent the free action or effect thereof, than others. See MAGNETISM.

Others aſcribe all to magnetic rocks, and iron mines, which, affording more of the magnetic matter than other parts, draw the needle more. See IRON, &c.

Laſtly, others imagine earthquakes, or high tides, to have diſturbed and diſlocated ſeveral conſiderable parts of the earth, and ſo changed the magnetic axis of the globe, which originally was the ſame with the axis of the globe itſelf.

But ſtill, that great phænomenon, the *variation of the variation*, i. e. the continual change of the declination, in one and the ſame place, which the modern obſervations do abundantly evince, is not accountable for, on any of theſe foundations; nor even conſtant with them.

Dr. Halley, therefore, gives us a new ſyſtem; the reſult of a great number of obſervations; and even of a great number of voyages made, at the public charge, on this very account; The light that excellent author has let into this obſcure part of natural hiſtory, is very great; and the conſequences thereof in navigation, &c. very conſiderable. Add, that he has reduced the divers *variations* of divers places, to a preciſe rule, or order, which before appeared all precarious, and arbitrary.

His theory, therefore, will deſerve a more ample detail. — The obſervations it is built on, as laid down in the *Philoſophical Tranſactions*, are as follow.

Obſervations of the Variations *of the needle, in divers places, and at divers times.*

Names of Places.	Longitude from London.	Latitude.	Year of Obſervat.	Variation obſerved.
	° ′	° ′		° ′
London	0 0	51 32 N	1580	11 15 E
			1622	6 0 E
			1634	4 5 E
			1672	2 30 W
			1683	4 30 W
Paris	2 25 E	41 51 N	1640	3 0 E
			1666	0 0
			1681	2 30 W
Uraniburg	13 0 E	55 54 N	1672	2 35 W
Copenhagen	12 53 E	55 41 N	1649	1 30 E
Dantzick	19 0 E	54 23 N	1679	7 0 W
Montpelier	4 0 E	43 37 N	1674	1 10 W
Breſt	4 25 W	48 23 N	1680	1 45 W
Rome	13 0 E	41 50 N	1681	5 0 W
Bayonne	1 20 W	43 30 N	1680	1 20 W
Hudſon's Bay	79 40 W	51 0 N	1668	19 15 W
In Hudſon's Streights	57 0 W	61 0 N	1668	29 30 W
In Baffin's Bay, at Sir Tho. Smith's Sound	80 0 W	78 0 N	1616	57 0 W
At ſea	50 0 W	38 40 N	1682	7 30 W
At ſea	31 30 W	43 50 N	1682	5 30 W
At ſea	42 0 W	21 0 N	1678	0 40 E
Cape S. Auguſtine	35 30 W	8 0 S	1670	5 10 E
At ſea off the mouth of R. Plata	53 0 W	39 30 S	1670	20 30 E
Cape Frio	41 10 W	22 40 S	1670	12 10 E
Eaſt entrance of Magellan Streights	68 0 W	52 30 S	1670	17 0 E
Weſt entrance	75 0 W	53 0 S	1670	14 10 E
Baldivia	73 0 W	40 0 S	1670	8 10 E

Names of Places.	Longitude from London.	Latitude.	Year of Obſervat.	Variation obſerved.
	° ′	° ′		° ′
Cape Aguillas	16 30 E	34 50 S	1622	2 0 W
			1675	8 0 W
At ſea	1 0 E	34 30 S	1675	0 0
At ſea	20 0 W	34 0 S	1675	10 30 E
At ſea	32 0 W	24 0 S	1675	10 30 E
S. Helena	6 30 W	16 0 S	1677	0 40 E
I. Aſcenſion	14 30 W	7 50 S	1678	1 0 E
Johanna	44 0 E	12 15 S	1675	19 30 W
Monbaſa	40 0 E	4 0 S	1675	16 0 W
Zocatra	56 0 E	12 30 N	1674	17 0 W
Aden, in the mouth of the red ſea	47 30 E	13 0 N	1674	15 0 W
Diego Roiz	61 0 E	20 0 S	1676	20 30 W
At ſea	64 30 E	0 0	1676	15 30 W
At ſea	55 0 E	27 0 S	1676	14 0 W
Bombay	72 30 E	19 0 N	1676	12 0 W
C. Comorin	76 0 E	8 15 N	1680	8 48 W
Ballaſore	87 0 E	21 30 N	1680	8 20 W
Fort S. George	80 0 E	13 15 N	1680	8 10 W
Weſt point of Java	104 0 E	6 40 S	1676	3 10 W
At ſea	58 0 E	39 0 S	1677	27 30 W
I. S. Paul	72 0 E	38 0 S	1677	23 30 W
At Van Diemen's	142 0 E	42 25 S	1642	0 0
At New Zealand	170 0 E	40 50 S	1642	9 0 E
At Three King Iſle in New Zealand	169 30 E	34 35 S	1642	8 40 E
I. Rotterdam in the South-ſea	184 0 E	20 15 S	1642	6 20 E
On the coaſt of New Guinea	149 0 E	4 30 S	1643	8 45 E
At the weſt point of New Guinea	126 0 E	0 26 S	1643	5 30 E

From theſe obſervations, the learned author gathers, 1°. That throughout all Europe, the *variation*, at this time, is weſt; and more in the eaſtern parts thereof than the weſtern, increaſing that way.

2°. That on the coaſts of America, the *variation* is weſterly; increaſing all the way as you go northerly along the coaſt; ſo as to be above 20 degrees at Newfoundland, nearly 30 degrees in Hudſon's Streights, and not leſs than 57 degrees in Baffin's bay: and that as you ſail eaſtward from this coaſt, the *variation* diminiſhes. Hence, he argues, ſomewhere between Europe and the north part of America, there muſt be an eaſterly *variation*, or at leaſt no *variation*.

3°. That on the coaſt of Brazil, there is eaſt *variation*; increaſing as you go to the ſouthward, ſo as to be 12 degrees at cape Frio, and 20 degrees and half over-againſt R. Plata; and thence ſailing ſouth-weſterly, to the Streights of Magellan, it decreaſes 17 degrees, and at the weſt entrance about 14 degrees.

4°. That eaſtward of Braſil, this eaſterly *variation* decreaſes, ſo as to be very little at S. Helena and Aſcenſion, and to be quite gone, and the compaſs point true, about 18 degrees longitude from the cape of Good Hope.

5°. That to the eaſtward of the aforeſaid places, a weſtward *variation* begins and governs in all the Indian ſea, riſing to 18 degrees under the equator, about the meridian of the northern part of Madagaſcar; and 27 degrees and a half, in 39 degrees ſouth latitude, near the ſame meridian: eaſterly from thence, the weſt *variation* decreaſes, ſo as to be not much above eight degrees at cape Comorin, and about three degrees upon the coaſt of Java; and about the Moluccca Iſlands to be quite gone; as alſo a little to the weſtward of Van Diemen's land.

6°. That to the eaſtward of the Molucca's, and Van Diemen's land, in ſouth latitude, there ariſes another eaſterly *variation*, which ſeems not ſo great as a former, nor of ſo large extent; for that at the iſland Rotterdam, it is ſenſibly leſs than upon the eaſt coaſt of New Guinea; and at the rate it decreaſes, it may well be ſuppoſed, that about 20 degrees further eaſtward, or 225 degrees eaſt longitude from London, in the latitude of 20 degrees ſouth, a weſterly *variation* begins.

7°. That the *variation* taken at Baldivia, and at the weſt entrance of the Streights of Magellan, ſhews, that the eaſt *variation*, noted in the third obſervation, is decreaſing apace; and that it cannot well extend many degrees into the South ſea, from the coaſt of Peru and Chili; leaving room for a ſmall weſterly *variation*, in that tract of the unknown world, that lies in the mid-way between Chili, and New Zealand, and between Hounds Iſland, and Peru.

8°. That in ſailing north-weſt from S. Helena, by Aſcenſion, as far as the equator, the *variation* continues very ſmall eaſt, and, as it were, conſtantly the ſame: ſo that in this part of the world, the courſe, wherein there is no *variation*, is evidently no meridian, but rather north-weſt.

9°. That the entrance of Hudſon's Streights, and the mouth of R. Plata, being nearly under the ſame meridian, at the one place the needle varies 29 degrees and a half weſt; at the other 20 degrees and a half eaſt.

Theory of the VARIATION *of the needle.* — From the circumſtances above rehearſed, the learned author takes occaſion to aſſert, "That the whole globe of the earth is one great magnet, having four magnetical poles, or points of attraction; near each pole of the equator, two; and that in thoſe parts of the world which lie nearly adjacent to any one of theſe magnetical poles, the needle is governed thereby; the neareſt pole being always predominant over the more remote."

The pole which at preſent is neareſt to us, he conjectures to lie in, or near the meridian of the Lands-end of England, and not above 7 degrees from the arctic pole: by this pole, the *variation* in all Europe and Tartary, and the North ſea, are principally governed; though ſtill with ſome regard to the other northern pole, whoſe ſituation is in the meridian, paſſing about the middle of California, and about 15 degrees from the north pole of the world; to which the needle has chiefly reſpect in all the north America, and in two oceans on either ſide thereof, from the Azores, weſtwards, to Japan, and farther.

The two ſouthern poles, he imagines, are rather farther diſtant from the ſouth pole of the world: the one about 16 degrees therefrom, in a meridian ſome 20 degrees to the weſtward of Magellan Streights, or 95 degrees weſt from London: this commands the needle in all ſouth America, in the Pacific ſea, and the greateſt part of the Ethiopic ocean. — The other ſeems to have the greateſt power, and the largeſt dominion of all, as it is the moſt remote from the pole of the world, being little leſs than 20 degrees diſtant therefrom, in the meridian which paſſes through New Holland, and the iſland Celebes, about 120 degrees eaſt from London: this pole is predominant in the ſouth part of Africa, in Arabia, and the Red ſea, in Perſia, Indian, and its iſlands; and all over the Indian ſea, from the cape of Good Hope, eaſtwards, to the middle of the great South ſea, that divides Aſia from America.

Such ſeems to be the preſent diſpoſition of the magnetical virtue, throughout the whole globe of the earth. — It remains to ſhew, how this hypotheſis accounts for all the *variations* that have been obſerved of late; and how it anſwers to the ſeveral remarks drawn from the table.

1°. Then, it is plain, that as our European north pole is in the meridian of the Lands-end of England, all places more eaſterly than that, will have it on the weſt ſide of their meridian; and conſequently the needle, reſpecting it with its northern point, will have a weſterly *variation*; which will ſtill be greater as you go to the eaſtwards, till you come to ſome meridian of Ruſſia, where it will be the greateſt, and from thence decreaſe again. — Accordingly, in fact, we find that at Breſt the *variation* is but 1 degree 3 quarters; at London, 4 degrees and an half; and at Dantzick 7 degrees, weſt (in 1683.)—Again, to the weſtward of the meridian of the Land's-end, the needle ought to have an earſterly *variation*; were it not that (by approaching the American northern pole, which lies on the weſt ſide of the meridian, and ſeems to be of greater force than this other) the needle is drawn thereby weſtward, ſo as to counterbalance the direction given by the European pole, and to make a ſmall weſt *variation* in the meridian of the Land's-end itſelf. Yet, about the iſle Tercera, it is ſuppoſed our neareſt pole may ſo far prevail, as to give the needle a little turn to the eaſt; though but for a very little ſpace; the counter-balance of thoſe two poles permitting no conſiderable *variation*, in all the eaſtern part of the Atlantic ocean; nor upon the weſt coaſts of England, and Ireland, France, Spain, and Barbary. — But to the weſtward of the Azores, the power of the American pole overcoming that of the European, the needle has chiefly reſpect thereto; and turns ſtill more and more towards it, as you approach it. Whence it comes to paſs, that on the coaſt of Virginia, New England, Newfoundland, and in Hudſon's Streights, the *variation* is weſtward; that is, increaſes as you go from thence towards Europe: and that it is leſs in Virginia, and New England, than in Newfoundland, and Hudſon's Streights.

2°. This weſterly *variation*, again, decreaſes, as you paſs over the north America, and about the meridian of the middle of California, the needle again points due north; and from thence weſtwards, to Yedzo and Japan, it is ſuppoſed the *variation* is eaſterly; and half ſea over, not leſs than 15 degrees: and that this eaſt *variation* extends over Japan, Yedzo, eaſt Tartary, and part of China, till it meet with the weſterly, which is governed by the European north pole, and which is the greateſt ſomewhere in Ruſſia.

3°. Towards the ſouth pole the effect is much the ſame; only that here the ſouth point of the needle is attracted. — Whence it will follow, that the *variation* on the coaſt of Braſil, at the river of Plata, and ſo on to the Streights of Magellan, ſhould be eaſterly, if we ſuppoſe a magnetical pole, ſituate about 20 degrees more weſterly than the Streights of Magellan. — And this eaſterly *variation* extends eaſtward over the greateſt part of the Ethiopic ſea, till it be counterpoiſed by the virtue of the other ſouthern pole; as it is about mid-way, between the cape of Good Hope, and the iſles of Triſtan d'Acunha.

4°. From thence eaſtwards, the Aſiatic ſouth pole becoming prevalent, and the ſouth point of the needle being attracted thereby, there ariſes a weſt *variation*, very great in quantity and extent; becauſe of the great diſtance of this magnetical pole of the world. — Hence it is, that all the Indian ſea, as far as Hollandia Nova, and farther, there is conſtantly a weſt *variation*; and that under the equator itſelf, it riſes to no leſs than 18 degrees, where it is moſt. — Add, that about the meridian of the iſland of Celebes, being likewiſe that of this pole, this weſterly *variation* ceaſes, and an eaſterly begins, which reaches to the middle of the South ſea, between the middle of Zelandia Nova, and Chili; leaving room for a ſmall weſt *variation*, governed by the American ſouth pole.

5°. From the whole it appears, that the direction of the middle, in the temperate and frigid zone, depends chiefly upon the counterpoiſe of the forces of two magnetical poles of the ſame nature; as alſo why, under the ſame meridian, the *variation* ſhould be in one place 29 degrees and a half weſt, and in another 20 degrees and a half eaſt?

6°. In the torrid zone, and particularly under the equinoctial, reſpect muſt be had to all four poles; and their poſitions well conſidered; otherwiſe it will not be eaſy to determine what *variations* ſhall be; the neareſt pole being always ſtrongeſt: yet not ſo, as not to be counter-balanced ſometimes by the united forces of two more remote. — Thus, in ſailing from S. Helena by the iſle of Aſcenſion, to the equator, on the north-weſt courſe, the *variation* is very little eaſterly, and in that whole tract unalterable; becauſe the ſouth American pole (which is conſiderably the neareſt in the aforeſaid places) requiring a great eaſterly *variation*, is counterpoiſed by the contrary attraction of the north American, and the Aſiatic ſouth pole; each whereof, ſingly, is, in theſe parts, weaker than the American ſouth pole: and upon the north-weſt courſe, the diſtanc from this latter is very little varied; and as you recede from the Aſiatic ſouth pole, the balance is ſtill preſerved by acceſs towards the north American pole. — In this caſe, no notice is taken of the European north pole; its meridian being little removed from thoſe of theſe places, and of itſelf requiring the ſame *variations* we here find.

After the ſame manner, may the *variations* in other places, under, and near the equator, be accounted for: ſo that the hypotheſis muſt be allowed very adequate, and ſufficient for the phænomena. See VARIATION *of the* VARIATION.

To obſerve the VARIATION, *or declination of the needle.* — Draw a meridian line, as directed under the article MERIDIAN: then, a ſtyle being erected in the middle thereof, place a needle thereon, and draw the right line it hangs over. — Thus will the quantity of the *variation* appear. See COMPASS.

Or thus: — As the former method of finding the declination, cannot be applied at ſea, others have been thought of; the principal whereof follow. — Suſpend a thread and plummet over the compaſs, till the ſhadow paſs through the centre of the card: obſerve the rhumb, or point of the compaſs, which the ſhadow touches when it is the ſhorteſt. — For the ſhadow is then a meridian line: conſequently the *variation* is ſhewn.

Or thus: — Obſerve the rhumb wherein the ſun, or ſome ſtar riſes and ſets: biſſect the arch intercepted between the riſing and ſetting; the line of biſſection will be the meridian line: conſequently, the declination is had as before. — The ſame may be had from two equal altitudes of the ſame ſtar, obſerved either by day or night.

Or thus: — Obſerve the rhumb wherein the ſun, or a ſtar riſes and ſets; and from the latitude of the place, find the eaſtern or weſtern amplitude: for the difference between the amplitude and the diſtance of the rhumb obſerved, from the eaſtern rhumb of the card, is the *variation* ſought.

Or thus: — Obſerve the altitude of the ſun, or ſome ſtar, SI, (*Tab. Navigation, fig.* 16.) whoſe declination is known; and note the rhumb in the compaſs, to which it then correſponds. — Since then in the triangle ZPS we have three ſides, *viz*, PZ, the complement of the elevation of the pole PR; SP, the complement of the declination DS; and ZS, the complement of the altitude SI; the angle PZS is found by ſpherical trigonometry, (ſee TRIANGLE:) the contiguous one to which, *viz*, AZS, meaſures the azimuth HI. — The difference then, between the azimuth, and the diſtance of the rhumb obſerved from the ſouth is the *variation* ſought.

Note, to have the eaſtern or weſtern amplitude accurately, regard muſt be had to the refraction; the laws whereof are delivered under the article REFRACTION.

For the more commodious obſerving in what rhumb of the compaſs the ſun, or a ſtar is ſeen, it will be proper to have two little apertures, or glaſs windows, oppoſite to each other under the limb thereof; with a teleſcope-ſight fitted to one of them, and to the other a fine thread.

VARIATION *of the* VARIATION, is the change in the declination

nation of the needle, obſerved, at different times, in the ſame place.

This *variation*, firſt, it is ſaid, diſcovered by Gaſſendus, is found to obſerve one and the ſame law pretty regularly. — It is ſuppoſed, owing to the difference of velocity of the motions of the internal and external parts of the globe.

Theory of the VARIATION *of the* VARIATION. — From the obſervations above recited, under the head VARIATION, it ſeems to follow, that all the magnetical poles have a motion weſtward: but if it be ſo, it is evident, that it is not a rotation about the axis of the earth: for then the *variations* would continue the ſame, in the ſame parallel of latitude (the longitude only changed) as much as the motion of the magnetical poles: but the contrary is found by experience; for there is no where, in the latitude of 51 and a half north, between England and America, a *variation* of 11 degrees eaſt, at this time; as it was once here at London. — Wherefore, it ſeems that our European pole is grown nearer the arctic pole than it was heretofore; or elſe, that it has loſt part of its virtue.

But whether theſe magnetic poles move all together with one motion, or with ſeveral; whether equally, or unequally; whether circular, or libratory: if circular, about what centre; if libratory, after what manner? are things yet unknown!

This theory ſeems yet ſomewhat obſcure, and defective: to ſuppoſe four poles in one magnetical globe, in order to account for the *variation*, is a little unnatural; but to conceive thoſe poles to move, and that by ſuch laws as to ſolve the *variation* of the *variation*, is ſtill more extraordinary. — In effect, the ſolution appears not much leſs implicite and arbitrary, than the problem.

The learned author of the theory therefore, found himſelf under a neceſſity to ſolve the phænomena of his ſolution; and with this view, preſented the following hypotheſis.

The external parts of the globe, he conſiders as the ſhell, and the internal as a nucleus, or inner globe; and between the two he conceives a fluid medium. — That inner earth having the ſame common centre, and axis of diurnal rotation, may turn about with our earth each 24 hours. Only the outer ſphere having its turbinating motion ſome ſmall matter either ſwifter or ſlower than the internal ball; and a very minute difference in length of time, by many repetitions, becoming ſenſible; the internal parts will, by degrees, recede from the external; and, not keeping pace with one another, will appear gradually to move, either eaſtward, or weſtward, by the difference of their motions.

Now, ſuppoſe ſuch an internal ſphere, having ſuch a motion, the two great difficulties in the former hypotheſis are eaſily ſolved: for if this exterior ſhell of earth be a magnet, having its poles at a diſtance from the poles of diurnal rotation, and if the internal nucleus be likewiſe a magnet, having its poles in two other places, diſtant alſo from the axis; and theſe latter, by a gradual and ſlow motion, change their place, in reſpect of the external: we may then give a reaſonable account of the four magnetical poles aforementioned, as likewiſe of the changes of the needle's *variation*.

The period of this motion being wonderful great, and there being hardly an hundred years ſince theſe *variations* have been duly obſerved; it will be very hard to bring this hypotheſis to a calculus: eſpecially ſince, though the *variations* do increaſe and decreaſe regularly in the ſame place, yet in differing places, at no great diſtance, there are found ſuch caſual changes thereof, as can no ways be accounted for by a regular hypotheſis; but ſeem to depend upon the unequal and irregular diſtribution of the magnetical matter, within the ſubſtance of the external ſhell or coat of the earth, which deflect the needle from the poſition it would acquire from the effect of the general magnetiſm of the whole. — Of which, the *variations* at London and Paris, give a notable inſtance; for the needle has been conſtantly about 1½ more eaſterly at Paris than at London: though it be certain, that according to the general effect, the difference ought to be the contrary way; notwithſtanding which, the *variations*, in both places, do change alike.

Hence, and from ſome other things of like nature, it ſeems plain, that the two poles of the external globe are fixed in the earth; and that if the needle were wholly governed by them, the *variations* thereof would be always the ſame, with ſome irregularities, upon the account juſt now mentioned. — But the internal ſphere having ſuch a gradual tranſlation of its poles, does influence the needle, and direct it variouſly, according to the reſult of the attractive or directive power of each pole; and, conſequently, there muſt be a period of the revolution of this internal ball; after which, the *variations* will return again, as before. But if it ſhall in future ages be obſerved otherwiſe, we muſt then conclude, that there are more of theſe internal ſpheres, and more magnetical poles than four; which, at preſent, we have not a ſufficient number of obſervations to determine, and particularly in that vaſt Mar del Zur, which occupies ſo great a part of the whole ſurface of the earth.

If then two of the poles be fixed, and two moveable, it remains to aſcertain, which they are that keep their place? The author thinks it may be ſafely determined, that our European north pole, is the moveable one of the two northern poles, and that which has chiefly influenced the *variations* in theſe parts of the world: for in Hudſon's Bay, which is under the direction of the American pole, the change is not obſerved to be near ſo faſt, as in theſe parts of Europe, though that pole be much farther removed from the axis. — As to the ſouth poles, he takes the Aſiatic pole to be fixed, and conſequently the American pole to move.

This granted, it is plain the fixed poles are the poles of this external ſhell, or cortex of the earth; and the other the poles of the magnetical nucleus, indcluded and moveable within the other. — It likewiſe follows, that this motion is weſtwards; and, by conſequence, that the aforeſaid nucleus has not preciſely attained the ſame degree of velocity, with the exterior parts in their diurnal revolutions; but ſo very nearly equals it, that in 365 revolves, the difference is ſcarce ſenſible. — That there is any difference ariſes hence, that the impulſe, whereby the diurnal motion was impreſſed on the earth, was given to the external parts; and from thence, in time, communicated to the internal: but not ſo, as yet perfectly to equal the velocity of the firſt motion impreſſed on, and ſtill conſerved by, the ſuperficial parts of the globe.

As to the preciſe period, we want obſervations to determine it; though the author thinks we may, with ſome reaſon, conjecture, that the American pole has moved weſtward 46 degrees in 90 years; and that the whole period thereof is performed in about 700 years.

Mr. Whiſton, in his *New laws of Magnetiſm*, raiſes ſeveral objections againſt this theory; which ſee under the article MAGNETISM.

VARIATION *of Quantities*, in algebra. See CHANGE, and COMBINATION.

VARIATION, in aſtronomy — The *variation of the moon*, called by Bullialdus, the *reflection of her light*, is the third inequality obſerved in the moon's motion; whereby, when out of the quadratures, her true place differs from her place twice equated. See PLACE, EQUATION, *&c.*

Sir Iſaac Newton takes the moon's *variation* to ariſe partly from the form of her orbit, which is an ellipſis; and partly from the inequality of the parts of ſpace, which the moon deſcribes in equal times, by a radius drawn to the earth. See MOON.

To find the greateſt variation, obſerve the moon's longitude in the octants; and for the time of obſervation, compute the moon's place quite equated: the difference between the computed, and the obſerved place, is the greateſt *variation*.

Tycho makes the greateſt *variation* 40′ 30″: Kepler makes 51′ 49″; Sir Iſaac Newton makes the greateſt *variation* at a mean diſtance between the ſun and the earth, to be 35′ 9″; at the other diſtances, the greateſt *variation* is in a ratio compounded of the duplicate ratio of the times of the moon's ſynodical revolution directly, and the triplicate ratio of the diſtance of the ſun from the earth inverſly. *Phil. Nat. Princ. Math.* Prop. XXXIX. Lib. iii.

VARIATION, in the Italian muſic, is underſtood of the different manners of playing, or ſinging a tune, or ſong; whether by ſubdividing the notes into ſeveral others of leſſer value, or by adding graces, *&c.* — In ſuch manner, however, as that one may ſtill diſcern the ground of the tune through all the enrichments; which ſome call *embroideries.*

Thus, *e. gr.* the divers couples of chacons, Spaniſh folies, gavots, French paſſecaillies, *&c.* are ſo many *variations:* ſo alſo many diminutions of courants, gavots, and other pieces for the lute, harpſichord, *&c.* are real *variations.*

VARICIFORMES *Paraſtatæ*, in anatomy, a name which ſome authors give to two veſſels near the bladder; by reaſon of their many turnings; ſerving to work and prepare the ſeed the better. See PARASTATÆ, and DEFERENTIA *Vaſa.*

VARICOSUM *Corpus*, in anatomy, the ſame as *corpus pyramidale*. See PYRAMIDALE *Corpus.*

VARICOUS *Ulcers*. See the article ULCER.

VARIEGATION, among botaniſts and floriſts, the act of ſtreaking or diverſifying the leaves, *&c.* of plants and flowers, with ſeveral colours.

Variegation is either *natural*, or *artificial.* — Of *natural variegation* there are four kinds; the firſt ſhewing itſelf in yellow ſpots, here and there in the leaves of plants; called by gardeners the *yellow bloach.*

The ſecond, called the *white bloach*, marks the leaves with a greater number of white ſpots, or ſtripes; the whiteſt lying next the ſurface of the leaves, uſually accompanied with other marks of a greeniſh white, that lie deeper in the body of the leaves.

The third, and moſt beautiful, is, where the leaves are edged with white, being owing to ſome diſorder or infection in the juices, which ſtains the natural complexion or verdure of the plant.

The fourth kind is that called the *yellow edge.*

Variegation is, in itſelf, a diſeaſe; and theſe are only ſo many ſpecies, or rather degrees thereof. — In the yellow, the diſeaſe is the ſlighteſt: the white is a ſure ſign of a deep infection, and weakneſs in the plant: which is further evinced by this; that no two leaves are ever marked exactly alike. — This ſometimes degenerates into the third, or edge kind; which is a total and immoveable diſeaſe, that lays hold not only of the leaves, but of the wood, and even the fruit, ſeed, &c.

In the two firſt kinds, there is a poſſibility of recovering the plants to their native verdure, by inarching them into a healthful ſtock of the ſame ſpecies, and letting the ſtocks ſtand a year or two joined together; by which means, the juices of the ſtrong ſtock overpowering the diſtemper, throw off the morbid humours by perſpiration: but the third kind is incurable; no art can recover the edged plant to produce plain green leaves again.

Artificial Variegation, is performed by inarching, or inoculating a ſtriped, or *variegated* plant into a plain one of the ſame ſort; as a *variegated* common jeſſamin, into a plain, common, Spaniſh, Brazil, or Indian jeſſamin. See INOCULATION, and ABLACTATION.

A ſingle bud or eye, Mr. Bradley obſerves, being placed in the eſcutcheon of a diſtempered tree, where it can only receive nouriſhment from the vitiated juices, will become *variegated*, proportionably to the nouriſhment it draws; and will partake more of the white or yellow juice, than if a branch ſhould be inarched: the bud having nothing to nouriſh it, but the juices of the plant it is inoculated on; whereas, a cyon inarched, is fed both by the ſtriped plant, and the healthful one.

As to the natural ſtripes, or *variegations*, there are ſome particular circumſtances to be obſerved: 1°. That ſome plants only appear *variegated*, or bloached in the ſpring and autumn; the ſtains diſappearing as they gather ſtrength in ſummer: of this kind are rue, thyme, and pot marjoram.

2°. Some plants are continually bloached in the ſpongy part of their leaves; the ſap-veſſels, all the time, remaining of a healthful green: ſuch are the alternus, orange-mint, &c. which, being ſtrengthened by rich manure, or being inarched into healthful plants, throw off the diſtemper.

3°. In other plants, the diſeaſe is ſo rooted and inveterate, that it is propagated with the ſeed: ſuch are the archangel, water betony, bank creſs, borrage, ſtriped ſelary, and ſycamore; the ſeeds of which produce ſtriped plants.

VARIOLÆ*, or VARIOLI, a contagious diſeaſe, popularly called the *ſmall-pox*. See *Small*-POX.

* It is called *variolæ*, as ſhewing itſelf in puſtules, or little tumors like *varices*; or as variegating the ſkin. See VARIX, &c.

VARIORUM*, in matters of literature, a term or phraſe of abbreviation, uſed for an edition of a claſſic author, printed in Holland, with the notes of divers authors thereupon: *Cum notis variorum*, or *cum ſelectis variorum obſervationibus*.

In this ſenſe, we ſay, *Plautus variorum*; a ſet of Dutch *variorums*, &c.—The *variorums*, for the generality, are the moſt valued editions.

* The word is the genitive plural of the Latin *varius*, different, divers.

VARIX*, in medicine, a dilitation of a part of a vein; ſo as to make it bulge out, and form a little, ſoft, knotty, painleſs tumour. See VEIN, ANEURYSM.

* The word is pure Latin, formed from the verb *variare*; by reaſon of the turns and meanders of the veins, which the tumor ſometimes follows.

Sometimes it is confined to one ſingle branch of a vein; and ſometimes it extends to ſeveral: and ſometimes runs crooked and bent, in various knots and circumvolutions.

It happens ofteneſt to the crural and hæmorhoidal veins; ſometimes, alſo to thoſe in the teſtes, and frequently in the abdomen and breaſts of pregnant women, and ſuch as give ſuck.

It is ſuppoſed owing to the great abundance, or thickneſs of the blood; or the relaxation of the membranes of the veins; immoderate labour, ſprains, cramps, too great preſſure or ſtricture by bandages. Stagnations of the blood, from a plethora, cacochymia, &c. may alſo give occaſion thereto.

Melancholic perſons, and thoſe who feed on coarſe meats, are moſt ſubject to them: the generality of women with child, have *varices* on their thighs and legs, occaſioned by the fœtus compreſſing the iliac veins; and by that means, preventing the reflux of blood to the heart.

Varices happening ſpontaneouſly, and proving of a moderate ſize, are rarely dangerous; but are even allowed ſerviceable in caſe of the hæmorrhoids.—When immoderate, they ſometimes occaſion a cachexy, dropſy, or conſumption.

The cure is to be attempted by evacuations, as phlebotomy, and cathartics; external applications, as diſcutient fomentations, cataplaſms, embrocations, bandages, &c. Or, laſtly, where the caſe grows dangerous, by inciſion.

Hernia VARICOSA, the ſame with *cirſocele*. See CIRSOCELE.

The *hernia varicoſa* is known by the ſituation of the tumor, the courſe of the vein, relaxation of the part, or its appearing inflated with air, diſtended, and painful. See HERNIA.—It is remedied by a proper truſs, or bandage, with the medicines abovementioned.

VARLET. See the article VALET.

VARNISH, or VERNISH, VERNIX, a thick, viſcid, gloſſy liquor; uſed by painters, gilders, and various other artificers, to give a gloſs and luſtre to their works, as alſo to defend them from the weather, duſt, &c.

There are divers kinds of *varniſhes*, all made of gums diſſolved in ſpirit of wine.

White VARNISH is uſually made of gum ſandarach and gum maſtick diſſolved in ſpirits, left to ſettle two days, then ſtrained through a linnen cloth, and after ſtanding ſome time, the clear pour'd off, and bottled for uſe.

The more curious artiſts diſſolve the two gums ſeparately; and having a made a ſeparate *varniſh* of each, mix them occaſionally, as their work requires a ſtiffer or a ſofter *varniſh*. But for the *beſt white varniſh*, more gums are required, *viz.* Venice turpentine, gum copal, elemi, benzoin, animæ, and white roſin.

Lacc-VARNISH, is made of gum lacca and ſpirit of wine, frequently ſhaken till the gum be diſſolved, then ſtrained and the clear decanted off, as above.

The lacc ought to be of the ſort called ſeed lacc.—Though for varniſhing ordinary woods, ſhell lacc is often uſed.—But this will not ſtand againſt the weather.

Beſides theſe, there are *hard* and *ſoft varniſhes*, or grounds, uſed by the etchers, and engravers. See ETCHING.

VARNISH, is alſo uſed for a kind of gloſſy coat, wherewith potters ware, Delft ware, China ware, &c. are covered, to give them a ſmoothneſs, and luſtre. — Melted lead, is the *varniſh* ordinarily uſed for the firſt; and ſmalt for the ſecond. See POTTERS.

The true *varniſh* uſed by the Chineſe, and Japaneſe, to give that inimitable luſtre to their porcelain, is one of the grand ſecrets in that manufacture; and almoſt the only thing wanting to make Delft and French ware vie with the Chineſe. Several have deſcribed the preparation thereof; particularly Kircher: but none ever ſucceeded in the trial. See PORCELAIN.

VARNISH, is alſo a term applied to the colours which antique medals acquire in the earth. See MEDAL.

The value of a medal is heightened by a beauty, which nature alone is able to give, and art has never yet attained to counterfeit: we mean, the colour or *varniſh*, which certain ſoils tinge the medal withal; ſome with a blue, almoſt as beautiful as that of a turquoiſe; others with an inimitable vermilion colour; others with a gloſſy ſhining brown, infinitely beyond any of our figures in bronze.

The moſt uſual *varniſh* is a fine green, which hangs to the moſt delicate ſtrokes, without effacing them; much more accurately than the fineſt enamel does on metals.

Braſs alone is ſuſceptible of it; for as to ſilver, the green ruſt that gathers on it, always ſpoils it; and it muſt be ſcowered off with vinegar, or lemon juice.

There is alſo a *falſe* or *modern varniſh*; which the falſifiers of medals give to their counterfeits, to give them the air of antiquity: it is diſcovered by its being ſofter than the natural *varniſh*, which is as hard as the metal itſelf.

Some lay their ſpurious medals under ground, where they contract a degree of *varniſh*, that may impoſe on the leſs knowing: others uſe ſal armoniac, mixed with vinegar, others burnt paper.

VAROLI *Pons.* See the article PONS.

VAS, *Veſſel.* See VESSEL, VESICULA, ANGEIOLOGY.—Hence (in the ſtile of anatomiſts) the *Vaſa adipoſa*, *præparantia*, &c.

VAS, *Breve*, *Short* VESSEL, in anatomy, a veſſel at the bottom of the ſtomach; thus called from its ſhortneſs. See STOMACH.

It ſends divers little branches from the bottom of the ſtomach to the ſpleen; or, according to the uſe the antients imagined it to be of, from the ſpleen to the ſtomach: for their notion was, that by means of this veſſel, the ſpleen ſupplied the ſtomach with an acid juice: which acting on the inner nervous membranes of the ſtomach, cauſed the ſenſation of hunger; and at the ſame time mixing with the foods contained therein, aſſiſted, by its acid quality, in the diſſolution thereof. See SPLEEN, HUNGER, &c.

But upon examining the little branches of this veſſel more accurately, we find they do not pierce into the ſtomach, and that they are no more than branches of veins, ſerving to return the blood into the ſplenic vein, whence it paſſes into the vena porta. See SPLENIC, and PORTA.

VASA *Concordiæ*, among hydraulic authors, are two veſſels, ſo conſtructed, as that one of them, though full of wine, will not run a drop; unleſs the other, being full of water, do run alſo—Their ſtructure and apparatus may be ſeen in Wolfius, *Element. Matheſ.* T. II. Hydraul.

VASCULAR, VASCULARIS, in anatomy, is applied to any thing conſiſting of divers veſſels, veins, arteries, &c.

We ſay, the *vaſcular* and valvular texture of the lungs. —All the fleſh in an animal body, is found to be *vaſcular*, none of it parenchymous, as the antients imagined. See FLESH, PARENCHYMA, &c.

VASCULAR *Glands*. See the article GLAND.

VASCULAR *Glands.* See the article GLAND.

VASCULAR, VASCULARIUS, in antiquity, was the denomination of a kind of artificers, among the antient Romans; who made ſilver and gold veſſels without relievo's, or figures imboſſed thereon.

Hence, according to Salmaſius, it is, that Cicero, in his ſixth oration againſt Verres, diſtinguiſhed *voſcularius* from *cælator*, engraver.

In the art called by the Greek εμπαιςικη, which was the art of ſuperadding ornaments of precious ſtones, or rich metals to vaſes of other metals; the *vaſcularii* and cælatores were different; the firſt being the goldſmiths who made the vaſe, the ſecond the ſculptors who added the ornaments. — But in the art called τορευτιχη, or the art of cutting bas reliefs, or ſtamping figures on metal; the *vaſcularii* were alſo cælators, or engravers: that is, they who made the vaſe, made alſo the relievos, or figures, wherewith it was enriched. See SCULPTURE, *&c.*

VASCULIFEROUS *Plants*, among the botaniſts, ſuch as have a peculiar veſſel or caſe to contain the ſeed; which is ſometimes divided into cells. See PLANT.

Theſe have always a monopetalous flower; either uniform, or diſform. See MONOPETALOUS.

The former have all their ſeeds divided; 1°. Into two partitions, as the *hyoſcyamus*, *nicotiana*, *priapeia*, and the *gentiana*. 2°. Into three partitions, as the *convolvulus*, *ſpeculum veneris*, *trachelium*, *repunculus* or *campanula*, *repunculus*, *corniculatus*, &c. 3°. Into four partitions, as the *ſtramonium*.

Thoſe of the latter kind, which have a diſform monopetalous flower, as the *linaria*, *pinguicula*, *antirrhinum*, *ariſtolochia*, *ſcrophularia*, *digitalis*, *pedicularis*, *melampyrum*, *euphraſia*, &c.

VASE, a term of equal import with the Latin *vas*, whence it is formed; and the Engliſh *veſſel*. See VESSEL.

It is applied to the antient veſſels, dug from under ground, or otherwiſe found, and preſerved in cabinets, *&c.* as veſſels of ſacrifice, urns, *&c.* and to other more modern veſſels, which are rather of curioſity and ſhew, than uſe; as thoſe of cryſtal, porcelain, *&c.*

VASES, in architecture, or ornaments of ſculpture, placed on ſocles, or pedeſtals; repreſenting the veſſels of the antients; particularly thoſe uſed in ſacrifice, as the præfericulum, ſimpulum, incenſe-pots, flower-pots, *&c.* and occaſionally enriched with baſſo relievos.

They are commonly placed there to crown, or finiſh facades, or frontiſpieces. See CROWNING — They are frequently alſo called *acroteria*; and are uſually inſulate. See ACROTERIA.

Vitruvius mentions a kind of *theatrical vaſes*, made of braſs, or earthen ware, called *echea*, ηχεια; which they diſpoſed in private places, under the ſteps and ſeats of the theatres, to aid and increaſe the reflection and reaſonance of the actors voices, *&c.* See THEATRE.—It is ſaid, there are alſo *vaſes* of this kind in the cathedral church of Milan.

VASE is particularly uſed in architecture, to ſignify the body of the Corinthian and compoſite capital; called alſo the *tambour*, or *drum*; and ſometimes the *campana*, or *bell.*—See *Tab. Archit. fig.* 21. *lit. c. c.* ſee alſo CORINTHIAN, and TAMBOUR.

VASE is alſo ſometimes uſed among floriſts, for that they otherwiſe call the *calyx.*

The *vaſe*, or rather calyx of a tulip, is the top, or head of a tulip; the leaves whereof form a kind of *vaſe*, or cup. See CALYX.

Goldſmiths, braſiers, *&c.* alſo uſe *vaſe* for the middle of a church-candleſtick; which is uſually of a roundiſh figure, bordering ſomewhat on that of a *vaſe.*

VASSAL*, **VASSALLUS**, in our antient cuſtoms, a perſon who vowed fidelity, and homage to a lord, on account of ſome land, *&c.* which he held of him, in fee. See FEALTY, HOMAGE, LORD, *&c.*

> * Du Cange will have the word to come from *vaſſus*, which antiently ſignified a *ſervant*, or *domeſtic* of a prince, and ſometimes alſo the *comites*, or *aſſeſſores* in public trials.— Menage, after Cujas, takes *vaſſal* to have been formed of *geſſel*, an antient German word, ſignifying *companion.* — Caſeneuve derives it from the Gauliſh *geſſus*, a brave man, from *geſſo*, or *geſſum*, or *jæſum*, a kind of javelin uſed among them. — Voſſius derives *vaſſal* from *vas*, *vadis*, pledge; whence alſo he will have it to be, that they are ſometimes called *fideles.*

The *vaſſal* was alſo called *piratus*, *lord's-man* and *fee-man*; but now the denomination is changed into that of *tenant in fee.* See TENANT, VILLAIN, *&c.*

They ſometimes alſo uſed the term *vaſſour* or *vaſſal*; whence *vavaſour.* See VAVASOUR, and VAVASORY.

If a *vaſſal* offended his lord grievouſly, either in perſon, or in honour, he committed the crime of felony; which carried with it a confiſcation of his fee. See VASSALAGE, FELONY, *&c.*

A Rear **VASSAL**, is he who holds of a lord, who himſelf is *vaſſal* of another lord. See MESNE.

VASSAL was alſo antiently uſed for ſoldier; by reaſon fees, at firſt, were given to none but military men. See FEE.

VASSALAGE, the ſtate of a vaſſal; or a ſervitude and dependency on a ſuperior lord. See VASSAL, SERVICE, TENURE, *&c.*

Antiently, they diſtinguiſhed between *liege vaſſalage*, and *ſimple vaſſalage.*

Liege vaſſalage only belonged to the king; as carrying with it an obligation on the ſide of the vaſſal, to ſerve his lord in war, againſt all perſons whatever. See LIEGE.

In all *ſimple vaſſalage*, the fealty, or *liege vaſſalage*, was ſtill reſerved to the king. See FEALTY.

Some alſo diſtinguiſh *active vaſſalage*, and *paſſive*: the firſt is the right of fealty reſiding in the lord; the ſecond, the ſervice and duties incumbent on the tenant. See LORD, *&c.*

VASTO, in law, a writ that lies againſt the tenant for life, or years, for making waſte. See WASTE.

VASTUS, in anatomy, a name common to two muſcles of the leg, diſtinguiſhed into *internal* and *external*; thus called from their largeneſs: both of them ſerving to extend the leg.

VASTUS *Externus*, ſprings from the root of the great trochanter, and from the linea aſper; outwardly tendinous, and inwardly fleſhy; and deſcending obliquely forwards, becomes, *vice verſa*, tendinous inwardly, and fleſhy outwardly; till meeting the tendon of the rectus, it grows quite tendinous, and is inſerted together with it.—See *Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 60. *fig.* 2. *n.* 41. *fig.* 6. *n.* 35.

VASTUS *Internus*, ariſe likewiſe partly tendinous, and partly fleſhy, from the linea aſpera, immediately below the leſs trochanter, upon the outſide of the tibia; and is continued almoſt to the lower apophyſis thereof, on the inſide: whence it deſcends obliquely, and growing tendinous, is inſerted with the former.—See *Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 55. *fig.* 2. *n.* 39. *fig.* 7. *n.* 42.

VAT, or **FAT**, a kind of veſſel, uſed to hold wine, ale, beer, cyder, or any other liquor, in the time of its preparation.

VATICAN*, **VATICANUS**, is properly the name of one of the ſeven hills whereon Rome ſtands: on the foot hereof is the famous church of S. Peter, hence called the *Vatican*; and a magnificent palace of the pope, which has the ſame denomination.—Hence ariſe divers figurative expreſſions; as *the thunderbolt of the Vatican*, q. d. the pope's anathema, *&c.*

> * The word, according to Aulus Gellius, is derived from *vaticinium*, prophecy; by reaſon of the oracles and predictions which were uſed to be delivered there by the inſpiration of an antient deity, called *Vaticanus*; who was ſuppoſed to unbind the organs of ſpeech in new-born children; and whom others will have to be no other than Jupiter, conſidered in that capacity.

The Library of the **VATICAN**, is one of the moſt celebrated in the world: it is particularly remarkable for its manuſcripts.— Towards the beginning of the laſt century, it was greatly augmented by the addition of that of the elector Palatine.— It is open to all the world three or four times a week.—In it are ſhewn a *Virgil*, *Terence*, &c. above a thouſand years old; the manuſcript whereon the edition of the *Septuagint* was made; and abundance of rabbinical manuſcripts. See LIBRARY.

VATICINATION, **VATICINATIO**, the act of prophecying, or divining. See DIVINATION and PROPHECY.

VAVASOR, **VALVASOR**, **VAVASOUR**, or **VALVASOUR**, in our antient cuſtoms, a diminutive of *vaſſal*, or *vaſſor*; ſignifying a *vaſſal of a vaſſal*, or one who held a fee of another vaſſal. See VASSAL, and VAVASORY.

Yet Camden, and others, hold *vavaſor* to be a dignity, next below that of a baron: he adds, that the word is formed of *vas ſortitum ad valetuninem*, a veſſel choſen for ſafety, and health.—Others derive it *à valvis*, *quaſi obligatus ſit adſtare ad valvas domini*, *vel dignus ſit eas intrare*; as being a perſon obliged to wait at his lord's door, or as worthy to enter thereat: but the etymology is ridiculous enough.

Du Cange diſtinguiſhes two ſorts of vaſſals under this denomination:—The *great*, called *valvaſores*, who held of the king: ſuch were counts, and barons.—And the *leſſer*, called *valvaſini*, who held of the former.

VAVASORY*, **VAVASORIA**, the quality of the land, or fee held by a vavaſor. See VAVASOR.

> * *Quod dicitur de baronia non eſt obſervandum in* vavaſoria, *vel aliis minoribus feodis quam baronia, quia caput non habent ſicut baronia.* Bract. Lib. II. cap. 39.

There are *baſe vavaſories*, and *frank*, or *noble vavaſories*; according as it has pleaſed the lord to make his *vavaſor.*— *Baſe vavaſories*, are thoſe for which the lord of the fee owes ſummage, light-horſe, rents, or other ſervices.—*Free vavaſories*, are ſuch as are exempt from theſe ſervices.

VAUDOIS, **VALDENSES**, or **WALDENSES**, a name given to a ſect of reformers, who made their firſt appearance about the year 1160; or, as others will have it, about the year 1118.

The occaſion of their riſe is thus delivered:— "In an aſ-

“ ſembly of ſeveral of the more conſiderable citizens of Lyons,
“ one of them fell down ſuddenly dead in the middle.—Upon
“ which, Pierre Valdo, who was one of the number, being
“ ſtruck with the accident, diſtributed a large ſum of money
“ among the poor on the ſpot.—This drawing a great num-
“ ber of people to follow him, he exhorted them to embrace
“ a voluntary poverty, after the example of Jeſus Chriſt,
“ and his apoſtles: and as he was a man of ſome learning, he
“ expounded to them the New Teſtament in the vulgar
“ tongue.
“ The clergy ſoon began to cry out on him as a raſh intru-
“ der: but he, deſpiſing their reprimands, ſtill held on; and
“ even went further. — For the accuſations of the prieſts
“ having exaſperated him, he began to declaim againſt them;
“ expoſed their corrupt lives and morals; and even, by de-
“ grees, came to cenſure ſome of the corruptions in the diſ-
“ cipline and doctrine of the church.”—And this paved ſome
of the way to the Reformation.

The *Vaudois* had their name from this Valdo, whoſe retainers they were. — They were alſo called *Lyoniſts*, and *Sabatez*, or *Inſabatez*, or *Enſabatez*.

VAULT, *Fornix*, in architecture, an arched roof, ſo contrived, as that the ſeveral ſtones whereof it conſiſts, do, by their diſpoſition, ſuſtain each other. See ARCH.

Vaults are to be preferred, on many occaſions, to ſoffits, or flat ceilings, as they give a greater riſe and elevation; and beſides, are more firm and durable. See CEILING, ROOF, *&c.*

The antients, Salmaſius obſerves, had only three kinds of *vaults*: the firſt, *fornix*, made cradle-wiſe; the ſecond, *teſtudo*, tortoiſe-wiſe, called by the French *cul du four*, or oven-wiſe; the third, *concha*, or ſhell-wiſe.

But the moderns ſubdivide theſe three ſorts into a great many more, to which they give different names, according to their figures, and uſe: ſome are *circular*, others *elliptical*, &c.

The ſweeps of ſome, again, are larger, others leſs portions of a ſphere: all above hemiſpheres are called *high*, or *ſurmounted vaults*; all that are leſs than hemiſpheres, are *low*, or *ſurbaſed vaults*, &c.

In ſome, the heighth is greater than the diameter; in others, it is leſs: there are others again, quite flat, only made with haunſes; others oven-like, or in form of a cul de four, *&c.* others growing wider, as they lengthen, like a trumpet.

Of *vaults*, ſome are *ſingle*, others *double*, *croſs*, *diagonal*, *horizontal*, *aſcending*, *deſcending*, *angular*, *oblique*, *pendent*, &c. — There are likewiſe *Gothic vaults*, with *pendentives*, &c. See OGIVE, PENDENTIVE, *&c.*

Maſter **VAULTS**, are thoſe which cover the principal parts of buildings; in contradiſtinction to the *leſſer*, or ſubordinate *vaults*, which only cover ſome little part; as a paſſage, a gate, *&c.*

Double **VAULT**, is ſuch a one as, being built over another, to make the exterior decoration range with the interior, leaves a ſpace between the convexity of the one, and the concavity of the other: as in the dome of S. Paul's at London, and S. Peter's at Rome.

VAULTS *wich Compartiments*, are ſuch whoſe ſweep, or inner face, is enriched with pannels of ſculpture, ſeparated by plat-bands: theſe compartiments, which are of different figures, according to the *vaults*, and uſually gilt on a white ground, are made with ſtucco, on brick-walls; as in the church of S. Peter's at Rome; and with plaiſter, on timber *vaults*.

Theory of **VAULTS**.—A ſemicircular arch, or *vault*, ſtanding on two piedroits, or impoſts, and all the ſtones that compoſe them, being cut and placed in ſuch manner, as that their joints, or beds, being prolonged, do all meet in the centre of the *vault*; it is evident, all the ſtones muſt be in the form of wedges, *i. e.* muſt be wider and bigger atop than at bottom: by virtue of which, they ſuſtain each other, and mutually oppoſe the effort of their weight, which determines them to fall.

The ſtone in the middle of the *vault*, which is perpendicular to the horizon, and is called the *key of the vault*, is ſuſtained on each ſide by the two contiguous ſtones, juſt as by two inclined planes: and of conſequence, the effort it makes to fall, is not equal to its weight.

But ſtill, that effort it greater, as the inclined planes are leſs inclined; ſo that, if they were infinitely little inclined, *i. e.* if they were perpendicular to the horizon, as well as the key, it would tend to fall with its whole weight; and would actually fall, but for the mortar.

The ſecond ſtone, which is on the right or left of the key-ſtone, is ſuſtained by a third; which, by virtue of the figure of the *vault*, is neceſſarily more inclined to the ſecond, than the ſecond is to the firſt; and of conſequence, the ſecond, in the effort it makes to fall, employs a leſs part of its weight than the firſt.

For the ſame reaſon, all the ſtones, reckoning from the key-ſtone, employ ſtill a leſs and leſs part of their weight to the laſt; which, reſiſting on a horizontal plane, employs no part of its weight; or, which is the ſame thing, makes no effort to fall; as being intirely ſupported by the impoſt.

Now, in *vaults*, a great point to be aimed at is, that all the vouſſoirs, or key-ſtones, make an equal effort in order to fall: To effect this, it is viſible, that as each (reckoning from the key to the impoſt) employs a ſtill leſs and leſs part of its whole weight; the firſt for inſtance, only employing one half; the ſecond, one third; the third, one fourth, *&c.* there is no other way to make thoſe different parts equal, but by a proportionable augmentation of the whole, *i. e.* the ſecond ſtone muſt be heavier than the firſt; the third, than the ſecond, *&c.* to the laſt; which ſhould be infinitely heavier.

M. de la Hire demonſtrates what that proportion is, in which the weights of the ſtones of a ſemicircular arch muſt be increaſed, to be in equilibrio, or to tend with equal forces to fall; which is the firmeſt diſpoſition a *vault* can have.

Before him, the architects had no certain rule to conduct themſelves by; but did all at random. Reckoning the degrees of the quadrant of the circle from the key-ſtone to the impoſt; the extremity of each ſtone will take up ſo much the greater arch, as it is farther from the key.

M. de la Hire's rule is, to augment the weight of each ſtone above that of the key-ſtone, as much as the tangent of the arch of the ſtone exceeds the tangent of the arch of half the key.—Now, the tangent of the laſt ſtone, of neceſſity becomes infinite, and of conſequence its weight ſhould be ſo too: but as infinity has no place in practice, the rule amounts to this, that the laſt ſtones be loaded as much as poſſible, that they may the better reſiſt the effort which the *vault* makes to ſeparate them; which is called the *ſhoot*, or *drift of the vault*.

M. Parent has ſince determined the curve, or figure which the extrados, or outſide of a *vault*, whoſe intrados, or inſide, is ſpherical, muſt have, that all the ſtones may be in equilibrio.

Key of a **VAULT**, is a ſtone, or brick, in the middle of the *vault*, in form of a truncated cone, ſerving to bind or faſten all the reſt. See KEY.

Reins, or *Fillings up of a* **VAULT**, are the ſides which ſuſtain it.

Pendentive of a **VAULT**, is the part ſuſpended between the arches or ogives. See PENDENTIVE.

Impoſt of a **VAULT**, is the ſtone whereon the firſt vouſſoir, or arch-ſtone of the *vault* is laid. See IMPOST, *&c.*

VAULT, or VOLT, in manage. See VOLT.

VAUNT, or VANT. See the article VAN.

VAUNT-*Lay*, among hunters, a ſetting of hounds, or beagles in a readineſs where the chaſe is to paſs; and caſting them off before the reſt of the kennel come in. See RELAY.

VAYVODE, or VAIVODE. See the article WAYWODE.

UBIQUISTS*, **UBIQUITARIES**, or **UBIQUITARIANS**, a ſect of Lutherans, which roſe and ſpread itſelf in Germany; and whoſe diſtinguiſhing doctrine was, that the body of Jeſus Chriſt is every where, or in every place. See LUTHERANISM.

* The word is formed from the Latin adverb, *ubique*, every where.

Brentius, one of the earlieſt reformers, is ſaid to have firſt broached this error, in 1560.— Melanchthon immediately declared againſt it; maintaining, that it introduced, with the Eutycheans, a kind of confuſion into the two natures of Jeſus Chriſt; and proteſted, that he would oppoſe it as long as he lived.

On the other hand, Andrew and Flacius Illyrius, Oſiander, *&c.* eſpouſed Brentius's party; and aſſerted the body of Jeſus Chriſt to be every where.

The univerſities of Leipſic and Wirtemberg, and the generality of Proteſtants, ſet themſelves againſt this new hereſy, but in vain: the *Ubiquitarians* grew ſtronger and ſtronger.—Six of their leaders, Schmidelin, Selneccer, Muſculus, Chemnitius, Chytræus, and Cornerus, having a meeting in 1577, in the monaſtery of Berg, they there compoſed a kind of credo, or formula of faith; wherein the *ubiquity* was eſtabliſhed as an article.

All the *Ubiquitiſts*, however, are not agreed: ſome of them, and among the reſt the Swedes, hold that Jeſus Chriſt, even during his mortal life, was every where: others maintain, that it is only ſince his aſcenſion that his body is every where.

G. Hornius only allows Brentius the honour of being the firſt propagator of *Ubiquitiſm*; its firſt inventor, according to him was John of Weſtphalia, a miniſter of Hamburg, in 1552.

UBIQUIST, in the univerſity of Paris, is a term applied to ſuch doctors in theology, as are not reſtrained to any particular houſe; either to that of Navarre, or Sorbonne.

The *Ubiquiſts* are called, ſimply, *doctors in theology*; whereas the others add, *of the houſe of Sorbonne*, or *Navarre*, &c. See SORBONNE, DOCTOR, *&c.*

UBIQUITY, *omnipreſence*; an attribute of the Godhead, whereby he is always intimately preſent to all things; gives the eſſe to all things; knows, preſerves, and does all in all things. See GOD.

For ſince God cannot be ſaid to exiſt in all places, as placed therein, (becauſe, then, he would need ſomething to his exiſtence, *viz.* place; and would have extenſion, parts, *&c.*) he muſt be conceived to be every where, or in all things, as a firſt, univerſal efficient cauſe, in all his effects.

He is preſent, therefore, to all his creatures, as a pure act, or an exerciſe of an active virtue, which knows, preſerves, governs, *&c.* every thing.—Nor are, even finite minds, preſent otherwiſe than by operation. See PRESENCE.

UDDER, UBER, in comparative anatomy, that part in brutes wherein the milk is prepared; anſwering to the mammæ, breaſts in the human kind. See BREAST, and MILK.

VECTIS, in mechanics, one of the powers; more uſually called *lever*. See LEVER.

Heterodromus VECTIS. See the article HETERODROMUS.

VECTOR, in aſtronomy, a line ſuppoſed to be drawn from any planet moving round a centre, or the focus of an ellipſis to that centre, or focus. See PLANET.

This, by ſome writers of the new aſtronomy, is called *vector*, or *radius vector*, becauſe it is that line by which the plant ſeems to be carried round its centre; and with which it deſcribes areas proportional to the times. See AREA, *&c.*

VEDETTE, in the military art, a ſentinel on horſeback, detached from the main body of the army, to diſcover and give notice of the enemy's deſigns.

VEER, a ſea term, variouſly uſed.—*Veering out a rope*, denotes the letting it go by hand, or letting it run out of itſelf: thus, they ſay, *Veer more cable*; that is, let more run out.

But they do not uſe the word for the letting out of any running rope, except the ſheat.

VEER, is alſo uſed in reference to the wind: for when it changes often, and ſuddenly, they ſay, *the wind veers.*

When a ſhip under ſail, has her ſheat *veered* out, they ſay, *ſhe goes veering*; that is, at large; neither by a wind, not directly before it, but between both: which they alſo call *quartering*. See WIND, and QUARTERING.

VEGETABLE, VEGETABILE, in phyſiology, a term applied to all plants, conſidered as capable of growth; *i. e.* all natural bodies which have parts organically formed for generation, and accretion, but not ſenſation. See PLANT.

In *vegetables*, there is ſuppoſed to be a principle of life, commonly called the *vegetative ſoul.* See VEGETATIVE, and VEGETATION.

Boerhaave very ſcientifically defines a *vegetable* to be a body generated of the earth; to which it adheres, or is connected, by parts called *roots*, through which it receives the matter of its nouriſhment, and increaſe; and conſiſts of juices, and veſſels, ſenſibly diſtinct from each other: or, a *vegetable* is an organical body, compoſed of veſſels and juices, every where diſtinguiſhable from each other; to which grow roots, or parts, whereby it adheres to ſome other body, from which it derives the matter of its life, and growth.

This definition furniſhes a juſt and adequate idea of a *vegetable:* for by its conſiſting of veſſels and juices, it is diſtinguiſhed from a *foſſil*; and by its adhering to another body, and deriving its nouriſhment therefrom, it is diſtinguiſhed from an *animal.* See FOSSIL, and ANIMAL.

A *vegetable* is defined an organical body, becauſe conſiſting of different parts, which jointly concur to the exerciſe of the ſame function. See ORGANICAL.

Adhering by ſome of its parts to another body—for we know of no plant that is ſo abſolutely vague and fluctuating, but has ſtill a body it adheres to; though that body may be various, *e. gr.* earth, as in our common plants; ſtone, as in rock-plants; water, as in ſea-plants; and air, as in ſome mucilages.

As to thoſe few plants which appear to float with the water, the manner of growth is ſomewhat anomalous: M. Tournefort has ſhewn, that all plants do not ariſe ſtrictly from ſeeds; but that ſome, inſtead of ſemen, depoſite, or let fall a little drop of juice, which ſinking in the water, by its gravity reaches the bottom, or ſome rock, *&c.* in its way; to which it ſticks, ſtrikes root, and ſhoots into branches: Such is the origin of coral. See CORAL.

Add, that the root of a plant may have any ſituation at pleaſure, with reſpect to the body thereof; nor needs it either be loweſt, or higheſt, *&c.*—Accordingly, in aloes, coral, moſſes, fungus's, *&c.* the root is frequently uppermoſt, and its growth downwards.

The vaſcular ſtructure of *vegetables*, is rendered very apparent, by an experiment of Mr. Willughby.—Cutting off ſome pretty big branches of birch, and making a ſort of baſon, or reſervoir on the end thereof with ſoft wax; upon filling this with water, and holding the branch upright, the water, in a few minutes, ſunk into the veſſels of the wood, and running quite through the length, dropped out conſiderably faſt; continuing ſo to do, as long as the water was poured on.—The ſame ſucceeds in a ſycamore, walnut tree, *&c.* though the flux here is not ſo copious. *Philoſoph. Tranſact.* N°. 70.

There are ſecrets whereby the growth of *vegetables* is ſurpriſingly promoted.—Mr. Boyle mentions a virtuoſo, who entertained his friends at the end of their meal with a ſallad of lettices, which he ſowed in their preſence, immediately before they ſat down to table.

The chymiſts alſo furniſh us with an extraordinary ſort of *vegetables:* as, the arbor Dianæ, arbor Martis, *&c.*—In effect, gold, ſilver, iron, copper, being prepared in aqua fortis, there riſes out of them a kind of tree, which vegetates, or grows, to the naked eye, and ſpreads into branches, leaves, *&c.* the whole heighth of the water; till all the matter is ſpent therein. See ARBOR *Dianæ*, &c.

This water, the chymiſts call *flint water*; the ſecret whereof has been communicated by Rhodocanaſſes, a Greek chymiſt.

VEGETABLE *Oil.* See the article OIL.

VEGETATION, VEGETATIO, the acts whereby plants, and other living bodies, receive nouriſhment, and grow. See PLANT, VEGETABLE, ACCRETION, *&c.*

Plants, we learn from the miſcroſcope, conſiſt of different parts, veſſels, *&c.* analogous to thoſe of animals: and each kind of veſſel is ſuppoſed to be the vehicle of a different humour, or juice, ſecreted from the maſs of ſap; which is conſidered as the blood, or common fund of them all. See SAP and BLOOD.

Dr. Grew aſſigns the offices of the ſeveral veſſels: thoſe placed on the inner verge of the bark, he calls *lymphæducts*, and ſuppoſes them deſtined from the conveyance of the moſt aqueous, or watery liquor; theſe Mr. Bradley calls the *new forming veſſels*, which are annually produced, and help to increaſe the bulk of the tree.

Thoſe in the middle of the bark, Dr. Grew calls *lactiferous*, or *reſiniferous* veſſels; their uſe, according to Bradley, is to return the ſuperfluous ſap: Theſe veſſels, Grew obſerves, are the principal viſcera of plants; and adds, that as the viſcera of animals are but veſſels conglomerated; ſo the veſſels of a plant are viſcera drawn out at length. See VISCERA.

To the nutrition of plants, as well as animals, it ſeems neceſſary that there be a concurrence of two ſpecifically diſtinct fluids; and a learned author maintains an intermixture of two ſuch humours in every part of a tree, like that which we obſerve in linſey-woolſey: every part of ſap being impregnated with other tinctures, and continually filtred from fibres of one kind to thoſe of another. From this mixture, many of the phænomena of the ripening, odours, colours, *&c.* are accounted for.

Theory of VEGETATION.—The proceſs of nature in the *vegetation* of plants, is very accurately delivered by the excellent Malpighi, to the effect following.

The egg (or ſeed) of the plant being excluded out of the ovary, (called *pod*, or *huſk*) and requiring further foſtering and brooding; is committed to the earth. See SEED, and EGG.

There, that kind mother having received it into her boſom, not only does the office of incubation, by her own warm vapours and exhalations, joined with the heat of the ſun; but, by degrees, ſupplies what the ſeed requires for its further growth: as abounding every where with canals and ſinus's, wherein the dew, and rain-water, impregnated with fertile ſalts, glide, like chyle and blood in the arteries, *&c.* of animals.

This moiſture meeting with a new depoſited ſeed, is percolated, or ſtrained through the pores or pipes of the outer rind, or huſk, (correſponding to the ſecundines of fœtus's) on the inſide whereof lie one or more, commonly two, thick ſeminal leaves, (anſwering to the placenta in women, and the cotyledons in brutes.) See SECUNDINE, PLACENTA, *&c.*

Theſe ſeed-leaves conſiſt of a great number of little veſiculæ, or bladders; with a tube, correſponding to the navel-ſtring in animals. See UMBILICUS.

In theſe veſiculæ is received the moiſture of the earth, ſtrained through the rind of the ſeed; which makes a ſlight fermentation with the proper juice before contained therein.

This fermented liquor is conveyed by the umbilical veſſel to the trunk of the little plant; and to the gem, or bud, which is contiguous thereto: upon which, a *vegetation* and increaſe of the parts ſucceeds.

Such is the procedure in the *vegetation* of plants; which the illuſtrious author exemplifies in a grain of wheat; as follows.—The firſt day the grain is ſown, it grows a little turgid; and the ſecundine, or huſk, gapes a little in ſeveral places: and the body of the plant, being continued by the umbilical veſſel to a conglobated leaf, (which is called the *pulp* or *fleſh* of the ſeed, and is what conſtitutes the flower) ſwells; by which means, not only the gem, or ſprout, (which is to be the future ſtem) opens, and waxes green; but the roots begins to bunch out; whence the placenta, or ſeed-leaf, becoming looſe, gapes.

The ſecond day the ſecundine, or huſk, being broke through; the ſtem, or top of the future ſtraw, appears on the outſide thereof, and grows upwards by degrees: in the mean time, the ſeed-leaf guarding the roots, becomes turgid with its veſiculæ; and puts forth a white down. And the leaf being pulled away, you ſee the roots of the plant bare; the future buds, leaves, and reſt of the ſtalk ſtill lying hid. — Between the roots, and the aſcending ſtem, the trunk of the plant is knit, by the navel-knot, to the flower-leaf; which is very moiſt, though it ſtill retains its white colour, and its natural taſte.

The third day, the pulp of the conglobated, or round leaf, becomes turgid with the juice which it has received from the earth, fermenting with its own.

Thus the plant increaſing in bigneſs, and its bud or ſtem becoming taller, from whitiſh, turns greeniſh: the lateral roots alſo breaks forth greeniſh, and pyramidal from the gaping ſheath, which adheres cloſely to the plant; and the lower root grows longer, and hairy, with many fibres ſhooting out of the ſame.

Indeed there are hairy fibres hanging all along on all the roots, except on their tips; and theſe fibres are ſeen to wind about the ſaline particles of the ſoil, little lumps of earth, &c. like ivy; whence they grow curled. Above the lateral roots, there now break out two other little ones.

The fourth day, the ſtem mounting upwards, makes a right angle with the ſeminal leaf: The laſt roots put forth more; and the other three, growing larger, are cloathed with more hairs, which ſtraightly embrace the lumps of earth; and where they meet with any vacuity, unite into a kind of network. — The conglobate, or flower-leaf, is now ſofter; and, when bruiſed, yields a white ſweetiſh juice, like barley cream. — By ſtripping it off, the root and ſtem of the plant are plainly ſeen, with the intermediate navel-knot, whoſe outer part is ſolid, like a bark, and the inner more ſoft, and medullary.

The fifth day, the ſtalk ſtill riſing, puts forth a permanent, or ſtable leaf, which is green, and folded; the roots grow longer, and there appears a new tumor of a future root: the outer, or ſheath-leaf is looſened; and the ſeed-leaf begins to fade.

The ſixth day, the ſtable-leaf being looſened, the plant mounts upwards; the ſheath-leaf ſtill cleaving about it like a bark. — The ſeed-leaf is now ſeen ſinuous, or wrinkled, and faded: and this being cut or freed from the ſecundine, the fleſh, or pericarpium, is found of a different texture; the outer part, whereby the outſide of the ſeed or grain is heaved up, being more ſolid; but the inſide veſicular, and filled with humor, eſpecially that part next the navel-knot. — All the leaves being pulled off, the roots torn, and the flower-leaf removed, the trunk appears; wherein, not far from the roots, the navel-knot bunches out, which is ſolid, and hard to cut: above, there is the mark of the ſheath-leaf, which was pulled off; and underneath, as in an arm-pit, the gem is often hid. — The hind part of the plant, ſhews the breakings forth of the roots, likewiſe the faded placenta, &c.

After the eleventh day, the ſeed-leaf, as yet ſticking to the plant, is crumpled, and almoſt corrupted; within it is hollow; and about the ſecundine, the mucous, and white ſubſtance of the ſeed, being continued to the navel-knot, forms a cavity. All the roots becoming longer, put forth new branches out of their ſides: the ſeed-leaf withers, and its veſicles are emptied: the internodes, or ſpaces between the knots, grow longer; new gems appear; and the middle root grows ſeveral inches long.

After a month, the roots and ſtalk being grown much longer, new buds break out at the firſt knot, and little tumors bunch out, which, at length, break into roots. — *For other circumſtances of Vegetation*, ſee GENERATION, JUICE, SEED, RADICLE, PLUME, PERPENDICULARITY, PARALLELISM, &c.

As to the Vegetable Matter, or the food whereby plants grow, there is ſome doubt: the common opinion among naturaliſts, is, that water is the great *vegetable* food; which is confirmed by any eaſy experiment.

A ſprig of balm, mint, or the like plant, is ſet in a phial of pure water, without any mixture of earth; yet the ſprig grows, puts forth roots, leaves, and branches.

Agreeable to which, is another famed experiment of Van Helmont; who drying 200 pounds of earth, and planting a willow which weighed 5 pounds therein, he watered it only with rain, or diſtilled-water; and to ſecure it from any other earth, covered it with a perforated tin cover: at 5 years end, weighing the tree, with all the leaves it had born in that time, he found it to weigh 169 pounds 3 ounces; yet the earth was only diminiſhed 2 ounces. See WATER.

To aſcertain this point, Dr. Woodward has made ſome very good experiments; which, at the ſame time, give light to many other circumſtances of *vegetation*. — His experiments are moſt of them made with ſprigs of mint, and ſome other plants, nicely weighed, and incloſed in equal glaſs phials, well covered up with parchment; leaving only room for the ſtems to aſcend through it; and filled with water: ſome with ſpring-water, others with rain-water, others with Thames-water.

At the end of 77 days he took them all out again; weighed them, as alſo the water left; and computed the weight of water expended on them, and the proportion of the increaſe of the plant, to the expence of the water.

The next year, *viz.* 1692, he made freſh experiments with the ſame phials, and the ſame ſort of plants, weighed as before, only ſome were filled with Hyde-Park conduit-water alone, others with the ſame water and a certain proportion of garden-earth diſſolved in it; and others in the ſame water diſtilled.

At the end of 56 days, he weighed the plants, water, &c. and computed what each plant had gained, what quantity of water was expended on the plant, and the proportion of the increaſe of the plant, to the decreaſe of the water.

The reſult of all which experiments, he gives us in the following obſervations, and reflections. — 1°. In plants of the ſame kind, the leſs they are in bulk, the ſmaller quantity of the fluid maſs, in which they are ſet, is drawn off. — The conſumption, where the maſs is of equal thickneſs, being pretty nearly proportional to the bulk of the plant.

In effect, the water ſeems to aſcend up the veſſels of plants, in much the ſame manner as up a filtre: and it is no great wonder, that the larger filtre ſhould draw off more water than the ſmaller; or that a plant, that hath no more and larger veſſels ſhould take up a greater ſhare of the fluid, in which it is ſet, than one that has fewer can: nor is this noted as a thing very conſiderable in itſelf, but chiefly with regard to what follows.

2°. Much the greater part of the fluid maſs thus drawn off, and conveyed into the plant, does not ſettle or abide there; but paſſes through their pores, and exhales up into the atmoſphere. — That the water, in theſe experiments, aſcended only through the veſſels of the plants, is certain; ſince ſome glaſſes, which had no plants in them, though diſpoſed in like manner as the reſt, remained at the end of the experiment as at firſt, without any diminution of water: and that the greateſt part of it flies off from the plant, into the atmoſphere, is as certain.

The leaſt proportion of the water expended, was to the augment of the plant, as 46 or 50 to 1; and in ſome 100, 200, nay, in one, as 700 to 1.

This ſo continual an emiſſion of water, in ſo great plenty, from the parts of the plant, affords a manifeſt reaſon, why countries that abound with trees, and the larger vegetables eſpecially, ſhould be very obnoxious to damps, great humidity in the air, and more frequent rains, than others that are more open and free. — The great moiſture in the air, was a great inconvenience, and annoyance to thoſe who firſt ſettled in America; which, at that time, was overgrown with woods and groves: but as theſe were burned and deſtroyed, to make way for habitations, and culture of the earth; the air mended, changed into a temper much more ſerene and dry than before.

Nor does this humidity go off pure, and alone, but uſually carries with it many parts of the ſame nature, with thoſe whereof the plant, through which it paſſes, conſiſts: the craſſer, indeed, are not ſo eaſily born up into the atmoſphere, but are uſually depoſited on the ſurface of leaves, flowers, and other parts of the plants; whence our mannas, our honies, and other gummous exudations of vegetables: but the finer and lighter parts, are with greater eaſe ſent up into the atmoſphere; thence they are conveyed to our organs of ſmell, by the air we draw in reſpiration; and are pleaſant or offenſive, beneficent or injurious to us, according to the nature of the plants from which they ariſe. — And ſince theſe owe their riſe to the water that aſcends out of the earth, through the bodies of plants; we cannot be far to ſeek for the cauſe, why they are more numerous in the air, and a greater quantity of odours is found exhaling from vegetables, in warm humid ſeaſons, than in any others.

3°. A great part of the terreſtrial matter that is mixed with water, aſcends up into the plant, as well as the water. — There was much more terreſtrial matter, at the end of the experiment, in the water of the glaſſes that had no plants in them, than in thoſe which had plants. — The garden-mould diſſolved in ſome of the glaſſes, was conſiderably diminiſhed, and carried off; nay, the terreſtrial and vegetable matter, was born up in the tubes filled with ſand, cotton, &c. in that quantity, as to be evident, even to ſenſe: and the bodies in the cavities of the other tubes, that had their lower ends immerſed in water, wherein ſaffron, cochineal, &c. had been infuſed, were tingled with yellow, purple, &c. — To look abroad a little towards our ſhores, and parts within the verge of the ſea, theſe will preſent us with a large ſcene of plants, that, along with the vegetable, take up into them mere mineral matter alſo, in great abundance; ſuch as our ſea-purſlain, the ſeveral ſorts of algas, of ſamphires, and other marine plants: thoſe contain common ſea-ſalts, which are the ſame as the foſſil, in ſuch plenty, as not only plainly to be diſtinguiſhed on the palate, but may be drawn out of them in conſiderable quantity; nay, ſome affirm, there are plants found that will yield nitre, and other mineral ſalts.

The vegetable matter being very fine and light, is ſurprizingly apt, and diſpoſed to attend water in all its motions, and follow it into each of its receſſes; as appears not only from the inſtances above alledged, but many others: percolate it with all the care imaginable, filtre it with never ſo many filtrations, yet ſome terreſtrial matter will remain. — Dr. Woodward has filtred water through ſeveral ſheets of thick paper, and after that, through very cloſe fine cloth, twelve times doubled; and this over and over, and yet a conſiderable quantity of this matter diſcovered itſelf in the water, after all. — Now if it thus paſſes interſtices that are ſo very ſmall and fine, along with the water, it is the leſs ſtrange, it ſhould attend it in its paſſage through the ducts and veſſels of plants: it is true, filtring and diſtilling the water, intercepts, and makes it quit ſome of the earthy matter it was before impregnated withal; but then, that which continues with the water after this, is fine and light, and ſuch, conſequently, as is, in a peculiar manner, fit for the growth and nouriſhment of vegetables. — And this is the caſe of rain-water: the quantity of terreſtrial matters it bears up into the atmoſphere, is not great; but what it does bear up, is chiefly of that light kind, or vegetable matter, and that, too, perfectly diſſolved, and reduced to ſingle corpuſcles, all fit to enter the tubules, and veſſels of plants: on which account it is, that this water is ſo very fertile and prolific.

The reaſon why all the terreſtrial matter mixed with the water, does not aſcend into the plant, is, that the mineral matters makes a great deal of it, which is not only groſs and ponderous, but ſcabrous and inflexible; and ſo not diſpoſed to enter the pores of the roots: beſides, a great many of the ſimple vegetable particles, by degrees, unite, and form ſmall clods, or moleculæ, which ſtick to the extremities of the roots of thoſe plants; and others of them, entangled in a looſer manner, from the nubeculæ, or green bodies, ſo commonly obſerved in ſtagnant water: theſe, when thus conjoined, are too big to enter the pores, or aſcend up the veſſels of plants; which ſingly they might have done.

Hence it is, that in agriculture, be the earth never ſo rich, good, and fit for the production of corn, or other vegetables; little will come of it, unleſs the parts of it be ſeparated and looſe: and it is on this account, ſuch pains are beſtowed in the digging, tilling, ploughing, fallowing, harrowing, and breaking the clodded lumps of earth: and it is the ſame way that ſea-ſalt, nitre, and other ſalts, promote *vegetation*.

Some authors imagine nitre eſſential to plants; and that nothing in the vegetable kingdom is tranſacted without it: but Dr. Woodward aſſures us, that by all the trials he has been able to make, the thing ſeems to him quite otherwiſe: and when contiguous to the plant, nitre rather deſtroys than nouriſhes it. — But nitre, and other ſalts, certainly looſen the earth, and ſeparate the concreted parts thereof; by that means, fitting and diſpoſing them to be aſſumed by the water, and carried up into the ſeed or plant, for its formation and increaſe. — It is every body's obſervation, how apt all ſorts of ſalts are to be wrought upon by moiſture, how eaſily they run with it; and when theſe are drawn off, and have deſerted the lumps wherewith they were incorporated, thoſe muſt moulder immediately, and fall aſunder of courſe: the hardeſt ſtone we meet with, if it happen, as it frequently doth, to have any ſort of ſalt intermixed with the ſand of which it conſiſts, upon its being expoſed to a humid air, in a ſhort time diſſolves and crumbles all to pieces; and much more will clodded earth, or clay, which is not of ſo compact and ſolid a conſtitution.

The ſame way is lime likewiſe ſerviceable in *vegetation*: the huſbandmen ſay, it does not fatten, but only mellows the ground: by which they mean, it doth not contain any thing in itſelf, that is of the ſame nature with the vegetable mould, or afford any matter fit for the formation of plants, but merely ſoftens, and relaxes the earth; by that means, rendering it more capable of entering the ſeeds of vegetables ſet in it, in order to their nouriſhment, than otherwiſe it would have been. — The properties of lime are well known, and how apt it is to be put in a ferment, and commotion by water; nor can ſuch commotion ever happen, when lime is mixed with earth, however hard and clodded that may be, without opening and looſening it.

4°. The plant is more or leſs nouriſhed, in proportion, as the water in which it ſtands, contains a greater or ſmaller quantity of proper terreſtrial matter in it. — The truth of this propoſition, is decernable through the whole proceſs of this author's experiments. — The mint in one of his glaſſes, was of much the ſame bulk and weight with that of two or three others: but the water in which the firſt was, being river-water, which was apparently ſtored more copiouſly with terreſtrial matter, than the ſpring or rain-water, wherein the others ſtood, occaſioned it to arrive at almoſt double the bulk that either of them had, and with a leſs expence of water too: ſo likewiſe the mint in another glaſs, in whoſe water was diſſolved a ſmall quantity of good garden-mould; though it had the diſadvantage to be leſs, when firſt ſet, than either of the mints in two other glaſſes, whoſe water was the very ſame with the firſt, only had none of the earth mixed with it; yet, in a ſhort time, the plant not only overtook, but much outſtripped the others.

The reaſon why the proportion of the increaſe of the plant is limited to the quantity of proper terreſtrial matter in the water, is, that all even vegetable matter, is not proper for the nouriſhment of every plant: nor do there want good indications, that every kind of vegetable requires a peculiar and ſpecific matter for its formation and nouriſhment; yea, each part of the ſame vegetable: and that there are very many and different ingredients to go to the compoſition of the ſame individual plant. — If, therefore, the ſoil wherein any vegetable or ſeed is planted, contains all, or moſt of theſe ingredients, and thoſe in due quantity, it will grow and thrive there; otherwiſe it will not: if there be not as many ſorts of corpuſcles, as are requiſite for the conſtitution of the main, and more eſſential parts of the plant, it will not proſper at all; if there are theſe, and not in ſufficient plenty, it will never arrive to its natural ſtature: or, if there be any the leſs neceſſary and eſſential corpuſcles wanting, there will be ſome failure in the plant; it will be defective in taſte, ſmell, colour, or ſome other way.

Indeed, it is inconceivable how one uniform, homogeneous matter, having its principles, or original parts of the ſame ſubſtance, conſtitution, magnitude, figure, and gravity, ſhould conſtitute bodies ſo unlike in all thoſe reſpects, as vegetables of different kinds are; nay, even as the different parts of the ſame vegetable: that one ſhould carry a reſinous, another a milky, a third a yellow, a fourth a red juice in its veins; one afford a fragrant, another an offenſive ſmell; one ſweet to the taſte, another acid, bitter, acerb, auſtere, *&c.* that one ſhould be nouriſhing, another poiſonous; one purging, another aſtringent. — And this argument makes equally ſtrong againſt thoſe who ſuppoſe mere water the matter out of which all bodies are formed. — A catapucia in one of the glaſſes received but little increaſe, only 3 ½ grains all the while it ſtood, though 2501 grains of water were ſpent upon it: but this might poſſibly be owing, not to the water's wanting matter fit for the nouriſhment of that particular plant, but to the water's being an improper medium for it to grow in: too much of that liquor, in ſome plants, may probably hurry the terreſtrial matter through the veſſels too faſt for them to lay hold of it.

But a farther proof of this doctrine is, that the ſoil once proper for the production of ſome ſort of vegetable, does not ever continue to be ſo; but, in tract of time, loſes its property; and ſooner in ſome lands, and later in others: If wheat, for example, be ſown upon land proper for that grain, the firſt crop will ſucceed very well, and perhaps the ſecond, and the third, as long as the ground is in heart, as the farmers call it; but in a few years it will produce no more, if ſowed with that corn: ſome other grain it may, as barley; and after this has been ſown ſo oft, that the land can bring forth no more of it, it may afterwards yield ſome good oats; and perhaps peaſe after them. — At length it becomes barren; the vegetative matter that at firſt it abounded with, being reduced by the ſucceſſive crops, and moſt of it born off: each ſort of grain takes forth that peculiar matter, that is proper for its own nouriſhment.

It may be brought to bear another ſeries of the ſame vegetables; but not till it is ſupplied with a new fund of matter, of the like ſort with what it firſt contained; either by the ground's lying fallow for ſome time, till the rain has poured a freſh ſtock upon it; or by the manuring it. — That this ſupply is of the like ſort, is evident from the ſeveral manures found beſt to promote the *vegetation*; which are, chiefly, either parts of vegetables, or of animals: of animals, we ſay, which either derive their own nouriſhment immediately from vegetable bodies, or from other animals that do ſo; in particular, the blood, urine, and excrements of animals; ſhavings of horns, and hoofs; hair, wool, feathers, calcined ſhells, lees of wine and beer, aſhes of all ſorts of vegetable bodies, leaves, ſtraw, roots, and ſtubble, turned into earth by ploughing, or otherwiſe, to rot and diſſolve there. — Theſe are our beſt manures; and being vegetable ſubſtances, when refunded back again into the earth, ſerve for the formation of other like bodies. See MANURING, and COMPOST.

The like is obſervable in gardens, where the trees, ſhrubs, and herbs, after their continuing in one ſtation, till they have derived thence the greater part of the matter fit for their increaſe, will decay, and degenerate; unleſs either freſh earth, or ſome fit manure be applied to them: it is true they may maintain themſelves there for ſome time, by ſending forth roots farther and farther, to an extent all around, to fetch in more proviſion; but, at laſt, they muſt have a freſh ſupply brought to them, or they themſelves be removed or tranſplanted to ſome place better furniſhed with matter for their ſubſiſtence. — And accordingly, gardeners obſerve, that plants that have ſtood a long while in a place, have longer roots than uſual; part of which they cut off, when they tranſplant to a freſh ſoil, as not now of any farther uſe to them.

All theſe inſtances point forth a peculiar terreſtrial matter, and not water, for the ſubject to which plants owe their increaſe: were it water only, there would be no need of manures, or tranſplanting; the rain falls in all places, in this field and that, indifferently; on one ſide of an orchard or garden, as well as another: nor could there be any reaſon, why a tract of land ſhould yield wheat one year, and not the next, ſince the rain ſhowers down alike on each.

5°. Vegetables then are not formed of water, but of a certain peculiar terreſtrial matter. — A little diſtillation ſhews, that there is a conſiderable quantity of this matter contained both in rain, ſpring, and river-water: and the experiments abovementioned, ſhew that the much greateſt part of the fluid maſs that aſcends up into plants, does not ſettle or abide there, but paſſes through the pores of them, and exhales into the atmoſphere; and that a great part of the terreſtrial matter, mixed with the water, paſſes up into the plant along with it; and that the plant is more or leſs augmented, in proportion, as the water contains a greater or ſmaller quantity of that matter: from all which, we may reaſonably infer, that earth, and not water, is the matter that conſtitutes vegetables.

One of the ſprigs of mint drew up into it 2501 grains of the fluid maſs, and yet had received but $3\frac{1}{2}$ grains of increaſe from it: a ſecond, though it had at firſt the diſadvantage to be much leſs than the third, yet, being ſet in water wherewith earth was plentifully mixed, and the other in water without any ſuch earth, it had vaſtly outgrown it; weighing, at leaſt, 145 grains more than the former: a fourth plant, though at firſt a great deal leſs than the fifth, yet being ſet in the foul craſs-water, that was firſt in the ſtill, after that in which the laſt was ſet was drawn off, had gained in weight, at the end, above double what that in the finer and thinner water had. — The proportion of the augment of that plant which throve moſt, was to the fluid maſs ſpent upon it, but as 1 to 46; in others, as 1 to 60, 100, 200; and in the cataputia, but as 1 to 714. — One of the ſprigs took up 39 grains of water a day, one day with another; which was much more than the whole plant originally, and yet it gained not $\frac{1}{4}$ of a grain a day in weight: and another took up 253 grains a day, which was near twice as much as its original weight; and after all, the daily increaſe of the plant was no more than $2\frac{15}{36}$ grains.

6°. Spring and rain-water contain near an equal charge of vegetable matter; river-water more than either of them. — Theſe proportions hold in the main, but a ſtrict and juſt compariſon is hardly to be expected; inaſmuch as in all probability, the water that falls in rain, contains at ſome times a greater ſhare of terreſtrial matter, than that which falls at other times; a more powerful and intenſe heat, of neceſſity, hurrying up a larger quantity of that matter, along with the humid vapours that form rain, than one more feeble and remiſs poſſibly can. — The water of one ſpring may flow forth with an higher charge of this matter, than that of another: this depending partly upon the quickneſs of the ebullition of the water, and partly upon the quantity of that matter latent in the ſtrata, through which the fluid paſſes, and the greater or leſs laxity of thoſe ſtrata: for the ſame reaſon the water of one river may abound with it, more than that of another; nay, the ſame river, when much agitated, and in commotion, muſt tear up more of it, than when it moves with leſs rapidity, and violence. — That there is a greater quantity of this matter in rivers, and that it contributes vaſtly to the ordinary fertility of the earth, we have an illuſtrious inſtance in the Nile, the Ganges, and other rivers, that yearly overflow the neighbouring plains: their banks ſhew the faireſt and largeſt crops of any in the world.

7°. Water ſerves only for a vehicle to the terreſtrial matter which forms vegetables, and does not itſelf make any addition to them. — Where the proper terreſtrial matter is wanting, the plant is not agumented, though never ſo much water aſcend into it: water, then, is not the matter that compoſes vegetable bodies; it is only the agent that conveys the matter to them, and diſtributes it to their ſeveral parts for their nouriſhment: that matter is ſluggiſh and inactive, and would lie eternally confined to its beds of earth, without advancing up into plants; did not water, or ſome like inſtrument, fetch it forth, and carry it into them.

This fluid is capacitated for the office here aſſigned it, ſeveral ways: by the figure of its parts, which, as appears from many experiments, is exactly and mathematically ſpherical; their ſurfaces being perfectly polite, and without any the leaſt irregularities. It is evident, corpuſcles of ſuch a figure are eaſily ſuſceptible of motion, and far above any others whatever; and conſequently the moſt capable of moving and conveying other matter that is not ſo active: then, the intervals of bodies of that figure, are, with reſpect to their bulk, of all others, the largeſt, and ſo the moſt fitted to receive and entertain foreign matter in them; beſides, as far as the trials hitherto made inform us, the conſtituent corpuſcles of water are each ſingly conſidered, abſolutely ſolid, and do not yield to the greateſt external force: this ſecures their figure againſt any alteration, and the intervals of the corpuſcle, muſt be always alike. — By the latter, it will be ever diſpoſed to receive matter into it; and by the former, when once received, to bear it along with it. — Water is farther capacitated to be a vehicle to this matter, by the tenuity and fineneſs of the corpuſcles of which it conſiſts: we hardly know any fluid in all nature, except fire, whoſe conſtituent parts are ſo exceeding ſubtile, and ſmall, as thoſe of water are: they will paſs pores and interſtices, that neither air, nor any other fluid will. — This enables them to enter the fineſt tubes and veſſels of plants, and to introduce the terreſtrial matter, conveying it to all parts of them; whilſt each, by means of organs it is endued with for the purpoſe, intercepts, and aſſumes into itſelf ſuch particles, as are ſuitable to its own nature, letting the reſt paſs on through the common ducts.

8°. Water is not capable of performing this office to plants, unleſs aſſiſted by a due quantity of heat. — This muſt concur, or *vegetation* will not ſucceed. — The plants ſet in the glaſſes in October, and the following colder months, had not near the quantity of water ſent up into them, or ſo great an additional increaſe by much, as thoſe that were ſet in June, July, and the hotter months. — It is plain, water has no power of moving itſelf, or riſing to the vaſt heighth it does, in the more tall and lofty plants; ſo far from it, that it doth not appear from any diſcovery yet made, that even its own fluidity conſiſts in the inteſtine motion of its parts, whatever the Carteſians think. — Indeed, we need nothing more to ſolve all the phænomena of fluidity, than ſuch a figure, and diſpoſition of parts, as water has: ſpherical corpuſcles muſt ſtand ſo very tickliſh upon each other, as to be ſuſceptible of every impreſſion; and though not perpetually in motion, muſt be always ready and liable to be put into it, by any the ſlighteſt force imaginable: it is true, the parts of fire, or heat, are not capable of moving themſelves, any more than thoſe of water; but they are more ſubtile, light, and active, than thoſe are, and ſo more eaſily put into motion. See FLUIDITY.

That the concurrence of heat in this work is really neceſſary, appears not only from the experiments before us, but from all nature; from the fields and foreſts, gardens and orchards: we ſee in autumn, as the ſun's power is gradually leſs and leſs, ſo its effect on plants is remitted, and *vegetation* ſlackens by little and little. — Its failure is firſt decernable in trees; which being raiſed higheſt above the earth, require a more intenſe heat, to elevate the water, charged with nouriſhment, to their tops; ſo that for want of freſh ſupport and nutriment, they ſhed their leaves, unleſs ſecured by a firm and hard conſtitution indeed, as our ever-greens are: next, the ſhrubs part with theirs; and then the herbs, and lower tribes: the heat, being, at length, not ſufficient to ſupply even theſe, though ſo near the earth, and the fund of their nouriſhment. — As the heat returns the ſucceeding ſpring, they all recruit again, and are furniſhed with freſh ſupplies and verdure: but firſt, thoſe which are loweſt and neareſt the earth, and that require a leſſer degree of heat to raiſe the water with its earthy change unto them: then the ſhrubs, and high vegetables, in their turns; and laſtly, the trees. — As the heat increaſes, it grows too powerful, and hurries the matter with too great rapidity, through the finer and more tender plants; theſe, therefore, go off, and decay; and others that are more hardy and vigorous, and require a greater degree of heat, ſucceed in their order. — By which mechaniſm, provident nature furniſhes us with a very various and differing entertainment; and what is beſt ſuited to each ſeaſon all the year round.

As the heat of the ſeveral ſeaſons affords us a different face of things, ſo the ſeveral diſtant climates ſhew the different ſcenes of nature, and productions of the earth. — The hotter countries ordinarily yield the largeſt and talleſt trees, and thoſe, too, in a much greater variety than the colder; even thoſe plants common to both, attain to a much greater bulk in the ſouthern, than the northern climes: nay, there are ſome regions ſo cold, that they raiſe no vegetables at all to a conſiderable ſize; this we learn from Greenland, Iceland, and other places of like cold ſituation and condition: in theſe there are no trees, and the ſhrubs are poor, little, and low. — Again in the warmer climates, and ſuch as do furniſh trees, and the large vegetables, if there happen a remiſſion, or diminution of the uſual heat, their productions are impeded in proportion: our cold ſummers gives us proof enough of this; for though, at ſuch times, the heat we have is ſufficient to raiſe the vegetative matter into the lower plants, our corns, wheat, barley, peaſe, and the like; and we have plenty of ſtrawberries, raſpberries, gooſeberries, currants, and the fruits of ſuch vegetables as are low and near the earth; and a moderate ſtore of cherries, mulberries, plums, &c. and ſome others that grow at ſomewhat greater heighth; yet our apples, pears, walnuts, and the productions of the taller trees, have been fewer, and thoſe not ſo thoroughly ripened, and brought to that perfection, as they are in more benign and warm ſeaſons: and indeed, in trees of the ſame kind; thoſe that keep cloſe to the earth, always produce the moſt and beſt fruit: for which reaſon it is, that the gardeners check and reſtrain the growth of their better fruit-trees; and prevent their running up to too great a heighth. — As to our grapes, apricots, peaches, nectarins, and figs, they being tranſplanted hither out of hotter countries, it is the leſs wonder we have a failure of them in cold ſummers. — Nor is it the ſun, or the ordinary emiſſion of the ſubterranean heat only, that promotes *vegetation*, but any other indifferently, according to its power and degree; as we find from our ſtoves, hot-beds, &c. See Heat, Cold, Water, Earth, Soil, Tree, Dwarf, Hot-bed, &c.

VEGETATIVE, Vegetativus, a term applied to that principle, or part in plants, by virtue whereof they receive nouriſhment, and grow, or vegetate. See Vegetation.

The philoſophers ſpeak of three kinds of ſouls, the *vegetative*, *ſenſitive*, and *rational*. See Soul.

The *vegetative* ſoul, is that principle whereby trees and plants live, grow, produce their kinds, &c. See Plant.

This *vegetative* principle is differently ſeated in different plants: an ingenious author obſerves, that, generally ſpeaking, its place is exactly between the trunk, and root; at leaſt, this appears to be the place in moſt of the ſeminiferous tribe; which, if cut down near the place, rarely ſhoot again.

In other plants, as the elm, and many edible plants, it ſeems to reſide wholly in the roots; which, if cut into ever ſo many parts, yet, thoſe being planted in the ground, ſoon grow. See Root, and Planting.

In others, as the willow kinds, it ſeems to be diffuſed all over, both root, trunk, and branches; inſomuch, that if cut into a thouſand pieces, there is no deſtroying them without ſplitting them in the middle; and ſcarcely then. See Fecundity.

Laſtly, in others, as the cereus's, ficus's, &c. it is ſeated in the body, branches, and leaves; any of which being put into the ground, ſtrike root immediately, and grow.

The office of this *vegetative* principle, is to concoct the indigeſted earth and ſalts which aſcend through the roots; and to aſſimilate them to the nature of the plant. See Vegetation.

VEHICLE, Vehiculum, in its literal ſenſe, ſignifies ſomewhat that carries, or bears a thing along. See Carriage, Waggon, Wheel, &c.

Thus, in anatomy, the ſerum is ſaid to be the *vehicle* that conveys the globules of the blood. See Blood.

In pharmacy, any liquid ſerving to dilute another with, or to adminiſter it in, more agreebly to a patient, is called a *vehicle*.

Water is the *vehicle* of the nutritious matter of vegetables. See Vegetation, and Water.

VEIL, Velum, a piece of ſtuff, ſerving to hide, or prevent the ſight of any thing.

In this ſenſe, we read of a large *veil*, or curtain, in the temple of Jeruſalem, miraculouſly rent at the paſſion of our Saviour. — In the Romiſh churches, in time of Lent, they have *veils*, or curtains over the altar, crucifix, images of the ſaints, &c.

Veil, is alſo uſed for a large piece of crape, wore on the head by nuns; as the badge of their profeſſion. — Whence, to *take the veil*, ſignifies to commence religious. See Profession.

The novices wear white *veils*; and thoſe who have made the vows, black *veils*. See Novice.

The prelate before whom the vows are made, bleſſes the *veil*, and gives it the religious. See Religious, &c.

VEIN, Vena, in anatomy, a name given to ſeveral veſſels, or canals, which receive the blood from the divers parts of the body, to which the arteries had conveyed it from the heart; and carry it back to the heart again. — See *Tab. Anat.* (*Angeiol.*) *fig.* 6, 7. ſee alſo Blood, &c.

The *veins* are only a continuation of the extreme capillary arteries, reflected back again towards the heart. See Capillary, and Artery.

In their progreſs, uniting their channels as they approach the heart they, at laſt, all form three large *veins*, or trunks, *viz.* The *vena cava deſcendens*; which brings the blood back from all the parts above the heart. — The *vena cava aſcendens*; which brings the blood from all the parts below the heart. — And the *porta*, which carries the blood to the liver. See Cava, Heart, Porta, &c.

The anaſtomoſis, or inoſculation of the *veins* and arteries, was firſt ſeen by the microſcope, in the feet, tails, &c. of frogs, and other amphibious animals, by Leewenhoeck; but has ſince been obſerved in other animals, particularly the omentum of a cat, by Mr. Cowper, &c. See Anastomosis, Circulation, &c.

The coats of the *veins* are four, the ſame with thoſe of the arteries; only the muſcular coat is thin in all the *veins*, as it is in the capillary arteries; the preſſure of the blood againſt the ſides of the *veins*, being leſs than that againſt the ſides of the arteries, becauſe the force of the heart is much broke in the capillaries. — See *Tab. Anat.* (*Angeiol.*) *fig.* 7. *a. a. b. b. c. d.* ſee alſo the article Phlebotomy.

In the *veins* there is no pulſe, becauſe the blood is thrown into them with a continual ſtream, and becauſe it moves from a narrow channel to a wider. — But they have a periſtaltic motion, which depends on their muſcular coat. See Pulse, &c.

The *capillary veins* unite with one another; as has been ſaid of the capillary arteries; only their courſe is directly oppoſite: for inſtead of a trunk diſtributed into branches and capillaries, a *vein* is a trunk, formed out of a concourſe of capillaries. See Capillary.

In all the *veins*, which are perpendicular to the horizon, excepting thoſe of the uterus, and the porta, there are ſmall membranes, or valves; ſometimes there is only one, ſometimes there are two, and ſometimes three, placed together, like ſo many half thimbles ſtuck to the ſides of the *veins*, with their mouths towards the heart.

Theſe, in the motion of the blood towards the heart, are preſſed cloſe to the ſides of the *vein*; but ſhut the *veins*, againſt any reflux of the blood that way from the heart, and thereby ſuſtain the weight thereof in the great trunks. See Valve.

The *veins* are diſtinguiſhed, with reſpect to their ſituation, into *ſuperior*, and *inferior*, *aſcending*, and *deſcending*; *right*, as the meſenteric, and *left*, as the ſplenic branch; *internal*, as the baſilica; and *external*, as the humeral.

Many of them, likewiſe, acquire denominations from the parts wherein they are found; as, the *jugulars*, *phrenitic*, *renal*, *iliac*, *hypogaſtric*, *epigaſtric*, *axillary*, *crural*, *umbilical*, *ſural*, *ſciatica*, *ſaphena*, *mediana*, *cephalic*, *thoracic*, *ſubclavian*, *intercoſtal*, *coronal*, *diaphragmatic*, *hæmorrhoidal*, *cervical*, *thymal*, *mammillary*, *gaſtric*, *ſtomachic*, *epiploic*, *ſplenic*, &c.

They are alſo diſtinguiſhed, from their particular offices, into *ſpermatic*, *emulgent*, &c. all which ſee exhibited in *Tab. Anatomy*, (*Angeiol.*) — and their particular deſcriptions under their proper article Jugular, Phrenitic, &c.

Vein is alſo applied to the ſtreaks, or waves of divers colours, appearing on ſeveral ſorts of woods, ſtones, &c. as if they were really painted; and which the painters frequently imatate in painting wainſcots, &c.

Marble is generally full of ſuch *veins*. See Marble. — Lapis lazuli has *veins* like gold. See Lapis. — Ovid, ſpeaking of the metamorphoſes of men into ſtones, ſays — *Quæ modò vena fuit, ſub eodem nomine manſit.*

Veins, in ſtones, are a defect, proceeding uſually from an inequality in their conſiſtence, as to hard, and ſoft; which makes the ſtone crack, and ſhiver in thoſe parts.

Vein is alſo applied, in the ſame ſenſe with *ſtratum*, to the various diſpoſitions and kinds of earth met withal in digging. See Stratum.

Thus, we ſay, a *vein* of ſand, another of rock, &c. a *vein* of ocher, vitriol, allom, calamine, coal, &c. — Mineral waters acquire their different qualities, by paſſing through *veins* of vitriol, ſulphur, &c. See Mineral.

In the ſame ſenſe, we ſay, a *vein* of gold, ſilver, quickſilver, &c. meaning certain parts of the earth, wherein the oar or glebe of thoſe metals is found; and which is diſtributed into divers branches, like the *veins* in the body. See Ore, Mine, &c.

Tavernier gives us a deſcription of the *veins* in the diamond mines in Golconda, with the manner of digging them. See Diamond.

In digging of coal-pits, they meet with a variety of *veins*, the order, &c. of which, is different, in different places: in the *Philoſophical Tranſactions*, N°. 360. the *veins* in thoſe famous coal-mines at Mendip, in Somerſetſhire, are obſerved to be, (below the turf, or loam, or malm, a reddiſh fire-ſtone; the coal clives, which is blackiſh rock;) the *ſtinking vein*, a hard coal for mechanic uſes; five feet below which, is the *catſhead vein*, 22 feet thick, intermixed with lumps of ſtone; at a like diſtance below which, is the *three-coal vein*, divided into three kinds of coal, and about three feet thick.

The *veins* hitherto mentioned, are frequently worked in the ſame pit. — The next is the *peaw vein*, which is intermixed with cockle-ſhells, and fern-branches, uſually wrought in a ſeparate pit: though its depth below the *three-coal vein* be only above five feet, yet the cliff between is very hard, and liable to water: this *vein* is about a yard thick; and the like diſtance below it, is the *ſmith's-coal vein*: beneath which, is the *ſhelly vein*; and under that, a *vein* of 10 inches, little worth, and ſeldom wrought. See Coal.

The ſame *veins* are found in a place 7 or 8 miles apart. — All the *veins* lie obliquely, or ſhelving, like the ſide of a houſe: the obliquity, or *pitch*, as they term it, is about 22 inches in a fathom; which, when it riſes to the land, is called *crop*, and in ſome places *baſſeting*.

In digging to the ſouth-weſt, they oft meet with ridges, which cauſe the *vein* to *trap up*; i. e. being cut off by the ridges, they find it over their heads, when they are through the ridge: on the contrary, working through a ridge to the north-eaſt, they ſay, it *traps down*, i. e. they find it under their feet.

VEJOURS, Visores, in law, are thoſe ſent by the court, to take view of any place in queſtion, for the better deciſion of the right. See View.

It is alſo uſed for thoſe ſent to view ſuch as eſſoign themſelves *de malo lecti*; whether, in truth, they be ſuch as that they cannot appear, or whether they counterfeit. See Essoign, Viewer, *&c.*

VELAMEN, is uſed by ſome ſurgeons, for the bag, ſkin, or bladder of an impoſthume, or ſwelling. See Cystis, Tumor, Abscess, *&c.*

VELAMENTUM *Bombycinum*, a name which ſome anatomiſts give to the velvet membrane, or inner ſkin of the inteſtines. See Intestines.

VELARIUS, in antiquity, an officer in the court of the Roman emperors; being a kind of uſher, whoſe poſt was behind the curtain, *vela*, in the prince's apartment; as that of the chancellors was at the entry of the baluſtrade, *cancelli*; and that of the *oſtiarii* at the door.

The *velarii* had a ſuperior, of the ſame denomination, who commanded them; as we find in two inſcriptions, quoted by Salmaſius, in his notes on Vopiſcus; and by a third in Gruter. — The firſt is,

D. M.
TI. CL. HALLUS
PRÆPOSITUS VELARIORUM
DOMUS AUGUSTANAE
FEC. SIBI ET FILIIS SUIS L. L.
POST. EORUM.

Salmaſius, and others, for HALLUS, which is in the ſtone whereon the inſcription is at Rome, put THALLUS: though we find mention of the ſame Hallus, as a Samaritan by nation, and Tiberius's freedman, in Joſephus; which ſhews that the *velarii*, and their chief, were very antient officers, and in uſe among the firſt emperors.

VELITES, in the Roman army, a kind of antient ſoldiery, who were armed lightly with a javelin, a caſk, cuiraſſe, and ſhield. See Triarii.

VELLEITY, Velleitas, in the ſchool philoſophy, is uſually defined a languid, cold, and remiſs will. See Will. Others ſay, it implies an impotency of obtaining what we require. — Others will have it, a ſlight deſire for ſomething, which a perſon does not matter much, or is too indolent to ſeek: as, *catus amat piſcem, ſed non vult tangere lympham.*

VELLICATION, among phyſicians, the act of twitching. — The word is more particularly applied to a ſort of ſudden convulſions, that happen to the fibres of the muſcles. See Fibre, and Convulsion.

VELOCITY, in mechanics, *ſwiftneſs*; that affection of motion, whereby a moveable is diſpoſed to run over a certain ſpace in a certain time. See Motion.

It is alſo called *celerity*; and is ſtill proportional to the ſpace moved. — The greateſt *velocity* wherewith a ball can deſcend, by virtue of its ſpecific weight, in a reſiſting medium, is that which the ſame ball would acquire by falling in an unreſiſting medium, through a ſpace which is to four thirds of its diameter, as the denſity of the ball to the denſity of the fluid. See Descent.

Huygens, Leibnitz, Bernoulli, Wolfius, and the foreign mathematicians, hold, that the momenta, or forces of falling bodies, at the end of their falls, are as the ſquares of their *velocities* into the quantity of matter; the Engliſh mathematicians, on the contrary, maintain them to be as the *velocities* themſelves, into the quantity of matter. See Momentum.

Velocity is conceived, either as *abſolute*, or *relative*: the *velocity* we have hitherto conſidered, is *ſimple*, or *abſolute*, with reſpect to a certain ſpace, moved in a certain time.

Relative, or *reſpective velocity*, is that wherewith two diſtant bodies approach each other, and come to meet in a longer, or leſs time: whether only one of them moves, towards the other at reſt, or whether they both move; which may happen two ways; either by two bodies mutually approaching each other in the ſame right line or by two bodies moving the ſame way in the ſame line, only the foremoſt ſlower than the other; for by this means, this will overtake that. And, as they come to meet, in a greater or leſs time, the *relative velocity* is greater or leſs.

Thus, if two bodies come nearer each other by two feet, in one ſecond of time; their reſpective *velocity* is double that of two others, which only approach one foot in the ſame time.

Velocities *of bodies moving in Curves.* — According to Galileo's ſyſtem of the fall of heavy bodies, now admitted by all philoſophers, the *velocities* of a body falling vertically, are, each moment of its fall, as the roots of the heighths from whence it has fallen; reckoning from the beginning thereof. Hence that author gathered, that if a body fall along an inclined plane, the *velocities* it has at the different times, will be in the ſame ratio: for ſince its *velocity* is all owing to its fall, and it only falls as much as there is perpendicular heighth in the inclined plane; the *velocity* ſhould be meaſured by that heighth, as much as if it were vertical.

The ſame principle, likewiſe, led him to conclude, that if a body fall through two contiguous inclined planes, making an angle between them, much like a ſtick when broke, the *velocity* would be regulated after the ſame manner, by the vertical heighth of the two planes taken together: for it is only this heighth it falls; and from its fall it has all its *velocity*.

The concluſion was univerſally admitted, till the year 1693, when M. Varignon demonſtrated it to be falſe: from his demonſtration, it ſhould ſeem to follow, that the *velocities* of a body falling along the cavity of a curve, for inſtance, of a cycloid; ought not to be as the roots of the heighths; ſince a curve is only a ſeries of an infinity of infinitely little contiguous planes, inclined towards one another. So that Galileo's propoſition would ſeem to fail in this caſe too, and yet it holds good; only with ſome reſtriction.

All this mixture of truths and errors, ſo near akin to each other, ſhewed that they had not got hold of the firſt principles; M. Varignon, therefore, undertook to clear what related to the *velocities* of falling bodies; and to ſet the whole matter in a new light: he ſtill ſuppoſes Galileo's firſt ſyſtem, that the *velocities*, at the different time of a vertical fall, are as the roots of the correſpondent heighths. — The great principle he makes uſe of to attain his end, is that of compound motion. See Composition *of Motion*.

If a body fall along two contiguous inclined planes, making an obtuſe angle, or a kind of concavity between them; M. Varignon ſhews, from the compoſition of thoſe motions, that the body, as it meets the ſecond plane, loſes ſomewhat of its *velocity*; and, of conſequence, that it is not the ſame at the end of the fall, as it would be, had it fell through the firſt plane prolonged: ſo that the proportion of the roots of the heighths aſſerted by Galileo, does not here obtain.

The reaſon of the loſs of *velocity*, is, that the motion, which was parallel to the firſt plane, becomes oblique to the ſecond, ſince they make an angle: this motion, which is oblique to the ſecond plane, being conceived as compounded, that part perpendicular to the plane, is loſt, by the oppoſition thereof, and part of the *velocity* along with it: conſequently, the leſs of the perpendicular there is in the oblique motion, or, which is the ſame thing, the leſs the two planes are from being one, *i. e.* the more obtuſe the angle is, the leſs *velocity* does the body loſe.

Now, all the infinitely little, contiguous, inclined planes, whereof a curve conſiſts, making infinitely obtuſe angles among themſelves, a body falling along the concavity of a curve, the loſs of *velocity* it undergoes each inſtant, is infinitely little: but a finite portion of any curve, how little ſoever, conſiſting of an infinity of infinitely little planes, a body moving through it, loſes an infinite number of infinitely little parts of its *velocity*: and an infinity of infinitely little parts, makes an infinity of a higher order, *i. e.* an infinity of infinitely little parts makes a finite magnitude, if they be of the firſt order, or kind; and an infinitely little quantity of the firſt order, if they be of the ſecond; and ſo in infinitum. — Therefore, if the loſſes of *velocity* of a body falling along a curve, be of the firſt order, they will amount to a finite quantity in any finite part of the curve, *&c.* See Curve.

The nature of every curve is abundantly determined, by the ratio of the ordinates, to the correſpondent portions of the axis; and the eſſence of curves in general, may be conceived as conſiſting in this ratio, which is variable a thouſand ways. — Now this ſame ratio will be likewiſe that of two ſimple *velocities*, by whoſe concurrence a body will deſcribe any curve: and, of conſequence, the eſſence of all curves in the general, is the ſame thing as the concourſe, or combination of all the forces, which, taken two by two, may move the ſame body. — Thus we have a moſt ſimple, and general equation, of all poſſible curves, and all poſſible *velocities*. See Curve.

By means of this equation, as ſoon as the two ſimple *velocities* of a body are known, the curve, reſulting from them, is immediately determined. — It is obſervable, that on the foot of this equation, an uniform *velocity*, and a *velocity* that always varies according to the roots of the heighths, produce a parabola, independent of the angle made by the two projectile forces that give the *velocities*: conſequently, a cannon ball, ſhot either horizontally, or obliquely to the horizon, muſt always deſcribe a parabola. — The beſt mathematicians, hitherto, had much ado to prove, that oblique projections formed parabolas, as well as horizontal ones. See Projectile, and Parabola.

To have ſome meaſure of *velocity*, the ſpace is to be divided into as many equal parts, as the time is conceived to be divided into: for the quantity of ſpace, correſponding to that diviſion of time, is the meaſure of the *velocity*.

For an inſtance; ſuppoſe the moveable A, (*Tab. Mechanics, fig.* 40.) travel a ſpace of 80 feet, in 40 ſeconds of time;

dividing 80 by 40, the quotient 2 ſhews the *velocity* of the moveable to be ſuch, as that it paſſes over an interval of two feet in one minute: the *velocity*, therefore, is rightly expreſſed by $\frac{80}{40}$; that is, by 2.

Suppoſe, again, another moveable, B, which, in 30 ſeconds of time, travels 90 feet; the index of the celerity will be 3. Wherefore, ſince in each caſe the meaſure of the ſpace is a foot, which is ſuppoſed every where of the ſame length; and the meaſure of time a ſecond, which is conceived every where of the ſame duration: the indices of the *velocities* 2 and 3, are homogeneal: and therefore, the *velocity* of A, is to the *velocity* of B, as 2 to 3.

Hence, if the ſpace be = *ſ*, and the time = *t*, the *velocity* may be expreſſed by *ſ* : *t*; the ſpace being in a ratio of the time, and the *velocity*. See MOTION.

Circular VELOCITY.	See the article	CIRCULAR.
Meaſure of VELOCITY.		MEASURE.

VELOCITY *of Wind of Light, Sound*, &c. See WIND, LIGHT, SOUND, *&c.*

VELOM *, a kind of parchment, finer, evener, and whiter than the common parchment. See PARCHMENT.

* The word is formed from the French *velin*, of the Latin *vitellinus*, belonging to a calf.

Abortive VELOM. See the article ABORTIVE.

VELVET *, a rich kind of ſtuff, all ſilk, covered on the outſide with a cloſe, ſhort, fine, ſoft ſhag; the other ſide being a very ſtrong, cloſe tiſſue. See PLUSH.

* The word is formed of the French *velours*, which ſignifies the ſame; and which comes from *velu*, a thing covered with hair.

The nap or ſhag, called alſo the *velveting*, of this ſtuff, is formed of part of the threads of the warp, which the workman puts on a long narrow channelled ruler, or needle; and which he afterwards cuts, by drawing a ſharp ſteel tool along the channel of the needle, to the ends of the warp.

The principal and beſt manufactories of *velvet* are in France and Italy, particularly at Venice, Milan, Florence, Genoa, and Lucca: there are others in Holland, ſet up by the French refugees; whereof, that at Haerlem is the moſt conſiderable: but theſe all come ſhort of the beauty of thoſe of France; and, accordingly, are ſold for 10 or 15 *per cent.* leſs. — There are even ſome brought from China, but they are the worſt of all.

There are *velvets* of various kinds, as — *plain*, that is, uniform and ſmooth, without either figures or ſtripes.

Figured VELVET, that is, adorned and worked with divers figures; though the ground be the ſame with the figures; that is, the whole ſurface *velveted.* See FIGURED.

Ramage, or *branched* VELVET, repreſenting long ſtalks, branches, *&c.* on a ſattin ground, which is ſometimes of the ſame colour with the *velvet*, but more uſually of a different one. — Sometimes, inſtead of ſattin, they make the ground of gold and ſilver; whence the denominations of *velvets with gold ground*, &c.

Shorn VELVET, is that wherein the threads, that make the *velveting*, have been ranged in the channelled ruler, but not cut there.

Striped VELVET, is that wherein there are ſtripes of divers colours, running along the warp; whether thoſe ſtripes be partly *velvet*, and partly ſattin, or all *velveted.*

Cut VELVET, is that wherein the ground is a kind of taffety, or gros de Tours, and the figures *velvet.*

Velvets are likewiſe diſtinguiſhed, with regard to their different degrees of ſtrength and goodneſs, into *velvets* of four threads, three threads, two threads, and a thread and half: the firſt are thoſe where there are eight threads of ſhag, or *veleting*, to each tooth of the reed; and the ſecond have only ſix, and the reſt four.

In general, all *velvets*, both worked and cut, ſhorn and flowered, are to have their warp and ſhag of organſin, ſpun and twiſted or thrown in the mill; and their woof of ſilk well boiled, *&c.* They are all of the ſame breadth.

VENA, VEIN, in anatomy. See the article VEIN.

VENA *Cava.* See the article CAVA.

VENA *Porta*, &c. — See *Tab. Anat.* (*Splench.*) *fig.* 5. *lit. i*; ſee alſo the article PORTA, *&c.*

VENA *Pulmonis.* See the article PULMONARY.

VENÆ-SECTIO, the opening of a vein; called alſo *phlebotomy*; and popularly, *bleeding.* See PHLEBOTOMY, *&c.*

VENÆ *Lacteæ.*	See the article	LACTEAL.
VENÆ *Lymphaticæ.*		LYMPHATIC.
VENÆ *Præputii*, &c.		PREPUCE.

VENAL, or VENOUS, among anatomiſts, ſomething that bears a relation to a vein. See VEIN.

The extremities of the cava and pulmonary veins, where they enter the auricles of the heart, are called *venous ſinus's.* See CAVA, and PULMONARY; ſee alſo HEART, and CIRCULATION.

VENAL *, VENALIS, is alſo uſed for ſomething bought with money, or procured by bribes.

* The word is formed from the Latin, *venalis*, to be ſold.

Thus, we ſay, *venal* bards; courtezans, and flatterers are *venal*; juſtice in Turky is *venal*; it muſt be bought of the baſhaws.

In England, there are ſeveral offices in the revenue, policy, &c. *venial*: but this *venality* of offices is no where ſo conſiderable, as in France; where all offices of judicature are bought of the king, and only municipal officers are elected. See OFFICE.

Offices, in England, are *venal* only by a kind of connivance; in France, it is a thing ſolemn, and authorized. — The *venality* was firſt introduced by Louis XII. who, to clear thoſe immenſe debts contracted by his prodeceſſor Charles VIII. without burthening his people with new taxes, bethought himſelf to ſell the offices; and, in reality, made a vaſt ſum thereby.

Francis I. made an advantage of the ſame expedient to get money, and ſold his poſts openly: under the ſame king, it was only accounted a kind of loan; but that loan was no more than a name to diſguiſe a real ſale. — The parliament not being able to reliſh the *venality* of offices, always made the buyer take an oath, that he did not buy his poſt, either directly or indirectly; but there was a tacit exception made, of monies lent the king for being put into them. — At length, the parliament finding its oppoſitions were in vain, and that the traffic of offices were publickly authorized, aboliſhed the oath in 1597.

VENDEE, in law, the perſon to whom any thing is ſold; in contradiſtinction to *vendor*, or the ſeller.

VENDITIONI *Exponas*, is a judicial writ, directed to the ſheriff; commanding him to ſell goods, which he has formerly, by commandment, taken into his hands; for the ſatisfying a judgment given in the king's court.

VENEERING, VANEERING, or FINEERING, a kind of marquetry, or inlaying; whereby ſeveral thin ſlices, or leaves of fine wood, of different kinds, are applied and faſtened on a ground of ſome common wood. See MOSAIC.

There are two kinds of inlaying; the one, which is the more ordinary, goes no further than the making of compartiments of different woods; the other requires a deal more art, and repreſents flowers, birds, and the like figures.

The firſt kind is what we properly call *veneering*; the latter we have already deſcribed under the article MARQUETRY.

The wood intended for *veneering*, is firſt ſawed out into ſlices or leaves about a line thick: in order to ſaw them, the blocks or planks are placed upright, in a kind of ſawing-preſs: — The deſcription whereof may be ſeen under the article PRESS.

Theſe ſlices are afterwards cut into narrow ſlips, and faſhioned divers ways, according to the deſign propoſed: then the joints being carefully adjuſted, and the pieces brought down to their proper thickneſs, with ſeveral planes for the purpoſe; they are glued down on a ground, or block of dry wood, with good ſtrong Engliſh glue.

The pieces thus jointed and glued, the work, if ſmall, is put in a preſs; if large, it is laid on the bench, covered with a board, and preſſed down with poles, or pieces of wood, one end thereof reaches to the cieling of the room, and the other bears on the board.

When the glue is quite dry, they take it out of the preſs, and finiſh it; firſt with little planes, then with divers ſcrapers; ſome whereof reſemble raſps, which take off the dents, *&c.* left by the planes.

When ſufficiently ſcraped, the work is poliſhed with the ſkin of a ſea-dog, wax, and a bruſh and poliſher of ſhave graſs: which is the laſt operation.

VENELLIS. See VICIS *&* *Venellis mundandis.*

VENEREAL, ſomething belonging to Venus. See VENUS.

A *venereal* perſon, is one addicted to *venery*, or *venereal* pleaſures. — *Venereal medicine*, are called *aphrodiſiacs*, *provocatives*, &c.

VENEREAL *Diſeaſe*, *Lues* VENEREA, the *French diſeaſe*, *foul diſeaſe*, *French pox*, or *great pox*, is a contagious malady, contracted by ſome impure humour, generally received in coition; and diſcovering itſelf in ulcers and pains about the genital and other parts. See POX.

It is uſually ſaid to have made its firſt appearance in Europe in the year 1493; though others will have it much older, and contend for its being known to the antients, only under other names.

Mr. Becket, particularly, has attempted to ſhew, that it is the ſame with what among our forefathers was called the *leproſy*; and which, in many of our antient Engliſh writings, charters, *&c.* is called *brenning*, or *burning.*

In order to prove his point, he has ſearched the records relating to the ſtews antiently kept on the Bankſide, Southwark, under the juriſdiction of the biſhop of Wincheſter. See STEWS.

Among other conſtitutions of theſe ſtews, dated 1162, it was appointed, "That no ſtew-holder ſhould keep any woman "that hath the perillous infirmity of BURNING." And in another vellom manuſcript, now in the cuſtody of the biſhop of Wincheſter, dated 1430, it is again ordered, "That no

" ſtew-holder keep any woman within his houſe that hath any " ſickneſs of BRENNING, but that ſhe be putte out, upon " the peyne of making a fine unto the lord of a hundred ſhillings." See BURNING.

To confirm this account, Mr. Becket quotes a deſcription of the diſeaſe from a manuſcript of John Arden, Eſq; ſurgeon to king Richard II. and king Henry IV. Arden defines the diſeaſe called *brenning*, *incendium*, to be a certain inward heat and excoriation of the urethra: which definition, Mr. Becket obſerves, gives us a perfect idea of what we now call a *clap*; agreeable to the lateſt and moſt exact anatomical diſcoveries, and free of all the errors of Platerus, Rondeletius, Bartholin, Wharton, and other later writers on this diſeaſe. See CLAP, and GONORRHÆA.

As to the leproſy being the ſame with this *venereal diſeaſe*, it muſt be owned, there are a good many ſymptoms in the one diſeaſe, which quadrate well enough with thoſe in the other; but then the ſymptoms in each are ſo precarious, that a great deal of ſtreſs cannot be laid hereon. See LEPROSY.

The common tradition is, that the *venereal diſeaſe* firſt broke out in the French army, when it lay encamped before Naples; and that it was owing to ſome unwholeſome food: on which account, the French call it the *Neapolitan diſeaſe*; and the Italians, the *mal Franceſe*.

But others go much higher, and ſuppoſe it to be the ulcer Job complained of ſo grievouſly: and accordingly, in a *Miſſal* printed at Venice in 1542, there is a maſs in honour of S. Job, to be ſaid by thoſe recovered of this diſeaſe; as being ſuppoſed to owe their deliverance to his interceſſion.

But the opinion which prevails moſt among the more knowing of our phyſicians, is, that the diſeaſe is of Indian extraction; and that it was brought hither by the Spaniards from the American iſlands, where it was very common, before ever the Spaniards ſet footing there: whence the Spaniards call it *ſarva des India*, or *las buvas*: notwithſtanding what Herrera ſays, that the Spaniards carried it to Mexico, inſtead of bringing it thence.

Liſter, and others, take it to have had its firſt riſe from ſome of the ſerpentine kind; either from a bite thereof, or from ſome of their fleſh taken as food: this is pretty certain, that men bitten or ſtung by ſcorpions, are greatly eaſed by coition; but the woman, Pliny aſſures us, receives a deal of damage thereby: which is no ſlender argument of the diſeaſe's ariſing from ſome perſon ſo poiſoned.

Liſter adds, there is no room to doubt, but that the lues aroſe from ſome ſuch cauſe; for upon any venomous bite, the penis becomes vehemently extended; and the patient being ſeized with a ſatyriaſis, breaths nothing but rage, and luſt: nature, in effect, ſeeming to direct him to coition for a remedy.

But what proves a remedy to the wounded perſon, proves a diſeaſe to the woman: and from women thus infected, other men, who have to do with them, become infected in their turns; and thus has the diſeaſe been propagated.

The firſt ſymptoms generally ariſing after an affair with an infected perſon, are a heat, ſwelling, and inflammation about the penis, or vulva, with a hotneſs of urine.

The ſecond or third day uſually brings on a gonorrhæa, or dripping, which denominates it a *clap*; and which, in a few days more, is followed by a chordee. See GONORRHÆA, and CHORDEE.

Though ſometimes there is no gonorrhæa, or clap; but the poiſon rather makes its way, through the cutis, to the groin; and there raiſes buboes, with various malignant puſtules in all parts of the body. See BUBO.

Sometimes, alſo, there happen callous ulcers, called *ſhankers*, in the ſcrotum and perinæum; and ſometimes a cancerous and callous ulcer between the prepuce and glans; and in ſome the teſticles ſwell. See SHANKER.

Add to theſe, violent nocturnal pains, nodes, heats in the palms of the hands, and ſoals of the feet; and hence fiſſures, excoriations, condylomata, &c. about the anus; falling of the hair; ruddy, yellow, or livid ſpots; hoarſeneſs, relaxation, and eroſion of the uvula, ulcers of the palate, ozæna, tingling of the ears, deafneſs, blindneſs, itch, conſumption, &c.—But it is rare all theſe ſymptoms happen to the ſame perſon.

The *venereal diſeaſe*, Sydenham obſerves, is communicated by copulation, lactation, handling, ſaliva, ſweat, the genital mucus, and the breath: and in whatever part it is received, it there diſcovers itſelf firſt.—When the infection is received along with the milk from the nurſe, it commonly ſhews itſelf in ſoreneſs and ulcers of the mouth.

The method of cure is various, according to the various ſymptoms, and ſtages: for the firſt ſtage, *viz.* a gonorrhæa virulenta, or clap, ſee CLAP, and GONORRHÆA.

Dr. Pitcairn's method is this:—After two or three vomits, he directs mercurius dulcis, for ſome days, twice a day; when the mouth grows ſore, let alone the mercury for three or four days, and purge every other day. As the mouth grows well again, repeat the uſe of mercury; and thus alternately, till the ſymptoms ceaſe. See MERCURY.

For a confirmed lues, mercurial ſalivation is generally held the only effectual cure: though mercurial frictions, applied in ſuch quantity, and at ſuch intervals as not to raiſe a ſalivation, are held by ſome to be not only eaſier and ſafer, but even more ſucceſsful, in this diſeaſe, than ſalivation itſelf. See SALIVATION.

Dr. Sydenham tells us, he uſes to ſalivate immediately, without any preliminary evacuation, or preparation of the body at all.—His method is this: he preſcribes an unguent of ℥ii of axung. porcin. *i. e.* ſwines-ſeam, and ℥i of mercury. With a third part of this, he orders the patient to anoint his arms and legs, for three nights ſucceſſively, with his own hands; ſo as not to touch either the arm-pits, the groin or the abdomen.—After the third unction, the gums uſually ſwell, and a ptyaliſm comes on.—If it does not come in the time, he directs turbith mineral gr. viii. in conſerve of red roſes; which occaſioning a vomiting, raiſes the ptyaliſm.—And if, afterwards, the ſalivation abate, ere the ſymptoms are quite diſappeared, he orders it to be promoted with a freſh doſe of mercurius dulcis.—The diet, and other regimen, to be the ſame as in a catharſis.

VENERIS *Oeſtrum*, *the ſtimulus or incentive of venery*; is an appellation given, by ſome anatomiſts, to the clitoris. See CLITORIS.

VENERIS *Oeſtrum*, is alſo uſed by others for the tranſport of love, or the utmoſt ecſtaſy of deſire, or enjoyment in coition. See ORGASM.

Some are of opinion, that infectious women are the moſt apt to communicate the poiſon, when they are thus excited with deſire; whereas, with indifference, they may admit the ſame intercourſe, without giving the infection.

VENERIS *Ens*. See the article ENS.

VENERY*, is uſed for the act of copulation, or coition of the two ſexes. See COITION, and GENERATION.

* It takes its name from *Venus*, the ſuppoſed deity of the paſſion of love.

VENERY, alſo denotes the arts or exerciſe of hunting wild beaſts; which are alſo called *beaſts of venery*, and *beaſts of foreſt*. See HUNTING.

Such are the hare, hart, hind, boar, and wolf. See BEAST.

VENEW. See the article VENUE.

VENIA*, among our antient writers, denotes a kneeling, or low proſtration to the ground; uſed by penitents. See GENUFLEXION.

* Walſingham, p 196. *Rege interim proſtrato in longa* venia.—*Per* venias *centum verrunt barbis pavimentum*.

VENIAL, a term in the Romiſh theology, applied to ſlight ſins, and ſuch as eaſily obtain pardon. See SIN.

In confeſſing to the prieſt, people are not abliged to accuſe themſelves of all their *venial* ſins.—The thing that gives the greateſt embarras to the Romiſh caſuiſts, is to diſtinguiſh between *venial* and mortal ſins.

The Reformed reject this diſtinction of *venial* and *mortal* ſins; and maintain, that all ſins, how grievous ſoever, are *venial*; and all ſins, how ſlight ſoever, are mortal: And the reaſon they urge is, that all ſins, though of their own nature mortal, yet become *venial*, or pardonable, by virtue of our Saviour's paſſion, to all ſuch that fulfil the conditions on which it is offered in the goſpel.—To which the Romaniſts anſwer, That the chief of theſe conditions is confeſſion. See CONFESSION, and ABSOLUTION.

VENIRE *Facias*, in law, is a judicial writ, lying where two parties plead, and come to iſſue; directed to the ſheriff, to cauſe twelve men of the ſame neighbourhood to meet to try the ſame, and ſay the truth upon the iſſue taken. See TWELVE-MEN, and VENUE.

If this inqueſt come not at the day of the writ returned; then ſhall go an habeas corpus, and after that a diſtreſs, until they come.

VENIRE *Facias tot Matronas*. See VENTRE *Inſpiciendo*.

VENISON*, VINAISON, the fleſh of beaſts of game, or of animals to be caught in the way of game, *i. e.* by hunting, &c. as deer, hare, &c. See GAME.

* The word is French, *venaiſon*; formed of the Latin *venatio*, hunting. See HUNTING.

Beaſts of **VENISON**. See the article BEAST.

VENOM, VENENUM. See the article POISON.

The terms *venom* and *poiſon* only differ from each other in this, that the latter is more frequently uſed where the noxious matter is taken inwardly, as in foods, drinks, &c. and the former, where it is applied outwardly, as in ſtings and bites of ſerpents, ſcorpions, vipers, ſpiders, &c.

The pike is ſaid to have a *venomous* tooth.—All *venomous* beaſts in the general, have that quality in a greater degree, when bred in mountainous and dry places, than when in wet and marſhy places; the ſouthern more than the northern; thoſe hungry and enraged, than others; and in ſummer more than winter. See VIPER.

VENOUS, VENOSUS. See the article VENAL.

VENOUS *Artery*, *Arteria* VENOSA. See ARTERY, LUNGS, CIRCULATION, *&c.*

VENT*, VENT-HOLE, or *Spiracle*, a little aperture left in the tubes, or pipes of fountains, to facilitate the air's eſcape; or, on occaſion, to give them air; as in froſty weather, *&c.* for want of which they are apt to burſt. See FOUNTAIN.

* The word is formed from the Latin *ventus*, wind.

A *vent*, taken in this ſenſe, is properly the end of a pipe, placed erect, and reaching above ground; uſually ſoldered to the turns, or elbows of pipes. — The *vents* of large pipes, are to be as high as the ſuperficies of the reſervoir; unleſs there be a valve in them.

VENT is alſo uſed for a little hole, pierced in veſſels of wine, beer, *&c.* that are on tap; and which admits air enough to make the liquor run, but not ſo much as to corrupt and ſpoil it.

VENT, again, is applied to the covers in wind-furnaces, whereby the air enters, which ſerves them for bellows; and which are ſtopped with regiſters, or ſlices, according to the degree of heat required; as in the furnaces of glaſs-houſes, eſſayers, *&c.* See BELLOWS, FURNACE, *&c.*

VENT is alſo uſed for a pipe of lead, or potter's ware; one end whereof opens into the cell of a neceſſary houſe, and the other reaches to the roof of the houſe; to give room for the corrupt fetid air to exhale.

There are alſo *vents*, or apertures made in the walls which ſuſtain terraſſes, to furniſh air, and give a paſſage for the waters.

This kind of *vent* the Italians, and we from them, call a *barbacane*. See BARBACANE.

Port-**VENT**. Se the article PORT-*Vent*.

VENTER, *Belly*, in anatomy, a cavity in the body of an animal, containing viſcera, or other organs neceſſary for the performance of divers functions. See BODY, VISCERA, *&c.*

Phyſicians divide the human body into three *venters*, regions, or cavities; the firſt, the *head*, containing the brain, *&c.* See HEAD, and BRAIN.

The ſecond, the *breaſt*, or *thorax*, as far as the diaphragm, containing the organs of reſpiration. See THORAX, LUNGS, *&c.*

The third, which is what we more commonly call the *venter*, or *belly*, is that wherein the inteſtines, and the organs of generation and digeſtion are contained; called by anatomiſts the *abdomen*. See ABDOMEN.

VENTER, or *Belly*, is alſo popularly uſed for the exterior part of the lower *venter*. — In which ſenſe, we ſay, the navel is in the middle of the *venter*, &c.

VENTER is alſo uſed for the ventricle, or ſtomach; becauſe that part is incloſed in the cavity thereof. See VENTRICLE. — In this ſenſe it is, that Jonas is ſaid in ſcripture to have been three days in the whale's belly.

VENTER is alſo uſed for the womb, or uterus of women. — And hence the writ *de ventre inſpiciendo*. See VENTRE *Inſpiciendo*.

Hence, alſo, in the civil law, we ſay, *partus ſequitur ventrem*, the child follows the belly; meaning that its condition is either free or ſervile, according to that of its mother. See MARRIAGE.

They alſo ſay, to *appoint a curator for the belly*, with regard to poſthumous children, yet in the mother's womb. See POSTHUMUS. — With regard to princes, the *venter*, or belly has been ſometimes crowned, in form.

VENTER is alſo uſed, in ſpeaking of a partition of the effects of a father and mother, among children born, or accruing from different marriages.

This partition is ſo ordered, as that a ſingle child of one marriage, or *venter*, takes as much as ſeveral of another mariage, or *venter*: in order to which, the eſtate is divided into ſo many parts, as there have been *venters*, or marriages.

VENTER is alſo uſed for the children, whereof a woman is delivered at one pregnancy. — Thus, two twins are ſaid to be of the ſame *venter*.

Many people take for a fable, what is related of the counteſs of Holland, *viz.* that ſhe had 365 children at one *venter*, all living and baptized: and yet the ſtory is very gravely related by abundance of authors; and the font, or baſon, is ſtill ſhewn in the church where they were baptized; with a kind of monument of the fact inſcribed thereon. See FOETUS.

VENTER, or *belly* of a muſcle, is the fleſhy, or body part thereof; as contradiſtinguiſhed from the two tendons, its extreams; one whereof is called the *head*, and the other the *tail* of the muſcle. See MUSCLE.

VENTER *Draconis*, *Dragon's belly*, in aſtronomy, denotes the middle of a planet's orbit; or that part moſt remote from the nodes, *i. e.* from the dragon's head and tail; being the part which has the greateſt latitude, or is at the greateſt diſtance from the ecliptic. See ORBIT, and NODE.

There are two points under this denomination, in each orbit: that towards the ſouth, is alſo called the *ſouthern limit*, and that towards the north, the *northern limit*. See LIMITS.

The moon has 5 degrees of latitude, when in the dragon's belly; and is 90 degrees diſtant from the nodes. See LATITUDE.

VENTER *Equi*, *Horſe's belly*, among chymiſts, denotes horſe-dung, or a dunghil, wherein are incloſed certain veſſels for particular operations, to be performed by means of the gentle heat thereof. See FIRE, HEAT, BATH, *&c.*

VENTIDUCTS, in building, are ſpiracles, or ſubterraneous places, where freſh, cool winds being kept, are made to communicate, by means of tubes, funnels, or vaults, with the chambers, or other apartments of a houſe; to cool them in ſultry weather.

Theſe are much in uſe in Italy, where they are called *ventidotti*. — Among the French they are denominated *priſons des vents*, and *palais d'Eole*. See BUILDING, HOUSE, *&c.*

VENTOSA *Spina*. See the article SPINA *Ventoſa*.

VENTOSITY, in medicine. See the article FLATUS.

VENTRE *Inſpiciendo*, a writ for the ſearch of a woman that ſays ſhe is with child, and thereby holds land from him that is, otherwiſe, next heir at law.

VENTRICLE, VENTRICULUS, *q. d. little belly*, in anatomy a diminutive of *venter*; ſignifying a cavity, ſmaller than what we expreſs by a venter; or rather, a diviſion of a venter; or ſome ſmaller cavity, contained in a larger. See VENTER.

There are two cavities in the heart, adjoining to the auricles; and four in the brain; called *ventricles*; which ſee explained under the articles HEART, and BRAIN.

The right ventricle of the heart, in relaxing, admits the blood by the right auricle from the cava; and, contracting, drives it out into the pulmonary arteries; the *left*, receiving the blood by the left auricle, from the lungs, drives it out into the aorta. — See *Tab. Anat. (Angeiol.) fig.* 9. *lit. c.* ſee alſo the articles CAVA, AORTA, and LUNGS; SYSTOLE, DIASTOLE, CIRCULATION, *&c.*

VENTRICLE, or VENTRICULUS, by way of eminence thus called, is the ſame with the ſtomach. See STOMACH.

For the action of the VENTRICLE *in vomiting*, ſee VOMITING.

VENTRICULI *Ardor*. See the article ARDOR.

VENTRILOQUOUS*, VENTRILOQUUS, *Gaſtriloquous* or *Engaſtrimythus*, a term applied to perſons who ſpeak inwardly, having a peculiar art of forming ſpeech, by drawing the air into the lungs; ſo that the voice proceeding out of the thorax, to a by-ſtander ſeems to come from a diſtance. See ENGASTRIMYTHUS, GASTRILOQUOUS.

* The word is compounded of *venter*, belly, and *loquor*, I ſpeak.

Such a perſon we had lately in London, a ſmith by profeſſion, who had the faculty in ſuch perfection, that he could make his voice appear, now, as if it came out of the cellar; and the next minute, as if in an upper room; and no body preſent perceive that he ſpoke at all: accordingly, he has frequently called a perſon firſt up, then down ſtairs; then out of doors, then this way, then that, without ſtirring from his ſeat, or appearing to ſpeak at all.

Rolandus, in his *Agloſſoſtomographia*, mentions, that if the mediaſtinum, which is naturally a ſingle membrane, be divided into two parts, the ſpeech will ſeem to come out of the breaſt; ſo that the by-ſtanders will fancy the perſon poſſeſſed. See ENGASTRIMANDER.

VENTURINE, or ADVENTURINE, is ſometimes uſed for the fineſt and ſlendereſt gold wire, uſed by embroiderers, *&c.* See GOLD WIRE.

When reduced into powder, as fine as it can be clipped, or filed, this powder may be ſtrewed on the firſt layer of pure varniſh, made uſe of in japanning, after the varniſh is dry, in order to lay any colour over it. See JAPANNING.

VENUE, or VENEW, in law, a neighbouring, or near place. — *Locus quem vicini habitant.*

Thus, we ſay, twelve of the aſſizes ought to be of the ſame *venue* where the demand is made. See ASSISE.

— "And alſo return, in every ſuch pannel, upon the venire facias, ſix ſufficient hundreders, at the leaſt, if there be ſo many within the hundred where the venire lies." *Stat.* 25 *Hen.* VIII. See VENIRE *Facias*.

VENUS, in aſtronomy, one of the inferior planets; denoted by the character, ♀. See PLANET.

Venus is eaſily diſtinguiſhed by her brightneſs, and whiteneſs, which exceeds that of all the other planets, and which is ſo conſiderable, that, in a duſky place, ſhe projects a ſenſible ſhadow. — Her place is between the earth and Mercury.

She conſtantly attends the ſun, and never departs from him above 47 degrees: when ſhe goes before the ſun, that is, riſes from him, ſhe is called *phoſphorus*, or *lucifer*, or the *morning ſtar*; and when ſhe follows him, that is, ſets after him, *heſperus*, or *veſper*, or the *evening ſtar*. See PHOSPHORUS, VESPER, *&c.*

The ſemidiameter of *Venus*, is to that of the earth, as 10 to 19; her diſtance from the ſun is $\frac{722}{1000}$ of the earth's diſtance from the ſun: her excentricity 5; the inclination of her orbit 3° 23′. See INCLINATION, EXCENTRICITY, &c.

Her periodical courſe round the ſun performed in 224 days 17 hours; and her motion round her own axis, in 23 hours. See PERIOD, and REVOLUTION.

Her greateſt diſtance from the earth, according to Caſſini, is 38000 ſemidiameters of the earth; and her ſmalleſt 6000. See DISTANCE. — Her parallax is 3 minutes. See PARALLAX.

Venus, when viewed through a teleſcope, is rarely ſeen to ſhine with a full face, but has phaſes juſt like thoſe of the moon; being now gibbous, now horned, &c. and her illumined part conſtantly turned towards the ſun, *i. e.* it looks towards the eaſt, when *phoſphorus*, and towards the weſt, when *heſperus*. See PHASES.

De la Hire, in 1700, through a teleſcope of 16 feet, diſcovered mountains in *Venus*; which he found to be larger than thoſe in the moon. See MOON.

And Caſſini, and Campani, in the years 1665, and 1666, diſcovered ſpots in her face: from the appearances of which, he aſcertained her motion round her axis. See SPOTS, MACULÆ, &c.

Sometimes ſhe is ſeen in the diſk of the ſun, in form of a dark, round ſpot. See TRANSIT.

In 1672, and and 1686, Caſſini, with a teleſcope of 54 feet, thought he ſaw a ſatellite moving round this planet, and diſtant from it about ⅗ of *Venus*'s diameter. — It had the ſame phaſes as *Venus*, but without any well defined form; and its diameter ſcarce exceeded ¼ of that of *Venus*.

Dr. Gregory thinks it more than probable, that this was a ſatellite; and ſuppoſes the reaſon why it is not uſually ſeen, to be the unfitneſs of its ſurface, to reflect the rays of the ſun's light; as is the caſe of the ſpots in the moon: of which, if the whole diſk of the moon were compoſed, he thinks, that planet could not be ſeen as far as to *Venus*. See SATELLITE.

The phænomena of *Venus*, evidently ſhew the falſity of the Ptolemaic ſyſtem: for that ſyſtem ſuppoſes, that *Venus's* orb, or heaven, encloſes the earth; paſſing between the ſun and Mercury. — And yet all our obſervations agree, that *Venus* is ſometimes on this ſide the ſun, and ſometimes on that; nor did ever any body ſee the earth between *Venus* and the ſun: which yet muſt frequently happen, if *Venus* revolved round the earth in a heaven below the ſun. See SYSTEM, EARTH, &c.

VENUS, in chymiſtry, is uſed for the metal *copper*. See COPPER.

Its character is ♀; which, ſay the adepti, expreſſes it to be gold, only joined with ſome corroſive and arſenical menſtruum; which removed, copper would be gold. See GOLD.

Venus is univerſally allowed, by the chymiſts, &c. to be one of the moſt powerful medicines in nature: of this, is ſaid to have been compoſed the famous Butler's ſtone, which cured moſt diſeaſes by only licking it. — Of this is compoſed that noble remedy of Van Helmont, *viz.* the ſulphur of vitriol, or ens vitrioli, fixed by calcination, and cohobation. — Of the ens vitrioli of *Venus*, is likewiſe compoſed Mr. Boyle's arcanum, the colcothar vitrioli. See VITRIOL.

It is certain, copper is a moſt excellent emetic, and a noble antidote againſt poiſons; for it is no ſooner taken than it exerts its force: whereas other vomitories lie a good while in the ſtomach: but one ſingle grain of ruſt of *Venus* immediately vomits. — Hence ſyrups, that have ſtood over night in copper veſſels, create a vomiting. See EMETIC, VOMITING, &c.

It is alſo an excellent medicine in chronical caſes: hence a famous phyſician is recorded to have cured Charles V. of a dropſy by the uſe of copper.

Venus is diſſoluble by all the ſalts known, both acid, alkaline, and nitrous; nay, even by water and air, conſidered as they contain ſalt. See DISSOLUTION, SALT, &c.

It is from this common reception of all menſtruums, that copper is called *Venus*, q. d. *meretrix publica*, a common proſtitute: though others take the denomination to have been occaſioned by its turning of a ſea-green colour, when diſſolved by acids.

Cryſtals of **VENUS**. See the article CRYSTAL.

Mount of **VENUS**, *Mons* **VENERIS**, among anatomiſts, is a little hairy protuberance, in the middle of the pubes of women; occaſioned by the more than ordinary collection of fat under the ſkin in that place. See PUBES.

Among chiromancers, the *mount of Venus* is a little eminence in the palm of the hand, at the root of one of the fingers.

VERA *Billa*. See the article BILLA.

VERB, in grammar, a word ſerving to expreſs what we affirm of any ſubject, or attribute to it — as the words, *is*, *underſtands*, *hears*, *believes*, &c. See WORD.

The *verb* is thus called of the Latin *verbum*, word, by way of eminence; as being the principal word of a ſentence. See SENTENCE.

The common definition given by grammarians, is, that a *verb* is a word which betokens *being*, *doing*, or *ſuffering*.

To conceive the origin and office of *verbs*, it may be obſerved, that the judgment we make of any thing, as when I ſay *the earth is round*, neceſſarily includes three terms. See TERM. — The firſt, called the *ſubject*, is the thing we affirm of, *e. gr.* earth. See SUBJECT. — The ſecond, called the *attribute*, is the thing affirmed, *e. gr.* round. See ATTRIBUTE. — The third, *is*, connects thoſe two terms, together, and expreſſes the action of the mind, *affirming* the attribute of the ſubject.

This laſt is what we properly call the *verb*; and which ſome of our later grammarians, particularly the port royaliſts, chuſe to call by a more ſignificant word, *affirmation*. — The reaſon is, that its principal uſe is to ſignify *affirmation*; that is, to ſhew the diſcourſe, wherein that word is uſed, is the diſcourſe of a man who does not only conceive things, but judges and affirms ſomewhat of them.

By this circumſtance, a *verb* is diſtinguiſhed from nouns which alſo ſignify an affirmation, as *affirmans affirmatio*; thoſe only ſignify an affirmation, as that, by a reflection of of the mind, is rendered an object of thought: ſo that they do not ſhew, that the perſon who uſes them *affirms*, but only that he conceives *an affirmation*. See AFFIRMATION.

Though the principal uſe of *verbs* be to ſignify affirmation; they alſo ſerve to expreſs the other motions of the ſoul: as to deſire, pray, command, &c. but this they only do, by changing the mood, or inflection. See MOOD.

Here, we only conſider the *verb* in its primary ſignification, which is that it has in the indicative mood. — On this footing, the *verb* ſhould have no other uſe, but to mark the connection which we make in the mind, between the two terms of a propoſition; but the *verb eſſe*, to be, is the only one that has retained this ſimplicity: nor, in ſtrictneſs, has this retained it, but in the third perſon, as *eſt*, is.

In effect, men being naturally inclined to ſhorten their expreſſions, to the affirmation they have almoſt always added other ſignifications, in the ſame word: thus, *e. gr.* they add that of ſome attribute, ſo as that two words make a propoſition; as in *Petrus vivit*, Peter lives: where *vivit* includes both the attribute and affirmation; it being the ſame thing to ſay *Peter lives*, as that *Peter is living*. — And hence the great variety of *verbs* in every language.

For, had people been contented to give the *verb* its general ſignification, without any additional attribute, each language would only have needed one *verb*, *viz.* the *verb* ſubſtantive *eſt*, is.

Again, on ſome occaſions, they alſo ſuperadd the ſubject of the propoſition, as *ſum homo*, I am a man: or *vivo*, I live: and hence the diverſity of perſons in *verbs*. See PERSON.

Again, we alſo add to the *verb*, a relation to the time, with regard to which we affirm; ſo that one ſingle word, as *cœnaſti*, ſignifies that I attribute to the perſon I ſpeak the action of ſupping, not for the preſent time, but for the paſt: and hence the great diverſity of tenſes in moſt *verbs*. See TENSE.

The diverſity of theſe ſignifications, or additions in the ſame word, has perplexed and deceived many of our beſt authors, in the nature of a *verb*; and led them to conſider it, not according to what is eſſential to it, which is to affirm; but according to ſome of its accidental relations.

Thus, Ariſtotle, taking up with the third of thoſe additional ſignifications, defines *verb* to be *vox ſignificans cum tempore*; a word ſignifying ſomething with time.

Others, as Buxtorf, adding the ſecond relation, define it, *vox flexilis cum tempore & perſona*; a word admitting of divers inflections, in reſpect of time and perſon.

Others, taking up with the firſt of the additional ſignifications, which is that of the attribute, and conſidering that the attributes men ordinarily add to the affirmation, were actions and paſſions; have ſuppoſed the eſſence of a *verb* to conſiſt in ſignifying *actions*, or *paſſions*.

Laſtly, Scaliger imagined he had made a great diſcovery in his book of the *Principles of the Latin tongue*, in ſaying, that the diſtinction of things into *permanentes*, and *fluentes*, into what remain, and what paſs away, is the proper ſource of the diſtinction between *nouns*, and *verbs*; the firſt being to ſignify what remains, and the ſecond what paſſes.

But from what we have ſaid, it is eaſy to perceive, that theſe definitions are all falſe; and that the only true definition is, *vox ſignificans affirmationem*: This definition includes all that is eſſential to the *verb*; but if one would likewiſe include its principal accidents, one might define it, *vox ſignificans affirmationem, cum deſignatione perſonæ, numeri, & temporis*; a word which ſignifies an affirmation, with a deſignation of perſon, number, and tenſe: which is what properly agrees to the *verb* ſubſtantive *eſt*.

For as to other *verbs*, conſidered as becoming different by the union of certain attributes, one may define them thus; *vox ſignificans affirmationem alicujus attributi, cum deſignatione perſonæ, numeri, & temporis*; a word which expreſſes the affirmation of ſome attribute, with a deſignation of perſon, number, and time.

Verbs are variouuſly divided; with reſpect to the ſubject, they are divided into *active*, *paſſive*, *neuter*, &c. with reſpect to their inflections, into *regular*, and *irregular*; *perſonal*, and *imperſonal*; *auxiliary*, *ſubſtantive*, &c.

Verb *Active*, is a *verb* which expreſſes an action that falls on another ſubject, or object. See Active.

Such are, *I love*, *I work*, &c. which ſignify the action of *loving*, *working*, &c. — Of theſe gammarians make three kinds; the one called *tranſitive*, where the action paſſes on a ſubject different from the agent; — *reflected*, where the action returns upon the agent; — *reciprocal*, where the action returns mutually upon the two agents that produc'd it.

Verb *Paſſive*, is that which expreſſes a paſſion; or which receives the action of ſome agent; and which is conjugated in the modern tongues, with the auxiliary *verb*, *I am*, *je ſuis*, *jo ſono*, &c. See Auxiliary.

Some do not allow of any *verbs paſſive* in the modern languages: the reaſon is, what we call *paſſive*, is nothing but the participle of the *verb*, joined with the auxiliary *verb*, *to be*; whereas the *verbs paſſive* of the Latin, *&c.* have their particular terminations. See Passive.

Verb *Neuter*, is that which ſignifies an action that has no particular object whereon to fall; but which, of itſelf, takes up the whole idea of the action — as, *I ſleep*, *thou yawneſt*, *he ſnores*, *we walk*, *you run*, *they ſtand*. See Neuter.

The Latins call them *neuters*, by reaſon they are neither active nor paſſive; though they have the force and ſignification of both: as, *I languiſh*, ſignifies as much as *I am languiſhing*; *I obey*, as much as *I exerciſe obedience*, &c. only that they have no regimen to particularize this ſignification.

Of theſe *verbs*, there are ſome which form their tenſes by the auxiliary *verb*, *to have*; as, *I have ſlept*, *you have run*. — Theſe, grammarians call *neuters active*.

Others there are, which form their compound parts by the auxiliary, *to be*; as, *to come*, *to arrive*, &c. for we ſay, *I am come*, not *I have come*, &c. — Theſe are called *neuters paſſive*.

Verb *Subſtantive*, is that which expreſſes the being, or ſubſtance which the mind forms to itſelf, or ſuppoſes in the object; whether it be there, or not — as, *I am*, *thou art*. See Substantive.

Auxiliary, or *Helping* Veres, are thoſe which ſerve in conjugating active and paſſive *verbs*: ſuch are, *I am*, *I have*, &c. See Auxiliary.

The abbot de Dangeau diſtinguiſhes all *verbs* into two general kinds; *auxiliary verbs*, and *verbs* which make uſe of auxiliaries. This diſtinction ſome may tax as not very juſt; in regard, *auxiliary verbs*, ſometimes make uſe of auxiliaries themſelves; but this does not deſtroy the diviſion; it only ſhews, that the *auxiliary verb* has two formalities, or two different qualities to be conſidered under; in virtue whereof, it conſtitutes, as it were, two ſorts of *verbs*.

The *verbs* which make uſe of auxiliaries, he divides into *active*, *neuter*, and *pronominal*. — *Verbs neuter*, he farther diſtinguiſhes into *neuters active*, and *neuters paſſive*. *Pronominals* he diſtinguiſhes into *identic*, *reciprocal*, *neutrized*, and *paſſived* — But ſeveral of theſe are peculiar to the French language.

Verbs, in the Engliſh, and moſt modern tongues, do not change their endings, as in Latin, to denote the ſeveral times, modes, *&c.* of their being, doing, or ſuffering; but in lieu thereof, make uſe of auxiliaries: as *have*, *am*, *be*, *do*, *will*, *ſhall*, *may*, *can*, &c.

Regular Verbs, are thoſe which are conjugated after ſome one manner, rule, or analogy. See Conjugation.

Irregular, or *Anomalous* Verbs, are thoſe which have ſomething ſingular in the terminations, or formations of their tenſes. See Anomalous.

The irregularities in our Engliſh *verbs*, lie wholly in the formation of the preter tenſe, and paſſive participle. — The firſt, and moſt general irregularity, took its riſe from the quickneſs of our pronunciation, by changing the conſonant *d* into *t*; the vowel *e*, in the regular ending *ed*, being cut off, that the pronunciation might be more ready: thus, for *dwelled*, *keeped*, *ſended*, we ſay, *dwelt*, *kept*, *ſent*.

Veres *imperſonal*, are thoſe which have only the third perſon — as, *it behoves*, &c. See Impersonal.

There are alſo *reduplicative verbs*; as, *reſound*, *recall*, &c. *frequentative verbs*, &c.

VERBAL*, ſomething that belongs to *verbs*, or even to words ſpoke with the mouth. See Oral.

* The word is formed from the Latin, *verbero*, I ſmite.

Verbal nouns, are thoſe formed from verbs. See Noun. — A *verbal contract*, is that made merely by word of mouth; in oppoſition to that made in writing. See Contract, *&c.*

Verbal *Accident*. See the article Accident.

VERBERATION, *ſmiting*, in phyſics, a term uſed to expreſs the cauſe of ſound, which ariſes from a *verberation* of the air, when ſtruck, in divers manners, by the ſeveral parts of the ſonorous body firſt put into a vibratory motion. See Sound.

VERDEGREASE*, or Verdegris, a kind of ruſt of copper, of great uſe among painters for a green colour. See Green, and Colour.

* The word is formed from the Latin, *viride æris*: It is alſo called *ærugo*. Others call it the *flower*, and others the *vitriolic ſalt of copper*; though, in reality, it be the proper ſubſtance of the metal. See Vitriol.

Verdegreaſe is prepared from copper-plates, and rape or huſks of grapes well ſaturated with wine, put up in earthen pots; and ranged ſtratum ſuper ſtratum; that is, firſt rape, then copper; and ſo alternately.

When the pots are filled, they are ſet in a cellar; whence, after ſome time, they are taken out, to gather the *verdegreaſe*, which is a green ruſt covering the plants all over. See Rust, and Copper.

Some talk of *verdegreaſe* made with vinegar, and other corroſive ſalts; but it is a miſtake; the beſt wine being nothing too good for the purpoſe.

Accordingly, the greateſt part of the *verdegreaſe* conſumed in Europe, is made in Languedoc, of the wines of that country; and is exported in cakes of about 25 pounds weight each.

There is but little quite pure: to be good, it muſt be very dry, of a deep green, and pretty clear of white ſpots.

The apothecaries uſe to diſſolve *verdegreaſe* in diſtilled vinegar, and then filtrate and evaporate it in the cellar; upon which it ſhoots into cryſtals. — Theſe cryſtals are uſed among chirurgeons, *&c.* to cleanſe old ulcers, eat off fungous fleſh, *&c.*

VERDERER*, or Verderor, a judicial officer of the king's foreſt, whoſe buſineſs is to look to the vert, and ſee it well maintained. See Vert.

* The word is formed from the Latin, *viridarius*, which Ulpian uſes in the like ſignification.

He is ſworn to keep the aſſizes of the foreſt; as alſo to view, receive, and enroll the attachments and preſentments of all manner of treſpaſſes, relating to vert and veniſon therein. See Forest.

VERDETER. See the article Verditer.

VERDICT*, is the anſwer of the jury given to the court, concerning the matter of fact, in any cauſe, civil or criminal, committed by the court to their trial and examination. See Jury, and Trial.

* It is called *verdict*, for *vere dictum*, q. d. *dictum veritatis*, the dictate of truth.

A *verdict* is either *general*, or *ſpecial*.

General Verdict, is that which is brought into the court in like general terms as the general iſſue: as in action of diſſeiſin, the defendant pleads, no wrong, no diſſeiſin. — Then the iſſue is general, whether the fact be wrong, or not: which being committed to the jury, they, upon conſideration of the evidence, come in and ſay, either for the plaintiff, *That it is a wrong diſſeiſin*; or for the defendant, *That it is no wrong, no diſſeiſin*. See Issue.

Special Verdict, is, when they ſay at large, that ſuch and ſuch a thing they found to be done by the defendant, or tenant; declaring the courſe of the fact, as in their opinion it is proved; and as to the law, upon the fact, proving the judgment of the court.

This *ſpecial verdict*, if it contain any ample declaration of the cauſe from the beginning to the end, is called a *verdict at large*.

Attainder by Verdict. See the article Attainder.

VERDITER, Verdeter, a kind of mineral ſubſtance ſometimes uſed by the painters, *&c.* for a blue, but more uſually mixed with yellow for a green colour. See Green, &c.

Verditer, according to Savary, ought to be made of the lapis armenus; or, at leaſt, of an earthy ſubſtance much like it, brought from the mountains of Hungary, *&c.* only prepared by powdering it, and cleanſing it by lotion. See Armenian *Stone*.

But this ſtone and earth are very rare; and the *verditer* uſed is not a native, but a factitious ſubſtance: the proper way of preparing it, we are told, is by caſting wine or water upon new copper, juſt as it comes red hot out of the furnace, and catching the ſteams which riſe from it upon copper-plates. — Others ſay, it is prepared by diſſolving copper plates in wine, much after the manner of verdegreaſe.

The method in practice, among us, is ſaid to be as follows: — Into an hundred pounds weight of whiting, the refiners pour their copper water, and ſtir them together every day for ſome hours, till the water grows pale: then they pour that away, and ſet it by for farther uſe; and pour on more of the green water, and ſo till the *verditer* be made: which being taken out, is laid on large pieces of chalk in the ſun, till it be dry for the market. *Harris.*

The water mentioned to be poured off from the *verditer*, (which remains at the bottom of the tub) is put into a copper, and boiled till it come to the thickneſs of water-gruel: now, conſiſting principally of ſalt-petre reduced, moſt of the ſpirit of vitriol being gone with the copper into the *verditer*; and a diſh full of this being put into the other materials for aqua fortis, is re-diſtilled, and makes what they call a *double water*, which is near twice as good as that made without it.

VERDOY, in heraldry, is applied to a bordure of a coat of arms; charged with any kinds or parts of flowers, fruits, ſeeds, plants, *&c.*

VERDURE*, the quality of greenneſs. See GREEN.

* The word is French, formed of *verd*, green.

VERGE, VIRGA, a rod, ſwitch, or yard; particularly a ſtick or wand, which perſons are admitted tenants by holding in their hands, ſwearing fealty to the lord of the manor. See VIRGA, and INVESTITURE.

On this account, they are all called *tenants by the verge*. See TENANT.

Dented VERGE, among floriſts, is a jagged edge, or circumference of a leaf. See LEAF, and DENTED.

VERGE is alſo uſed for the compaſs or extent of the king's court; within which is bounded the juriſdiction of the lord ſteward of the king's houſhold. See COURT, STEWARD, HOUSHOLD, &c.

It is thus called, from the *verge* or ſtaff which the marſhal bears.— It was antiently alſo denominated *pax regis*, or the king's peace. See PEACE.

The lord ſteward, by virtue of his office, without any commiſſion, judges of all tranſgreſſions, as treaſons, murders, felonies, bloodſhed, &c. committed in the court, or within the *verge* thereof; which extends, every way, the ſpace of twelve miles from the chief tunnel of the court; only London, by charter, exempted.

Court of VERGE, is a court, or tribunal, in manner of a king's-bench; which takes cognizance of all crimes, and miſdemeanors committed within the *verge*, or juriſdiction of the king's court.

It is held in the compting-houſe, by the lord ſteward, as judge thereof, aſſiſted by other officers of the houſhold; as, the treaſurer, comptroller, cofferer, clerks of the green-cloth, &c. See GREEN-*Cloth*, &c.

VERGE *of Land*, *Virga Terræ*. See the article YARD-*Land*.

VERGERS, VIRGATORES *ſervientes*, are officers who carry white wands before the juſtices of either bench; called alſo, *porters of the verge*. See PORTER.

VERGERS *of cathedral or collegiate churches*, are inferior officers, who go before the biſhop, dean, &c. with a verge, or rod tipped with ſilver.

VERGILIÆ, a conſtellation, whoſe appearance denotes the approach of the ſpring. See SPRING.

According to the poets, they were the daughters of Atlas; and by the Greeks were called *pleiades*: but the Romans named them *vergilæ*. See PLEIADES.

VERIFICATION, the act of proving, or making a thing appear true. See CONFIRMATION, &c.

In the French law, *verifying* is uſed for the recording of the king's edicts, and decrees by the parliament.

VERIFICATIONE *Relicta*. See the article RELICTA.

VERISIMILI. See the article RULE *de veriſimili notitia*.

VERISIMILITUDE. See the article PROBABILITY.

VERJUICE, a juice or liquor drawn from ſour grapes, or apples, unfit for wine, or cider; or from ſweet ones, while yet acid, and unripe. See CIDER.

Its chief uſe is in ſauces, ragouts, &c. though it is alſo an ingredient in ſome medicinal compoſitions; and is uſed by the wax-chandlers to purify their wax.

It has its name from a large ſort of grape, called *verjus*, or *bourdelas*; which is ſaid never to grow perfectly ripe; or rather, which in its utmoſt maturity is too auſtere and ſour to be uſed in wine: whence it is commonly turned into *verjuice*; tho' in France all unripe grapes are denominated *verjus*.

There is alſo a tolerable *verjuice* made of crabs, gathered, laid in a heap to ſweat, the ſtalks, &c. ſeparated; then ſtamped, or ground, and the crab-maſh put in a hair bag; the juice ſqueezed in a preſs, barelled up cloſe, and ſet in a warm place to work for ten or twelve days.

VERMES, in medicine. See the article WORMS.

VERMICELLI*, or VERMICHELLY, a kind of meſs, prepared of flower, cheeſe, yolks of eggs, ſugar, and ſaffron; and reduced into little long pieces, or threads, like worms, by forcing it with a piſton through a number of little holes in the end of a pipe made for the purpoſe.

* The word, in the original Italian, ſignifies *little worms*: they alſo call it *tagliarini*, and *millefanti*.

It was firſt brought from Italy, where it is in great vogue. In effect, it is the great regale of the Italians.— Other nations are not eaſily brought into the taſte of it.— It is chiefly uſed in ſoups and pottages, to warm, provoke venery, &c.

VERMICULAR, an epithet given to any thing that bears a relation, or reſemblance to worms, *vermiculi*. See WORM.

Anatomiſts particularly apply it to the motion of the inteſtines, and certain muſcles of the body. See INTESTINE, &c.

The *vermicular*, or periſtaltic motion of the inteſtines, is performed by the contraction of the fibres thereof, from above downward; as the antiperiſtaltic motion is by their contraction from below upwards. See PERISTALTIC.

The contraction happening in the periſtaltic, which others call the *vermicular motion*, as reſembling the motion of worms, does not affect all the parts of the inteſtines at once; but one part after another,

VERMICULAR, or VERMICULATED *Work*, *Opus vermiculatum*, in ſculpture, a ſort of ornament, conſiſting of frets, or knots, in Moſaic pavements, winding, and repreſenting, in ſome ſort, the tracks made by worms*. See MOSAIC.

* *Quam lepide lexeis compoſitæ, ut teſſerulæ omnes*
Arte pavimento, atque emblemate vermiculato.
Cic. de Orat. lib. III.

VERMICULARES (in anatomy) Muſculi, Tabuli.

VERMIFORMIS, in anatomy, a term applied to various parts in the human body; bearing ſome reſemblance to worms. — Such are the

Proceſſus, or *Apophyſes* VERMIFORMES, two extremities of the cerebellum, ſituate near the fourth ventricle of the brain. See CEREBELLUM, and EPIPHYSES.

VERMIFORMES *Muſculi*, are the four muſcles in each hand and foot, which bring the fingers and toes towards the thumbs and great toes; called alſo *lumbricales*. See LUMBRICALES.

VERMIFUGUS, the ſame with *anthelmintic*. See ANTHELMINTIC, and WORM-*Powder*.

VERMILION, a bright, beautiful red colour; in great eſteem among the antients, under the denomination of *minium*. See RED, COLOUR, MINIUM, &c.

There are two kinds of *vermilion*; the one *natural*, the other *factitious*.

The *natural* is found in ſome ſilver mines, in form of a ruddy ſand; which they prepare, and purify by ſeveral lotions, and coctions.

VERMILION is made of artificial cinnabar, ground up with white wine, and afterwards with the whites of eggs: in this ſtate it is made into cakes, and left to dry. To fit it for uſe, they grind it up a ſecond time with water and whites of eggs, — To purify and heighten its colour, ſome grind it up with urine, or ſpirits of wine, to which a little ſaffron is added.— See CINNABAR.

Some alſo pretend to make *vermilion* of lead, burnt and waſhed; or of ceruſſe, rubified by fire. — But theſe are not properly denominated *vermilion*, but *red lead*. See LEAD.

It is this laſt, however, that ſeems to be the artificial minium of the antients; and accordingly, apothecaries, and painters ſtill give it the name, to enhance the price. See MINIUM.

The antient Greek and Latin authors, have given diver ſfabulous accounts of their minium; and ſeveral of the moderns have adopted their dreams: Theophraſtus attributes the firſt invention of making it to Callias the Athenian; who hit upon it, in endeavouring to draw gold, by fire, out of a red ſand, found in the ſilver mines, in the year of Rome 249.— But Vitruvius ſays, it was diſcovered in the Cilbian fields; where it was drawn from a red ſtone, called by the Greeks *anthrax*.

We have two kinds of *vermilion* from Holland; the one of a deep red, the other pale: but it is the ſame matter at bottom; the difference of colour only proceeding from the cinnabar's being more or leſs ground: when fine ground, the *vermilion* is pale; and this is preferred to the coarſer, and redder.

It is of conſiderable uſe among the painters in oil, and miniature; and likewiſe among the ladies, as a fucus, or paint, to heighthen the complexion of ſuch as are too pale. See PAINTING, MINIATURE, &c.

VERMILION is ſometimes alſo, though improperly, uſed for what we otherwiſe call *kermes*, or *ſcarlet grain*. See KERMES, &c.

VERMINATION, VERMINATIO, the act of breeding worms, and other vermine; particularly bots in cattle, &c.

VERMINATION is ſometimes alſo uſed, among phyſicians, for a ſort of tormina ventris, or wringing of the guts; wherein the patient is affected, as if worms were gnawing his inteſtines. See GRIPES, and TORMINA.

VERMINE, VERMINA, a collective name, including all kinds of little animals, or inſects, which are hurtful or troubleſome to men, beaſts, fruits, &c. as worms, lice, fleas, bugs, caterpillars, ants, flies, &c. See INSECT, WORM, BLIGHT, &c.

VIRMIVOROUS *Animals*, are ſuch as feed upon worms. See ANIMAL.

VERNACULAR, is applied to any thing that is peculiar to ſome one country. See LOCAL, &c.

Whence, diſeaſes which reign moſt in any particular nation, province, or diſtrict, are ſometimes called *vernacular diſeaſes*: more frequently *endemic diſeaſes*. See ENDEMIC, and DISEASE.

Such are the *plica polonica*, *ſcorbutus*, *tarantiſm*, &c. See PLICA, SCORBUTUS, TARANTISM, &c.

VERNAL, ſomething belonging to the ſpring ſeaſon. See SPRING.— Hence, *vernal leaves*, are thoſe leaves of plants which come up in the ſpring, &c. See LEAF.

VERNAL *Signs*, are thoſe which the ſun is in, during the ſpring ſeaſon, *viz.* Aries, Taurus, and Gemini. See SIGN.

VERNAL *Equinox*, is that which happens when the ſun is aſcending from the equator towards the north pole. See EQUINOX.

VERNISH. See the article VARNISH.

VERONICA, a term abbreviated from *vericonica* of *vera icon*, q. d. *true image*; and applied to portraits, or repreſentations of the face of our Saviour on handkerchiefs.

Veronica's are imitations of that celebrated original one, preſerved with great veneration at S. Peter's in Rome; and imagined, by ſome, to be the handkerchief laid over our Saviour's face in the ſepulchre.

The firſt mention we find of this famous relick, is in a ceremonial, complied in 1143, dedicated to pope Celeſtin, by Benedict a canon of S. Peter's: but there is no mention made of the time when it was brought to Rome. — A feaſt is kept in honour thereof in moſt churches, on the Tueſday in quinquageſima week.

It is to be obſerved, that the name *veronica*, is only given to ſuch handkerchiefs as repreſent no more of our Saviour than his face: for ſuch as repreſent his whole body, as that of Beſançon, which ſhews his fore-part at length; and that of Turin, which repreſents both his fore and hind part, as having covered him all over, were never called by this name. The painters ſometimes repreſent the *veronica* as held up by an angel, but moſt commonly by a woman; which woman, the common people imagine to be a ſaint, called Saint *Veronica*. On this principle, ſome people, towards the cloſe of the ninth century, began to fancy there might have been a woman of that name in Jeruſalem, who had preſented her handkerchief to our Saviour, as he went to Calvary, to wipe his face withal, beſmeared, as it was, with ſweat and blood; and that the picture of his face had been miraculouſly impreſſed thereon.

This was no ſooner imagined by ſome, than it was believed by others: and accordingly, we find by the travels of Bernard de Bredemback, dean of Mentz, to the Holy Land, in 1483, printed in 1502, that it was not long ere her very houſe was found out. — From that time the fiction gained ground, and became a current legend.

It was at length added, that this ſame woman, S. *Veronica*, was the woman troubled with the flux of the blood in the goſpel: and accordingly, ſhe was ſoon joined with S. Fiacrius, and invoked together with him againſt the hæmorrhoids.— And hence the eſtabliſhment of feaſts, in honour of S. *Veronica*, in the churches dedicated to S. Fiacrius.

In ſome of theſe churches, particularly at S. Giles's in Valenciennes, this ſaint is commonly called S. *Venice*, by abbreviation from the genitive, *Veronicæ:* and the women have a cuſtom at certain times of the year, to hang linen ſwathes, wherewith they had girt themſelves for nine days, near her ſtatue. — And it is thence, or rather, for our Saviour's picture expreſſed on the linen hankerchief, that the milliners have taken S. *Veronica*, or as they call her, S. *Veniſſe*, or S. *Venecia*, or *Veniſa*, for their tutelary ſaint.

VERRUCA, in medicine. See the article WART.

Hence, *verrucous* is applied to any excreſcencies which have a reſemblance to warts. — There are alſo *verrucous* ulcers, *&c.*

VERRY, in heraldry. See the article VAIRY.

VERSA. See the article VICE *Verſa*.

VERSE, VERSUS, in poetry, a line or part of a diſcourſe, conſiſting of a certain number of long and ſhort ſyllables, which run with an agreeable cadence; the like being alſo reiterated in the courſe of the piece. See POETRY.

This repetition, according to F. Boſſu, is neceſſary to diſtinguiſh the notion of *verſe* from that of proſe: for in proſe, as well as *verſe*, each period and member are parts of diſcourſe, conſiſting of a certain number of long and ſhort ſyllables; only, proſe is continually diverſifying its meaſures, and cadences; and *verſe* repeats them. See PROSE.

This repetition of the poets, appears even in the manner of writing; for one *verſe* being finiſhed, they return to the beginning of another line to write the *verſe* following: and it is to this return, that *verſe* owes its name; *verſus* coming from *vertere*, to *turn*, or *return*.

Accordingly, we find the ſame word uſed, to ſignify any thing that is placed in a certain, regular order: Cicero uſes *verſus* for a line in proſe; Virgil for a row of trees, and even of oars in a galley. But as the regularity of *verſe* carries with it more charms, and requires a greater degree of exactneſs, the word has, in time, become appropriated to poetry.

To make *verſe*, it is not enough that the meaſures and quantities of ſyllables be obſerved, and ſix juſt feet put, one after another, in the ſame line: there are further required certain agreeable cadences, particular tenſes, moods, regimens, and even ſome words unknown in proſe.

But what is chiefly required, is an elevated, bold, figurative manner of diction: this manner, is a thing ſo peculiar to this kind of writing, that without it, the moſt exact arrangement of longs and ſhorts, does not conſtitute *verſe*, ſo much as a ſort of meaſured proſe. See VERSIFICATION.

The Greek and Latin *verſes*, conſiſt of a certain number of feet, diſpoſed in a certain order. See FOOT. — Some have attempted to make French and Engliſh *verſes* on the ſame foundation; but without ſucceſs. See QUANTITY, and HEXAMETER.

Voſſius is very ſevere on the modern *verſe*, and makes it altogether unfit for muſic: Our *verſes*, ſays he, run all as it were on one foot; without diſtinction of members, or parts, and without regard to the natural quantities of ſyllables. — We have no rhythmus at all: and we mind nothing, but to have a certain number of ſyllables in a *verſe*, of whatever nature, and in whatever order. See RHYTHMUS.

Mr. Malcolm vindicates our *verſe* from this imputation. It is true we do not follow the metrical compoſition of the antients; yet we have ſuch a mixture of ſtrong and ſoft, long and ſhort ſyllables, as makes our *verſes* flow, ſmooth or rumbling, ſlow or rapid, agreeable to the ſubject. — Inſtances of all which we have in the following lines:

" Soft is the ſtrain when Zephyr gently blows.
" The hoarſe rough *verſe* ſhould like the torrent roar.
" The line too labours, and the words move ſlow.
" Flies o'er the unbended ears, and ſkims along the main.

By making a ſmall change, or tranſpoſition of a word or ſyllable, in any of theſe *verſes*, any body who has an ear will find, that we make a great matter, of the nature and order of the ſyllables. See NUMBERS.

Voſſius adds, that the antient odes were ſung, as to the rhythmus, in the ſame manner as we ſcan them: every pes being a diſtinct bar, or meaſure, ſeparated by a diſtinct pauſe: though, in reading, that diſtinction was not accurately obſerved.

Laſtly, he obſerves, that their odes had a regular return of the ſame kind of *verſe*; and the ſame quantity of ſyllables, in the ſame place of every *verſe:* whereas, in the modern odes, to follow the natural quantity of our ſyllables, every ſtanza would be a diſtinct ſong. See ODE.

It is next to impoſſible to write proſe without, ſometimes, intermixing *verſe* with it; ſo that Vaugelas's rule, which enjoins us to avoid them, is next to impracticable. — This may be further ſaid, that for ſhort *verſes*, they are ſo little perceived, that it is ſcarce worth while to ſtrain one's ſelf to avoid them; and as to long *verſes*, they are chiefly to be avoided in the ends of periods; for, in the middle, they are ſcarce felt. In the general, rules of this kind muſt be conſidered, as principally regarding numerous *verſes*, and ſuch as are readily diſtinguiſhed by their cadence: thus, in Latin, it is ſcarce poſſible to avoid iambic *verſes*; but hexameters muſt, by all means, be avoided, their cadence being more ſenſible and more ſtudied. See RHYME, *&c.*

VERSES are of various kinds; ſome denominated from the number of feet whereof they are compoſed; as, the *monometer*, *dimeter*, *trimeter*, *tetrameter*, *pentameter*, *hexameter*, * *hendecaſyllabum*, &c.— Some from the kinds of feet uſed in them; as the pyrrhichian, proceleuſmatic, iambic, trochaic, dactylic, anapæſtic, ſpondaic or moloſſean, chor-iambic, iambi-dactylic, or dactylotrochaic. — Sometimes from the names of the inventers, or the authors who have uſed them with moſt ſucceſs: as, the anacreontic, archilochian, hipponactic, pherecratian, glyconian, alcmanian, aſclepiadean, alcaic, ſteſichorian, phaliſcan, ariſtophanian, callimachian, galliambic, phalæcian, and ſapphic. — Sometimes from the ſubject, or the circumſtances of the compoſition; as, the heroic, elegiac, adonic, &c. See HEXAMETER, PENTAMETER, IAMBIC, &c.

* In reckoning the feet of iambics, trochaics, and anapæſtics, each meter is a dipody, or comprehends two feet.— In other verſes a meter is but a ſingle foot.— Hence it is, that the iambic trimeter is alſo called *ſenarium*, becauſe compoſed of ſix feet. *Serv. Centim. p.* 1817.

The morderns have invented *heroic*, or *alexandrine verſes*, which conſiſt of twelve or thirteen ſyllables. See ALAXANDRINE.

The antients, likewiſe, invented various kinds of poetical deviſes in verſe; as *cento's*, *echo's*, and *monorhymes*. See CENTO, ECHO, *&c.*

Equivocal VERSES, thoſe where the ſame words, contained in two lines, carry a different ſenſe. See EQUIVOCAL, *&c.*

Reciprocal VERSES, thoſe which read the ſame backwards as forwards. See RETROGRADE.

Concordant VERSES.		CONCORDANT.
Dactylic VERSES.		DACTYLIC.
Elegiac VERSES.		ELEGIAC.
Feſcennine VERSES.		FESCENNINE.
Heroic VERSE.	See	HEROIC.
Metrical VERSES.		METRICAL.
Rhopalic VERSES.		RHOPALIC.
Serpentine VERSES.		SERPENTINE.
Technical VERSES.		TECHNICAL.

VERSE, is alſo uſed for a part of a chapter, ſection, or paragraph ſubdivided into ſeveral little articles. See CHAPTER.

The whole Bible is divided into chapters; and the chapters ſubdivided into *verſes*. See BIBLE.

The diviſion of *verſes* in the New Teſtament, was firſt made by Robert Stephens: and ſo negligently was it done, that his ſon, Henry Stephens, aſſures us, he worked at it as he travelled from Paris to Lions. — Many learned men find great fault with that diviſion; and yet it is every where followed. M. Simon obſerves, that the Greeks and Latins meant by *verſe*, a line, containing a certain number of words. — He adds, that the authors of thoſe days, to prevent any thing being added or taken away from their works, uſed to mark at the end, the number of *verſes* they contained; but the books themſelves were wrote all running, without any diviſions, points, or the like.

VERSED *ſine of an Arch*, a ſegment of the diameter of a circle, lying between the foot of a right ſine, and the lower extremity of the arch. See ARCH, and COVERSED.

Thus, DE, (*Tab. Trigonometry, fig.* 1.) is the *verſed ſine* of the arch AE. See SINE.

VERSIFICATION, the art, or manner of making verſe; alſo the tune and cadence of verſe. See VERSE.

Verſification, is properly applied to what the poet does more by labour, art, and rule, than by invention, and the genius or furor poeticus.

The matter of *verſification*, is long and ſhort ſyllables, and feet compoſed of them; and its form, the arangement of them, in correct, numerous, and harmonious *verſes*; but this is no more than a mere tranſlator may pretend to, and which the Catilinarian war, put in verſe, might merit. See MEASURE, QUANTITY, CADENCE, RHYTHM, *&c.*

It is with reaſon, therefore, that theſe ſimple matters are diſtinguiſhed from the grand poetry, and called by the name *verſification*. See POETRY.

In effect, there is much the ſame difference between grammar and rhetoric, as between the art of making verſes, and that of inventing poems.

VERSION, a tranſlation of ſome book, or writing, out of one language into another. See TRANSLATION.

VERSO. See the article FOLIO *Verſo*.

VERT, in heraldry, the term for a green colour. See GREEN, and COLOUR.

It is called *vert* in the blazon of the coats of all under the degree of nobles; but in coats of nobles it is called *emerald*; and in thoſe of kings, *Venus*.

In engraving, it is expreſſed by diagonals, or lines drawn athwart, from right to left, from the dexter chief corner, to the ſiniſter baſe. See *Tab. Herald. fig.* 48.

In lieu of *vert*, the French heralds uſe *ſinople*, or ſynople. See SINOPLE.

VERT, or *Green Hue*, in foreſt law, any thing that grows, and bears a green leaf within the foreſt, that may cover a deer. See FOREST, GAME, *&c.*

This is divided into *over-vert*, and *nether-vert*.

Over-VERT is the great woods; which, in law-books, are uſually called *hault-bois*.

Nether-VERT is the under-woods; otherwiſe called *ſub-bois*.

We ſometimes alſo meet with *Special* VERT, which denotes all trees growing in the king's woods ,within the foreſt; and thoſe that grow in other men's woods, if they be ſuch trees as bear fruit to feed the deer.

VERTEBRÆ*, a chain of little bones, reaching from the top of the neck, down the back, to the os ſacrum; and forming a third part of the human ſkeleton, called the *ſpina dorſi*. See SPINE.

* They have their name *à vertendo*; becauſe it is on them the head and trunk turn: the Greeks call them σπονδυλοι, *ſpondyli*, for the ſame reaſon.

The *vertebræ* are 24 in number; ſeven of them belong to the neck, twelve to the back, and five to the loins. See NECK, LOINS, *&c.*

They lie not in a ſtrait line; thoſe of the neck bend inward, and thoſe of the back outwards, for enlarging the cavity of the thorax; and thoſe, again, of the loins bend inwards, and thoſe of the os ſacrum outwards, to enlarge the cavity of the baſon.

The body of each *vertebra* is ſpongious and cavernous; having in the middle a large perforation, through which the medulla ſpinalis paſſes, and ſeven apophyſes, or proceſſes.

The fore-part of this body is round and convex; the hind-part ſomewhat concave: its upper and lower ſides are plain, each covered with a cartilage which is pretty thick forwards, but thin backwards, by means whereof it is, that we bend the body forwards; the cartilages yielding to the preſſure of the bodies of the *vertebræ*, which, in that motion, come cloſer to one another: which could not be effected, if the hard bodies of the *vertebræ* were cloſe to one another.

The proceſſes of each *vertebra* are of three ſorts: two tranſverſe, or lateral; in each of which there is a tendon of the *vertebral* muſcles inſerted: four oblique ones; by which the *vertebræ* are articulated to one another: and one acute, on the hindmoſt part of the *vertebra* —. See *Tab. Anat.* (*Oſteol.*) *fig.* 10. *lit. a. a. b. b. fig.* 7. *lit. a. a. a. a. fig.* 7. *lit. n. n. o. o. o. r. r. ſ. ſ*, &c. *fig.* 11, *lit. b. b. c. c. fig.* 8. *lit. b. b. a. a.*

Theſe proceſſes, which are peculiarly called the *ſpines*, form, with the hinder or concave part of the body of the *vertebræ*, a large hole in each *vertebra*; and all the holes anſwering one another, make a channel for the deſcent of the ſpinal marrow, which ſends out its nerves to the ſeveral parts of the body by pairs, through two ſmall holes, formed by the jointing of four notches, in the ſides of each ſuperior and inferior *vertebra*. See MEDULLA *Spinalis*.

The *vertebræ* are articulated to one another, by ginglymus: for the two deſcending oblique proceſſes of each ſuperior *vertebra* of the neck and back, have a little dimple in their extremities, wherein they receive the extremities of the two aſcending oblique proceſſes of the inferior *vertebræ*; ſo that the two aſcending proceſſes of each *vertebra* of the neck, and back, are received, and the two deſcending do receive, except the firſt of the neck, and laſt of the back; but the aſcending proceſſes of each *vertebra* of the loins receive, and the two deſcending are received; contrary to thoſe of the neck, and back.

The *vertebræ* are all tied together by a hard membrane, made of ſtrong and large fibres: It covers the body of all the *vertebræ* forwards; reaching from the firſt of the neck, to the os ſacrum. — There is another membrane, which lines the canal, made by the large hole of each *vertebra*; which alſo ties them together: beſides, the bodies of each *vertebra* are tied to one another, by the intervening cartilages; and the tendons of the muſcles, which are inſerted in their proceſſes, tie them together behind.

This ſtructure of the ſpine is admirable; for had it been all one bone, we could have had no motion in our backs; had it been of two or three bones articulated for motion, the medulla ſpinalis muſt have been neceſſarily bruiſed at every angle, or joint; beſides, the whole would have not been ſo pliable, for the ſeveral poſtures we have occaſion to put ourſelves in: if it had been made of ſeveral bones, without intervening cartilages, we ſhould have had no more uſe of it, than if it had been but one bone. — If each *vertebra* had had its own diſtinct cartilages, it might have been eaſily diſlocated. — Laſtly, the oblique proceſſes of each ſuperior and inferior *vertebra*, keep the middle one, that it can neither be thruſt backwards nor forwards, ſo as to compaſs the medulla ſpinalis.

The *vertebræ* of the neck differ from the reſt, in that they are ſmaller and harder, their tranſverſe proceſſes perforated for the paſſages of the vertebral veſſels, and their acute proceſſes forked and ſtraight. See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 1. 1. *fig.* 7. *n.* 14. 14. *fig.* 8. and *fig.* 9.

Add, that the firſt and ſecond have ſomething peculiar to themſelves.

The firſt, called *atlas*, is tied to the head; and moves with it upon the ſecond, ſemicircularly. See ATLAS.

The ſecond is called *epiſtrophæus*, *axis*, or *cardo*; alſo *vertebra dentata*: in the middle, between its two oblique aſcending proceſſes, it has a long and round proceſs like a tooth, which is received into a ſinus of the atlas; and upon it, the head with the firſt *vertebra*, turns half round, as upon a hinge, or axis. The extremity of this proceſs, is knit to the occiput, by a ſmall, but ſtrong ligament. — A luxation of this tooth is mortal, becauſe it compreſſes the medulla ſpinalis.

The third is alſo by ſome, though improperly, denominated *axis*.

The *vertebræ* of the back differ from the reſt in this, that they are larger than thoſe of the neck, and ſmaller than thoſe of the loins: their acute proceſſes ſlope downwards upon one another. They have in each ſide of their bodies a ſmall dimple, wherein they receive the round extremities of the ribs: the uppermoſt of them is ſometimes called the *creſt*; the ſecond the *axillaris*; and the reſt *coſtales*. See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 13. 13. *fig.* 7. *n.* 15. 15. *fig.* 10.

The *vertebræ* of the loins, are the broadeſt; and the laſt of them, the largeſt of all the *vertebræ*. See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 14. 14. *fig.* 7. *n.* 16. 16. *fig.* 11.

Though each *vertebra* has but a ſmall motion, yet the motion of them all is conſiderable: the head, we have obſerved, moves only backwards and forwards on the firſt *vertebra*, and ſemicircularly on the ſecond. — The motion of the other *vertebræ* of the neck is not ſo manifeſt, yet is greater than that of the *vertebræ* of the back; becauſe their acute proceſſes are ſhort and ſtraight, and the cartilages, which are between their bodies, thicker. — The *vertebræ* of the back have the leaſt motion of any, becauſe their cartilages are thin, their acute proceſſes long, and very near to one another: and they are fixed to the ribs, which neither move forwards, nor backwards. — The greateſt motion of the back, is performed by the *vertebræ* of the loins; becauſe their cartilages are thicker, and their acute proceſſes are at a greater diſtance from one another: for the thicker the cartilages are, the more we may bend the body forwards; and the greater diſtance there is between the acute proceſſes, the more we may bend backwards.

Such is the ſtructure and motion of the *vertebræ*, when in their natural poſition: but we frequently find them variouſly diſtorted. — If the *vertebræ* of the back ſtick out, it conſtitutes what we call a *bunched back*: and in ſuch caſes, the cartilages between the *vertebræ* are very thin and hard forwards, but conſiderably thick backwards, where the oblique proceſſes of the ſuperior and inferior *vertebræ*, are at a conſiderable diſtance from one another, which diſtance is filled up with a viſcous ſubſtance.

This inequality of the thickneſs of the cartilages happens, either by a relaxation, or a weakneſs of the ligaments and muſcles, faſtened to the back-ſide of the *vertebræ*: in which caſes, their antagoniſts finding no oppoſition, remain in a continual contraction.

The os ſacrum does alſo conſiſt of *vertebræ* in children; which grow ſo cloſe together in adults, that they make but one large and ſolid bone of the figure of an iſoſceles triangle, whoſe baſes is tied to the laſt *verterbra* of the loins, and the upper part of its ſides to the ilia, and its point to the os coccygis. See SACRUM *Os.*

VERTEBRALES, in anatomy, a pair of muſcles, whoſe office is to ſtretch out all the *vertebræ* of the back. See VERTEBRÆ.

VERTEX, in anatomy, the crown of the head; or that uppermoſt and middle part ſituate between the ſinciput and occiput. See HEAD.

Hence, alſo, *vertex* is figuratively uſed for the top of other things. — Thus, the *vertex* of a cone, pyramid, conic ſection, *&c.* is the point of the upper extremity of the axis; or the top of the figure. See CONE, PYRAMID, *&c.*

VERTEX *of an Angle*, is the angular point; or the point A, (*Tab. Geometry, fig.* 91.) wherein the legs meet. See ANGLE.

VERTEX *of a Figure*, is the *vertex* of the angle oppoſite to the baſe. See FIGURE.

Such is the point M, (*Tab. Geometry, fig.* 19.) oppoſite to the baſe KL. See BASS.

VERTEX *of a curve*, is the point A, (*Tab. Geometry, fig.* 51.) from which the diameter is drawn; or the interſection of the diameter, and the curve. See CURVE.

VERTEX *of a Glaſs*, in optics, the ſame with the pole thereof. See POLE, OPTIC *Glaſs*, &c.

VERTEX is alſo uſed, in aſtronomy, for that point of heaven perpendicularly over our heads; properly called the *zenith.* See ZENITH.

Path of the VERTEX. See the article PATH.

VERTICAL *Circle*, in aſtronomy, is a great circle of the ſphere, paſſing through the zenith Z, and nadir N, (*Tab. Aſtronomy, fig.* 6.) and any other given point on the ſurface of the ſphere, as B. See CIRCLE, and SPHERE.

The *vertical circles* are alſo called *azimuths*. See AZIMUTH. — The meridian of any place is a *vertical circle.* See MERIDIAN, *&c.* — All the *vertical circles* interſect each other in the zenith and nadir. See ZENITH, and NADIR.

The uſe of the *vertical circles*, is to meaſure the heighth of the ſtars, and their diſtances from the zenith, which is reckoned on theſe circles; and to find their eaſtern and weſtern amplitude, by obſerving how many degrees the *vertical* wherein the ſtar riſes, or ſets, is diſtant from the meridian. See ALTITUDE, AMPLITUDE, *&c.*

Prime VERTICAL, is that *vertical* circle, or azimuth, which paſſes through the poles of the meridian; or which is perpendicular to the meridian, and paſſes through the equinoctial points. See PRIME *Vertical.*

VERTICAL *of the Sun*, is the *vertical* which paſſes through the centre of the ſun, at any moment of time.

Its uſe is in dialing, to find the declination of the plane whereon the dial is to be drawn; which is done by obſerving how many degrees that *vertical* is diſtant from the meridian, after marking the point, or line of the ſhadow upon the plane, at any times. See DECLINATION.

VERTICAL *Angles.* — Two angles, as, *o* and *x*, (*Tab. Geometry, fig.* 18.) are ſaid to be *vertical*, if the legs of one of them, AE and EC, be only continuations of the legs of the other, DE and BE. See ANGLE, and OPPOSITE.

VERTICAL *Plane*, in perſpective, is a plane perpendicular to the geometrical plane; paſſing through the eye, and cutting the perſpective plane at right angles. See PLANE.

VERTICAL *Plane*, in conics, is a plane paſſing through the vertex of the cone, and parallel to any conic ſection. See PLANE, and CONE.

VERTICAL *Line*, in conics, is a right line drawn on the *vertical plane*, and paſſing through the vertex of the cone. See LINE.

VERTICAL *Dial*, is a ſun-dial, drawn on the plane of a *vertical circle*; or perpendicular to the horizon. See DIAL, *&c.*

Theſe are particularly called *oriental*, eaſt; *occidental*, weſt; *meridional*, ſouth; and *ſeptentrional*, or north *verticals*, when oppoſed to one or other of theſe cardinal points of the horizon. See EAST, WEST, *&c.*

When they do not look preciſely to any of them, they are called *decliners*: and when their plane, or ſurface is not perfectly perpendicular, *recliners*. See DECLINER, RECLINER, *&c.*

VERTICAL *Point*, in aſtronomy, the ſame with *vertex*, or *zenith.*

Hence, a ſtar is ſaid to be *vertical*, when it happens to be in that point which is perpendicularly over any place.

VERTICAL *Line*, in dialing, is a line or any plane perpendicular to the horizon.

This is beſt found and drawn on an erect and reclining plane, by holding up a ſtring and heavy plummet ſteadily, and then marking two points of the ſhadow of the thread on the plane, a good diſtance from one another; and drawing a line through thoſe marks. See DIALING.

VERTICILLATE *Plants*, are ſuch as have their flowers intermixed with ſmall leaves, growing in a kind of whirls about the joints of a ſtalk; as penny-royal, hore-hound, *&c.* See PLANT.

The peculiar characteriſtic of this genus of plants, according to Mr. Ray, is, that their leaves grow by pairs, one juſt againſt another, on the ſtalk: the flower monopetalous, but uſually growing down with a kind of lip, or turning ſomething like the form of a helmet: four ſeeds after each flower; to which the perianthium of the flower ſerves inſtead of a capſula ſeminalis.

The ſame author makes two ſpecies of theſe *verticillate plants.* — 1°. The *fruticoſæ*, or ſuch whoſe ſuperficies is perennial: theſe, again, have either a plain flower, as the chamædrys vulgaris, thucrium, and the marum ſyriacum; or a flower with a lip, which they call a *labiated flower*; or one ſomething in the form of an helmet, which they call *galeated*; as the ſacria ſtæchas, hyſſopus, roſmarinus, ſatureia, marum vulgare, thymum vulgare, and the polium montanum.

2°. The *herbaceæ*, or ſuch whoſe ſtalks are not perennial; theſe are the menthæ, verbena, dictamnus creticus, origanum, majorana, ocimum, horminum, galeopſis, nepeta, betonica, prunella, ſtachys, clinopodium vulgare, lamium, moluca, hedera terreſtris, galericulata, calamintha, meliſſa, marrubium commune, nigrum & aquaticum; chamæpitys, ſcarodonia, ſcordium, bugula, ſyderitis, cardiaca.

VERTICILLATE *Flowers.* See the article FLOWER.

VERTICITY, is that property of the loadſtone, whereby it turns or directs itſelf to ſome peculiar point. See MAGNET.

The attraction of the magnet was known long before its *verticity.* See COMPASS, NEEDLE, *&c.*

VERTIGO*, in medicine, an indiſpoſition of the brain, wherein the patient ſees the objects about him as if they turned round, and fancies he turns round himſelf; though all the while at reſt.

* The word is Latin, formed *à vertendo*, from turning round.

Phyſicians diſtinguiſh two kinds, or rather, two degrees of *vertigoes.* — The firſt, called a *ſimple vertigo*, is when the body and external objects appear to turn round, without any great dimneſs of ſight.

The other, called *ſcotomia*, or *vertigo tenebroſa*, is when the eyes are alſo darkened; and, as it were, covered with a miſt. See SCOTOMIA.

Some make a third ſtage, *viz. vertigo caduca*, wherein the patient actually falls down. — But this ſeems ſcarce to differ from an epilepſy. See EPILEPSY.

Sometimes the *vertigo* is ſeated in the fore-part of the head, and ſometimes in the hind-part: where the latter is much the more dangerous.

Bellini accounts for the *vertigo* very well, from a preternatural motion in the retina: for it is evident, an object will ſeem to move circularly, if the images thereof, painted on the retina, fall ſucceſſively on different parts of the retina. See RETINA, and VISION.

This they may do, either by the object's moving while the eye is at reſt, or from the eye moving while the object reſts; or, laſtly, the object and eye being both at reſt, and the rays falling on the ſame place, by the optic nerve's being alone in motion. For ſince a right and an oblique incident do not excite the ſame tremors in the nerves, and the ſame ſpecies of motion; if the optic nerve only be moved, and the object be at reſt, it will appear to ſhift its ſituation, by the change of the place in which it was repreſented. See VISION.

External cauſes of *virtigines*, are a continued turning round of the body, drunkenneſs, too long faſting, immoderate exerciſe, ſurprize, voracity, much uſe of pulſe, onions, leeks, raddiſhes, cabbage, muſtard, *&c.* and, in the general, whatever may preſs, diſtend, or contract the arteries.

The firſt ſtep in the cure, is bleeding in the jugular, or cupping; then they proceed to an emetic; then a veſicatory on the neck, or a perpetual bliſter, or iſſues; with ſternutatories, and the other medicines that obtain in the apoplexy. See APOPLEXY.

VERTILLAGE, in agriculture, the tilling, or preparing of ground to receive the ſeed, by turning, ſtirring, or toſſing it. See the article VIRTUE.

VERTUE. See the article VIRTUE.

VERTUOSO. See the article VERTUOSO.

VERU-MONTANUM, in anatomy, a kind of little valve, in the place wherein the ejaculatory ducts enter the urethra. See VALVE, URETHRA, *&c.*

Its uſe is, to prevent the urine, in paſſing the urethra, from getting in at thoſe ducts, and ſo mixing with the ſemen. See URINE, *&c.*

VERY* *Lord*, and VERY *Tenant*, are thoſe that are immediate lord and tenant to one another. See LORD, MESN, *&c.*

* " — And know ye, that in taking of leaſes ſix things are neceſſary, *viz. very lord*, and *very tenant*; ſervice behind; the day of the taking; ſeiſin of the ſervices, and within his fee; and that a man is not *very tenant*, until he have atturned to the lord by ſome ſervice. *Old. Nat. Brev.* See TENANT, ATTOURNMENT, *&c.*

VESICA, in anatomy, a *bladder*; a membranous or ſkinny part, in which any humour is contained. See BLADDER, CYSTIS, *&c.*

VESICA *Bilaria*. See VESICULA *Fellis*.

VESICA, among chymiſts, is a large copper veſſel, tinned on the inſide; uſed in diſtilling ardent ſpirits: ſo called, as reſembling the figure of a blown bladder. See DISTILLATION.

VESICÆ *Fundus.*	See the article	FUNDUS.
VESICÆ *Sphincter.*		SPHINCTER.

VESICATORY, VESICATORIUM, an external medicine, ſerving to raiſe a bliſter; whence alſo it is itſelf, though improperly, called a *bliſter*. See EPISPASTIC.

Veſicatories are unguents, cataplaſms, or plaiſters made of ſharp, irritating medicaments, which have a faculty of drawing the humours from within, outwards; inflaming and ulcerating the ſkin, and raiſing veſicæ, or bladders; whence their denomination, *veſicatory*.

We have *veſicatories* made of cantharides, euphorbium, figs, ſublimate of mercury, lapis infernalis, muſtard, anacardium, ſquills, briony, vinegar, pepper, leaven, *&c.* which are incorporated and made up with honey, gums, reſins, *&c.* to bring them to the conſiſtence required. See CANTHARIDES, *&c.*

Veſicatories are a ſtronger ſort of ſinapiſms, and potential cauteries. See SINAPISM, CAUTERY, CAUSTIC, *&c.*

VESICULA, VESICLE, a diminutive of *veſica*; ſignifying a *little bladder*. See VESICA, and BLADDER.

The lungs conſiſt of *veſiculæ*, or lobules of *veſiculæ*, admitting air from the brochiæ; and not only air, but alſo duſt, *&c.* See LOBULE, and LUNGS.

There are ſeveral parts in the body which bear this appellation; as,

VESICULA *fellis*, *ciſtula fellis*, or the *gall-bladder*; which is an oblong membranous veſſel, not unlike a pear both in form and ſize; ſituate in the hollow part of the liver. See LIVER.

It adheres to the liver, not only by its veſſels, which it receives from it, but likewiſe by its membranes, whereof, the external is common to both. — The lower part, which hangs out of the liver, reſts on the pylorus of the ſtomach.

Its trunks, or membranes, are uſually reckoned five; an outer, or common one, from the peritonæum; an inner one, on that ſide which adheres to the liver from the capſula of the porta, and of the porus bilarius. — And three proper ones: the firſt whereof is vaſculous; the ſecond, muſcular; and the third, glandulous.

But Dr. Drake, viewing a piece of dried gall-bladder with a microſcope, found but little reaſon for this accurate diſtinction; the ſeveral orders of fibres of the ſeveral coats appearing to be no other than an infinite perplexity of veſſels diverſly ramified.

The gall-bladder is uſually diſtinguiſhed into the *fundas*, which is the wideſt part; and *collum*, or neck, which is the narroweſt.

The neck of the *veſicula fellis* being prolonged, terminates in a duct, called *meatus cyſticus*, or *bilarius*; which, at about two inches diſtance from the gall-bladder, is joined to the meatus hepaticus; theſe, together, form the ductus communis. See DUCTUS, MEATUS, *&c.*

The uſe of the gall-bladder, is to receive the bile, after its being ſecreted in the glands of the liver; and to diſcharge it by the common duct into the duodenum.

The bile found in this veſſel is of a brighter yellow, a greater conſiſtence, and more bitter and acrimonious than that in the porus bilarius. See BILE.

VESICULÆ *Seminales.* — See *Tab. Anat.* (*Splanch.*) *fig.* 8. *lit. o. o. fig.* 15. *lit. b b*; ſee alſo the article SEMINALES.

VESICULÆ *Adipoſæ*. See the article ADIPOSÆ.

VESICULAR *Glands*. See the article GLAND.

VESPER, in aſtronomy, called alſo *heſperus*, and the *evening ſtar*; is the planet Venus, when ſhe is eaſtward of the ſun, and conſequently ſets after him. See VENUS, and HESPER.

VESPERS, in the Romiſh church, *evening ſong*; that part of the office which is rehearſed after noon — anſwering to our *evening prayers*; except that it differs more from the office of the morning, called *mattins*. See MATTINS.

Sicilian VESPERS, is a famous æra in the French hiſtory; ſignifying a general maſſacre of all the French in Sicily, in the year 1282; to which the firſt toll that called to *veſpers* was the ſignal.

Some will have it to have happened on Eaſter-eve: others, on the day of the Annunciation. — It was raiſed by one Prochites, a cordelier, at the time when Charles of Anjou, count of Provence, was king of Naples and Sicily. — The women with child by French-men were not ſpared.

After the like manner, we ſay, the *mattins of Moſcow*, ſpeaking of the Muſcovites aſſaſſinating their prince Demetrius, and all the Poles, his adherents, at Moſcow, the 27th of May 1600, under the conduct of their duke Choutſky, at ſix a-clock in the morning.

VESPERTILIONUM *Alæ*, *bats wings*, among anatomiſts, two broad membranous ligaments, with which the bottom of the womb is tied to the bones of the ilium; ſo called from their reſembling the wings of a bat. — See *Tab. Anat.* (*Splanch*) *fig.* 11. *lit. g. g.* ſee alſo UTERUS.

VESPERTINE, VESPERTINUS, in aſtronomy, is when a planet is ſeen deſcending to the weſt after ſun-ſet.

VESSEL, VAS, VASE, a thing proper to hold, or contain liquor. See VAS, VASE, VESICA, VESICULA, *&c.*

Thus, a tun, hogſhead, *&c.* are *veſſels*, fit to contain ale, wine, *&c.* See TUN, BARREL, *&c.*

The chymiſts uſe a great diverſity of *veſſels* in their operations; as matraſſes, pelicans, retorts, receivers, *&c.* See MATRASS, PELICAN, *&c.*

Double VESSEL. See the article DOUBLE.

Among anatomiſts, *&c.* all the tubes or canals, wherein the blood, and other juices, or humours are ſecreted, conveyed, depoſited, *&c.* as the veins, arteries, lymphatics, ſpermatics, *&c.* are called *veſſels*. — See *Tab. Anat. P.* 2. *Veſſels of human body*; ſee alſo TUBE, CANAL, DUCT, VEIN, VESICULA, *&c.*

Some even extend the word *veſſel* to the nerves; as ſuppoſing them the conduits of the animal ſpirits. See NERVE.

Veſſels conſiſt of membranes, variouſly formed, and diſpoſed for the reception of the fluids; and theſe membranes, again, conſiſt of leſſer veſicles, or veſiculæ: and this, for what we know, without end. See MEMBRANE, FLUID, *&c.*

In the new ſyſtem of many modern philoſophers and phyſicians, *veſſel* is a name common to all the ſolid parts of the body. See SOLID.

Theſe authors explain the whole animal œconomy, functions, *&c.* from the divers liquors diffuſed throughout the body, and the various tubes, or *veſſels* which contain thoſe liquors. — In effect, all we know in the human body, is either *veſſel*, or liquor. See DIGESTION.

The antients, it is true, had a notion, that ſome parts of the body, as the heart, ſpleen, *&c.* are mere parenchyma's, *i. e.* a kind of pulp, or pith, void of all *veſſels*; but the moderns, by the advantage of microſcopes, injections, *&c.* find that theſe, and all other parts of the body, are mere congeries, or maſſes of *veſſels* interwove. See PARENCHYMA, FLESH, *&c.*

Some philoſophers even extend the modern ſyſtem to all material beings; owning, only two elements, *viz.* a matter infinitely liquid, diffuſed through all nature; and hard, or ſolid parts; which are, as it were, the *veſſels* of that matter. See ELEMENT, *&c.*

The *veſſels* have a conſiderable ſhare in the vital actions; all that is required to the maintenance of life, being a due quantity of a proper humour and its continued motion along the *veſſels*: this motion depends in great meaſure, on the action of the *veſſels* themſelves; and the action of the *veſſels*, depends on the contraction of the fibres, whereby, when ſtretched and diſtended by the flowing humour, they ſhorten themſelves again, and diſpoſe themſelves into right lines, ſtill approaching towards the axis of their cavity; and thus, they propel their contents: ſo that the force of the *veſſels* is chiefly to be determined from their figure. See FIBRE, ELASTICITY, *&c.*

The number of *veſſels*, ſome of our lateſt and beſt anatomiſts obſerve, is greateſt in embryo's; and continually decreaſes as age comes on. See FOETUS.

For, in the actions whereby nutrition, *&c.* are effected, the greater *veſſels* being much diſtended by their humours, the ſmaller veſicles, whereof the membranes, or coats of the larger are wove, become compreſſed and ſtreightened, and at length quite dry, and void of juices; ſo that growing together, the fibres become the firmer and ſtronger, by the loſs of the veſicles. — And hence the ſtrength, firmneſs, ſtiffneſs, *&c.* of the ſolid parts. See SOLID; ſee alſo DISEASE, and DEATH.

Axis of a VESSEL.	See the article	AXIS.
Capillary VESSELS.		CAPILLARY.
Cervical VESSELS.		CERVICAL.
Phrenic VESSELS.		PHRENIC.
Pulmonary VESSELS.		PULMONARY.
Spermatic VESSELS.		SPERMATIC.
Umbilical VESSELS.		UMBILICAL.

VESSEL, in navigation, is a name common to all ſorts of ſhipping, *i. e.* all floating machines, or vehicles that move in the water. See SHIP.

Veſſels are frequently diſtinguiſhed in two general claſſes, *viz.* *high-bottomed* or *decked veſſels*; which are thoſe that move wholly with wind and ſail, and live in all ſeas; as *pinks*, *gallions*, *ſhips*, &c. See SAILING.

And *flat-bottomed veſſels*, which go both by oars and ſails: ſuch are *boats*, *galleys*, *praams*, *wherries*, &c. See OARS, ROWING, *&c.* ſee alſo BOAT, GALLEY, *&c.*

Floating veſſels, are uſually diſtinguiſhed into *boats*, *lighters*, *barges*, *barks*, *fiſhing veſſels*, *ſhips of trade*, and *veſſels of war*; of each whereof there are divers kinds and denominations. See BOAT, BARGE, LIGHTER, SHIP, *&c.*

Veſſels of war, are a *three-decked ſhip*, firſt and ſecond rate; a *frigate*, a *frigate*, or *two decked ſhip*, third, fourth, and fifth rate; a *one decked ſhip*, ſixth rate; a *boom-veſſel*, a *fire-ſhip*, a *ketch*, a *machine-veſſel*, a *ſmoaker*. See RATE.

A *veſſel* is ſaid to be *of three or four hundred tuns*; meaning that it will carry three or four hundred times two thouſand weight: or, that when immerged in water, it poſſeſſes the ſpace of three or four hundred tun of water; which is equal to the weight of the *veſſel*, and all the loading it can carry. See TUN, and BURDEN.

A *veſſel* is ſaid to *draw ten or fifteen feet of water*; meaning, that when loaden, it ſinks ſo deep under water.

The figure of *veſſels*, is a thing of great importance, with regard to their motion, ſailing, &c. and in the determining what form is moſt commodious, the new doctrine of infinites becomes of apparent ſervice to navigation and commerce.

A body moving in an immoveable fluid, is obliged to ſever the parts thereof; and they reſiſt ſuch ſeparation. — Now, ſetting aſide a certain tenacity, whereby they are, as it were, glued together; and which is different in different fluids; the whole force of the reſiſtance depends on that of the ſhock, or impulſe: for a body that is ſtruck, ſtrikes at the ſame time; but a perpendicular ſtroke is that a liquid reſiſts the moſt, as being the greateſt: and for a body to move freely therein, it muſt be of ſuch figure, as to preſent itſelf as obliquely as poſſible. — If it were triangular, and moved with the point foremoſt, it is certain all its parts would ſtrike the fluid obliquely, but they would all ſtrike it with the ſame obliquity; and it were more advantageous, that each ſhould ſtrike more obliquely than its neighbour.

Now, ſuch a perpetual augmentation of obliquity, can no where be had in a curve line; each point whereof is conſidered as an infinitely ſmall right line, always inclined to the other little right lines contiguous to it.

To find what curve it is, whoſe perpetual change of obliquity, or inclination in all its parts, renders it, of all others, the fitteſt to divide the fluid eaſily; is a problem much more difficult than it appears to be; and, in effect, only to be ſolved by the new geometry: the ſolution was firſt given by Sir Iſaac Newton, in his inveſtigation of the ſolid of the leaſt reſiſtance.

That author, however, did not publiſh his analyſis; yet the marquis de l'Hôpital hit upon it: and afterwards M. Fatio reſolved the ſame problem; though by a much longer, and more perplexed way. See SOLID *of the leaſt reſiſtance.*

Book of VESSELS. See the article BOOK.

VEST, and VESTITURE. See the article INVESTITURE.

VESTALIA, feaſts held in honour of the goddeſs Veſta, on the fifth of the ides of June; *i. e.* on the ninth day of that month. See FEAST.

On that day, banquets were made before the houſes; and meats ſent to the veſtals, to be offered by them to the goddeſs. See VESTAL.

The aſſes that turned the mills for grinding corn, were, on this occaſion, led about the city, crowned with flowers, and chaplets formed of pieces of bread; and the mill-ſtones were likewiſe decked with garlands and crowns.

The ladies went barefooted in proceſſion to the temple of Veſta; and an altar was erected to Jupiter *the baker*, *Jovi piſtori*, in the capitol.

The *veſtalia* had their name from that of their goddeſs Veſta, from the Greeks called ἑϛια, fire, or hearth; whence Cicero derives the Latin name. — Accordingly, the poets frequently uſe *Veſta* for fire, or flame; as *Jupiter* for air, *Ceres*, for corn, &c. See GOD, &c.

VESTALS, VESTALES, in antiquity, maids in antient Rome, conſecrated to the ſervice of the goddeſs Veſta; and particularly, to watch the ſacred fire in her temple. See VESTALIA.

Numa firſt inſtituted four *veſtals*; and Plutarch tells us, Servius Tullus added two more: which, number, ſix, laſted as long as the worſhip of the goddeſs Veſta. — It is true, S. Ambroſe reckons them ſeven; but without any foundation.

The *veſtals* made a vow of perpetual virginity: their employment was, the ſacrificing to Veſta, and keeping up the holy fire in her temple. — If they violated the vows of chaſtity, they were puniſhed with remarkable ſeverity; being ſhut up, or buried in a deep pit, or cavern, with a lighted lamp, and a little water and milk, and there left to be devoured by hunger. — If they let out the fire, they were whipped by the pontifex maximus; and the fire was re-kindled by the ſun-beams collected, ſome ſay, in burning-glaſſes, and not otherwiſe.

To be ſecure of their virginity, at their admiſſion, it was provided, that they ſhould not be above ſix years old. — They were choſen by lot, out of 20 virgins, carried by the pontiff to the comitia, for that purpoſe.

They were only conſecrated for 30 years; after which time, they were at liberty to go out and be married. If they continued in the houſe after that time, they were only to be aſſiſtant, in point of advice, to the other *veſtals*.

The firſt ten years they were to employ in learning their functions; the ten following they were to exerciſe them; and the laſt ten, to teach them to others.

Their order was very rich; both on account of the endowments of the emperor, and of legacies of other perſons.

The *veſtals* had a particular place allotted them at the amphitheatres, and games of the circus. — Their vehicle was the carpentum, or pilentum. — The vail wherein they ſacrificed, was called *ſuffibulum*.

At firſt, they were nominated by the kings; but after the extinction of monarchy, by the pontifex maximus, or high prieſt. — The oldeſt of them was called *maxima*, as the firſt pontiff was maximus. See PONTIFF.

They had divers privileges: diſpoſed of their effects by teſtament, in their father's life-time; had the ſame gratification as a mother of three children; and whenever they met a criminal going to execution, had a power to pardon him.

The fire which the *veſtals* were to watch, was not on an altar, or a hearth; but in little earthen veſſels with two handles, called *capeduncula*.

This fire was held a pledge of the empire of the world. If it went out, it was judged a very unlucky prognoſtic; and was to be expiated with infinite ceremonies. — Among the Romans, Feſtus tells us, it was only to be re-kindled by the rubbing a kind of wood, proper for the purpoſe. But among the Greeks, Plutarch, in the life of Numa, obſerves, it was to be rekindled, by expoſing ſome inflammable matter, in the centre of a concave veſſel held to the ſun. — For it is to be noted, the Romans were not the only people who kept the perpetual fire of Veſta, in imitation of the celeſtial fires: but the Greeks were poſſeſſed with the ſame ſuperſtition; particularly the Delphians, Athenians, Tenedians, Argives, Rhodians, Cyzicenians, Mileſians, Epheſians, &c.

VESTIARIUS, VESTIARY, in antiquity, maſter of the wardrobe; an officer under the Greek empire, who had the care and direction of the emperor's apparel, robes, &c. See WARD-ROBE.

The *protoveſtiarius*, or *firſt veſtiary*, was the grand maſter of the wardrobe. — But, among the Romans, *veſtiarius* was only a ſaleſman, or taylor.

VESTIBLE*, VESTIBULUM, in the antient architecture, a large open ſpace before the door, or entrance of a houſe.

* Martinius derives the word from *veſtæ ſtabulum*; by reaſon the fore-part of the houſe was dedicated to *Veſta*. – Daviler derives it from *veſtis*, and *ambulo*; by reaſon people there begin to let their trains fall.

The Romans had places called *veſtibles*, at the entrance of their houſes, to ſhelter people obliged to ſtand at the door from the weather: we have ſtill *veſtibles* of the like kind, in many old churches, houſes, &c. called *porches*. See PORCH, and PROPYLÆUM.

Veſtibles only intended for magnificence, are uſually between the court and the garden: theſe are ſometimes *ſimple*; that is, have their oppoſite ſides equally enriched with arches; and ſometimes their plan is not contained under four equal lines, or a circular one, but forms ſeveral van-corps, and rear-corps, furniſhed with pilaſters.

VESTIBLE, VESTIBULUM, in anatomy, denotes the fore-part of the labyrinth of the ear. See EAR, and LABYRINTH.

The *veſtible* is a ſmall cavity, of an irregular form, placed immediately above the baſis of the ſtapes; between the ſemicircular canals, and the cochlea. See COCHLEA.

In it appear divers foramina; as that of the feneſtra ovalis; the five foramina of the ſemicircular canals; that of the cochlea; and five other very ſmall ones, through which ſo many nerves paſs. See FENESTRA, &c.

VESTIGIA, a Latin term, frequently uſed by Engliſh writers, to ſignify the traces, or footſteps any thing has left behind it. See TRACE.

The word is particularly applied to the marks remaining of ſomething antique, gone to ruin by time. See RUIN.

VESTIS *Angelica*. See the article ANGELICA.

VESTMENT. See the article VESTURE.

VESTRY, VESTIARIA, a room adjoining to a church, where the prieſts veſtments, and ſacred utenſils are kept, and porachial aſſemblies held. See SACRISTY, and VESTRY-*Men*.

VESTRY-*Men*, a ſelect number of the principal perſons of every pariſh within the city of London, and elſewhere; who yearly chuſe pariſh-officers, and take care of its concernments. See PARISH.

They are thus called, becauſe they uſually meet in the *veſtry* of the church. See SACRISTY.

VESTRY-*Clerk*, an officer who keeps the pariſh accounts. See PARISH, CLERK, &c.

VESTURE, VESTMENT, a garment, or cloathing.

In our law-books, it is alſo uſed metaphorically: as in, *veſtura terræ*, i. e. *ſegetes quibus terra veſtitur*; the corn wherewith the earth is clothed, or covered.

VESTURE *of an Acre of Land*, is the produce on it; or the wood, corn, &c. growing on it. — It ſhall be enquired how much the *veſture* of an acre of ground, and how much the land, &c. 4 Ed. I. 14 Ed. III. &c.

VESTURE, VESTURA, alſo ſignifies a poſſeſſion, or ſeiſin. See POSSESSION, and SEISIN.

In which ſenſe, it is borrowed from the feudiſts; with whom *inveſtitura* ſignifies a delivery of poſſeſſion by a ſpear or ſtaff; and *veſtura*, poſſeſſion itſelf. INVESTITURE.

VETERAN, VETERANUS, in the Roman militia, a ſoldier who was grown old in the ſervice; or who had made a certain number of campaigns; and on that account was entitled to certain benefits, and privileges.

Twenty years ſervice, were ſufficient to entitle a man to the benefits of a *veteran*. — Theſe privileges conſiſted in being abſolved from the military oath; in being exempted from all the functions of a ſoldier; in enjoying a certain ſalary, or appointment, &c.

In France, the term VETERAN is ſtill retained to ſuch officers as have held their poſts 20 years; and who enjoy certain of the honours and privileges affixed thereto, even after they have laid them down.

A *veteran* counſeller has a voice and ſeat at audiences, though not at proceſſes by writing.— A *veteran* ſecretary of the king, acquires the privileges, &c. of nobility, to himſelf and his children.

VETERINARIA, *Mulo-medicina*, or medicine applied to the diſeaſes of cattle. See MEDICINE, HORSE, &c.— Whence,

VETERINARIUS, a farrier, or horſe-leech. See FARRIER.

VETERNUS, is uſed by ſome phyſicians for a lethargy, or other drouſy diſeaſe. See LETHARGY, &c.

VETITUM *Namium*, in law, imports a forbidden diſtreſs. See NAM and DISTRESS.

Such, *e. gr.* is that when the bailiff of a lord diſtrains beaſts, or goods, and the lord forbids his bailiff to deliver them when the ſheriff comes to replevy them; and to that end, drives them to places unknown: — Or when, without any words, they are ſo eſſoined, as they cannot be replevied.

Divers lords of hundreds, and courts-baron, have power to hold plea *de* vetito namio. — *Mathilda de Morton clamat in manerio de Mawerdon duos* law-days, & *infangentheft* & *placita de* namio vetito, *ſine breve domini regis*. Int. Record. in Theſaur. Scac.

VEXES. See the article NE INJUSTE *Vexes*.

VI ET ARMIS, q. d. *by force and arms*, a law term uſed in an indictment; to denote the forcible and violent commiſſion of any crime. See TRESPASS, and INDICTMENT.

VI LAICA *removenda*, a writ, lying where debate being between two parſons, or proviſors for a church; and of them makes a forcible entry into it, with a number of laymen, and holds the other out.

VIA, *Way*. See the articles WAY, and ROAD.

VIA LACTEA, in aſtronomy, the *milky way*, or galaxy. See GALAXY.

VIA MILITARIS, in our law-books, is uſed for a *highway*— *quæ publica dici poterit & ducit ad mare & ad portum, & quandoque ad mercata*. Bracton, Lib. IV. c. 16.

VIA REGIA, the *king's highway*, is defined in *Leg. Hen.* I. to be "that which is always open, and which no body may "ſhut by any threats, as leading to a city, port, or town."

Its breadth the ſame laws preſcribe to be ſuch, as that two carts may paſs each other, and ſixteen horſemen armed go abreaſt.

VIA SOLIS, the *ſun's way*, in aſtronomy, is uſed, among ſome aſtronomers, for the ecliptic line; ſo called, becauſe the ſun never goes out of it. See ECLIPTIC.

VIÆ PRIMÆ, *firſt paſſages*, among phyſicians, are the œſophagus, ſtomach, and guts; including the whole length of the alimentary duct, or canal, from the mouth to the ſphincter ani. See DUCT, STOMACH, INTESTINES, &c. — ſee alſo PRIMÆ.

In this ſenſe, we ſay, An obſtruction in the *primæ viæ*. — Purging and emetic medicines operate chiefly on the *primæ viæ*. — Sudorifics, alteratives, cardiacs, &c. ſuſpend their action till after they have paſſed the *primæ viæ*. See MEDICINE, PURGATIVE, EMETIC, &c.

VIAL, or PHIAL, a ſmall thin glaſs bottle. See PHIAL.

VIALES, in mythology, a name given, among the Romans, to the gods who had the care and guard of the roads, and highways. See GOD.

The *dii viales*, according to Labeo, were of the number of thoſe gods called *dii animales*; who were ſuppoſed to be the ſouls of men changed into gods; and were of two kinds, *viz.* the *viales*, and *penates*. See PENATES.

The *viales* were the ſame with thoſe otherwiſe called *lares*; at leaſt, ſome of the *lares* were denominated *viales*, viz. ſuch of them as had the more immediate intendency of the roads. See LARES.

Hence, the two names are ſometimes joined, and thoſe highway deities called *lares viales*: witneſs that inſcription in Gruter.

FORTUNAE
REDUCI LARI
VIALI ROMAE
AETERNAE
Q. AXIUS AELIA
NUS—VE. PROC.
AUG.
IONI.

VIATICUM, among the antient Romans, was the allowance or appointment which the republic gave to ſuch of its officers as were ſent into the provinces, to exerciſe any office, or perform any ſervice, or commiſſion; as alſo to the officers of the army, and even the ſoldiers, &c. See PROVINCE.

Tacitus makes mention of it, Lib. I. *Annal.* c. 37. *Viaticum amicorum ipſiuſque Cæſaris*; meaning the appointments which the republic paid to Germanicus, and his officers.

This *viaticum*, however, did not conſiſt altogether in money: the ring given the magiſtrates and officers ſent into the provinces, was part of it; ſo were the clothes, baggage, tents, and the reſt of their equipage.

In the Romiſh church, VIATICUM is ſtill the allowance made a religious, to defray the expences of a journey, miſſion, &c. See MISSION.

VIATICUM is alſo uſed for the communion, or euchariſt, which is given to the people in the pangs of death; or who are about to make the voyage of the other world. See COMMUNION.

The *viaticum* is not given to perſons executed in courſe of juſtice.

VIATOR, in antiquity, an officer of juſtice among the Romans. — The term, originally, had no other ſignification than that of a publick meſſenger, or ſervant ſent to advertiſe the ſenators and magiſtrates when aſſemblies were to be held, where their preſence was required.

Hence, becauſe, in the firſt ages of that empire, the Roman magiſtrates lived moſtly at their country-houſes; theſe officers being obliged to be frequently upon the road, were called *viatores*, travellers; from *via*, highway.

In proceſs of time, the name *viator* became common to all officers of the magiſtrates, lictors, accenſi, ſcribes, ſtatores, and cryers; either by reaſon theſe names and offices were confounded in one: or becauſe *viator* was a general name, and the reſt particular ones, ſpecifying the particular functions they diſcharged, as A. Gellius ſeems to inſinuate, when he ſays, that member of the company of *viatores*, who binds a criminal condemned to be whipped, was called *lictor*. See ACCENSI, SCRIBE, &c.

Be this as it will, the names *lictor* and *viator* are often uſed indiſcriminately for each other; and we as often meet with *Send to ſeek, or advertiſe him by a lictor*, as *by a* viator.

None but the conſuls, pretors, tribunes, and ædiles, had a right to have *viatores*. — They were not to be Roman citizens, and yet were required to be free.

VIBEX, is ſometimes uſed, by phyſicians, for a black and blue ſpot on the ſkin, occaſioned by an afflux, or extravaſation of blood. See PETECHIA, &c.

VIBRATION, in mechanics, a regular, reciprocal motion of a body; *e. gr.* a pendulum; which, being ſuſpended at freedom, ſwings or *vibrates*, firſt this way, then that.

For the bob being raiſed, falls again by its gravity; and with the velocity thus acquired, riſes to the ſame heighth on the other ſide; whence, its gravity makes it fall again: and thus its *vibrations* are continued. See PENDULUM.

Mechanical authors, in lieu of *vibration*, frequently uſe the term *oſcillation*. See OSCILLATION.

The *vibrations* of the ſame pendulum are all iſochronal; that is, performed in equal time, at leaſt in the ſame climate; for, towards the equator, they are found ſomewhat ſlower.

A pendulum 3 feet 3 inches, and 2 tenths of an inch, according to Huygens, or 39, 25 inches, according to Sir J. Moor and lord Brouncker, *vibrates* ſeconds, or makes 3600 *vibrations* in an hour. See SECOND.

The *vibrations* of a longer pendulum, take up more time than thoſe of a ſhorter one, in the ſubduple ratio of the lengths.— Thus, a pendulum 3 feet long will make 10 *vibrations*; while another 9 inches long makes 20. — For 10 is the half of 20, and 3 feet, or 36 inches, are the ſquare of 6 inches; which is double of 3, whoſe ſquare is 9: ſo that 10 is to 20 in a ſubduble ratio of 36 to 9.

The ſame thing is meant, when we ſay, that the number of *vibrations* of pendulums in a given time, is in a reciprocal ratio of their lengths.

M. Mouton, a prieſt of Lyons, wrote an expreſs treatiſe, to ſhew, that by means of the number of *vibrations* of a given pendulum, in a certain time, one might eſtabliſh an univerſal meaſure throughout the whole world; and fix the ſeveral meaſures in uſe among us, in ſuch manner, as that they might be recovered again, if at any time they ſhould chance to be loſt, as is the caſe of moſt of the antient meaſures, which we now only know by conjecture. See MEASURE.

The VIBRATIONS *of a ſtretched cord, or ſtring*, ariſe from its elaſticity; which power being of the ſame kind with that of gravity, the *vibrations* of a cord follow the ſame laws as thoſe of pendulums: conſequently the *vibrations* of the ſame cord equally ſtretched, though they be unequal in length, are equidiurnal, or performed in equal times; and the ſquares of the times of the *vibrations* are among themſelves, inverſly, as the powers whereby they are equally bent, and inflected. See Chord, Elasticity, Fibre, &c.

The *vibrations* of a ſpring, too, are proportionable to the powers whereby it is bent: theſe follow the ſame laws as thoſe of the cord, or pendulum, and, conſequently, are equidiurnal; which is the foundation of ſpring-watches. See Spring, and Watch.

Vibration is alſo uſed in phyſics, *&c.* for divers other regular alternate motions. — Senſation is ſuppoſed to be performed, by means of the *vibratory* motion of the nerves, begun by external objects, and propagated to the brain. See Sensation, Vision, Nerve, &c.

The ſeveral ſorts and rays of light, Sir Iſaac Newton conceives to make *vibrations* of ſeveral bigneſſes; which, according to thoſe magnitudes, excite ſenſations of ſeveral colours; much after the ſame manner as *vibrations* of air, according to their ſeveral magnitudes, excite ſenſations of ſeveral ſounds. See Colour, Sound, &c.

Heat, according to the ſame author, is only an accident of light, occaſioned by the rays putting a fine, ſubtile etherial medium, which pervades all bodies, into a *vibrative* motion, which gives us that ſenſation. See Medium, and Heat.

From the *vibrations*, or pulſes of this ſame medium, he accounts for the alternate fits of eaſy reflection, and eaſy transmiſſion of the rays. See Light, Ray, Reflection, &c.

In the *Philoſophical Tranſactions* it is obſerved, that the butterfly, into which the ſilk-worm is transformed, makes 130 *vibrations*, or motions of its wings, in one coition.

VICAR*, Vicarius, a perſon appointed as deputy of another; to perform his functions, in his abſence, and under his authority. See Lieutenant, Deputy, Vice-gerent, &c.

* The word is formed from *vicarius, qui alterius vices gerit.*

The pope pretends to be *vicar* of Jeſus Chriſt on earth. — He has under him a *grand-vicar*, who is a cardinal, and whoſe juriſdiction extends over all prieſts, both ſecular, and regular; and even over laymen.

Among the antient Romans, *vicarius*, *vicar*, was a legatus, or lieutenant, ſent into the provinces where there was no governor: ſo that the *vicarii* were properly the emperor's *vicars*, not thoſe of governors. *Cod. de Offic. Vicar.*

Italy, in the time of the eaſtern empire, was governed by two *vicarii*: the one *vicar of Italy*, who reſided at Milan; the other of the city, who reſided at Rome.

Cujas obſerves, that the word *vicar* was ſometimes, though rarely, attributed to the lieutenant-generals of proconſuls, or governors of Roman provinces.

Vicar, in the canon law, denotes a prieſt of a pariſh, the predial tithes whereof are impropriated, or appropriated; that is, belong either to a chapter, religious houſe, &c. or to a layman, who receives them, and only allows the *vicar* the ſmall tithes, or a convenient ſalary, antiently called *portio congrua*. See Tithe, Appropriation, &c.

He is thus called *quaſi vice fungens rectoris*, as ſerving for, or in lieu of a rector, who would be intitled to the great tithes. See Rector, and Parson.

Theſe *vicars* were antiently called *perpetui vicarii*; becauſe not appointed by the impropriator, and licenced by the biſhop to read ſervice; but preſented by the patron, and canonical inſtitution given them by the hands of the ordinary; and ſo having conſtant ſucceſſion, or corporations, and never dying. See Induction, Cure, &c.

The canoniſts mention four ſpecies of *vicars*: ſome *perpetual*; others appointed for a certain time, and, on ſome ſpecial occaſion, called *mercenarii*; others called *ſpeciales*, appointed not for the whole cure, but for ſome certain place, article, or act: others *generales*, neither perpetual, nor appointed for any certain act, but for all things in the general.

Vicar *General*, was a title given by king Henry VIII. to Thomas Cromwell, earl of Eſſex; with full power to overſee the clergy, and regulate all matters relating to church affairs.

VICE, Vitium, in ethics, is ordinarily defined an elective habit, deviating, either in exceſs, or defect, from the juſt medium wherein virtue is placed. See Virtue.

It is called a *habit*, to diſtinguiſh it from *ſin*, which is only an act: hence, a ſin is looked on, as ſomething tranſient; and a *vice*, as ſomething permanent. See Sin, Habit, &c.

Authors diſtinguiſh three ſtates of *vice*: the firſt *incontinentiæ*, of incontinence; wherein a perſon ſees, and approves the good, but is hurried to evil by the violence of his paſſions. — The ſecond, *intemperantiæ*, of intemperance; wherein even the judgment is depraved, and perverted. — The third, *feritatis*, of obduracy; wherein the perſon is totally immerſed in *vice*, without any ſenſe or feeling thereof.

The ſtate of incontinency, is conſidered as infirmity, wherein the perſon feels the ſharpeſt ſtings of conſcience: that of intemperance, as malice, wherein the remorſe is not ſo lively. — In that of obduracy there is none. See Conscience.

Vice, in ſmithery, and other arts employed in metals, is a machine, or inſtrument, ſerving to hold faſt any thing they are at work upon; whether it be to be filed, bent, riveted, *&c.* To file ſquare, it is abſolutely neceſſary the *vice* be placed perpendicular, with its chaps parallel to the work-bench. See Filing.

The parts of the *vice* are, the *face*, or *plane*, which is its uppermoſt part; the *chaps*, which are cut with a baſtard cut, and well tempered; the *ſcrew pin*, cut with a ſquare ſtrong worm; the *nut*, or *ſcrew-box*, which has a ſquare worm, and is brazed into the round box; the *ſpring*, which throws the chaps open; and the *foot*, on which the whole is mounted.

Hand-**Vice**, is a ſmall kind of *vice*, ſerving to hold the leſſer works in, that require often turning about.

Of this there are two kinds, the *broad chapt hand-vice*, which is that commonly uſed; and the *ſquare noſed hand-vice*, ſeldom uſed but for filing ſmall round work.

Vice is alſo a machine uſed by the glaziers, to turn, or draw lead into flat rods, with grooves on each ſide, to receive the edges of the glaſs. See Lead.

This machine conſiſts of two iron chaps, or cheeks, joined with two croſs iron pieces. — In the ſpace between the chaps, are two ſteel wheels, with their ſpindles, or axes paſſed through the middle; each of which has its nut, or pinion with teeth, that catch into each other: to the loweſt is fitted a handle, whereby the machine is turned.

There are ſome of theſe *vices* double, and that will draw two leads at once: theſe have three wheels. — Some glaziers, will turn lead of different ſizes in the ſame *vice*; by changing their cheeks for each ſize. See Cheek.

With another pair of ſpindles, whoſe nuts almoſt meet, they turn lead for *tiers*; which, when it comes out of the *vice*, is almoſt cut aſunder, in two thickneſſes, eaſy to be parted.

Before the invention of this *vice*, which is but a late thing, they uſed a plane: accordingly, in all the antient windows, we find the lead planed, and grooved that way. See Glass.

Vice is alſo uſed in the compoſition of divers words, to denote the relation of ſomething which comes inſtead, or in the place of another.

In this ſenſe, the word is Latin, *vice*, ſtead, place, turn, *&c.*

Vice Admiral, is one of the three principal officers of the royal navy; who commands the ſecond ſquadron, and has his flag ſet up in the fore-top of his ſhip. See Admiral, Navy, &c.

Vice-Chamberlain, called alſo, in antient ſtatutes, *under-chamberlain*; is an officer in the court, next under the lord chamberlain; and, in his abſence, has command, and controll, of all officers belonging to that part of the houſhold, called the *chamber* above ſtairs. See Chamberlain.

Vice-Chancellor of a univerſity, is an eminent member, choſe annually, to manage affairs in the abſence of the chancellor. See University.

Vice-Doge, is a counſeller of Venice, who repreſents the doge when ſick, or abſent; that the ſeignory may never be without a chief.

The *vice-doge* never takes the ducal chair, nor bears the horn, nor is addreſſed under the title of *ſereniſſimo*: yet, the foreign embaſſadors, ſpeaking to the college, uſe the common apoſtrophe of *ſereniſſimo prencipe*: and he performs all the offices of doge; and gives anſwers to embaſſadors, without moving his cap. See Doge.

Vice-Dominus, a vicount, ſheriff, or vidame. See Vicount, Vidame, *&c.*

Vice-Dominus *Abbatiæ*, or *Eccleſiæ*, in the civil and canon law, an advocate, or protector of an abbey, or church. See Advocate, and Advowee.

Vice-Dominus *Epiſcopi*, in the canon law, is the commiſſary, or vicar-general of a biſhop. See Commissary, &c.

Vice-gerent, *Vicegerens*, a vicar, deputy, or lieutenant. See Vicar, Lieutenant, &c.

Vice-Comes, in law, *&c.* } See { Vicount.
Accedas ad **Vice-Comitem.** } See { Accedas.

Reſpectu habendo computi **Vice-Comitis**. See Respectu.

Vice-Legate, an officer whom the pope ſends to Avignon, and ſome other cities, to perform the office of a ſpiritual and temporal governor, at a time when there is no legate, or cardinal to command there.

All the Gaule Narbonnoiſe, as Dauphine, Provence, &c. has recourſe to the *vice-legate* of Avignon, for all eccleſiaſtical diſpatches; in like manner as the other provinces addreſs themſelves to Rome. See Legate.

Vice-Roy, a governor of a kingdom, who commands therein, in the name, and ſtead of a king; with full and ſovereign authority.

Sicily, Catalonia, Mexico, *&c.* are governed by *vice-roys*. See King.

Vice *Verſa*, a Latin phraſe, frequently retained in Engliſh writings; ſignifying as much as, *on the contrary*.

Thus, as the ſun mounts higher and higher above the horizon, inſenſible perſpiration increaſes; and, *vice verſa*, as he decends lower, it diminiſhes.

VICENNALIS, in antiquity, ſomething of 20 years, or that returns after 20 years.

Among the Romans, *vicennalia* was particularly uſed for the funeral feaſts, held on the 20th day after a perſon's deceaſe.

VICENNALIA, or VICENNALES *Ludi*, were alſo games, feaſts, and rejoicings, held every 20th year of the reign of a prince.

On medals, we frequently meet with *vicennalia vota*; the vows put up on that occaſion, for the ſafety of the emperor, and inlargement of the empire.

Theſe are expreſſed by VOT. X & XX, in the medals of Tacitus, Gallienus, and Probus; VOT. X. M. XX, in thoſe of Valerius Maximianus, and Galerius Maximianus; VOT. X. MUL. XX, in thoſe of Conſtantine, Valentinian, and Valens; VOT. X. MULT. XX, in thoſe of Diocleſian, Conſtantine, Julian, Valentinian, Theodoſius, Arcadius, Honorius; VOTIS X. MULT. XX, in thoſe of Julian, Valentinian, Gratian; VOT. X. SIC. XX, in thoſe of Valerius Conſtantius; VOT. XII. FEL. XX, in the younger Licinius; VOT. XV. FEL. XX, in Conſtantine. See VOWS.

VICINAGE, and VICINITUM a neighbourhood. See VENUE.

Common per Cauſe de VICINAGE. See COMMON.

VICIS & *Venellis Mundandis*, a writ lying againſt a mayor, bailiff, &c. for not taking care that the ſtreets be well cleanſed.

VICISSITUDE, VICISSITUDO, the ſucceeding of one thing after another. — As, the *viciſſitude* of ſeaſons, fortune, &c.

VICONTIEL. } See the article { VISCOUNTIEL.
VICONTIELS. } { VISCOUNTIELS.

VICOUNT, VICE-COMES, in our law-books, ſignifies the ſame with *ſheriff*; between which two words, there ſeems to be no other difference, but that the one came from our conquerors, the Normans; the other from our anceſtors, the Saxons. See SHERIFF.

VICOUNT, or VISCOUNT, is alſo uſed for a degree of nobility, next below a count or earl, and above a baron. See NOBILITY.

Camden obſerves, that this is an antient name of office, but a new one of dignity, never heard of among us till Henry VIth's days, who, in his 18th year, created, in parliament, John lord Beaumont, *viſcount Beaumont*: but it is much more antient in other countries.

Du Cange, indeed, will have the dignity to have had its firſt riſe in England; but it is much more probable, it was firſt brought over hither by the Normans.

The privileges of a *vicount*, are, that he may have a cover of aſſay held under his cup when he drinks, and may have a travers in his own houſe. — And a *vicounteſs* may have her gown bore up by a man, out of the preſence of her ſuperiors; and in their preſence by a woman.

VICOUNTIELS, VICONTIELS, VICECOMITALIA, in our law-books, denotes things belonging to the ſheriff; particularly certain farms, for which the ſheriff pays a rent to the king, and makes what profit he can of them. See SHERIFF.

Writs VICOUNTIEL, are ſuch as are triable in the county or ſheriff's-court. — Of which kind are divers writs of nuſance, &c. See WRIT, &c.

VICOUNTIEL, or VICONTIEL *Juriſdiction*, is that juriſdiction belonging to the officers of a county; as ſheriffs, coroners, eſcheators, &c.

VICTIM, VICTIMA, a bloody ſacrifice offered to ſome deity, of a living thing; either a perſon, or a beaſt, which is ſlain to appeaſe his wrath, or to obtain ſome favour. See SACRIFICE, and LUSTRATION.

The Greeks offered Iphigenia, at Aulis, for a *victim* to obtain a favourable wind. — The gods of the heathens had each their proper *victims*: thus, the goat was Bacchus's *victim*; the horſe Neptune's. See GOD, and VICTIMARIUS.

VICTIMARIUS, a miniſter, or ſervant of the prieſt, whoſe office was to bind the *victims*, and prepare the water, knife, cake, and other things, neceſſary for the ſacrifice. See SACRIFICE.

To the *victimarii* it alſo belonged, to knock down, and kill the victims: in order to which, they ſtood cloſe by the altar, naked to the waiſt, but crowned with laurel; and holding a hatchet or a knife up, aſked the prieſt leave to ſtrike; ſaying, *Agone?* ſhall I ſtrike? Whence they were called *agones*, and *cultellarii*, or *cultrarij*.

When the *victim* was killed, they opened it, and after view-the entrails, took them away, waſhed the carcaſe, ſprinkled the flower on it, &c.

The ſame *victiamarii* lighted the fire, wherein books were condemned to be burnt. See Liv. 40. lib. 40. c. 29. and A. Gellius, lib. 1. c. 1. extr. 12.

VICTORIAN *Period*, in chronology. See PERIOD.

VICTORY, VICTORIA, the overthrow, or defeat of an enemy, in war, combat, duel, or the like. See WAR, COMBAT, DUEL, CHAMPION, &c.

Among the Romans, crowns, triumphs, &c. were decreed to their generals, for the *victories* they gained. See CROWN, TRIUMPH, &c.

VICTUALLING-*Office*, an office kept on Tower-hill, for the furniſhing his majeſty's navy with *victuals*. See OFFICE.

It is managed by ſeven commiſſioners, who have their inferior officers; as ſecretaries, clerks, &c. beſides agents in divers parts of Great Britain, Ireland, &c. See NAVY.

VICTUS *Ratio*, among phyſicians, a particular manner of living for the preſervation of health, and prevention of diſeaſes. See DIET, REGIMEN, &c.

VIDAME*, *Vice-Dominus*, was antiently uſed for the biſhop's deputy in temporals; as *comes*, or *vice-comes*, was the king's. See VICE-DOMINUS, &c.

* The word according to Nicod, comes from *vicarius*; according to Paſquier, from *vice-dominus*; *dam* ſignifying *dominus*, or lord. See DOM.

The original inſtitution of *vidamos*, was for defence of the temporalties of biſhopricks, while the biſhops themſelves were taken up in prayer, and other ſpiritual functions. — They alſo led the biſhop's forces, when they were obliged to go to war, either to defend their temporalties, or for the arrier-ban.

They alſo managed, and pleaded their cauſe in courts of juſtice; diſtributed juſtice among their tenants, prevented any body's pillaging, or damaging the houſes of deceaſed biſhops, &c. — In effect, they repreſented the biſhop, conſidered as a temporal lord. See BISHOP, OFFENDER, &c.

In ſome antient charters, the *vidames* are called *advocates*, or *advowees*. See ADVOCATE, and ADVOWEE.

VIDAME is ſtill a title of ſeignory, or lordſhip: attributed to ſeveral gentlemen in France: as, the *vidame* of Chartres, of Amiens, &c.

The antient *vidames*, Paſquier ſays, were the biſhops temporal judges; and had the ſame privileges as the vicounts.

By degrees, the *vidames* converted their office into a fee; and the biſhops their *vidames*, or judges, into vaſſals, as kings did their counts, dukes, &c. See COUNT, VASSAL, &c. — Accordingly, the *vidame* of Chartres, &c. ſtill hold lands of the biſhops of thoſe places.

VIDIMUS, in law, the ſame with *innoteſcimus*; being letters patent of a charter of feoffment, or ſome other inſtrument not of record.

VIDUITATIS *Profeſſio*, the making a ſolemn profeſſion of living a chaſte widow; a cuſtom heretofore obſerved in England, and attended with divers ceremonies. See WIDOW.

VIE. See the article CESTUI *qui Vie*.

VIEW*, VISUS, in law, the act of *veiors*, or *viewers*. See VEIOR, and VIEWER.

* This is called, by Bracton, *Res quaſi ſacra quia ſolam perſonam regis reſpicit, & introducta pro pace, & communi utilitate.*

When a real action is brought, and the tenant knows not well what the land is the demandant aſks; he may pray the *view*: which is, that the jury may *ſee* the land which is claimed.

This courſe of proceeding we received from the Normans, as appears by the *Grand cuſtomary*. — It is uſed in various caſes; as in aſſize of rent-ſervice, rent-charge, rent-ſeck; in a writ of nuſance; in a writ quo jure; in the writ de rationabilius diviſis, &c.

VIEW *of Franc-pledge*, VISUS *Franci Plegii*, is the office which the ſheriff in his county-court, or the bailiff in his hundred, performs; in looking to the king's peace, and ſeeing that every man be in ſome pledge. See FRANC-*Pledge*.

VIEW, in matters of optics, perſpective, &c. See VISION, SIGHT, PERSPECTIVE, &c.

Point of VIEW. See the article POINT.

VIEW, among hunters, the track, or print of the feet of a fallow deer on the ground. See TRACK, &c.

To VIEW *a place*, in the military art, is to ride about it, before the laying of a ſiege, in order to obſerve the ſtrength or weakneſs of its ſituation, and fortification. See RECONNOITRE.

VIEWERS, or VEIORS, in law, are perſons ſent by a court, to *view* a place, or perſon in queſtion; as the ſituation of a place where a fact was committed; or a perſon, in caſe of ſickneſs, &c. See VIEW, and VEIOR.

VIGIL, or EVE, in church chronology, the day before any feaſt, &c. See FEAST, and EVE.

Though the civil day begin at midnight, yet the eccleſiaſtical, or ſcriptural day, begins at ſix o'clock in the evening, and holds till ſix in the evening the enſuing day. See DAY.

Hence, the collect for every Sunday and holy-day, by order of the church, is to be read, at the preceeding evening-ſervice, at ſix o'clock the day before; from which time the religious day was ſuppoſed to begin.

And this firſt part of the holy-day, from ſix o'clock the day before, was, by the primitive Chriſtians, ſpent in hymns, and other devotions; and being often continued till late in the night, was called *vigil*. See WAKE.

Theſe *vigils* came, by degrees, to be ſo enlarged, that, at laſt, all the day preceeding the holy-day was called by the name.

The origin of *vigils* is deduced by Forbes from a cuſtom in the antient church, for the people, both men and women, to meet together in the evening before Eaſter-day, and watch and pray, as expecting the coming of our Lord, who was to riſe early in the morning. This practice, Tertullian obſerves, *ad Uxorem*, afterwards got to other feaſts and ſaints-days.—But abuſes creeping in, they were forbid by a council, in 1322, and in lieu thereof faſtings were inſtituted on the day before, tho' ſtill called by the antient name of *vigils*.

Coma VIGIL. See the article COMA.

VIGILIA, that ſtate of an animal which is oppoſite to ſleep, and popularly called *waking*, or *watching*. See SLEEP, and WATCHING.

VIGINTIVIRATE, a dignity among the antient Romans, eſtabliſhed by Cæſar.

This dignity comprehended four others; for of the *vigintiviri*, or twenty men which compoſed the company, there were three who ſat and judged of all criminal affairs; three others had the inſpection of the coins, and coinage; four took care of the ſtreets of Rome; and the reſt were judges of civil affairs.

VILL, VILLA. See the article VILLAGE.

VILLA *Regis*, or *Regia*, a title antiently given to thoſe *villages* where the kings of England had a royal ſeat, and held the manor in their own demeſn: having there commonly a free chapel exempt from the biſhop's juriſdiction.

VILLÆ *Præpoſitus*. See the article PRÆPOSITUS.

VILLAGE*, VILLA, or VILL, an aſſemblage of houſes, inhabited chiefly by peaſants and farmers, having uſually a church, but no market.

* The word is French, formed of *vil*, or *vilis*, low, mean, contemptible: or rather, from the Latin, *villa*, a country houſe, or farm.

The want of a market diſtinguiſhes a *village* from a *town*, as the church does from a *green*, *ſtreet*, &c. See TOWN, &c. Among our Saxon anceſtors, *vill*, or *village*, was uſed in the ſenſe of the Roman *villa*; *viz.* for a country farm, or ſeat, furniſhed with convenient out-houſes, &c. for repoſiting the fruits thereof. Afterwards it came to be taken for a manor: then for part of a pariſh, or the pariſh itſelf. See PARISH.

Hence, in ſeveral antient law-books, *vill* and *pariſh* are the ſame thing: accordingly, Forteſcue, *de Laudibus Leg. Ang.* writes, "That the boundaries of *villages* are not by houſes, " ſtreets, or walls; but by a large circuit of ground, within " which may be divers hamlets, waters, woods, &c.

Fleta makes this difference between a *manſion*, a *village*, and a *manor*; that a manſion may conſiſt of one, or more houſes; though there is only to be one dwelling-place, without any other very near it: for if other houſes be contiguous, it is then a *village*. — A manor may conſiſt of one or more *villages*. See MANSION, and MANOR.

For the better government of *villages*, the lord of the ſoil has uſually a power to hold a court-baron every three weeks. See COURT-*Baron*.

VILLAIN, VILLANUS, in our antient cuſtoms, the ſame with *bond-man*: called alſo, in Domeſday-book, *ſervus*, ſlave. See SERVANT, SLAVE, &c.

A *villain* was one who held lands in *villenage*, or on condition of rendering baſe ſervices to his lord. See SERVICE, VASSAL, &c.

There were antiently in England two ſorts of *villains*, viz. *villains in groſs*, who were bound immediately to the perſons of their lords, and to their heirs — and *villains regardant* to a manor, by the civilians called *glebæ adſcripti*; who were bound to their lord, as members belonging to ſuch a manor, of which he was owner. See REGARDANT.

This latter was a *pure villain*, of whom the lord took redemption to marry his daughter, and to make him free; and he might put him out of his lands and tenements at his will; might beat and chaſtiſe him, but not maim him.

They were called *villains* from *villa*; becauſe they dwelt in *villages*: the ſame were alſo called *pagenſes*, and *ruſtici*; and of ſuch ſervile condition were they, that they were uſually ſold with the farm to which they reſpectively belonged. See PAGAN.

There are not properly any ſuch *villains* now, though the law concerning them ſtands unrepealed. — The lands before held in *villenage*, are now held in free and common *ſocage*. See TENURE, SOCAGE, &c.

VILLAIN *Eſtate*, or *condition*, is contradiſtinguiſhed to *free eſtate*. See BASE *Eſtate*, and VILLENAGE.

VILLAINAGE. See the article VILLENAGE.

VILLAINOUS *Judgment*, is that which caſts the reproach and ſtain of *villany* and ſhame on him againſt whom it is given. — As that againſt a conſpirator, &c. See JUDGMENT, and INFAMOUS.

Lambard calls it *villainous puniſhment*; and ſays, it may well be called *villainous*, in regard the judgment, in ſuch caſe, ſhall be like the antient judgment in attaint, *viz.* that the criminals ſhall not be of any credit afterwards; nor ſhall it be lawful for them, in perſon, to approach the king's court: that their lands and goods ſhall be ſeized into the king's hands, their trees rooted up, their bodies impriſoned, &c.

VILLARUM *Nomina*. See the article NOMINA.

VILLENAGE, or VILLAINAGE, VILLANIA, the quality or condition of a *villain*. See VILLAIN.

Villenage is more particularly uſed for a ſervile kind of tenure of lands, or tenements; whereby the tenant was bound to do all ſuch ſervice as the lord commanded, or were fit for a *villain* to perform: which Bracton expreſſes, by *Sciri non poterit veſperare, quale ſervitium fieri debet manè*. See VILLAIN, and SERVICE.

Villenage is divided into that *by blood*, and that *by tenure*. — Tenure, in *villenage*, could make no freeman a villain, unleſs it were continued time out of mind; nor could free land make a *villain* free. See TENURE.

Villenage is alſo divided by Bracton into *pure villenage*, where the ſervices to be performed were indeterminate and arbitrary, as above expreſſed — and *ſocage villenage*; which was to carry the lord's dung into his fields, to plough his ground on certain days, ſow and reap his corn, &c. and even to empty his jakes: as the inhabitants of Bicton were bound to do to the lord of Clun-caſtle in Shropſhire; which was afterwards turned into a rent, now called *Bickton ſilver*; and the *villainous* ſervice excuſed.

VILLI, *coarſe hair*, in anatomy, is uſed in the ſame ſenſe as *fibres*, or *fibrillæ*. See FIBRE.

VILLI, in botany, denotes a ſort of tomentum, or down, like the grain or ſhag of pluſh; with which, as a kind of excreſcence, ſome trees do abound. See TOMENTUM.

VILLOUS, VILLOSA, is particularly applied to one of the coats or membranes of the ſtomach, called *cruſta villoſa*. — See *Tab. Anat. (Splanch.) fig.* 2. *lit. h.* ſee alſo STOMACH, &c. It takes its name from innumerable *villi*, or fine fibrillæ, wherewith its inner ſurface is covered. See CRUSTA *Villoſa*.

VINALIA, in antiquity, a name common to two feaſts among the antient Romans; the one in honour of Jupiter, and the other of Venus. See FEAST.

The firſt was held on the nineteenth of Auguſt, and the ſecond on the firſt of May. — The *vinalia* of the nineteenth of Auguſt, were called *vinalia ruſtica*, and were inſtituted on occaſion of the war of the Latins againſt Mezentius; in the courſe of which war, that people vowed a libation to Jupiter of all the wine of the ſucceeding vintage.

On the ſame day likewiſe fell the dedication of a temple of Venus; whence ſome authors have fallen into a miſtake, that theſe *vinalia* were ſacred to Venus. — But Varro, *LLL. V.* and Feſtus, in *Verbo Ruſtica*, diſtinguiſh between the two ceremonies; and expreſly aſſert the *vinalia* to be a feaſt of Jupiter.

VINCULUM, in algebra, a character in form of a line, or ſtroke drawn over a factor, diviſor, or dividend, when compounded of ſeveral letters, or quantities; to connect them, and ſhew that they are to be multiplied, or divided, &c. together, by the other term. See CHARACTER, MULTIPLICATION, DIVISION, &c.

Thus, $d \times \overline{a+b-c}$, ſhews that d is to be multiplied into $a+b-c$.

VINDEMIATING*, the gathering of the grapes, or other ripe fruits; as apples, pears, cherries, &c.

* The word is formed of the Latin, *vindemia*, vintage. See VINTAGE.

VINDEMIATRIX, or VINDEMIATOR, a fixed ſtar of the third magnitude, in the northern wing of the conſtellation Virgo; whoſe longitude, latitude, &c. ſee among the reſt of thoſe of VIRGO.

VINDICATION, *Claiming*, in the civil law, an action ariſing from the property a perſon has in any thing: or a permiſſion to take or ſeize a thing, as one's own, out of the hands of a perſon, whom the law has doomed not to be the true proprietor.

VINE, VITIS, a noble plant, or ſhrub, of the reptile kind; famous for its fruit, or grapes, and for the liquor they afford. See WINE.

The kinds of *vines* are almoſt infinite; denominated either from the ſoil, and place where they grow; as the *Bourguignon*, *Bourdelas*, *Italian*, *Mantua vine*, &c. or from the form, colour, taſte, &c. of their grapes; as the *acorn*, *apricot*, *damaſk*, *birds-bill*, *muſcadine*, &c. *vine*.

Our gardeners find, that *vines* are capable of being cultivated in England, ſo as to produce large quantities of grapes; and thoſe ripened to ſuch a degree, as may afford a good ſubſtantial vinous juice. — Witneſs the vineyards in Somerſetſhire; particularly that famous one at Bath.

In effect, it does not ſeem ſo much owing to the inclemency of our Engliſh air, that our grapes are generally inferior to thoſe of France, as to the want of a juſt culture.

Thoſe fitted for the Engliſh climate, Mr. Mortimer finds to be the ſmall black grape, the white muſcadine, parſley grape, muſcadilla, white and red Frontigniac. — Mr. Bradley recommends the July grape, the early ſweet water grape, lately brought from the Canaries, ; the arbois, or French ſweet water grape: all which, if well managed, and the weather favourable, are ripe by the middle of Auguſt. — He alſo recommends the claret and Burgundy grapes.

The beſt ſoil for *vines*, according to Mortimer, is the hotteſt gravel, ſand, or dry rocky ground; provided it be well watered and ſhaded. — At firſt planting, Mr. Bradley recommends chalky hills, as proper for *vines*.

To mend a ſoil that wants thoſe qualities, it is good to throw in the rubbiſh of old buildings, well mixed with twice as much earth, and ſifted about the roots of the *vines*. See VINEYARD.

Vines are propogated either by layers, or cuttings; that is, either by laying down the young branches as ſoon as the fruit is gathered, or by making plantations of ſlips, or cuttings, at that time. See PROPAGATION.

Mr. Mortimer ſays, it may be done any time in the winter before January; though Bradley ſays, he has done it, with ſucceſs, in March and April.

For the Pruning of VINES. } See the article { PRUNING.
For the Planting of VINES. } { VINEYARD.

VINEA, or fortification. See MANTELET.

VINEGAR*, *Acetum*, an agreeable, acid, penetrating liquor, prepared from wine, cyder, beer, and other liquors; of conſiderable uſe, both as a medicine, and a ſauce. See ACETUM.

* The word is French, *vinaigre*; formed from *vin*, wine; and *aigre*, ſour. See WINE.

Wine, and other vinous liquors are ſaid to gain a grateful ſharpneſs, *i. e.* to become *vinegar*, by having their ſalts exalted by inſolation, or other means; and their ſulphurs weakned and depreſſed.

Others aſcribe the converſion of vinous liquors into *vinegar*, to the grinding or ſharpening of the longitudinal particles thereof; by which means, they become more ſharp and pungent.

The method of making *vinegar* has long been kept a ſecret among the people of that profeſſion; who, it is ſaid, oblige themſelves to each other by oath not to reveal it: but, notwithſtanding this, the *Philoſophical Tranſactions*, and ſome other late writings, furniſh us with approved accounts thereof.

Method of making Cider VINEGAR. — The cider (the meaneſt of which will ſerve the purpoſe) is firſt to be drawn off fine into another veſſel, and a quantity of the muſt, or pouz of apples to be added: the whole is ſet in the ſun, if there be a conveniency for the purpoſe; and, at a week or nine days end, it may be drawn off. See CIDER.

Method of making Beer VINEGAR. — Take a middling ſort of beer, indifferently well hopped; into which, when it has worked well, and is grown fine, put ſome rape, or huſks of grapes, uſually brought home for that purpoſe: maſh them together in a tub; then, letting the rape ſettle, draw off the liquid part, put it into a caſk, and ſet it in the ſun as hot as may be; the bung being only covered with a tile, or ſlate-ſtone: and in about thirty or forty days, it will become a good *vinegar*, and may paſs in uſe as well as that made of wine, if it be refined, and kept from turning muſty.

Or thus: — To every gallon of ſpring water, add three pounds of Malaga raiſins; which put into an earthen jar, and place them where they may have the hotteſt ſun from May till Machaelmas: then preſſing all well, tun the liquor up in a very ſtrong iron-hooped veſſel, to prevent its burſting: it will appear very thick and muddy, when newly preſſed; but will refine in the veſſel, and be as clear as wine. — Thus let it remain untouched for three months, before it be drawn off, and it will prove excellent *vinegar*.

To make Wine VINEGAR. — Any ſort of vinous liquor, being mixed with its own fæces, flowers, or ferment, and its tartar firſt reduced to powder; or elſe with the acid and auſtere ſtalks of the vegetable from whence the wine was obtained, which hold a large proportion of tartar; and the whole being kept frequently ſtirring in a veſſel which has formerly held *vinegar*, or ſet in a warm place full of the ſteams of the ſame, will begin to ferment a-new, conceive heat, grow ſour by degrees, and ſoon after turn into *vinegar*.

The remote ſubjects of acetous fermentation, are the ſame with thoſe of vinous; but the immediate ſubjects of it, are all kinds of vegetable juices, after they have once undergone that fermentation which reduces them to wine: for it is abſolutely impoſſible to make *vinegar* of muſt, the crude juice of grapes, or other ripe fruits, without the previous aſſiſtance of vinous fermentation.

The proper ferments for this operation, whereby *vinegar* is prepared, are— 1°. The fæces of all acid wines.— 2°. The lees of *vinegar*. — 3°. Pulverized tartar; eſpecially that of rheniſh wine, or the cream or cryſtals thereof. — 4°. *Vinegar* itſelf. — 5°. A wooden veſſel, well drenched with *vinegar*, or one that has long been employed to contain it. — 6°. Wine that has often been mixed with its own fæces. — 7°. The twigs of vines, and the ſtalks of grapes, currants, cherries, or other vegetables of an acid auſtere taſte — 8°. Bakers leaven, after it is turned acid.— 9° All manner of ferments, compounded of thoſe already mentioned.

Vinegar is no production of nature, but a creature of art: for verjuice, the juices of citrons, lemons, and the like native acids, are improperly ſaid to be *natural vinegars*; becauſe, when diſtill'd, they afford nothing but vappid water: whereas it is not the property of *vinegar* to yield an acid ſpirit by diſtillation.

Method of making VINEGAR *in France.* — The French uſe a method of making *vinegar* different from that above deſcribed. — They take two very large oaken veſſels, the larger the better, open at the top; in each whereof they place a wooden grate, within a foot of the bottom: upon theſe grates, they firſt lay twigs, or cuttings of vines, and afterwards the ſtalks of the branches, without the grapes themſelves, or their ſtones; till the whole pile reaches within a foot of the brim of the veſſels: then they fill one of theſe veſſels with wine to the very top, and half fill the other; and with liquor drawn out of the full veſſel, fill up that which was only half full before; daily repeating the ſame operation, and pouring the liquor back from one veſſel to the other; ſo that each of them is full, and half full by turns.

When this proceſs has been continued for two or three days, a degree of heat will ariſe in the veſſel which is then but half full, and increaſe for ſeveral days ſucceſſively, without any appearance of the like in the veſſel which happens to be full during thoſe days; the liquor whereof will ſtill remain cool: and as ſoon as the heat ceaſes in the veſſel that is half full, the *vinegar* is prepared: which, in the ſummer, happens on the fourteenth or fifteenth day from the beginning; but in the winter, the fermentation proceeds much ſlower: ſo that they are obliged to forward it by artificial warmth, or the uſe of ſtoves.

When the weather is exceeding hot, the liquor ought to be poured off from the full veſſel into the other twice aday: otherwiſe, the liquor would be over-heated, and the fermentation prove too ſtrong; whence the ſpirituous parts would fly away, and leave a vappid wine, inſtead of *vinegar* behind.

The full veſſel is always to be left open at the top, but the mouth of the other muſt be cloſed with a cover of wood; in order the better to keep down and fix the ſpirit in the body of the liquor; for otherwiſe, it might eaſily fly off in the heat of fermentation. — The veſſel that is only half full ſeems to grow hot, rather than the other, becauſe it contains a much greater quantity of the vine-twigs and ſtalks, than that, in proportion to the liquor; above which the pile riſing to a conſiderable heighth, conceives heat the more, and ſo conveys it to the wine below.

VINEGAR *of Antimony*, is an acid ſpirit, drawn by diſtillation from the marcaſite of antimony. See ANTIMONY.

Its uſe is commended in continued and malignant fevers.

The apothecaries have, likewiſe, a kind of theriacal *vinegar*, acetum theriacale, made of Venice treacle digeſted in wine *vinegar*. See ACETUM.

VINEYARD, VINETUM, a plantation of vines. See VINE.

The beſt ſituation of a *vineyard*, is on the declivity of an hill lying to the ſouth. See EXPOSURE.

The vine is propagated by ſlips, layers, or ſuckers, planted in a nurſery, and thence tranſplanted, about February, into the *vineyard*.

As to the ſoil, it is agreed, nothing can be too dry for them: and as to the ſorts of vines, none but the forward ones ought to be planted in England. — Theſe are found to ripen very well in open borders, without walls.

They are to be planted in lines running north and ſouth, five or ſix foot apart; only two vines in each hole. — The September following, the ſhoots of that ſummer to be pruned ſhorter, according to their ſtrength; and the ſummer following, the ſtrongeſt will begin to ſhew a little fruit. — They are now to be ſupported with ſtakes, &c. ſo as they may run about a foot above ground: the higher they run, the leſs danger they are in of being ſpoiled with wet; but the lower, the ſweeter grapes, and the ſtronger wine.

If, notwithſtanding due pruning, they do not ſeem inclinable to bear large bunches, the ground to be helped with a mixture of rubbiſh of ſome old building, with ſea-coal aſhes, or drift ſand. — Thus managed, a *vineyard*, in five or ſix years, will produce good ſtore of grapes.

The celebrated *vineyard* at Bath, containing about ſix acres of ground, planted with white muſcadine, and black cluſter grapes, Mr. Bradley aſſures us, by ſuch management, ſome years ago, yielded ſixty hogſheads of wine at a vintage: though in the year 1721, it only yielded three hogſheads.

The ſame author mentions a little *vineyard* of a private perſon at Rotherhith; which, though only conſiſting of 100 vines, and ſome of them only of the ſecond year's growth, yielded, at a vintage, 95 gallons of wine; which, he adds, had the true Burgundy flavour, as being made from that ſort of grape: and exceeded any made from any *vineyard* on this ſide Paris. See WINE.

VINOUS, VINOSUS, ſomething that relates to wine; or that has the taſte, and ſmell thereof. See WINE.

All vegetables, by a due treatment, afford a *vinous* liquor; as corn, pulſe, nuts, apples, grapes, &c. See MALT, BREWING, &c.

A ſecond fermentation, duly managed, turns any *vinous* liquor into an acetous one. See VINEGAR.

The proper character, and effect of fermentation, is to produce either a *vinous*, or an acetous quality in the body fermented. See FERMENTATION.

Some of our countrymen, bound on a voyage to the Eaſt Indies, having filled ſeveral caſks with Thames-water, to carry along with them; obſerved an inteſtine motion in it, when they came to the equator; and found it afterwards turned into a kind of *vinous* liquor, capable of affording an inflammable ſpirit by diſtilliation. See WATER, and SPIRIT. This, without diſpute, proceeded from the flowers, leaves, roots, fruits, and other vegetable matters, continually falling, or waſhed down in that river. — Such waters are always found in a ſtate of putrefaction, ere they put on a *vinous* nature. See PUTREFACTION.

VINTAGE, the crop of wine, or what is got from the vines each ſeaſon. See WINE.

The word is alſo uſed for the time or ſeaſon of gathering, or preſſing the grapes.

In France, a decree or ordinance of the proper judge, and a ſolemn publication thereof, are required, ere the *vintage* can be begun.

VINUM, a liquor, or drink, popularly called *wine*. See WINE.

VINUM, in medicine, VINUM *Medicatum*, is particularly applied to ſeveral medicated wines, *i. e.* medicinal preparations, whereof wine is the baſis; ſuch as the

VINUM *Abſynthites*, or worm-wood wine; made of the great or little *abſynthium*, by taking the apices, or tops of the flowers, putting them in a ſacculus, or bag, and ſuſpending it in the middle of a veſſel of wine; which fermenting, extracts the taſte, ſmell, and virtues of the worm-wood. See ABSYNTHIUM.

VINUM *Aromaticum*, made by infuſing aromatics, or ſpices, in new wine, or muſt.

VINUM *Cydonites*, quince-wine; made of ſlices of that fruit, ſteeped in muſt, or new wine.

VINUM *Emeticum*, emetic wine; is wine wherein the glaſs, or regulus of antimony, or crocus metallorum, have been ſteeped. See EMETIC.

It only takes a certain degree of efficacy from the matters; nor it is found any ſtronger at three months end, than at the end of eight days. — It purges both upwards, and downwards.

VINUM *Hippocraticum*, or *hippocras*; ſo called of *manica Hippocratis*, or Hippocrates's ſleeve, through which it is ſtrained; is a ſort of ſpiced wine, in which ſugar and ſpices have been ſteeped for ſome time. See HIPPOCRAS, CLARET, &c.

VINUM *Marinum*, ſea-wine; made by caſting ſea-water on the grapes in the vat.

VINUM *Picatum*, pitched wine; made of pitch infuſed in muſt.

VINUM *Roſatum*, roſe-wine; made by ſteeping roſes for three months in wine.

VINUM, called alſo *acetum*, *ſcilliticum*. See SCILLA.

VINUM *Strobilites*, or pine-apple wine: — *Vinum hyſſopites*, hyſſop-wine.

VIOL, VIOLA, a muſical inſtrument, of the ſame form with the *violin*; and ſtruck, like that, with a bow. See VIOLIN.

There are *viols* of divers kinds — The firſt, and principal, among us, is the *baſs-viol*, called, by the Italians, *viola di gamba*, or the *leg-viol*; becauſe held between the legs. It is the largeſt of all; and is mounted with ſix ſtrings. Its neck is divided in half notes, by ſeven frets fixed thereon. Its ſound is very deep, ſoft, and agreeable. — The tablature, or muſic for the *baſs-viol*, is laid down on ſix lines, or rules.

What the Italians call *alto viola*, is the counter-tenor of this; and their *tenore viola*, the tenor. They ſometimes call it, ſimply, the *viol*: ſome authors will have it the *lyra*, others the *cithara*, others the *chelys*, and others the *teſtudo* of the antients. See LYRA, &c.

2°. The *love-viol*, *viola d' amore*, which is a kind of triple *viol*, or violin; having ſix braſs or ſteel ſtrings, like thoſe of the harpſicord. — It yields a kind of ſilver ſound, which has ſomething in it very agreeable.

3°. A *large viol*, with 44 ſtrings, called, by the Italians, *viola di bardone*; but little known among us.

4°. *Viola baſtarda*, or *baſtard viol*, of the Italians; not uſed among us: Broſſard takes it to be a kind of *baſs-viol*, mounted with 6 or 7 ſtrings, and tuned as the common one.

5°. What the Italians call *viola di braccio*, arm-*viol*; or, ſimply, *braccio*, *arm*; is an inſtrument anſwering to our counter-tenor, treble, and fifth violin.

6°. Their *viola prima*, or *firſt viol*, is really our countertenor violin; at leaſt, they commonly uſe the cliff of *c ſol ut* on the firſt line, to denote the piece intended for this inſtrument.

7°. *Viola ſecunda*, is much the ſame with our tenor violin; having the cliff of *c ſol ut* on the ſecond line.

8°. *Viola terza*, is nearly our fifth violin; the cliff *c ſol ut* on the third line.

9°. *Viola quarta*, or fourth *viol*, is not known in England, or France: though we frequently find it mentioned in the Italian compoſitions; the cliff on the fourth line.

Laſtly, their *violetta*, or little *viol*; is, in reality, our triple *viol*: though ſtrangers frequently confound the term, with what we have ſaid of the *viola prima*, *ſecunda*, *terza*, &c.

VIOL, is alſo a term uſed among mariners, when a hawſer, or ſtrand-rope is bound faſt with nippers to the cable, and brought to the jeer-capſtan, for the better weighing of the anchor, where the main capſtan proves inſufficient. See ANCHOR, CABLE, CAPSTAN, &c.

VIOLATION, the act of *violating*, i. e. forcing a woman, or committing a rape upon her. See RAPE.

Amnon, David's ſon, *violated* his ſiſter, who was avenged by Abſalom: Tereus *violated* his-ſiſter-in-law Philomela.— To *violate* the queen, the king's eldeſt daughter, or the princeſs of Wales, is high treaſon. See TREASON.

VIOLATION, is alſo uſed, in a moral ſenſe, for a breach, or infringement of a law, ordinance, or the like. See TRANSGRESSION.

Thus, we ſay, a *violation* of the law of nature, of a treaty of peace, of one's oath, *&c.* — The law of nations was *violated* in the inſult offered to Mr. S——— the king's embaſſador at Madrid.

VIOLATION, is alſo uſed for a profanation. — In which ſenſe, we ſay to *violate* a church, *&c.* See PROFANATION.

VIOLENT, in the ſchools, a thing done by force.— In which ſenſe it ſtands oppoſed to *ſpontaneous*. See SPONTANEOUS.

A thing is ſaid to be *violent*, when effected by ſome external principle; the body that undergoes it contributing nothing thereto, but ſtruggling againſt it.

The body, in ſuch caſe, is ſaid to *ſtruggle*, by reaſon whatever is *violent*, diſcompoſes and diſtracts a thing from its natural conſtitution, and tends to deſtroy it.

The ſchoolmen all allow, that man, as being endued with reaſon, is capable of ſuffering ſuch *violence*; but brute and inanimate bodies are not: *in brutum*, &c. violentum *non cadit.*

VIOLENT *Motion*. See the article MOTION.

VIOLIN, VIOLINO, *Fiddle*, a muſical inſtrument, mounted with four ſtrings, or guts; and ſtruck, or played with a bow.

The *violin* conſiſts, like moſt other inſtruments, of three parts; the *neck*, the *table*, and the *ſoundboard*.

At the ſides are two apertures, and ſometimes a third towards the top, ſhaped like a heart.

Its bridge, which is below the apertures, bears up the ſtrings, which are faſtened to the two extremes of the inſtrument; at one of them, by a ſcrew, which ſtretches, or looſens them at pleaſure.

The ſtyle and ſound of the *violin*, is the gayeſt and moſt ſprightly of all other inſtruments; and hence it is, of all other, the fitteſt for dancing. Yet there are ways of touching it, which render it grave, ſoft, languiſhing, and fit for church, or chamber muſic.

It generally makes the treble, or higheſt parts in conſorts.— Its harmony is from fifth to fifth. Its play is compoſed of baſs, counter-tenor, tenor, and treble; to which may be added, a fifth part: each part has four fifths, which riſe to a greater ſeventeenth.

In compoſitions of muſic, *violin* is expreſſed by V: two VV denote two *violins*.

The word *violin*, alone, ſtands for *treble violin*: when the Italians prefix *alto*, *tenore*, or *baſſo*, it then expreſſes the counter-tenor, tenor, or baſs-*violin*.

In compoſitions, where there are two, three, or more different *violins*, they make uſe of *primo*, *ſecunda*, *terzo*, or of the characters I° II° III°, or 1° 2° 3°, *&c.* to denote the difference.

The *violin* has only four ſtrings, each of a different thickneſs, the ſmalleſt whereof makes the *e ſi mi* of the higheſt octave of the organ; the ſecond, a fifth below the firſt, makes the *a mi la*; the third, a ſifth below the ſecond, is *d la re*; laſtly, the fourth, a fifth below the third, is *g re ſol*.

Moſt nations, ordinarily, uſe the cliff *g re ſol* on the ſecond line, to denote the muſic for the *violin*; only in France, they uſe the ſame cliff as the firſt line at bottom: the firſt method is beſt, where the ſong goes very low, the ſecond, where it goes very high.

The VIOLONCELLO of the Italians, is properly our fifth *violin*, which is a little baſs *violin*, half the ſize of the common baſs *violin*, and its ſtrings juſt half as thick, and half as long; which renders the ſound juſt an octave lower than the ſame.

Their VIOLONE is a double baſs, almoſt twice as big as the common baſs *violin*, and the ſtrings bigger and longer, in proportion; and conſequently, its ſound an octave lower than that of our baſs *violin*: which has a noble effect in great concerto's. See VIOL.

VIPER, VIPERA, in natural hiſtory, a kind of ſerpent, famed not only for the exceeding venomouſneſs of its bite, which is one of the moſt dangerous poiſons in the animal kingdom, but alſo for the great uſefulneſs of its fleſh in medicine: whence vipers come to make a conſiderable article in divers arts. See POISON.

This remarkable reptile, has the biggeſt and flatteſt head of all the ſerpent-kind. Its uſual length is about half an ell; and its thickneſs an inch: its ſnout is not unlike that of a hog. It has ſixteen ſmall immoveable teeth in each jaw; beſides, two other large, ſharp, hooked, hollow, tranſparent, canine teeth, ſituate at each ſide of the upper jaw, which are thoſe that do the miſchief: theſe are flexible in their articulation; and are ordinarily laid flat along the jaw, the animal never raiſing them but when it would bite.

The roots or baſes of theſe teeth, or fangs, are incompaſſed with a veſicle, or bladder, containing the quantity of a large drop of a yellow inſipid ſalivous juice.

It has only one row of teeth; whereas all other ſerpents have two: its body is not at all fetid; whereas the inner parts of the bodies of other ſerpents are intolerable. — It creeps very ſlowly, and never leaps like other ſerpents; though it is nimble enough to bite, when provoked.

Its body is of two colours, aſh-coloured, or yellow, and the ground ſpeckled with longiſh brown ſpots.— The ſcales under its belly, are of the colour of well poliſhed ſteel.

The male has two ſets of genital inſtruments, and the female two matrixes, &c. She brings forth her young living; whereas other ſerpents lay eggs, and hatch them: on which account, the *viper* is ranked among the viviparous animals. See VIVIPAROUS.

Her young ones come forth wrapped up in thin ſkins, which break on the third day, and ſet the animal at liberty. — She brings forth to the number of 20 young; but only one each day.

The antients, particularly Pliny, Galen, &c. believed that the young killed their mother in the delivery; but this is not the only miſtake they were guilty of on the ſubject of the *viper*. — They held, that it eat cantharides, ſcorpions, &c. which rendered its poiſon ſo very dangerous.

Dr. Mead obſerves, that the antients eſteemed the *viper* ſacred; and that the kings of the Eaſt Indies cauſed cottages to be built for their entertainment, and their killers to be puniſhed with death. — On medals, the *viper* is frequently repreſented as a ſymbol of divine power; and as ſuch, given by way of attribute to the antient phyſicians.

As to the manner wherein the *viper* conveys its poiſon, authors are a little diſagreed. — Franciſco Redi, and Moiſe Charras, have each of them wrote very curious pieces on the ſubject, but their reſult is very different.

Redi maintains, that all the venom of the *viper*, is contained in the two veſiculæ, or bags, which cover the baſe of the two canine teeth; whence, upon biting, the yellowiſh liquor is ſqueezed out into the wound: where, mixing with the blood, and other juices, it produces thoſe dreadful ſymptoms.

This hypotheſis he maintains, by a good number of experiments; as of animals, *viz.* cocks, &c. being bit with *vipers*, after theſe veſiculæ and their juice had been taken out; without any ſigns of poiſon, or any ill conſequence at all.

Charras, on the other hand, maintains, that this yellow liquor is not poiſonous; that he has given it to pigeons, as food, without their being at all diſordered thereby; that the *viper's* bite he has always found mortal to animals, even after the bag has been taken clear out, as well as before: and laſtly, that the poiſon muſt lie in the irritated ſpirits of the *viper*, which it exhales in the ardor of its biting; and which are ſo cold, that they curdle the blood, and ſtop the circulation.

The controverſy between theſe two ingenious authors, is very extraordinary: their ſyſtems are oppoſite; yet both maintained by a great number of well atteſted experiments. — The public, however, generally give into the ſentiment of Sig. Redi; as anſwering beſt to the mechaniſm of the parts.

Dr. Mead ſuppoſes it the true one, in his eſſay on the poiſon of the *viper*; and adds to Redi's account, that the poiſon in the *viper's* bag is ſeparated from the blood, by a conglomerate gland, lying in the lateral anterior part of the os ſincipitis, behind the orbit of the eye; from which gland is a duct, that conveys the poiſon to the bags at the teeth. — The teeth, he adds, are tubulated for the conveyance and emiſſion of the poiſon into the wound; but their hollowneſs does not reach to the apex, or tip of the tooth, but ends in a long ſlit below the point, out of which the poiſon is emitted.

Theſe ſlits, or perforations of the teeth, Galen ſays, the mountebanks, of his days, uſed to ſtop with ſome kind of paſte; after which, they would publickly expoſe themſelves to be bitten, without danger.

Effects of the bite of the VIPER — The ſymptoms following the bite of a *viper*, are an acute pain in the place wounded; ſwelling, firſt red, afterwards livid, ſpreading by degrees; great faintneſs; a quick, low, and ſometimes interrupted pulſe; ſickneſs at the ſtomach; bilious convulſive vomiting; cold ſweats; ſometimes pains about the navel; and death itſelf, if the ſtrength of the patient, or ſlightneſs of the bite, do not overcome it.

If he do overcome it, the ſwelling continues inflamed for ſome time; and the ſymptoms abating, from the wound runs a ſanious liquor, little puſtules are raiſed about it, and the colour of the ſkin is as if the patient were icterical.

By the microſcope, the virus has been found to conſiſt of minute ſalts in continual motion; after which a number of ſpicula, or darts appeared, reſembling, but much finer, a ſpider's web. — This, when mixed with ſyr. violar. inclined to red, no ways to green; ſo that the juice is not alkalious: But Mr. Boyle, and Dr. Pitcairn, prove the blood to be only an alkaly.

Such a ſmall quantity of the virus, ſeems to have ſo great an effect by wounding the fibres, and altering the coheſion of the globules of blood, which, by the elaſtic matter thereof proves a nimble vehicle, to carry the viperine ſpicula almoſt every where ſuddenly. — Theſe will ſtimulate and fret the ſenſible membranes; whereupon, a more than uſual afflux of the animal juices may be carried to the parts.

The cure ſeems very unſettled: Mr. Boyle found a hot iron held near the place ſucceſsful; but it proved otherwiſe with M. Charras. — Again, the ſnake-ſtone from the Eaſt Indies, immediately applied to the place, is much commended: but ſignior Redi, and M. Charras, found it of no uſe; yet Baglivi, and Dr. Havers, give inſtances of its good ſucceſs.

Dr. Mead adds, that the ſame ſtone directly applied to a pigeon, when bitten, ſaved its life four hours; whereas, moſt of the other pigeons bitten died in half an hour.

This ſtone is not natural, but factitious; its virtue lies in its poroſity, which is ſuppoſed to imbibe the virus.

The *viper*-catchers, Dr. Mead adds, have a ſpecific, in which they can ſo far confide, as not to be afraid of being bitten. — That ſpecific is, the axungia of the *viper* preſently rubbed into the wound; which conſiſting of clammy, viſcid, penetrating, and active parts, ſheaths the ſalts of the virus.

The ſame author, applying it to the noſtrils of a dog bitten, found it well the next day: when this is not timely applied, and the virus has inſinuated into the blood, the *ſal viper.* is excellent, given and repeated till ſweats be produced. — This ſucceeded well with M. Charras; and Dr. Mead relates, that it recovered one, after the virus had induced an univerſal icterus.

Vipers make a conſiderable article in medicine. — Moſt authors agree, that there is no part, humour, or excrement, not even the gall itſelf, of a *viper*, but may be ſwallowed without much harm. — Accordingly, the antients, and, as ſeveral authors aſſure us, the Indians at this day, both of the eaſt and weſt, eat them as we do eels.

Caro viperina, *viper's* fleſh, either roaſted, or boiled, the phyſicians unanimouſly preſcribe as an excellent reſtorative; particularly in the elephantiaſis, incurable conſumptions, leproſy, &c. and Dr. Mead thinks, they might be leſs ſparing in the quantity than they are; inſtead of a little *viper's* fleſh, he recommends the broth, or gelly of *vipers*; or, as the antients did, to boil and eat them as fiſh, or at leaſt, to drink vinum viperinum, *i. e.* wine wherein they have been long infuſed.

Viper's fleſh is an ingredient in ſeveral of our beſt antidotes; as the theriaca andromach. &c. See THERIACA.

The apothecaries alſo ſell the pulvis viperinus, which is only dried *vipers* pulverized, heart, liver, and all, and paſſed through a ſieve. — This, to heighten the price we ſuppoſe, they call *animal bezoard*. See BEZOARD.

The *ſalts of vipers*, whether volatile, or fixed, alſo their fat, or axungia, and their oil, chymically drawn, are drugs in good repute.

VIPER-*Wine*. See the article WINE.

VIRAGO*, a woman of extraordinary ſtature; and who, with the female ſex, has the mien and air of a man, and performs the actions and exerciſes of men. See AMAZON.

* The word is pure Latin, formed from *vir* man; and ſeldom uſed, but in the way of diverſion.

Such were Semiramis, and Pentheſilea, among the antients, and Jeanne la Pucelle, commonly called *the maid of Orleans*, among the moderns.

In the vulgate verſion of the Bible, Eve is called *virago*, becauſe made of the rib of the man. — The Latin tranſlator, by this, aimed to preſerve the etymology which is in the Hebrew, and of *vir*, formed *virago*; as Adam, in the Hebrew text, called Eve *Iſcha*, of iſch, man.

VIRGA. See the article YARD.

VIRGA*, is particularly uſed in law for a *verge*, or *rod*, ſuch as ſheriffs and bailiffs carry a badge of their office. See VERGE.

* — *Ranſ. ap Howel, præpoſitus de Lantiſſin amerciatus pro eo quod habuit in manu ſua coram juſticiariis hic* virgam *nigram & inboneſtam, ubi habere debuiſſet* virgam *album & honeſtam certæ longitudinis, prout decet.* In ſeſſ. Itin. de Cardiff. 7 Hen. VI. See VERGERS.

VIRGÆ, in phyſiology, a meteor, called alſo *columellæ*, and *funes tentorii*; being an aſſemblage of ſeveral ſtreams of light, repreſenting a bundle of rods, or ropes. See METEOR.

It is ſuppoſed owing to the ſtreaming of the ſun beams through certain rimulæ, or chinks; at leaſt, through the more lax and open parts of a watery cloud; happening chiefly in the morning and evening.

There is alſo another kind, conſiſting not of ſtreams of mere white light, but, as it were, painted of various colours; like thoſe of the rainbow. See RAINBOW.

VIRGATA *Terræ*, or **VIRGA** *terræ*, a yard-land. See YARD-*Land*.

VIRGATORES *Servientes*, in Fleta, are vergers, or tipſtaves, who attend the judges. See VERGER, and SERJEANT *at Arms*.

VIRGIN, VIRGO, a ſemale who has had no carnal commerce with man; or, more properly, who has ſtill the *flos virginis*, or maiden-hood. See VIRGINITY.

In the Roman Breviary, there is a particular office for *virgins* departed, anſwering to thoſe for ſaints, martyrs, and confeſſors. See OFFICE.

Critics and antiquaries are much divided about a feaſt held in that church in honour of S. Urſula, and her companions; who are ſaid in the Ritual, Legend, &c. to have been eleven thouſand *virgins*.

Some imagine there has been a miſtake in reading the antient rituals, wherein XI. M. V. which was only an abbreviation of *eleven virgin martyrs*, was read according to the numeral letters, *eleven thouſand virgins*. — F. Sirmond conjectures, that in the antient liſts of martyrs, there were found S. S. Urſula, and Undecimilla V. M. and that in lieu of Undecimilla, which is the name of a *virgin martyr*, the copiſts had made *undecimillia*, which is eleven thouſand.

By the Moſaic law, the prieſts are enjoined to take none to wife but thoſe that are *virgins*: the widow, the divorced, and the harlot are to be refrained from.

VIRGIN is alſo applied, by way of eminence, to Mary the mother of our Saviour; as conceiving, and bringing him forth without any breach of her chaſtity. See CONCEPTION, ANNUNCIATION, &c.

The fathers, many of them, with the modern churches, hold that the *virgin* not only conceived, but brought forth, or was delivered, without breach of her virginity; otherwiſe, ſays S. Auguſtin, it would be falſe which is ſaid in the creed, that he was born of a *virgin*. — 'Tis even defined, that ſhe ſtill remained a *virgin* to the end of her life: whence the Greeks always call her αειπαρθενος, *ever virgin Mary*; and after them the Latins, *ſemper virgo*. Though, as this is not recorded in holy writ, many have denied it, and held, that ſhe had afterwards to do with Joſeph, and bore other children; and this as early as the time of Origen. Tertullian himſelf is produced as one that denied the perpetual *virginity*: and the like may be ſaid of Apollinaris and Eunomius, with their followers.

Theſe impugners of the perpetual *virginity* encreaſed afterwards to a great number, and are called by Epiphanius, *Antidicomarianitæ*; and were condemned under that name by the ſixth general council. The ſame were alſo called by the Latins *Helvediani*, from Helvedius a diſciple of Auxentius, whoſe name was made uſe of as having been refuted by S. Jerom. He was followed by Jovinian, a monk of Milan, as Jerom teſtifies; though S. Auguſtin ſpeaks otherwiſe, viz. that he held, that the *virgin* loſt her virginity in bringing forth: And Bonoſus, a biſhop in Macedonia, was condemned for the ſame poſition.

Their error was founded on the ſame ſubtile interpretations of ſcripture: as, becauſe S. Matthew ſays, that Joſeph knew not Mary (εως) 'till ſhe had brought forth her firſt-born: from hence they infer, that he knew her afterwards: ſo becauſe he was called her firſt-born, they argue, that ſhe muſt have had a ſecond. — But the Jewiſh law determines what is meant by firſt-born, and affixes it to the apertion of the womb: *primogenitum omne quod aperit vulvam*, Luke ii. 22, 23. — But they add, that mention is made of the mother and brethren of Jeſus; John ii. 12. and Matth. xii. 46. But this the antient fathers, eſpecially of the Greek church, explain, after Origen, of ſome children of Joſeph by a former wife, of which ſome make ſix; the eldeſt of which was James, the brother of our Lord: But in reality there ſeems no neceſſity of ſuppoſing, from theſe texts, that Joſeph had any other offſpring; becauſe the language of the Jews included in the name of brethren, not only the ſtrict relation of fraternity, but alſo the larger of conſanguinity. See BROTHERS.

But the Helvedians further argue, that the ſcriptures not only call them the brothers of Chriſt, but declare them to be the ſons of Mary: for that the Jews, Matth. xiii. 35. ſay, "Is not "his mother called Mary, and his brethren James, and Joſes, "and Simon, and Judas?" — To this biſhop Pearſon anſwers, That Mary the mother of James and Joſes was a different perſon from Mary the *virgin*; which he ſhews, by comparing the accounts of John xix. 25. Matth. xxvii. 5, 6. and Mark xv. 40. where this Mary the mother of James, and the ſiſter of Mary the *virgin*, is repreſented as the wife of Cleophas.

Neſtorius and his adherents maintained, that the *virgin* could not, with any propriety, be called the *mother of God*; as being really no more than the *hoſteſs of God*: for that the eternal Word could not be conceived, and born of the womb of a *virgin*. See NESTORIANS.

This hereſy was condemned at the council of Epheſus; yet it has been lately revived in Holland, chiefly by a refugee monk, one Renoult.

Charity of the holy VIRGIN. } See { CHARITY.
Preſentation of the VIRGIN. } { PRESENTATION.

VIRGIN is alſo applied, figuratively, to ſeveral things that retain their abſolute purity, and have never been made uſe of. — Thus,

VIRGIN-*Wax*, is that which has never been wrought, but remains as it came out of the hive. See WAX.

VIRGIN *Oil*, is what oozes ſpontaneouſly from the olive, &c. without preſſing. See OIL.

VIRGIN *Gold*, is that metal ſuch as it is got out of the oar, without any mixture or alloy; in which ſtate it is ſometimes ſo ſoft, that it will take the impreſſion of a ſeal. See GOLD.

VIRGIN *Copper*, is a native copper found in the mine, and which has never been melted down. See COPPER.

VIRGIN *Quickſilver*, is that found perfectly formed, and fluid, in the veins of mines; or, at leaſt, is got from the mineral earth, by mere lotion, without fire. See MERCURY.

VIRGIN *Parchment*, is that made of the ſkin of an abortive lamb, or calf. See PARCHMENT, and VELOM.

VIRGIN *Sulphur*. } See the article { SULPHUR.
VIRGIN's *Milk*. } { LAC *Virginale*.

VIRGIN's *Thread*, a ſort of meteor that flies in the air, like ſmall untwiſted ſilk; and which falling upon the ground, or upon plants, changes itſelf in a form like a ſpider's web. See METEOR.

In theſe northern climates, it is moſt frequent in ſummer; the days being then temperately warm, the earth not exceeding dry, nor yet over-charged with moiſture.

This has formerly paſſed for a ſort of dew, of an earthy, ſlimy nature: but naturaliſts are now agreed, that the *virgi's threads* are no other than ſo many ſpiders webs. See WEB.

VIRGINALE *Clauſtrum*, in anatomy, the ſame as *hymen*. See HYMEN.

VIRGINEUS *Morbus*, the *virgin's diſeaſe*; the green-ſickneſs, or chloroſis. See CHLOROSIS.

VIRGINIS *Spica*. See the article SPICA.

VIRGINITY, VIRGINITAS, the teſt or criterion of a *virgin*; or that which entitles her to the denomination. See VIRGIN.

In the firſt ages of the Chriſtian church, *virginity* grew into great honour and eſteem; inſomuch, that the women were admitted to make ſolemn vows thereof in public. — Yet was it held infamous among the Jews, for a woman to die a maid.

The veſtals, among the antients, and the nuns or religious, among the moderns, found guilty of a breach of the vow of *virginity*, are allotted a ſevere puniſhment; the firſt to be buried alive, the latter to be immured. See VESTAL, &c.

The phyſicians, both antient and modern, are exceedingly divided upon the ſubject of *virginity*: ſome holding that there are no certain marks, or teſtimonies thereof, and others that there are.

Solomon ſays expreſly, there are four things too wonderful for him to know: "The way of an eagle in the air; of a "ſerpent on the rock; of a ſhip in the midſt of the ſea; and "the way of a man in a maid;" which our tranſlators have rendered, leſs juſtly, *the way of a man with a maid*.

Yet Moſes eſtabliſhed a teſt, which was to be concluſive among the Jews. — The nuptial ſheets, it ſeems, were to be viewed by the relations on both ſides; and the maid's parents were to preſerve them as a token of her *virginity*; to be produced, in caſe her huſband ſhould ever reproach her on that ſcore.

In caſe the token of *virginity* was not found thereon, ſhe was to be ſtoned to death at her father's door.

This teſt of *virginity* has occaſioned abundance of ſpeculation about the parts concerned; but the niceſt inquiries cannot ſettle any thing certain about them. — Dr. Drake ſays expreſly, that, whatever might be expected among the Jews, there is not the ſame reaſon to expect thoſe tokens of *virginity* in theſe countries: for beſides, that the Hebrews married extremely young, as is the cuſtom in all the eaſtern countries, there are ſeveral circumſtances which may here fruſtrate ſuch expectations, even in virgins not vitiated either by any male contact, or any wantonneſs of their own.

In effect, in theſe northern climates, the inclemency of the air expoſes the ſex to ſuch checks of perſpiration, as gives a great turn to the courſe of the humours, and drives ſo much humidity through the parts, as may extraordinarily ſupple and relax thoſe membranes from which the reſiſtance is expected; and from which, in hotter countries, it might more reaſonably be depended on.

What moſt commonly paſſes among us for a teſt of *virginity*, is the hymen: and yet the moſt curious among the anatomiſts are greatly divided not only about the figure, ſubſtance, place, and perforations of this famous membrane, but even about the exiſtence thereof; ſome poſitively affirming, and others as flatly denying it. See HYMEN.

As nice a point as that of *virginity* is among anatomiſts, the midwives and matrons treat it with leſs diffidence. — In the ſtatutes of the ſworn matrons, or midwives, of Paris, containing likewiſe divers formula's of reports, and depoſitions made in court, upon their being called to viſit girls that made their complaint of being deflowered, they lay down fourteen marks whereon to form a judgment.

Laur. Joubert, a famous phyſician of Montpellier, has tranſcribed three of theſe reports: one made to the provoſt of Paris, another in Languedoc; and a third in Bearn. — Theſe reports are very conſiſtent with each other; and contain fourteen marks of *virginity*, expreſſed in their proper terms; ſuch as were received among the women of that profeſſion, and authorized in court.

M. Joubert does not explain thoſe terms; nor do we find any explanation of them any where, but in another report of the 23d of October 1672, inſerted in the *Picture of Love* of Venette, a phyſician of Rochel; a copy of which, we ſhall here give in Engliſh.

‘We, Mary Miran, Chriſtophlette Reine, and Jeanne Porte Poullet, ſworn matrons of the city of Paris, certify to all thoſe whom it may concern, that on the 22d of October, in this preſent year, at the appointment of Monſieur the provoſt of Paris, we went into the ſtreet de Pompierre, to a houſe next the ſign of the ſilver key, to view and viſit Olive Tiſſerand, of the age of 30 years; on a complaint made by her in court againſt James Mudont, citizen of Roche ſur Mer, for forcing and violating her the ſaid Olive: and having viewed and examined the whole with the eye, and finger, we find, *Les toutons devoyez*, that is, the breaſts looſe and flaccid, *mammæ marcidæ & flaccidæ: Les barres froiſſées, i. e.* the os pubis bruiſed, *os pubis colliſum: Le lippion recoquillé*, i. e. the hair curled up, *pubes in orbem ſinuata: L' entrepet ridé, i. e.* the perinæum or ſeam wrinkled, *perinæum corrugatum: Le pouvant debiffé, i. e.* the vulva, or pudendum, tumbled and diſordered, *vulva diſſoluta & marceſcens: Les balunaux pendants, i. e.* the labia hanging down, *labia pendentia: Le lippendis pilé, i. e.* the edge of the labia bared of hair, *labiorum ora pilis defectæ: Les baboles abbatues, i. e.* the nymphæ beat down, *nymphæ depreſſæ: Les halerons demis, i. e.* the carunculæ undone, or opened, *carunculæ diſſolutæ: L'entrechenat retourné, i. e.* the membranes which connect the caruncules inverted, *membrana connectens inverſa: Le barbidau ecorché, i. e.* the clitoris excoriated, *clitoris excoriata: Le guilboquet fendu, i. e.* the neck of the womb torn, *collum uteri dilaceratum: Le guillenard elargi, i. e.* the vagina ſtretched, or widened, *vagina dilatata: La dame du milieu retirée, i. e.* the hymen broke and gone, *hymen deductum: L'arriere foſſe ouverte, i. e.* the inner orifice of the womb opened, *os internum matricis apertum.* — *Le tout veu & viſité feuillet par feuillet nous avons trouvé qu'il, y avoit trace de* — The whole viewed and examined part by part, we find plainly the track or foot-ſtep of — *Omnibus ſigillatim perſpectis & perſcrutatis*, &c. — Accordingly we, the ſaid matrons, do certify it to be true, to you, Monſieur le provoſt, on the oath we have taken. — Done at Paris the 23d of October, 1672.’

In Peru, and ſeveral other provinces of South-America, we are aſſured by Pedro de Cieca, in the hiſtory of the Yncas, *&c.* that the men never marry, but on condition that the next relation, or friend of the maid's, ſhall undertake to enjoy her before him, and take away her *virginity*. — And our countryman Lawſon relates the like of ſome of the Indian nations of Carolina. — So little is the *flos virginis*, prized ſo much among us, valued by them.

VIRGO, in aſtronomy, one of the ſigns, or conſtellations of the zodiac, into which the ſun enters in the beginning of Auguſt. See SIGN, and CONSTELLATION.

The ſtars in the conſtellation *Virgo*, in Ptolemy's catalogue, are 32; in Tycho's, 39; in the Britannic, 89. — The longitudes, latitudes, magnitudes, *&c.* whereof, are as follows:

Names and Situations of the Stars.	Sign.	Longitude.			Latitude.				Magnit.
		°	′	″	°	′	″		
That preced. *Virgo*'s head	♍	17	30	05	5	19	13	N	6
North. in the top of the head		19	00	29	6	6	21	N	5
South.		19	49	35	4	35	39	N	5
Subſeq. and leſs in the top of the head		19	37	15	6	21	33	N	6
In the bend of the ſouth. wing		22	46	14	0	40	47	N	3
5									
		21	09	47	7	14	53	N	6
		24	12	31	3	20	31	N	5 6
South. in the face		23	13	29	6	8	52	N	5
North.		23	23	06	8	31	29	N	5
		27	08	22	2	42	52	N	6
10									
		25	39	56	6	19	31	N	6
		24	38	13	10	44	24	N	6 7
	♎	0	16	44	1	8	8	N	6
		3	39	31	6	16	20	S	7
Preced. in the ſouth. wing.		0	30	52	1	22	1	N	4 3
15									
That in the neck	♍	29	2	17	5	4	22	N	5
		28	44	8	7	7	4	N	6
		29	7	52	12	43	22	N	6
	♎	7	9	52	5	19	47	S	6
In the ſouth. arm		6	29	0	1	42	25	S	6
20									
Firſt of three under ſouth. arm		7	50	38	3	27	[illegible]	S	5
		1	3	5	13	41	37	N	6
		8	15	49	2	44	25	S	6
Second of the ſouth. wing.		5	52	11	2	48	53	N	3
Preced. of three in the north. wing		1	10	33	13	32	49	N	5
25									
		2	36	19	10	24	41	N	6
South. of the north. wing		3	6	26	11	34	19	N	5 6
		2	28	51	13	22	45	N	6 7
		1	42	23	15	38	52	N	6
		1	10	31	17	47	57	N	6
30									
		6	20	45	7	55	15	N	7
		11	31	30	3	3	16	S	6
Middle under the ſouth. arm		11	52	25	3	25	22	S	5
		3	3	20	6	43	39	N	6
In the north. ſide againſt the girdle		7	9	5[illegible]	8	38	27	N	3
35									
Third of the ſouth. wing		10	52	5[illegible]	2	21	50	N	6
		10	55	41	2	51	56	N	7
Upper of north. wing, *vindemiatrix*		5	37	40	16	12	34	N	3
		11	47	47	2	55	7	N	7
Third under the ſouth. arm		15	25	09	3	15	3	S	5
40									
		14	44	20	1	26	51	S	6
		15	41	28	2	42	31	S	6
Fourth and laſt of the ſouth. wing		13	54	23	1	45	29	N	4
Firſt of three under ſpica		18	25	56	7	53	20	S	4 5
		19	46	20	10	12	6	S	6
45									
		20	30	30	1	6	24	S	6
That following vindemiatrix	♎	9	41	24	16	13	6	N	7
That following north. wing		11	27	17	12	39	30	N	5
Middle under ſpica		20	43	10	9	9	50	S	4 5
		21	29	8	8	19	33	S	5 6
50									
		13	52	05	9	58	50	N	7
		12	39	6	12	48	11	N	6
In ſouth. hand		19	31	22	2	1	59	S	1
Underneath ſpica		20	26	48	3	18	24	S	6
Laſt, and north. of three under ſpica		21	49	15	6	17	54	S	5 6
55									
		10	38	12	21	24	25	N	6
		12	4	17	18	42	49	N	6
North. of preced. in ſquare of thigh		18	39	18	2	47	25	N	6
		23	52	19	8	26	42	S	5
Second		19	16	27	3	8	55	N	6
60									
		22	48	30	5	14	34	S	6
South. of preced. in ſquare of thigh		20	55	51	0	24	7	S	6
		19	44	11	2	55	30	N	7
Another follow. north. wing		16	3	48	12	33	1	N	6
Under the girdle, as in the hip		17	49	50	8	39	9	N	3
65									
Third in ſquare of thigh		19	46	12	4	15	21	N	6
		21	10	4	2	9	18	N	6
North. of thoſe foll. in ſquare of thigh		22	23	31	1	43	45	N	6
That over the girdle		18	15	4	13	16	45	N	6
		25	44	18	4	59	33	S	7
70									
		25	50	19	4	30	31	S	6
In ſouth. knee		24	43	6	1	21	46	S	5
		26	59	34	6	18	29	S	6
		23	16	7	4	4	4	N	6
		27	39	20	6	21	37	S	5 6
75									
In north. thigh		22	52	22	9	37	22	N	6
		22	21	36	12	9	45	N	6
That over the north. thigh		23	24	56	13	4	50	N	5
		28	10	30	3	41	47	N	6
		28	25	25	3	19	59	N	6
80									
South. of 3 in the border of garment	♍	0	10	40	2	55	40	N	4
Middle in the border	♎	29	27	27	7	15	37	N	4
In extrem. of ſouth. foot	♏	2	38	13	0	31	4	N	4
North. of three in the garment	♎	29	4	41	11	3	1	N	5
		29	33	5	11	30	3	N	5
85									
A bright one follow. theſe	♍	1	8	14	11	47	25	N	4
In extrem. of the north. foot		5	47	23	9	43	8	N	4
		4	22	44	15	56	52	N	6
		4	10	50	17	7	21	N	4

VIRGULA *Divina*, or *baculus divinatorius*, a forked branch in form of a Y, cut off a hazle-tree; by means whereof people have pretended to diſcover mines, ſprings, *&c.* under ground. See MINE, *&c.*

The method of uſing it is this: the perſon who bears it walking very ſlowly over the places where he ſuſpects mines or ſprings may be, the effluvia exhaling from the metals, or vapour from the water, impregnating the wood, makes it dip, or incline; which is the ſign of a diſcovery.

We find no mention made of this *virgula* in any author before the eleventh century: but from that time it has been in frequent uſe; divers fine names have been invented for it, ſome calling it *caduceus*, others *Aaron's rod*, &c.

Some diſpute the matter of fact, and deny it to be poſſible; others, convinced with the great number of experiments alledged in its behalf, look out for the natural cauſes thereof. — The corpuſcles, ſay theſe authors, riſing from the ſprings, or minerals, entering the rod, determine it to bow down, in order to render it parallel to the vertical lines which the effluvia deſcribe in their riſe.

In effect, the mineral, or watery particles are ſuppoſed to be emitted by means of the ſubterraneous heat, or of the fermentations in the entrails thereof: now the *virgula* being of a light, porous wood, gives an eaſy paſſage to thoſe particles, which, withal, are very fine and ſubtile; the effluvia then drivien forwards

wards by thoſe that follow them, and oppreſſed at the ſame time by the atmoſphere incumbent on them, are forced to enter the little interſtices between the fibres of the wood, and by that effort oblige it to incline or dip down perpendicularly, to become parallel with the little columns which thoſe vapours form in their riſe.

VIRGULA, in grammer, a term which Latin, French, and ſome other authors uſe for a point in writing, uſually called by us *comma*. See COMMA.

Virgula's, F. Simon obſerves, as an invention of the modern grammarians, to give the greater clearneſs to diſcourſe. — The uſe thereof was unknown to the ancient Greeks and Romans, who wrote all without taking off the pen, ſo that their books lie all together without any diſtinction of points and *virgula's*. See POINTING.

VIRGULTUM, in our antient law-books, is uſed for an holt, or plantation of twigs, or oziers. See WICKER.

Sometimes, alſo, for a coppice of young wood. — *Et præterea concedo* virgultum *meum & totam communiam dominii mei.* Mon. Angl.

In another place of the ſame work *virgultum*, or rather *virgulta*, may be taken for *virgata*, viz. — *Dedit prædictæ eccleſiæ unam* virgultam *terræ in manerio de Crumptone.* See YARD-*Land*.

VIRIDARIO *Eligendo*, a writ that lies for the choice of a verderor in the foreſt. See VERDEROR.

VIRIDE *æris*, the ſame as *ærugo*, or *verdegreaſe*. See VERDEGREASE.

VIRILE, ſomething that belongs, or is peculiar to man, or the male ſex.

Thus *virile* member, *membrum virile*, is frequently uſed for the penis. See PENIS.

VIRILE *Age*, *Ætas virilis*, is the ſtrength and vigour of a man's age, *viz.* from thirty to forty-five years, which is an age wherein we are equally removed from the extremes of youth and old age. See AGE.

The civil lawyers only make one age of youth and *virility*; and yet their different temperatures ſeem to require a diſtinction; for which reaſon, ſome compare youth to ſummer, and *virility* to autumn. See PUBERTY.

At Rome, the youth quitted the prætexta at fourteen or fifteen years of age, and took the *virile* gown, *toga virilis*, to ſhew, it ſeems, that they then entered on a ſerious age. See PRETEXTA, and TOGA.

M. Dacier will have it, that children did not take the pretexta till thirteen years of age, nor quit it for the *toga virilis*, till ſeventeen.

VIRILIA, a man's genitals, or privy members; including the penis, and teſtes. See PENIS, TESTICLE, GENERATION, *&c.*

The cutting off the *virilia*, according to Bracton, was felony by common law; and that, whether the party were conſenting or not *. See EUNUCH, and CASTRATION.

VIRTSUNGIANUS * *Ductus*, or *Ductus* VIRTSUNGII, in anatomy, a canal, more uſually called *ductus pancreaticus*. See PANCREATIC.

VIRTUAL, *Potential*, ſomething that has a power, or virtue of acting, or doing. See VIRTUALLY.

The term is chiefly underſtood, of ſomething that acts by a ſecret inviſible cauſe; in oppoſition to *actual*, and *ſenſible*. See POTENTIAL.

VIRTUAL *Focus*, in optics, is a point from which rays, before converging, begin to diverge, or divaricate. See FOCUS.

Hence it is alſo called, *point of diſperſion*, or *divergency*; in oppoſition to the *focus*, which is called *the point of concurrence*. See POINT, DISPERSION, DIVERGENT, &c.

Suppoſe, *e.gr.* the concavity of a glaſs to be abc (*Tab. Optics, fig.* 11.) and its axis de; let fg be a ray of light falling on the glaſs parallel to the axis de, and let d be the centre of the arch abc.

This ray fg, after it has paſſed the glaſs, at its emerſion at g, will not proceed directly to h, but be refracted from the perpendicular dg, and become the ray gk.

Draw then directly gk, ſo that it may croſs the axis in e. — The point e ſo found, Mr. Molyneux calls the *virtual focus*, or *point of divergence*. Diopt. Nov.

VIRTUALITY, VIRTUALITAS, in the ſchools, denotes ſome mode or analogy in an object, which, in reality, is the ſame with ſome other mode, but out of regard to contradictory predicates, is conſidered as if diſtinct therefrom.

Thus the divine nature, and the perſon of the Word, are two *virtualities*; for though, in reality, they be the ſame, yet are they conſidered as things different. — For the perſon of the Word is ſaid to have been begotten, and his nature is ſaid not to be begotten: now begotten, and not begotten, are contradictory predicates.

And hence ariſe what we call *virtual diſtinctions*, whereby one *virtuality* is diſtinguiſhed from another, not one thing from another.

Thus it is, the divine nature is diſtinguiſhed from the divine perſon, and the divine underſtanding from the divine will. See TRINITY.

VIRTUALLY, VIRTUALITER, in the ſchools, is applied to a mode of exiſtence. — A thing is ſaid to be *virtually* any where, when it is deemed to be there by ſome *virtue*, influence, or other effect produced by it. — Thus the ſun is *virtually* on earth, *i. e.* by his light, heat, *&c.*

A thing is alſo ſaid to be *virtually* preſent, when the virtues, or properties belonging to it, and iſſuing from it, remain. — In which ſenſe, the forms of the elements are held to be *virtually* in mixed bodies. See PRESENCE.

A thing is alſo ſaid to be a cauſe *virtually*, or a *virtual cauſe*, and that two ways: the firſt, when there is no real diſtinction between it, and the effect attributed to it; and yet it is conceived by us, as if it were really the cauſe thereof. — Thus, immutability in God, is the cauſe of eternity.

Secondly, when an effect is not of the ſame kind with the cauſe, and yet the cauſe has the power or *virtue* of producing the effect: thus the ſun is not formally, but *virtually* hot; and fire is not contained formally, but *virtually* in heat. See CAUSE, EFFECT, &c.

VIRTUE, VIRTUS, a term uſed in various ſignifications.

In the general, it denotes *power*, or *perfection* of any thing, whether natural, or ſupernatural, animate, or inanimate, eſſential, or acceſſary. — Hence the *virtues*, that is, powers of God, angels, men, plants, elements, *&c.* See POWER, and FACULTY.

VIRTUE, in its more proper and reſtrained ſenſe, ſignifies a habit, which improves and perfects the haver, or poſſeſſor, and his actions. See HABIT, PERFECTION, &c.

In this ſenſe, *virtue* is a principle of acting, or doing well and readily; and that, either infuſed from above, ſuch as are the *theological virtues*; or acquired by our own application, as the *intellectual*, and *moral virtues*.

For as there are two things in man, from which all his actions proceed, *viz.* the underſtanding, and the will; ſo the *virtue*, by which he is perfected, or whereby he is diſpoſed to do all things rightly, and to live happily, muſt be twofold: the one, of the underſtanding; the other, of the will. That which improves the underſtanding is called *intellectual*, or *dianoetic*; and that, the will, *moral*, or *ethic*. — For, ſince there are two things required in order to live aright, *viz.* to know what ſhould be done; and, when known, readily to perform it: and ſince man is apt to err various ways in each reſpect, unleſs regulated by diſcipline, *&c.* he alone can deport himſelf rightly in his whole courſe of life, whoſe underſtanding and will have attained their utmoſt perfection.

Intellectual **VIRTUE**, then, according to Ariſtotle, is a habit of the reaſonable ſoul, whereby it conceives, or ſpeaks the truth; either in affirming, or denying. See TRUTH.

The *virtues* which come under this claſs, are divided into *ſpeculative*; which are thoſe converſant about neceſſary things, that can only be known, or contemplated; and *practical*, which are converſant about contingent things, that may likewiſe be practiſed.

Ariſtotle has another diviſion of *intellectual virtue*, fetched from the ſubject; as ſome of them are ſeated in the επιστημονικη, or *contemplative part*, viz. thoſe converſant about neceſſary things, as *ſcience*, *wiſdom*, *intelligence*. See SCIENCE, UNDERSTANDING, &c.

And others, in the λογιστικη, or *practical part*; ſuch as thoſe converſant about contingent things, as *prudence*, *art*, &c. See ART, &c.

Moral **VIRTUE**, is defined by Ariſtotle, to be an elective habit, placed in a mediocrity, determined by reaſon, and as a prudent man would determine.

The Scotiſts maintain every moral habit to be indifferent, as to good or evil, and capable of becoming, ſucceſſively, either *virtue* or *vice*: *virtue*, if it have a relation of conformity with right reaſon; and *vice*, if it have not. See VICE.

According to them, therefore, *virtue* is a habit ſubjectively, but not entitatively, good: as it is only a relation of conformity, *&c.* which is ſeparable from the entity of the habit.

The Thomiſts, on the contrary, aſſert *virtue* to be a habit eſſentially good; nor capable of miniſtring any thing to any act poſitively bad. — And they philoſophize thus: every habit eſſentially good, inclines to acts, like thoſe whereby it was acquired; thus, by doing juſtly, we become juſt; and, by abſtaining from forbidden pleaſures, we become temperate. But *moral virtue* is produced, or acquired by acts eſſentially good; good, we mean, both in reſpect of our duty, and of the motive and end: therefore *moral virtue* inclines only to good acts.

Others diſallow the peripatetic notion of *virtue*, as placed in a habit: for a habit, or hability, ſay they, includes two things; a cuſtom, and facility; the firſt as a cauſe, and the ſecond as an effect: ſo that a habit is nothing but a facility acquired by cuſtom. — They therefore who make *virtue* a habit of doing well, muſt, of neceſſity, aſcribe it to a frequent exerciſe of good actions. — But this cannot be; for the *virtue* muſt be before the good actions; and the habit, after them. — Indeed, whence ſhould the actions proceed, but from *virtue? Virtue* therefore is before the good actions, and certainly before a habit, reſulting from a frequency of good actions. Hence, they define *virtue* to be a firm purpoſe, or reſolution of doing whatever right reaſon demands to be done. — For though a cuſtom of doing well be required, to make a perſon eſteemed good among men; yet it does not follow, that that cuſtom or habit is the formal cauſe of that denomination, or the goodneſs itſelf.

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* — *Henricus Hall & A. uxor ejus capti & detenti in priſona de Evilcheſter, eo quod rectati fuerunt quod ipſi abſciderunt* virilia *Johannis Monachi, quem idem Henricus deprehendit cum prædicta A. uxore ejus.* Rot. Clauſ. 13 Hen. III.

* It took its name *virtſungianus*, from the inventor, *Virtſungius*, profeſſor at Padua.

Moraliſts uſually diſtinguiſh four *principal*, or, as they are vulgarly called, *cardinal virtues*, viz. *prudence*, *juſtice*, *fortitude*, and *temperance:* the reaſon of which diviſion is founded in this, that for a man to live *virtuouſly* and honeſtly, it is neceſſary he know what is fit to be done; which is the buſineſs of *prudence*. That he have a conſtant and firm will to do what he judges beſt; which will perfect the man, either as it reſtrains too violent perturbations, the office of *temperance*. —

Or, as its ſpurs and urges on thoſe that are too ſlow and languid, which is the buſineſs of *fortitude*.

Or, laſtly, comparatively, and with regard to human ſociety; which is the object of *juſtice*.

To theſe four all the other *virtues* are referred, either as parts, or as concomitants.

VIRTUES, in the celeſtial hierarchy, the third rank, or choir of angels; being that in order between *dominations*, and *powers*. See HIERARCHY.

To theſe is attributed the power of working miracles, and of ſtrengthening and reinforcing the inferior angels in the exerciſe of their functions. See ANGEL.

VIRTUOSO, an Italian term, lately introduced into Engliſh; ſignifying a man of curioſity and learning; or one who loves and promotes the arts and ſciences.

In Italy, *virtuoſi* are properly ſuch as apply themſelves to the polite arts of painting, ſculpture, turning, mathematics, muſic, &c.— A perſon who makes profeſſion thereof, is called *virtuoſo*, *queſto è un virtuoſo*.

Among us, the term ſeems appropriated to thoſe who apply themſelves to ſome curious and quaint, rather than immediately uſeful art or ſtudy: as antiquaries, collectors of rarities of any kind, microſcopical obſervers, &c.

VIRULENT, a term applied to any thing that yields a *virus*; that is, a contagious, or malignant pus. See PUS.

The *gonorrhæa virulenta*, is what we popularly call a *clap*. See GONORRHÆA.

VIS, a Latin word, ſignifying *force*, or *power*; adopted by phyſical writers, to expreſs divers kinds of natural powers, or faculties. See POWER, and FACULTY.

VIS *Inertiæ*, or *powers of inactivity*, is defined by Sir Iſaac Newton, to be a power implanted in all matter, whereby it reſiſts any change endeavoured to be made in its ſtate, *i. e.* whereby it becomes difficult to alter its ſtate, either of reſt, or motion. See INERTIA.

This power, then, coincides with the *vis reſiſtendi*, power of reſiſting, whereby every body endeavours, as much as it can, to perſevere in its own ſtate, whether of reſt, or uniform rectilinear motion: which power is ſtill proportional to the body, and only differs from the *vis inertiæ* of the maſs, in the manner of conceiving it.

Bodies only exert this power, in changes brought on their ſtate by ſome *vis impreſſa*, force impreſſed on them. — And the exerciſe of this power, is, in different reſpects, both reſiſtance, and impetus: reſiſtance, as the body oppoſes a force, impreſſed on it to change its ſtate; and impetus, as the ſame body endeavours to change the ſtate of the reſiſting obſtacle. *Phil. Nat. Princ. Math.* Lib. I. — See REACTION.

The *vis inertiæ*, the ſame great author elſewhere obſerves, is a paſſive principle, by which bodies perſiſt in their motion or reſt; receive motion, in proportion to the force impreſſing it, and reſiſt as much as they are reſiſted. See MOTION.

For the effect of the VIS Inertiæ, *in reſiſting and retarding the motion of Bodies*, &c. ſee RESISTANCE, and RETARDATION.

VIS *Impreſſa*, is defined by Sir Iſaac Newton, to be the action exerciſed on any body, to change its ſtate, either of reſiſting, or moving uniformly in a right line.

This force conſiſts altogether in the action; and has no place in the body after the action is ceaſed. — For the body perſeveres in every new ſtate, by the *vis inertiæ* alone.

This *vis impreſſa* may ariſe from divers cauſes, as from the percuſſion, preſſion, and centipetal force. See PERCUSSION, &c.

VIS *Centripeta*.	See	CENTRIPETAL *Force*.
VIS *Centrifuga*.		CENTRIFUGAL *Force*.
VIS *Motrix*.		MOTION.
VIS *Stimulans*.		STIMULATING.

VISCERA *, in anatomy, a term of equal import with *entrails*; including the heart, liver, lungs, ſpleen, inteſtines, and other inward parts of the body. See *Tab. Anat. (Splanch.) P.* 3. ſee alſo the articles BODY, HEART, LIVER, &c.

The word is alſo frequently uſed ſingularly, *viſcus*, to expreſs ſome particular part of the entrails; by reaſon the word *entrails* has no ſingular.

VISCIDITY, or VISCOSITY, the quality of ſomething that is *viſcid*, or *viſcous*, i. e. glutinous, or ſticky; like birdlime, which the Latins call by the name *viſcus*. See BIRDLIME.

Viſcid bodies, are thoſe which conſiſt of parts ſo implicated within each other, that they reſiſt, a long time, a compleat ſeparation, and rather give way to the violence done them, by ſtretching or extending each way. See PARTICLE, and COHESION.

The too great *viſcidity* of foods has very ill effects: thus, meals, or farinæ not fermented, gellies, &c. of animals, tough cheeſe, or curd too much preſſed, produce a weight or oppreſſion in the ſtomach; winds, yawnings, crudities, obſtructions of the minuter veſſels in the inteſtines, &c. Hence, an inactivity of the inteſtines themſelves, a ſwelling of the abdomen; and, hence, a *viſcidity* of the blood, from the reunion of the *viſcid* particles; obſtructions of the glands; paleneſs, coldneſs, tremors, &c.

VISCOUNT. See the article VICOUNT.

VISCUS, and VISCOSITY. See VISCERA, and VISSIDITY.

VISCUS; or VISCUM, in natural hiſtory, &c. See MISSLETOE.

VISIBLE, VISIBILE, ſomething that is an object of ſight, or viſion; or ſomething whereby the eye is affected, ſo as to produce a ſenſation. See VISION.

The ſchool philoſophers make two kinds of *viſibles*, or *viſible* objects: the one *proper*, or *adequate*; which are ſuch as are no other way perceivable, but by ſight alone: the other *common*; which are ſubject to divers ſenſes, as the ſight, hearing, feeling, &c.

Again, the firſt, or *proper object of viſion*, is of two kinds, *viz. light*, and *colour*, for theſe two are only ſenſible by ſight. — The firſt, and primary, *viz. light*, they make the formal, and *colour*, the material object. See OBJECT.

The Carteſians think they philoſophize better, when they ſay, that light, alone, is the proper object of viſion; whether it flow from a luminous body through a tranſparent medium, and retain its firſt name, *light*; or whether it be reflected from opake bodies, under a certain new modification, or habitude, and exhibit their images; or, laſtly, whether in being reflected, it is likewiſe refracted, after this, or that manner, and affects the eye with the appearance of *colour*.

But, agreeably to Sir Iſaac Newton's ſentiments, colour alone is the proper object of ſight: colour being that property of light, whereby the light itſelf is *viſible*; and whereby the images of opake objects are painted on the retina. See LIGHT and COLOUR.

Ariſtotle, *De Anima*, Lib. II. enumerates five kinds of common *viſibles*, which are uſually received for ſuch in the ſchools, *viz. motion*, *reſt*, *number*, *figure*, and *magnitude*. — Others maintain nine, as in the verſes;

Sunt objecta novem viſus *communia:* quantum,
Inde figura, locus, *ſequitur* diſtantia, ſitus,
Continuumque & diſcretum, motuſque, quieſque.

Authors reaſon very variouſly as to theſe common objects of viſion: there are two principal opinions among the ſchoolmen. — The adherents to the firſt, hold, that the common *viſibles* produce proper repreſentations of themſelves, by ſome peculiar ſpecies or image, whereby they are formerly perceived, independently of the proper *viſibles*.

But the ſecond opinion prevails moſt, which imports, that the common *viſibles* have not any ſuch formal peculiar ſpecies to become *viſible* by; but that the proper objects are ſufficient to ſhew themſelves in this or that place, or ſituation, and in this or that diſtance, figure, magnitude, &c. by the circumſtances of their conveyance to the ſenſory.

In effect, ſince theſe common *viſibles* cannot be repreſented alone, (for who ever ſaw place, diſtance, figure, ſituation, &c. of itſelf) but are always conveyed along with the images of light and colour to the organ; what neceſſity is there to conceive any ſuch proper images, whereby the common *viſibles* ſhould be formally perceived by the ſoul? It is much more probable, that from the peculiar manner, wherein the ſenſitive faculty perceives a proper object, it is apprized of its being in this or that ſituation, or place; in this or that figure, magnitude, &c. — How this is effected, may be conceived from what follows.

I. The ſituation and place of *viſible* objects, are perceived without any intentional ſpecies thereof, merely by the impulſe being made from a certain place, and ſituation, either above, or below, on the right, or left, before, or behind; whereby the rays of the proper *viſibles* are thrown upon the retina, and their impreſſion conveyed to the ſenſory.

For ſince an object is ſeen by thoſe rays which carry its image to the retina, and in that place to which the viſive power is directed by the rays it receives: as it perceives the impulſe of the rays to come from any place, &c. it is abundantly admoniſhed of the object's being in that place, and ſituation. See PLACE.

From this principal, ſeveral remarkable phænomena of viſion are accountable for; as,

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* The term iſ pure Latin, being formed of *veſci*, to feed; by reaſon, eatables, called in Latin *veſca*, undergo divers preparations in the *viſcera*. See DIGESTION, &c.

1°. That if the diſtance between two *viſible* objects be an angle that is inſenſible, the diſtant bodies will appear as if contiguous: whence, a continuous body being the reſult of ſeveral contiguous ones; if the diſtances between ſeveral *viſibles* ſubtend inſenſible angles, they will appear one continuous body: which gives a pretty illuſtration of the notion of a continuum. See CONTINUITY.

2°. If the eye be placed above a horizontal plane, objects, the more remote they are, the higher will they appear, till the laſt be ſeen in a level with the eye. — Whence it is, that the ſea, to perſons ſtanding aſhore, ſeems to riſe higher and higher the further they look.

3°. If any number of objects be placed below the eye, the moſt remote will appear the higheſt; if they be above the eye, the moſt remote will appear the loweſt.

4°. The upper parts of high objects appear to ſtoop, or incline forwards; as the fronts of churches, towers, *&c.* — And ſtatues atop of buildings, to appear upright, muſt recline, or bend backwards. See further under the articles REFRACTION, HORIZON, *&c.*

II. The mind perceives the diſtance of *viſible* objects, from the the different configurations of the eye, and the manner wherein the rays ſtrike the eye, and the image is impreſſed thereon.

For the eye diſpoſes itſelf differently, according to the different diſtances it is to ſee, *viz.* for remote objects the pupil is dilated, and the cryſtalline brought nearer the retina, and the whole eye made more globous: on the contrary, for near objects, the pupil is contracted, the cryſtalline thruſt forwards, and the eye lengthened. See PUPIL, CRYSTALLINE, *&c.*

The diſtance, again, is adjudged of by the angle the object makes, from the diſtinct or confuſed repreſentation of the object, and the briſkneſs or feebleneſs, the rarity or ſpiſſitude of the rays.

To this it is owing, 1°. That objects which appear obſcure or confuſed, are judged to be more remote: a principle which the painters uſe, to make ſome of their figures appear farther diſtant than others on the ſame plane. See PERSPECTIVE, *&c.*

To this it is likewiſe owing, that rooms whoſe walls are whitened, appear the ſmaller: that fields covered with ſnow, or white flowers, ſhow leſs than when clothed with graſs: that mountains covered with ſnow, in the night-time, appear the nearer: that opake bodies appear the more remote in the twilight. See DISTANCE.

III. The magnitude or quantity of *viſible* objects, is known chiefly by the angle comprehended between two rays drawn from the two extremes of the object, to the centre of the eye. See *Optic* ANGLE.

An object appears ſo big as is the angle it ſubtends: or bodies ſeen under a greater angle appear greater; and thoſe under a leſs, *&c.* — Hence, the ſame things appears now bigger, and now leſs, as it is leſs or more diſtant from the eye. — This we call *apparent magnitude.* See MAGNITUDE.

Now, to judge of the real magnitude of an object, we conſider the diſtance: for ſince a near and a remote object may appear under equal angles, the diſtance muſt neceſſarily be eſtimated; that if it be great, and the optic angle ſmall, the remote object may be judged great, and vice verſa.

The magnitude of *viſible* objects, is brought under certain laws, demonſtrated by the mathematicians; as,

1°. That the apparent magnitudes of a remote object, are as the diſtances reciprocally.

2°. That the co-tangent of half the apparent magnitudes of the ſame objects, are as the diſtances: hence, the apparent magnitude and diſtance being given, we have a method of determining the true magnitude: the canon is this, As the whole ſine is to the tangent of half the apparent magnitude, ſo is the given diſtance to half the real magnitude. — The ſame canon, inverted, will, from the diſtance and magnitude given, determine the apparent one.

3°. Objects, ſeen under the ſame angle, have their magnitudes proportional to their diſtances.

4°. The ſubtenſe AB (*Tab. Optics, fig.* 51.) of any arch of a circle, appears of equal magnitude in all the points D C E G, though one point be vaſtly nearer than another; and the diameter D G, appears of the ſame magnitude in all the points of the periphery of the circle. — Hence we take a pretty hint for the moſt commodious form of theatres.

5°. If the eye be fixed in A, (*fig.* 52.) and the right line B C be moved in ſuch manner, as that the extremes thereof always fall on the periphery; it will always appear of the ſame magnitude. — Hence, the eye being placed in any angle of a regular polygon, the ſides will appear equal.

6°. If the magnitude of an object directly oppoſite to the eye, be equal to its diſtance from the eye, the whole object will be taken in by the eye, but nothing more. — Whence, the nearer you approach an object, the leſs part you ſee of it. See FLAME.

IV. The figure of *viſible* objects is eſtimated chiefly from our opinion of the ſituation of the ſeveral parts thereof.

This opinion of the ſituation, *&c.* enables the mind to apprehend an external object under this or that figure, more juſtly than any ſimilitude of the images in the retina with the object can; the images being frequently elliptical, oblong, *&c.* when the objects they exhibit to the mind are circles, ſquares, *&c.*

The laws of viſion, with regard to the figures of *viſible* objects, are,

1°. That if the centre of the pupil be exactly againſt, or in the direction of a right line, the line will appear as one point.

2°. If the eye be placed in the direction of a ſurface, ſo that only one line of the perimeter can radiate on it, it will appear as a line.

3°. If a body be oppoſed directly towards the eye, ſo as only one plane of the ſurface can radiate on it, it will appear as a ſurface.

4°. A remote arch, viewed by an eye in the ſame plane, will appear as a right line.

5°. A ſphere, viewed at a diſtance, appears a circle.

6°. Angular figures, at a diſtance, appear round.

7°. If the eye look obliquely on the centre of a regular figure, or a circle, the true figure will not be ſeen; but the circle will appear oval, *&c.* See FIGURE.

V. The Number of *viſible* objects is perceived, not only by one or more images formed in the fund of the eye; but alſo by ſuch a poſition of thoſe parts of the brain, whence the optic nerves ſpring, as the mind has been uſed to, in attending to a certain place, and that either ſingle, or manifold.

Accordingly when either of the eyes, with the contiguous part of the brain, are forced out of their juſt paralleliſm with the other, *v. gr.* by preſſing it with the finger, *&c.* all things appear double: but when they are in the requiſite paralleliſm, though there be two images in the fund of the two eyes, yet the object will appear ſingle. — Again, one thing may appear double, or even manifold, not only with both eyes, but even with only one of them open: by reaſon, the common concourſe of the cones of rays, reflected from the object to the eye, either falls ſhort of the retina, or goes much beyond it. See SEEING.

VI. Motion and reſt are ſeen, when the images of objects repreſented in the eye, and propagated to the brain, are either moved, or at reſt: and the mind perceives theſe images either moving or at reſt, by comparing the moved image to another, with reſpect to which it changes place; or, by the ſituation of the eye to the object being continually changed.

So that motion is only perceived, by perceiving the images to be in different places and ſituations: nor are theſe changes perceived, unleſs affected in time. So that to perceive motion, a ſenſible time is required. — But reſt is perceived by the viſual faculty, from the perception of the image in the ſame place of the retina, and the ſame ſituation for ſome ſenſible time.

Hence the reaſon, why bodies moving exceedingly faſt appear at reſt: thus, a live coal, ſwung briſkly round, apppears a continued circle of fire; the motion not being commenſurate with *viſible* time, but much ſwifter than the ſame: ſo that in the time the ſoul requires to judge of any change of ſituation of the image on the retina, or that is it moved from this place to that, the thing itſelf performs its whole circuit, and is in its former place again.

Laws of viſion with regard to the motion of viſibles, are —

1°. That if two objects, unequally diſtant from the eye, move from it with equal velocity; the more remote one will appear the ſlower: or, if their celerities be proportionable to their diſtances, they will appear to move equally ſwift.

2°. If two objects, unequally diſtant from the eye, move with unequal velocities in the ſame direction, their apparent velocities are in a ratio compounded of the direct ratio's of their true velocities, and the reciprocal one of their diſtances from the eye.

3°. A *viſible* object, moving with any velocity, appears to be at reſt, if the ſpace deſcribed in the interval of one ſecond be imperceptible at the diſtance of the eye. — Hence it is, that a near object, moving very ſlowly, as the index of a clock, or a remote one very ſwiftly, as a planet, ſeem at reſt.

4°. An object, moving with any degree of velocity, will appear to reſt, if the ſpace it runs over in a ſecond of time be to its diſtance from the eye, as 1 to 1400: nay, in fact, if it be as 1 to 1300.

5°. The eye proceeding ſtreight, from one place to another, a lateral object, either on the right or left, will ſeem to move the contrary way.

6°. If the eye and the object move both the ſame way, only the eye much ſwifter than the object, that laſt will appear to go backwards.

7°. If two or more objects move with the ſame velocity, and a third remain at reſt, the moveables will appear fixed, and the quieſcent in motion the contrary way. — Thus, clouds moving very ſwiftly, their parts ſeem to preſerve their ſituation, and the moon to move the contrary way.

If the eye be moved with a great velocity, lateral objects, at reſt appear to move the contrary way. — Thus, to a perſon, ſitting in a coach, and riding briſkly through a wood, the trees ſeem to retire the contrary way; and to people in the ſhip, *&c.* the ſhores ſeem to recede.

VISIBLE *Horizon.* } { HORIZON.
VISIBLE *Place.* } See the article { PLACE.
VISIBLE *Species.* } { SPECIES.

VISIER, or VIZIER, an officer or dignitary in the Ottoman

man empire; whereof there are two kinds: the firſt called, by the Turks *viſier azem*, that is, *grand viſier*; firſt created in 1370, by Amurath I. in order to eaſe himſelf of the chief and weightier affairs of the government.

The *grand* or *prime viſier*, is the prime miniſter of ſtate of the whole empire. — He commands the army in chief, and preſides at the divan, or great council. — Renegado Chriſtians, have been ſometimes raiſed to the *viſierate:* ſuch were Khairedain, ſirnamed *Barbaroſſa*, Ulug Ali, Cuproli, &c.

Next to the *grand viſier*, are ſix other ſubordinate *viſiers*, called *viſiers of the bench*, who officiate as his counſellors, or aſſeſſors in the divan.

VISION, VISIO, the act of ſeeing, or of perceiving external objects by the organ of ſight. See SEEING, and SIGHT.

Viſion is well defined to be a ſenſation, whereby, from a certain motion of the optic nerve, made in the bottom of the eye by the rays of light emitted or reflected from objects, and hence conveyed to the common ſenſory in the brain, the mind perceives the luminous object, its quantity, quality, figure, &c. See VISIBLE.

The phænomena of *viſion*, the cauſes thereof, and the manner wherein it is effected, make one of the greateſt and moſt important articles in the whole ſyſtem of natural knowledge. — Indeed, a great part of the phyſical, mathematical, and anatomical diſcoveries and improvements of the moderns terminate here; and only tend to ſet the buſineſs of *viſion* in a clearer light.

Hitherto refer what Sir Iſaac Newton and others have diſcovered of the nature of light, and colours; the laws of inflexion, reflexion, and refraction of the rays; the ſtructure of the eye, particularly the retina, and optic nerves, &c.

It is not neceſſary we ſhould here give a minute detail of the proceſs of *viſion* from its firſt principles: the greateſt part is already delivered under the reſpective articles. — The *eye*, the organ of *viſion*, we have deſcribed under the article EYE; and its ſeveral parts, tunics, humours, &c. under their proper heads, CORNEA, CRYSTALLINE, &c.

The immediate and principal organ of *viſion*, *viz.* the retina, according to ſome, and the choroides, according to others, are diſtinctly conſidered: as alſo, the ſtructure of the optic nerve, which conveys the impreſſion to the brain; and the texture and diſpoſition of the brain itſelf, which receives them, and repreſents them to the ſoul. See RETINA, CHOROIDES, OPTIC *Nerve*, BRAIN, SENSORY, &c.

Again, the nature of light, which is the medium, or vehicle whereby objects are carried to the eye, is laid down at large under the articles LIGHT, and COLOURS; and the chief properties thereof concerned in *viſion*, under REFLEXION. REFRACTION, &c. and many of its circumſtances under RAY, MEDIUM, &c. — What remains for this article, therefore, is only to give a general idea of the whole proceſs; in which all the ſeveral parts are concerned.

Different Opinions, or Syſtems of VISION. — The Platoniſts and Stoics held *viſion* to be effected by the emiſſion of rays out of the eyes; conceiving, that there was a ſort of light thus darted out, which, with the light of the external air, taking, as it were, hold of the objects, rendered them viſible; and thus returning back again to the eye, altered and new modified by the contract of the object, made an impreſſion on the pupil, which gave the ſentation of the object.

The reaſons whereby they maintain their opinion, are fetched, 1°. From the brightneſs and luſtre of the eye: 2°. From our ſeeing a remote cloud, without ſeeing one which we are incompaſſed withal; (the rays being ſuppoſed too briſk and penetrating to be ſtopped by the near cloud, but growing languid at a greater diſtance, are returned to the eye:) 3°. From our not ſeeing an object laid on the pupil: 4°. From the eye's being weary with ſeeing, *i. e.* by emitting great quantities of rays: and laſtly, From animals which ſee in the night; as cats, lions, moles, owls, and ſome men.

The Epicureans held *viſion* to be performed by the emanation of corporeal ſpecies, or images from objects; or, a ſort of atomical effluvia, continually flying off from the intimate parts of objects to the eye.

Their chief reaſons are, 1°. That the object muſt neceſſarily be united to the viſive faculty; and ſince it is not united by itſelf, it muſt be ſo by ſome ſpecies that repreſents it, and that is continually flowing from bodies: 2°. That it frequently happens, that old men ſee remote objects better than near ones; the diſtance making the ſpecies thinner, and more commenſurate to the debility of their organ.

The Peripatetics hold, with Epicurus, that viſion is performed by the reception of ſpecies; but differ from him in the circumſtances: for they will have the ſpecies (which they call *intentionales*) to be incorporeal.

It is true, Ariſtotle's doctrine of *viſion*, delivered in his chapter *de Aſpectu*, amounts to no more than this; That objects muſt move ſome intermediate body, that by this they may move the organ of ſight. — To which he adds, in another place, that when we perceive bodies, it is their ſpecies, not their matter, that we receive; as a ſeal makes an impreſſion on wax, without the wax's retaining any thing of the ſeal.

But this vague and obſcure account, the Peripatetics have thought fit to improve. — Accordingly, what their maſter called *ſpecies*, the diſciples underſtanding of real proper ſpecies, aſſert, That every viſible object expreſſes a perfect image of itſelf, in the air contiguous to it; and this image another, ſomewhat leſs, in the next air; and the third another, &c. till the laſt image arrives at the cryſtalline, which they hold for the chief organ of ſight, or that which immediately moves the ſoul. — Theſe images they called *intentional ſpecies.* See SPECIES.

The modern philoſophers, as the Carteſians and Newtonians, give a better account of *viſion.* — They all agree, that it is performed by rays of light reflected from the ſeveral points of objects, received in at the pupil, refracted and collected in their paſſage through the coats and humours, to the retina; and thus ſtriking, or making an impreſſion on ſo many points thereof: which impreſſion is conveyed, by the correſpondent capillaments of the optic nerve, to the brain, &c.

As for the Peripatetic ſeries, or chain of images, it is a mere chimera; and Ariſtotle's meaning is better underſtood without, than with them — In effect, ſetting theſe aſide, the Ariſtotelian, Carteſian, and Newtonian doctrine of *viſion* are very conſiſtent: for Sir Iſaac Newton imagines, that *viſion* is performed chiefly by the vibrations of a fine medium, which penetrates all bodies, excited in the bottom of the eye by the rays of light; and propagated through the capillaments of the optic nerves, to the ſenſorium — And Des Cartes maintains, That the ſun preſſing the materia ſubtilis, wherewith the world is filled every way, the vibrations or pulſes of that matter reflected from objects, are communicated to the eye, and thence to the ſenſory: ſo that the action or vibration of a medium, is equally ſuppoſed in all. See MEDIUM.

Modern Theory of VISION. — In order to *viſion*, we are certain, it it required that the rays of light be thrown from the viſible objects to the eye. — What befals them in the eye, will be conceived from what follows.

Suppoſe, *e. gr.* Z the eye, and A B C the object, (*Tab. Optics, fig.* 53.) Now, though every point of an object be a radiant point, that is, though there be rays reflected from every point of the object to every point of the circumambient ſpace, each carrying with it its reſpective colour, (which we falſly imagine to be thoſe of the object;) yet, as only thoſe rays which paſs through the pupil of the eye affect the ſenſe, we ſhall here conſider none elſe.

And, again, though there be a great number of rays paſſing from one radiant point, as B, through the pupil, yet we ſhall only conſider the action of a few of them; as BD, BE, BF.

Now then, the ray B D, falling perpendicularly on the ſurface E D F, willl paſs out of the air into the aqueous humour, without any refraction, and proceed right to H; where, falling perpendicularly on the ſurface of the cryſtalline humour, it will go on, without any refraction, to M; where, again, falling perpendicularly on the ſurface of the vitreous humour, it will proceed ſtreight to the point O, in the fund or bottom of the eye.

Again, the ray B E, paſſing obliquely out of the air upon the ſurface of the watery humour E D F, will be refracted, and approach towards the perpendicular E P: thus, proceeding to the point G, in the ſurface of the cryſtalline, it will be there refracted ſtill nearer to the perpendicular. — So alſo E G, falling obliquely out of air into a harder body, will be refracted towards the perpendicular G R; and falling on the point L of the ſurface of the vitreous humour, it will ſtill be brought nearer to M.

Laſtly, G L, falling obliquely out of a denſer, upon the ſurface of a rarer body L M N, will be refracted, and recede from the perpendicular L T; in receding from which, it is evident it approaches towards the ray B D O, and may be ſo refracted, as to meet the other in O. — In like manner, the ray B F, being refracted in B, will turn to I, and thence to N, and thence to the others in O. — But the rays between B E and B F, being ſomewhat leſs refracted, will not meet preciſely in the ſame point O.

Thus will the radiant point B affect the fund of the eye, in the ſame manner as if the pupil had had no breadth, or as if the radiant itſelf had only emitted one ſingle ray, ſuch as were equal in power to all thoſe between B E, and B F.

In like manner, the rays proceeding from the point A, will be ſo refracted in paſſing through the humours of the eye, as to meet near the point X; and the rays from any intermediate point between A and B, will nearly meet in ſome other point in the fund of the eye, between X and O.

Upon the whole, it may be aſſerted univerſally, that every point of an object, affects only one point in the fund of the eye; and, on the contrary, that every point in the fund of the eye, only receives rays from one point of the object. — Though this is not to be underſtood in the utmoſt rigour. See RADIANT.

Now if the object recede from the eye, in ſuch manner, as that the radiant point B, does not decline from the line B D; the rays which would proceed from B, not enough divaricated, would be ſo refracted in paſſing the three ſurfaces, as that they would meet ere they reached the point O: on the contrary, if the object ſhould be brought nearer the eye, the rays paſſing from the point B to the pupil, too much divaricated, would be refracted ſo, as not to meet till beyond the point O. Nay, the object may be ſo near, that the rays proceeding from any point may be ſo divaricated, as that they ſhall never meet at all. — In all which caſes, there would be no point of the object, but would move a pretty large portion of the fund of the eye; and thus the action of each point would be confounded with that of the contiguous one.

And this would commonly be the caſe, but that nature has provided againſt it; either by contriving the eye, ſo as its bulb may be lengthened, or ſhortened, as objects may be more or leſs diſtant; or, as others will have it, ſo as that the cryſtalline may be made more convex, or more flat; or, according to others; ſo as that the diſtance between the cryſtalline and the retina may be lengthened or ſhortened.

The firſt expedient is the moſt probable; on the footing of which, when we direct our eyes to an object ſo remote, as that it cannot be diſtinctly viewed by the eye in its accuſtomed figure, the eye is drawn back into a flatter figure, by the contraction of four muſcles; by which means, the retina becoming nearer the cryſtalline humour, receives the rays ſooner: and when we view an object too near, the eye being compreſſed by the two oblique muſcles, is rendered more globular; by which means, the retina being ſet further off from the cryſtalline, does, not receive the rays of any point before they meet.

It may be here added, that this acceſs, and receſs of the cryſtalline, is ſo neceſſary to *viſion*, that, whereas, in ſome birds the coats of the eye are ſuch a bony conſiſtence, that muſcles would not have been able to contract and diſtend them; nature has taken other means, by binding the cryſtalline down to the retina, with a kind of blackiſh threads, not found in the eyes of other animals. — Nor muſt it be omitted, that of the three refractions above mentioned, the firſt is wanting in fiſhes; and that to remedy this, their cryſtalline is not lenticular, as in other animals, but globular. — Laſtly, ſince the eyes of old people are generally worn flatter than thoſe of young ones; ſo that the rays from any point, fall on the retina ere they become collected into one; they muſt exhibit the object ſomewhat confuſedly: nor can ſuch eyes ſee any but remote objects diſtinctly. See PRESBYTÆ. — In others, whoſe eyes are too globular, the caſe is juſt the reverſe. See MYOPES.

From what has been ſhewn, that every point of an object moves only one point of the bottom of the eye; and, on the contrary, that every point in the fund of the eye, only receives rays from one point of the object; it is eaſy to conceive, that the whole objects moves a certain part of the retina; that in this part there is a diſtinct, and vivid collection of all the rays received in at the pupil; and that as each ray carries its proper colour along with it, there are as many points painted in the fund of the eye, as there were points viſible in the object. — Thus is there a ſpecies, or picture, on the retina, exactly like the object; all the difference between them, is, that a body is here repreſented by a ſurface; a ſurface frequently by a line, and a line by a point: that the image is inverted, the right hand anſwering to the left of the object, *&c.* and that it is exceedingly ſmall, and ſtill the more ſo, as the object is more remote. See VISIBLE.

What we have ſhewn under other articles of the nature of light, and colours, readily accounts for this painting of the object on the retina. — The matter of fact is proved by an eaſy experiment, firſt tried by Des Cartes; thus: The windows of a chamber being ſhut, and light only admitted at one little aperture; to that aperture apply the eye of ſome animal newly killed, having firſt dextrouſly pulled off the membranes that cover the bottom of the vitreous humour, *viz.* the hind part of the ſclerotica, choroides, and even part of the retina; then will the images of all the objects, without doors, be ſeen diſtinctly painted on any white body, as on an egg-ſhell, that the eye is laid upon — The ſame thing is better ſhewn by an artificial eye, or a camera obſcura. See EYE, and CAMERA *Obſcura.*

The images of objects, then, are repreſented on the retina; which is only an expanſion of the fine capillaments of the optic nerve, and from which the optic nerve is continued into the brain. — Now, any motion or vibration, expreſſed on one extreme of the nerve, will be propagated to the other: Hence the impulſe of the ſeveral rays, ſent from the ſeveral points of the object, will be propagated as they are on the retina, (*i. e.* in their proper colours, *&c.* or in particular vibrations, or manners of preſſure, correſponding thereto) to the place where thoſe capillaments are interwoven into the ſubſtance of the brain. — And thus is *viſion* brought to the common caſe of ſenſation.

For ſuch, we know, is the law of the union between the ſoul and body; that certain perceptions of the firſt, do neceſſarily follow certain motions of the laſt: but the different parts of the object do ſeparately move different parts of the fund of the eye; and thoſe motions are propagated to the ſenſory: it follows, therefore, that there muſt ariſe ſo many diſtinct ſenſations at the ſame time. See SENSATION.

Hence, 1°. we eaſily conceive, that the perception, or image in the mind, muſt be the clearer, and more vivid, the more rays the eye receives from the object: conſequently, the largeneſs of the pupil will have ſome ſhare in the clearneſs of *viſion.* See PUPIL.

2°. Conſidering only one radiant point of an object, we may ſay, that that point would move the ſenſe more weakly, or be ſeen more obſcurely, as it is more remote; by reaſon the rays coming from any point, like all qualities propagated in orbem, are always diverging; and therefore the more remote, the fewer of them will be received in at the pupil. — But, as it is not a ſingle point of an object, but all of them together, that affect the organ of ſenſe; and as the image of the object ſtill poſſeſſes a leſs part of the retina, as it is more remote; therefore, though the rays that flow from any point of an object two miles off, into the pupil, be rarer, or fewer by half, than thoſe flowing from the ſame point at a mile's diſtance; yet the ſame campillament of the optic nerve, which, in the latter caſe, would only be moved by that one point, in the former, will be affected with the joint action of the neighbouring points; and therefore the image be as clear as in the other caſe. — Add, that the pupil dilating itſelf more, as the object is more remote, takes in more rays than it would otherwiſe do.

3°. The diſtinctneſs of *viſion*, is ſomewhat concerned in the ſize of the image, exhibited in the fund of the eye. — For there ſhould be, at leaſt, as many extremes of capillaments, or fibres of the optic nerve, in the ſpace that image poſſeſſes, as there are particles in the object, that ſends rays into the pupil: otherwiſe, every particle will not move its ſeparate capillament: and if the rays from two points fall on the ſame capillament, it will be the ſame, as if only one point had fell there; ſince the ſame capillament cannot be differently moved at the ſame time. — And hence it is, that the images of very remote objects being very ſmall, they appear confuſed, ſeveral points of the image affecting each capillament: and hence, alſo, if the object be of different colours, ſeveral particles affecting the ſame capillament at the ſame time, only the brighteſt and moſt lucid will be perceived: thus, a field, furniſhed with a good number of white flowers, among a much greater quantity of green graſs, *&c.* at a diſtance appears all white.

Our ſeeing of objects *ſingle*, though with two eyes, in each of which is a ſeveral image, or picture; and our ſeeing of them *erect*, whereas the picture inverted, are two great phænomena in *viſion*: which ſee conſidered under the articles SIGHT, and SEEING. — *For the manner of ſeeing, and judging of the diſtance and magnitude of objects,* ſee VISIBLE, MAGNITUDE, *&c.*

VISION, in optics. — The laws of *viſion*, brought under mathematical demonſtrations, make the ſubject of *optics*, taken in the greateſt latitude of that word: for among the writers of mathematics, optics is generally taken in a more reſtrained ſignification, for the doctrine of *direct viſion*; catoptrics, for the doctrine of *reflected viſion*; and dioptrics, for that of *refracted viſion.* See OPTICS, CATOPTRICS, and DIOPTRICS.

Direct, or *Simple* VISION, is that performed by means of direct rays; that is, of rays paſſing directly, or in right lines, from the radiant point to the eye. See DIRECT. — Such is that explained in the preceding article, VISION; ſee alſo RAY.

Reflected VISION, is that performed by rays reflected from ſpecula, or mirrors. See REFLECTION. — *The laws hereof, ſee under* REFLECTION, *and* MIRROR.

Refracted VISION, is that performed by means of rays *refracted*, or turned out of their way, by paſſing through mediums of different denſity; chiefly through glaſſes and lens's. — *The laws of this, ſee under the articles* REFRACTION, LENS, &c.

Arch of VISION. See the article ARCH.

VISION, among divines, is uſed for an appearance, which God occaſionally ſent his prophets and ſaints; either by way of dream, or in reality. See PROPHECY, REVELATION, &c.

Such were the *viſions* of Ezekiel, Amos, *&c.* the *viſion* of S. Paul, lifted up to the third heaven, *&c.* of Joſeph, by which he was aſſured of the purity of the virgin, *&c.*

Many among the Romiſh ſaints ſtill pretend to *viſions*: the *Revelations of S. Bridget* are ſo many *viſions.* See REVELATION.

Hence the word has come into diſrepute, and become a common name for all chimeras, or ſpectres, which either our own folly or fear poſſeſſes us with: and hence, a perſon that frames to himſelf wild romantic notions, is called a *viſionary.* See ENTHUSIASM, FANATIC, &c.

Quevedo's *viſions*, are deſcriptions of what paſſed in the imagination of that author.

Beatific VISION, denotes the act whereby the angels and bleſſed ſpirits ſee God in paradiſe.

VISIR, VISIER, or VIZIER. See the article VISIER.

VISITATION, VISITATIO, an act of juriſdiction, whereby a ſuperior, or proper officer, *viſits* ſome corporation, college, church, or other public or private houſe, to ſee that the laws and regulations thereof be duly obſerved. See REFORM, and REFORMATION.

Among us, the biſhop of each dioceſe is obliged to hold a *viſitation* every third year, and the archdeacon the other two years;

to ſee that the diſcipline be well obſerved, the people well inſtructed; and take care, that neither the church, nor the paſtors thereof, receive any detriment. See **Bishop**, **Archdeacon**, *&c.*

Anciently the regarder's office was expreſſed to be the *viſitation of manners.* See **Regarder**, **Censor**, &c.

The lawyers hold it a branch of the king's prerogative, to *viſit* the univerſities, to enquire into the ſtatutes, and the obſervations of them; to expel delinquents, *&c.* But ſome of the colleges diſallow this privilege; and plead themſelves, by royal charters, exempt from all civil and royal *viſitations.* See **University.**

Among the Romaniſts, the general of each religious order, is obliged to *viſit* the ſeveral monaſteries of order. See **General**, and **Order.**

In abbies, that are chiefs of their orders, there are particular officers, called *viſitors;* who are diſpatched into all the houſes and congregations depending on them, to ſee that the regular diſcipline is obſerved.

In Spain, there is a *viſitor*, and *inquiſitor general.*— The *viſitation* of the cloiſter belongs to the ordinary. — At Paris, the parliament *viſits* the ſeveral priſons and priſoners four times a year.

Visitation, in a moral and religious ſenſe, is alſo applied to the afflictions that befal mankind; as coming from the hand of God, to try or prove them. — In which ſenſe, the laſt plague among us is frequently called the *viſitation.*

VISIVE, **Visivus**, in the ſchool philoſophy, a term applied to the power of *ſeeing.* See **Vision.**

Authors are exceedingly divided, about the place where the *viſive faculty* reſides: ſome will have it, in the retina; others, in the choroides; others, in the optic nerves; others, as Sir Iſaac Newton, in the place where the optic nerves meet, before they come to the brain; and others, in the brain itſelf. See **Sight**, and **Sensory.**

VISNE, **Visnetum**, in law, a neighbouring place, or place near at hand. See **Venue.**

VISUAL, ſomething belonging to the ſight, or ſeeing. See **Sight**, and **Seeing.**

Visual *Rays*, are lines of light, imagined to come from the object to the eye. See **Ray.**

All the obſervations of aſtronomers and geometers, are performed by means of the *viſual* rays, received in at the ſights, or pinnulæ of alhidades. See **Observation**, **Sight**, **Quadrant**, **Levelling**, *&c.*

Visual *Point*, in perſpective, is a point in the horizontal line, wherein all the ocular rays unite. See **Point.**

Thus, a perſon ſtanding in a ſtreight long gallery, and looking forwards, the ſides, floor, and ceiling ſeem to meet, and touch one another in a point, or common centre.

Visual *Angle.* } See the article { **Angle.**
Visual *Line.* } See the article { **Line.**

VISUM. See the article **Habere** *facias Viſum.*

VITA, *Life.* } See the article { **Life.**
Cui in **Vita.** } See the article { **Cui.**

Aqua **Vitæ.** See the article **Aqua.**

VITAL, **Vitalis**, in anatomy, ſomething that miniſters principally to the conſtituting, or maintaining of life in the bodies of animals. See **Life.**

Thus, the heart, lungs, and brain, are called *vital* parts. See **Part**, **Heart**, &c.

Vital *Functions*, or *actions*, are thoſe operations of the *vital* parts, whereby life is effected; ſo as that it cannot ſubſiſt without them. See **Action**, **Motion**, &c.

Such are the muſculous action of the heart; the ſecretory action in the cerebellum; the reſpiratory action of the lungs; the circulation of the blood and ſpirits through the arteries, veins, and nerves. See **Heart**, **Brain**, **Respiration**, **Circulation**, &c.

Vital *Spirits*, are the fineſt, and moſt volatile parts of the blood. See **Spirits**, **Blood**, **Heat**, **Flame**, &c.

VITELLIANI, in antiquity, a kind of a tablet, or pocket-book, wherein people anciently uſed to write down their ingenious, humorous, and even wanton fancies and impertinencies: the ſame with what in Engliſh we may call a *trifle-book.* See *Martial*, Lib. XIV. Epig. viii.

Some will have them to take their name from *vitellus*, a yolk of an egg; by reaſon, the leaves were rubbed therewith. — Others derive the name from one *Vitellius* their inventor.

VITI *Chorea.* See the article **Chorea** *Sancti Viti.*

VITRIFICATION, or **Vitrifaction**, the act of converting a body into glaſs, by means of fire. See **Glass.**

Of all bodies, fern-aſhes, ſand, bricks, and pebbles, *vitrify* the moſt eaſily. Accordingly, it is of theſe that glaſs is principally made.

Gold held, by Mr. Homberg, near the focus of the duke of Orlean's large burning concave mirror, at firſt ſmoaked, then changed, all of it that did not go off in fumes, into glaſs, of a deep violet colour. — The glaſs of gold weighs leſs than gold. *Memoirs of the Royal Academy*, 1702. See **Gold.**

All metals, and even almoſt all natural bodies, ſufficiently heated, *vitrify:* and this *vitrification* is the laſt effect of the fire; after which the moſt intenſe heat of the leargeſt burning-glaſs, will make no further alteration. See **Burning-Glass**, **Mirror**, and **Fire.**

Vitrification, ſome authors will have to be chiefly effected, by the ſalts uniting and incorporating with the metalline particles. See **Calcination.**

But, according to M. Homberg, all *vitrification* ariſes from the earthy part; which, being expoſed to a violent fire, and intimately penetrated by ſome other diſſolvent, commences glaſs. — Thus, ſuppoſing the principles of gold to be mercury, a metallic ſulphur, and an earth; the *vitrification* of gold is eaſily conceived: the mercury, being volatile, exhales in ſmoke, and leaves behind it the earth, and ſulphur, which are fixed; the ſulphur diſſolves the earth, and *vitrifies* it.

VITRIOL*, **Vitriolum**, a mineral ſubſtance, compoſed of an acid ſalt, intermixed with ſomething metalline. See **Mineral**, **Salt**, &c.

* Some take the word *vitriolum* to be uſed *quaſi vitri oleum*, becauſe of its ſhining colour; but Menage rather derives it *à vitreo colore:* the Latins call it *atramentum ſutorium;* and the Greeks, *chalcanthus.*

Vitriol is uſually conſidered as a ſalt, but is more properly ranked among the claſs of ſemi-metals; as having a metallic matter mixt or combined with its ſalt.

Vitriol is defined by Boerhaave, a ſaline, metallic, tranſparent glebe; diſſoluble in water, and fuſible and calcinable by fire.

It acquires different names, according to the different places where it is dug: and the *vitriols* of thoſe alſo, differ from each other in denomination and colour, ſome being *white*, others *blue*, and others *green.*

Roman and Cyprus *vitriol*, for inſtance, is blue; and that of Sweden and Germany greeniſh: beſides which, there is alſo a white kind.

White vitriol partakes but little of any metal, *blue* partakes of copper, and *green* of iron. See **Iron**, *&c.*

M. Geoffroy, the elder, obſerves, that they all conſiſt of an acid ſalt, like that found in allum and ſulphur; excepting that in allum, the acid is mixed with an abſorbent earth, or calx: in ſulphur, it is united with certain fatty, bituminous parts; and in *vitriols*, with metallic parts.

According to Boerhaave, *vitriols* conſiſt of a metallic part, with a ſulphur adhering, a menſtruous acid, and water. — In *blue vitriol*, the metal wherewith the acid, *&c.* is joined, is copper. See **Venus.** — In *white vitriol*, called alſo *white copperas*, it is mixed with lapis calaminaris, or ſome ferruginous earth, intermixed with lead or tin. See **Copperas.** — In *green vitriol*, the acid is joined with iron. * See **Mars.**

* In five ounces of *green vitriol*, M. Geoffroy, the younger, has found two of water, two of iron, and one of acid. Vid. *Hiſt. Acad. R. Scienc. an.* 1728. p. 45.

The antients give the name *chalcitis*, or *chalcanthum*, to *native vitriol;* or that which acquires its full perfection in the entrails of the earth, and which is a kind of mineral ſtone, of a reddiſh colour. — Of this they obſerved three different ſtates, or transformations: chalcitis, in its firſt ſtate, they called *miſi;* this afterwards turned into *melanteria*, and that into *ſori.* See **Chalcitis.**

Some moderns take this chalcitis to be the ſame with the *colcothar* brought from Sweden and Germany; the beſt whereof is of a browniſh red colour, and a *vitriolic* taſte, and diſſolves eaſily in water; and when broke, is of the colour of ſhining copper. See **Colcothar.**

All the other *vitriols* above-named, are really factitious, being only a kind of cryſtals, drawn, by means of water, from a ſort of marcaſite ordinarily found in mines, and called by naturaliſts, *pyrites*, or *quis.* See **Pyrites.**

Roman vitriol is made by expoſing theſe pyrites to the air, till ſuch time as they calcine, and change into a greeniſh, acid, *vitriolic* calx, or duſt; in which ſtate they are thrown into the water, and are afterwards, by boiling and evaporation, reduced into that kind of cryſtals ſent us from Italy.

All the other *vitriols* are made after the ſame manner; that is, much after the ſame manner as allum is made in England, or ſalt-petre in France. See **Allum**, and **Salt-petre.**

For *green vitriol*, they add a great number of pieces of iron to the liquor in the boiling; theſe a raiſe great ebullition. — As ſoon as the iron is diſſolved, they evaporate the diſſolution to a certain degree, and ſo let it cryſtallize. — The cryſtals being formed, there remains a thick, reddiſh, unctuous ſtyptic, and aſtringent liquor; which M. Geoffroy calls *eaumere de vitriol;* as containing all the principles of the mineral, though diſunited.

The powder of this *vitriol* is exceedingly ſtyptic, and excellent for the cure of wounds, and the ſtopping of blood. — Its effects this way, have been raiſed, by the knavery of ſome, and credulity of others, to a kind of miracle; it being this that makes the baſis of the famous ſympathetic powder. See **Sympathetic.**

The medicinal virtues of *vitriol* are very great; but all owing to the iron, or other metallic parts mixed with it, and therefore follow the kind of metal. — Thus, thoſe of *green vitriol* depend on the ſtypticity or aſtringency of iron, or Mars. See MARS, *&c.*

The eau-mere drawn from *green vitriol*, M. Geoffroy obſerves, does not differ any way, eſſentially, from a great number of preparations which the chymiſts have given us of *vitriol*, iron, and the lapis hæmatites: as the fixed and anodyne ſulphurs of *vitriol*, or Mars; arcana, and magiſteries of *vitriol*; tinctures, *&c.* of *vitriol*, Mars, *&c.* — The common baſis of all which is iron exceedingly ſubtilized and attenuated. See IRON.

A ſolution of *vitriol*, mixed with a tincture of galls, becomes inſtantly exceeding black: and it is this is the common writing-ink. See INK.

M. Lemery, the younger, has a pretty hypotheſis to account for this blackneſs: he imagines, that as the *vitriol* whereof ink is made, is iron diſſolved by an acid, and intimately mixed therewith; and as galls are an alkali, or abſorbent, this alkali meeting the acids which hold the iron diſſolved, unites with them, and makes them let the iron looſe; which thereupon revivifies, and reſumes its natural blackneſs: ſo that, in ſtrictneſs, it is iron that we write withal.

This ſyſtem is confirmed hence: that of the five ſorts of *vitriol*, that of Cyprus or Hungary is the only one whoſe baſe is copper; that of the reſt is iron: and accordingly they all ſerve to make ink withal, excepting the firſt.

Some naturaliſts hold *vitriol* to be the root, or matrix of copper; becauſe, in the copper-mines, they never dig deeper than the glebe out of which the *vitriol* is drawn.

Vitriol affords ſeveral chymical preparations; as — *ſpirit of vitriol*, procured by firſt calcining, then diſtilling it. See SPIRIT. — *Oil of vitriol*, which comes out after the ſpirit, by heightening the fire wherewith that had been raiſed. — What remains after both, is *colcothar of vitriol.* — *Tartar of vitriol* is had by mixing *oil of vitriol* with oil of tartar per deliquium; a ſalt precipitating to the bottom, which being ſet to exhale and cryſtallize, is the *tartar of vitriol.* See TARTAR.

From the *colcothar of vitriol*, is prepared the ens veneris. See ENS *Veneris.*

Metallic VITRIOLS. — All metals, it is to be obſerved, may be converted into *vitriols*, by diſſolving them with acid ſpirits, and letting them ſtand to cryſtallize. See CRYSTAL, and CRYSTALLIZATION.

Factitious vitriols, being only metals diſſolved and cryſtallized in ſaline menſtruums, are frequently called by way of diſtinction, *metallic vitriols*, and *metallic ſalts.*

VITRIOL *of Iron*, *Vitriolum Martis*, is a preparation made by diſſolving iron, or ſteel, in oil or ſpirit of *vitriol*; then evaporating or drawing off the moiſture, and bringing the matter to cryſtallize, by ſetting it in a cool place. — This is alſo called *ſal martis*, or *ſalt of ſteel.* See CHALYBEAT.

VITRIOL *of Luna*, or *the Moon*, is the body of ſilver chymically opened, and reduced into the form of ſalt by the ſharp points of ſpirit of nitre. See LUNA, and SILVER.

VITRIOL *of Venus*, is a ſolution of copper in ſpirit of nitre, evaporated and cryſtallized, to gain the ſalt; called alſo *vitriol of copper.* See COPPER, *&c.*

Ros VITRIOLI. See the article ROS.

VITRIOLATED, among chymiſts, turned into *vitriol*, or having *vitriol* infuſed in it. See VITRIOL.

Tartar VITRIOLATED. See TARTARUM *Vitriolatum.*

VITRIOLIC, ſomething that has the quality of *vitriol*, or partakes of the nature of *vitriol.* See VITRIOL.

In this ſenſe, we ſay, *vitriolic ſpring*, *vitriolic ſtone*, *vitriolic ſpirits*, &c. — If iron be thrown into a *vitriolic* water, and the red ruſt ariſing on the ſurface of the iron be melted down, it will be found real copper; which is an inſtance of the tranſmutation of one metal into another. See TRANSMUTATION.

VITRIOUS, or VITREOUS, in anatomy, the third, or glaſſy humour of the eye, thus called from its reſemblance to melted glaſs. See HUMOUR, and EYE.

It lies under the cryſtalline; by the impreſſion of which, its fore-part is rendered concave. See CRYSTALLINE.

For the office of the *vitrious humour*, ſee VISION.

Some authors alſo call the coats or membranes that contain this humour, *vitrious tunics.*

VITTA, among anatomiſts, *fillet* or *head-band*; is uſed for that part of the amnios, which ſticks to the infant's head when it is juſt born. See AMNIOS, CAWL, &c.

VITUS's *Dance*, in medicine. See CHOREA *Sancti Viti.*

VIVA *Pecunia*, was anciently uſed for live cattle. See PECUNIA, MONEY, &c.

VIVA VOCE, q. d. by word of mouth. See ORAL, WITNESS, EVIDENCE, DEPOSITION, &c.

VIVARY, VIVARIUM, in our law-books, is ſometimes uſed for a park, warren, or fiſh-pond, wherein living creatures are kept, *&c.* See PARK, WARREN, *&c.*

VIVIFICATION, in medicine, the art of *vivifying*, that is, of contributing to the action that gives life, or maintains life. See LIFE.

The chymiſts alſo uſe the word, in ſpeaking of the new force, vigour, and luſtre, which, by this art, they give to natural bodies, particularly to mercury; which, after having been fixed or amalgamated, they reſtore to its firſt ſtate. See REVIVIFICATION.

VIVIPAROUS, VIVIPARUS, in natural hiſtory, an epithet applied to ſuch animals as bring forth their young alive, and perfect: in contradiſtinction to ſuch as lay eggs; which are called *oviparous animals.* See ANIMAL, OVIPAROUS, and EGG.

Vipers are diſtinguiſhed from ſnakes, in that the latter lay eggs in dunghils, to be hatched by the warmth thereof; but the former are *viviparous*, that is, lay their eggs within their bellies, and bring forth live vipers. See VIPER.

In the *Philoſophical Tranſactions*, we have an account of a *viviparous fly*, of the oeſtrum or gad-kind. — Dr. Liſter tells us, he opened ſeveral females of this claſs, and found, in each, two bags of live white worms. — The like is hinted by Aldrovandus. — Liſter even ſuſpects, that all of this tribe are, in ſome meaſure, *viviparous.* See INSECTS.

VIVO, in architecture, the ſhaft, or fuſt of a column. — See *Tab. Architect. fig.* 24. *lit. r*; ſee alſo SHAFT, and COLUMN.

The term is alſo uſed, in a more particular ſenſe, for the naked of a column, or other part. See NAKED.

VIVUM *Linum.* } See the article { LINUM.
VIVUM *Sulphur.* } See the article { SULPHUR.

VIZARD, or VIZOR. See the article MASQUE.

VIZIER. See the article VISIER.

ULCER, ULCUS, in medicine, a ſolution, or diſcontinuity of texture, or loſs of ſubſtance in the fleſhy parts of the body, proceeding from an internal cauſe. See SOLUTION.

Galen defines *ulcer* an inveterate eroſion of the ſoft parts of the body; by which, inſtead of blood, they are brought to yield a kind of pus, or ſanies; which prevents the conſolidation.

Etmuller defines an *ulcer*, a ſolution of continuity from ſome corroſive ſharpneſs or acidity, that takes away from the parts, and turns the proper nouriſhment of the body into a ſanious matter. — A like ſolution of continuity happening in a bony part, is called a *caries.* See CARIES.

Galen commonly uſes the words *ulcer* and *wound* indifferently; bnt the Arabs, and the moderns after them, diſtinguiſh between the two. See WOUND.

Spontaneous *ulcers*, are generally ſuppoſed to proceed from acrimony, or a corroſive diſpoſition of the humours of the body; whether brought on by poiſons, the venereal taint, or other cauſes.

Ulcers are divided into *ſimple*, and *complicated.* — They are again divided, with regard to their circumſtances, into *putrid*, or *ſordid*, wherein the fleſh all around is corrupted, and fetid. — *verminous*, where the matter being thick, does not flow away, but generates worms, *&c.* — *virulent*, which inſtead of pus, or ſanies, yield a malignant virus, *&c.*

They are again diſtinguiſhed, with regard to their form, into *ſinuous*, *fiſtulous*, *varicous*, *carious*, &c.

When an *ulcer* happens in a good conſtitution, and proves eaſy of cure, it is ſaid to be *ſimple.*

When attended with other concurring ſymptoms, as a cacochymic habit, which greatly retards or obſtructs the cure, it is called a *compound ulcer.*

A *ſimple ulcer* is attended with no other ſign, than that of eroſion; but *compound ulcers*, happening in a ſcorbutic, dropſical, or ſcrophulous conſtitution, may be attended with pain, a fever, convulſions, a large and emaciating diſcharge of matter, inflammation and ſwelling of the part, calloſity of the lips, a caries of the bones, *&c.*

A Putrid or ſordid ULCER, is that whoſe ſides are lined with a tough, viſcous humour, and is alſo attended with heat, pain, inflammation, and a large flux of humours to the part: with time the ſordes increaſe and change colour, the *ulcer* corrupts, its matter grows fetid, and ſometimes the part gangrenes. — Putrid fevers often gives riſe to this kind of *ulcer.*

Phagedænic ULCER, is an *ulcer* of a corroſive nature, eating away the adjacent parts all around; the lips thereof remaining tumefied. — When this kind of *ulcer* eats deep, and ſpreads wide, without being attended with a tumour, but putrifies, and grows foul and fetid, it is called *noma*; and both, on account of the difficulty wherewith they heal, are alſo termed *dyſepulota.* See PHAGEDÆNA, &c.

Varicous ULCERS, are ſuch as being ſeated in the veins, and becoming painful and inflammatory, ſwell up the part they poſſeſs. — Theſe, when recent, being occaſioned by the uſe of corroſives, or proceeding from a ruptured varix, are often attended with an hæmorrhage. — The veins adjacent to the *ulcers* are, in this caſe, præternaturally diſtended, and may, ſometimes, be felt interwoven together, like net-work, about the part.

Sinuous ULCERS, are ſuch as run aſlant, or ſideways from their orifice; and may be known either by ſearching with the probe, wax-candle, *&c.* or the quantity of matter they diſcharge, in proportion to their apparent magnitude. — Theſe ſometimes lie deep, and have ſeveral turnings: they are diſtinguiſhed from fiſtula's only by their want of calloſity, except in the very orifice. See SINUS.

Fiſtulous **ULCERS**, are ſuch as are ſinuous, or winding, and attended with great calloſity; and diſcharge a thin, ſerous, and fetid matter. See FISTULA.

Old **ULCERS** are rarely cured without the uſe of internals, which are to be ſuch as abſorb and deſtroy the acidity; ſudorifics eſpecially, decoctions of the woods, antimonials, viperines, and volatiles; but above all things, vomitories often repeated: in the moſt obſtinate *ulcers*, mercurial ſalivation is often required; old *ulcers* are frequently incurable, without making an iſſue in the oppoſite part.

The cure of ſimple, ſhallow *ulcers*, is commonly effected by applying a pledget armed with liniment. arcæi, or baſilic. flav. to the part, a plaiſter of diachyl. ſimp. or de minio, being laid over it, and repeating the dreſſing once aday, or ſeldomer. If only the cuticula be loſt, or eaten away, nothing more than a little unguent. deſiccativ. rub. or diapomphol. &c. ſpread thin upon linen, need be applied.

If ſpongy fleſh ſhould grow up, in either caſe it may be kept down with a little Roman vitriol, &c. as in caſe of healing up the ſimple *ulcers*, made by the breaking of common tumors.

Evacuations are indiſpenſibly neceſſary in the cure of *ulcers* of the compound kind, where the conſtitution will admit thereof. — If the *ulcer* be fiſtulous, ſinuous, cancerous, &c. and the matter fetid, thin, or ſanious, it is found proper to join calomel with the purgatives, or to give it in ſmall doſes, between the repetitions thereof, ſo as not to ſalivate.

Beſides the uſe of evacuating medicines, it will here alſo be proper to order a courſe of diet-drink, made with the ſudorific woods, eſpecially where the *ulcer* is ſuſpected to be venereal. — In the mean time, proper dreſſings are to be uſed.

When the *ulcer* obſtinately reſiſts this treatment, a ſalivation is generally propoſed, and ſeldom fails to promote the cure, though all other remedies ſhould have been tried in vain. — If the patient be too weak to undergo the fatigue of a thorough ſalivation, it may be moderated, and kept up the longer, in proportion to his ſtrength. See SALIVATION.

External medicines for *ulcers*, are digeſtives, cleanſers, ſarcotics, and epulotics. — M. Belloſte gives us a medicine of ſingular efficacy in the cure of *ulcers*; and it is no more than a decoction of walnut-tree leaves in water, with a little ſugar; in which a linen cloth being dipped, is to be laid on the *ulcer*, and this to be repeated every ſecond or third day. — This ſimple and vulgar medicine he finds ſuppurates, deterges, incarnates, reſiſts putrefaction, &c. more than any other medicine known.

An *ulcer* in the lungs, makes what we call a *phthiſis*. See PHTHISIS.

The venereal diſeaſe is a grand ſource of *ulcers*; particularly in the prepuce and glans, in men; the vagina, &c. in women; and in the mouth and palate in both. See VENEREAL *Diſeaſe*.

Venereal ulcers are of various kinds; thoſe that grow callous and cancerous, are called *ſhankers*. See SHANKER.

ULCERATED *Cancers*. See the article CANCER.

ULCERATION, EXULCERATIO, a little aperture, or hole in the ſkin, cauſed by an *ulcer*. See EXULCERATION.

Cauſtic medicines ſometimes occaſion *ulcerations* in the ſkin. See CAUSTICS. — Arſenic always *ulcerates* the parts it ſticks to. — A flux at the mouth *ulcerates* the tongue and palate. See ARSENIC, and SALIVATION.

ULIGINOUS, ULIGINOSUS, implies as much as moiſt, mooriſh, fenny. See FEN, MORASS, &c.

ULLAGE *of a caſk*, is ſo much as a veſſel wants of being full. See GAUGING, and SLIDING-*Rule*.

ULNA, in anatomy, a long, hard bone in the arm, with a cavity in the middle; called alſo *focile majus*, and *cubitus*. — See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 8. *fig.* 7. *n.* 10. ſee alſo the articles ARM, and CUBITUS.

The *ulna* lies on the inſide of the fore-arm, reaching from the elbow to the wriſt; is big at its upper end, and grows ſmaller to its lower end.

At its upper it has two proceſſes, which are received into the fore and hind ſinus's of the extremity of the humerus. — The foremoſt proceſs is ſmall and ſhort; the hindmoſt, called ωλεκρανον, is bigger and longer; it ſtays the fore-arm, when it comes to a right line with the arm. See OLECRANON.

Betwixt theſe proceſſes it has a ſemicircular ſinus, which receives the inner protuberance of the lower end of the humerus, upon which we bend and extend our fore-arm; and along the middle of that there runs a ſmall ridge, by which this bone is articulated to the humerus by ginglymus. — Had the articulation here been an arthrodia, the joint muſt have been much weaker; but the hand could have received no more motion from it, than it has now from the ſhoulder.

The inſide of this upper end has a ſmall ſinus, which receives the circumference of the round head of the radius. — Its lower extremity, which is round and ſmall, is received into a ſinus, in the lower end of the radius; and upon this extremity, it has a ſhort and ſmall proceſs, from which the ligaments which tie it to the bones of the wriſt ariſe: this proceſs ſerves to keep the bones of the wriſt in their place.

ULNA, an *ell* in meaſure. See ELL, and MEASURE.

ULNA *Ferrea*, denotes the ſtandard iron ell, kept in the Exchequer. See STANDARD.

ULNAGE. See the article ALNAGE.

ULNARIS *Extenſor*, in anatomy, a muſcle, called alſo *extenſor carpi*. — See *Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 38. ſee alſo the article EXTENSOR.

ULNARIS *Flexor*. See the article FLEXOR *Carpi*.

ULTERIOR, in geography, is applied to ſome part of a country, or province, which, with regard to the reſt of that country, is ſituate on the farther ſide of a river, mountain, or other boundary, which divides the country into two parts. Thus, Africa, with regard to Europe, is divided by mount Atlas, into *citerior*, and *ulterior*, i. e. into two portions, the one on this ſide mount Atlas, and the other on that.

ULTIMA *Baſia*, *laſt kiſſes*, is a phraſe uſed among ſome painters, for the laſt finiſhing touches with the pencil. See PAINTING.

ULTRAMARINE*, ULTRAMARINUM, a beautiful blue colour, uſed by the painters, prepared from lapis lazuli. See BLUE, and LAPIS.

* Some derive its name, *ultramarine*, q. d beyond ſea, from its being firſt brought into Europe, out of India, and Perſia: Others ſay, it is becauſe its colour is deeper than that of the ſea.

This blue is one of the richeſt, and moſt valuable colours, uſed in painting. — The preparation conſiſts, in firſt calcining the lapis in an iron pot or crucible, then grinding it very fine on porphyry ſtone; then mixing it up with a paſte made of wax, pitch, maſtick, turpentine, and oil; and at laſt waſhing the paſte well in clear water, to ſeparate the colouring part from the reſt, which precipitates to the bottom, in form of a ſubtile, beautiful, blue powder. — The water is then poured off, and the powder at bottom dried in the ſun; which is the true *ultramarine*.

Thoſe who prepare this colour, have uſually four kinds, which they procure by ſo many different lotions: the firſt is ſtill the beſt; and the reſt worſe and worſe, to the laſt. — There is *ultramarine* of the firſt kind, ſold for 11 *l.* ſterling *per* ounce; and of the laſt, for about 12 or 15 *s.*

The common opinion concerning its origin is, that the method of making it was firſt diſcovered in England; and that a member of the Eaſt India company, having a quarrel with his aſſociates, to be revenged of them, made the ſecret public.

Ultramarine muſt be choſen of a high colour, and well ground, which is known by putting it between the teeth, where, if it feel gritty, it is a ſign the triture is not ſufficient.

To know whether it be pure and unmixed, put a little of it in a crucible, and heating it red hot, if the powder has not changed its colour after this trial, it is certainly pure: on the contrary, if you perceive any change, or any black ſpecks in it, it is falſified.

Beſide this, there is another kind, called *common*, or *Dutch ultramarine*; which is only lapis, or ſmalt well ground, and pulverized; the colour whereof, when uſed by the painters, is much like that of the true *ultramarine*, though much leſs valued.

ULTRAMONTANE, ſomething beyond the mountains. The term is principally uſed, in relation to Italy and France, which are ſeparated by the mountains of the Alps.

In France, the opinions of the *ultramontane* canoniſts, *i. e.* of thoſe of Italy, are not received.

The painters, particularly thoſe of Italy, call all thoſe that are not of that country, *ultramontanes*; or, ſimply, *tramontanes*. — Pouſſin is the only *tramontane* painter that the Italians ſeem to envy. See TRAMONTANE.

ULTRAMUNDANE, ULTRAMUNDANUS, *beyond the world*; is that part of the univerſe, ſuppoſed to be without, or beyond the limits of our world, or ſyſtem. See UNIVERSE, WORLD, &c.

UMBELICUS. See the article UMBILICUS.

UMBELICAL. See the article UMBILICAL.

UMBELLA, or UMBRELIA. See the article PARASOL.

UMBELLÆ, UMBELLS, among botaniſts, the round tufts, or heads of certain plants, ſet thick together, and all of the ſame heighth. — *Sparſed*, or thin *umbellæ*, are thoſe which ſtand at a diſtance from one another, yet all of an equal heighth. See UMBELLIFEROUS.

UMBELLIFEROUS *Plants*, are ſuch as have their tops branched, and ſpread out like an umbrella; on each little ſubdiviſion of which, there is growing a ſmall flower: ſuch are fennel, dill, &c. See PLANT.

This flower is always pentapetalous; and is ſucceeded by two naked ſeeds adjoining to each other, which are the true characteriſtics that diſtinguiſh theſe plants from others.

The *umbelliferous* are a very large genus of plants, and are diſtinguiſhed by Mr. Ray, into,

1°. Such as have a compounded leaf, of a triangular and pinnate form. — The ſeeds of theſe are either broad, flat, and plain, almoſt like leaves; as the ſphondylium, paſtinaca latifolia, panax heracleum tordylium, orcoſelinum, thyſſelinum, apium cicutæ foliis, daucus alſaticus carvifolia, anethum, pucedanum, thapſia, ferula, &c. Or with a ſeed more tumid, and leſs compreſſed and flat, than the former; as the cachrys,

laſerpitium, cicutaria vulgaris, ſcandix, cerefolium, myrrhis ſativa angelica, leviſticum, ſiler montanum, bulbocaſtanum, ſiſarum, oenanthe, ſium, pimpinella, apium, cicuta, viſnaga, ſaxifraga, crithmum, fœniculum, daucus vulgaris, aniſum, caucalci, coriandrum, paſtinaca marina, *&c.*

2°. Such as have a ſimple, or undivided leaf, or at leaſt one only a little jagged; as the perfoliata, buplerum, aſtrantia nigra, ſanicula, and the ſeſeli æthiopicum.

UMBELLIFORM *flowers.* See the article FLOWER.

UMBER, or UMBRE, UMBRIA, among painters, *&c.* a dry duſky colour'd earth, which, diluted with water, ſerves to make a dark brown colour, uſually call'd with us a hair-colour.

It is called *umber* from *umbra*, ſhadow; as ſerving chiefly for the ſhadowing of objects: or rather from *Umbria*, a country of Italy, whence it is uſed to be brought. See SHADOW.

UMBILICAL, UMBILICALIS, in anatomy, ſomething that relates to the *umbilicus*, or navel. See UMBILICUS, &c.

UMBILICAL *Region*, is that part of the abdomen lying round about the *umbilicus*, or navel. See ABDOMEN, and REGION.

UMBILICAL *Veſſels*, are a ſet or aſſemblage of veſſels belonging to a fœtus; conſtituting what we call the *funiculus umbilicalis*, or navel-ſtring. See FOETUS, SECONDINE, &c.

Theſe veſſels are two arteries, a vein, and the urachus.

The UMBILICAL *arteries* ariſe from the iliacs, near their diviſion into external and internal; and paſs thence on each ſide of the bladder, through the navel, to the placenta. — See *Tab. Anat.* (*Angeiol.*) *fig.* 1. *n.* 56. 56. *fig.* 3. *lit. e. e. fig.* 16. *lit. g. g.*

The UMBILICAL *vein*, from innumerable capillaries united into one trunk, deſcends from the placenta, to the liver of the fœtus; where it is partly diſtributed into the porta, and partly into the cava. — See *Tab. Anat.* (*Angeiol.*) *fig.* 4. *lit. c.* (*Splanch.*) *fig.* 3. *lit. i. fig.* 16. *lit. f.*

The urachus is only plainly found in brutes; though there is no doubt but it has place likewiſe in mankind. See URACHUS.

The uſe of theſe veſſels, is to maintain a continuity and communication, between the mother and the fœtus. — Some authors will have it, that the fœtus receives its food and increaſe this way; and that it grows, like a vegetable, from the mother as the root, of which the *umbilical veſſels* are the ſtem; and the child the head or fruit of this plant-animal. See CIRCULATION, NUTRITION, FOETUS, *&c.*

Funiculus UMBILICALIS, popularly called the *navel-ſtring*, is a kind of ſtring, formed of the *umbilical veſſels*; which, being tied up in a common coat, or membrane, traverſe the ſecundines, and are inſerted, at one end, into the placenta of the mother, and at the other, into the abdomen of the fœtus. — See *Tab. Anat.* (*Splanch*) *fig.* 16. ſee alſo the article UMBILICAL *Veſſels*.

The navel-ſtring is membranous, wreathed, and unequal; ariſing out of the middle of the abdomen, and reaching to the placenta uterina: it is uſually half an ell in length, and as thick as one's finger. — It was neceſſary it ſhould be ſo long and lax, that when the fœtus in the womb grows ſtrong, it might not break it by its ſprawling and tumbling about; and that after it is born, the ſecundine, or after-birth, might be drawn out the better by it.

The way that it paſſes from the navel to the placenta, is very unconſtant; for ſometimes it goes upon the right hand, to the neck, which having incompaſſed, it deſcends to the placenta; and ſometimes it goes on the left hand, up to the neck, *&c.* Sometimes it comes not to the neck at all, but goes firſt a little up towards the breaſt, and then turns round the back, and from thence paſſes to the placenta.

This part, at the birth, is either broke, or cut away, to the navel; ſo that its veſſels, *viz.* two arteries, a vein, and urachus, become perfectly uſeleſs, as veſſels; and, drying up, become impervious, and ſerve only as ligaments to ſuſpend the liver.

UMBILICAL *Points*, in mathematics, the ſame with *foci*. See FOCUS.

UMBILICUS, *Navel*, in anatomy, the centre of the middle part of the lower venter, or belly; being the place through which the *umbilical* veſſels paſs, out of the fœtus, to the placenta of the mother. — See *Tab. Anat.* (*Splanch.*) *fig.* 16. *lit. e.*

* The word is pure Latin, formed of *umbo*, the little bunch in the middle of a buckler; by reaſon of its reſemblance to the navel. See UMBILICAL *Veſſels*.

UMBILICUS, in mathematics, the ſame with *focus*. See FOCUS.

UMBONE, or *Horn*, among floriſts, ſignifies any pointed ſtyle, or piſtil, in the middle of a flower. See PISTIL.

There is alſo an *umbone* called *doubly-pointed*, or *by-parted*, as in the peony; and ſometimes the *umbone* has four ſharp points, in which caſe it is termed, an *umbone* divided into ſo many heads, or cut into three or four parts.

UMBRA, *Shadow*. See the article LIGHT, SHADOW, PENUMBRA, &c.

UMBRE. See the article UMBER.

UMBRELLA. See the article UMBELLA.

UMPIRE *, a third perſon, choſen to decide a controverſy left to an arbitration, in caſe the arbitrators cannot agree. See ARBITRATOR, and ARBITRATION.

* Minſhew ſuppoſes the word formed of the French *un pere*, a father. — Some call him a *ſur-arbitrator*.

UNCASING, among hunters, the cutting up, or fleaing of a fox. See HUNTING.

UNCIA, a term generally uſed for the twelfth part of a thing. — In which ſenſe it occurs in Latin writers, both for a weight, called by us an *ounce*; and a meaſure, called an *inch*. See OUNCE, and INCH; ſee alſo AS, WEIGHT, MEASURE, &c.

UNCIA *Terræ*, or *Agri*, is a phraſe frequently met withal in the ancient charters of the Britiſh kings; but what the quantity of ground was, is a little obſcure. — All that we know for certain, is, that it ſignified a large quantity, as much as 12 modii; which modius ſome conjecture to have been an hundred feet ſquare.

UNCIÆ, in algebra, are the numbers prefixed to the letters of the members of any power, produced from a binomial, reſidual, or multinomial root. See ROOT.

Thus, in the fourth power of $a+b$, that is, $aaaa+4aaab+6aabb+4abbb+bbbb$, the *unciæ* are 4, 6, 4. See POWER, &c.

Sir Iſaac Newton gives a rule, for finding the *unciæ* of any power, ariſing from a binomial root. Thus: — Let the index of the power be called m; then will the *unciæ* ariſe from ſuch a continual multiplication as this, *viz.* $1\times\frac{m-0}{1}\times\frac{m-1}{2}\times\frac{m-2}{3}\times\frac{m-3}{4}\times\frac{m-4}{5}$, *&c.* Thus, if the *unciæ* of the biquadrate, or fourth power, were required; the rule is, $1\times\frac{4-0}{1}(=4)\times\frac{4-1}{2}(=6)\times\frac{4-2}{3}(=4)\times\frac{4-3}{1}(=1)$; which ſhews, that the *unciæ* are 1, 4, 6, 4, 1. See POLYGONAL *Number*.

Or thus: The terms of any powers are compounded of certain literal factums, with numbers called *unciæ*, prefixed; and the factums are found, by making two geometrical progreſſions; the firſt of them beginning from the required power of the firſt part of the root, and ending in unity; and the ſecond beginning with unity, and ending in the required power of the ſecond part: thus, for a ſixth power of $a+b$;

$a^6\ a^5\ a^4\ a^3\ a^2\ a^1$ firſt ſeries,

$1\ b\ b^2\ b^3\ b^4\ b^5\ b^6$ ſecond ſeries,

and multiplying the terms of the ſame order in either ſeries, into one another: as $a^6+a^5b+a^4b^2+a^3b^3+a^2b^4+ab^5+b^6$, out of which the ſixth power of $a+b$ is compounded.

The *unciæ*, then, are found by writing the exponents of the powers of the ſecond ſeries, *i. e.* of b, under the exponents of the powers of the firſt ſeries, *i. e.* of a; and taking the firſt figure of the upper ſeries for the numerator, and the firſt of the lower for the denominator of a fraction, which is equal to the *uncia* of the ſecond term; and ſo for the reſt. Thus, for the ſixth power we have,

$$\begin{array}{cccccc} 6 & 5 & 4 & 3 & 2 & 1 \\ 1 & 2 & 3 & 4 & 5 & 6 \end{array}$$

Accordingly, $\frac{6}{1}=6$ is the *uncia* of the ſecond term of the ſixth power; $\frac{6.5}{1.2}=\frac{30}{2}=15$, the *uncia* of the third term; $\frac{6.5.4}{1.2.3}=\frac{120}{6}=20$, the *uncia* of the fourth term; $\frac{6.5.4.3}{1.2.3.4}=\frac{6.5}{1.2}=\frac{30}{2}=15$, the *uncia* of the fifth term; $\frac{6.5.4.3.2}{1.2.3.4.5}=\frac{6}{1}=6$, the *uncia* of the ſixth term; $\frac{6.5.4.3.2.1}{1.2.3.4..6}=1$, The *uncia* of the laſt power. See PYRAMIDAL *Numbers*.

UNCIAL, UNCIALIS, an epithet, which antiquaries give to certain large-ſized letters, or characters, antiently uſed in inſcriptions, and epitaphs. See LETTER, CAPITAL, *&c.*

The word is formed from the Latin *uncia*, the twelfth part of any thing; and which, in geometrical meaſure, ſignified the twelfth part of a foot, *viz.* an inch; which was ſuppoſed to be the thickneſs of the ſtem of one of theſe letters—

UNCORE, or UNQUES *Priſt*, *ſtill ready*; in law, a plea for the defendant, being ſued for a debt due on a bond at a day paſt, to ſave the forfeiture of his bond, *&c.* by affirming, that he tendered the debt at the time and place, and that there was none to receive it; and that he is yet alſo ready to pay the ſame. See TENDER.

UNCTION, UNCTIO, the act of anointing, or ſmeering with oil, or other fatty matter. See OIL.

Mercurial *unction*, properly applied, brings on a ſalivation. See SALIVATION. — The ſurgeons cure divers wounds, ulcers, *&c.* by repeated *unctions*, with oils, unguents, cerats, *&c.* See UNGUENT, LINIMENT, &c.

UNCTION, in matters of religion, is uſed for the character conferred on ſacred things, by anointing them with oil. See CHRIST and MESSIA.

Anciently, in the eaſtern countries, which abounded ſo much in oil, and odoriferous ſpices, it was the cuſtom to ſeperate perſons and things deſigned for extraordinary offices, or uſes, by anointing

ing them with ointments compoſed of ſuch ingredients; ſymbolizing thereby, both an effuſion of the neceſſary gifts to qualify them for their office, and a diffuſion of the good and grateful effects expected from them.

There were three ſorts of perſons to whom this unction, or conſecration, eſpecially belonged, kings, prieſts and prophets; who, therefore, are all of them (ſays Barrow) ſtiled in ſcripture the *Lord's Anointed*.

The *unction* of kings is ſuppoſed to be a ceremony, introduced very late among Chriſtian princes: Onuphrius ſays, none of the emperors were ever anointed before Juſtinian, or Juſtin. — The emperors of Germany took up the practice from thoſe of the eaſtern empire — King Pepin of France was the firſt king who received the *unction*.

In the Romiſh church, beſides an *unction* at baptiſm, on the forehead, and at confirmation, on the head, they have an *extreme unction*, given to people in the pangs of death, on the parts where the five ſenſes reſide, being the parts by which the perſon is ſuppoſed to have ſinned. See EXTREME *Unction*.

UNCUTH*, UNKNOWN, is uſed in the ancient Saxon laws, for him that comes to an inn, gueſt-wiſe, and lies there but one night — In which caſe, his hoſt was not bound to anſwer for any offence he committed, whereof he was guiltleſs himſelf. See HOGENHINE.

> * —*Prima nocte poteſt dici* uncuth, *ſecunda vero*, gueſt, *tertia nocte* hogenhine. *Bracton*, Lib. III. See THIRD *Night awn Hine*.

UNDECAGON, is a regular polygon of eleven ſides. See POLYGON.

UNDECIMVIR, a magiſtrate among the ancient Athenians, who had ten other collegues, or aſſociates joined with him in the ſame commiſſion.

The functions of the *undecimviri* at Athens, were much the ſame as thoſe of the prevots de marechauſſé in France. They took care of the apprehending of criminals; ſecured them in the hands of juſtice; and when they were condemned, took them again into cuſtody, that the ſentence might be executed on them.

They were choſe by the tribes; each tribe naming its own: And as the number of tribes, after Calliſthenes, was but ten, which made ten members, a ſcribe or notary was added, which made the number eleven. — Whence their name ὁι ἐνδεκα, or *undecimviri*, as Cornelius Nepos calls them in the life of *Phocion*. — In Julius Pollux, they are denominated ἐπαρχοι, and νομοφυλακες.

UNDE', UNDEE, or UNDY, in heraldry. See WAVY.

UNDER *the ſea* in the ſea language. — A ſhip is ſaid to be ſo, when ſhe lies ſtill, or waits for ſome other ſhips, with her helm laſhed, or tied up a-lee.

UNDER-*Currents* — Diſtinct from the *upper*, or *apparent currents* of the ſeas; ſome naturaliſts conclude, there are in divers places *under-currents*, which ſet or drive a contrary way. See CURRENT.

Dr. Smith, in the *Philoſophical Tranſactions*, brings the hypotheſis of *under-currents*, to ſolve that remarkable phænomenon, the ſea's ſetting ſtrongly through the Streights into the Mediterranean, with a conſtant current 20 leagues broad. — What ſhould become of the vaſt quantity of water poured in this way; as alſo, of that running from the Euxine, through the Boſphorus, into the Helleſpont, and thence into the Archipelago; is a ſpeculation that has long employed the philoſophers! This author's conjecture is, that there is an *under-current*, whereby a great quantity of water is carried out as comes in. — To confirm which, he obſerves, that between the north and ſouth foreland, it is either high or low water upon the ſhore, three hours before it is ſo off at ſea: a certain ſign, that though the tide of flood runs aloft, yet the tide of ebb runs under-foot, or cloſe by the ground.

He adds an account from an able ſailor in the Baltic ſound; that going with their pinnace into the middle ſtream, they were carried violently away by the current: but that ſinking a bucket with a large cannon-bullet, to a certain depth of water, it gave a check to the boat's motion; and ſinking it ſtill lower, the boat was driven a-head to the windward, againſt the upper current, which was not above four or five fathom deep.

Dr. Halley ſolves the current's ſetting in at the Streights, without overflowing the banks, from the great evaporation; without ſuppoſing any *under-current*. See VAPOUR, and EVAPORATION.

UNDER-CHAMBERLAINS *of the exchequer*, two officers there, who cleave the tallies, and read the ſame; ſo that the clerk of the pell, and the comptrollers thereof, may ſee that the entries are true. See EXCHEQUER, TALLY, PELLS, &c.

They alſo make ſearches for all records in the treaſury, and have the cuſtody of Domeſday book. — See CHAMBERLAIN.

UNDERMINING. See the article SAPPING.

UNDER-SHERIFF, *Sub-vice-comes*. See SHERIFF.

UNDERSHRUB. See the article SUFFRUTEX.

UNDER-SITTER, an inmate. See INMATE.

UNDERSTANDING, *Intellectus*, is defined, by the Peripatetics, to be a faculty of the reaſonable ſoul, converſant about intelligible things, conſidered as intelligeble. See FACULTY, and SOUL.

They alſo make it twofold, *viz.* *active*, and *paſſive*.

Active UNDERSTANDING, *Intellectus agens*, they hold, that faculty of the ſoul by which the ſpecies and images of intelligible things are framed, on occaſion of the preſence of phantaſms, or appearances thereof. — For, maintaining the intellect to be immaterial, they hold it impoſſible it ſhould be diſpoſed to think by any diſproportionate phantaſms of mere body, and therefore that it is obliged to frame other proportionate ſpecies of itſelf; and hence its denomination *active*.

Paſſive UNDERSTANDING, *Intellectus patiens*, is that which, receiving the ſpecies framed by the *active underſtanding*, breaks forth into actual knowledge. See KNOWLEDGE.

The moderns ſet aſide the Peripatetic notion of an *active underſtanding*. — The Carteſians define the *underſtanding* to be that faculty, whereby the mind converſing with, and, as it were, intent on itſelf, evidently knows what is true in any thing not exceeding its capacity. See JUDGMENT.

The corpuſcular philoſophers define the *underſtanding* to be a faculty, expreſſive of things which ſtrike on the external ſenſes, either by their images, or their effects, and ſo enter the mind. — Their great doctrine is, *Nihil eſſe in intellectu quod non prius fuerit in ſenſu*; and to this doctrine our famous Mr. Locke, and moſt of the lateſt Engliſh philoſophers ſubſcribe. See SENSE, &c.

The Carteſians cry out aloud againſt it, between whom and the Corpuſcularians there is this farther difference, that the latter make the judgment to belong to the *underſtanding*; but the former to the will. See WILL.

Hence, according to the moſt approved opinion of the Corpuſcularians, the *underſtanding* has two offices, *viz. perception*, and *judgment*; according to the Carteſians only one, viz. *perception*. See PERCEPTION.

UNDERSTANDING is alſo uſed for the act, exerciſe, or exertion of this faculty; or the action whereby the mind knows things, or repreſents them in idea to itſelf.

UNDERTAKERS, were anciently ſuch perſons as were employed by the king's purveyors, and acted as their deputies. See POURVEYORS.

At preſent, the name is chiefly uſed for *upholders*, or perſons who furniſh out funerals. — And for ſuch as *undertake* any great work, as the draining of fens, &c. Stat. 43 Eliz.

UNDER-TREASURER *of England*, *Vice-Theſaurarius Angliæ*, an officer mentioned in the ſtat. 39 Eliz. c. 7. and whom ſeveral other ſtatutes confound with treaſurer of the Exchequer. See EXCHEQUER.

He cheſted up the king's treaſure at the end of every term, and noted the content of money in each cheſt, and ſaw it carried to the king's treaſury in the Tower, for the eaſe of the lord treaſurer, &c.

In the vacancy of the lord treaſurer's office, he alſo did every thing in the receipt, that the lord treaſurer himſelf does. See TREASURER.

UNDER-WOOD, *ſub-boſcus*, is coppice, or any wood that is not accounted timber. See COPPICE, and TIMBER.

UNDULATION, in phyſics, a kind of tremulous motion, or vibration, obſervable in a liquid; whereby it alternately riſes and falls, like the waves of the ſea*. See MOTION.

> * And hence it is that the term takes its riſe from the Latin, *unda*, wave. See WAVE.

This *undulatory* motion, if the liquid be ſmooth, and at reſt, is propagated in concentric circles, as moſt people have obſerved upon throwing a ſtone, or other matter upon the ſurface of a ſtagnant water, or even upon touching the ſurface of the water lightly with the finger, or the like.

The reaſon of theſe circular *undulations* is, that, by touching the ſurface with the the finger, there is produced a depreſſion of the water in the place of contact. — By this depreſſion the ſubjacent parts are moved ſucceſſively out of their place, and the other adjacent parts thruſt upwards, which lying ſucceſſively on the deſcending liquid, follow it; and thus the parts of the liquid are alternately raiſed and depreſſed, and that circularly.

When a ſtone is thrown into the liquid, the reciprocal vibrations are more conſpicuous: here the water in the place of immerſion riſing higher, by means of the impulſe or rebound, till it comes to fall again, gives an impulſe to the adjoining liquid, by which means that is likewiſe raiſed about the place of the ſtone, as about a centre, and forms the firſt *undulous* circle; which falling again, gives another impulſe to the fluid next to it further from the centre, which riſes likewiſe in a circle; and thus, ſucceſſively, greater and greater circles are produced.

UNDULATORY *Motion*, is likewiſe applied to a motion in the air, whereby its parts are agitated after the like manner as waves in the ſea; as is ſuppoſed to be the caſe when the ſtring of a muſical inſtrument is ſtruck. See CHORD.

This *undulatory* motion of the air, is ſuppoſed the matter or cauſe of ſound. See SOUND.

Inſtead of the *undulatory*, ſome authors chuſe to call this a *vibratory motion.* See VIBRATION.

UNDULATION is alſo uſed, in chirurgery, for a motion enſuing in the matter contained in an abſceſs, upon ſqueezing it. — A tumor is ſaid to be in a condition for opening, when one perceives the *undulation.* See TUMOR.

UNEQUAL *Courſes.* } See the article { MASONRY.
UNNEQUAL *Hours.* } See the article { HOUR.

UNEVEN *Number.* See the article NUMBER.

UNGELD*, in our ancient cuſtoms, a perſon out of the protection of the law; ſo that if he were murdered, no *geld*, or fine, was to be paid in the way of compenſation by him that killed him. See WERE.

* The word is compounded of the negative *un*, and *gildan*, to pay. See GELD, and ÆSTIMATIO *Capitis.*

Si Frithman, i. e. *homo pacis*, *fugiet & repugnet*, *& ſe nolit indicare*; *ſi occidatur jaceat* ungeld, *i. e.* no pecuniary compenſation ſhall be made for his death. *Skinner.* — *Ungilda akere*, mentioned in Brompton, has much the ſame ſignification, *viz.* where any man was killed, attempting any felony, he was to lie in the field unburied, and no pecuniary compenſation to be made for his death.

UNGUENT, UNGUENTUM, *Ointment*, in chirurgery, a topical remedy, or compoſition, chiefly uſed in the dreſſing of wounds and ulcers. See WOUND, &c.

Unguents, liniments, and cerats, are external forms applied on divers parts of the body, both to cure, and to eaſe and relieve them. — They only differ from each other in conſiſtence; with regard to which, *unguents* hold the medium; being ſtiffer than liniments, but ſofter than cerats. See LINIMENT, and CERAT.

Oils are ordinarily the baſes of all three; to which are added wax, axungia, and ſeveral parts of plants, animals, and minerals; both on account of the virtues they furniſh, and to give a conſiſtence to the oils, and to keep them longer on the part, that they may have more time to act.

The principal *unguents*, or ointments, are, *unguentum roſatum*; *unguentum album*, or *white unguent* of ceruſs; *populneum*, made of the buds of the poplar tree; *unguentum apoſtolorum*, ſo called from the twelve drugs it conſiſts of, a cleanſer; *unguentum baſilicum*, a ſuppurative; *unguentum Ægyptiacum*, cauſtic; *unguentum aureum*, incarnative, and cicatrizing; *unguentum de apio*, mundificative; *unguentum Agrippæ*, ſaid to be diſcovered by king Agrippa. See POPULNEUM, ÆGYPTIACUM, APOSTOLORUM, &c. — Pomatums are alſo ranked in the number of *unguents.* See POMATUM.

UNGUIS, a Latin term, ſignifying a *nail* of the hand or foot. See NAIL.

UNGUIS (in Medicine) a diſeaſe of the eye; being a whitiſh ſpeck on the adnata, formed of a nervous excreſcence growing on that coat; beginning at the great canthus, ſomewhat of the ſhape and ſize of a nail of the hand, and ſpreading inſenſibly till it reach the pupil, and at laſt quite cover it.

The *unguis* is much of the ſame nature with the *pterygium* and *pannus.* See PANNUS.

The ordinary cauſe of the *unguis* is an exceſſive acrimony in the tears, which corrode the conjunctiva; as is often the caſe in an ophthalmia, or after the ſmall-pox. See OPHTHALMIA.

UNGUIS, in anatomy, is applied to two bones of the noſe, being as thin as ſcales, and reſembling the nail; whence their name. See NOSE.

The *ungues* are the ſmalleſt bones in the upper jaw, and are ſituate cloſe to the great canthus of the eyes. See MAXILLA.

Some authors call them *oſſa lachrymalia*, but improperly; there being no glandula lachrymalis in the canthus. — Others call them *orbitaria oſſa.*

They are contiguous to four other bones, *viz.* the coronal, that of the noſe, the maxillary, and that part of the ethmoides which forms the orbit.

UNGUIS, or UNGUICULUS, among botaniſts and floriſts, denotes a little ſpeck, of a different colour from the reſt of the petala, or leaves of flowers. See PETALA.

It has the figure of a nail of the hand: its place is at the origin, or root of thoſe leaves; as we ſee in the roſe, poppy-flowers, and divers others.

In preparing of medicines, the *ungues*, or *unguiculi*, are pulled off the flowers that enter the ſame.

UNGUIS *Odoratus.* See BLATTA *Bizantia.*

UNGULA, in geometry, is the ſection of a cylinder, cut off by a plane paſſing obliquely through the plane of the baſe, and part of the cylindric ſurface. See CYLINDER, &c.

UNGULA, in natural hiſtory, the claw, or hoof of a quadruped. See HOOF.

UNGULA *Alcis*, the elk's claw. See the article ELK.

UNGULA, or *Hamus*, among ſurgeons, a ſort of hooked inſtrument, wherewithal to extract a dead fœtus out of the womb.

UNICORN, in natural hiſtory, an animal famous among the Greek authors, under the name of μονοκερως; and among the Latins, under that of *unicornu.*

Both theſe names it takes from its diſtinguiſhing characteriſtic, the having one horn only; which is repreſented as five palms long, growing in the middle of the forehead. See HORN.

This animal claims a place here, not only as it makes a curious article in natural hiſtory, but alſo as it furniſhes ſomething to medicine, commerce, and heraldry.

The popular account is, that it is about the ſize of a horſe, its hair ſhort, and of a dark-brown colour; very timerous, and therefore keeping moſtly in the woods; and that its true place is the province of Agoas, in the kingdom of Damotes, in Ethiopia.

The firſt author who wrote of the *unicorn*, was one Creſius, whom Ariſtotle mentions as a very ſuſpicious author: Ælian only ſpeaks of it in very doubtful terms. — The other writers on the ſubject are Philoſtratus, and Solinus; Æneas Sylvius, who is pope Pius II. Marcus Paulus, Aleoſius, Geſner, Garcias ab Horto, And. Marinus, &c. Of theſe, ſome ſay it reſembles a horſe, others an aſs, others a goat, by its beard; others an elephant, others a rhinocerous, others a greyhound, &c. Munſter and Thevet will have it an amphibious animal, and its horn to be moveable at pleaſure. — Others make all its ſtrength to conſiſt in its horn; and add, that when purſued by the hunters, it precipitates itſelf from the tops of the higheſt rocks, and pitches upon its horn; which ſuſtains the whole effort of its fall, ſo that it receives no damage thereby. — In effect, the ſeveral authors do all give ſeveral accounts of the figure and colour, both of the animal, and of its horn, and all its parts. — And hence the more knowing among the moderns, do unanimouſly hold it a fabulous animal.

The legend adds, that it is wonderful fond of chaſte perſons; and therefore, in order to take it, a virgin is placed in its way; whom when the *unicorn* ſpies, he lies down by her, and lays his head on her lap, and ſo falls aſleep; upon which the virgin making a ſignal, the hunters come in, and take the beaſt; which could never be caught any other way, becauſe it would either caſt itſelf headlong from a rock, or die.

What ordinarily paſſes among us for *unicorn's horn*, and is ſhewn for ſuch in the collections of curioſitites, and uſed for ſuch by ſeveral phyſicians, we are aſſured by Pereyra, in his account of Greenland, is the tooth of a large fiſh of the the whale kind, called by the iſlanders *narwal*; and, in other places, *walrus*, and *rohart*; frequent enough in the icy ſea. This tooth, or horn, turned, channelled, and terminating in a point, as it is, ſprings out of the middle of the fore-part of the upper jaw, where it has a root a foot long, as thick as the horn itſelf: it is the only tooth the animal has in the upper jaw, and ſerves it as a weapon of defence, wherewith it dares to attack the largeſt whale.* — It can ſtrike it with ſuch violence, as even to pierce the ſide of a ſtrong-built ſhip.

* The horn of the Narwal caught in 1736 in a creek of the Elbe, in the dutchy of Bremen, aroſe, as Dr. Hampe aſſures us, from the fore-part of the head, juſt above the mouth, and was ſix foot long, white like ivory, and curiouſly twiſted. — Yet Wormius, and the generality of authors, take it for a tooth. Many hold its chief uſe is to break the ice. Dr. Steigartahl rather imagines it to ſerve for ſeeking its food; and mentions a whale caught in Greenland, in the belly of which a Narwal had ſtuck his tooth up to the mouth, and had ſuck'd the blood and humours. Vid. Phil. Tranſ. Numb. 447. p. 147, & p. 149. ſeq.

There is a fine horn of this kind preſerved in the repoſitory of S. Denis at Paris, given by And. Thevet, and pretended to have been a preſent to him from the king of Monomotapa, who carried him to hunt the *unicorn*; which is frequent in that country: this horn ſome have ſuſpected to be an elephant's tooth, carved in that manner. — At Straſbourg there is another, between ſeven and eight feet along. — In the repoſitory at Venice, there is a good number; all different from each other.

The antients held the *unicorn's horn* to be a counter-poiſon; and, that the animal uſed to dip it in the water, to purify and ſweeten it ere it would drink: it is added, that for the ſame reaſon other beaſts wait to ſee it drink before them. — Thence, as alſo from the rarity of the thing, people have taken occaſion to attribute divers medicinal virtues thereto.

But Amb. Paré has proved it a mere piece of charletanery, and all the virtues attributed to it to be falſe; and yet the price it has bore is almoſt incredible: Andrea Racci, a phyſician of Florence, affirms the pound of 16 ounces to have been ſold, in the apothecaries ſhops, for 1536 crowns, when the ſame weight of gold was only worth one hundred forty eight crowns.

The *unicorn* is one of the ſupporters of the arms of England. See SUPPORTER. — This beaſt is repreſented, by heralds, paſſant, and ſometimes rampant. — When in this laſt action, as in the Engliſh arms, it is properly ſaid to be *ſaillant* — Argent, an *unicorn* ſeiant ſable, armed and unguled, or, borne by the name of *Harding.*

UNIFORM, UNIFORMIS, denotes a thing to be ſimiliar, or conſiſtent either with another thing, or itſelf, in reſpect of figure, ſtructure, proportion, and the like. — In which ſenſe it ſtands oppoſed to *difform.* See SIMILITUDE.

UNIFORM, or *Equable Motion.* See the article MOTION.

UNIFORM *Flowers of plants*, are ſuch as are of the ſame figure all around, having their fore and backs parts, as alſo their right and left parts, exactly alike. See FLOWER.

When they are otherwiſe, they are termed *difform flowers*. See Difform.

Uniform *Temperament*. See the article Temperament.

UNIFORMITY, *Regularity*, a ſimilitude or reſemblance between the parts of a whole. — Such is that we meet withal in figures of many ſides, and angles reſpectively equal, and anſwerable to each other. See Regular.

A late ingenious author makes beauty to conſiſt in *uniformity*, joined or combined with variety. See Beauty.

Where the *uniformity* is equal in two objects, the beauty, he contends, is as the variety; and where the variety is equal, the beauty is as the *uniformity*. See Deformity.

Uniformity, is particularly uſed for one and the ſame form of public prayers, and adminiſtration of ſacraments, and other rites, &c. of the church of England, preſcribed by the famous ſtat. 1 Eliz. and 14 Car. II. called *the Act of uniformity*. See Nonconformist, Dissenter, Separatist, &c.

UNION, a junction, coalition, or aſſemblage of ſeveral different things in one. — Philoſophers are exceedingly to ſeek about the manner of the *union* of ſoul and body, or by what medium it is that two ſuch heterogeneous beings are kept ſo cloſely together? — It is one of the great laws of this *union*, that ſuch and ſuch an impreſſion on the brain be followed by ſuch and ſuch a ſenſation, or perception in the ſoul. See Soul, Sensation, Motion, &c.

Union, in a philoſophical ſenſe, is uſed, by Dr. Grew, for one of the three ways of mixture; being the joining together of atoms, or inſenſible particles, ſo as to touch in a plane: as is ſuppoſed to be the caſe in the cryſtallizations of ſalts, and the like bodies. See Mixtion, Crystallization, &c.

Union, among painters, expreſſes a ſymmetry and agreement between the ſeveral parts of a painting; when, *e. gr.* there is a deal of relation and connection between them, both as to the figures, and the colouring: ſo that they apparently conſpire to form one thing. See Symmetry.

Union, in architecture, may denote a harmony between the colours in the materials of a building.

Union, in an eccleſiaſtical ſenſe, denotes a combining or conſolidating of two churches into one. See Church, Benefice, Consolidation, &c.

This is not done without the conſent both of the biſhop, the patron, and the incumbent. See Patron, &c.

The canoniſts diſtinguiſh three kinds of *union:* that of *acceſſion*, that of *confuſion*, and that of *equality*.

Union *of Acceſſion*, is the moſt uſual: by this the united benefice becomes a member, and acceſſory of the principal.

Union *by Confuſion*, is that where the two titles are ſuppreſſed, and a new one created, including both.

Union *of Equality*, is that where the two titles ſubſiſt; but equal, and independent.

By ſtat. 37 Hen. VIII. it is enacted, "That an *union*, or "conſolidation of two churches may be admitted, provided "the annual value of one of them, in the king's books, do "not exceed 6 *l.* and the diſtance between them, be not a"bove one mile." — And by another, ſtat. 17 Car. II. it is enacted, "That the *union* of two churches, or chapels, in "any city or town, by the biſhop, patron, and chief Magi"ſtrate of the town, ſhall be valid, unleſs the value of the "churches ſo united exceed 100 *l.*"

Hypoſtatical **Union**. See the article Hypostatical.

Union, or *the* **Union**, by way of eminence, is more particularly uſed, among us, to expreſs the act whereby the two ſeparate kingdoms of England and Scotland were incorporated into one, under the title of *the kingdom of Great Britain*.

This *happy union*, in vain attempted by king James I. was at length effected in the year 1707, by the general conſent of the queen, and the eſtates of each realm.

The act, or treaty of *union*, conſiſts of twenty-five articles; which eleven Engliſh commiſſioners, and eleven Scotch ones, examined, approved, and ſigned on the third of Auguſt 1706. — The parliament of Scotland approved it on the fourth of February, 1707; and the parliament of England, the tenth of March, in the ſame year. — On the 17th following, the queen went to parliament, where ſhe approved the ſame treaty, with the act of ratification.

Since that time, there is only one privy council, and one parliament for the two kingdoms: the Scotiſh parliament is ſuppreſſed, or, rather ſuper-added to the Engliſh; both of them only conſtituting one, under the title of *the parliament of Great Britain*.

The number of members which, by the articles of the *union*, the Scots are to ſend into the houſe of commons, to repreſent the commons of that country, are 45; and the number of peers, whereby their peerage is to be repreſented, is 16. See Parliament.

The great officers of the crown of Scotland, before the *union*, were the lord high chancellor, lord high theſaurer, or treaſurer, lord privy-ſeal, and lord regiſter. — Their leſſer officers of ſtate were, the lord regiſter, lord advocate, lord theſaurer depute, and lord juſtice-clerk.

The four firſt officers are diſſolved by the *union*, and inſtead thereof new officers are erected, ſerving for both countries under the title of *lord high chancellor of Great Britain*, &c. See Chancellor, Treasurer, &c. — The four latter officers ſtill ſubſiſt. See Advocate, Register, &c.

Unions, **Uniones**, in phyſiology, the ſame with *margaritæ*, or *pearls*. See Pearl.

UNISON, in muſic, is the effect of two ſounds, which are equal in degree of tune, or in point of gravity, and acuteneſs. See Tune.

Uniſon may be defined a conſonance of two ſounds, produced by two ſtrings, or other bodies of the ſame matter, length, thickneſs, and tenſion, equally ſtruck, and at the ſame time; ſo that they yield the ſame tone, or note. See Note.

Or, it is the *union* of two ſounds, ſo like each other, that the ear perceiving no difference, receives them as one and the ſame ſound. See Sound.

What conſtitutes *uniſonance*, is the equality of the number of vibrations of the two ſonorous bodies in equal times: where there is an inequality in that reſpect; and, of conſequence, an inequality in degree of tune, the unequal ſounds conſtitute an *interval*. See Interval, and Vibration.

Uniſon is the firſt and greateſt of concords; and the foundation, or, as ſome call it, the *mother* of all the reſt: yet others deny it to be any concord at all, maintaining it to be only that in ſounds, which unity is in numbers. See Unity.

Theſe reſtrain the word *concord* to intervals, and make it include a difference of tune; but this is precarious: for as the word *concord* ſignifies an agreement of ſounds, it is certainly applicable to *uniſons* in the firſt degree.

But though *uniſonance*, or an equality of tune, makes the moſt perfect agreement of ſound; it is not true that the nearer any two ſounds come to an equality of tune, they are the more agreeable. — The mind is delighted with variety; and the reaſon of the agreeableneſs, or diſagreeableneſs of two ſounds, muſt be aſcribed to ſome other cauſe than the equality, or inequality of the number of their vibrations. See Concord.

It is a famed phænomenon in muſic, that an intenſe ſound being raiſed, either with the voice, or a ſonorous body, another ſonorous body near it, whoſe tune is either *uniſon*, or octave to that ſound, will ſound its proper note *uniſon*, or octave, to the given note. — The experiment is eaſily tried by the ſtrings of two inſtruments; or by a voice, and a harpſichord; or a bell, or even a drinking-glaſs.

This our philoſophers account for thus: one ſtring being ſtruck, and the air put in motion thereby; every other ſtring within the reach of that motion, will receive ſome impreſſion therefrom: but each ſtring can only move with a determinate velocity of recourſes, or vibrations; and all *uniſons* proceed from equal, or equidiurnal vibrations; and other concords from other proportions. — The *uniſon* ſtring, then, keeping equal pace with the ſounded ſtring, as having the ſame meaſure of vibrations, muſt have its motion continued, and ſtill improved, till its motion become ſenſible, and it give a diſtinct ſound. Other concording ſtrings have their motions propagated in different degrees, according to the frequency of the coincidence of their vibrations, with thoſe of the ſounded ſtring: the octave, therefore, moſt ſenſibly; then the fifth: after which, the croſſing of the motions prevents any effect.

This they illuſtrate by the pendulum; which being ſet a moving, the motion may be continued and augmented, by making frequent, light, coincident impulſes; as blowing on it when the vibration is juſt finiſhed: but if it be touched by any croſs or oppoſite motion, and this, too, frequently; the motion will be interrupted, and ceaſe altogether. — So, of two *uniſon* ſtrings, if the one be forcibly ſtruck, it communicates motion, by the air, to the other: and being equidiurnal in their vibrations, that is, finiſhing them preciſely together, the motion of that other will be improved and heightened, by the frequent impulſes received from the vibrations of the firſt; becauſe given preciſely, when that other has finiſhed its vibration, and is ready to return: but if the vibrations of the chords be unequal in duration, there will be a croſſing of motions, leſs or more, according to the proportion of the inequality; by which the motion of the untouched ſtring will be ſo checked, as never to be ſenſible. And this we find is the caſe in all conſonances, except *uniſon*, octave, and the fifth. See Chord.

UNIT, **Unite**, or **Unity**, in arithmetic, the number *one*; or one ſingle individual part of diſcrete quantity. See Number.

If a number conſiſt of four or five places, that which is outermoſt towards the right hand, is called the place of *units*. See Numeration.

Number, in general, is by Euclid defined to be μοναδων ποσοτης, a multitude, or aggregate of *units*; in which ſenſe, *unity* is not a number. See Unity.

UNITARIANS, a name aſſumed by the new Antitrinitarians; as making profeſſion to preſerve the glory and attribute of divinity to the *one*, only great and ſupreme God, and Father of our Lord Jeſus Chriſt. See Arians, Socinians, &c.

UNITED *Affection*. See the article AFFECTION.

UNITY, UNITAS, the abſtract, or quality, which conſtitutes, or denominates a thing *unum*, or one. See UNIT.

The ſchool philoſophers generally define *unity*, by a thing's being undivided in itſelf, and divided from every thing elſe. — Others, more accurately, define it, a mode of being, whereby it agrees to any particular being, once: theſe make two kinds of *unity*, viz. *unity of ſimplicity*, which is both undivided and indiviſible; ſuch as that of God, angels, and human ſouls: the other, *union of compoſition*, which, though undivided, is diviſible in the being, as conſiſting of divers parts: ſuch is that of man, &c.

Hence, *unity* is alſo divided into that *per ſe*, which agrees to any being whoſe parts are collected into one ſubſtratum; and *unity per accidens*, whoſe parts are not united into one ſubſtratum; as that of a flock of ſheep, &c.

Some alſo make a *ſingular*, or *numerical unity*, and an *univerſal unity*; a *real*, and an *imaginary unity*, &c.

It is diſputed among mathematicians, whether or no *unity* be a number? — The generality of authors hold the negative, and make *unity* to be only inceptive of number, or the principle thereof; as a point is of magnitude, and *uniſon* of concord.

Stevinus is very angry with the maintainers of this opinion: and yet, if number be defined a multitude of units joined together, as many authors define it, it is evident *unity* is not a number. See NUMBER.

UNITY, among divines. — The Romaniſts, and the Reformed diſpute, whether or no the church be one ſingle body, all the members whereof are joined together, either really, or in inclination; ſo that whatever does not appertain to that body, is no part of the church: which is what they call *the unity of the church*; and which the Romaniſts maintain is reſtrained to one ſingle ſociety, or one communion, under one viſible head; and out of which the Proteſtants are excluded!

Theſe laſt, on the contrary, hold, that the *unity* of the church may ſtill ſubſiſt, without the members being united under any one viſible head; it being ſufficient, that all Chriſtians be united by the bonds of mutual love, and charity; and that they be agreed in the fundamental points of religion.

All the difficulty is, to fix what thoſe fundamentals are; ſome inclining to make the door of the church wider than others. See TOLERATION.

UNITY, in poetry. — In the drama there are three *unities* to be obſerved; the *unity of action*, that of *time*, and that of *place*. See DRAMA.

In the epic poem, the great, and almoſt only *unity*, is that of the action. — Some regard, indeed, ought to be had to that of time: that of place there is no room for. — The *unity* of character is not reckoned among the *unities*. See CHARACTER.

The *unity* of the dramatic action, conſiſts in the unity of the intrigue in comedy, and that of the danger in tragedy; and this not only in the plan of the fable, but alſo in the fable extended and filled with epiſodes. See ACTION.

The epiſodes are to be worked in, without corrupting the *unity*, or forming a double action; and the ſeveral members are to be ſo connected together, as to be conſiſtent with that continuity of action ſo neceſſary to the body; and which Horace preſcribes, when he ſays, — *Sit quodvis ſimplex duntaxat & unum.* See EPISODE.

The *unity* of the epic action, M. Dacier obſerves, does not conſiſt in the unity of the hero, or in the unity of his character, and manners; though thoſe be circumſtances neceſſary thereto. — The *unity of action*, requires that there be but one principal action, of which all the reſt are to be incidents, or dependencies. See HERO, MANNERS, &c.

F. Boſſu aſſigns three things requiſite thereto: the firſt, that no epiſode be uſed, but what is fetched from the plan, and ground of the action, and which is a natural member of that body: the ſecond, that theſe epiſodes and members be well connected with each other: The third is, not to finiſh any epiſode, ſo as it may appear a whole action; but to let each be always ſeen in its quality of member of the body, and an unfiniſhed part.

The ſame excellent critic examines the *Æneid*, *Iliad*, and *Odyſſee*, with reſpect to theſe rules, and finds them ſtrictly obſerved. — Indeed, it was from the conduct of thoſe divine poems, that he took the hint of the rules themſelves. Inſtances wherein theſe rules are all neglected, he gives us in Statius's *Thebaid*.

To the *unity of time* it is required, in the drama, that the action be included in the ſpace of a day. — Ariſtotle ſays expreſly, it muſt not exceed the time the ſun employs in making one revolution, which is a natural day, under pain of irregularity: ſome critics will even have it included in the ſpace of twelve hours, or an artificial day.

Indeed, the antient tragic poets ſometimes diſpenſed with this rule; and the modern Engliſh ones many of them diſallow it: few of them practiſe it.

In the epic poem, the *unity of time* is ſtill leſs eſtabliſhed: In effect, there is no fixing the time of its duration; in regard, the warmer and more violent the action is, the leſs muſt be its continuance: Whence it is, that the *Iliad*, repreſenting the anger of Achilles, only contains forty-ſeven days at moſt; whereas the action of the *Odyſſee* holds eight years and an half, and that of the *Æneid* almoſt ſeven years.

But the length of the poem Ariſtotle gives us a rule for; which is, that it be ſuch as it may be read over in one day: pretending, that if it exceeds that compaſs, the ſight will be bewildered in it, and that one cannot ſee the end, without having loſt the idea of the beginning.

As to the *unity of place* and *ſcene*, neither Horace nor Ariſtotle give us any rules relating thereto. — It were to be wiſhed, indeed, that what is preſented to the audience on the ſame ſtage, which is never ſhifted, might be ſuppoſed to have paſſed in the ſame houſe, and the ſame apartment. — But as ſuch a conſtraint would cramp the poet too much; and as ſuch an uniformity would ſuit very ill with abundance of ſubjects; it has been agreed, that what paſſes any where in the ſame town or city, ſhall be allowed for *unity of place*. — At leaſt, if two different places be unavoidable; yet the place is never to be changed in the ſame act. See SCENE.

UNITY *of poſſeſſion*, in law, ſignifies a joint poſſeſſion of two rights, by ſeveral titles. See POSSESSION.

Thus, if I take a leaſe of land upon a certain rent, and afterwards buy the fee ſimple; this is an *unity of poſſeſſion*, whereby the leaſe is extinguiſhed: by reaſon I, who before had only the occupation for my rent, am now become lord of the ſame, and am to pay rent to none but myſelf. See EXTINGUISHMENT.

Unity of poſſeſſion, amounts to the ſame with what civilians call *conſolidation*. See CONSOLIDATION.

UNIVERSAL*, ſomething that is common to many things: or it is one thing belonging to many, or all things. See GENERAL, CATHOLIC, &c.

* The word, according to ſome, is compounded of *unum verſus alia*.

There are *univerſal inſtruments*, for meaſuring all kinds of diſtances, as heighths, lengths, &c. called alſo *pantometers*, and *holometers*.

An *univerſal* dial, is that whereby the hour may be found by the ſun all over the earth; or under any elevation of the pole. See DIAL.

Several learned authors have had it in view, to eſtabliſh an *univerſal character*; by which the different nations might underſtand each other's writings, without learning their language. See CHARACTER.

The Romaniſts are divided among themſelves, about the title of *univerſal biſhop*, which the popes have arrogated to themſelves; though others of them have declined it. — Baronius holds the appellation to belong to the pope jure divino; and yet S. Gregory, oppoſing the ſame quality given by a council in 586, to John, patriarch of Conſtantinople, aſſerted expreſly, that it did not belong to any biſhop; and that the biſhops of Rome could not, nor ought not to take it. — Accordingly, S. Leo refuſed to accept it, when offered him by the council of Chalcedon; for fear, leſt giving ſomething particular to one biſhop, they ſhould take from all; ſince there could not be an *univerſal biſhop*, but the authority of the reſt muſt be diminiſhed. See BISHOP, OECUMENICAL, POPE, &c.

UNIVERSAL, UNIVERSALE, in logic, is either *complex*, or *incomplex*. — A *complex univerſal*, is either an univerſal propoſition, as, "Every whole is greater than its part;" or whatever raiſes a manifold conception in the mind; as the definition of a reaſonable animal.

An *incomplex univerſal*, is what produces one only conception in the mind, and is a ſimple thing, reſpecting many; as human nature, which relates to every individual wherein it is found.

According to the various order and reſpect this *univerſal* has to many; there are ſeven modes thereof aſſigned; *viz.*

Univerſals in cauſing, ſuch are the common efficient cauſes of divers effects; as *God*, the *ſun*, &c. See CAUSE, &c. — *Univerſals in diſtributing*, ſuch are common, or univerſal ſigns; as *all*, *none*, &c. — *Univerſals in knowing*, which know all things; as the underſtanding, &c. — *Univerſals in repreſenting*, ſuch are images, or ideas of univerſal things; as the idea of a houſe, of a man, &c. — *Univerſals in ſignifying*, ſuch are common words, ſignifying many things; as animal, ſtone, &c. — *Univerſals in being*, or *exiſting*, are natures exiſting in ſeveral; as humanity in Peter, Paul, &c. — And, *Univerſals in predicating*, which exiſt in many things, and are ſeparately predicated of them all; as, *ens*, and *unum*: theſe are alſo called *logical univerſals*.

All theſe kinds of *univerſals*, the two laſt only excepted, are not *univerſals* in themſelves, but only with reſpect to their objects, *cauſed*, *repreſented*, &c. So that what we chiefly conſider as *univerſals*, are the *univerſalia in eſſendo*, and *prædicando*.

Now in an *univerſal*, they diſtinguiſh two things, the *matter*, called the *material univerſal*, *univerſale materiale*, which is the one nature multipliable in many; as humanity in Peter,

ter, Paul, *&c.* and the *form*, called the *formal univerſal*, which is the unity of that nature.

Wherefore, to conſtitute an *univerſal*, it is requiſite the nature be one, yet multipliable: but what ſuch a nature is, has proved matter of great controverſy, both among the antient and modern philoſophers.

The Platoniſts will have *univerſals* to be nothing but divine ideas — Now by *idea* they mean the pattern or form which the artificer has in view, when he makes any thing: but as this is two-fold, *internal*, which is a ſort of image of the thing to be done, which the artificer frames in himſelf; and *external*, which is ſomething out of himſelf, which the artificer imitates: the philoſophers have been infinitely perplexed, to find which of the two Plato meant. — The Peripapetics inſiſt he meant the *external*; but the Platoniſts, and moſt of the Chriſtian divines, hold for the *internal*.

The Stoics and Nominaliſts hold this in common with the Platoniſts, that *univerſals* are not in the things themſelves, but out of them: The Stoics, particularly, for *univerſals*, put a kind of formal conceptions, or acts of knowing; by reaſon they repreſent many things at the ſame time: *e. gr.* knowledge, repreſenting all men, is, according to the Stoics, an *univerſal*.

The Nominaliſts make words *univerſals*; by reaſon the ſame word repreſents many things, as the word *man* repreſents all men: but both Stoics and Nominaliſts make *univerſals* to be ſomething extrinſic to things themſelves; by reaſon whatever exiſts, or is produced, is ſingular: ſo that there is no *univerſal* really in things.

The Peripatetics, however, contend, that there are *univerſal* and *common* natures in things themſelves; or that things and natures like each other, form a material *univerſal*. — But as to the manner wherein they are *univerſal*, or whence they derive their *univerſality*, that is, their unity and aptitude of being in many, whether from nature, or from our underſtanding, is matter of diſpute among them. — If they derive that unity, wherein their *univerſal* form is placed, from nature; then there is an *univerſal à parte rei*; which is the opinion of the Scotiſts. See SCOTISTS.

If they do not derive it from nature, but only from our minds or underſtandings, then the doctrine of the Thomiſts is allowed; who contend, that a formal *univerſal* has no other exiſtence, but by an act of the intellect. See THOMISTS.

UNIVERSAL *Cauſe.*	See	CAUSE.
UNIVERSAL *Characters.*		CHARACTER.
UNIVERSAL *Conſumption.*		CONSUMPTION.
UNIVERSAL *Executor.*		EXECUTOR.
UNIVERSAL *Geography.*		GEOGRAPHY.
UNIVERSAL *Gravity.*		GRAVITY.
UNIVERSAL *Maps.*		MAP.
UNIVERSAL *Palſy.*		PALSY.
UNIVERSAL *Rheumatiſm.*		RHEUMATISM.
UNIVERSAL *Ring-dial.*		RING-*Dial.*
UNIVERSAL *Syſtem.*		SYSTEM.
UNIVERSAL *Theorem.*		THEOREM.

UNIVERSALISTS, in polemical divinity, an appellation, given to ſuch as hold *univerſal* grace; in like manner as the domination *particulariſts*, is given to thoſe who hold *particular* and *efficacious* grace. See GRACE, EFFICACIOUS, PARTICULARIST, &c.

The Arminians are particularly denominated *univerſaliſts*. See ARMINIAN.

UNIVERSALITY, the quality that denominates a thing *univerſal*. See UNIVERSAL.

The Catholics aſſert the *univerſality* of their church, both as to time, and perſons; and maintain this to be a note or mark of the true church; which diſtinguiſhes it from all other ſocieties that pretend to the name. See UNIVERSAL, CHURCH, *&c.*

UNIVERSALITY, in the ſchools. — Logicians make two kinds of *univerſality*; the one *metaphyſical*, the other *moral*.

Metaphyſical UNIVERSALITY, is that which excepts nothing: as this propoſition, "Every man is mortal."

Moral UNIVERSALITY, is that which admits of ſome exception: as, "All old men praiſe the times paſt." — In ſuch like propoſitions, it is enough the thing be ordinarily ſo; it not being ſtrictly required, that every old man ſhould be of that diſpoſition.

UNIVERSE, a collective name, ſignifying the whole world, or the aſſemblage of heaven and earth, with all things therein: called by the Greeks, το πα, and by the Latins, *mundus*. See WORLD, HEAVEN, EARTH, SYSTEM, &c.

The antients, and after them the Carteſians, imagine the *univerſe* to be infinite. — The reaſon they give, is, that it implies a contradiction to ſuppoſe it finite, or bounded; ſince it is impoſſible not to conceive ſpace beyond any limits that can be aſſigned it: which ſpace, according to the Carteſians, is body; and conſequently part of the *univerſe*. See SPACE, and EXTENSION.

But that the *univerſe* is finite, appears from the two following conſiderations. — 1ſt, That whatever conſiſts of parts, cannot be infinite; ſince the parts that compoſe it, muſt be finite, either in number or magnitude; which if they be, what they compoſe muſt be ſo too; or, 2dly, they muſt be infinite in number or magnitude; but an infinite number is a contradiction, and to ſuppoſe the parts infinitely big, is to ſuppoſe ſeveral infinites, one bigger than another; which, though it may paſs among mathematicians, who only argue about infinites, *in poſſe*, or in imagination, will not be allowed in philoſophy. See INFINITE.

UNIVERSITY, UNIVERSITAS, a collective term, applied to an aſſemblage of ſeveral colleges eſtabliſhed in a city, or town, wherein are profeſſors in the ſeveral ſciences, appointed to teach them to ſtudents; and where degrees, or certificates of ſtudy in the divers faculties are taken up. See ART, and SCIENCE.

In each *univerſity*, four faculties are uſually taught; theology, medicine, law, and the arts and ſciences. See THEOLOGY, *&c.*

They are called *univerſities*, or *univerſal ſchools*, by reaſon the four faculties are ſuppoſed to make the world, or whole compaſs of ſtudy. See FACULTY.

In the eye of the law, an *univerſity* is held a mere lay body, or community; though, in reality, it be a mixed body, compoſed partly of laymen, and partly of eccleſiaſtics. See COMMUNITY, COMPANY, *&c.*

Univerſities had their firſt riſe in the twelfth and thirteenth centuries. — Thoſe of Paris and Bologna pretend to be the firſt that were ſet on foot; but then they were on a different footing from the *univerſities* among us. See SEMINARY, and SCHOOL.

The *univerſity* of Paris is ſaid to have commenced under Charlemaign, and to owe its riſe to four Engliſhmen, diſciples of venerable Bede; who, going to that city, made a propoſal to ſet up, and ſell learning; and accordingly, held their firſt lectures in places aſſigned them by that Prince: ſuch is the account given by Gaguin, Gilles, de Beauvais, *&c.* — Though the authors who wrote in thoſe days, as Eginhard, Aimon, Rheginon, Sigebert, *&c.* make not the leaſt mention thereof.

Add, that Paſquier, Du Tillet, *&c.* declare openly againſt the opinion; and aſſert, that its firſt foundations were not laid till Louis the young, and Philip Auguſte, in the twelfth century. — The earlieſt mention we find made of it, is in Regordus, who lived in that age; and who was cotemporary with Peter Lombard, the maſter of the ſentences, the great glory of that *univerſity*; in memory of whom, an anniverſary is to this day obſerved by that body, in the church of S. Marcel, where he lies buried.

But it is certain it was not eſtabliſhed all at once: it appears to have been at firſt no other than a public ſchool in the cathedral church; from which it grew, by little and little, under the favour and protection of the kings, into a regular body.

In effect, our own *univerſities*, Oxford and Cambridge, ſeem intitled to the greateſt antiquity of any in the world; and Univerſity, Baliol, and Merton colleges in Oxford, and S. Peter's in Cambridge, all made colleges in the thirteenth century, may be ſaid to be the firſt regular endowments of this kind in Europe.

For though Univerſity college in Cambridge had been a place for ſtudents ever ſince the year 872, yet this, like many of the other antient colleges beyond ſea, and Leyden to this day, was no proper college; but the ſtudents, without any diſtinction of habit, lived in citizens houſes; having only meeting-places to hear lectures, and diſpute.

In after-times, there were houſes built for the ſtudents to live in ſociety; only each to be at his own charge, as in the inns of court. — Theſe, at firſt, were called *inns*; but now *halls*. See INN, and HALL.

At laſt, plentiful revenues were ſettled on ſeveral of theſe halls, to maintain the ſtudents in diet, apparel, *&c.* and theſe were called *colleges*. See COLLEGE.

The *univerſities* of Oxford and Cambridge are governed, next under the king, by a *chancellor*, who is to take care of the government of the whole *univerſity*, to maintain the liberties thereof, *&c* See CHANCELLOR.

Under him is the *high ſteward*, whoſe office is to aſſiſt the chancellor, and other officers, when required, in the execution of their offices, and to hear and determine capital cauſes, according to the laws of the land, and the privileges of the *univerſity*.

The next officer is the *vice-chancellor*, who officiates for the chancellor in his abſcence. — There are alſo two *proctors*, who aſſiſt in the government of the *univerſity*; particularly in the buſineſs of ſchool-exerciſe, taking up degrees, puniſhing violaters of the ſtatutes, *&c.* See PROCTOR. — Add to theſe a *public orator*, *keeper of records*, *regiſter*, *beadles*, and *verger*.

For the degrees taken up in each faculty, with the exerciſes, *&c.* requiſite thereto, ſee DEGREE; ſee alſo DOCTOR, BACHELOR, *&c.*

UNIVOCAL, in the ſchools, is applied to two or more names, or terms, that have but one ſignification. — In oppoſition to *equivocal*, which is, where one term has two or more ſignifications. See EQUIVOCAL.

Or, *univocal terms*, are ſuch whoſe name, as well as nature, is the ſame; in oppoſition to *equivocals*, whoſe names are the ſame, but their natures very different. See UNIVOCALS.

For a thing to be predicated *univocally* of any others, it is to be attributed to all of them alike, and in the ſame proper ſenſe. See PREDICATE, and PREDICABLE.

UNIVOCAL *Generation.* — The doctrine of the antients, with reſpect to propagation, was, That all perfect animals were produced by *univocal generation*; that is, by the ſole union, or copulation of a male and female of the ſame ſpecies, or denomination: and, that inſects were produced by equivocal generation, without any ſeed, and merely of the corruption of the earth exalted, and, as it were, impregnated by the ſun's rays. See EQUIVOCAL, INSECT, *&c.*

Some philoſophers make a kind of intermediate generation between equivocal and *univocal* which they call *analogous generation.* See GENERATION.

UNIVOCAL *Action.* } See the article { ACTION.
UNIVOCAL *Cauſe.* } See the article { CAUSE.

UNIVOCALS, called by the Greeks *ſynonyma*, are defined by Ariſtotle to be thoſe things whoſe name is common, and alſo the reaſon correſponding to the name; that is, the definition of the idea affixed to it, the ſame. See UNIVOCAL.

Thus, under the name and definition of *animal*, man and brute are equally included; and circle and ſquare, in the reaſon or definition of a *figure*.

Here, the word, as *figure*, they uſe to call *univocum univocans*, or *univocating univocal*; and the things included under the *univocal* name, as *circle*, and *ſquare*, *univoca univocata*, *univocated univocals.*

UNIVOCATION, in logics, and metaphyſics. — The ſchool-men have long diſputed about the *univocation* of being, *i. e.* whether the general idea of *being* agree in the ſame manner, and in the ſame ſenſe, to the ſubſtance and the accident; to God, and the creature?

UNKNOWN. See the article UNCUTH.

UNLAWFUL, *illegal*, ſomething prohibited by, or contrary to the terms of a law, either divine or human. See LAW.

UNLAWFUL *Aſſembly*, the meeting of three or more perſons together, by force to commit ſome unlawful act; as, to aſſault any perſon, to enter his houſe, or land, *&c.* and thus abiding together, whether they attempt the execution, or not. See ASSEMBLY, RIOT, *&c.*

By the ſtat. 16 Car. II. If five perſons, or more, ſhall be aſſembled together, above thoſe of the family, at any conventicle or meeting, under colour of any exerciſe of religion, it is *unlawful*, and puniſhable by fines, and otherwiſe, as in that ſtatue is provided.

UNLIKE *Quantities*, and *Signs*, in algebra. See LIKE *Signs*, and *Quantities:* ſee alſo SIGN, and QUANTITY.

UNLIMITED, or *indeterminate Problem*, is ſuch a one as is capable of infinite ſolutions. — As, to divide a triangle given into two equal parts; to make a circle paſs through two points aſſigned, *&c.* See PROBLEM.

UNLUTING, in chymiſtry, the taking away of the lute, loam, or clay, wherewith a veſſel is cloſed, joined to another, or the like. See LUTE.

UNMOOR, a term uſed at ſea, when a veſſel that before rid, or was held by two anchors, is begun to be diſengaged and prepared to weigh. See ANCHOR, and MOORING.

UNQUES *Priſt, always ready.* See UNCORE *Priſt.*

UNREEVING *a Rope.* See the article REEVING.

UNRIGGING *of a Ship*, is the taking away the rigging, or cordage. See RIGGING.

UNSEELING, in falconry, a taking away the thread that runs through the hawk's eye-lids, and hinders her ſight. See HAWK, and FALCONRY.

Drawing the ſtrings of the hood, to be in readineſs to pull off, is called *unſtriking the hood.*

UNWRITTEN *Tradition.* See the article TRADITION.

VOCABULARY*, VOCABULARIUM, in grammar, denotes a collection of the words of a language, with their ſignifications: otherwiſe called a *dictionary*, *lexicon*, or *nomenclature.* See WORD, NOMENCLATURE, *&c.*

* The word is French, formed of the obſolete term *vocable*; of the Latin, *vocabulum*, word.

The *vocabulary* is, properly, a leſſer kind of dictionary, which does not enter ſo minutely into the origins, and different acceptations of words. See DICTIONARY. — Though the Italian *vocabulary* of the academy de la Cruſca ſeems to be an exception from this diſtinction; as being a copious and exact work, in three volumes folio, ſaid to have been forty years in compiling. — And the like holds of the *vocabulario* Portuguez of F. Bluteau, in ten volumes folio.

VOCAL, ſomething that relates to the voice, or ſpeech. See VOICE, *&c.*

Thus, *vocal prayer* is that ſpoke out, or delivered in words, in contradiſtinction to *mental prayer.* See PRAYER.

In our ancient cuſtoms, VOCALIS is frequently uſed for ſo *called:* — *Poſt hæc Morganus de tribu Walenſium*, *&c. alter nomine Madocus* vocalis *princeps eorum.* Matt. Paris.

VOCAL is ſometimes alſo uſed ſubſtantively, in ſpeaking of matters of election, to ſignify a perſon who has a right to vote. — A man muſt have been a religious a certain number of years, to be *vocal.* See VOTE.

VOCAL *Muſic*, is muſic ſet to words, eſpecially verſes; and to be performed with the voice. — In contradiſtinction to *inſtrumental muſic*, compoſed only for inſtruments, without ſinging. See MUSIC.

Poetry then makes a neceſſary part of *vocal muſic*; and this appears to have been the chief, if not the only practice of the antients, from the definitions which they give us of muſic. See HARMONY, *&c.*

Their *vocal muſic* ſeems to have had ſome advantage over ours, in that the Greek and Latin languages were better contrived to pleaſe the ear than the modern ones. — In effect, Voſſius taxes all the latter languages as unfit for muſic, and ſays, "We ſhall never have any good *vocal muſic*, till our "poets learn to make verſes on the model of the antients;" *i. e.* till the ancient metrical feet and quantities are reſtored. See VERSE, and QUANTITY.

But it is to be obſerved, that the rhythmus of their *vocal muſic*, was only that of their poetry; and had no other forms and mutations, than what the metrical art afforded. See MUTATION.

Their changes were no other than from one kind of metrum or verſe to another; as from iambic, to choraic. See MEASURE, and RHYTHMUS.

Their *vocal muſic*, then, conſiſted of verſes ſet to muſical tunes, and ſung by one or more voices, in chorus, or alternately; ſometimes with, and ſometimes without the accompaniments of inſtruments. See SYMPHONY.

For inſtrumental muſic, in the manner we have defined it, it is not very clear they ever had any. See SYNAULIA, *&c.*

VOCATION, *Calling*; among divines, the grace or favour which God does any one in calling him out of the way of death, and putting him into the way of ſalvation.

In this ſenſe, we ſay, the *vocation of the Jews*, the *vocation of the Gentiles*, &c. — There are two kinds of *vocation*; the one *external*, the other *internal* — The firſt conſiſts in a ſimple and naked propoſing of objects to the will. — The ſecond, is that which renders the firſt effectual, by diſpoſing our faculties to receive thoſe objects.

VOCATION, is alſo uſed for a deſtination to any ſtate, or profeſſion. — It is a rule, that none are to enter the eccleſiaſtic or monaſtic ſtate, without a particular *vocation*, or call. See ORDERS, ORDINATION, *&c.*

The Romaniſts hold the *vocation* of the reformed divines null and invalid. — Among our ſelves, ſome hold an uninterrupted ſucceſſion neceſſary to the validity of the *vocation* of a prieſt.

VOCATIVE, in grammar, the fifth caſe, or ſtate of nouns. See CASE.

When we name the perſon we are ſpeaking to, or addreſs ourſelves to the thing we are ſpeaking of, as if it were a perſon; the noun or name acquires a new relation, which the Latins and Greeks expreſs by a new termination, called the *vocative.*

Thus, of *Dominus*, Lord, in the nominative, the Latins have made *Domine*, O Lord, in the *vocative*; of *Antonius*, *Antoni*, *&c.* — But as this was a thing not abſolutely neceſſary, and as the nominative caſe might ſerve on ſuch occaſions, this new caſe, or termination, was not univerſal: in the plural, for inſtance, it was the ſame with the nominative; and even in the ſingular, it was only practiſed in the ſecond declenſion among the Latins; and in Greek, where it is the moſt common, it is frequently neglected, and the nominative uſed inſtead of it: as in that paſſage in the Greek pſalms, quoted by St. Paul, to prove the divinity of Jeſus Chriſt, θρονος σȣ, ὁ Θεος, thy throne, O God!

In Engliſh, and moſt of the modern tongues, this caſe is ordinarily expreſſed in nouns that have an article in the nominative, by ſuppreſſing that article: as, *the Lord is my hope* — *Lord, thou art my hope!* though, on many occaſions, we uſe an interjection.

VOCIFERATIO*, in our old law-books, the ſame with *hue and cry.* See HUE *and Cry.*

* — *Qui furem plegiatum dimiſerit, qui ei obviaverit & gratis ſine* vociferatione *dimiſerit*, &c. Leg. Hen. I.

VOICE, VOX, a ſound produced in the throat and mouth of an animal, by an apparatus of inſtuments for that purpoſe. See SOUND.

Voices are either *articulate*, or *inarticulate.*

Articulate VOICES, are thoſe whereof ſeveral conſpire together to form ſome aſſemblage, or little ſyſtem of ſounds. — Such are the *voices* expreſſing the letters of an alphabet, numbers of which joined together, form words. See LETTER, and WORD.

Inarticulate VOICES, are ſuch as are not organized, or aſſembled into words: ſuch is the barking of dogs, the braying of aſſes, the hiſſing of ſerpents, the ſinging of birds, *&c.*

The formation of the *human voice*, with all the varieties thereof obſerved in ſpeech, muſic, *&c.* make a very curious article of inquiry; and the apparatus and organiſm of the parts miniſtring thereto, is ſomething exceedingly ſurpriſing.

Thoſe parts are, the trachea, or wind-pipe, through which the air paſſes and repaſſes into the lungs; the larynx, which is a ſhort cylindric canal, at the head of the trachea; and the glottis, which is a little oval cleft, or chink, left between two ſemicircular membranes, ſtretched horizontally withinſide the larynx; which membranes, though capable of joining cloſe together, do generally leave an interval, either greater or leſs, between them, called the *glottis.* — See particular deſcriptions of each of theſe parts, under the articles TRACHEA, LARYNX, and GLOTTIS.

The long canal of the trachea, terminated a-top with the glottis, appears ſo like a flute, that the antients made no doubt but the trachea contributed the ſame to the *voice*, as the body of the flute does to the ſound of that inſtrument. — Galen himſelf fell, in ſome meaſure, into the miſtake: he perceived, indeed, that the principal organ of *voice* was the glottis; but he ſtill allowed the trachea a conſiderable ſhare in the production of ſound.

Galen's opinion was followed by all the antients after him; and even by all the moderns, before M. Dodart. — But that author, obſerving that we do not either ſpeak or ſing, when we inſpire, or take in the air, but only when we expire, or expel it; and that, the air coming out of the lungs, paſſes always out of the minuter veſicles of that part into larger; and at laſt into the trachea itſelf, which is the largeſt of all: that thus its paſſage becoming ſtill more free and eaſy, and this more than ever in the trachea, it can never undergo ſuch a violence, and acquire ſuch a velocity in that canal, as is required to the production of ſound. — But that, as the aperture of the glottis is very ſmall, in compariſon with the width of the trachea, the air can never get out of the trachea by the glottis, without a vaſt compreſſion and augmentation of its velocity; and that by this means, in paſſing, it communicates a briſk agitation to the minute parts of the two lips of the glottis, gives them a kind of ſpring, and occaſions them to make vibrations; which, communicated to the paſſing air, occaſions the ſound. See VIBRATION.

This ſound, thus formed, proceeds into the cavity of the mouth and noſtrils; where it is reflected, and reſounds: and on this reſonance, M. Dodart ſhews, it is that the agreeableneſs of the *voice* intirely depends. — The different conſiſtences, forms, *&c.* of the divers parts of the mouth, contribute to the reſonance, each in their way; and from this mixture of ſo many different reſonances in their due proportion, reſults a harmony in the human *voice*, inimitable by any muſician. — Hence it is, that when any of theſe parts is diſordered, *e. gr.* the noſe ſtopped, the *voice* becomes diſpleaſing.

This reſonance in the cavity of the mouth, does not ſeem to conſiſt in a ſimple reflexion, ſuch as that of a vault, *&c.* but in a reſonance proportionate to the tones of the ſound ſent into the mouth from the glottis; and accordingly, we find this cavity to lengthen and ſhorten itſelf, according to the depth or acuteneſs of the tone.

Now, for the trachea to effect this reſonance, as it was the common opinion it did, it would be required, that the air, after its being modified, and turned into ſound by the glottis, inſtead of continuing its courſe from within outwards, ſhould return from without inwards, and thus ſtrike on the ſides of the trachea: which can never happen, except in thoſe who have a violent cough, and in ventriloquous perſons. — Indeed, in moſt river fowl, which have a very ſtrong *voice*, the trachea does reſound; but the reaſon is, that the glottis is placed at the bottom of the trachea, and not at the top, as in men.

That canal, then, which at firſt paſſed for the principal organ of *voice*, is found not to be ſo much as the ſecondary one, *i. e.* not that which occaſions the reſonance. — It does not ſerve the glottis, as the body of a flute does its plug; but inſtead of that, the mouth ſerves the glottis, as the body of ſome other wind-inſtrument not yet known in muſic. — In effect, the office of the trachea is no other, than that of the port-vent in an organ, *viz.* to furniſh wind.

For the cauſe of the different tones of VOICE. — As the organs that form the *voice* make a kind of wind-inſtrument, one might expect to find ſome proviſion therein, anſwerable to that which produces the differences of tones in ſome other wind-inſtruments. — But in the divers kinds of wind-inſtruments, the hautboy, organ, clarion, *&c.* there is none. — The tone, therefore, muſt be attributed either to the mouth and noſtrils, which occaſion the reſonance, or to the glottis, which produces the ſound: and as all the different tones are produced in man by the ſame inſtrument, it follows, that the part which produces them muſt be capable of changes anſwerable thereto.

Now, for a grave tone, we know there is more air required than for an acute one. — The trachea, therefore, to let this greater quantity paſs, muſt dilate and ſhorten itſelf; by which ſhortening, the external canal, that is, the canal of the mouth and noſe, reckoned from the glottis to the lips, or noſtrils, is lengthened. — For, the ſhortening of the internal canal, *i. e.* of the trachea, brings the larynx and glottis lower down; and of conſequence makes its diſtance from the mouth, *&c.* greater: and there is a change in the length of each canal, for every change of tone, and ſemitone. — Accordingly, it is eaſy to obſerve, that the knot of the larynx alternately riſes and falls in all quaverings, or ſhakings of *voice*, how ſmall ſoever the difference of tone may be.

Hence, as the depth of the tone of a hautboy, is anſwerable to the length of the inſtrument; or longeſt fibres of the wood, whoſe vibrations make the reſonance, making always the ſloweſt vibrations, and conſequently the deepeſt tone: it may appear probable, that the concavity of the mouth, by its lengthening for grave tones, and ſhortening for acute ones, might ſerve very well for the production of the divers tones: but M. Dodart obſerves, that in that play of the organ called the *human voice*, the longeſt pipe is ſix inches, and yet with all that length, it does not make any difference of tone; but the tone of the pipe is preciſely that of the plug; whereas the concavity of the mouth of a man of the graveſt *voice*, not being above ſix inches deep; it is evident that cannot modify, vary, and give the tone. See TUNE.

It is the glottis, then, that forms the tone, as well as the ſound; and the manner of forming the various tones, is by varying its aperture. — A piece of mechaniſm too admirable, not to be here particularly inquired into.

The human glottis, then, repreſented in *Tab. Nat. Hiſtory, fig.* 11. is only capable of one proper motion, *viz.* that of an approach of its lips, ADB, and ADB. — Accordingly, the dotted lines AEB, AFB, AGB, exhibit three different degrees of approach. — Theſe different apertures of the glottis, anatomiſts uſually attribute to the action of the muſcles of the larynx; but M. Dodart ſhews, from their poſition, direction, *&c.* that they have other uſes; and that the opening and ſhutting of the glottis is effected by other means, *viz.* by two tendinous cords, or ſtrings, incloſed in the two lips of that aperture.

In effect, each of the two ſemicircular membranes, whoſe interſtice forms the glottis, is doupled back upon itſelf; and within each duplicature is a cord or ſtring, which is faſtened at one end, to the fore-part of the larynx, and to the hind-part at the other. — It is true they appear more like ligaments than muſcles; as conſiſting of white and membranous fibres; not of red and fleſhy ones: but the vaſt number of minute changes in this aperture, neceſſary to form the vaſt variety of tones, make an extraordinary kind of muſcle, by whoſe contraction they ſhould be effected, abſolutely neceſſary. — Common fleſhy fibres, wherein the blood is received in large quantity, had been infinitely too coarſe for ſuch delicate motions.

Theſe ſtrings, which in their ſtate of relaxation make each a little arch of an ellipſis; as they contract more and more, become longer, but leſs and leſs curve; and at laſt, with the greateſt contraction they are capable of, degenerate into two right lines, applied cloſe to each other; ſo cloſe, and ſo firm, that an atom of air cannot eſcape out of the lungs, how full ſoever they may be, and how great an effort ſoever all the muſcles of the lower venter may make againſt the diaphragm, and by the diaphragm, againſt theſe two little muſcles.

The different apertures of the lips of the glottis, then, produce all the different tones in the ſeveral parts of muſic, *viz. baſs, tenor, counter-tenor, treble-baſs*, and *treble*; and the manner is thus:

The *voice*, we have ſhewn, can only be formed by the glottis; but the tones of the *voice*, are modifications of the *voice*, and can only be produced by the modifications of the glottis. — Now the glottis is only capable of one modification; which is, the mutual approach or receſs of its lips: it is this, therefore, produces the different tones. — Now that modification includes two circumſtances: the firſt, and principal, is, that the lips are ſtretched more and more, from the loweſt tone, to the higheſt; the ſecond is, that the more they are ſtretched, the nearer they approach.

From the firſt it follows, that their vibrations will be ſo much the quicker, as they come nearer their higheſt tone; and that the *voice* will be juſt, when the two lips are equally ſtretched, and falſe, when unequally; which agrees perfectly well with the nature of ſtring inſtruments.

From the ſecond it follows, that the higher the tones are, the nearer will they approach each other; which agrees perfectly well with wind inſtruments, governed by reeds, or plugs.

The degrees of tenſion of the lips, are the firſt and principal cauſe of tones; but their differences are inſenſible. — The degrees of approach, are only conſequences of that tenſion; but their differences are more eaſily aſſigned.

To give a preciſe idea of the thing, therefore, we had beſt keep to that; and ſay, that this modification conſiſts in a tenſion, from whence reſults a very numerous ſubdiviſion of a very ſmall interval; which yet, ſmall as it is, is capable, phyſically ſpeaking, of being ſubdivided infinitely. See DIVISIBILITY.

The doctrine is confirmed, from the different apertures found in diſſecting perſons of different ages, of both ſexes. — The aperture is leſs, and the exterior canal always ſhallower in the ſex and ages fitteſt to ſing treble. — Add, that the reed of a hautboy, ſeparated from the body of the inſtrument, being a little preſſed between the lips, will yield a tone, ſomewhat higher than its natural one; and if preſſed ſtill more, will yield another ſtill higher: and thus an able muſician may run ſucceſſively through all the tones, and ſemi-tones of an octave. It is different apertures, then, that produce, or at leaſt accompany different tones, both in natural wind inſtruments, and artificial ones; and the diminution of the aperture, raiſes the tones both of the glottis, and the reed.

The reaſon why leſſening the aperture heightens the tone, is, that the wind paſſes through it with the greater velocity; and from the ſame cauſe it is, that if any reed, or plug of an inſtrument be too weakly blown, its tone will be lower than ordinary.

Indeed, the contractions and dilatations of the glottis, muſt be infinitely delicate: by an exact calculation of the ingenious author abovementioned, it appears, that to perform all the tones and ſemitones of a common *voice*, which is computed to reach twelve tones, to perform all the particles and ſubdiviſions of thoſe tones into commas, and other minuter, though ſtill ſenſible parts; to perform all the ſhades, or the differences in a tone, when ſounded more or leſs ſtrong, without changing the tone: the little diameter of the glottis, which does not exceed $\frac{1}{16}$ of an inch, but which varies within that extent at every change, muſt be actually divided into 9632 parts; which parts are yet very unequal, and therefore many of them much leſs than the $\frac{1}{963200}$ part of an inch. — A delicacy ſcarce to be matched by any thing but a good ear, which has ſo juſt a ſenſe of ſounds as, naked, to perceive differences in all theſe tones; even thoſe whoſe origin is much leſs than the 963200th part of an inch. See HEARING.

VOICE, in grammar, is a circumſtance in verbs, whereby they come to be conſidered, as either *active*, or *paſſive*, *i. e.* either as expreſſing an action impreſſed on another ſubject, as *I beat*; or receiving it from another, as *I am beaten*. See VERB; ſee alſo ACTIVE, and PASSIVE.

VOICE, in matters of elections, denotes a *vote*, or *ſuffrage*. See VOTE, SUFFRAGE, &c.

In this ſenſe, a man is ſaid to have a *deliberative voice*, when he has a right to give his advice and opinion in a matter of debate, and his ſuffrage is taken. — An *active voice*, when he gives his vote for the election of any one; and a *paſſive voice*, when the ſuffrages may fall on himſelf to be elected. — An *excitative voice*, when he may act to procure another to be elected. — A *conſultative voice*, when he can only offer reaſons and remonſtrances, whereon the chief, or head, determines at his own diſcretion: ſuch the cardinals have, with regard to the pope; the maſters of chancery, with regard to the lord chancellor, *&c.*

Part of the **VOICE**, in muſic. See the article PORT.

VOID *Space*, in phyſics. See the article VACUUM, &c.

VOID, in common law. See ANNULLING, ABROGATION, RESCISSION, REVOCATION, *&c.*

VOID *Baſtions*. See the article BASTION.

VOIDANCE, VACANCY, in the canon law, a want of an incumbent upon a benefice. See VACANCY, &c.

This is twofold, either in law, *de jure*; as when one holds ſeveral benefices that are incompatible: or *de facto*, in deed; as when the incumbent is dead, or actually deprived. See BENEFICE, PLENARTY, &c.

VOIDED, UUIDE', in heraldry, is underſtood of an ordinary, whoſe inner or middle part is cut out; leaving nothing but its edges to ſhew its form; ſo that the field appears through it. Hence, it is needleſs to expreſs the colour, or metal of the *voided* part; becauſe it muſt, of courſe, be that of the field.

The Croſs **VOIDED**, differs from the croſs *fimbriated*, in that this latter does not ſhew the field through it, as the other does. — And the ſame obtains in other ordinaries.

VOIDER, in heraldry, one of the ordinaries, whoſe figure is much like that of the flaſque, or flanch; only that it doth not bend ſo much. — See *Tab. Herald. fig.* 89. ſee alſo the article FLANCH.

This armoury, they ſay, is properly the reward of a gentlewoman that has well ſerved her prince. — It is always born by pairs.

VOIDING, *Evacuating*, in medicine. See EVACUATION.

In the *Philoſophical Tranſactions*, we have an account of one Matt. Milford, who *voided* a worm by urine, ſuppoſed to have come from the kidneys. See WORMS.

Dr. Liſter mentions true caterpillars *voided* by a boy of nine years old. — Mr. Jeſſop ſaw hexapods vomited up by a girl. — Catherina Geilaria, who died in 1662, in the hoſpital of Altenburg, for 20 years *voided*, by vomit and ſtool, toads, and lizards. *Ephem. German.* T. I. Obſ. 103.

In the ſame *Ephem.* is an inſtance of a kitten, bred in the ſtomach, and vomited up. — Of whelps, frogs, lacertæ aquaticæ, and other animals, bred and *voided* the like way. — Bartholine gives us an inſtance of a worm, bred in the brain, and *voided* by the noſe of O. W. See VERMES.

VOIR *Dire*, in law — When, upon a trial at law, it is prayed that a witneſs may be ſworn upon a *voir dire*; the meaning is, that he ſhall upon his oath ſpeak or declare the truth, whether he ſhall get or loſe by the matter in controverſy. — If he be unconcerned, his teſtimony is allowed; otherwiſe, not. See OATH, WITNESS, &c.

VOL, among heralds, ſignifies the two wings of a fowl joined together, born in armoury; as being the whole that makes the flight. — Accordingly, a *demi-vol*, is a ſingle wing.

VOLA, the palm, or inſide of the hand, comprehended between the fingers and the wriſt. See HAND.

VOLANS. See the articles DRACO, and PISCIS.

VOLANT, in heraldry, is when a bird, in a coat of arms, is drawn flying, or having its wings ſpread out.

Paſs-**VOLANT**. } See the article { PASS-*Volant*.
Pont-**VOLANT**. } See the article { PONT.

VOLATILE, in phyſics, is commonly uſed to denote a mixt body, whoſe integral parts are eaſily diſſipated by fire, or heat; but is more properly uſed for bodies, whoſe elements, or firſt component parts, are eaſily ſeparated from each other, and diſperſed in air. See BODY, COHESION, ELEMENT, &c.

For, as any mixt body is ſaid to be *fixt*, in a double ſenſe; ſo may it be ſaid to be *volatile* two ways: whence the ſame body, *e. gr.* mercury, is both *volatile*, and fixt at the ſame time. Since, as its integral parts, or thoſe which ſtill retain the nature of mercury, are eaſily ſeparable by fire, and readily fly away; it is ſaid to be *volatile*: and yet, as it is very difficult to deſtroy its contexture, and reſolve it by fire, or any other menſtruum, into its firſt elements, it is ſaid to be *fixt*. — The ſame may be ſaid of ſulphur, antimony, &c.

Minerals, for the generality, are leſs *volatile* than vegetables, and vegetables leſs than animals. See FIXT.

The chymiſts diſtinguiſh between *volatile* ſalts, and fixt ſalts. See SALT. — The capitals of aludels, ſtop and collect the *volatile* parts of ſubſtances in ſublimation; and make what we call *flowers*. See FLOWERS, SUBLIMATION, &c.

"The particles of fluids, which do not cohere very ſtrongly "together, and are of ſuch ſmallneſs, as renders them moſt "ſuſceptible of thoſe agitations, which keep liquors in a fluor, "are eaſily rarified into vapour; and, in the language of the "chymiſts, are *volatile*. — Thoſe which are groſſer, and ſo "leſs ſuſceptible of alterations; or cohere by a ſtronger heat, "or, perhaps, not without fermentation: theſe are what the "chymiſts call *fixt bodies*." *Newton. Optic.* p. 371.

VOLATILE, in chymiſtry — When the fire decompounds any mixt body, the parts moſt diſpoſed to receive a great motion, are ſooneſt looſened, and riſe up in the order, which the differences of that diſpoſition give them; the reſt remaining immoveable at the bottom of the veſſel. See ANALYSIS, FIRE, &c.

Thoſe that riſe firſt are called *volatile parts*; ſuch are *phlegm*, *oil*, *ſpirits*, and *ſalts* both urinous, and alkalious. See SPIRIT, PHLEGM, and SALT.

The parts remaining, *viz. earth*, and *lixivial ſalts*, are called *fixt*. See FIXT, EARTH, and VOLATILISATION. — *For the making of fixt ſalts* volatile; ſee VOLATILISATION.

VOLATILE *Alkaly*. } See the article { ALKALY.
VOLATILE *Salt of amber*. } See the article { AMBER.

Sal **VOLATILE** *Oleoſum*. See the article SAL.

VOLATILISATION, or VOLATILIZATION, the act of rendering fixt bodies *volatile*; or of reſolving them by fire into a fine, ſubtile vapour, or ſpirit, which eaſily diſſipates, and flies away. See VOLATILE.

All bodies, even the moſt fixt, as gold, may be *volatilized*; either of themſelves, or with the admixture of ſome *volatile* ſubſtance, or ſpirit; by diſtillation, or ſublimation. See DISTILLATION, and SUBLIMATION; ſee alſo GOLD, BURNING-GLASS, &c.

In the *Memoirs of the royal Academy*, we have a diſcourſe on the *volatiliſation of the fixt ſalts of plants*, by M. Homberg. — That admirable chymiſt, it ſeems, by an odd accident, found fixt ſalts ſpontaneouſly *volatilized* in ſoap: Now ſoap, we know, is a compoſition of oil, and the alkalious lixivial ſalts of the plant kali. — Upon this, M. Homberg conjectured, that the oil, from which the volatile ſalts ſeem to derive their volatility, being intimately mixed with the fixt ſalts of the kali in the ſoap, had rendered them *volatile*: ſo that they ceaſed to be alkalious, by reaſon their pores were now filled with the oil which they had abſorbed. — Oil, in effect, has always ſomewhat of an acid in it; which acid, being joined to the alkali, the whole is rendered a kind of intermediate ſalt; which yet, as the acid and alkali were only joined by means of the oil, is ſtill oily or ſulphurous.

In conſequence of this view, he made divers chymical operations, whereby he found, that to diſpoſe the fixt ſalts of plants to *volatiliſe*, the proceſs is to be begun, by making them into a ſapo, and letting that ſapo ſhoot out little ſaline points, or cryſtals on its ſurface; which cryſtals are no other than fixt ſalts already *volatilized*. — Then, the remainder of the matter is to be ſet over the fire, after being well imbibed and penetrated by ſome new liquor, proper to aſſiſt in a new ſublimation of more fixt ſalts to be *volatilized*: and this to be repeated till no more ſalts will riſe.

The choice of the liquor, wherewith the ſapo is to be ſaturated, is not indifferent — Water is, of all others, the leaſt fit for the effect: oil does well; yet diſtilled oil better than that drawn by expreſſion: and ſpirit of wine beſt of all.

By ſuch means, M. Homberg *volatilized* almoſt half a quantity of ſalt of tartar, which is a fixt vegetable ſalt. See TARTAR.

VOLATILITY. See VOLATILE, SUBLIMATION, &c.

VOLCANO, or VULCANO, in natural hiſtory, a name given to mountains that belch, or vomit fire, flame, aſhes, cinders, ſtones, *&c.* See MOUNTAIN.

Such are mount Etna in Cicily, mount Veſuvius near Naples, *&c.* See ERUPTION.

Near Guatimala, in South America, are two mountains, the one called *volcano of fire*; the other *of water.* — Out of the firſt, huge pieces of rocks are frequently hurled, with as much vehemence as balls out of a cannon; and a written letter may be read by the light of its flames, at the diſtance of three miles. — Out of the other, vaſt quantities of water are continually ſpued up.

Volcano's and ignivomous mountains, though ſome of the moſt terrible phænomena in nature, have their uſes; being a kind of ſpiracles, or tunnels, whereby to vent the fire and vapour, that would otherwiſe make a more dreadful havock, by convulſions and earthquakes.

Nay, if the hypotheſis of a central fire and waters, be admitted; theſe outlets muſt be abſolutely neceſſary to the peace and quiet of the terraqueous globe. — Accordingly, Dr. Woodward obſerves, there is ſcarce any country much annoyed with earthquakes, but has one of theſe fiery vents; which is conſtantly obſerved to be all in flames, whenever an earthquake happens; by which means, it diſgorges that fire, which, while it was underneath, was the cauſe of the diſaſter. — He adds, that were it not for theſe diverticula, whereby the central fire has an exit, it would rage in the bowels of the earth much more furiouſly, and make much greater havock than it does; and that there are not wanting inſtances of countries, that have been wholly freed from earthquakes, by the eruption of a new *volcano* there. See EARTHQUAKE.

VOLERY, a great bird-cage, ſo large, that the birds have room to fly up and down in it. See AVIARY.

VOLITION, the act of willing. See WILL.

VOLITIVE *Thinking.* See the article THINKING.

VOLLEY, a military ſalute, made by diſcharging a great number of fire-arms at the ſame time. See SALUTE.

In the *Philoſophical Tranſactions*, Mr. Robert Clarke gives us an account of a very remarkable effect of firing ſome *volleys* of ſmall ſhot: “ Upon proclaiming the peace, in 1697, two “ troops of horſe were drawn in a line, the centre whereof “ was againſt a butcher's door, who kept a very large, cou- “ ragious maſtiff dog, the biggeſt in the town. “ Upon firing of the firſt *volley*, the dog, who before lay “ aſleep by the fire, ſtarted up, ran into an upper room, “ and hid himſelf under the bed. — The ſervant being about “ to beat him down, (as he had never uſed to go up ſtairs) “ a ſecond *volley* came; which made the dog riſe, run ſeveral “ times about the chamber, with violent tremblings, and “ ſtrange agonies. — But immediately a third *volley* came; “ upon which the dog ran once or twice about, fell down, “ and died immediately; throwing out blood at mouth and “ noſe.”

VOLO, in antiquity, a name which the Romans gave the ſlaves, who, in the ſecond Punic war, offered themſelves to ſerve in the army; upon a want of a ſufficient number of citizens. See SLAVE.

The name *volo*, *volones*, they are ſaid to have had from their offering themſelves voluntarily. — Feſtus ſays, it was after the battle of Cannæ that this happened: Macrobius, *Sat.* Lib. I. cap. II. places it before that battle.

Capitolinus tells us, that Marcus Aurelius formed troops, or legions of ſlaves, which he called *voluntarii*; and that the like forces, in the ſecond Punic war, had been called *volones.* — But before M. Aurelius, Auguſtus had given the name *voluntarii* to forces which he had raiſed out of *liberti*, or freedmen; as we are aſſured by Macrobius, *Sat.* Lib. I. cap. ii.

VOLTE, in the manage, ſignifies a round or circular motion, conſiſting of a gait of two treads, made by an horſe going ſideways round a centre; the two treads marking parallel tracks, one by the fore feet, larger; and the other by the hind feet, ſmaller: the ſhoulders bearing outwards, and the croup approaching towards the centre.

Demi-VOLTE, is a half-round of one tread, or two, made by the horſe at one of the angles or corners of the *volte*, or at the end of the line of the paſſade; ſo as when he is near the end of this line, or near one of the corners of the *volte*, he changes hands, to return by a ſemicircle.

Renverſed, or *inverted* VOLTE, is a track of two treads, which the horſe makes with his head to the centre, and his croup out; going ſideways upon a walk, trot, or gallop, and tracing out a larger circumference with his ſhoulders, and a ſmaller with his croup.

VOLUME *, VOLUMEN, a book, or writing, of a juſt bulk to be bound by itſelf. See BOOK.

* The word had its riſe *à volvendo*, rolling, or winding; the antient way of making up books, being in rolls of bark, or parchment. See ROLL.

This manner laſted till Cicero's time, and long after that paper was invented, and books wrote thereon. — The ſeveral ſheets were glued, or paſted end to end, wrote only on one ſide; and at the bottom a ſtick faſtened, called *umbilicus*; and at the other end a piece of parchment, whereon was the title of the book in letters of gold. See BOOK, PAPER, *&c.*

And yet, we are aſſured, king Attalus, or rather Eumenes, had, long before, done up ſome of his books in the ſquare form; as having found the ſecret of parchment, which would bear writing on both ſides. See PARCHMENT.

The library of Ptolemy king of Egypt, contained, according to Aulus Gellius, three hundred thouſand *volumes*; and, according to Sabellicus, ſeven hundred thouſand. See LIBRARY.

Raymond Lully wrote above four thouſand *volumes*; whereof we have divers catalogues extant. – It is held, that Triſmegiſtus wrote ſix thouſand five hundred twenty five *volumes*; others ſay, thirty ſix thouſand five hundred twenty nine: But it is much more rational to ſuppoſe, with la Croix, that it was the cuſtom of the Egyptians to put all the books they compoſed, under the name of *triſmegiſtus.*

At preſent, VOLUME is chiefly uſed in the ſame ſenſe with *tome*, for a part or diviſion of a work, bound ſeparately. — In this ſenſe, we ſay, “ the councils are printed at the Louvre “ in 37 *volumes.* See TOME.

VOLUME *of a Body*, is alſo uſed, among foreign philoſophers, for its *bulk*, or the ſpace incloſed within its ſuperficies. See BODY, MASS, *&c.*

VOLUMUS, in law, the firſt word of a clauſe in one ſpecies of the king's writs of protection, and letters patent. See PROTECTION.

VOLUNT, VOLUNTAS, in law, is when a tenant holds lands, *&c.* at the will of the leſſor, or lord of the manor. See TENANT, VASSAL, *&c.*

VOLUNTARY, in the ſchools. — The generality of philoſophers uſe *voluntary* in the ſame ſenſe with *ſpontaneous*; and apply it to any thing ariſing from an internal principle, attended with a due knowledge thereof. — In which ſenſe, they ſay, “ A dog moves *voluntarily* when he runs to the pot.” See SPONTANEOUS.

Ariſtotle, and his followers, reſtrain the term *voluntary* to thoſe actions that proceed from an inward principle, which knows all the circumſtances of the action.

There are two things, therefore, required to the *voluntarineſs* of an action: the firſt, that it proceed from an inward principle; thus, walking for pleaſure-ſake is a *voluntary* action; as ariſing from the will commanding, and the moving faculty obeying, which are both internal. — On the contrary, the motion of a man dragged to priſon is not *voluntary.*

The ſecond, that the action be performed with a perfect intelligence of the end, and circumſtances thereof: in which ſenſe, the actions of brutes, children, ſleeping people, *&c.* are not properly *voluntary.* See WILL.

Anatomiſts diſtinguiſh between the *voluntary*, and natural, or *involuntary motions* in the body. — Of the firſt kind are thoſe of the heart, lungs, pulſe, *&c.* See MUSCULAR, MOTION, ACTION, *&c.*

VOLUNTARY *Agent.*	See the article	AGENT.
VOLUNTARY *Eſcape.*		ESCAPE.
VOLUNTARY *Homicide.*		HOMICIDE.
VOLUNTARY *Novation.*		NOVATION.

VOLUTE*, VOLUTA, in architecture, a kind of ſpiral ſcroll, uſed in the Ionic, and Compoſite capitals; whereof it makes the principal characteriſtic, and ornament. — See *Tab. Archit. fig.* 41. *fig.* 26. *lit. D. fig.* 32. *litt. i i*; ſee alſo the article CAPITAL.

* Some call it the *ram's-horn*, from its figure, which bears a near reſemblance thereto.

Moſt architects ſuppoſe, that the antients intended the *volute* to repreſent the bark or rind of a tree, laid under the abacus, and twiſted thus at each extreme, where it is at liberty: others will have it a ſort of pillow, or bolſter, laid between the abacus and echinus, to prevent the latter being broke by the weight of the former, and the entablature over it; and accordingly call it *pulvinus.* — Others, after Vitruvius, will have it to repreſent the curls, or treſſes of a woman's hair. See IONIC *Order.*

The number of *volutes* in the Ionic order is four; in the Compoſite, eight.

There are alſo eight angular *volutes* in the Corinthian capital, accompanied with eight other ſmaller ones, called *helices.* See HELIX, CAULICOLE, *&c.*

There are ſeveral diverſities practiſed in the *volute.* — In ſome, the liſt or edge, throughout all the circumvolutions, is in the ſame line, or plane: ſuch are the antique Ionic *volutes*, and thoſe of Vignola. — In others, the ſpires or circumvolutions fall back; in others, project, or ſtand out. — Again, in ſome the circumvolutions are oval; in others, the canal of one circumvolution is detached from the liſt of another, by a vacuity or aperture. — In others, the rind is parallel to the abacus, and ſprings out from behind the flower thereof. — In others, it ſeems to ſpring out of the vaſe, from behind the ovum, and riſes to the abacus, as in moſt of the fine Compoſite capitals.

The *volute* is a part of great importance to the beauty of the column. — Hence, architects have invented divers ways of delineating it. — The principal are that of Vitruvius, which was long loſt, and at laſt reſtored by Goldman; and that of Palladio. — Daviler prefers the former as the eaſier. — The manner thereof is as follows.

Divide the altitude A B, (*Tab. Architecture, fig.* 12.) into eight equal parts, and aſſuming the fifth Q P, for a diameter, from the centre G, with half the diameter G P, deſcribe a circle for the eye of the *volute.* — Biſſect the radii G P and G Q in 1 and 4, and ſubdivide the half parts G 1 and G 4, each into three equal parts: then, upon the right line 1 4, conſtruct a ſquare 1, 2, 3, 4; one of whoſe ſides 2, 3, continue on to D; another, 3, 4, to E; and the third, 1, 2, to C. From G draw right lines G 2 and G 3; which divide into three equal parts. — Then, through 6 and 10, draw 6 1 and 10 N, parallel to 2 D. And through 11 and 7 draw 11 O and 7 K, parallel to 3 E; and through 5 and 9, draw 5 H, and 9 M, parallel to 1 C. — Laſtly, from 12, 11, 10, 9, 8, *&c.* ſtrike the quadrants P O, O N, N M, M L, L K, *&c.* which will form the *volute.*

Conſoles, modillions, and other ſorts of ornaments, have likewiſe their *volutes*, or ſcrolls. See CONSOLE, *&c.*

Canal of the VOLUTE. } See the article { CANAL.
Eye of the VOLUTE. } { EYE.

VOLVULUS, in medicine, a name which ſome authors give to the iliac paſſion, by others called *chordapſus*, and by others, *miſerere mei.* See ILIAC, CHORDAPSUS, and MISERERE.

VOMER, in anatomy, a Latin name, ſignifying, litterally, a *ploughſhare*; uſed by authors to denote the eleventh, or, according to the numeration of others, the thirteenth bone of the upper jaw: by reaſon of the reſemblance it bears to that utenſil. See MAXILLA.

The *vomer*, or *vomer aratri*, is a thin bone, placed in the middle of the noſe, over the palate, ſerving to part the two noſtrils from each other. See NOSTRIL.

It is ſmall, but hard, and is joined to the ſphenoides and ethmoides, which have each of them little eminences that are received into the cavities of the *vomer*; by which means it is faſtened in its place. See NOSE.

VOMICA, in medicine, a collection of pus in any part of the body. See PUS, ABSCESS, IMPOSTHUME, *&c.*

When this maſs, or collection, is in the lungs, it is called *vomica pulmonum.* — When in the kidneys, *vomica renum*, &c. See PHTHISIS, *&c.*

The *vomica* of the lungs differs from an empyema, which is a collection of pus in the cavity of the thorax. See EMPIEMA.

Nux VOMICA, *Vomic Nut*, is a little flat, round, woody fruit, or ſeed; hard as horn, of a mouſe-colour without, but of various colours within: ſometimes yellow, ſometimes white, and ſometimes brown. See NUX.

It is not known what the plant is that bears it. — It is a poiſon for dogs, and divers quadrupeds, which it kills preſently, through exceſſive vomiting. See POISON.

VOMITING, VOMITUS, a violent caſting up, or evacuating by the mouth, what is contained in the ſtomach. See EVACUATION.

This action has been generally allowed to be owing, principally, to the contraction of the fibres of the ſtomach, when irritated by the acrimonious quality, or oppreſſed with the quantity of its contents. See STOMACH.

But M. Chirac, and after him M. du Verney, and others, ſet aſide the fibres of the ſtomach; and advance, that *vomiting* is produced wholly by the extraordinary motions of the diaphragm, and muſcles of the lower venter. — So that the ſtomach is here ſuppoſed deſtitute of all action, and caſts back its contents only by its being compreſſed and flatted, from ſome foreign and accidental cauſes.

However, Boerhaave, and moſt of our lateſt writers, allow both the ſtomach, the diaphragm, and the muſcles of the abdomen, to have their ſhare in the action of *vomiting*: accordingly, that diligent author makes *vomiting* to conſiſt in a convulſive and retrograde motion of the muſcular fibres of the gullet, ſtomach, and inteſtines; as well as thoſe of the abdomen, and the ſeptum tranſverſum; which, when in a leſs degree, produce a nauſea; and in a greater, a *vomiting.* See NAUSEA.

By the contraction of ſo many parts, the ſtomach comes to be ſqueezed, as in a preſs; whence it is obliged to give up what is contained in its cavity, and the neighbouring parts; juſt as water is in a bladder, or ſponge, when ſqueezed between the hands.

The evacuation, too, muſt be upwards, rather than downwards; by reaſon the paſſage is more open and eaſy that way, and that the inteſtines are preſſed by the diaphragm, and the muſcles of the lower venter.

The primary cauſe of *vomiting*, uſes to be the too great quantity, or too much acrimony of the contents, ariſing from poiſons, contuſions, compreſſions, inflammations, and wounds in the brain; inflammations of the diaphragm, ſtomach, inteſtines, ſpleen, liver, kidneys, pancreas, and meſentery; unuſual agitations in coaches, at ſea, *&c.* and *vomitive*, or emetic medicines. See EMETICS.

VOMITIVES, or VOMITIVE *Medicines.* See EMETICS.

VOPISCUS, a Latin term, uſed in reſpect of twins in the womb, for that which comes to the perfect birth; the other being before excluded abortive. See TWINS, and ABORTION.

VORTEX, *Whirlwind*, in meteorology, a ſudden, rapid, violent motion of the air, in gyres, or circles. See WHIRLWIND.

VORTEX, VORAGO, is alſo uſed for an *eddy*, or *whirlpool*; or a body of water, in certain ſeas and rivers, which runs rapidly around, forming a ſort of cavity in the middle.

The ordinary cauſe of theſe *vortices*, is a gulph, or outlet, whereby the water of the ſea, *&c.* is abſorbed, or precipitates itſelf into ſome other receptacle; ſometimes to ſome other communicant ſea; and ſometimes, perhaps, into the vaſt abyſs of central water. See ABYSS, *&c.*

An artificial VORTEX, expreſſive of the phænomena of the natural ones, may be made with a cylindric veſſel, placed, immoveable, on a horizontal plane, and filled to a certain heighth with water. — In this water a ſtick being plunged, and turned round as briſkly as may be, the water is neceſſarily put into a pretty rapid circular motion, and riſes to the very edge of the veſſel; and when there arrived, ceaſes to be further agitated.

The water thus raiſed, forms a cavity in the middle, whoſe figure is that of a truncated cone; its baſe is the ſame with the upper cavity of the veſſel; and its vertex in the axis of the cylinder.

What raiſes the water at the ſide of the veſſel, which occaſions the cavity in the middle, is its centrifugal force. — For the motion of the water being circular, it reſpects a centre taken in the axis of the veſſel; or, which is the ſame, in the axis of the *vortex* formed by the water; the ſame velocity, then, being impreſſed on all the water, the circumference of a ſmaller circle of water, or a circle leſs remote from the axis, has a greater centrifugal force than another that is greater, or more remote from the axis. — The ſmaller circle, therefore, drives the greater towards the ſide of the veſſel; and from this preſſion, or impulſion, which all the circles receive from the ſmaller ones that precede them, and convey to the greater which follow them, ariſes that elevation of the water along the edge of the veſſel to the very top, where we ſuppoſe the motion to ceaſe.

With a *vortex* thus formed, M. Saulmon, of the royal academy of ſciences, made divers experiments, by putting ſeveral ſolid bodies therein, to acquire the ſame circular motion; with intent to diſcover which of them, in making their revolutions round the axis of the *vortex*, approach toward, or recede from it, and with what velocity. — The reſult was, that the heavier the body, ſtill the greater was its receſs from the axis.

M. Saulmon's view in this attempt, was, to ſhew how the laws of mechanics produce the cœleſtial motions; and that it is probably to thoſe motions that the gravity or weight of bodies is owing. — But, unhappily, the experiments ſhew juſt the contrary of what they ſhould do, to confirm the Carteſian doctrine of gravity. See GRAVITY.

VORTEX, in the Carteſian philoſophy, is a ſyſtem or collection of particles of matter moving the ſame way, and round the ſame axis.

Such *vortices* are the grand machines whereby theſe philoſophers ſolve moſt of the motions, and other phænomena of the heavenly bodies. — Accordingly, the doctrine of theſe *vortices* makes a great part of the Carteſian philoſophy. See CARTESIANISM.

The matter of the world, they hold to have been divided at the beginning into innumerable little equal particles, each endowed with an equal degree of motion, both about its own centre and ſeparately, ſo as to conſtitute a fluid. See FLUID.

Several ſyſtems, or collections of this matter, they further hold to have been endowed with a common motion about certain points, as common centres, placed at equal diſtances; and that the matters moving round theſe, compoſed ſo many *vortices.*

Then, the primitive particles of the matter they ſuppoſe, by theſe inteſtine motions, to become, as it were, ground into ſpherical figures, and ſo to compoſe globules of divers magnitudes; which they call *the matter of the ſecond element:* and the particles rubbed, or ground off them, to bring them to that form, they call *the matter of the firſt element.* See ELEMENT.

And ſince there would be more of this firſt element than would ſuffice to fill all the vacuities between the globules of the ſecond, they ſuppoſe the remaining part to be driven towards the centre of the *vortex,* by the circular motion of the globules; and that being there amaſſed into a ſphere, it would produce a body like the ſun. See SUN.

This ſun being thus formed, and moving about its own axis with the common matter of the *vortex,* would neceſſarily throw out ſome parts of its matter, through the vacuities of the globules of the ſecond element conſtituting the *vortex;* and this eſpecially at ſuch places as are fartheſt from its poles; receiving, at the ſame time in, by theſe poles, as much as it loſes in its equatorial parts. And, by this means, it would be able to carry round with it thoſe globules that are neareſt, with the greater velocity; and the remoter, with leſs. — And, by this means, thoſe globules which are neareſt the centre of the ſun, muſt be ſmalleſt; becauſe, were they greater, or equal, they would, by reaſon of their velocity, have a greater centrifugal force, and recede from the centre. See LIGHT.

If it ſhould happen that any of theſe ſun-like bodies, in the centres of the ſeveral *vortices,* ſhould be ſo incruſtated, and weakened, as to be carried about in the *vortex* of the true ſun: if it were of leſs ſolidity, or had leſs motion than the globules towards the extremity of the *ſolar vortex,* it would deſcend towards the ſun, till it met with globules of the ſame ſolidity, and ſuſceptible of the ſame degree of motion with itſelf; and thus, being fixed there, it would be for ever after carried about by the motion of the *vortex,* without either approaching any nearer to, or receding from the ſun; and ſo become a planet. See PLANET.

Suppoſing then all this, we are next to imagine, that our ſyſtem was at firſt divided into ſeveral *vortices,* in the centre of each of which was a lucid ſpherical body; and that ſome of theſe being gradually incruſtated, were ſwallowed up by others which were larger, and more powerful, till at laſt they were all deſtroyed and ſwallowed up by the biggeſt *ſolar vortex;* except ſome few which were thrown off in right lines from one *vortex* to another, and ſo became comets. See COMET.

But this doctrine of *vortices,* is, at beſt, merely hypothetical. — It does not pretend to ſhew by what laws and means the cœleſtial motions are really effected, ſo much as by what means they poſſibly might, in caſe it ſhould have ſo pleaſed the Creator. — But we have another principle which accounts for the ſame phænomena as well, nay, better than that of *vortices;* and which we plainly find has an actual exiſtence in the nature of things: and this is *gravity,* or the weight of bodies. See GRAVITY.

The *vortices,* then, ſhould be caſt out of philoſophy, were it only that two different adequate cauſes of the ſame phænomena are inconſiſtent. See NEWTONIAN *Philoſophy.*

But we have other objections againſt it. — For, 1°. If the bodies of the planets and comets be carried round the ſun in *vortices,* the bodies of the parts of the *vortex* immediately inveſting them, muſt move with the ſame velocity, and in the ſame direction; and beſides, muſt have the ſame denſity, or the ſame vis inertiæ. — But it is evident, that the planets and comets move in the very ſame parts of the heavens with different velocity, and in different directions. — It follows, therefore, that thoſe parts of the *vortex* muſt revolve at the ſame time, in different directions, and with different velocities; ſince one velocity, and direction, will be required for the paſſage of the planets, and another for that of the comets.

2°. If it were granted, that ſeveral *vortices* are contained in the ſame ſpace, do penetrate each other, and revolve with divers motions; ſince thoſe motions muſt be conformable to thoſe of the bodies, which are perfectly regular, and performed in conic ſections; it may be aſked, How they ſhould have been preſerved intire ſo many ages, and not diſturbed, and confounded by the adverſe actions and ſhocks of ſo much matter as they meet withal?

3°. The number of comets is very great, and their motions perfectly regular, obſerving the ſame laws with the planets, and moving in conical orbits, that are exceedingly excentric. Accordingly they move every way, and to all parts of the heavens, freely pervading the planetary regions, and going frequently contrary to the order of the ſigns, which would be impoſſible, unleſs theſe *vortices* were away.

4°. If the planets move round the ſun in *vortices,* thoſe parts of the *vortices* next the planets, we have already obſerved, would be equally denſe with the planets themſelves: conſequently the *vortical* matter, contiguous to the perimeter of the earth's orbit, would be as denſe as the earth itſelf: and that between the orbits of the Earth and Saturn, muſt be as denſe, or denſer. — For a *vortex* cannot maintain itſelf, unleſs the more denſe parts be in the centre, and the leſs denſe towards the circumference: and ſince the periodical times of the planets are in a ſeſquialterate ratio of their diſtances from the ſun, the parts of the *vortex* muſt be in the ſame ratio. — Whence it follows, that the centrifugal forces of the parts will be reciprocally as the ſquares of the diſtances. — Such, therefore, as are at a greater diſtance from the centre, will endeavour to recede therefrom with the leſs force. Accordingly, if they be leſs denſe, they muſt give way to the greater force, whereby the parts nearer the centre endeavour to riſe. — Thus, the more denſe will riſe, and the leſs denſe deſcend; and thus there will be a change of places, till the whole fluid matter of the *vortex* be ſo adjuſted, as it may reſt in æquilibrio.

Thus will the greateſt part of the *vortex* without the earth's orbit, have a degree of denſity and inactivity, not leſs than that of the earth itſelf. — Whence the comets muſt meet with a very great reſiſtance, contrary to all appearances. Coteſ. *præf. ad Newt. Princip.* See COMET, RESISTANCE, MEDIUM, &c.

The doctrine of *vortices,* Sir Iſaac Newton obſerves, labours under many difficulties: for a planet to deſcribe areas proportional to the times, the periodical times of the *vortex,* ſhould be in a duplicate ratio of their diſtances from the ſun; and for the periodical time of the planets to be a ſeſquiplicate proportion of their diſtances from the ſun, the periodical times of the parts of the *vortex* ſhould be in the ſame proportion of their diſtances: and, laſtly, for the leſſer *vortices* about Jupitur, Saturn, and the other planets, to be preſerved, and ſwim ſecurely in the ſun's *vortex,* the periodical times of the parts of the ſun's *vortex* ſhould be equal. — None of which proportions are found to obtain in the revolutions of the ſun, and planets around their axis. *Phil. nat. princ. math. apud. ſchol. gen. in calce.*

Beſides, the planets, according to this hypotheſis, being carried about the ſun in ellipſes, and having the ſun in the umbilicus of each figure, by lines drawn from themſelves to the ſun, do always deſcribe areas proportionable to the times of their revolutions; which that author ſhews the parts of no *vortex* can do. *Scol. prop. ult. lib. 2. princip.*

Again, Dr. Keil proves, in his *Examination of Burnet's Theory,* that if the earth were carried in a *vortex,* it would move faſter in the proportion of three to two, when it is in Virgo, than when it is in Piſces; which all experience proves to be falſe.

VOTE, or VOICE. See SUFFRAGE, and VOICE.

In the houſe of peers, they give their *votes,* or ſuffrages, beginning at the puiſne, or loweſt baron, and ſo to the reſt ſeriatim, every one anſwering, apart, *content,* or *not content:* and if the affirmatives and negatives are equal, *ſemper præſumitur pro negante;* the ſpeaker having no caſting *vote,* unleſs he be a peer.

In the houſe of commons, they *vote* by *yea's* and *no's,* promiſcuouſly. See PARLIAMENT.

VOTIVE *Medals,* are thoſe whereon the vows of the people, for the emperors, or empreſſes, are expreſſed. See MEDAL, and VOW.

The public vows, made every five, ten, or twenty years, are more often found round the edges of medals, than on the faces thereof, at leaſt under the weſtern empire; for in the eaſtern the caſe is different: witneſs the medal of M. Aurelius the younger, where the reverſe repreſents the vows made at the time of his marriage, VOTA PUBLICA. And on Greek medals, ΔΗΜΟΥ ΕΥΧΑΙ, which they ſometimes expreſs by the two initial letters, Δ. Ε. acccording to F. Hardouin's conjecture, which may be admitted in certain medals, where the ΔΗΜ. ΕΞ. that this, ΔΗΜΑΡΧΙΚΗΣ ΕΞΟΥΣΙΑΣ, does not well agree. Witneſs alſo the medal of Antonine, VOTA SUSCEPTA DECENNALIA.

The origin of *vows,* and *votive medals,* is given by M. Du Cange, thus: — Auguſtus feigning himſelf willing to quit the empire, and having twice, at the prayers of the ſenate, condeſcended to hold it for ten years longer, it grew into a cuſtom, to make freſh public prayers, ſacrifices, and games, for his continuing it, at the ten years end; and theſe they call *decennalia,* or *vota decennalia.* See DECENNALIA.

Under the eaſtern emperors, theſe vows were repeated every five years: hence it is, that, after Diocleſian's time, we find on medals VOTIS V. XV, *&c.* which practice continued till the time of Theodoſius, when Chriſtianity being well eſtabliſhed, a ceremony that had ſome remains of heatheniſm in it, was ſet aſide. So that the VOTIS MULTIS, on a medal of Majorianus, muſt be a very different thing; and no other, doubtleſs, than a kind of acclamation, like that PLURA NATALIA FAELICITER.

VOTIVE *Maſs.* See the arricle MASS.

VOTUM, VOW. See the article VOW.

VOTUM, in our antient law-books, is uſed for *nuptiæ,* or marriage: ſo, *dies votorum,* is the wedding-day, *Fleta,* lib. 4. cap. 2. par. 16. *Si donatarius ad alia vota convolaverit,* &c. See MARRIAGE.

VOUCH. — A perſon is ſaid to *vouch for another*, when he undertakes to maintain, or warrant him in any thing, or paſſes his word in his behalf. See VADARI, WAGER, &c.

In law, to *vouch*, is to call ſuch perſon, or *vouchee*, into court, to make good his warrant. See WARRANTY.

VOUCHEE, a perſon who is to warranty, or *vouch* for another, who in reſpect hereof, is called *voucher*. See VOUCHER, and WARRANTY.

VOUCHER*, in law, the tenant in a writ of right, who calls another perſon into court, bound to warranty him, and either to defend his right againſt the demandant, or to yield him other lands, *&c.* to the value. See WARRANTY and VOUCHEE.

The proceſs whereby the vouchee is called, is a *ſummoneas ad warrantiſandum*; and if the ſheriff return upon that writ, that the party hath nothing whereby he may be ſummoned, then goes out another writ, called, *ſequator ſub ſuo periculo*.

A recovery with a *ſingle voucher*, is when there is but one *voucher*; and with a *double voucher*, is when the vouchee voucheth over; and ſo a *treble voucher*. See RECOVERY.

There is alſo a *foreign voucher*, when the tenant impleaded in a particular juriſdiction, voucheth one to warranty in ſome other county, out of the juriſdiction of that court; and prays he may be ſummoned, *&c.* — This were more pertinently called a *voucher of a foreigner*.

VOUCHER, alſo ſignifies a leiger-book, or book of accompts, wherein are entered the warrants for the accomptant's diſcharge. See BOOK-KEEPING.

VOUSSOIR, *Vault-ſtone*, or *Key-ſtone*, in architecture, a ſtone proper to form the ſweep of an arch, being cut ſomewhat in manner of a truncated cone, whoſe ſides, were they prolonged, would terminate in a centre, to which all the ſtones of the vault are directed. See VAULT, ARCH, KEY, &c.

VOW, VOTUM, a ſolemn promiſe, or offering of a man's ſelf, or other thing to God. See OATH, OBLATION, &c.

A perſon is conſtituted a religious, by taking three *vows*, that of poverty, that of chaſtity, and that of obedience. See RELIGIOUS, MONK, &c.

Authors are divided as to the antiquity of theſe *vows*. — — It is agreed, the ancient anachorets, and hermits of the Thebaide made none; they did not conſecrate themſelves to God by an indiſſolvable obligation, but were at liberty to quit their retirement, and return into the world, whenever the fervor that drove them out of it, came to abate. See ANACHORET, &c.

Vows were not introduced till long after; and that to fix the too frequent inconſtancy of ſuch as, after retiring from the world, repreſented themſelves too ſoon, or too ſlightly; and by that means ſcandalized the church, and diſturbed the quiet of families by their return.

Eraſmus will have it, that ſolemn *vows* were not introduced till the thirteenth century, under the pontificate of Boniface VIII. — Others hold them as antient as the council of Calcedon: but the truth is, before Boniface VIII. there were none but ſimple *vows*, and ſuch as might be diſpenſed withal. — Their *vows*, till that time, were not deemed eternal chains; they were not indiſſoluble. It is true, they were obligatory promiſes, as to conſcience, and the inconſtancy of ſuch as violated them, was held an odious deſertion: but, as to law, the perſons were not held to be civilly dead, ſo as, upon their return, to render them incapable of all acts of civil ſociety.

The moſt common *vow* was that of poverty, but this only regarded the convent; on account of which, every perſon diveſted himſelf of all property: but the making of *vows* did not at all exclude them from the rights of blood, or render them incapable of inheriting.

No religious, it is true, acquired the property of the effects that fell to him; they all belonged to the monaſtery, in favour of which he had diveſted himſelf of every thing; and the monaſtery only left him the uſufruit and direction of them. — The popes have frequently confirmed this privilege to divers orders, and permitted the monks to inherit, as much as if they were ſeculars, and had made no *vows*.

At preſent, the civil death of a religious is dated from the day he makes the *vows*; and from that time he is utterly incapable of inheriting. — A religious may reclaim, or proteſt againſt his *vows* within five years; but, after that, it is no longer admitted. — The failures in the profeſſion, are eſteemed to be purged, by his ſilence and perſeverance for five years. — Indeed, to be relieved from his *vows*, it is not enough the party reclaim within the five years; but he muſt likewiſe prove he was forced to take the habit.

VOWS, VOTA, among the Romans, ſignify ſacrifices, offerings, preſents, and prayers, made for the emperors and cæſars, particularly for their proſperity, and the laſtingneſs of their empire.

Theſe were, at firſt, made every five years, then every fifteen, and then every thirty, called *quinquennalia*, *decennalia*, and *vicennalia*. See DECENNALIA, VICENNALIA, and QUINQUENNALIA.

In divers antique medals and inſcriptions, we read, *Vot.* X. *Vot.* XX. *Vot. mult.* ſignifying *votis decennalibus*, *vicennalibus*, *multis*, &c. See VOTIVE.

VOWEL, VOCALIS, in grammar, a letter which affords a complete ſound of itſelf; or a letter ſo ſimple, as only to need a bare opening of the mouth to make it heard, and to form a diſtinct voice. See LETTER.

Such are *a*, *e*, *i*, *o*, *u*; which are called *vocales*, *vowels*, in contradiſtinction to certain other letters, which depending on a particular application of ſome part of the mouth, as the teeth, lips, or palate, can make no perfect ſound without an opening of the mouth, that is, without the addition of a *vowel*; and are therefore called *conſonants*. See CONSONANT.

Though we ordinarily only reckon five *vowels*, yet, beſides that each of theſe may be either long or ſhort, which occaſions a conſiderable variety in the ſound: to conſider only their differences reſulting from the different apertures of the mouth, one might add four or five more *vowels* to the number. — For the *e* open, and the *e* cloſe, are different enough to make two *vowels*, as in *ſea*, and *depth*; ſo alſo the *o* open, and *o* cloſe, in *hoſt*, and *organ*. — Add, that the *u* pronounced *ou*, as the Latins did, and as the Italians and Spaniards ſtill do, has a very different ſound from the *u*, as pronounced by the Greeks, and, as at this day, by the Engliſh and French. — Again, *eo*, in *people*, make but one ſimple ſound, though we write it with two *vowels*.

Laſtly, the *e* mute is, originally, no more than a ſurd joined to a conſonant, when that is to be pronounced without a *vowel*, as when it is immediately followed by other conſonants, as in the word *ſcamnum*. — This is what the Hebrews call *ſcheva*, eſpecially when it begins the ſyllable: and this *ſcheva* is found in all languages, though overlooked in many of them, particularly the Engiſh, Latin, *&c.* by reaſon it has no proper character to denote it; though, in ſome of the vulgar tongues, particularly French and High-Dutch, it it expreſſed by the *vowel e* adding its ſound to the reſt.

Thus, without regarding the differences of the ſame ſound or *vowel*, as to length or ſhortneſs, one may diſtinguiſh ten ſeveral *vowels*, expreſſed by the following characters, *a*, *e*, *ê*, *i*, *o*, *ô*, *eu*, *ou*, *u*, *e*, mute. See ALPHABET.

VOX, in law — VOCEM *non habere*, is a phraſe uſed by Bracton and Fleta, for an infamous perſon; one who is not admitted to be a witneſs. See INFAMOUS, VILLAINOUS, &c.

UP-LAND, denotes high ground, or, as ſome call it, *terra firma*: by which it ſtands oppoſed to ſuch as is mooriſh, marſhy, or low. — Or, it is paſture-land, which lies ſo high, as not to be overflowed with rivers, or land-floods. See GROUND.

UPPER *Hemiſphere.*	See the article	HEMISPHERE.
UPPER *Ocean.*		OCEAN.
UPPER *polar Dial.*		DIAL.
UPPER *Region.*		REGION.

UPRIGHT, in architecture, a repreſentation or draught of the front of a building; called alſo, an *elevation*, or *orthography*. See ELEVATION, ORTHOGRAPHY, PLAN, &c.

UPRIGHT, in heraldry, is uſed in reſpect of ſhell-fiſhes, as crevices, *&c.* when ſtanding erect in a coat. — Inaſmuch as they want fins, they cannot, according to Guillim, be properly ſaid to be *hauriant*; that being a term appropriated to ſcaly fiſhes.

URACHUS, ΟΥΡΑΧΟΣ, in anatomy, a membranous canal in a fœtus, proceeding from the bottom of the urinary bladder, through the navel, to the placenta, along with the umbilical veſſels, whereof it is eſteemed one. — See *Tab. Anat. (Splanch.) fig.* 1. *lit. ſ. ſ. fig.* 3. *lit. e. d. fig.* 8. *lit. n. fig.* 16. *lit. n.* ſee alſo the articles UMBILICAL *Veſſels*, and FOETUS.

The termination of the *urachus* in the placenta, forms a little oval veſica, or bladder, which ſerves to receive the urine ſecreted in the kidneys of the fœtus, and that could not make its way through the urethra, by reaſon of the reſiſtance of the ſphincter of the bladder, which is not to be overcome, but by inſpiration.

The humour found in the veſica of the *urachus*, is ſtill in the greater quantity, the higher coloured, and the more like urine, as the fœtus is nearer the time of the birth.

The *urachus* is not plainly found any where but in brutes; but there is no diſpute but that it exiſts in a human fœtus. See FOETUS.

M. Drelincourt, a celebrated profeſſor of anatomy at Leiden, and ſome others after him, deny the *urachus* to be hollow:

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* This ſeems in ſome meaſure to agree to the contract in the civil law, whereby the vendee binds the vendor, ſometimes in the ſimple value of the things bought, ſometimes in the double; to warrant the ſecure enjoying of the thing bought. — Yet there is this difference between the civil and common law, in this point, that the civil law binds every man to warrant the ſecurity of that which he ſelleth; which the common law doth not, unleſs it be ſpecially covenanted. See ADVOWING.

on which ſuppoſition it would not be eaſy to aſſign its uſe, unleſs to keep the bladder ſuſpended to the navel. But the former opinion ſeems the beſt warranted. See URINE.

URAN. See the article OURAN.

URANIBOURGH, a term often heard among aſtronomers, being the name of a celebrated obſervatory, in a caſtle in the little iſland Veena, or Huena, in the Sound; built by that noble Dane, Tycho Brahe, and furniſhed with inſtruments for obſerving the courſe and motions of the heavenly bodies. See OBSERVATORY.

This famed obſervatory, finiſhed about the year 1580, did not ſubſiſt above ſeventeen years; when Tycho, who little thought to have erected an edifice of ſo ſhort a duration, and who had even publiſhed the figure and poſition of the heavens, which he had choſe for the moment to lay the firſt ſtone in, was obliged to abandon his country.

Soon after this, thoſe to whom the property of the iſland Huena was given, made it their buſineſs to demoliſh *Uranibourgh:* part of the ruins were diſperſed into divers places, the reſt ſerved to build Tycho a handſom ſeat upon his antient eſtate, which, to this day, bears the name of *Uranibourgh.* — For as to the antient *Uranibourgh,* there is now no footſteps remaining. — It was here Tycho compoſed his catalogue of the ſtars. See CATALOGUE.

M. Picart, making a voyage to *Uranibourgh,* found Tycho's meridian line drawn thereon, to deviate from the meridian of the world; which confirms the conjecture of ſome, that the poſition of the meridian line may vary. See MERIDIAN.

URBICARY *Provinces.* See the article SUBURBICARY.

URDE', or **URDE'E,** in heraldry. — A *croſs urdé,* ſeems to be the ſame with what we otherwiſe call *clechée.* See CLECHE'.

UREDO, the blaſting or blighting of trees, or herbs. See BLIGHT, RUBIGO, DISEASES *of plants,* &c.

UREDO, is ſometimes uſed by phyſicians, for an itching, or burning in the ſkin. ITCH.

URENTIA, are ſometimes uſed for medicines of a hot or burning quality. See CAUSTIC.

URETERS*, ΟΥΡΗΤΗΡΕΣ, in anatomy, two long and ſlender canals, which come from the baſon of the kidneys, one on each ſide, and terminate in the bladder; ſerving to convey the urine, ſecreted in the glands of the kidneys, into the bladder. — See *Tab. Anat. (Splanch.) fig.* 1. *lit. g. g. fig.* 4. *lit. f. fig.* 8. *lit. m. m. fig.* 9. *lit. II.* ſee alſo the articles KIDNEY, BLADDER, and URINE.

* The word is formed from the Greek ουρειν, *meiere,* to make water.

The *ureters* lie between the doubling of the peritonæum; and deſcending in the form of an S, pierce the bladder near its neck, where they run, firſt, ſome ſpace betwixt its coats, and then open into its cavity.

They are compoſed of three coats. — The firſt is from the peritonæum; the ſecond is made of ſmall oblique muſcular fibres; and the third, which is very ſenſible, has ſeveral ſmall glands, which ſeparate a ſlimy liquor, to defend it againſt the acrimony of the urine.

The neighbouring parts furniſh them with blood-veſſels; and they have nerves from the intercoſtal, and the vertebræ of the loins. — Their cavity is ſometimes contracted in three or four places, eſpecially towards the bladder.

Such as are ſubject to the gravel, and given to exceſſive drinking, have them ſometimes ſo much dilated, that one may put the end of ones little finger into them. See STONE, and GRAVEL. — Their obſtruction cauſes a ſuppreſſion of the urine. See URINE.

URETHRA, ΟΥΡΗΘΡΑ, in anatomy, a tube or canal ariſing from the neck of the bladder, and continued to the pudendum; ſerving to diſcharge, or carry off the urine out of the bladder. See *Tab. Anat. (Splanch.) fig.* 8. *lit. u. u. fig.* 15. *lit. d. f. m. m.* ſee alſo URINE.

Some will have it to be only a production of the neck of the bladder itſelf. — Its length is very different in the two ſexes. — In man it terminates in the extremity of the glans, and is ordinarily a foot long. — In women, where it is uſually called *meatus urinarius,* it is but two fingers breadth long, and terminates in the vulva; but it is much wider, and more eaſily dilated here, than in the other ſex. See PENIS, and MEATUS.

Mr. Cowper gives us an inſtance of a woman, wherein the hymen was ſo firm and impervious, that her huſband finding no paſſage through it, had opened himſelf another through the orifice of the *urethra.* See HYMEN.

The *urethra* is compoſed of two membranes, and a little ſpongy ſubſtance, like that of the corpora cavernoſa; except at the end which joins the neck of the bladder; where the diſtance between the membranes is ſmall, and filled up with a thin and red glandulous ſubſtance, whoſe excretory ducts, piercing the inner membrane, pour into the pipe a mucilaginous liquor, which lines and lubricates its cavity, and prevents the ſalts of the urine from galling it; as having a farther office in the male ſex, *viz.* the emiſſion of the ſeed. See SEED, CAVERNOSUM, and MUCUS.

URIGO, a burning with a cauſtic, or cautery. See CAUSTIC, CAUTERY, and BURN.

URIM *and Thummim,* אורים תמים q. d. *light and perfection,* the name of a kind of ornament belonging to the habit of the Jewiſh high-prieſt; in virtue whereof he gave oracular anſwers to the people. See PROPHECY, &c.

The high-prieſts of the Jews, we are told, conſulted God in the moſt important affairs of their commonwealth, and received anſwers by the *urim and thummim.* — What theſe were is diſputed among the critics: ſome take them to be the 12 precious ſtones in the breaſt-plate of the high-prieſt, which ſhone like a flame of fire. See RATIONALE.

Others will have them, the theraphim, or little human figures carried by the high-prieſt, hid in the fold of his robe or gown, and by which he anſwered the queſtions of the Jews. See THERAPHIM.

Diodorus Siculus relates, that there was a like ceremony in uſe among the Egyptians, whoſe principal miniſter of juſtice wore a collar of precious ſtones about his neck, which was called [illegible], truth.

URINAL, in medicine, a veſſel fit to receive and hold urines; and uſed accordingly, for the conveniency of ſick perſons. See URINE, and UROCRITERIUM.

It is uſually of glaſs, and crooked; and ſometimes filled with milk, to aſſuage the pain of the gravel.

URINARIA *Fiſtula,* is the ſame as *urethra;* ſo called from its office, to convey the urine. See URETHRA.

Veſica URINARIA. See the article BLADDER.

Meatus URINARIUS. See the article MEATUS.

URINARY *Bladder.*	See the article	BLADDER.
URINARY *Paſſage.*		URETHRA.

URINE*, URINA, a liquid excrement, or humour, ſeparated from the blood in the kidneys, conveyed thence into the bladder, and diſcharged by the urethra. See EXCREMENT.

* The word is formed from the Greek, ουρον, which ſignifies the ſame.

The *urine* is ſecreted from the arterial blood, in the glands of the kidneys; from which ariſe numerous little pellucid pipes, and veins; which, receiving the ſecreted *urine,* at length join into twelve papillæ; out of which the *urine* oozes into a cavity called the *pelvis,* from whence it runs into the ureters of either ſide, and through them into the bladder; and from that, at length, through the urethra, out of the body. See KIDNEYS, PAPILLÆ, PELVIS, URETER, BLADDER, and URETHRA.

The ſecretion of the *urine,* then, is not performed by any attraction, as ſome will have it; or by any emulſion, as others; or any fermentation, as others; or any precipitation, as others: but by the force of the heart, and arteries, whereby the blood is driven through innumerable turnings and windings of the veſſels; attenuated by reſiſtances, oppoſite motions, violent concuſſions, and various mixtures, till the more liquid and ſerous part thereof is forced through canals ſmaller than the blood-veſſels, and ſo collected and diſcharged. See SECRETION.

It is more than probable, that the blood of the emulgent artery, conveyed through all the little branches that ſpread through the exterior membranes of the veſiculæ whereof the kidneys are compoſed, being by this means exceedingly divided, and, as it were, attenuated, enters the veſiculæ themſelves, and gives them their red colour; that it is there filtrated, and the ſerous or *urinous* part ſecreted; that this filtration is promoted by the alternate contraction and dilatation of the fleſhy fibres that incloſe the little veſicles; and that after filtration, the parts that remain blood are reſumed by the capillary branches of the veins; the reſt entering the excretory ducts of the veſiculæ, which are the firſt receptacle of the *urine. Hiſt. Acad. des Sciences,* Anno 1705.

M. Morin, in the *Memoirs of the Academy of Sciences,* marks out a new rout, or courſe for the *urine.* — The ordinary one, which is the paſſage of any liquor we drink through the ſtomach into the inteſtines, thence into the lacteals, thence into the receptacle of the chyle, thence into the ſubclavian vein, thence into the cava, thence into the right ventricle of the heart, thence into the lungs, and thence into the left ventricle of the heart; thence into the aorta, thence into the emulgent artery, thence into the kidneys, thence into the ureters, and at laſt into the bladder, ſeems too long and circuitous; conſidering how readily mineral waters paſs, and what a ſpeedy effect aſparagus is found to have on our *urine.* — Beſides, that on this principle, the liquors we drink mixing with ſo many other liquors in their way, ſhould be greatly altered thereby; whereas we frequently find a tincture of caſſia, rendered by *urine* almoſt as black as when firſt taken: and the like is obſerved of divers other liquors.

M. Morin therefore, maintains, that a good part of the liquor we drink, oozes through the membranes of the ſtomach, and falls into the pelvis; where it enters the bladder through the pores thereof, without getting into the inteſtines, which are lined with too thick and viſcid a humour to allow it ingreſs.

This ſyſtem is confirmed hence, that both the ſtomach and bladder, even of a dead animal, are found eaſily permeable to water.

Accordingly, Dr. Morgan aſſures us, that if the contents of the abdomen be taken out of an animal body, after it is juſt opened, and the ſtomach be filled with warm water, while the parts are yet reaking, the liquor will paſs into the bladder; which will viſibly receive it, and be filled in proportion as the ſtomach empties.

The ſame author adds, that if a ligature be made upon the ureters, while the animal is yet living, and the blood continues to circulate; though this muſt cut off all communication from the kidneys to the bladder; yet any liquor, with which the ſtomach is filled, will paſs into the bladder.

From the whole, though ſome of our beſt anatomiſts, hold that a circulation of the whole maſs of blood is effected in five minutes, and others in two, which might account for the quick paſſage of the *urine*, it is hard to conceive, but that part of it muſt go immediately from the ſtomach into the bladder.

The general deſign of nature in this new *urinary* drain, is ſuppoſed to be to prevent any ſudden plethora, or immoderate diſtenſion of the veſſels upon drinking. See Drink, *&c.*

As a neceſſary conſequence of this ſyſtem, the author eſtabliſhes two kinds of *urine*; the one filtrated immediately out of the ſtomach into the bladder, the other paſſing the long courſe of circulation.

In the *Philoſophical Tranſactions*, we have an inſtance given us, by Mr. Young, of a boy ſix years old, that piſſed off almoſt all his *urine* by his navel.

In the ſame *Tranſactions*, Dr. Richardſon gives an account of a boy at North Bierly in Yorkſhire, who lived to ſeventeen years of age without ever making water; yet was in perfect health. — He had conſtantly a diarrhœa on him, but without much uneaſineſs. The obſtruction, that author obſerves, muſt have been in his kidneys; for he had never any inclination to make water.

Urines are of various kinds and properties. — After drinking plentifully of any aqueous fluid, the *urine* is crude, inſipid, void of ſmell, and eaſily retained. — That yielded by chyle well concocted, is ſharper, more ſaline, leſs copious, ſomewhat feted, and more ſtimulating. — That from chyle already converted into ſerum, is redder, ſharper, ſalter, and more fetid and ſtimulating. — And that ſecerned after long abſtinence, from humours well concocted, and worn off the ſolid parts, is the leaſt copious, ſharpeſt, ſalteſt, reddeſt, moſt fetid, almoſt putrified, and of all others the hardeſt to retain.

The *urine*, therefore, contains the watery part of the blood, its ſharpeſt, ſubtileſt, and moſt volatile ſalt, and that neareſt to the alkaline kind; its ſharpeſt, ſmalleſt, and moſt, volatile oil, and that neareſt to putrefaction; and its ſmalleſt moſt volatile earth. See Blood.

The ſal armoniac of the antients was prepared from camels *urine.* See Armoniac. — And the phoſphorus, in uſe among us, from human *urine.* See Phosphorus. — Saltpetre is likewiſe prepared from the *urine*, and other excrements of animals. See Salt-petre.

The Indians ſcarce uſe any other medicine but cows *urine.* — The Spaniards make great uſe of *urine* to clean their teeth withal: ſo did the Celtiberians of old.

Urine is alſo uſed in dying, to ferment and warm the woad. — Old *urine* tinges ſilver with a fine gold colour. See Dying.

The diſorders in the *urine* are various. See Strangury, Retention, Diabetes, Stone, Nubecula, *&c.*

Urine, in medicine. — The *urine* affords one of the principal criterions, or ſigns, whereby phyſicians judge of the ſtate of the patient, and the courſe of the diſeaſe. See Sign, Symptom, Disease, *&c.*

In caſting, or examining *urine*, the things to be conſidered are its *quantity*, *colour*, *ſmell*, *taſte*, *fluidity*, and the matters ſwimming therein.

An *abundance of urine*, indicates a looſeneſs of the renal pipes, a diminution of perſpiration, ſweat, ſaliva, an imperfect mixture of the blood, whereby the watry parts ſeparate eaſily from the reſt; a nervous indiſpoſition, a copious drinking of ſome aqueous liquid, or ſome diuretic taken. — Such *urine* preſages a thickneſs of what is left behind, and its acrimony; thirſt, anxiety, obſtructions, and their effects, a dry, thirſty, hot conſumption.

A contrary ſtate of the *urine*, indicates the contraries; and preſages future repletions, heavineſs, drouſineſs, convulſive tremors, *&c.*

A *thin*, *limpid*, *inſipid*, *colourleſs*, *taſteleſs urine*, denotes a great constriction of the renal veſſels, and, at the ſame time, a briſk agitation of the humours; a ſtrong coheſion of the oil, ſalt, and earth in the blood itſelf, and an imperfect mixture of the aqueous parts therewith; ſome grievous indiſpoſition of the mind, a hyſteric or hypochondriac fit; a debility of the viſcera; crudity, pituita, obſtructions of the veſſels; and, in acute diſeaſes, a want of a coction and criſis. — Such *urine* portends much the ſame as a too copious *urine*; and, in acute inflammatory diſeaſes, a bad condition of the viſcera, deliria, phrenſies, convulſions, death.

Ruddy urine, without any ſediment, in acute diſeaſes, indicates a violent motion and attrition among the parts that conſtitute the humours, and between the veſſels and the humours; a cloſe intimate mixture of the oil, ſalt, earth, and water in the humours: and hence a great crudity of the diſeaſe, and its long duration, and great danger. — Such *urine* preſages gangrenous obſtructions of the fineſt veſſels, chiefly thoſe of the brain and cerebel, and thence death: a difficult coction; a ſlow, doubtful criſis: and all theſe the worſe, as the *urine* is redder, and freer of ſediment. — If there be a heavy, copious ſediment, it ſhews a ſtrong antecedent attrition, looſe veſſels, ſharp, ſaline, colliquated blood, unfit for nutrition, intermitting fevers, and ſcurvy.

The preſages are, the durableneſs of the diſeaſe, wearing of the veſſels, weakneſs, colliquative ſweats, ſaliva, atrophy, and dropſy. — If the ſediment in ſuch *urine* be branny, ſcaly, filmy, *&c.* it preſages the like, only worſe.

A *yellow urine*, with a ſediment as before, denotes a jaundice, and the ſymptoms thereof in the cutis, ſtools, hypochondriums, *&c.*

A *green urine*, with a thick ſediment, denotes an atrabilary temperature, and that the matter thereof is reſolved, and now excreted: conſequently anxieties about the præcordia, perturbations of ſtool, iliac and colic pains.

Black urine, denotes the ſame with green, only in a greater and worſe degree.

Blood, pus, caruncles, filaments, hairs, anguillæ, grumæ, ſand, parts of ſtone, and a mucus at the bottom of the *urine*, denote ſome diſorder in the kidneys, ureters, bladder, teſticles, ſeminal veſicles, proſtatæ, and urethra.

Fatty urine, generally breeds ſmall ſands, adhering to ſome viſcid matter, and thus produces a ſort of oily membrane, or pellicle, which denotes an abundance of earth, and a heavy ſalt in the blood, and preſages the ſcurvy, ſtone, *&c.*

A *fetid urine*, denotes the ſalts and oils to be attenuated, diſſolved, and almoſt putrified; whence very great danger, both in chronic and acute diſeaſes.

Urine which, when ſhook, retains its froth long, denotes a tenacity of the mixture, and thence a difficulty of criſis; and pulmonic diſeaſes, or catarrhs in a head.

But the *urine* is chiefly conſulted in acute fevers, where it is a very ſure ſign: For, 1°. *Urine* with a white, light, equable, turbinated, inodorous ſediment, through the whole courſe of the diſeaſe to the criſis, is a very good preſage. — 2°. Copious, white, ſtrangurious *urine*, with much white ſediment, emitted at the time of the criſis, cures and takes away abſceſſes. 3°. A thin, ruddy *urine*, that does not ſubſide a white, thin, watery *urine*; a thin, equable, yellow *urine*; a turbid *urine*, that does not ſubſide, denotes, in very acute diſeaſes, a great crudity, a difficult criſis, and a durable dangerous diſeaſe.

Urine, in agriculture, is of excellent uſe as a manure. See Manuring.

The knowing in agriculture and gardening, prefer *urine* for land, trees, *&c.* before dung; as penetrating better to the roots; and removing divers infirmities of plants.

The decay of the antient Kentiſh pippins, is a thing much complained of; and Mr. Mortimer obſerves, they will be quite loſt, unleſs ſome perſons ſet themſelves to the antient way of culture; which, as all antient graziers and gardeners know, was by waſhing the moſſy, worm-eaten, cankered, and unſound trees, two or three times in the month of March, with the *urine* of oxen, *&c.* gathered in earthen veſſels, placed under the planks of the ſtalls wherein they were fatted.

In Holland, and in divers other parts, they preſerve the *urine* of their beaſts, *&c.* with as much care as their dung. — Mr. Hartlib, Sir Hugh Plat, Mr. Mortimer, *&c.* make a common complaint, that ſo great an improver of land, and ſo remarkable a ſtrengthener of manure, ſhould be ſo much diſregarded among us.

URINOUS *Salts*, are the ſame with what we otherwiſe call *alkali ſalts*, or *alkalies.* See Alkali.

There are two kinds of *urinous ſalts*, the one *fixt*, the other *volatile.* — The fixt prevail in plants, and the volatile in animals. See Salt, Fixt, and Volatile.

They are called *urinous*, in reſpect of their taſte, and ſmell, which bear ſome reſemblance to thoſe of urine.

URN, Urna, a kind of vaſe, of a roundiſh form, but biggeſt in the middle, like the common pitchers; now ſeldom uſed, but in the way of ornament over chimney-pieces, in buffets, *&c.* or, by way of acroters, a-top of buildings, funeral monuments, *&c.* See Vase, and Acroter.

The great uſe of *urns*, among the antients, was to preſerve the aſhes of the dead, after they were burnt: for which reaſon they were called *cineraria*, and *urnæ cineraria*; and were placed ſometimes under the tomb-ſtone, whereon the epitaph was cut; and ſometimes preſerved in vaults in their own houſes. See **Sepulchre**, **Tomb**, and **Funeral**.

Urns were alſo uſed at their ſacrifices, to put liquid things in. See **Sacrifice**. — They were alſo of uſe in the *ſortes præneſtinæ*, or caſting of lots. See **Sortes**.

At Rome, too, the cuſtom was to abſolve or condemn the accuſed, by the ſuffrages, or calculi, which the judges caſt into the *judicatory urn*. See **Absolution**, *&c.*

Virgil repreſents Minos the judge of hell, ſhaking the *urn*, to decide the lots of mankind — *Quæſitor Minos* urnam *movet*.

The *urn* is ſtill the attribute of rivers, which are painted leaning on *urns*, repreſenting their ſources by the waters flowing therefrom. — We find them repreſented in the ſame manner on antique medals, and relievo's. See **River**, and **Attribute**.

Urn, Urna, was alſo a Roman meaſure, for liquid things; containing about three gallons and a half of Engliſh wine meaſure. See **Measure**.

The *urn* was half the amphora, and four times the congius. See **Amphora**.

UROCRITERIUM*, or **Urocrisia**, a *caſting of water*; or giving judgment on diſeaſes by the ſight of the urine. See **Urine**.

* The word is compounded of οὖρον, urine, and κριτήριον, criterion, mark, ſign. — Hence alſo, *uromancy*, *uroſcopy*, &c.

URSA, in aſtronomy, *the Bear*, a name common to two conſtellations of the northern hemiſphere, near the pole; diſtinguiſhed by *major*, and *minor*. See **Constellation**.

Ursa *major*, or *the great bear*, according to Ptolemy's catalogue, conſiſts of 35 ſtars; according to Tycho's, of 56; but, in the Britannic catalogue, we have 215. — The longitudes, latitudes, magnitudes. *&c.* whereof, are as follow.

Names and Situations of the Stars.	Sign.	Longitude			Latitude North.			Magnit.
		°	′	″	°	′	″	
Inform. between Perſeus and the [head of the great bear	♊	10	41	11	31	34	4	6
		11	57	29	30	56	54	5 6
		11	52	15	30	33	50	5
		13	54	32	34	1	38	6
A ſtar of *Urſa minor* in Tycho		16	38	38	43	23	17	4 5
5								
		14	49	45	32	23	17	6
		14	58	14	30	50	59	5
Of *Urſa minor*		16	59	57	37	23	19	4 5
Of *Urſa minor*		17	12	5	35	53	15	5 6
		16	20	4	28	33	30	5
10								
		17	10	6	30	35	42	6
Inform. between the pole and Auriga		19	12	3	34	52	27	6
Preced. the great bear		19	47	39	34	15	39	6
		21	13	55	33	52	0	5 6
		22	28	51	40	44	23	6
15								
		22	47	57	38	30	25	6 7
		23	20	0	38	1	8	6
		22	54	41	33	8	33	6
		23	27	45	32	39	56	5 6
		23	33	43	33	27	40	6 7
20								
		24	29	32	35	29	38	6
		24	56	5	36	24	34	5
	♊	25	39	24	31	51	2	6
	♊	27	31	56	42	15	18	5 6
		27	17	9	35	28	5	5 6
25								
		27	26	38	35	42	35	6 7
37th of Caſſiopeia in Tycho		28	10	15	45	52	52	4 5
		28	9	27	36	33	18	6 7
		28	26	36	38	4	30	5 6
Perhaps, 32d of Caſſiopeia in Tycho		28	40	56	35	34	58	4 5
30								
		29	3	43	38	20	59	6
		29	11	0	35	57	43	5 6
		29	44	35	35	3	3	7
		29	51	0	35	13	1	6 7
		29	59	35	35	2	30	6
35								
	♋	0	30	30	34	50	33	7
		1	27	12	38	13	9	5 6
		1	33	53	38	12	16	6
		1	51	12	33	34	54	6
		2	57	37	36	15	26	5 6
40								
35th of Caſſiopeia		2	31	17	44	23	21	4 5
36th		2	39	13	45	43	33	4 5
33d		3	28	17	34	0	47	6
34th		4	2	18	36	21	17	5 6
		4	50	22	35	24	22	4 5
45								
		6	35	11	22	9	27	4 5
		6	0	2	36	54	46	5 6
		6	23	32	37	57	49	6
		7	34	35	36	58	2	5
		8	7	50	36	17	15	6 7
50								
		8	30	23	37	20	15	6
		9	58	58	26	58	23	5 6
		9	31	29	32	47	55	6
		11	18	5	26	53	54	5
Inform. follow. Auriga, betw. the head [of *Urſa maj.* and Gemini		11	19	26	37	25	55	6
55								
		12	3	53	35	1	55	5 6
		12	1	5	36	41	20	4 5
		11	24	1	40	48	30	5 6
		14	46	52	34	56	45	6
		16	42	59	25	58	1	6
60								
		16	42	47	26	9	39	5 6
		14	27	40	38	40	0	5 6
		16	2	49	33	56	31	6
		12	54	8	36	58	28	5 6
		16	37	18	39	21	2	6
65								
		17	11	39	38	38	21	5 6
		16	18	8	41	30	16	6 7
		18	13	48	36	58	19	5 6
		17	33	11	39	50	13	6 7
Inform. between Gemini and the fore- [foot of the bear		23	6	54	23	2	58	4 5
70								
In the tip of the noſe		18	39	28	40	12	47	4 3
Preced. of two againſt the eyes		17	19	32	44	33	1	4 5
		18	0	47	44	35	29	6
Subſeq. of the ſame		18	29	23	43	59	38	4
		27	25	19	17	6	52	6
75								
Againſt the jaw		21	36	0	42	17	49	5
		20	41	31	44	53	29	6
		28	37	48	25	2	44	5 6
Preced. of two in the forehead		19	39	10	47	54	43	4
North. in the preced. anterior foot		28	30	18	29	34	29	3
80								
Nor. of inform. under the anterior foot	♌	0	58	20	23	41	53	4 5
	♋	20	53	39	47	28	30	6
South. of the preced. foot		29	37	3	28	57	11	3
Poſterior in the forehead		20	58	41	47	48	5	5
Preced. in the triangle of the neck		23	15	30	44	33	3	4
85								
Second of the informes	♌	3	12	10	20	51	27	5
That under the preced. knee	♋	28	47	53	33	25	55	4 5
South. in the triangle of the neck		24	57	27	42	47	58	5
		27	39	29	38	35	45	5 6
	♌	2	57	59	25	49	20	5 6
90								
That over the preced. knee	♋	28	58	12	36	4	34	5
Nor. of the brighter among 5 inform.	♌	6	13	2	20	4	22	4
South. of the ſame		7	31	1	17	55	58	3 4
		0	34	53	36	36	21	6 7
	♋	20	4	2	53	16	39	7
95								
In extrem. of the ear		22	0	38	51	13	2	4 5
Poſter. in the triangle of the neck		26	29	5	45	7	19	4 3
	♌	0	26	16	38	26	25	6
		4	51	16	28	58	26	6
In the ſecond anterior knee		3	0	30	34	56	30	3 4
100								
A leſs over this		3	6	16	35	20	16	4 5
	♋	20	54	4	53	39	16	6
Laſt of 5 inform. under the anter. feet	♌	9	27	57	20	42	32	4 5
		10	1	37	20	17	29	6
		8	48	39	24	40	0	6
105								
	♋	28	8	57	46	25	7	5
	♌	9	44	58	24	24	4	6 7
	♋	28	38	28	46	9	35	5
	♌	2	21	49	40	39	18	6
North. of two in the breaſt		1	56	55	42	39	11	4 3
110								
South. of the ſame		5	0	20	38	14	10	4
		7	52	11	34	37	7	6
		4	41	45	41	11	33	6
		12	18	14	26	43	16	5 6
		16	42	35	18	32	33	5 6
115								
Preced. of inform. und. the poſter. feet		16	40	51	22	4	14	4 5
		1	28	23	49	27	46	5
North. in the preced. poſterior foot		15	13	22	29	52	27	4 3
		1	53	10	50	11	42	5
South. and poſter. in the ſame foot		16	54	2	28	57	46	4 3
120								
		2	34	45	50	35	12	6
2d of the informes under the poſt. feet		21	5	21	22	13	20	5 4
3d and north. of the ſame		20	13	16	25	3	44	4 5
		10	16	5	42	30	35	5
		10	13	49	43	45	37	6
125								
		19	33	52	28	51	47	5
		4	5	57	51	23	45	5 6
Prec. in the baſe of an oxygonous △ of [inform. under the bear's feet		24	31	37	21	36	55	4 3
		11	31	51	44	28	41	6
		18	21	58	34	49	14	5
130								
		12	5	54	44	23	38	6
		11	49	42	44	49	12	6

Names and Situations of the Stars.	Sign.	Longitude °	′	″	Latitude North. °	′	″	Magnit.
Subſeq. in the baſe of the oxygon		26	35	38	21	3	23	4
		11	5	14	46	48	33	6
		13	11	35	44	29	4	6
135								
		15	1	41	42	57	58	5 6
In the apex of the oxygonous triang.		26	31	49	24	56	4	4
In the preced. poſterior leg		22	10	5	33	3	5	5 4
		26	59	12	24	54	27	6
		27	23	30	24	29	35	6
140								
		24	46	14	31	3	16	6
South. in ☐ of preced. or in the ſide		15	4	12	45	6	16	2
		25	39	15	30	4	51	6 5
North. of preced. in the back		10	49	58	49	40	5	2
		26	53	23	29	31	30	6
145								
In the preced. poſter. knee		24	29	32	35	31	46	4 3
South. in the ſubſeq. poſter. knee	♍	3	0	37	24	46	5	4
North. in the ſame knee		2	20	15	26	9	3	4
	♌	29	52	42	30	46	34	5
		27	38	30	35	46	45	6
150								
	♍	1	16	32	32	41	24	5
	♌	29	21	41	36	12	0	6
		15	44	57	31	14	49	6
	♍	0	36	32	37	17	9	6
	♌	28	33	40	40	4	3	6
155								
		20	1	48	49	27	1	6
	♍	6	30	15	29	15	46	6
	♌	10	43	46	56	11	51	6 7
	♍	7	54	52	27	6	16	6
South. in the thigh	♌	29	21	15	41	32	23	4 5
160								
		23	14	2	48	6	52	6
Bright ſtar in the thigh; the ſouth. of		26	6	35	47	7	26	2
[the following in ſquare		23	43	54	49	34	37	6 7
	♍	1	51	41	41	10	22	6 7
		5	44	25	38	58	35	5
165								
	♌	25	35	54	51	6	44	7
	♍	0	5	37	48	46	41	7
In the root of the tail; nor. of ſquare	♌	26	40	40	51	39	36	3 2
[of the following	♍	10	52	24	38	34	36	6
In the ſouth. hip		4	51	53	45	37	34	5 6
170								
	♌	26	34	28	52	41	36	6 7
	♍	10	28	30	40	35	50	6
North. in the hip		3	29	14	48	6	48	5 4
	♌	28	27	25	52	13	50	7
	♍	13	13	35	37	46	0	5
175								
	♌	29	59	48	51	38	32	6 7
		27	30	45	53	53	12	6
	♍	4	40	31	48	40	22	6
That prec. the inform. under the tail		13	26	26	40	33	13	4 5
		14	45	13	40	37	42	7
180								
	♌	23	53	31	57	57	46	6
	♍	17	12	4	39	51	39	6
	♌	18	30	28	61	3	41	6
	♍	19	27	18	38	51	12	6
Firſt of the tail		4	31	25	4	20	16	2
185								
Bright ſtar under the tail, informis		20	14	22	40	7	53	2 3
	♌	21	43	[illegible]	60	52	[illegible]	6
	♍	25	45	10	33	57	20	4 5
That following the firſt of the tail		5	16	3	55	14	19	5 6
		24	1	51	38	54	37	5
190								
		23	7	8	41	39	50	7
Inform. prec. Bootes between the tail		23	4	4	41	51	18	7
[of the bear, and Coma Berenices		23	13	27	41	40	11	6
		21	42	23	43	40	31	7
		22	54	28	43	27	29	5 6
195								
		22	48	7	44	14	22	7
1ſt of the 2 preced. the laſt of the		23	28	15	44	12	28	6
[tail		15	54	8	51	47	4	5
		24	23	21	44	6	33	6
Middle of three bright ones in the tail		11	18	59	56	23	14	2
200								
That reſting, as it were, on the former		11	29	36	56	33	28	5
		5	22	51	60	22	20	5
That preced. the laſt of the tail		20	0	55	52	52	3	5
		12	48	0	57	41	5	7
Preced. in △ over the laſt of the tail		16	53	28	56	26	27	6
205								
North. in the ſame triangle		14	55	49	57	51	10	6
	♎	1	38	22	45	17	23	7
		1	47	34	45	23	40	6
		6	58	9	39	6	27	6
	♍	16	25	24	58	14	26	6
210								
Laſt of the tail		22	34	24	54	24	0	2
	♎	5	20	16	42	31	4	7
Informes towards Bootes's belt		5	25	42	42	25	12	7
		5	43	42	42	18	3	6
Laſt of the triangle over the tail	♍	18	51	20	58	25	13	6
215								

Ursa *minor*, the *little Bear*, called alſo *Charles's wain*; and by the Greeks, *cynoſura*; by its neighbourhood to the north pole, gives the denomination ἄρκτος, bear, thereto. See **Pole**, **Arctic**, *&c.*

Ptolemy and Tycho make it to conſiſt of eight ſtars; but Mr. Flamſteed of fourteen: The longitudes, latitudes, magnitudes, *&c.* whereof, as laid down in the Britannic catalogue, follow.

Names and Situations of the Stars.	Sign.	Longitude °	′	″	Latitude North. °	′	″	Magnit.
A ſmall one contiguous to the polar	♊	23	26	40	66	08	04	7
That over the polar		17	06	32	65	16	00	6
The laſt of the tail; the pole-ſtar		24	14	41	66	04	11	2
Preced. of two before the ſhoulder	♋	28	26	51	70	18	17	5
Subſeq. and more ſouth.		04	00	09	71	25	04	5
5								
Bright one in ſhoulder, preced. of ☐		08	54	40	72	58	10	2
In the breaſt, the moſt ſouth. of the ☐		17	11	56	75	13	15	3
Preced. of two in the loins		25	45	45	74	41	52	6
Subſeq. of the ſame, north of the ☐		23	02	10	75	05	45	4 5
Preced. of two in the ſide		26	27	42	77	24	10	5 6
10								
Brighter in the ſide, ſubſeq. of the ☐		25	56	25	77	49	28	4 5
In the root of the tail		04	45	05	73	53	36	4
Laſt but one of the tail	♊	26	50	39	69	54	37	4
Another follow. this, nearer the pole		26	45	00	69	31	27	7
14								

URSULINES, an order of nuns, who obſerve the rule of S. Auguſtin; and are chiefly noted for taking on them the education, and inſtruction of young maids. See **Order**, and **Religious**.

They take their name from their inſtitutreſs S. Urſula; and are cloathed in white, or black. — The *Urſulines* have ſpread exceedingly in France, *&c.* within theſe few years. — Few maids but are put out to ſchool to them.

USAGE, in law. } See { **Prescription**, and **Custom**.
Usage, in language. } See { **Language**.

USANCE, **Uso**, in commerce, is a determinate time for the payment of bills of exchange, reckoned either from the day of the bills being accepted, or from the day of their date; and thus called, becauſe regulated by the uſage and cuſtom of the places whereon they are drawn. See **Bill**, and **Exchange**.

Bills of exchange, are drawn at one or more *uſances*, either from ſight, or from date. — The Italians ſay *uſo doppio*, for *double uſance*, or *two uſances*.

This term is longer or ſhorter, according to the different countries. – In France *uſance* is fixed at thirty days. – At London, *uſance* is a calendar month; and *double uſance*, two months. — In Spain, *uſance* is two months, or ſixty days. — At Venice, Genoa, and Leghorn, three months.

At Hamburgh, *uſance* of bills drawn from England, France, and Venice, is two months after date. — From Antwerp, and Nuremberg, fifteen days after ſight.

At Venice, *uſance* of bills drawn at Ferrara, Bologna, Florence, Lucca, and Leghorn, is five days after ſight. – From Naples, Auſbourg, Genoa, and Vienna, fifteen days after ſight. — From Mantua, Modena, and Milan, twenty days after date. — From Amſterdam, Antwerp, and Hamburgh, two months after date; and from London, three months after date.

At Milan, *uſance* of bills drawn from Genoa, is eight days after ſight. — From Rome, ten days after ſight. And from Venice, twenty days after date.

At Florence, *uſance* of bills drawn from Bologna, is three days after ſight. — From Rome, ten days after ſight. — From Venice and Naples, twenty days after date.

At Rome, *uſance* of bills of exchange drawn in Italy, was, originally, ten days after ſight; but, by an abuſe, this term has been extended to fifteen.

At Leghorn, *uſance* of bills drawn from Genoa, is eight days after ſight: from Rome, ten days; from Naples, three weeks: from Venice, twenty days after date: from London, three weeks; and from Amſterdam, forty days.

At Amſterdam, *uſance* of bills drawn from England and France, is a month after date: from Venice, and Madrid, Cadix, and Sevil, two months.

At Genoa, *uſance* of bills from Milan, Florence, Leghorn, and Lucca, is eight days after ſight: from Venice, Rome, and Bologna, fifteen days: from Naples, twenty two days: from Sicily, a month after ſight, or two months after date: from Sardinia, a month after ſight: from Antwerp, Amſterdam, and other places in the Low Countries, three months after date.

USE, **Usus**, in law, denotes the benefit or profit of lands, and tenements. See **Usufruit**.

Uſe imports a truſt and confidence repoſed in a man for the holding of lands; that he to whoſe uſe or benefit the truſt is intended, ſhall reap the benefits thereof.

A deed conſiſts of two principal parts: the *premiſes*, which include all that comes before the habendum, or limitation of the eſtate; and the *conſequent*, which is the habendum itſelf;

wherein are two limitations: the one of the *eſtate*, or property the party ſhall receive by the deed. — The other of the *uſe*, expreſſing to, or for what *uſe* and benefit he ſhall have the ſame. See DEED.

Uſes, ſay ſome, were invented upon the ſtat. of Weſtminſter, *quia emptores terrarum:* before which time, no ſuch *uſes* were known. — And becauſe, in courſe of time, many deceits got footing, by ſettling the poſſeſſion in one man, and the *uſe* in another; it was enacted, anno 27 Hen. VIII. That the *uſe* and poſſeſſion of lands ſhould ſtand united, or that the poſſeſſion ſhould be given to him who had the *uſe*.

USE *and Cuſtom*, in antient law-books, denotes the ordinary method of acting or proceeding in any caſe, which, by length of time, has obtained the force of law. See CUSTOM, PRESCRIPTION, LAW, &c.

Ceſtui qui USE. } See the article { CESTUI.
Contingent USE. } { CONTINGENT.

USER *de Action*, in law, is the purſuing, or bringing an action, in the proper county, *&c.* See ACTION, PROCESS, &c.

USES *and Cuſtoms of the ſea*, are certain maxims, rules, or *uſages*, which make the baſe or ground-work of the maritime juriſprudence; by which the policy of navigation, and commerce of the ſea, are regulated. See NAVIGATION, COMMERCE, &c.

Theſe *uſes* and cuſtoms conſiſt in three kinds of regulations. — The firſt, called *laws*, or *judgments of Oleron*, were made by order of queen Eleanor, dutcheſs of Guienne, at her return from the holy war; and that chiefly from memoirs which ſhe had gathered in the Levant, where commerce was at that time in a very flouriſhing condition.

She called them *rolls of Oleron*, by reaſon ſhe then reſided in an iſland of that name, in the bay of Aquitaine. — They were much augmented about the year 1266, by her ſon Richard, king of England, on his return from the Holy Land.

The ſecond regulations were made by the merchants of Wiſbuy, a city in the iſland of Gothland, in the Baltic, antiently much famed for commerce, moſt of the nations of Europe having their quarters, magazines, and ſhops therein.

Theſe were compiled in the Teutonic language, and are ſtill the rule in the northern countries. Their date does not appear; but it is probable they were made ſince the year 1288, that the city of Wiſbuy was deſtroyed the firſt time, afterwards reſtored by Magnus, king of Sweden.

The third ſet of regulations were made at Lubec, about the year 1597, by the deputies of the Hanſe towns. See HANSE.

USHER, *Huiſſier*, ſignifies an officer, or ſervant, who has the care and direction of the door of a court, hall, chamber, or the like.

In the king's houſhold there are two *gentlemen-uſhers* of the privy-chamber, appointed to attend the door, give entrance, *&c.* to perſons that have admittance thither. — Four *gentlemen-uſhers*, waiters; and an aſſiſtant *gentleman-uſher*. — Eight *gentlemen-uſhers*, quarter-waiters in ordinary.

In the French court there are two *uſhers* of the anti-chamber, or hall where the king dines in public. — They wait ſword by ſide, all the year, and open the door to ſuch as are to come in. — There are above ſixteen *uſhers* of the chamber, two of the cabinet, and one of the order of the Holy Ghoſt.

The *uſhers* of the inquiſition in Spain and Portugal, are perſons of the prime quality, who think themſelves highly honoured, by only looking to the doors of the ſacred tribunal. See INQUISITION.

USHER, is alſo uſed for an officer in the Exchequer; of which ſort, three or four attend the chief officers and barons, at the court at Weſtminſter, and juries, ſheriffs, and other accomptants; at the pleaſure of court. See EXCHEQUER.

USHER *of the black-rod*. See the article BLACK-*Rod*.

In a chapter held at Whitehall, 13 Car. II. it was ordained, that the office ſhould be fixed to one of the *gentlemen-uſhers* daily waiters at court; the eldeſt of which always holds the place; and is called *gentleman-uſher*, and *black-rod*. See GARTER.

In relation to the order of the garter, he is appointed to carry the rod at the feaſt of S. George, and other ſolemnities, which he makes uſe of as an authority to attach delinquents, who have offended againſt the ſtatutes of the order, which he frequently doth by touching them therewith. — He wears a gold badge, embelliſhed with the enſigns of the order. — He has an houſe in Windſor-caſtle, and other privileges.

USNEA, in natural hiſtory, *muſcus arboreus*; a ſort of plant of the paraſite or moſs kind, growing like a great beard on the oak, cedar, and divers other trees. See MOSS, and PARASITE.

USNEA *Humana*, is a ſmall greeniſh moſs, growing on human ſkulls, that have lain a long time expoſed to the air.

It is very aſtringent, and held proper to ſtop hæmorrhages. — It is alſo an ingredient in the weapon-ſalve of Paracelſus, and Crollius.

USQUEBAUGH, a ſtrong, rich, compound liquor, chiefly taken by way of dram; its baſis being brandy, or rectified ſpirits of wine.

The proceſs is ſomewhat various, and the ingredients numerous. — We ſhall give one much commended formerly, as a ſpecimen.

To two gallons of brandy, or ſpirits, put a pound of ſpaniſh liquorice, half a pound of raiſins of the ſun, four ounces of currants; three of dates ſliced; tops of thyme, bawm, ſavory, and mint, and tops or flowers of roſemary, of each two ounces; cinnamon and mace bruiſed, nutmegs, anis ſeeds, and coriander ſeeds, bruiſed likewiſe, of each four ounces; citron, or lemon and orange peel, ſcraped, of each an ounce.

All theſe to be left to infuſe 48 hours in a warm place, often ſhaking them together: then ſet them in a cool place, for a week; after which the clear liquor is to be decanted off, and to it an equal quantity of neat white port-wine, and a gallon of canary, are to be added. — The whole to be ſweetned with a proper quantity of double refined ſugar.

USTION*, USTIO, in pharmacy, the preparing of certain ſubſtances, by burning them.

* The word is formed from the Latin *urere*, to burn.

The antients made uſe of the *uſtion* of horns, nails, feathers, and other parts of animals, for divers remedies: and the moderns ſtill uſe æs uſtum, which is burnt copper, or copper that has undergone the *uſtion*, with ſulphur. See ÆS USTUM.

The *uſtion* of minerals, is a more imperfect kind of calcination. See CALCINATION. — It is a degree beyond torrefaction. See TORREFACTION.

USTUM *Æs*. See the article ÆS USTUM.

USUCAPTION, USUCAPTIO, in the civil law, is an acquiſition of the property of a thing, by a poſſeſſion and enjoyment thereof for a certain term of years preſcribed by law. See POSSESSION.

Some make a difference between *preſcription*, and *uſucaption*, maintaining, that the latter is only uſed with regard to moveables, and the former with regard to immoveables. — But there is no eſſential difference between them; and accordingly, preſcription and *uſucaption*, are generally held ſynonyma's. See PRESCRIPTION.

USUFRIT, USUS-FRUCTUS, in the civil law, the uſe or enjoyment, of any lands or tenements: or the right of receiving the fruits and profits of an inheritance, or other thing, without a power of alienating, or changing the property thereof. See USE, and POSSESSION.

When the *uſufructuary*, dies, the *uſufruit* returns to the proprietor. — The dower to jointure of a widow, is only an *uſufructuary* due, that is, ſhe only enjoys the *uſufruit* thereof, and cannot diſpoſe of the principal. See DOWER.

All mutual preſents between man and wife, only import the *uſufruit* of the goods of the firſt that dies, to the profit of the ſurvivor. — The incumbents of benefices are only *uſufructuary*. See BENEFICE. — An *uſufructuary* has full right over the coppice; but cannot fell timber-trees.

USURER, a perſon charged with a habit or act of *uſury*. See USURY.

The laws of our antient Saxon and Norman kings, are very ſevere upon *uſurers*, or letters-out of money upon intereſt. — *Uſurarios quoque defendit rex Edvardus* (confeſſor,) *ne remaneret aliquis in toto regno ſuo; & ſi quis inde convictus eſſet, quod fœnus exigerat, omni ſubſtantia propria careret & poſtea pro exlege habeatur: quoniam* uſura *radix omnium malorum.* Leg. Edv. Confeſſ. cap. 37.

They were indeed allowed to diſpoſe of their goods before conviction, and whilſt they were living; but after their death they were confiſcate, if it could be proved they lent money to *uſe* within a year before their death. *Matt. Paris.*

If a clergyman were an *uſurer*, his goods were not to be confiſcated; but to be diſtributed to pious uſes. — In thoſe days *uſury* was thus defined:

Eſt uſura *ſuos quiſquis tradit mihi nummos*
Spe lucri, fœnus duplex uſura *vocatur.*

USURIOUS *Contract*, is any bargain or contract, whereby a man is obliged to pay more intereſt for money than the ſtatute allows. See INTEREST, CONTRACT, and USURY.

USURPATION, in law, an injurious uſing, or enjoyment of a thing for continuance of time, that belongs of right to another. See USUCAPTION, and POSSESSION.

USURY, USURA, in the general, denotes a gain or profit, which a perſon makes of his money, by lending the ſame; or it is an increaſe of the principal, exacted for the loan thereof; or the price a borrower gives for the *uſe* of a ſum credited to him by the lender: called alſo *intereſt*, and, in ſome antient ſtatutes, *dry exchange*. See INTEREST, and EXCHANGE.

The word *uſury* is uſually taken in an evil ſenſe, *viz.* for an unlawful profit which a perſon makes of his money; in which ſenſe it is, that *uſury* is forbidden by the civil and eccleſiaſtical law, and even by the law of nature: in this ſenſe it alſo is, that it is held *uſury* to lend money on pawns, to exact intereſt for money, without ſurrendering the principal, and to ſtipulate intereſt for money which is not employed in trade, nor brings any profit to the perſon who receives it:

but as the Latin word *uſura*, at leaſt the plural thereof, *uſuræ*, may be underſtood of a lawful intereſt, we do not ſee why *uſury* may not be uſed in Engliſh, in the ſame harmleſs ſenſe.

By the antient Roman law, people were allowed to lend out their money at one *per cent. per* month; which was 12 *per cent. per annum.* — If they received more, they incurred the note of infamy, and the overplus was charged on the principal.

This rate of *uſury* was allowed of, as low as the time of Juſtinian, who moderated it a little by the 26th law in the code, *de uſuris*. And not long after, the canon law forbid all ſort of *uſury* whatever. — In compliance with this prohibition, the cuſtomary laws do not allow any intereſt to be exacted, for money lent on a ſimple promiſe or obligation; but only by contract, and upon alienating the principal, which the debtor is to reimburſe at pleaſure: which is a kind of buying an annuity, or annual revenue.

So that in propriety, *unlawful uſury* conſiſts, in extorting an exceſſive rate for one's money, beyond what is preſcribed by law. See RATE.

Du Moulin, indeed, makes *uſury*, taken in the ill ſenſe, to be a profit exacted for a loan made to a perſon in want; intimating, that it is unlawful to extort gain, from the aſſiſtance given to the unhappy, or to convert an office of humanity into a mercenary one. — The reaſon is, that money is a barren and fruitleſs thing, in the hands of a perſon whom neceſſity obliges to borrow; and that being lent him to be ſpent, he can make no advantage of it: whereas the principal pretext for requiring lawful intereſt is, that the perſon who lends, may ſhare in the profits thereof, with the perſon to whom it is lent.

Notwithſtanding, moſt of the antient canoniſts inſiſt on a rigorous obſervation of that precept in Deuteronomy, *Non fœneraberis fratri tuo*, Thou ſhalt not lend money to thy brother on *uſury*: and plead, that nothing is to be required further than the principal.

However, in life, we call nothing *uſury*, but what exceeds the bounds preſcribed by the laws: ſo that when a perſon does not alienate his principal, or takes intereſt beyond what is limited by ſtatute, theſe alone are *uſury*.

By the ſtat. 12 Car. I. no man is allowed to take above ſix pounds, for the forbearance of one hundred pounds for one year, under certain penalties therein enjoined. — And by a later ſtat. 12 Annæ, no man may take above five pounds for the like occaſion; and in proportion for any other ſum.

UT, a Latin term, ſignifying, literally, *as*; much uſed in the ſtating of ratios and proportions. See RATIO, and PROPORTION.

Sir Iſaac Newton aſſigns its uſe thus: if indeterminate quantities of divers kinds be compared together, and one of them be ſaid to be *ut*, *as*, any other directly or inverſely; the meaning is, that the firſt is increaſed or diminiſhed, in the ſame ratio as the latter. — And if one of them be ſaid to be, *ut*, *as*, two or more others directly, or inverſely, the meaning is, that the firſt is increaſed or diminiſhed, in a ratio, compounded of the ratios in which the others are increaſed or diminiſhed.

Thus, if A be ſaid to *as* B directly, and *as* C directly, and as D inverſely, the meaning is, it is increaſed or diminiſhed, in the ſame ratio with $B \times C \times \overset{1}{D}$, that is, A and $\frac{BC}{D}$, are to each other in a given ratio. *Phil. Nat. Princ. Math.*

UT, in muſic, the firſt of the muſical notes. See NOTE.

Ut, *re*, *mi*, *fa*; the clef of *G*, *re*, *ſol*, *ut*; of *C*, *ſol*, *ut*, &c. See SCALE, &c.

This note, with the reſt, were taken out of the hymn of S. John Baptiſt. *Ut queant laxis*, &c. See MUSIC.

UTFANGTHEF*, an antient royalty or privilege, granted to the lord of a manor by the king, giving him a power to puniſh a thief dwelling, and committing theft out of his liberty; if he be taken within the lord's fee.

* Utfangthef *dicitur extraneus latro veniens aliunde de terra aliena, & qui captus fuit in terra ipſius qui tales habet libertates.* Bracton.

UTENSIL, UTENSILE, a little domeſtic moveable, belonging principally to the kitchen. — Such are pots, pans, plates, *&c.*

UTENSILS, is more particularly uſed in war, for the moveables which the hoſt is obliged to furniſh the ſoldiers quartered with him; which are, a bed with bed-cloths, a pot and a ſpoon. — They are likewiſe to have a place at their hoſt's fire, and candle. — *Utenſils* are ſometimes furniſhed in money, and ſometimes in kind.

UTERINE, UTERINUS, ſomething belonging to the uterus, or womb of women. See UTERUS, and MATRIX.

Uterine brothers or ſiſters, as thoſe born of the ſame mother, but different fathers. See BROTHER, *&c.*

Furor **UTERINUS**, in medicine, denotes a kind of madneſs, attended with laſcivious ſpeeches and geſtures, and an invincible inclination to venery. See FUROR.

The *furor uterinus*, is a complication of hyſterical ſymptoms ariſing from a turgeſcency, or inflation of the *uterine* veſſels. See HYSTERIC.

Men are ſubject to the like diſeaſe, as well as women; ſo that it might with more propriety be called, the *furor venereus*, or *venereal fury*. — It had its name *furor uterinus*, from an opinion, that it proceeded from vapours, riſing from the womb to the brain.

It has been frequently found, that maids held to be poſſeſſed, were only ſeized with the *uterine fury*. See POSSESSION.

The *furor uterinus*, is uſually ſuppoſed to conſiſt in ſome irregular motion of the ſpirits, occaſioned by a hot, luſtful temperament, the converſation of debauched perſons, or the reading of wanton books, hot foods, the abundance and acrimony of the ſerous matter which moiſtens the pudendum, ſuppreſſion of the menſes, large doſes of cantharides, *&c.*

Before the paroxyſm, the patient often appears ſilent and ſorrowful, with a fluſhing in the face, and a reſpiration and pulſe frequently intermitting, and ſuddenly varying. — During the paroxyſm they burſt ſometimes into laughter, and then into a fit of tears, *&c.*

Bleeding, fætid ſuffiments, and other hyſterical medicines, are proper during the fit.

UTERINUM *Jecur*. See the article JECUR.

UTERUS, in anatomy, *matrix*, or *womb*; that organ of generation in women, wherein the buſineſs of conception is performed, and wherein the embryo or fœtus is lodged, fed, and grows, during the time of geſtation, or till its delivery.

Its deſcription ſee under the article MATRIX. — Its office, *&c.* under GENERATION, CONCEPTION, GESTATION, FOETUS, &c.

Fundus UTERI.	See the article	FUNDUS.
Procidentia UTERI.		PROCIDENTIA.

Vagina, or *Cervix* UTERI. See VAGINA, and CERVIX.

UTILE, a Latin term, ſignifying profitable or uſeful; ſometimes uſed by Engliſh authors in the ſame ſenſe.

The *utile* and the *dulce*, profit and delight, are both to be aimed at in poetry; but it is diſputed which of them is to be aimed at in the firſt place. — Corneille ſays expreſly, *Dans la tragedie l'utile n'entre que ſous la forme du delectable.* See POETRY.

In the language of the philoſophers, there is nothing *utile*, but what is juſt and honeſt: *nihil bonum niſi honeſtum: nihil malum niſi turpe.* Cic. de Fin. lib. 2.

UTILE *Dominium*. See the article DOMINIUM.

UTLAGARIÆ *Perdonatio*. See PERDONATIO.

UTLAGATIO, in law-term, an outlawry. See OUTLAWRY.

UTLAGATO *Capiendo, quando utlagatur in uno comitatu & poſtea fugit in alium*, a writ for the apprehending a man who is outlawed in one country, and flies into another. See OUTLAWRY.

UTLAGATUM *Capias*. See the article CAPIAS.

UTLAGH, UTHLAGHUS. See the article OUTLAW.

UTLAND, *Outland*. See the article INLAND.

UTLARY, or UTLAWRY, UTLAGARIA. See OUTLAWRY.

UTRUM. See the article ASSISE, &c.

UTTER *Barriſter*. See the article BARRISTER.

UVEA. See TUNICA.

UVEA (in anatomy) *aciniformis tunica*, the third tunic, or brane of the eye, thus called, as reſembling the colour or figure of a grape. See EYE.

* It is called — *uvea*, on account of its reſembling the figure and colour of a grape, call'd, by the Latins, *uva*. For which reaſon alſo ſome have given it the name of — *Aciniformis*; from *acinus*, a grape-ſtone.

The hind part of this coat, or that the next the orbit of the eye on each ſide, is called the *choroides*; and is derived from the *pia mater*.

The anterior, or fore part is, like the former, traſparent, but thinner; and is, by authors, reckoned as a different tunic, and called *uvea*.

Of the duplicature of this part, is formed that ſtriped, variegated circle, called the *iris*. See IRIS.

And in its middle is a perforation, through which appears a little black ſpeck, which is the ſight, or pupil of the eye; and about which the iris forms a ring. See PUPIL.

From the inſide of this membrane, ſpring certain fibres, which ſpread themſelves round the cryſtalline humour; ſerving to contract or dilate the ſight at pleaſure; and called the *ligamentum ciliare*. See LIGAMENTUM.

To the *teſticles* belongs the *vaginalis tunicæ*. See ELYTROIDES.

VULCANO, among naturaliſts. See VOLCANO.

VULGAR *Air*.	See the article	AIR.
VULGAR *Algebra*.		ALGEBRA.
VULGAR *Arithmetic*.		ARITHMETIC.
VULGAR *Fractions*.		FRACTIONS.
VULGAR *Purgation*.		PURGATION.
VULGAR *Stone*.		STONE.

VULGATE, a very antient Latin tranſlation of the Bible; and the only one the church of Rome acknowledges authentic. See BIBLE.

The antient *vulgate* of the Old Teſtament, was tranſlated almoſt word for word, from the Greek of the Seventy. The author of the verſion is not known, nor ſo much as gueſſed at. See SEPTUAGINT.

It was a long time known by the name of the *Italic*, or old verſion; as being of very great antiquity in the Latin church. — It was the common, or vulgar verſion, before S. Jerom made a new one; whence its name *vulgate*.

Nobillius, in 1588, and F. Morin, in 1628, gave new editions of it; pretending to have reſtored, and re-collated it, from the antients who had cited it. — The *vulgate* was held by S. Auguſtine, to be preferable to all the other Latin verſions then extant; as rendering the words and ſenſe of the ſacred text, more cloſely and juſtly than any of the reſt. It has ſince been retouched from the corrections of S. Jerom; and it is this mixture of the antient Italic verſion, and ſome corrections of S. Jerom, that is now called the *vulgate*, and which the council of Trent has declared to be authentic.

It is this *vulgate* alone is uſed in the Romiſh church, excepting for ſome paſſages of the antient *vulgate* left in the miſſal, and the pſalms; which are ſtill ſung, according to the old Italic verſion. See BIBLE.

VULGATE *of the New Teſtament.* — This the Romaniſts generally hold preferable to the common Greek text; in regard it is this alone, and not the Greek text, that the council of Trent has declared authentic: accordingly, that church has, as it were, adopted this edition. The prieſts read no other at the altar, the preachers quote no other in the pulpit, nor the divines in the ſchools.

Yet ſome of their beſt authors, F. Bouhours for inſtance, own, that among the differences that are found between the common Greek, and the *vulgate*, there are ſome wherein the Greek reading appears more clear and natural, than that of the Latin; ſo that the ſecond might be corrected from the firſt, if the holy ſee ſhould think fit. — But thoſe differences, for the generality, only conſiſt in a few ſyllables, or words: they rarely touch the ſenſe. Beſides, in ſome of the moſt conſiderable, the *vulgate* is authorized by ſeveral antient manuſcripts.

Bouhours ſpent the laſt years of his life, in giving a French tranſlation of the New Teſtament, according to the *vulgate*.

In 1675, a new edition of the Greek Teſtament was publiſhed by the univerſity of Oxford; and great care taken therein, to compare the common Greek text, with all the moſt antient manuſcripts in England, France, Spain, and Italy; and to note the differences obſerved therein.

In the preface of this work, the editors ſpeaking of the divers verſions of the Bible in the vulger tongues, obſerve of the *vulgate*, that there is no verſion in any language to be compared with it. — And this they juſtify, by comparing paſſages that occur in the moſt celebrated Greek manuſcripts, with the ſame paſſages in the *vulgate*, where there is any difference between that, and the common printed Greek copy.

In effect, it is probable, that at the time the antient Italic, or *vulgate* verſion of the New Teſtament was made, and at the time it was afterwards compared with the Greek manuſcripts, by S. Jerom; as they were then nearer the times of the Apoſtles, they had juſter Greek copies, and thoſe better kept, than any of thoſe uſed when printing was firſt ſet on foot, two centuries ago.

M. Simon calls the Greek verſion of the Seventy, before it was reviſed and reformed by Origen, *The antient* vulgate *Greek*. — Origen's correction got the upper hand of the antient Greek, and joſtled it out of uſe; ſo that we have now ſcarce any copies thereof. See SEPTUAGINT.

VULNERARY*, in medicine, an epithet given to remedies, proper for the cure of wounds, and ulcers. See WOUND, and TRAUMATIC.

* The word is formed from the Latin *vulnus*, wound.

There are divers *vulnerary* herbs; as ariſtolochia, or birthwort; ſanicle, or ſelf-heal; plantain, mouſe-ear, veronica, or fluellin, agrimony, vervein, or holy herb, &c.

There are alſo *vulnerary* potions, compoſed of various ſimples. — *Vulnerary* balms, unguents, plaiſters, &c. See BALSAM, &c.

VULNERARY *Water*. See the article WATER.

VULTUS *de Luca*, the ſame with *veronica*. See VERONICA.

VULVA*, a name which ſome phyſicians give to the uterus, or womb. See MATRIX.

* The word is Latin, *vulva, quaſi valvæ*, a door.

VULVA is ſometimes alſo, though leſs properly, uſed for the cunnus, or pudendum muliebre. See GENITAL, and GENERATION.

UVULA, in anatomy, a round, ſoft ſpongeous body, like the end of a child's finger; ſuſpended from the palate, near the foramina of the noſtrils, perpendicularly over the glottis. See GLOTTIS, LARYNX, VOICE, &c.

Its uſe is to break the force of the cold air, and prevent its entring too precipitately into the lungs. See RESPIRATION, LUNGS, &c.

It is formed of a duplicature of the membrane of the palate; and is called, by ſome authors, *columella*, and, by others, *gurgulio*.

It is moved by two pair of muſcles, and ſuſpended by as many ligaments. — The muſcles are, the *external*, called the *ſphenoſtaphylinus*, which draws the *uvula* upwards, and backwards; and hinders the maſticated aliment from paſſing into the foramina of the noſtrils in deglutition. See SPHENOSTAPHYLINUS.

And the *internal*, called the *pterygoſtaphylinus*; which draws the *uvula* upwards and forwards. See PTERYGOSTAPHYLINUS.

Both muſcles move the *uvula* upwards, to give room for ſwallowing; and ſerve to raiſe it, when relaxed and fallen down. — In which caſe, it is uſual to promote its riſing, by applying a little beaten pepper on the end of a ſpoon to it. See DEGLUTITION.

Bartholin ſays, that ſuch as have no *uvula* are ſubject to the phthiſic, and uſually die thereof; by reaſon the cold air, entering the lungs too haſtily, corrupts them. See PHTHISIS.

UVULÆ *Procidentia*. See the article PROCIDENTIA.

UXORIUM, in antiquity, a fine, or forefeit paid by the Romans for not marrying. See MARRIAGE, POLITICAL *Arithmetic*, &c.

UZIFIR, UZUFAR, or UZIFUR, in chymiſtry, a name which ſome authors give to cinnabar. See CINNABAR.

W.

W, A letter particular to the northern languages, and people; as the Engliſh, Dutch, Poliſh, and others of Teutonic and Sclavonic original. See LETTER, and ALPHABET.

The *w* is alſo ſometimes admitted into the French, Italian, *&c.* in proper names, and other terms borrowed from the languages where it is uſed.

In Engliſh, the *w* is uſually a conſonant; and as ſuch, may go before all the vowels, except *u*; as in *want*, *weapon*, *winter*, *world*, &c. See CONSONANT.

It is ſometimes alſo a vowel; and as ſuch, follows any of the vowels *a*, *e*, *o*, and unites with them into a kind of double vowel, or diphthong; as in *law*, *ewe*, *ſow*, &c.

The Engliſh *w* is ſounded as in Latin, *u*, in *quantum*, *ſuadeo*, *lingua*. — Its ſound is alſo commonly like the groſs, or full *u* rapidly pronounced. — In French, the ſound of the *w* does not differ from that of the ſingle *v*. See U.

WADD, or WADDING, in gunnery, a ſtopple of paper, hay, ſtraw, old clouts, or the like, forced into a gun upon the powder, to keep it cloſe in the chamber; or put up cloſe to the ſhot, to keep it from rolling out. See CHARGE, and TAMPION.

WAFE. See the article WAIF.

WAFT. — *To waft a ſhip*, is to convoy her ſafe, as men of war do by merchants ſhips. See CONVOY.

To make a WAFT, is to hang out ſome coat, ſea-gown, or the like, in the main ſhrouds of the ſhip; as ſign for the men to come on board, *&c.*

Such *waft* is alſo frequently intended to ſhew that a ſhip is in diſtreſs, by a leak, *&c.* and therefore wants help from the ſhore, or from other ſhips.

WAFTERS, WAFTORES, conducters of veſſels at ſea. See CONVOY.

King Edward IV. conſtituted a triumvirate of officers with naval power, whom the patent ſtyles *cuſtodes*, *conductores*, and *waftores*; whoſe buſineſs chiefly was to guard our fiſhermen on the coaſts of Norfolk, and Suffolk.

WAGA, or VAGA. See the article WEIGH.

WAGAR, WAGING, in law, *vadari*, ſignifies the giving ſecurity for the performance of any thing. See GAGE, PLEDGE, VADARI, *&c.*

Thus, to *wage* law, is to put in ſecurity that you will make law at the day aſſigned. See MAKE.

WAGGON, a kind of vehicle, or carriage in common uſe. See CARRIAGE, &c.

There are divers forms of *waggons*, accommodated to the divers uſes they are intended for. — The common *waggon* conſiſts of the *ſhafts*, or *rads*, which are the two pieces the hind horſe bears up; the *welds*; the *ſlotes*, which are the croſs pieces that hold the ſhafts together; the *bolſter*, being that part on which the fore wheels and axletree turn, in wheeling the *waggon* acroſs the road; the *cheſt*, or body of the *waggon*, having the ſtaves or rails fixed thereon; the *bales*, or hoops, which compoſe the top; the *tilt*, the place covered with cloth at the end of the *waggon*: beſides the *wheels*, *axletree*, &c.

The larger the wheels of the *waggon*, and their circumference, the eaſier the motion; and the leſs, the heavier, and more uneaſy and jogging they go. — But ſtill, the higher a *waggon*, &c. is ſet, the apter it is to overturn. — The only reaſon why the fore wheels of *waggons*, &c. are made leſs than the hind wheels, is for the conveniency of turning. See WHEEL.

The more upright or ſquare the ſpokes of the wheels are from the box, or centre, the weaker they are when they come to bear on either ſide: on which account, as alſo to ſecure a wheel from breaking in a fall, they are made concave, or diſhing.

WAGGONER, in aſtronomy, a kind of conſtellation, called alſo *Charles's wain.* See CHARLES's WAIN.

WAGGONER is alſo uſed for a routier, or book of charts, deſcribing the ſeas, their coaſts, *&c.* See CHART, and ATLAS.

WAIF, or WAFE, a term primarily applied to ſtolen goods, which a thief, being purſued, or over-burthened, flies, and leaves behind him, or drops in the way.

The king's officer, or the bailiff of the lord within whoſe juriſdiction ſuch *waifs* or *waif* goods were left (having by grant, or preſcription, the franchiſe of *waif*) may ſeize the goods to his lord's uſe; except the owner come with freſh ſuit after the felon, and ſue an appeal of robbery within a year and a day, or give in evidence againſt him, and he be attainted. — In which caſes, the owner ſhall have his goods again.

Waifs, things loſt, and eſtrays, are ſaid to be *pecus vagrans*; and are *nullius in bonis ubi non apparet dominus.* And therefore belong to the lord of the franchiſe where they are found; who muſt cauſe them to be cried, and publiſhed in the markets, and churches near about: elſe the year and day does not run to the prejudice of him that loſt them.

Though *waif* be properly ſpoken of things ſtolen, yet it may alſo be underſtood of goods not ſtolen. — As, if a man be purſued with hue and cry, as a felon, and he flies, and leaves his own goods; theſe ſhall be forfeit as goods ſtolen: and are properly called *fugitive goods.* See FUGITIVE.

WAIN. See the article CHARLES's *Wain.*

WAINSCOT, in building, the timber-work ſerving to line the walls of a room; being uſually in pannels, and painted, to ſerve in lieu of hangings. See WALL, *&c.*

Even in halls, it is common to have *wainſcot* breaſt high; by reaſon of the natural humidity of walls. See WALL.

Some joiners put charcoal behind the pannels of the *wainſcot*, to prevent the ſweat of ſtone and brick-walls from ungluing the joints of the pannels. — Others uſe wool for the ſame purpoſe. — But neither the one nor the other is ſufficient in ſome houſes: the only ſure way, is, by priming over the back-ſides of the joints with white lead, Spaniſh brown, and linſeed oil.

According to Neve, *wainſcotting* with Norway oak, the workman finding ſtuff, is valued at ſix or ſeven ſhillings *per* yard ſquare. — Plain ſquare *wainſcotting*, the workman finding deal, is valued at three ſhillings, or three ſhillings ſix-pence *per* yard. — Large biſſection *wainſcotting*, with Dantzick ſtuff, is valued at ſix or ſeven ſhillings *per* yard; and ordinary biſſection work, at three ſhillings ſix-pence *per* yard.

In taking dimenſions, they uſe a ſtring, which they preſs into all the mouldings; it being a rule that they are to be paid for all where the plane goes. See MEASURING.

WAVE, in law, a woman that is put out of the protection of the law. See OUTLAW.

She is called *waive*, as being forſaken of the law: and not *outlaw*, as a man is; by reaſon women cannot be of the decenna, are not ſworn in leets to the king, nor to the law, as men are; who therefore are within the law: whereas women are not; and ſo cannot be outlawed, ſince they never were within it. See DECENNIER, FRIBURGH, *&c.*

In this ſenſe we meet with *waviaria mulieris*, as of the ſame import with *utlagatio viri.* See OUTLAWRY.

WAKE *of a ſhip*, is the ſmooth water a-ſtern, when ſhe is under ſail.

By this, a gueſs may be made of the ſpeed ſhe makes. See RECKONING.

They alſo judge from this, whether the ſhip goes as ſhe looks; that is, whether ſhe makes her way right a-head, as ſhe lies; as ſhe doth when her *wake* is right a-ſtern: but if this *wake* be a point or two to leeward, they judge that ſhe falls to the leeward of her courſe.

When, in a ſhip's ſtaying ſhe is ſo quick, that ſhe does not fall to leeward upon a tack, but that when tacked, her *wake* is to the leeward, they ſay, *She ſtays to the weather of her wake*; which is a ſign ſhe feels her helm well, and is nimble of ſteerage.

Alſo, when one ſhip, giving chaſe to another, is got as far into the wind as ſhe, and ſails directly after her, they ſay, *She is got into her* wake.

WAKEFULNESS, or WATCHING, *inſomnia.* See WATCHING.

WAKES*, VIGILS, or *Country*-WAKES, are certain antient anniverſary feaſts, in ſeveral pariſhes; wherein the people were to be awake at the ſeveral vigils, or hours to go to prayer. See VIGIL.

* The word is formed from the Saxon, *Wæcce*, *vigilia*, *excubiæ*, watch.

They are uſually obſerved, in the country, on the Sunday next after the ſaint's day to whom the pariſh-church is dedicated.

Cowel defines them by *vigils*, in the dedications of churches, where men ſat drinking in the choir all night. See DEDICATION.

WALDENSES. See the article VAUDOIS.

WALKERS, a ſort of foreſt-officers, appointed by the king to *walk* about a certain ſpace of ground, committed to their care, and inſpection. See FOREST.

Walkers, are the ſame with what we otherwiſe call *foreſters.* See FORESTER.

WALKS, in gardening. See the article ALLEYS.

To keep the weeds from growing upon *walks*, Mr. Switzer directs, that the bottoms thereof be filled with lime-rubbiſh, or coarſe gravel, flint ſtones, or other rocky ſtuff, eight or ten inches deep; over which may be laid a like depth of gravel, not too fine.

To keep them the drier, they are to be made rounding, or convex. — The uſual proportion is, that a *walk* 20 feet wide, be four inches higher in the middle, than at the ſides; a *walk* 25 feet wide, 5 inches, &c.

After laying a *walk*, it is to be rolled, both lengthwiſe and croſs-wiſe; and to lay it the firmer, it muſt have three or four water-rollings; that is, when it rains ſo very faſt, that the *walk* ſwims with water: which, when dry weather comes, will bind as hard as terrace.

To make the gravel bind the better, ſome mix a little lime with it; which being apt to ſtick to the heels of the ſhoes in wet weather, others grind or pound ſea-ſhells, and lay a thin coat thereof on the gravel; which being rolled, incorporates with the gravel, and hinders its hanging to the ſhoes.— Others beat ſmiths cinders to duſt, and others bricks; ſtrewing the duſt on the *walks*, which dries up the moiſture, and gives them a colour.

Gravel-WALK.	See	GRAVEL.
Ring-WALK, among hunters.		RING-*Walk*.
Terrace-WALK.		TERRACE.

WALKING-*Fire*. See the article *Ignis* FATUUS.

WALL, in architecture, &c, a work of ſtone, brick, wood, or the like; making the principal part of a building; as ſerving both to incloſe it, and to ſupport the roof, floors, &c. See BUILDING, HOUSE, &c.

Walls, though built very thick and ſtrong, and their foundations laid deep, yet, if carried on ſtreight in a line, are inclined to lean, or fall; and ſuch as are built crooked, though thin and weak, are much more laſting.— A *wall* raiſed over a river, on arches of pillars, ſtands as firm as others, whoſe foundation is entire.

Hence it appears, that a *wall* built much thinner than uſual, by only having at every 20 feet's diſtance an angle ſet out about two feet, or more, in proportion to the heighth of the *wall*; or by having at the like diſtance, a column, or pilaſter erected along with it, ſix or eight inches on each ſide, over and above the thickneſs of the reſt of the *wall*: ſuch *wall* will be much ſtronger, than if five times the quantity of materials were uſed in a ſtreight *wall*.

Walls are diſtinguiſhed into divers kinds, from the matter whereof they conſiſt; as *plaiſtered*, or *mud-walls*, *brick-walls*, *ſtone-walls*, *flint* or *boulder-walls*, and *boarder-walls*.— In all which theſe general rules are to be regarded.

1°. That they be built exactly perpendicular to the groundwork.

2°. That the maſſieſt and heavieſt materials be the loweſt; as fitter to bear, than be born.

3°. That the *walls*, as they riſe, diminiſh proportionally in thickneſs, for eaſe both of weight and expence.

4°. That certain courſes, or ledges, of more ſtrength than the reſt, be interlaid, like bones, to ſtrengthen the whole fabric.

Mud and *Plaiſtered*-WALLS, are chiefly in ordinary timber-buildings.— Theſe *walls*, being quartered and lathed between the timber, or ſometimes lathed over all, are plaiſtered with loam, (ſee LOAM;) which being almoſt dry, is plaiſtered over again with white mortar. See MORTAR.

Brick-WALLS, are the moſt important and uſual among us.— In theſe, particular care is to be taken about the laying of the bricks, *viz.* That in ſummer they be laid as wet, and in winter as dry as poſſible; to make them bind the better with the mortar: that in ſummer, as faſt as they are laid, they be covered up, to prevent the mortar, &c. from drying too faſt: that in winter they be covered well, to protect them from rain, ſnow, and froſt, which are all enemies to the mortar: that they be laid joint on joint in the middle of *walls*, as ſeldom as may be; but, good bond made there, as well as on the out-ſides.— Care is likewiſe to be taken, that the angles be firmly bound: in order to which, in working up the *walls* of a building, it is not adviſable to raiſe any *wall* above three feet high, ere the next adjoining *wall* be wrought up to it; that good bond may be made in the progreſs of the work.

Laſtly, in building a houſe in the city of London, the *walls* are to be of ſuch thickneſſes, as are enjoined by the act of parliament for rebuilding that city. See HOUSE.

Flint, or *Boulder*-WALLS, are frequently uſed in divers parts for fence-*walls*, a-round courts, gardens, &c. and even for *walls* of out-houſes.— Sir Henry Wotton obſerves, that the building of *walls* of flint, is a thing utterly unknown to the antients; who obſerving in that material a kind of metallic nature, at leaſt a fuſibility, reſerved it for nobler uſes. See BOULDER.

Theſe *walls* are uſually raiſed by a right and left-handed man, who have a hod of mortar poured down on the work, which they part betwixt them; each ſpreading it towards himſelf, and ſo they lay in the flints.— The mortar for this work is to be very ſtiff.

Angle of a WALL.	See the article	ANGLE.
Coping of a WALL.		COPING.
Plinth af a WALL.		PLINTH.
Scenography of WALLS.		SCENOGRAPHY.
Painting on WALLS.		PAINTING.

Party-WALLS.	See the article	PARTITION.
Picts WALL.		PICTS.
Fence-WALLS.		FENCE.

WALL in fortification, &c. See the article RAMPART.

WALLS, in gardening, &c.— The poſition, matter, and form of *walls*, for fruit-trees, are found to have a great influence on the fruit: though authors differ as to the preference. See GARDEN, ORCHARD, &c.

The reverend Mr. Lawrence directs, that the *walls* of a garden be not built directly to face the four cardinal points, but rather between them, *viz.* ſouth-eaſt, ſouth-weſt, north-eaſt, and north-weſt: in which the two former will be good enough for the beſt fruit, and the two latter for plums, cherries, and baking pears. See EXPOSURE.

Mr. Langford, and ſome others, propoſe garden-*walls* to conſiſt chiefly of ſemicircles; each about ſix or eight yards in front, and including two trees; and between every two ſemicircles, a ſpace of two feet of plain *wall*.— By ſuch a proviſion every part of a *wall* will enjoy an equal ſhare of the ſun, one time with another; beſide, that the warmth will be increaſed, by the collecting and reflecting of the rays in the ſemicircles; and the trees within be ſcreened from injurious winds.

As to the materials of *walls* for fruit-trees, brick, according to Mr. Switzer, is the beſt; as being the warmeſt and kindeſt for the ripening of fruit, and affording the beſt conveniency for nailing.

Mr. Lawrence, however, affirms, on his own experience, that *mud-walls*, made of earth and ſtraw tempered together, are better for the ripening of fruit, than either brick or ſtone *walls*: he adds, that the coping of ſtraw laid on ſuch *walls*, is of great advantage to the fruit, in ſheltering them from perpendicular rains, &c.

M. Fatio, in a particular treatiſe on the ſubject, inſtead of the common perpendicular *walls*, propoſes to have the *walls* built ſloping, or reclining from the ſun; that what is planted againſt them, may lie more expoſed to his perpendicular rays; which muſt contribute greatly to the ripening of fruit in our cold climate.

The angle of reclination, is to be that of the latitude of the place; that, when the ſun is in the meridian at the equinoxes, his rays may ſtrike juſt perpendicularly. See HEAT.

Yet ſome others prefer perpendicular *walls*, and even inclining ones, or ſuch as hang forwards to the ſun; as ſuch receive the ſun's rays perpendicularly when he is low; as in ſpring and autumn, or in the evening and morning: which they imagine of more ſervice, than the greateſt heats of the ſun at midſummer, upon reclining *walls*.

Add, that autumn the ſun is moſt wanted to ripen winter pears; in order to which, they ſhould be kept dry, which againſt ſloping *walls* cannot be; the dews, &c. lying much longer thereon, than on thoſe that are perpendicular.

One great advantage, however, of M. Fatio's ſloping *walls*, is, that fruit-trees, as vines, &c. being planted againſt them, melon-glaſſes may be ſet on the fruit; which will much forward its ripening.

Sea-WALLS.	See the article	DIKE.
WALL-*Trees*.		TREE.
Planting WALL *fruit-trees*.		PLANTING.

WALOON, or WALLOON, a kind of old French; being the language ſpoke by the Walloons, or the inhabitants of a conſiderable part of the French and Auſtrian Low-Countries, *viz.* thoſe of Artois, Hainault, Namur, Luxemburg, and part of Flanders and Brabant.

The *Waloon* is held to be the language of the antient Gauls, or Celts. See LANGUAGE, &c.

The Romans having ſubdued ſeveral provinces in Gaul, eſtabliſhed prætors, or proconſuls, &c. to adminiſter juſtice in the Latin tongue. On this occaſion, the natives were brought to apply themſelves to learn the language of the conquerors; and thus introduced abundance of the Roman words and phraſes into their own tongue.

Of this mixture of Gauliſh and Latin, was formed a new language, called *Romans*; in contradiction to the antient unadulterated Gauliſh, which was called *Walon*, or *Walloon*. This diſtinction is kept up to this day; for the inhabitants of ſeveral of the low-country provinces ſay, that in France they ſpeak Romans; whereas they ſpeak the *Walloon*, which comes much nearer the ſimplicity of the antient Gauliſh. See ROMANS, and FRENCH.

WANDASS. See the article WINDASS.

WANDERING *Stars*. See the article STAR.

WANLASS, in hunting.— Driving the *wanlaſs*, is the driving of deer to a ſtand, that the lord may have a ſhoot: which is one of the cuſtomary ſervices of fiefs. See HUNTING.

WAPENTAKE, or WEAPENTAKE, a diviſion of certain northern counties, particularly thoſe beyond the Trent, anſwering to what in other places is called a *hundred*, or a *cantred*. See HUNDRED.

Authors differ as to the origin of the word.— Brompton brings it from the Saxon *waepen*, and *taecan*, to deliver, by reaſon the tenants antiently delivered their arms to every new lord as a token of their homage.

Sir Thomas Smith gives a different account. — Muſters, he obſerves, were antiently taken of the armour and weapons of the ſeveral inhabitants of every hundred; and from ſuch as could not find ſufficient pledges for their good abearing, their *weapons* were *taken* away, and delivered to others.

Others give a different account of its riſe, *viz.* That when firſt the kingdom was divided into *wapentakes*; he who was the chief of the diviſion, and whom we now call *high-conſtable*, as ſoon as he entered upon his office, appeared in the field, on a certain day, on horſe-back, with a pike in his hand; and all the chief men of the hundred met him with their lances; who alighting, touched his pike with their lances, as a ſignal they were firmly united to each other, by the touching their weapons — Whence the denomination *wapentake* from the Saxon *waepen*, and *tac*, touching.

WAR, *Bellum*, a conteſt, or difference between princes, ſtates, or large bodies of people; which not being determinable by the ordinary meaſures of juſtice and equity, is referred to the deciſion of the ſword.

Hobbes's great principle is, that the natural ſtate of man, is a ſtate of *warfare*; moſt other politicians hold *war* to be a preternatural, and extraordinary ſtate.

Civil, or *Inteſtine* War, is that between ſubjects of the ſame realm; or between parties in the ſame ſtate. See Civil.

In this ſenſe, we ſay, the *civil wars* of the Romans deſtroyed the republic: the *civil wars* of Granada ruined the power of the Moors in Spain: the *civil wars* in England begun in 1641, ended in the king's death, 1648.

King's War, *Bellum regis.* — At the time when particular lords were allowed to make *war* with one another, to revenge injuries, inſtead of proſecuting them in the ordinary courts of juſtice; the appellation *king's war* was given to ſuch as the king declared againſt any other prince, or ſtate: on which occaſion, the lords were not allowed to make private *war* againſt each other; as being obliged to ſerve the king, with all their vaſſals. See Vassal, &c.

Religious War, is a *war* maintained in a ſtate, on account of religion; one of the parties refuſing to tolerate the other.

Holy War, is that antiently maintained by leagues and croiſades, for the recovery of the holy land. See Croisade.

Art of War. See the article Military *Art.*

Council of War, is an aſſembly of great officers, called by a general or commander, to deliberate with him on enterprizes, and attempts to be made. See Council.

On ſome occaſions, *council of war* is alſo underſtood of an aſſembly of officers, ſitting in judgment on delinquent ſoldiers, deſerters, coward-officers, *&c.*

Habiliments of War.	See the article	Habiliment.
Man of War.		Ship, Rate, *&c.*
Officers of War.		Officers.

Place of War, is a place fortified, on purpoſe to cover and defend a country, and ſtop the incurſion of an enemy's army: or, it is a place wherein are diſpoſed the proviſions of *war*, for an army incamped in the neighbourhood; or whither an army retires into winter quarters. See Place.

WARBLING *of the wings*, in falconry, is when a hawk, after having mantled herſelf, croſſes her wings over her back. See Hawk, and Falcon.

WARD, Warda, *cuſtody* or *keeping.* See Guard.

Ward, is a word uſed in our law-books, in divers ſignifications. — Thus, a *ward*, in London is a part of the city, committed to the ſpecial charge of one of the aldermen of the city. There are 26 wards in London, which are as hundreds, and the pariſhes thereof as towns. See Alderman, Hundred, *&c.*

A Foreſt is alſo divided into *wards*; ſo are moſt of our hoſpitals. See Forest, Woodward, and Hospital. — A priſon in ſometimes alſo called a *ward.* See Gaol.

The heir of the king's tenant, who held by knights-ſervice, or in capite, was alſo called a *ward*, during his non-age. — But this ſort of wardſhip is taken away by the ſtatute, 12 Car. II. cap. 24. See Wards.

Caſtle Ward. See the article Castle.

Ward, Warda, or Wardagium, is alſo uſed in our antient writers, for the cuſtody of a town or caſtle, which the tenants and inhabitants were bound to keep at their own charge. See Wardage.

Warda *Eccleſiarum*, denotes the guardianſhip of churches; which is in the king during vacancies, by reaſon of the regalia, or temporalities. See Regalia, and Temporalities.

WARDAGE, Wardagium, is ſometimes uſed in our antient law-writers, in the ſame ſenſe with *wardpenny.* See Wardpenny.

Sometimes it alſo ſeems to denote a being free from wardſhip.

WARDECORNE, among our antient writers, a duty incumbent on the tenants, to guard the caſtle, by ſounding a horn upon the approach of an enemy; called alſo *cornage.* See Cornage.

WARDEN, *Guardian*, one who has the charge, or keeping of any perſon, or thing, by office. See Guard, and Guardian.

Such is the *warden of the fleet*, the keeper of the fleet priſon; who has the charge of the priſoners there; eſpecially ſuch as are committed from the court of chancery for contempt. See Fleet.

Such alſo are, the *warden* of the fellowſhips, *warden* of the marſhes, *wardens* of peace, *warden* of the weſt marches, *warden* of the foreſt, *warden* of the alnage, *warden* of the king's wardrobe, *&c.* See Guardian; ſee alſo Justice, Wardrobe, *&c.*

Warden, in an univerſity, is the head of a college; anſwering to what in other colleges we call the *maſter* thereof. See University, *&c.*

Warden, or *Lord* Warden *of the cinque-ports*, is the governour of thoſe noted havens; who has the authority of an admiral, and ſends out writs in his own name. See Cinque-*Ports.*

Warden *of the mint*, is an officer, whoſe buſineſs is to receive the gold and ſilver bullion brought in by the merchants; to pay them for it, and overſee the other officers. — He is alſo called *keeper of the exchange*, and *mint.* See Mint.

Church-Wardens.	See the article	Church.
Renter-Warden.		Renter.

WARDER. — *Yeomen warders of the Tower*, are officers, forty in number, who are accounted the king's domeſtic ſervants, and are ſworn by the lord chamberlain: their duty is, to attend priſoners of ſtate, and wait at the gates. See Tower.

Ten of them are uſually upon the day's wait, to take an account of all perſons who come into the tower; to enter their names, and the names of the perſons they go to, in a book, to be peruſed by the conſtable or lieutenant.

WARDFEOH, or Wardfegh, the value of a ward, or heir under age; or the money paid to the lord of the fee, for his redemption.

WARD-HOOK, in gunnery, a rod, or ſtaff, with an iron end, turned ſerpent-wiſe, or like a ſcrew, to draw the wads or ockam out of a gun, when it is to be unloaded.

WARDMOTE, in London, is a court ſo called, which is kept in every ward of the city; anſwering to the *curiata comitia*, in antient Rome. See Mote.

WARD-PENNY, Warpeni, was formerly a cuſtomary due, paid to the ſheriff, or other officer, for maintaining watch and ward. See Penny.

It was payable at the feaſt of S. Martin; and is ſtill paid within the manor of Sutton Colfield in Warwickſhire; and with ſome very ſingular ceremonies.

WARDROBE, a cloſet, or little room adjoining to a bed-chamber; ſerving to diſpoſe and keep a perſon's apparel in; or for a ſervant to lodge in, to be at hand to wait, *&c.*

Wardrobe, in a prince's court, is an apartment wherein his robes, wearing apparel, and other neceſſaries are preſerved; under the care and direction of proper officers.

His majeſty has a *great wardrobe*, a *removing wardrobe*, and divers *ſtanding wardrobes*, belonging to his bed-chamber, in each of his palaces, *viz.* at Whitehall, Kenſington, Windſor, Hampton-Court, and the Tower; each under its reſpective keeper.

The *removing wardrobe* always attends on the king's perſon; as alſo on embaſſadors, at chriſtenings, maſques, plays, *&c.* — It is under the command of the lord chamberlain: the under-officers are, a yeoman, two grooms, and three pages.

The *great wardrobe* is of great antiquity. — Antiently it was kept near puddle-wharf, in a houſe purchaſed for that purpoſe, by king Edward III. but ſince the fire of London, it has been kept in York-buildings.

The maſter or keeper thereof, is an officer of great dignity: high privileges were conferred on him by Hen. VI. King James I. enlarged the ſame, and erected the office into a corporation. See Master.

The officers are, the *maſter* or keeper, his *deputy*, and his *clerk*; beſides ſeveral under-officers; and above ſixty tradeſmen, all ſworn ſervants to the king. See Clerk.

This office is to provide for coronations, marriages, and funerals of the royal family; to furniſh the court with beds, hangings, carpets, *&c.* to furniſh houſes for embaſſadors, at their firſt arrival here; preſents for foreign princes and embaſſadors; furniture for the lord lieutenant of Ireland, and our embaſſadors abroad; robes for the knights and officers of the garter, heralds, perſuivants, miniſters of ſtate, liveries for the officers of the bed-chamber, and other ſervants; liveries for the lord chief juſtices, and barons of the Exchequer; and other officers in thoſe courts: as alſo yeomen, warders, trumpets, kettle-drums, meſſengers, coachmen, grooms, *&c.* with coaches, harneſſes, ſaddles, *&c.* The watermen, game-keepers; linen and lace for the king's perſon; tilts, *&c.* for his barges, *&c.*

WARDS, a court firſt erected by king Henry VIII. and after augmented by him with the office of liveries: but now abſolutely taken away and aboliſhed, by a ſtatute made 12 Car. II. cap. 24.

Ward-staff, the conſtable or watchman's ſtaff.

The manor of Lambourn in Eſſex, is held by ſervice of the *ward-ſtaff, viz.* the carrying a load of ſtraw in a cart with ſix horſes, two ropes, two men in harneſs, to watch the ſaid *ward-ſtaff*, when it is brought to the town of Aibridge, *&c.* Camd. *tit. Eſſex.*

Ward-wite *, is defined by Fleta, as ſignifying a being exempted from the duty of watching. — Others rather take it for a duty paid towards the charge thereof.

* The word is compounded of the Saxon *ward, vigilia,* watch; and *wite,* mulct.

WARECTUM, in antient writings, ſignifies land that has lain long neglected, and untilled.

In antient records, we meet with *tempus warecti,* for the time wherein land lies fallow, or elſe the ſeaſon of fallowing. See Fallow.

WAREN. See the article Warren.

WARMTH. See the article Heat.

WARN, in law, to ſummon a perſon to appear in a court of juſtice. See Summons.

WARNING-*Wheel*, in a clock, is the third or fourth, according to its diſtance from the firſt wheel. See Clock.

WARP, in the manufactures, is the threads, whether of ſilk, wool, linen, hemp, cotton, or the like, that are extended lengthwiſe on the weaver's loom; and acroſs which the workman, by means of his ſhuttle, paſſes the threads of the woof, to form a cloth, ribband, fuſtian, or other matter. See Weaving.

For a woollen ſtuff, *&c.* to have the neceſſary qualities, it is required that the threads of the *warp* be of the ſame kind of wool, and of the ſame fineneſs throughout; that they be ſized with Flanders or parchment ſize, well prepared; and that they be in ſufficient number, with regard to the breadth of the ſtuff to be wrought. See Woof, Cloth, *&c.*

To* Warp *a ſhip, is to hale her to a place, when the wind is wanting, by means of a hawſer, a cable, and an anchor fixed thereto.

WARPENI. See the article Wardpenny.

WARRANT, an act, inſtrument, or obligation, whereby a perſon authorizes another to do ſomething, which he had not otherwiſe a right to do. See Warranty, Guaranty, and Voucher.

Warrant *of Attorney*, is that whereby a man appoints another to do ſometing in his name, and *warrants* his action. See Attorney.

It ſeems to differ from a *letter of attorney*, which paſſes under hand and ſeal of him that makes it, before creditable witneſſes; whereas *warrant of attorney*, in perſonal, mixed, and ſome real actions, is put in of courſe by the attornies for the plaintiffs, or defendants.

Though a *warrant of attorney*, to ſuffer a common recovery by the tenant, or vouchee, is to be acknowledged before ſuch perſons as the commiſſion for the doing thereof directs. See Recovery, &c.

In the court of common pleas, there is a *clerk of the warrants*, who enters all *warrants of attorney* for plaintiff, and defendant. See Clerk.

WARRANTIZANDUM. See the article Summons *ad Warrantizandum.*

WARRANTO. See the article Quo *Warranto.*

WARRANTY, Warrantia, a promiſe, or covenant by deed, made by the bargainer for himſelf and his heirs, to *warrant* and ſecure the bargainee and his heirs, againſt all men, for enjoying the thing agreed on between them. See Voucher.

Such *warranty* paſſes from the ſeller to the buyer; from the feoffer to the feoffee; from him that releaſes, to him that is releaſed from an action real. — The form of it is thus: *Et ego vero præfatus A. & hæredes mei prædictas quinque acras terræ cum pertinentiis ſuis præfato B. hæredibus & aſſignatis ſuis contra omnes gentes* warrantizabimus *in perpetuum, per præſentes.*

Note, under *hæredes*, heirs, are comprized all ſuch as the firſt *warranter*'s lands come to, whether by deſcent, purchaſe, or the like.

Warranty is either *real*, or *perſonal.* — *Real*, when it is annexed to lands and tenements granted for life, *&c.* which, again is either *in deed*, or *in law.* See De Facto, &c.

Perſonal, either reſpects the property of the thing ſold, or the quality of it.

Real warranty, again, in reſpect of the eſtate, is either *lineal*, *collateral*, or *commencing by diſſeiſin.*

Warrantia *Chartæ*, a writ that lies for a perſon who is infeoffed in lands and tenements, with clauſe of *warranty*; and is impleaded in an aſſize, or writ of entry, wherein he cannot vouch, or call to *warranty.* See Voucher.

Warrantia *Diei*, a writ which lies in caſe where a man having a day aſſigned perſonally to appear in court to an action wherein he is ſued, is, in the mean time, by commandment employed in the king's ſervice; ſo that he cannot come at the day aſſigned. — It is directed to the juſtices, ordering them not to find or record him in default.

WARREN, Warenna, a franchiſe, or place privileged; either by deſcription, or grant from the king, to keep beaſts and fowl of *warren* in; as rabbits, hares, partridges, pheaſants, *&c.* See Beast, Game, Hunting, &c.

By a ſtatute 21 Edw. III. a *warren* may lie open, and there is no need of cloſing it in; as there is of a park. See Park, &c.

If any perſon be found an offender in any ſuch *free warren*, he is puniſhable for the ſame at common law. See Free.

***Beaſts of* Warren.** See the article Beasts.

WART, *Verruca*, a little round, hard excreſcence, ariſing on the fleſh, like a pea. See Excrescence.

Warts are more frequent on the hands than any other part. — There are divers ſorts: the moſt uſual are called *porraceæ*; as having heads like leeks, and conſiſting of little threads, reſembling the roots thereof.

Another ſort is called *myrmecia*, which is a little round, callous eminence on the hands of young children; riſing ſuddenly, and diſappearing again. See Myrmecia.

A third ſort is the *acrochordon.* See Acrochordon.

Some phyſicians alſo rank the corns growing on the toes under the claſs of *warts*: which the Latins call *clavi*; becauſe occaſioning ſhooting pains, as if one were pricked with the point of a nail. See Clavus.

Warts, if only rooted in the cutis, are eaſily taken away; but if they ariſe from the tendons underneath, there is ſcarce any extirpating them without great danger. — The juice of chelidon. maſ. or eſula, or dens leonis, or tithymal, frequently applied, takes off *warts.*

Borelli commends water wherein ſal armoniac has been diſſolved: which Dr. Mapletoft, late profeſſor of phyſic at Greſham-College, makes no ſcruple to ſay is the only ſure remedy he knows of in all medicine.

WASHING. See the articles Ablution, Lotion, *&c.*

Waſhing the feet, was a common piece of civility among the Jews, practiſed upon ſtrangers, viſitors, *&c.* at their arrival.

Waſhing the feet of twelve poor people, is an anniverſary ceremony, performed both by the kings of England and France; in commemoration of our Saviour's *waſhing* the feet of his apoſtles.

Arnobius, *adv. Gentes*, Lib. VII. mentions a feaſt in uſe among the antients, called *lavatio matris deûm*, the *waſhing* of the mother of the gods, held on the 30th of March.

Washing *one's hands.* See the article Hand.

Washing *of a ſhip*, in the ſea language, is when all the guns are brought to one ſide; and the men, getting upon the yards, *waſh* her other ſide, and ſcrape her as far as they can reach.

Washing, in painting, is when a deſign drawn with a pen, or crayon, has ſome one colour laid over it with a pencil; as indian ink, biſtre, or the like; to make it appear the more natural, by adding the ſhadows of prominences, apertures, *&c.* and by imitating the particular matters, whereof the thing is ſuppoſed to conſiſt.

Thus, they *waſh* with a pale red, to imitate brick and tyle; with a pale indian blue, to imitate water and ſlate; with green, for trees and meadows; with ſaffron or French berries, for gold and braſs; and with ſeveral colours, for marbles.

Theſe *waſhes* are uſually given in equal teints, or degrees, throughout; which are afterwards brought down, and ſoftened over the lights with fair water, and ſtrengthened with deeper colours for the ſhadows. See Light, and Shadow.

Washings, or Washes, among goldſmiths, coiners, *&c.* are the lotions whereby they recover the particles of gold and ſilver out of the ſweep, *i. e.* aſhes, earths, ſweepings, *&c.*

This is either performed by ſimply *waſhing* them again and again, or by putting them in the *waſhing* mill.

To make one of theſe *waſhes*, they not only gather together the aſhes of the furnaces, and ſweepings of the workhouſes; but they alſo break and pound the old earthen crucibles, and the very bricks whereof the furnaces are built; little particles of gold, *&c.* being found to ſtick to them, by the crackling natural to thoſe metals, when in their laſt degree of heat.

Theſe matters being as well ground, and mixed together, are put in large wooden baſons, where they are *waſhed* ſeveral times, and in ſeveral waters, which run off, by inclination, into troughs underneath; carrying with them the earth, and the inſenſible particles of the metals, and only leaving behind them the larger and more conſiderable ones, which are viſible to the eye, and taken out with the hand without more trouble.

To get out the finer parts, gone off with the earth, they uſe quickſilver, and a *waſhing* mill. — This mill conſiſts of a large wooden trough, at bottom of which are two metalline parts, ſerving as mill-ſtones; the lower being convex, and the upper, which is in form of a croſs, concave.

A-top is a winch, placed horizontally, which turns the upper piece round; and at bottom a bung, to let out the water and earth, when ſufficiently ground.

To have a *waſh*, then, the trough is filled with common water; into which they caſt thirty or forty pounds of quickſilver, and two or three gallons of the matter remaining from the firſt lotion. — Then turning the winch, they give motion to the upper mill-ſtone; which grinding the matter and the quickſilver violently together, the particles of gold and ſilver become the more eaſily amalgamated therewith: This work they continue for two hours; when opening the bung, the water and earths run out, and a freſh quantity is put in. See AMALGAMATION, &c.

The earths are uſually paſſed thus through the mill three times; and the ſame quantity of mercury uſually ſerves all the three times. — When there is nothing left in the mill but the mercury, united with the gold or ſilver which it has amalgamated, they take it out, and *waſhing* it in divers waters, they put it in a ticken bag, and lay it in a preſs, to ſqueeze out the water, and the looſe quickſilver: the remaining quickſilver they evaporate by fire, in a retort, or an alimbeck. The metal which remains, they refine with lead, or part it with aqua fortis. See GOLD, and SILVER; ſee alſo LAVATORY.

WASSAILE, or **WASSEL**, a feſtival ſong, ſung heretofore from door to door, about the time of Epiphany. See WASSEL-*Bowl*.

WASSEL-*Bowl*, or **WASTEL-*Bowl***, was a large cup or bowl of ſilver or wood, wherein the Saxons, at their public entertainments, drank a health to one another, in the phraſe *was-heal*; that is, *health be to you*.

This *waſſel-bowl*, ſeems plainly to be meant by the word *vaſtellum*, in the lives of the abbots of S. Albans, by Matt. Paris; where he ſaith, *abbas ſolus prandebat ſupremus in refectorio* “ *habens* vaſtellum: “ He had ſet by him the *waſſel-bowl*, “ to drink an health to the fraternity; or the poculum chari- “ tatis.

And hence the cuſtom of going a *waſſelling*, ſtill uſed in Suſſex, and ſome other places, ſeems to have taken its name.

WAST, or **WASTE**, *Vaſtum*, in law, has divers ſignifications. — 1°. It is uſed for a ſpoil, made either in houſes, woods, lands, &c. by the tenants for life, or for years, to the prejudice of the heir, or of him in reverſion, or remainder. — Upon this, the writ of *waſte* is brought for recovery of the thing *waſted*, and treble damages. See IMPEACHMENT.

WASTE *of the foreſt*, is, properly, where a man cuts down his own woods within the foreſt, without licenſe of the king, or lord-chief-juſtice in eyre. See FOREST, and PURLIEU.

WASTE, is alſo taken for thoſe lands which are not in any man's occupation; but lie common. See COMMON.

They ſeem to be ſo called, becauſe the lord cannot make ſuch profit of them as of his other lands; by reaſon of the uſe others have thereof, for paſſing to and fro. — Upon this none may build, cut down trees, dig, &c. without the lord's licenſe.

Year Day and **WASTE**. See YEAR *Day and Waſte*.

WASTE *of a ſhip*, is that part of her between the main-maſt, and the fore-maſt. See SHIP, and MAST.

WASTE-BOARDS, are boards ſometimes ſet upon the ſide of a boat, or other veſſel, to keep the ſea from breaking into her.

WATCH, *Guet*, a perſon poſted as a ſpy in any place, to have an eye thereto, and give notice of what paſſes. See CENTINEL, SENTRY, &c.

WATCH, is alſo uſed for a *corps de garde* poſted at any paſſage; or a company of guards who go on the patrol. See GUARD. — Some officers are exempted from *watch*, and guard.

In the ſame ſenſe they ſay, *night-watch*, guet de nuit: *watch-word*, mot de guet: *royal-watch*, *city-watch*.

Chevalier de guet, is a name given by the French, to the officer who commands the *royal-watch*, &c.

WATCH, at ſea, ſignifies a meaſure, or ſpace of four hours; becauſe half the ſhip's crew *watch*, and do duty in their turns ſo long at a time.

The ſhip's company is divided into two parts, the *larboard-watch*, and the *ſtarboard-watch*. — The maſter of the ſhip commands the latter, and the chief mate the former.

Sometimes when a ſhip is in harbour, they *watch* but a *quarter-watch*, as they call it; that is, but a quarter of the company *watch* at a time.

The *watch-glaſs*, being four hours, is uſed at ſea to ſhift or change their *watches*. — There are alſo *half-watch* hour-glaſſes; minute and half-minute glaſſes; by which laſt they count the knots when they heave the log, in order to find the ſhip's way. See LOG-*Line*, and KNOT.

Death-**WATCH**. See the article DEATH.

WATCH, is alſo uſed for a ſmall portable movement, or machine, for the meaſuring of time; having its motion regulated by a ſpiral ſpring. See WATCH-WORK.

Watches, ſtrictly taken, are all ſuch movements as ſhew the parts of time; as clocks are ſuch as publiſh it, by ſtriking on a bell, &c. But, commonly, the name *watch* is appropriated to ſuch as are carried in the pocket; and *clock* to the large movements, whether they ſtrike the hour, or not. See CLOCK, and MOVEMENT.

Spring, or *Pendulum* **WATCHES**, ſtand pretty much on the ſame principle with pendulum clocks; whence their denomination. — If a pendulum, deſcribing little arches of a circle, make vibrations of unequal lengths, in equal times; it is by reaſon it deſcribes the greater with a greater velocity. For the ſame reaſon, a ſpring put in motion, and making greater or leſs vibrations, as it is more or leſs ſtiff, and as it has a greater or leſs degree of motion given it, performs them nearly in equal times. — Hence, as the vibrations of the pendulum had been applied to large clocks, to rectify the inequality of their motions; ſo, to correct the uneqal motions of the balance of *watches*, a ſpring is added; by the iſochroniſm of whoſe vibrations, the correction is to be effected. See PENDULUM.

The ſpring is uſually wound into a ſpiral; that, in the little compaſs allotted it, it may be as long as poſſible; and may have ſtrength enough, not to be maſtered and dragged about, by the inequalities of the balance it is to regulate.

The vibrations of the two parts, *viz.* the ſpring and balance, ſhould be of the ſame length; only ſo adjuſted, as that the ſpring, being the more regular in the length of its vibrations than the balance, may, on occaſion, communicate its regularity thereto. See SPRING.

The invention of ſpring, or *pocket-watches*, is owing to the felicity of the preſent age. — It is true, we find mention made of a *watch* preſented to Charles V. in the hiſtory of that prince: but this, in all probability, was no more than a kind of clock to be ſet on a table; ſome reſemblance whereof, we have ſtill remaining in the antient pieces made before the year 1670.

In effect, it is between Dr. Hooke, and M. Huygens, that the glory of this excellent invention lies: but to which of them it properly belongs, is greatly diſputed; the Engliſh aſcribing it to the former; and the French, Dutch, &c. to the lattter.

Mr. Derham, in his *Artificial Clockmaker*, ſays roundly, that Dr. Hooke was the inventor; and adds, that he contrived various ways of regulation. — One way was with a loadſtone. — Another with a tender ſtreight ſpring, one end whereof played backwards and forwards with the balance; ſo that the balance was to the ſpring, as the bob to a pendulum; and the ſpring as the rod thereof. — A third method was with two balances, of which there were divers ſorts; ſome having a ſpiral ſpring to the balance for a regulator, and others without.

But the way that prevailed, and which continues in mode, was with one balance, and one ſpring running round the upper part of the verge thereof. Though this has a diſadvantage, which thoſe with two ſprings, &c. were free from; in that a ſudden jerk, or confuſed ſhake, will alter its vibrations, and put it in an unuſual hurry.

The time of theſe inventions was about the year 1658; as appears, among other evidences, from an inſcription on one of the double balance *watches*, preſented to king Charles II. *viz.* Rob. Hooke Inven. 1658. T. Tompion fecit, 1675.

The invention preſently got into reputation, both at home and abroad; and two of them were ſent for by the dauphin of France.

Soon after this, M. Huygens's *watch* with a ſpiral ſpring got abroad, and made a great noiſe in England, as if the longitude could be found by it. — It is certain, however, that his invention was later than the year 1673, when his book *de Horol. Oſcillat.* was publiſhed; wherein he has not one word of this, though he has of ſeveral other contrivances in the ſame way.

One of theſe the lord Brouncker ſent for out of France, where M. Huygens had got a patent for them. — This *watch* agreed with Dr. Hooke's, in the application of the ſpring to the balance; only M. Huygens's had a longer ſpiral ſpring, and the pulſes and beats were much ſlower. The balance, inſtead of turning quite round, as Dr. Hooke's, turns ſeveral rounds every vibration.

Mr. Derham ſuggeſts, that he has reaſon to doubt M. Huygens's fancy firſt was ſet to work, by ſome intelligence he might have of Dr. Hooke's invention, from Mr. Oldenburg, or ſome other of his correſpondents in England: tho' Mr. Oldenburg vindicates himſelf againſt that charge, in *Philoſophical Tranſactions*, N°. 118, and 129.

Huygens invented divers other kinds of *watches*, ſome of them without any ſtring or chain at all; which he called, particularly, *pendulum watches*.

As it was in England that *watches* had their firſt riſe; ſo it is there, too, they have arrived at their greateſt perfection. — Witneſs that exceeding value put on an Engliſh *watch* in all foreign countries, and that vaſt demand made for them.

M. Savary, in his *Diction. de commerce*, pretends to match the French *watchmakers* againſt the Engliſh. — He aſſerts, “ That if the Engliſh be in any condition to diſpute it with “ them, they owe it entirely to the great number of French “ workmen, who took ſhelter here upon the revocation of “ the edict of Nants.” He adds, “ That three fourths of “ the *watches* made in England, are the work of French- “ men.” — From what authorities he ſays this, we know not: but it need not be told Engliſhmen that it is falſe; there not being one French name, that we know of, among all our famed *watchmakers:* nor, in the body of *watchmakers*, is there one eighth part French.

It is certain the French people prefer our *watches* vaſtly to their own; inſomuch, that to have them with the more eaſe, a number of Engliſh workmen were invited over in 1719, and eſtabliſhed with great countenance at Verſailles, under the direction of the famous Mr. Law. — But the eſtabliſhment, though every thing promiſed well for it, and the French *watch* and clockmakers ſeemed undone by it, fell to the ground in leſs than a year's time. — M. Savary imputes its fall, intirely, to that ſtrong prejudice of the French people, in behalf of the Engliſh workmen, and to the opinion that the *watches* did not come from England. But the truth is, the workmen ſent over being moſt of them men of looſe characters, grew diſſolute, quarrelled with the prieſts, inſulted the magiſtrates, and were diſmiſſed, of neceſſity.

Striking WATCHES, are ſuch, as beſides the proper *watch*-part, for meaſuring of time, have a clock-part, for ſtriking the hours, *&c.*

Theſe are real clocks; only moved by a ſpring inſtead of a weight. — Properly ſpeaking, they are called *pocket-clocks.* See CLOCK.

Repeating WATCHES, are ſuch as by pulling a ſtring, *&c.* do repeat the hour, quarter, or minute, at any time of the day or night.

This repetition was the invention of Mr. Barlow, and firſt put in practice by him in larger movements, or clocks, about the year 1676. — The contrivance ſtreight ſet the other artiſts to work, who ſoon contrived divers ways of effecting the ſame. — But its application to pocket-*watches*, was not known before king James the ſecond's reign; when the ingenious inventor abovementioned, having directed Mr. Thompſon to make a *repeating watch*, was ſoliciting a patent for the ſame.

The talk of a patent engaged Mr. Quare to reſume the thoughts of a like contrivance, which he had had in view ſome years before: he now effected it; and being preſſed to endeavour to prevent Mr. Barlow's patent, a *watch* of each kind was produced before the king and council; upon trial of which, the preference was given to Mr. Quare's.

The difference between them was, that Barlow's was made to repeat, by puſhing in two pieces on each ſide the *watch*-box; one of which repeated the hour, and the other the quarter: whereas Quare's was made to repeat by a pin that ſtuck out near the pendant; which being thruſt in, (as now it is done by thruſting in the pendant itſelf) repeated both the hour and quarter with the ſame thruſt. See WATCHWORK.

WATCHING, WAKEFULNESS, *inſomnia*, among phyſicians, denotes a diſorder whereby a perſon is diſabled from going to ſleep. See SLEEP.

It is occaſioned by a continual and exceſſive motion of the animal ſpirits in the organs of the body, whereby thoſe organs are prepared to receive, readily, any impreſſions from external objects, which they propagate to the brain; and furniſh the ſoul with divers occaſions of thinking. See SPIRIT.

This extraordinary flux of ſpirits may have two cauſes: for, 1°. The ſenſible objects may ſtrike the organ with too much force. In which caſe, the animal ſpirits being violently agitated, and thoſe agitations continued by the nerves to the brain, they give a like motion to the brain itſelf; the neceſſary conſequence of which, is, that the animal muſt wake. Thus, a loud ſhriek, pains, head-ach, gripes, coughing, *&c.* cauſe *waking*. — Add, that the ſoul's being oppreſſed with cares, or deeply engaged in thinking, contributes to the ſame: ſince, as it acts by the miniſtry of the ſpirits, any cares or meditations that keep thoſe in motion, muſt produce *watchfulneſs*. — Of this kind are thoſe inveterate *wakings* of melancholic perſons; ſome of whom have been known to paſs three or four weeks without a wink of ſleep. See MELANCHOLY.

2°. The other cauſe is in the ſpirits themſelves; which have ſome extraordinary diſpoſition to receive motion, or to perſiſt in it: as, from their too great heat, or that of the brain in fevers, *&c.* — Hence it is, that the diſorder is moſt frequent in ſummer, in the heat of youth, *&c.*

Long faſting has the ſame effect; the want of food ſubtilizing the ſpirits, and drying the brain. — The ſame is likewiſe an ordinary ſymptom in old age, by reaſon the pores of the brain, and the nerves, having been much widened by the continual paſſage of ſpirits, for a great number of years, the ſpirits now paſs and repaſs through them with too much eaſe; and need not any extraordinary motion to keep the mind awake. See HABIT.

There are inſtances of *waking* for forty-five nights ſucceſſively: and we even read of a melancholy perſon, who never ſlept once in fourteen months. — Such *watchings* uſually degenerate into madneſs. See NARCOTICS, and OPIATE.

WATCH-WORK, is that part of the movement of a clock or watch, which is deſigned to meaſure, and exhibit the time on a dial-plate; in contradiction to that part which contributes to the ſtriking of the hour, *&c.* which is called *clock-work*. See WATCH, and CLOCKWORK.

The ſeveral members of the *watch*-part, are, 1°, The *ballance*, conſiſting of the *rim*, which is its circular part; ſee BALLANCE; and the *verge*, which is its ſpindle; to which belong the two *pallets* or *leves*, that play in the teeth of the crown-wheel.

2°. The *potence*, or *pottance*, which is the ſtrong ſtud in pocket-watches, whereon the lower pivot of the verge plays, and in the middle of which, one pivot of the balance-wheel plays; the bottom of the pottance is called the *foot*, the middle part the *noſe*, and the upper part the *ſhoulder*.

3°. The *cock*, which is the piece covering the balance.

4°. The *regulator*, or *pendulum ſpring*, which is the ſmall ſpring in the new pocket-*watches*, underneath the balance. See REGULATOR.

5°. The *pendulum*; whoſe parts are, the *verge*, *pallets*, *cocks*, and the *bob*.

6°. The *wheels*, which are the *crown-wheel*, in pocket-pieces, and *ſwing-wheel* in pendulums; ſerving to drive the balance or pendulum. See CROWN-WHEEL.

7°. The *contrate wheel*, which is that next the crown-wheel, *&c.* and whoſe teeth and hoop lie contrary to thoſe of other wheels; whence the name.

8°. The *great*, or *firſt wheel*; which is that the fuſy, *&c.* immediately drives: after which are the *ſecond wheel*, *third wheel*, &c.

Laſtly, between the frame and dial-plate, are the *pinion of report*, which is that fixed on the arbor of the great wheel; and ſerves to drive the *dial-wheel*, as that ſerves to carry the *hand*.

Theory, and Calculation of WATCH-WORK. — Preliminaries neceſſary to the calculating of the *watch*-part of a movement, are laid down under the articles BEATS, MOVEMENT, and CLOCKWORK; ſee alſo TURN.

Preliminary rules, common to the calculation of all movements, the *clock* as well as the *watch*-parts; ſee under the article MOVEMENT. — Particular rules for the *ſtriking part*; ſee under the article CLOCKWORK. — Thoſe for the *watch*-part we have from the rev. Mr. Derham, as follow.

1°. The ſame motion, it is evident, may be performed either by one wheel, and one pinion, or many wheels, and many pinions; provided the number of turns of all the wheels bear the proportion to all the pinions, which that one wheel bears to its pinion: or, which is the ſame thing, if the number, produced by multiplying all the wheels together, be to the number produced by multiplying all the pinions together, as that one wheel, to that one pinion. — Thus ſuppoſe you had occaſion for a wheel of 1440 teeth, with a pinion of 28 leaves; you may make it into three wheels of 36, 8, and 5, and three pinions of 4, 7, and 1. For the three wheels, 36, 8, and 5, multiplied together, give 1440 for the wheels; and the three pinions 4, 7, and 1, multiplied together, give 28 for the pinions. — Add, that it matters not in what order the wheels and pinions are ſet, or which pinion runs in which wheel; only for contrivance-ſake, the biggeſt numbers are commonly put to drive the reſt.

2°. Two wheels, and pinions of different numbers, may perform the ſame motion. — Thus, a wheel of 36, drives a pinion of 4, the ſame as a wheel of 45, a pinion of 5; or a wheel of 90, a pinion of 10. — The turns of each being 9.

3°. If in breaking the train into parcels, any of the quotients ſhould not be liked; or if any other two numbers to be multiplied together, are deſired to be varied; it may be done by this rule. — Divide the two numbers, by any other two numbers which will meaſure them; multiply the quotients by the alternate diviſors; the product of theſe two laſt numbers found, will be equal to the product of the two numbers firſt given. — Thus, if you would vary 36 times 8, divide theſe by any two numbers which will evenly meaſure them: ſo, 36 by 4, gives 9; and 8 by 1, gives 8: now, by the rule, 9 times 1 is 9, and 8 times 4, 32; ſo that for 36×8, you have 32×9; each equal to 288. If you divide 36 by 6, and 8 by 2, and multiply as before, you have $24 \times 12 = 36 \times 8 = 288$.

4°. If a wheel and pinion fall out with croſs numbers, too big to be cut in wheels, and yet not to be altered by theſe rules; in ſeeking for the pinion of report, find two numbers of the ſame, or a near proportion, by this rule: as either of the two given numbers, is to the other, ſo is 360, to a fourth. Divide that fourth number, as alſo 360, by 4, 5, 6, 8, 9, 10, 12, 15, (each of which numbers exactly meaſures 360) or by any of thoſe numbers that brings a quotient neareſt an integer. — As ſuppoſe you had 147 for the wheel, and 170 for the pinion; which are too great to be cut into ſmall wheels, and yet cannot be reduced into leſs, as having no other common meaſure but unity: ſay, as 170 : 147 :: 360 : 311. Or, as 147 : 170 :: 360 : 416. Divide the fourth number, and 360 by one of the foregoing numbers; as 311, and 360 by 6, it gives 52 and 60; divide them by 8, you have 39, and 45: and, if you divide 360 and 416, by 8, you have 45 and 52 exactly. Wherefore, inſtead of the two numbers 147, and 170, you may take 52, and 60; or 39 and 45, or 45 and 52, &c.

5°. To come to practice in calculating a piece of *watch-work*, firſt pitch on the train or beats of the balance in an hour; as, whether a ſwift one, of about 20000 beats, (the uſual train of a common 30 hour *pocket-watch*) or a ſlower, of about 16000, (the train of the new pendulum *pocket-watches*) or any other train. — Next, reſolve on the number of turns the fuſy is intended to have, and the number of hours the piece is to go: ſuppoſe, *e. gr.* 12 turns, and to go 30 hours, or 192 hours, (*i. e.* 8 days) &c. Proceed now to find the beats of the balance or pendulum in one turn of the fuſy, by the direction given under the word BEATS. — Thus in numbers; 12 : 16 : : 20000 : 26666. Wherefore, 26666 are the beats in one turn of the fuſy, or great wheel, and are equal to the quotients of all the wheels into the balance multiplied together. — Now this number is to be broken into a convenient parcel of quotients; which is to be done thus: firſt, halve the number of beats, *viz.* 26666, and you have 13333; then pitch on the number of the crown-wheel, ſuppoſe 17: divide 13333 by 17, and you have 784 for the quotient (or turns) of the reſt of the wheels and pinions; which being too big for one or two quotients, may be beſt broken into three. — Chuſe therefore three numbers; which, when multiplied all together continually, will come neareſt 784: as ſuppoſe 10, 9, and 9, multiplied continually, gives 810, which is ſomewhat too much; therefore try again other numbers, 11, 9, and 8: theſe drawn one into another continually, produce 792; which is as near as can be, and convenient quotients. — Having thus contrived the piece from the great wheel to the balance; but the numbers not falling out exactly, as you firſt propoſed, correct the work thus: firſt, (by the direction given under the word BEATS) multiply 792, the product of all the quotients pitched upon, by 17, (the notches of the crown-wheel) the product is 13464, which is half the number of beats in one turn of the fuſy; then (by a rule given under the word BEATS) find the true number of beats in an hour. — Thus, 16 : 12 : : 13464 : 10098; which is half the beats in an hour. — Then find what quotient is to be laid upon the pinion of report, (by the rule given under that word.) — Thus, 16 : 12 : : 12 : 9, the quotient of the pinion of report. — Having thus found your quotients, it is eaſy to determine what numbers the pinions ſhall have; for, chuſing what numbers the wheels ſhall have, and multiplying the pinions by their quotients, the produce is the number for the wheels. — Thus, the number of the pinion of report is 4, and its quotient is 9; therefore the number for the dial-wheel muſt be 4 × 9, or 36: ſo the next pinion being 5, its quotient 11, therefore the great wheel muſt be 5 × 11 = 55; and ſo of the reſt.

4) 36 (9
5) 55 (11
5) 45 (9
5) 40 (8
17

Such is the method of calculating the numbers of a 16 hour *watch*. — Which *watch* may be made to go longer, by leſſening the train, and altering the pinion of report. — Suppoſe you would conveniently ſlacken the train to 16000; then, by the rule given under the word BEATS, ſay, As $\frac{1}{2}$ 16000, or 8000 : 13464 : : 12 : 20. So that this *watch* will go 20 hours. — Then for the pinion of report, ſay, (by the rule given under that word) As 20 : 12 : : 12 : 7. So that 7 is the quotient of the pinion of report. And as to the numbers, the operation is the ſame as before; only the dial-wheel is but 28, for its quotient is altered to 7. — If you would give numbers to a *watch* of about 10000 beats in an hour, to have 12 turns of the fuſy, to go 170 hours, and 17 notches in the crown-wheel: the work is the ſame, in a manner, as in the laſt example; and conſequently thus: As 12 : 170 : : 10000 : 141666, which fourth number is the beats in one turn of the fuſy; its half, 70833, being divided by 17, gives 4167 for the quotients: and becauſe this number is too big for three quotients, therefore chuſe four, as 10, 8, 8, 6 $\frac{3}{5}$; whoſe product into 17 makes 71808, nearly equal to half the true beats in one turn of the fuſy. — Then ſay, As 170 : 12 : : 71808 : 5069, which is half the true train of your *watch*. — And again, 170 : 12 : : 12 : $\frac{144}{170}$, which expreſſes the pinion of report, and the number of the dial-wheel. — But theſe numbers being too big to be cut in ſmall wheels, they muſt be varied by the fourth rule, above, thus:

As 144 : 170 : : 360 : 425;
Or 170 : 144 : : 360 : 305.

Then dividing 360, and either of theſe two fourth proportionals, (as directed by the rule;) ſuppoſe by 15, you will have $\frac{24}{28}$, or $\frac{20}{24}$; then the numbers of the whole movement will ſtand as in the margin.

4) 28 (7
5) 55 (11
5) 45 (9
5) 40 (8
17

24) 20 ($\frac{20}{24}$
6) 60 (10
6) 48 (8
5) 40 (8
5) 33 (6$\frac{3}{5}$
17

Such is the calculation of ordinary *watches*, to ſhew the hour of the day: in ſuch as ſhew minutes, and ſeconds, the proceſs is thus.

1°. Having reſolved on the beats in an hour; by dividing the deſigned train by 60, find the beats in a minute; and accordingly, find proper numbers for the crown-wheel, and quotients, ſo as that the minute-wheel ſhall go round once in an hour, and the ſecond wheel once a minute.

Suppoſe, *e. gr.* you ſhould chuſe a pendulum of ſix inches to go eight days, with 16 turns of the fuſy; a pendulum of 6 inches vibrates 9368 in an hour; and conſequently, dividing it by 60, gives 156, the beats in a minute. Half theſe ſums are 4684, and 78. Now, the firſt work is to break this 78 into a good proportion, which will fall into one quotient, and the crown-wheel. Let the crown-wheel have 15 notches, then 78, divided by 15, gives 5; ſo a crown-wheel of 15, and a wheel and pinion, whoſe quotient is 5, will go round in a minute to carry a hand to ſhew ſeconds. — For a hand to go round in an hour to ſhew minutes; becauſe there are 60 minutes in an hour, it is but breaking 60 into good quotients, (ſuppoſe 10 and 6, or 8 and 7$\frac{1}{2}$ &c.) and it is done. — Thus, 4684 is broken, as near as can be, into proper numbers. — But ſince it does not fall out exactly into the above-mentioned numbers, you muſt correct, (as before directed) and find the true number of beats in an hour, by multiplying 15 by 5, which makes 75; and 75 by 60, makes 4500, which is half the true train. — Then find the beats in one turn of the fuſy; thus, 16 : 192 : : 4500 : 54000; which laſt is half the beats in one turn of the fuſy. — This 54000 being divided by 4500, (the true numbers already pitched on) the quotient will be 12; which not being too big for a ſingle quotient, needs not be divided into more; and the work will ſtand as in the margin. — As to the hour-hand, the great wheel, which performs only one revolution in 12 turns of the minute-wheel, will ſhew the hour; or it may be done by the minute-wheel.

8) 40 (5
15

8) 64 (8
8) 60 (7$\frac{1}{2}$
8) 40 (5
15

9) 108 (12
8) 64 (8
8) 60 (7$\frac{1}{2}$
8) 40 (5
15

WATER, *Aqua*, in phyſics, a ſimple, fluid, and liquid body; reputed the third of the four vulgar elements. See ELEMENT.

Sir Iſaac Newton defines *water* to be a fluid ſalt, volatile, and void of taſte: but this definition Boerhaave ſets aſide; inaſmuch as *water* is a menſtruum, or diſſolvent of ſalts and ſaline bodies, which does not agree with the notion of its being a ſalt itſelf; inaſmuch as we do not know of any ſalt that diſſolves another. See SALT.

Whether water *be originally fluid?* — Though *water* be defined a *fluid*, it is a point controverted among philoſophers, whether fluidity be its natural ſtate, or the effect of violence: we ſometimes find it appear in a fluid, and ſometimes in a ſolid form; and as the former in our warmer climate is the more uſual, we conclude it the proper one, and aſcribe the other to the extraneous action of cold. — Boerhaave, however, aſſerts the contrary, and maintains *water* to be of the cryſtalline kind; ſince, wherever a certain degree of fire is wanting to keep it in fuſion, it readily grows into a hard glebe, under the denomination of *ice*. See ICE.

Mr. Boyle is much of the ſame ſentiment. — Ice, he obſerves, is commonly reputed to be *water* brought into a preternatural ſtate by cold: but, with regard to the nature of things, and ſetting aſide our arbitrary ideas, it might as juſtly be ſaid, That *water* is ice preternaturally thawed by heat. — If it be urged that ice, left to itſelf, will, upon the removal of the freezing agents, return to *water*; it may be anſwered, that, not to mention the ſnow and ice which lie all ſummer long on the Alps, and other high mountains, even in the torrid zone, we have been aſſured, that, in ſome parts of Siberia, the ſurface of the ground continues more months of the year frozen by the natural temperature of the climate, than thawed by the heat of the ſun; and a little below the ſurface of the ground, the *water* which chances to be lodged in the cavities there, continues in a ſtate of ice all the year round: ſo that when, in the heat of ſummer, the fields are covered with corn, if you dig a foot or two deep, you ſhall find ice, and a frozen ſoil.

No pure water *in all nature.* — *Water*, if it could be had alone, and pure, Boerhaave argues, would have all the requiſites of an element, and be as ſimple as fire; but there is no expedient hitherto diſcovered for making it ſuch. — *Rain-water*, which ſeems the pureſt of all thoſe we know of, is replete with infinite exhalations of all kinds, which it imbibes from the air: ſo that filtered and diſtilled a thouſand times, there ſtill remain fæces. — Further, the *rain-water* gathered from the roofs of houſes, is a lixivium of tyles, ſlate, or the like; impregnated with the dungs and fæces of the animals, birds, &c. depoſited thereon; and the exhalations of numerous other things. — Add, that all the *rain-water* gathered in cities, muſt at leaſt be ſaturated with the ſmoke of a thouſand chimneys, and the various effluvia of numbers of perſons, &c. — Beſide, that there is fire contained in all *water*; as appears from its fluidity, which is owing to fire alone. See FIRE.

As what is in the air neceſſarily mixes itſelf with *water*, it hence appears impoſſible to have ſuch a thing as pure *water*. — If you percolate it through ſand, or ſqueeze it through pumice, or paſs it through any other body of the like kind, you will always have ſalt remaining. — Nor can diſtillation render it pure; ſince it leaves air therein, which abounds in corpuſcles of all ſorts. See AIR.

The pureſt of all *waters* we can any way arrive at, is that diſtilled from ſnow, gathered in a clear, ſtill, pinching night, in ſome very high place; taking none but juſt the outer or ſuperficial part thereof. — By a number of repeated diſtillations, the greateſt part of the earth, and other fæces, may be ſeparated hereform: and this is what we muſt be contented to call *pure water*.

Mr. Boyle, indeed, relates, that a friend of his, by diſtilling a quantity of *water* an hundred times, found, at length, that he had got ſix tenths of the firſt quantity in earth: Whence he concludes, that the whole *water*, by further proſecuting the operation, might be converted into earth. See EARTH.

But it ſhould be conſidered, that *water* cannot be removed, or poured into a veſſel, without mixing ſome duſt therewith; ſo, neither can the luting of the veſſel be diſtilled, without loſing ſomething every time. — Boerhaave, therefore, rather concludes, that the *water* thus often diſtilled, might acquire ſtill new earth from the duſt floating in the air, and the inſtruments employed in the operation.

That author aſſures us, that after diſtilling ſome very pure *water*, by a gentle fire, the ſpace of four months, it appeared perfectly pure; and yet, leaving it to reſt in veſſels exactly cloſed, it would conceive a ſlender kind of weedy matter, ſomewhat like the ſtamina of plants, or the little tufts of a mucilage: yet Schottus ſaw *water*, in Kircher's muſæum, that had been kept in a veſſel, hermetically ſealed, upwards of fifty years; yet ſtill remained clear and pure, and ſtood to the ſame heighth in the veſſel as at firſt, without the leaſt ſign of ſediment.

Boerhaave adds, that he is convinced nobody ever ſaw a drop of pure *water*; that the utmoſt of its purity known, only amounts to its being free from this or that ſort of matter: and that it can never, for inſtance, be quite deprived of ſalt; ſince air will always accompany it, and air has always ſalt. See AIR, and ATMOSPHERE.

Water *in all places and bodies.* — *Water* ſeems to be diffuſed every where, and to be preſent in all ſpace where there is matter. — Not a body in all nature but will yield *water*: it is even aſſerted, that fire itſelf is not without *water*.—A ſingle grain of the moſt fiery ſalt, which in a moment's time will penetrate through a man's hand, readily imbibes half its weight of *water*, and melts, even in the drieſt air imaginable. — Thus, ſalt of tartar, placed near the hotteſt fire, will attract or imbibe *water*; and, by that means, increaſe conſiderably its weight, in a ſmall time: ſo, in the drieſt ſummer's day, a pewter veſſel with ice in it, brought up from ſome cold ſubterraneous place, into the hotteſt room, will immediately be covered over with little drops of *water*, gathered from the contiguous air, and condenſed by the coldneſs of the ice.

It is ſurprizing to conſider the plenteous ſtock of *water* which even dry bodies afford. — Oil of vitriol, being expoſed a long time to a violent fire, to ſeparate all the *water*, as much as poſſible, from the ſame; will, afterwards, by only ſtanding a few minutes in the air, contract freſh *water* ſo faſt, as ſoon to afford it as plenteouſly as at firſt. — Hartſhorn, kept forty years, and turned as hard and dry as any metal; ſo, that if ſtruck againſt a flint, it will yield ſparks of fire; yet, being put into a glaſs veſſel, and diſtilled, will afford one eighth part of its quantity of *water*. — Bones dead and dried twenty-five years, and thus become almoſt as hard as iron; yet, by diſtillation, have afforded half their weight of *water*. — And the hardeſt ſtones, ground and diſtilled, do always diſcover a portion thereof.

Eels, by diſtillation, yielded Mr. Boyle ſome oil, ſpirit, and volatile ſalt, beſides the caput mortuum; yet all theſe were ſo diſproportionate to the *water*, that they ſeemed to have been nothing but that coagulated: the ſame ſtrangely abounds in vipers, though eſteemed very hot in operation; and will, in a convenient air, ſurvive, for ſome days, the loſs of their heads and hearts. — Human blood itſelf, as ſpirituous and elaborate a liquor as it is reputed, ſo abounds in *water*, that out of ſeven ounces and an half, the ſame author, by diſtillation, drew near ſix of phlegm; before ever any of the other principles began to riſe. See PHLEGM.

Whether water *be the common matter of all bodies?* — From conſiderations of this kind, Thales, and ſome other philoſophers, have been led to hold, that all things were made of *water*: which opinion, probably, had its riſe from the writings of Moſes, where he ſpeaks of the ſpirit of God moving upon the face of the *waters*. — But Mr. Boyle does not conceive the *water* here mentioned by Moſes as the univerſal matter, to be our elementary *water*: we need only ſuppoſe it an agitated congeries of a great variety of ſeminal principles, and of other corpuſcles fit to be ſubdued and faſhioned by them; and it may yet be a body fluid like *water*, in caſe the corpuſcles it was made up of were, by their creator, made ſmall enough, and put into ſuch an actual motion, as might make them roll, and glide eaſily over one another. — However, Baſil Valentine, Paracelſus, Van Helmont, Sendivogius, and others, have maintained the ſame principle, *viz.* that *water* is the elemental matter, or ſtamen of all things, and ſuffices alone for the production of all the viſible creation. — Thus Sir Iſaac Newton, "All birds, beaſts, and fiſhes, inſects, trees, and vegetables, with their ſeveral parts, do grow out of *water*, and *watery* tinctures, and ſalts; and, by putrefaction, return again to *watery* ſubſtances."

Helmont endeavours to prove this doctrine from an experiment; wherein, burning a quantity of earth, till all the oil was conſumed, and then mixing it up with *water*, to draw out all the ſalt; and puting this earth, thus prepared, into an earthen pot, which nothing but *rain-water* could enter; yet a willow, planted therein, grew up to a conſiderable heighth and bulk, without any ſenſible diminution of the earth: whence he concluded, that the *water* was the only nutriment of the vegetable kind, as vegetables are of the animal. — The ſame thing is inferred by Mr. Boyle, from a parallel experiment: and the whole is countenanced by Sir Iſaac Newton, who obſerves, that *water*, ſtanding a few days in the open air, yields a tincture; which, like that of malt, by ſtanding longer, yields a ſediment, and a ſpirit; but before putrefaction, is fit nouriſhment for animals and vegetables.

But Dr. Woodward endeavours to ſhew the whole a miſtake: *water* containing extraneous corpuſcles, ſome of theſe, he ſhews, are the proper matter of nutrition; the *water* being ſtill found to afford ſo much the leſs nouriſhment, the more it is purified by diſtillation. — Thus, a plant in diſtilled *water* will not grow ſo faſt as in *water* not diſtilled; and if the *water* be diſtilled three or four times over, the plant will ſcarce grow at all, or receive any nouriſhment from it. So that *water*, as ſuch, does not ſeem the proper nutriment of vegetables; but only the vehicle thereof, which contains the nutritious particles, and carries them along with it, through all the parts of the plant. See VEGETATION.

Hence, a *water-plant*, e. gr. a naſturtium, brought up in a veſſel of *water*, will be found to contain the more ſalt and oil, the muddier the *water* is: in effect, *water* nouriſhes the leſs, the more it is purged of its ſaponaceous ſalts; in its pure ſtate, it may ſuffice to extend or ſwell the parts, but affords no new vegetable matter. See VEGETABLE, NUTRITION, &c.

Helmont, however, carries his ſyſtem ſtill further, and imagines, that all bodies may be re-converted into *water*. — His alkaheſt, he affirms, adequately reſolves plants, animals, and minerals, into one liquor, or more, according to their ſeveral internal differences of parts: and the alkaheſt, being abſtracted from theſe liquors, in the ſame weight, and with the ſame virtues as when it diſſolved them, the liquors may, by frequent cohobations from chalk, or ſome other proper matter, be totally deprived of their ſeminal endowments, and return at laſt to their firſt matter, inſipid *water*.

Thus much is confeſſed, that mixed bodies do all reſolve by fire, into phlegm or *water*, oil, ſpirit, ſalt, and earth; each of which is found to contain *water*.

Spirits, for inſtance, cannot be better repreſented, than by ſpirit of wine; which, of all others, ſeems freeſt from *water*: yet, Helmont affirms, it may be ſo united with *water*, as to become *water* itſelf. — He adds, that it is materially *water*; only under a ſulphurous diſguiſe. — According to him, in making Paracelſus's balſamum-ſamech, which is nothing but ſal tartari dulcified, by diſtilling ſpirit of wine from it, till the ſalt be ſufficiently ſaturated with its ſulphur, and till it ſuffers the liquor to be drawn off, as ſtrong as it was poured on; when the ſalt of tartar, from which it is diſtilled, hath retained, or deprived it of the ſulphurous parts of the ſpirit of wine, the reſt, which is incomparably the greateſt part of the liquor, will turn to phlegm. In effect, corroſive ſpirits, according to Mr. Boyle's obſervation, abound in *water*; which may be obſerved, by entangling, and ſo fixing their ſaline parts, as to make them corrode ſome proper body; or elſe by mortifying them with ſome contrary ſalt: which will turn them into phlegm. See SPIRIT.

And as to ſalts; ſalt of tartar well calcined, being laid to liquify in the air, will depoſite an earth; and if it be then committed to diſtillation, will yield a conſiderable quantity of inſipid *water*; inſomuch, that if it be urged with a vehement fire, the ſalt will almoſt all vaniſh, and nothing ſaline remain, either in the *water*, or the earth. — Whence Helmont concludes, that all ſalts might be converted into *water*. Add, that ſea-ſalt, recovered from its own acid ſpirit, and oil of tartar, reſolves into *water*, as much as into oil of tartar. See SALT.

Laſtly, oils run, in great meaſure, into *water*; and it is probable, might be converted wholly into the ſame. See OIL, SULPHUR, &c.

No ſtandard for the weight and purity of water. — *Water* ſcarce ever continues two moments exactly of the ſame weight, by reaſon of the air and fire contained therein. Thus, a piece of pure limped ice, laid in a nice balance, never continues in equilibrio. — In effect, the expanſion of *water* in boiling, ſhews what effect the different degree of fire has, on the gravity of *water*. — This makes it difficult to fix the ſpecific gravity of *water*, in order to ſettle its degree of purity; but this we may ſay in the general, that the pureſt *water* we can procure, is that which is 880 times as heavy as air. — However, neither have we any tolerable ſtandard in air; for *water* being ſo much heavier than air, the more water is contained in the air, the heavier of courſe muſt it be: as, in effect, the principal part of the weight of the atmoſphere ſeems to ariſe from the *water*. See AIR, and ATMOSPHERE.

Properties and effects of water. — 1°. *Water* is found the moſt penetrative of all bodies, after fire, and the moſt difficult to confine; ſo that a veſſel through which *water* cannot paſs, may retain any thing. Nor is it any objection, that ſyrups and oils will ſometimes paſs through bodies which will hold *water*; this not being owing to the greater ſubtilty and penetration of their particles, but to the reſin, wherewith the wood of ſuch veſſels abounds, to which oils and ſyrups are as menſtruums; ſo that diſſolving the reſin, they make their way through the ſpaces left thereby: whereas *water*, not acting on reſins, is retained. See RESIN.

And yet, *water* gradually makes its way, even through all woods, and is only retainable in glaſs and metals; nay, it was found by experiment at Florence, that when ſhut up in a ſperical veſſel of gold, and then preſſed with a huge force, it made its way through the pores even of the gold: ſo that the moſt ſolid body in nature, is permeable to *water*. See GOLD.

Water is even found more fluid than air; a body being reputed more fluid than another, when its parts will find way through ſmaller pores: now air, it is known, will not paſs through leather, as is evident in the caſe of an exhauſted receiver covered therewith; whereas *water* paſſes with eaſe. — Again, air may be retained in a bladder, but *water* oozes through. In effect, it is found, that *water* will paſs through pores ten times ſmaller than air will. See PORE.

It muſt not be omitted, however, that M. Homberg accounts for this paſſage of *water* through the narrow pores of animal ſubſtances which will not admit the air, on another principle, *viz.* its moiſtening and diſſolving the glutinous matter of the fine fibres of the membranes, and rendering them more pliable and diſtractile; which are things that the air, for want of a wetting property, cannot do. — As a proof of this doctrine, he filled a bladder, and compreſſed it with a ſtone, and found no air to come out; but placing the bladder thus compreſſed in *water*, the air eaſily eſcaped. *Hiſt. de l'Acad.* An. 1700. p. 45.

2°. *Water*, then, may even hence, *viz.* from its penetrative power, be argued to enter the compoſition of all bodies, both vegetable, animal, and foſſil; with this peculiar circumſtance, that it is eaſily, and with a gentle heat, ſeparable again from bodies it had united with: which cannot be ſaid of any other body. — Fire, indeed, will penetrate more than *water*; but it is difficult to procure it again from the bodies it is once fixed in, as is evident in red lead, *&c.* See MINIUM, VERMILION, *&c.*

This property of *water*, joined with its ſmoothneſs and lubricity, fits it to ſerve as a vehicle for the commodious and eaſy conveyance of the nutritious matter of all bodies: being ſo fluid, and paſſing and repaſſing ſo readily, it never ſtops up the pores, but leaves room for the following *water*, to bring on a new ſupply of nutritious matter. See NUTRITION.

3°. And yet the ſame *water*, as little coheſive as it is, and as eaſily ſeparated from moſt bodies, will cohere firmly with ſome others, and bind them together into the moſt ſolid maſſes: though it appears wonderful, that *water*, which will be ſhewn an almoſt univerſal diſſolvent, ſhould withal be a great coagulator.

Water, we ſee, mixed up with earth or aſhes, gives them the utmoſt firmneſs and fixity. — The aſhes, *e. gr.* of an animal, incorporated with pure *water* into a paſte, and baked with a vehement fire, grow into a coppel; which is a body remarkable for this, that it will bear the utmoſt effort of a refiner's furnace. — It is, in effect, upon the glutinous nature of *water* alone that our houſes ſtand: for take but this out of wood, and it becomes aſhes; or out of tyles, and they become duſt.

Thus, a little clay dried in the ſun, becomes a powder, which, mixed with *water*, ſticks together again, and may be faſhioned at pleaſure; and this dried again by a gentle fire, or in the ſun, and then baked in a potter's oven, by an intenſe fire, becomes little other than a ſtone. — So the Chineſe earth, whereof our porcelain veſſels are made, which hold all liquors, and even melted lead itſelf, is diluted and wrought up with *water*. See PORCELAIN.

To ſay no more, all the ſtability and firmneſs ſeen in the univerſe, is owing to *water* alone. — Thus, ſtone would be an incoherent ſand, did not *water* bind it together; and thus, again, of a fat gravelly earth, wrought up with *water*, and baked or burnt, we make bricks, tyles, and earthen veſſels, of ſuch exceeding hardneſs and cloſeneſs, that *water* itſelf cannot paſs through them. And theſe bodies, though to appearance perfectly dry, and deſtitute of *water*, yet, being pulverized and put in a retort, and diſtilled, yield an incredible quantity of *water*.

The ſame holds of metals; for the parings or filings of lead, tin, antimony, *&c.* by diſtillation, yield *water* plentifully; and the hardeſt ſtones, ſea-ſalt, nitre, vitriol, ſulphur, *&c.* are found to conſiſt chiefly of *water*, into which they reſolve by force of fire.

The *lapis calcarius*, or lime-ſtone, being expoſed to the fire, affords a prodigious quantity of pure *water*; and the more of this *water* is expreſſed, the more friable does it become, till at length it commences a dry calx or lime, wherein, in lieu of the *water* ſo expelled, the fire, in the courſe of calcination, enters; which is expelled again, in its turn, by pouring on cold *water*. Yet, the ſame *water* and calx, tempered together, produce a maſs, ſcarce inferior, in point of ſolidity, to the primitive lime-ſtone. See LIME, MORTAR, *&c.*

4°. That *water* is not elaſtic, is evident hence, that it is incompreſſible, or incapable, by any force, of being reduced into leſs compaſs: this eaſily follows from that famous experiment abovementioned, made by order of the great duke of Tuſcany. — The *water*, being incapable of condenſation, rather than yield, tranſuded through the pores of the metal, ſo that the ball was found wet all over the outſide; till at length, making a cleft in the gold, it ſpun out with great vehemence. — From this laſt circumſtance, indeed, ſome have weakly concluded it was elaſtic. For the impetus wherewith the *water* darted forth, was more probably owing to the elaſticity of the gold, which communicated that impreſſion to the *water*.

And hence we ſee the reaſon why blocks of marble ſometimes burſt in cold weather; and why a veſſel filled with *water*, and afterwards, by any means, reduced to a leſs compaſs, burſts the veſſel, though ever ſo ſtrong. — This is obſervable in a piece of braſs cannon, which being filled with *water*, and the mouth exactly ſtopped, ſo as to prevent all egreſs of *water*; if a cold night happens, ſufficient to contract and conſtipate bodies; the metallic matter undergoing the common fate, and the *water* refuſing to give way, the cannon is burſt aſunder with incredible violence.

Some bring an argument for the elaſticity of *water* hence, that hot *water* takes up more room than cold; but no legitimate concluſion can be formed from hence: for in the hot *water*, there is a good quantity of fire contained, which interpoſing between the particles of the *water*, makes it extend to a greater ſpace, wthout any expanſion of parts from its own elaſticity. This is evident hence, that if *water* be once heated, there is no reducing it to its former dimenſions, but by letting it cool again: which plainly ſhews, that the expanſion depends not on the elaſticity of parts, but on the preſence of fire. — *Water*, then, though incapable of compreſſion or condenſation, may yet be rarefied by heat, and contracted by cold. See RAREFACTION, &c.

It may be added, that a further degree of cold, that is, ſuch a one as congeals *water*, or turns it into ice, does expand it. — There are other ways to manifeſt this expanſion of *water*, by freezing. — Mr. Boyle having poured a proper quantity of *water* into a ſtrong cylindrical earthen veſſel, expoſed it, uncovered, both to the open air in froſty nights, and the operation of ſnow and ſalt; and found, that the ice produced in both caſes, reached higher than the *water* before it was froze. Add, that it has been found, that the rain ſoaking into marble, and violent froſts coming on, have burſt the ſtones: and even implements made of bell-metal, careleſly expoſed to the wet, have been broken and ſpoiled by the *water*; which entering at little cavities of the metal, was there afterwards froze, and expanded into ice.

From the whole we may be enabled to ſettle ſomething, as to the nature of the component particles of *water*; and, 1°. That they are, as to our ſenſes, infinitely ſmall; whence their penetrative power: 2°. Exceedingly ſmooth and ſlippery, void of any ſenſible aſperities; witneſs their fluidity, and their being ſo eaſily ſeparable from other bodies which they adhere to: 3°. Extremely ſolid: 4°. Perfectly tranſparent, and as ſuch inviſible; which we gather hence, that pure *water*, incloſed in a veſſel hermetically ſealed, projects no ſhadow; ſo that the eye ſhall not be able to diſcover whether the veſſel have *water* in it or not; and in that the cryſtals of ſalts, when the *water* is ſeparated from them, loſe their tranſparency. — 5°. Hard, rigid, and inflexible; as appears from their not being compreſſible. — If it be aſked, how a body ſo light, fluid, and volatile, and which ſo eaſy a fire ſuffices to rarefy, ſhould be ſo ſtubborn and incompreſſible? We ſee no other cauſe to aſſign, but the homogeneity of it parts. — If *water* be conſidered as conſiſting of ſpherical, or cubical particles, hollow withinſide, and of a firm texture; here will be enough to account for the whole: Its firmneſs and ſimilarity will make it reſiſt ſufficiently; and its vacuity renders it light enough, &c. — The little contact between ſpherules, will account for the weakneſs of its coheſion, &c. See PARTICLE, COHESION, &c.

Salt melted in *water*, does not fill the veſſel in proportion to its own bulk: whence it follows, that there are little ſpaces between the particles of water, to admit thoſe of the ſalt. — And hence, again, we gather, that the *watry* particles are extremely ſolid and inflexible; ſince, though they have intermediate ſpaces, no force or weight can compreſs, or crowd them nearer. See SALT.

5°. *Water* is the moſt inſipid of all bodies; the taſte we ſometimes obſerve therein, ariſing not from the mere *water*; but from ſalt, vitriol, or other bodies mixed therewith: and accordingly, all the ſapid *waters*, recommended for medicinal uſes, are found to depoſite a quantity of ſome of thoſe foſſils.

6°. *Water* is perfectly inodorous, or void of the leaſt ſmell. — *Water*, then, neither affects ſight, taſte, nor ſmell, provided it be pure; and conſequently might remain for ever imperceptible to us, but for the ſenſe of feeling.

Whether water *be convertible into air?* — It has been diſputed, whether or no *water* be convertible into air; there being numerous inſtances of, at leaſt, an apparent tranſmutation. — In the vapours daily raiſed, we find *water* rarefied to ſuch a degree, as to take place in the atmoſphere, and help to compoſe a conſiderable part of what we call *air*; and even to contribute to many of the effects aſcribed to the air. See VAPOUR, AIR, and ATMOSPHERE. — But ſuch a vapour-air has not the characters of true permanent air, being eaſily reducible into *water* again. So, in digeſtions and diſtillations, though *water* may be rarefied into vapours, yet it is not really changed into air, but only divided by heat, and diffuſed into very minute parts; which, meeting together, preſently return to ſuch *water* as they conſtituted before.

Yet, *water* rarefied into vapour in an æolipile, will, for a while, have an elaſtic power, the great and laſt characteriſtic of true air, and ſtream out perfectly like a blaſt of air: The elaſtic power of this ſtream, is manifeſtly owing to nothing elſe but the heat, that expands and agitates the aqueous particles thereof; and when the heat is gone, the elaſticity, and other aerial properties diſappear likewiſe. See ELASTICITY.

Rapid winds thus made, ſeem to be no more than mere *water*, broke into little parts, and put into motion; ſince, by holding a ſolid, ſmooth, and cold body againſt it, the vapours condenſing thereon, will preſently cover the body with *water*. — Indeed, though no heat intervenes, motion alone, if vehement, may perhaps ſuffice to break *water* into minute parts, and make them aſcend upwards in form of air. — Mr. Boyle obſerves, that between Lyons and Geneva, where the Rhone is ſuddenly ſtraitened by two rocks very near each other, that rapid ſtream, daſhing with great impetuoſity againſt them, breaks part of its *water* into minute corpuſcles, and gives it ſuch a motion, that a miſt may be obſerved at a conſiderable diſtance, ariſing from the place, and aſcending high into the air.

WATER, in geography and hydrography, is a common, or general name applied to all liquid tranſparent bodies, gliding or flowing on the earth. See FLUID, LIQUID, &c.

In this ſenſe, *water* and earth are ſaid to conſtitute our terraqueous globe. See EARTH.

Some authors have raſhly and injuriouſly taxed the diſtribution of *water* and earth in our globe as unartful, and not well proportioned: ſuppoſing that the *water* takes up too much room. See TERRAQUEOUS.

An inundation, or overflowing of the *waters*, makes a deluge. See DELUGE.

Cataract of WATER. See the article CATARACT.

Water is diſtinguiſhed, with regard to the places where it is found, into marina, *ſea-water*; pluvialis, *rain-water*; fluviatilis, *river-water*; fontana, *ſpring-water*; putealis, *well-water*; ciſternina, that of *ciſterns*; paluſtris, that of *lakes*, *moraſſes*, &c. — which are each more impure, and heterogenous than other.

Sea-WATER, is an aſſemblage of bodies, wherein *water* can ſcarce be ſaid to have the principal part: it is an univerſal colluvies of all the bodies in nature, ſuſtained and kept ſwimming in *water*, as a vehicle. See SEA, OCEAN, &c.

Dr. Liſter conſiders it as the fund or ſource, out of which all bodies ariſe. He gives, in ſome meaſure, into the opinion of Thales, and Van Helmont; and imagines the *ſea-water* to have been the only element created at the beginning, before any animal, or vegetable; or even before the ſun himſelf. — *Freſh-water*, he ſuppoſes to have roſe accidentally after the creation of theſe, and to owe its origin to the vapours of plants, the breath of animals, and the exhalations raiſed from the ſun. *De Font. Med. Ang.*

Dr. Halley is of another opinion — He takes it for granted, that the ſaltneſs of the ſea, ariſes from the ſaline matter diſſolved and imbibed by the rivers in their progreſs, and diſcharged, with their *waters*, into the ocean; and conſequently, that the degree of ſaltneſs is continually and gradually increaſing. — On this hypotheſis, he even propoſes a method for determining the age of the world: for two experiments of the degree of ſaltneſs, made at a large interval of time, will, by the rule of proportion, give the time wherein it has been acquiring its preſent degree. *Philoſ. Tranſact.* N°. 344.

The *water* of the ſea is liable to ſeveral periodical changes. See TIDES.

High-WATER.
Low-WATER. } See the articles FLUX, EBB, &c.
Ebb-WATER.

Rain-WATER, is the *water* of the ſea, purified by a ſort of diſtillation: or rather, it is the *watery* vehicle, ſeparated from the ſaline, and other matters reſiding therein, by evaporation. See RAIN, and EVAPORATION.

The *water*, which deſcends in rain and ſnow, is, of all others, the pureſt, in a cold ſeaſon, and a ſtill ſky; and this we muſt be contented to take for elementary *water*.

The *rain-water*, in ſummer, or when the atmoſphere is in commotion, it is certain, muſt contain infinite kinds of heterogeneous matter: Thus, gathering the *water* that falls after a thunder-clap, in a ſultry ſummers day, and letting it ſettle, a real ſalt is found ſticking at the bottom. But in winter, eſpecially when it freezes, the exhalations are but few, ſo that the rain falls without much adulteration: and hence, what is thus gathered in the morning-time, is found of good uſe for taking away ſpots in the face; and that gathered from ſnow, againſt inflammation of the eyes. See SNOW.

Yet this *rain-water*, with all its purity, may be filtered and diſtilled a thouſand times, and it will ſtill leave ſome fæces behind it.

Spring-WATER is the next, in point of purity. — This, according to Dr. Halley, is collected from the air itſelf; which being ſatured with *water*, and coming to be condenſed by the evening's cold, is driven againſt the cold tops of the mountains; where, being further condenſed and collected, it gleets down, or diſtils, much as in an alembic. See SPRING, &c.

This *water*, which before floated in the atmoſphere, in form of a vapour, being thus brought together, at firſt forms little ſtreams; ſeveral of which meeting together, form rivulets; and theſe, at length, rivers.

River-WATER, on ſome occaſions, is to be eſteemed purer than that of ſprings. — If the ſtream, in deſcending from its ſpring, chance to flow over ſtrata, or beds, wherein there is ſalt, ſulphur, vitriol, iron, or the like, it diſſolves and imbibes part thereof. — Otherwiſe, ſpring-*water* becomes purer and better; for while the river drives on its *waters* in an uninterrupted ſtream, all its ſalts, with the vegetable and animal matters drained into it, either from exhalations, or from the ground it waſhes, gradually either ſink to the bottom, or are driven to the ſhore: and hence, the antient poets and painters repreſent the deities of ſprings and rivers, as combing and carding their *waters*. See RIVER.

With regard to the qualities of *water*, it is further diſtinguiſhed into ſalina, *ſalt-water*; dulcis, *freſh-water*, &c.

Salt-WATER, or *Sea*-WATER. See SALT, and SEA-*Water*.

Freſh-WATER. — It is generally granted, that thoſe *waters*, cæteris paribus, are the beſt, as well for wholeſomneſs, as various other œconomical uſes, &c. that are freeſt from ſaltneſs; which is an adventitious, and, in moſt caſes, a hurtful quality in *waters*. — Mr. Boyle, therefore, contrived a very extraordinary method of examining the freſhneſs and ſaltneſs of *waters*, by a precipitant, which could diſcover one part of ſalt in 1000, nay, 2 or 3000 parts of *water*. See FRESH-*Water*.

The thawed ice of ſea-*water* is often uſed in Amſterdam for brewing; and Bartholine, in his book *De Nivis Uſu*, confirms the relation: "It is certain, ſays he, that if the ice of " the ſea-*water* be thawed, it loſes its ſaltneſs; as has been " lately tried by a profeſſor in our univerſity."

Uſes of WATER. — The uſes of *water* are infinite; in food, in medicine, in agriculture, in navigation, in divers of the arts, &c.

As a *food*, it is one of the moſt univerſal drinks in the world; and, if we may credit many of our lateſt and beſt phyſicians, one of the beſt too. — For this uſe, that which is pureſt, lighteſt, moſt tranſparent, ſimple, colourleſs, void of taſte and ſmell, and which warms and cools faſteſt, and wherein herbs and pulſe infuſe and boil the ſooneſt, is beſt. See DRINK.

Hippocrates, in his treatiſe *De Aere, Aquis & Locis*, ſpeaks much in behalf of light *water*. — Herodotus relates, that, among the antients, ſome nations drank a *water* ſo very light, that all woods readily ſunk therein. — And Mr. Boyle mentions ſome *water* brought out of Africa into England, which was ſpecifically lighter than ours, by four ounces in a pint, *i. e.* by one third. See WATERPOISE.

It is eſteemed a good quality in *water*, to bear ſoap, and make a lather therewith. — This our river *waters* readily do, but the pump and ſpring-*waters* are found too hard for it; yet may theſe be remedied, by barely letting them ſtand for four or five days.

As a *medicine*, it is found, internally, a powerful febrifuge; excellent againſt colds, coughs, ſtone, ſcurvy, *&c.* See FEBRIFUGE, *&c.* — Externally, its effects are no leſs conſiderable. See BATH.

In *agriculture*, and gardening, *water* is allowed abſolutely neceſſary to vegetation; whence Varro places it in the number of the divinities he invokes in his firſt book *de re Ruſtica: Etiam*, ſays he, *precor lympha, quoniam ſine aqua omnis miſera eſt agricultura.* See WATERING.

The changes *water* is liable to, and the different forms it appears under, are numerous. — Sometimes as ice, then as a vapour, then as a cloud, ſhower, ſnow, hail, fog, *&c.* See ICE, VAPOUR, CLOUD, SHOWER, SNOW, HAIL, FOG, FREEZING, &c.

Many naturaliſts have even maintained *water* to be the vegetable matter, or the only proper food of plants; but Dr. Woodward has overturned that opinion, and ſhewn, that the office of *water* in vegetation, is only to be a vehicle to a terreſtrial matter, whereof vegetables are formed; and does not itſelf make any addition to them. — All *water*, he allows, contains more or leſs of this terreſtrial matter; ſpring and rain-*water* near an equal quantity, and river-*water* more than either of them. See VEGETATION.

Water is of the laſt uſe in chymiſtry; being one of the great inſtruments by means whereof its operations are all performed. See CHYMISTRY, and OPERATION.

It acts in various manners and capacities; as a menſtruum, a ferment, a putrefacient, a vehicle, a medium, *&c.*

1°. As a *menſtruum*, it diſſolves all kinds of ſalts. See SALT, DISSOLVENT, DISSOLUTION, &c. — Air alſo ſeems to diſſolve ſalts; but it is only in virtue of the *water* it contains. — Nor has any other body the power of diſſolving ſalts, further than as it ſhares in this fluid. See AIR, &c.

The particles of ſalts, we have obſerved, inſinuate themſelves into the interſtices between the particles of *water*; but when thoſe interſtices are once filled, the ſame *water* will not any longer diſſolve the ſame ſalt; but it will diſſolve a ſalt of another kind, by reaſon of the different figure of the particles, which enter and occupy the vacancies left by the former: and thus it will diſſolve a third, or fourth ſalt, *&c.* — So, when *water* has imbibed its fill of common ſalt, it will ſtill diſſolve nitre; and when ſaturated with nitre, it will diſſolve ſal ammoniac, and ſo on.

Water alſo diſſolves all ſaline bodies, it being the conſtituent character of this claſs of bodies, that they are uninflammable, and diſſoluble in *water*. — Hence, *water* may diſſolve all bodies, even the heavieſt and moſt compact, as metals; inaſmuch as thoſe are capable of being reduced into a ſaline form: in which ſtate they may be ſo intimately diſſolved by *water*, as to be ſuſtained therein.

Water diſſolves all ſaponaceous bodies, *i. e.* all alkalious ſalts and oils blended together: though oil itſelf be not diſſoluble in *water*, the admixture of ſalt herewith, rendering it ſaline, brings it under the power of *water*.

Now, all the humours in the human body are apparently ſaline, though none of them are ſalt itſelf; and the ſame may be ſaid of the juices of all vegetables, excepting the oils; and accordingly, they all diſſolve in *water*.

Water diſſolves glaſs itſelf. — This being melted with ſalt of tartar, becomes ſoluble in *water*. See GLASS.

It diſſolves all gums, and gummous bodies; it being a characteriſtic of a gum, that it diſſolves in *water*; in contradiſtinction from a *reſin*. See GUM, &c.

Further, *water* mixed with alkali ſalts, diſſolves oil and oily bodies. — Thus, though mere *water* poured on greaſy wool, be repelled thereby; yet a ſtrong lixivium, or alkali ſalt being mixed with the *water*, it readily diſſolves and abſorbs all that was greaſy and oleaginous: and thus it is that woollen cloths are ſcoured.

But, *water* does not diſſolve reſins; as we conceive a reſin to be no other than an inſpiſſated, or concentrated oil. See RESIN.

Oils and ſulphurs *water* leaves untouched; and what is more extraordinary, it repels them; and by repelling, drives the oily particles into eddies. — Add, that it ſeems to repel all oleaginous, ſulphurous, fatty, and adipous bodies, wherein oil predominates; and hence alſo it is, that the fatty parts in our bodies eſcape being diſſolved by *water*. — And it is, in all probability, by this means that fat is collected in the adipoſe cells of all animals. See FAT.

Nor does it diſſolve terrene or earthy bodies, but rather unites and conſolidates them; as we ſee in tyles, *&c.* See EARTH.

After diſſolving a body, the *water* unites and hardens together with it; and, if the body be of the ſaline kind, forms cryſtals, and retains the ſalts in that form. See CRYSTAL.

Salts, while thus joined with *water*, aſſume various figures; the cryſtals of ſea-ſalt, *e. gr.* are pyramidal; thoſe of nitre, priſmatical; thoſe of ſal gemmæ, cubical, *&c.* But, that *water* is the cauſe of theſe ſalts being in cryſtals, is evident hence, that upon ſeparating the *water*, the cryſtals are no more; their form is loſt, and their tranſparency ceaſes. See CRYSTALLIZATION.

2°. Without *water*, there can no fermentation be raiſed. — Thus, if you grind a plant into a duſt, or farina, it will never ferment; even though you add yeaſt, or ſpirit of wine thereto: but *water* being poured on it, the fermentation readily ariſes. See FERMENTATION.

3°. All putrefactions, both of animal and vegetable bodies, are likewiſe performed by means of *water* alone; and without it, there would be no ſuch effect in all nature. See PUTREFACTION.

4°. *Water* is indiſpenſibly required to efferveſſence; which is an inteſtine motion, ariſing between contrary ſalts: for no ſuch motion can ariſe from a mixture of contrary ſalts, unleſs there be *water* to diſſolve and keep them in ſolution.

5°. A farther uſe is in the making ſeparations of oily from ſaline parts, which is a thing of the laſt ſervice: thus, any oleaginous ſubſtance, incorporated with ſalt, being ſhook ſometime in a proper quantity of *water*, the ſalts diſſolving, will be extracted from the oil, and imbibed by the *water*: and thus is the body dulcified. — So butter, by a continued lotion in fair *water*, becomes inſipid; and aromatic oils, agitated a long time in warm *water*, lay aſide their ſaline ſpirituous parts, and become inert, and inodorous.

Spirit of wine, mixed with oil, makes one body therewith; but if you pour *water* thereon, it will repel the oil, and draw all the ſpirit to itſelf: nay, frequently, what the ſpirit had diſſolved in other bodies, *water* will ſeparate from them, by diluting the ſpirit, and letting the other matters precipitate.

6°. *Water* is of great ſervice in directing and determining the degree of fire, or heat. — This was firſt diſcovered by M. Amontons, from an obſervation, that *water* over the fire grows gradually more and more hot, till it comes to boil; but then ceaſes to increaſe, and only maintains its preſent degree of heat, even though the fire were ever ſo much enlarged, or were continued ever ſo long. — This, therefore, affords a ſtandard, or fixed degree of heat all over the world; boiling *water*, provided it be equally pure, being of the ſame heat in Greenland, as under the equator.

By means hereof, they make baths of divers degrees of heat, accommodated to the various occaſions. See BATH, FIRE, HEAT, *&c.*

Water is of the utmoſt uſe in divers of the mechanical arts, and occaſions of life; as, in the motion of mills, and other machines. — And the laws, properties, *&c.* of this fluid with reſpect thereto; as its motion, gravitation, preſſion, elevation, action, *&c.* And the conſtruction of divers engines ſubſervient thereto, or founded thereon; as ſiphons, pumps, *&c.* make the ſubject of *hydraulics*, and *hydroſtatics.* See HYDRAULICS, FLUID, ASCENT, &c.

The quantity of *water* on this ſide our globe, Dr. Cheyne ſuſpects to be daily decreaſing; “ ſome part thereof being continually turned into animal, vegetable, metalline, or mineral ſubſtances; which are not eaſily diſſolved again into their component parts. — Thus, if you ſeparate a few particles of any fluid, and faſten them to a ſolid body, or keep them aſunder one from another, they are no fluid; to produce fluidity, a conſiderable number of ſuch particles is required.” See FLUIDITY.

“ Moſt of the fluids or liquids we know of, are formed by the coheſion of particles of different figures, magnitudes, gravities, and attractive powers, ſwimming in pure *water*, or an aqueous fluid; which ſeems to be the common baſis of all. — Wine is only *water* impregnated with particles of grapes; and beer with particles of barley: all ſpirits ſeem to be nothing but *water*, ſaturated with ſaline or ſulphurous particles: and all liquids are more or leſs fluid, according to the greater or ſmaller coheſion of the particles, which ſwim in the aqueous fluid. — And there is hardly any fluid without this coheſion of particles: not even pure *water* itſelf; as is apparent from the bubbles which ſometimes will ſtand on its ſurface, as well as on that of ſpirits, and other liquors.” *Philoſoph. Princip. of Relig.*

Aſcent of WATER. See ASCENT, and CAPILLARY.

WATER-*Bearer.*		AQUARIUS.
WATER-*Column.*		COLUMN.
WATER-*Clock.*		CLEPSYDRA.
WATER-*Level.*		LEVEL.
WATER-*Machine.*	See the article	MACHINE.
WATER-*Microſcope.*		MICROSCOPE.
WATER-*Mill.*		MILL.
WATER-*Organ.*		ORGAN.
WATER-*Spout.*		SPOUT.

WATER, in natural hiſtory, *&c.* is diſtinguiſhed into *pure*, called alſo *elemental*; *mineral*; and *artificial*, or *factitious.*

As to the *pure*, we have already obſerved, that there is, perhaps,

haps, none abſolutely ſo; all *water* being found to contain more or leſs particles ſuch as thoſe in terreſtrial bodies; not earthy particles, we mean, but oils, ſalts, *&c.*

Mineral WATERS, are thoſe which contain ſuch, and ſo many particles of different nature from *water*, as thence to derive ſome notable property beyond what common *water* has: or, *mineral waters* are thoſe which have contracted ſome virtue extraordinary, by paſſing through beds of minerals, as allum, vitriol, ſulphur, *&c.* or by receiving the fumes thereof. See MINERAL.

The kinds of *mineral waters* are various, as are the kinds of compoſitions of the minerals they are impregnated withal. See FOSSIL.

Some are *ſimple*, as only containing mineral particles of one ſort; others *mixed*, of two, three, four, or more ſorts.

Hence, we have, 1°. *Metallic waters*, in different parts, *golden*, *ſilver*, *copper*, *tin*, *leaden*, and *iron waters*. See METAL, FERRUGINOUS, CHALYBEAT, &c.

2°. *Saline waters*, viz. *nitrous*, *aluminous*, *vitriolate*, and thoſe of common ſalt. See SALT.

3°. *Bituminous*, *ſulphurous*, *antimonial*, *carbonaceous*, and *amber waters*. See BITUMEN, *&c.*

4°. *Earthy* and *ſtony waters*, viz. *lime*, *chalk*, *oker*, *cinnabar*, *marble*, and *alabaſter waters*.

To which ſome add *mercurial waters*. See MERCURY, &c.

This diviſion of *mineral waters*, is taken from their eſſences; that is, from the mineral particles they contain: but the moſt uſual and celebrated diviſion, is borrowed from the manner wherein they affect our ſenſes; with regard to which there are ten kinds; *viz. acid*, *bitter*, *hot*, *cold*, *oily* and *fat*, *poiſonous*, *coloured*, *boiling*, *petrifying*, *incruſtating*, and *ſaline*.

Acid WATERS, called alſo *acidulæ*, ariſe from the admixture of vitriol, nitre, allum, and ſalt. — Theſe are cold, and very frequent, there being not reckoned leſs than 1000 in Germany alone: ſome of which are ſaid to be ſour as vinegar, and uſed inſtead thereof; others vinous, and ſerving for wine; others aſtringent, *&c.* See ACIDULÆ.

Hot WATERS, called *thermæ*, ariſe from the admixture of ſulphurous particles and fumes. — Of theſe, the hotteſt is that in Japan, which, it is ſaid, no fire can bring *water* to equal; and which keeps hot thrice as long as our boiled *water*. See THERMÆ, *&c.*

Oily, and *Fat* WATERS, ariſe from a bituminous and ſulphurous matter; as amber, petroleum, pitch, naphtha, *&c.* See NAPHTHA, PETROL, *&c.*

Bitter WATERS, are produced from an impure ſulphur, bitumen, nitre, and copper. — Such is the lacus aſphaltites.

Very cold WATERS, have their riſe from a mixture of nitre and allum; or of mercury, iron, *&c.* The depth of the ſource or ſpring too, have ſome effect.

WATERS *which change the nature of bodies.* — Of theſe there is great variety.

1°. Near Armagh in Ireland, is a lake, wherein a ſtaff being fixed ſome months, the part that ſtuck in the mud will be turned into iron; and that part incompaſſed with the *water* into hone; the reſt remaining as before. — Thus Gyraldus, and Maginus; but Brietius denies it.

2°. In the northern part of Ulſter is a ſpring, which, in the ſpace of ſeven years, petrifies wood, or converts it into ſtone. — The like are found in divers other parts, as in Hungary, Burgundy, *&c.* Vitruvius mentions a lake in Cappadocia, which converts wood into ſtone in one day. See PETRIFACTION.

3°. There are alſo *waters* ſuppoſed to tranſmute, or turn iron into copper. See TRASMUTATION.

4°. Others are ſaid to change the colour of the hair. — Gyraldus mentions a ſpring in Ireland, wherein if a perſon were waſhed, he inſtantly became grey. See HAIR.

Poiſonous WATERS, are occaſioned by their creeping through arſenical, antimonial, and mercurial earths; or being impregnated by their fumes. — Such is the lacus aſphaltites, and divers others about the Alps, *&c.* which immediately kill thoſe who drink of them: but theſe are moſt of them filled up with ſtones; which is one reaſon ſo few are known.

Saline WATERS, are generated two ways; either they are derived from the ſea, by ſome ſubterraneous paſſage; or are generated from mineral ſalts, which they meet withal in their paſſage, ere they arrive at their ſprings. See SEA, and SALT.

Boiling, or *Bubbling* WATERS, are produced either by a ſulphurous, or a nitrous ſpirit, mixed with the *water* in the earth: if it be ſulphurous, the *water* is hot; if nitrous, cold. For all the *waters* that boil as if hot are not ſo, but ſome few are cold: we read both of thermæ and acidulæ that boil.

There are divers other *waters* which have very ſingular properties not reducible to any of theſe claſſes: ſuch — 1°. is that ſpring in Portugal, which abſorbs all bodies caſt into it, though the lighteſt: and not far from it there was antiently another, in which no bodies, not the heavieſt, could ſink. — 2°. In Andaluſia, we aſſured by Euſeb. Nierembergenſis, there is a lake which foretels approaching ſtorms, by making a terrible bellowing, that may be heard 18 or 20 miles diſtance — 3°. In Granada is a well, whoſe *water* diſſolves ſtones. — 4°. We read of a ſpring in Arcadia, which rendered thoſe who drank of it abſtemious. — In the iſland of Chio is a ſpring, which converts thoſe who drink of it into fools. — 6°. There are ſprings in divers parts of England, Wales, Spain, *&c.* which ebb and flow daily with the flux and reflux of the ſea; and ſome are even ſaid to ebb and flow againſt the tide. — Add, 7°. *ſtalactical waters.* See STALACTITES.

Bath-WATER.	See article	BATH.
Spaw-WATER.		SPAW.
Petrifying-WATER.		PETRIFYING.

Interdiction of Fire and WATER. See INTERDICTION.

WATER, in chymiſtry, by the chymiſts called more uſually *phlegm*; is the fourth of the five chymical principles, and one of the paſſive ones. See PRINCIPLE, and PHLEGM.

It is never drawn pure, and unmixed; which, Dr. Quincy obſerves, makes it uſually a little more deterſive than common *water*.

This principle, probably, contributes much to the growth of bodies, in that it both renders and keeps the active principles fluid; ſo that they are capable of being conveyed by circulation into the pores of the mix'd: and alſo becauſe it tempers their exorbitant motion, and keeps them together; ſo that they are not ſo eaſily and ſoon diſſipated.

In all ſuch bodies whoſe active ſubſtances are joined and united pretty cloſely together; as in common ſalt, tartar, all plants that are not odoriferous, and in many animal bodies, this principle is the firſt that comes in diſtillation: but when *water* is mixed with volatile ſalts, or with ſpirit of wine, or is in any odoriferous mixture; then the volatile particles will riſe and come away firſt. See PRINCIPLE, ELEMENT, &c.

WATERS, in medicine, pharmacy, chymiſtry, &c. called alſo *artificial*, and *medicated waters*; are a kind of liquors, procured or prepared by art from divers bodies, principally of the vegetable tribe; having various properties, and ſerving various purpoſes.

Theſe *waters* are either *ſimple*, or *compound*.

Simple WATERS, are thoſe procured from ſome one vegetable body. See VEGETABLE, PLANT, &c.

A *ſimple water* is not ſuppoſed to be the mere *water*, or phlegm of the body it is drawn from, as is evident from the taſte and ſmell thereof. — The intention of making ſuch *water*, is to draw out the virtues of the herb, ſeed, flower, root, or the like, ſo as it may be more conveniently given in that form, than any other. But the phlegm, or *watery* part of any medicinal ſimple, is no better than common *water* undiſtilled: ſo that all thoſe ingredients, which in diſtillation raiſe nothing but phlegm, as may be diſcovered from the ſcent and taſte of what comes over, are not fit for the ſtill. — On this principle, a great part of the *waters* retained in the diſpenſatories, will appear good for nothing, at leaſt not worth diſtilling.

The means whereby this ſeparation is effected, are either *evaporation*, *infuſion*, *decoction*, or *diſtillation*. — The firſt is performed by expoſing the vegetable in a cold ſtill, to a gentle heat, like that of a ſummer's ſun; and catching the effluvia which exale from it. See HEAT, EVAPORATION, &c.

The effect of this operation, is a *water*, or fluid matter, which is the moſt volatile, fragrant, and aromatic part of the plant; and that wherein its ſpecific virtue reſides. — And thus is it, that the aromatic or odoriferous *waters* of vegetables are procured. See AROMATIC.

The ſecond means, *viz. infuſion*, is performed by putting the vegetable in hot rain-*water*, below the degree of boiling; keeping it to this degree by an equable heat, for the ſpace of half an hour; and then ſtraining or pouring it off. See INFUSION. — The only *waters* procured this way, in much uſe in the modern practice, are thoſe of frog-ſpawn, and oak-buds.

The third means, *viz. decoction*, only differs from the ſecond in this, that the *water* is kept to the degree of boiling. See DECOCTION.

The fourth means, *viz. diſtillation*, is performed by infuſing the ſubject in an alembic, with a gentle warmth, for ſome time; and, then increaſing the heat, ſo as to make it boil; and laſtly, catching and condenſing the ſteam, or vapour ariſing therefrom. See DISTILLATION.

This proceſs furniſhes what we call the *diſtilled waters*, of ſo much uſe in medicine, *&c.* — The vegetable ſubjects beſt fitted for it, are the ſapid and odorous, or thoſe of the aromatic tribe; as angelica, aniſeed, baum, carraway, coriander, cumin, dittany, fennel, hyſſop, marjoram, mint, roſes, roſemary, ſaffron, ſage, ſcurvygraſs, thyme, cinnamon, citron, juniper, lime, myrtle, orange, peach, *&c.*

The medicinal virtues of *waters* prepared after this manner, are the ſame as thoſe of the reſpective plants, *&c.* they are drawn from. — Thus, the diſtilled *water* of mint is ſtomachic; that of worm-wood, vermifugous, *&c.*

The materia medica, it may be obſerved, affords no remedies in this way, but for the intentions either of cordials, diuretics, or diaphoretics. — Were it practicable to raiſe a balſamic cathartic, or opiate in this way, yet would thoſe properties be much more conveniently brought forth by other proceſſes; ſo that nothing is to be looked for in a diſtilled *water*, but ſuch ſubtile and light parts of a medicinal ſimple, as may fall in with the forementioned intentions: indeed, very little comes over, under that diviſion, weighty enough to affect even the urinary ſecretions.

The *ſimple waters*, of chief virtue, are the following ones, *viz. Dill-water*, aqua anethi; *baum-water*, aqua meliſſæ; *angelica-water*, aqua angelicæ; *mint-water*, aqua menthæ; *roſemary-water*, aqua anthos; *orange-flower-water*, aqua naphæ; *black-cherry-water*, aqua ceraſor. nig. *parſly-water*, aqua petroſelini; *camomile*, chamom. *pennyroyal*, pulegii; *fennel-water*, aqua fæniculi; *damaſk-roſe-water*, aqua roſarum dam. *hyſſop-water*, aqua hyſſopi; *rue-water*, aqua rutæ; *juniper-water*, aqua juniperi bacc. *elder-water*, aqua ſambuci flor. *lovage-water*, aqua leviſtici; *carminative-water*, aqua carminativa, *&c.*

It may be here proper to note, that whatever properties any ſimple has from the groſſineſs or ſolidity of its parts, which make it act as an emetic, cathartic, or aſtringent; the reſidue left after diſtillation, will remain in full poſſeſſion thereof. — Thus, the purging ſyrup of roſes, is as well made after the damaſk-roſe-*water* is drawn off, as if the flowers were put into infuſion; becauſe nothing of a cathartic quality riſes with the *water*.

Sometimes, the ſubject is fermented, by the addition of yeſt, honey, or the like ferment, to the hot *water*, before the diſtillation begin: in which caſe, if the ferment added were in ſufficient quantity to effect a thorough fermentation, the liquid afterwards exhaled and drawn off, would be thin and inflammable; which makes what we call a *ſpirit*; otherwiſe, thick, white, ſapid, *&c.* and called a *water*. See FERMENTATION, SPIRIT, &c.

The *waters* procured in this manner, contain the oil of the plant in great perfection; which makes them of conſiderable uſe in medicine, further than thoſe raiſed without fermentation; beſide that they keep better and longer; the ſpirit in them preventing their corrupting or growing mothery.

Compound WATERS, or thoſe wherein ſeveral ingredients are uſed, are very numerous, and make a large article in commerce; ſome prepared by the apothecaries, according to the diſpenſatory preſcripts, for medicinal uſes; others by the diſtillers, to be drank by way of dram, *&c.* and others by the perfumers, *&c.*

They are diſtinguiſhed by different epithets, taken from the Latin, Greek, Arabic, Engliſh, *&c.* in reſpect either of the ſpecific virtues of the *waters*; or the parts of the body, for the cure whereof they are intended; or the diſeaſes they are good againſt; or the ingredients they are compounded of; or their different uſes, *&c.*

The moſt conſiderable among the claſs of *compound-waters*, we ſhall here enumerate. — The manner of making them, it is true, is not always the ſame; eſpecially thoſe intended for drinking; for which, every one gives his own method as the beſt. — Thoſe we here deliver, are taken from ſuch as have the greateſt reputation in preparing theſe things; or from thoſe who have wrote beſt of them.

We have only three general remarks to add, with regard to thoſe intended for drinking: 1°. That ſuch wherein any thing is infuſed, as bruiſed fruits, pounded herbs, or ground ſpices, are always paſſed through a ſtrainer, to make them finer and purer. — 2°. That thoſe made with brandy, or ſpirit of wine, are uſually diſtilled after mixing their ingredients; which renders thoſe liquors exceedingly ſtrong and dangerous, and confirms the proverb; *Plures occidit gula quam gladius.* In effect, ſome of them are ſo penetrating, that they burn the tongue when taken. — 3°. That the *waters* which take their name from any particular thing, as *cinnamon*, &c. have always ſome other ingredients joined with them, according to the taſte or ſmell required.

Alexipharmic, or *Alexiterial* WATERS, are *waters* that reſiſt poiſons and the plague. — Such are thoſe of angelica, ſcorzonera, citron, orange, ſcordium, rue, *&c.* See ALEXIPHARMIC. — Such alſo are *treacle-water*, *plague-water*, *milk-water*, *poppy-water*, &c.

Allum-WATER, is a vulnerary *water*, thus called, by reaſon the baſis, or principal ingredient thereof, is allum. See ALLUM, and VULNERARY.

Angelica-WATER, is uſually prepared of brandy, angelica-roots and ſeeds, carduus, baum, fennel-ſeed, *&c.* the whole beat together in a mortar; infuſed for a night in French brandy, and then diſtilled. — It is reputed a good carminative, and cordial, as alſo a cephalic, *&c.* See ANGELICA.

Aniſeed-WATER. — To eight parts of eſſence of aniſeed diſtilled, put three parts of brandy, with one of *water* boiled; mix the whole together: and if you require it ſugared, add half a pint of clarified ſugar; but many prefer it without: and ſtrain the whole.

Apricot-WATER. — To a quart of *water*, put ſix or eight apricots, ſliced; boil the whole, to extract the taſte; and when cold, add four or five ounces of ſugar. — When that is diſſolved ſtrain it.

Aromatic-WATERS, we have already ſpoke of among the ſimple *waters*.

Arthritic-WATERS, are *waters* good againſt the gout, palſy, tremors, pains in the joints, *&c.* — Such are thoſe of piony, chamæpitys, betony, roſemary, *&c.*

Bryony-WATER, is one of the *compound waters* preſcribed in the college diſpenſatory; prepared from bryony-roots, rue, mugwort, ſavin, feverfew, dittany, *&c.* — It is a good hyſteric, opens menſtrual obſtructions, *&c.*

Carduus-WATER, is made from carduus benedictus pounded in a mortar, and put in an alembic. — Then, a ſufficient quantity of the juice of the ſame ſort of plant, drawn by expreſſion, is poured into the alembic, that the herbs ſwimming in the juice, may be in no danger of ſticking to the bottom of the cucurbit in diſtillation. Laſtly, fitting on a capital, and luting the joints, diſtil half as much juice as you put in. — This *water* is ſudorific; and good againſt the plague, malignant fevers, *&c.* See CARDUUS.

WATER *of ſeparation*, or *depart*, is only *aqua fortis*; thus called, becauſe ſerving to ſeparate gold from ſilver. See DEPART. It is alſo called

Cauſtic-WATER, and is prepared of a mixture of ſpirit of nitre and vitriol, drawn by force of fire; to which are ſometimes added allum, *&c.*

It diſſolves all metals, gold only excepted. — The invention of aqua fortis, is uſually referred to the thirteenth century: though ſome hold it to have been known in the time of Moſes. See AQUA *Fortis*, AURUM *Potabile*, &c.

Cephalic-WATERS, are *waters* proper to ſtrengthen and comfort the brain. — Such are thoſe of roſemary, marjoram, ſage, pyony, bettony, baum, *&c.* See CEPHALIC.

Chalybeat-WATER, is a *water* wherein red-hot ſteel has been quenched. — It is aſtringent, and good, like ferruginous, or iron *waters*, for diarrhœas, *&c.* CHALYBEAT, and MARTIAL.

Cherry-WATER. — In a quart of *water* cruſh half a pound of cherries, with four or five ounces of ſugar. Strain the whole through a cloth, till it be very clear.

Cinnamon-WATER. — In a quart of *water* boil half an ounce of broken cinnamon; and taking it off the fire, add a quarter of a pound of ſugar: let it cool, and ſtrain it. — Or thus: take a pound of cinnamon, three pounds of *roſe-water*, and as much white-wine: bruiſe the cinnamon, infuſe it fourteen days, then diſtil it. — The firſt *water* that riſes is the beſt; then the ſecond; then the third. See CINNAMON.

Clary-WATER, is compoſed of brandy, ſugar, and cinnamon, with a little ambergreaſe diſſolved in it. — It helps digeſtion, and is cardiac. — This *water* is rendered either purgative or emetic, by adding reſins of jallop and ſcammony, or crocus metallorum. — Some make *clary-water* of brandy, juice of cherries, ſtrawberries and gooſeberries, ſugar, cloves, white pepper, and coriander-ſeeds; infuſed, ſugared, and ſtrained.

Clove-WATER, is prepared of brandy, and cloves bruiſed therein, and diſtilled. See CLOVE.

Cordial, or *Cardiac* WATERS, are *waters* proper to ſtrengthen and comfort the heart. — Such are thoſe of endive, chicory, bugloſs, burrage, marrigolds, *&c.* See CARDIAC, and CORDIAL.

Coſmetic-WATERS, are *waters* proper to cleanſe, ſmoothen, and beautify the ſkin. See COSMETIC.

Fennel-WATER. — Infuſe a handful of fennel in a pint of cold *water*, for an hour, or an hour and a half: add three or four ounces of ſugar. Strain, it and drink it.

Gentian-WATER. — Take four pounds of gentian roots, either green, or dried; mince them ſmall, infuſe them in white-wine, or only ſprinkle them therewith; then diſtil them, with the addition of a little centaury the leſſer. See GENTIAN.

It is frequently uſed as a ſtomachic, and is alſo commended for a deterger; ſerving in dropſies, jaundice, obſtructions of the viſcera, *&c.*

Gum-WATER, is that made by letting gum-arabic, incloſed in a linen rag, infuſe in common *water*. — The ladies alſo make *water* to gum their hair, of quince-kernels ſteeped in *water*. See GUM, and ARABIC.

Hepatic-WATERS, are thoſe uſed to cleanſe, ſtrengthen, and refreſh the liver. — Such are thoſe of chicory, capillaries, purſlain, agrimony, fumitory, *&c.*

Honey-WATER, is a *water* prepared in places where much honey is made, by waſhing out the honey-combs, and the veſſels they have been in, in common *water*. — This gives it a honey-taſte, and it afterwards becomes very clear, and the people uſe it as their common drink. See HONEY.

Horſe-raddiſh-WATER, *aqua raphani*, is prepared of the juices of ſcurvygraſs, brook-lime, water-creſſes, white-wine, lemon-juice, bryony-root, horſe-raddiſh, winter's-bark and nutmeg, digeſted and diſtilled. — It is a good diuretic; cleanſing, and removing obſtructions of the viſcera, promoting perſpiration, *&c.*

Hungary-WATER, is a liquor diſtilled in balneo mariæ, from roſemary-flowers, and ſpirit of wine well rectified. — It has its name from the wonderful effects it is ſaid to have had on a queen of Hungary, at the age of 72 years. — It is good againſt faintings, palſies, lethargies, apoplexies, and hyſterical diſorders. — There are divers ways of preparing it. See HUNGARY.

Hyſteric-WATERS, are thoſe proper to ſtrengthen the matrix, or womb, and remedy the diſorders that befal it. — Such are thoſe of bryony, matricary or motherwort, hyſſop, fennel, baum, mugwort, ſmallage, *&c.* See HYSTERIC.

Iced, or *Frozen* WATERS, are certain agreeable and wholeſom *waters*, as *orange-water*, or the like, artificially froze in ſummer-time, particularly in hot countries, to be uſed in collations, *&c.* as coolers. — The way of making them is thus: the veſſels containing the liquors deſigned to be froze, are firſt ſet in a pail, in ſuch manner, as not to touch each other; then covered up, and the void ſpace in the pail filled with common ice, beaten, and mixed with ſalt. — Every half hour they clear out what *water* the thawing ice ſends to the bottom of the pail, by means of a hole at bottom; and at the ſame time ſtir up the liquors with a ſpoon, that they may freeze into ſnow: for were they to ſhoot in form of ice, or icicles, they would have no taſte. — Then, covering the veſſels again, they fill up the pail with more beaten ice, and ſalt, in lieu of that diſſolved and evacuated. The more expeditious the freezing is required to be, the more ſalt is to be mixed with the ice. See FREEZING.

Imperial-WATER, *Aqua imperialis*, is a *water* diſtilled from cinnamon, nutmeg, citron-bark, cloves, calamus aromaticus, ſantal, and divers other ſimples, infuſed in white-wine and *baum-water*. — It is a pleaſant cordial-dram, good againſt diſeaſes of the brain, ſtomach, and womb.

Juniper-WATER, is a compound *water*, made of brandy, and juniper-berries beaten therein, and diſtilled. See JUNIPER, and GENEVA.

Lime-WATER, is common *water*, wherein quick-lime has been ſlaked; and afterwards filtered. See LIME.

Milk-WATER, *Aqua lactis*, is prepared of mint, wormwood, carduus benedictus, goat's-rue, and meadow-ſweet, bruiſed, infuſed in milk, and drawn off by infuſion. — It is held alexipharmic, and cephalic.

Aqua Mirabilis, or *the wonderful* WATER, is prepared of cloves, galangals, cubebs, mace, cardomums, nutmeg, ginger, and ſpirit of wine, digeſted twenty four hours, then diſtilled. — It is a good and agreeable cordial, carminative, *&c.*

Nephritic-WATERS, are ſuch as ſtrengthen the reins, and help them to diſcharge, by urine, any impurities therein. — Such are thoſe of the honeyſuckle, pellitory, raddiſh, beans, mallows, *&c.* See NEPHRITIC.

The *nephritic-water* of Dr. Radcliff, popularly called *Dr. Radcliff's water*, is taken into the laſt edition of the college diſpenſatory. — It is prepared from the kernels of black cherries, peaches, and bitter almonds, beaten in a mortar into a paſte, with rheniſh wine; and ſeeds of ſmallage, treacle, muſtard, gromwel, and parſley, beaten likewiſe, and added thereto: to the mixture are put juniper-berries, garlic, onions, leeks, pimpernel, horſe-raddiſh, calamus aromaticus, cinnamon, wall-rue, mace, and nutmegs: the whole macerated in rheniſh, ſpirit of black cherries, *&c.* and thus diſtilled. — It is one of the moſt powerful detergers and cleanſers known; good in the dropſy, jaundice, aſthma, pleuriſy, *&c.*

Ophthalmic, or *Eye*-WATERS, are ſuch as are good in diſorders of the eyes. — ſuch are thoſe of eye-bright, fennel, vervain, plantain, celandine, cyanus, *&c.* See OPHTHALMIC.

Orange-flower WATER, is made of common *water*, ſugar, and orange-flowers, infuſed for about two hours. — After the like manner, one may make *waters* of divers other flowers; as violets, jonquils, jeſſamies, tuberoſes, *&c.*

Peach-WATER, is made after the ſame manner as *apricot-water*; only with peaches.

Phagedænic-WATER, is *lime-water*, to every pound whereof, is added twenty or thirty grains of corroſive ſublimate, in powder. — It ſerves to cleanſe old ulcers, to eat off fungous fleſh, *&c.* See PHAGEDÆNIC.

Plague-WATER, *Aqua epidemica*, is prepared from the roots of maſterwort, angelica, pyony, and butter-bur; viper-graſs, Virginia-ſnakeroot, rue, roſemary, baum, carduus, water-germander, marigold, dragon, goat's-rue, and mint; the whole infuſed in ſpirit of wine, and diſtilled. See PLAGUE. — It is of frequent uſe, as an alexipharmic: it revives the ſpirits, and promotes a diaphoreſis. It is the baſis of moſt juleps now preſcribed, eſpecially in feveriſh caſes.

Poppy-WATER, is prepared from the flowers of wild poppies, infuſed in white-wine, or brandy, and drawn off in a cold ſtill. — It is a cordial, good againſt the colic, and by ſome called *red plague-water*.

Pyony-WATER, is made of pyony and lime-flowers, and lilly of the valley ſteeped in canary, and diſtilled: to the *water* thus procured, are added the root of male pyony, white dittany, birthwort, miſletoe, rue, caſtor, cubebs, cinnamon, betony, *&c.* — It is a good cordial, and much uſed in nervous caſes.

Roſe-WATER. — Take of roſes three parts, and of fennel and rue each, one part; chop them ſmall, and mix them well together; then diſtil them. See ROSE. — This *water* is excellent for the eyes, *&c.*

Scordium-WATER, is prepared from the juices of goats-rue, ſorrel, ſcordium, citrons, and venice treacle, digeſted and diſtilled. — It is an alexipharmic.

Second-WATER. See the article SECUNDA *Aqua*.

Specific-WATERS, are ſuch as have ſome peculiar virtue, appropriate to certain diſeaſes. — Thus *purſlain-water*, wherein mercury has been infuſed, is a ſpecific againſt worms in young children. See SPECIFIC.

Splenetic-WATERS, are thoſe proper againſt diſeaſes of the ſpleen. — Such are thoſe of the tamariſk, cuſcuta, hartſtongue, hops, *&c.* See SPLEEN.

Stephens's-WATER, *Aqua Stephani*, is made from cinnamon, ginger, galangals, cloves, nutmegs, paradiſe-grains, aniſſeeds, ſweet-fennel, carraway, thyme, mint, ſage, pennyroyal, pellitory, roſemary, red roſes, camomile, origany, and lavender, ſteeped in french brandy, or ſpirit of wine, and diſtilled. — It is a good cephalic and cardiac, and is alſo reputed hyſterical.

Stomachic WATERS, are ſuch as have the virtue to cleanſe, ſtrengthen, and confirm the ſtomach. — As red *roſe-water*, *mint-water*, *aniſeed-water*, &c. See STOMACHIC.

Stygian-WATER. See the article AQUA *Regalis*.

Styptic-WATER, is a diſſolution of rubified vitriol, or the colcothar remaining in the retort, after the ſpirit has been extracted; with burnt allum and ſugar-candy. — With thirty grains of each of theſe three drugs, ſome mix half an ounce of urine of a young man, as much *roſe-water*, and two ounces of *plantain-water*. — Its uſe is to ſtop bleeding. See STYPTIC.

Surfeit-WATER. See the article SURFEIT.

Treacle-WATER, *Aqua Theriacalis*, is directed by the college diſpenſatory to be made of green walnuts, rue, carduus, marigold, baum, butter-bur-roots, burdock, angelica, maſterwort, water-germander, Venice-treacle, mithridate, canary-vinegar, and lemon-juice, ſteeped and diſtilled. — It is the moſt uſed of any in the ſhops; though Dr. Quincy decries it as one of the worſt concerted of all. — Its intention is to be an alexipharmic, and ſudorific.

Other diſpenſatories give a more ſimple *treacle-water*, made from venice treacle, with an equal quantity of brandy and vinegar. — It is good for ulcers, and eroſions of the mouth; eſpecially if a little Armenian bole be diſſolved therein. See THERIACA.

Vulnerary-WATER, is a *water* proper for the healing of wounds, prepared from the juice of vulnerary plants. See VULNERARY.

WATER, in anatomy, *&c.* is applied to divers liquors, or humours in the human body. See HUMOUR, FLUIDS, *&c.* Such is the aqua phlegmatica, *phlegmatic-water*; which is a ſoft ſerous humour contained in the pericardium, and wherein the heart ſwims. See PERICARDIUM.

Anatomiſts are divided about it: ſome will not have it natural, but ſuppoſe it ſeparated forcibly during the pangs of death: their reaſon is, the difficulty they meet withal in tracing its paſſage, or how it is carried off. — The lateſt anatomiſts, however, ſeem to agree to its being a natural and neceſſary humour: and one reaſon is, that it is found even in the pericardiums of fœtus's.

It has likewiſe been diſputed whence it ſhould be ſeparated. — The freſheſt opinion is, that it is ſecreted by ſome glands about the baſis of the heart; and that it diſtils thence, drop by drop, into the cavity of the pericardium, in ſuch quantity, as juſt to ſupply what is expended daily by the motion and warmth of the heart; and ſo needs no evacuation. — Its uſe is to moiſten, lubricate, and cool the heart, and prevent any inflammation that might ariſe from the dry friction of the heart and pericardium. — So that it does the ſame office to the heart, that the *water* does wherein the fœtus ſwims; which, without it, would not have liberty to move at all. See HEART.

WATER is alſo uſed in divers ceremonies, both civil and religious. — Such is the *baptiſmal water*, *holy water*, &c. See BAPTISM, &c.

Holy WATER, is a *water* prepared every Sunday in the Romiſh church, with divers prayers, exorciſms, *&c.* uſed by the people to croſs themſelves withal at their entrance, and going out of church; and pretended to have the virtue of waſhing away venial ſins, driving away devils, preſerving from thunder, diſſolving charms, ſecuring from, or curing diſeaſes, *&c.*

The uſe of *holy water* appears to be of a pretty antient ſtanding in the church: witneſs S. Jerom, in his life of S. Hilarion, and Gretſer *de Benedict.* cap. x, *&c.* — M. Godeau attributes its original to pope Alexander, a martyr under the emperor Adrian.

Many of the reformed take the uſe of *holy water* to have been borrowed from the *luſtral water* of the antient Romans. See LUSTRAL. — Though it might as well be taken from the ſprinklings in uſe among the Jews. See *Numbers* xix. 17.

Urban Godfrey Siber, a German, has a diſſertation printed at Leipſic, to ſhew, by proofs brought from church-hiſtory, that one may give *holy water* to drink, to brutes.

Bitter **WATERS** *of Jealouſy.* — In the Levitical law, we find mention made of a *water*, which ſerved to prove whether or no a woman were an adultreſs. — The formula was this: the prieſt, offering her the holy *water*, denounced, — “ If “ thou haſt gone aſide to another, inſtead of thy huſband, “ and if thou be defiled, *&c.* the Lord make thee a curſe and “ an oath among thy people, by making thy thigh to rot, “ and thy belly to ſwell: and this *water* ſhall go into thy “ bowels, to make thy belly to ſwell, and thy thigh to rot.” And the woman ſhall ſay, *Amen.* — “ Theſe curſes the prieſt “ ſhall write in a book, and blot them out with the *bitter* “ *water.*” — “ When he hath made her drink the *bitter water*, it ſhall come to paſs, that, if ſhe be defiled, the *water* “ ſhall enter into her, and become bitter, and her belly ſhall “ ſwell, *&c.*” — “ If ſhe be not defiled, ſhe ſhall be free, “ and conceive ſeed.” *Numbers*, ch. v.

WATER *Ordeal*, or *Trial*, was of two kinds; by hot, and by cold *water*. See ORDEAL, &c.

Trial or Purgation by boiling, or hot **WATER.** — Among our anceſtors, there was a way of proving crimes, by immerging the body, or the arm in hot *water*, with divers religious ceremonies. See PURGATION, &c.

In the judgment by *boiling water*, the accuſed, or he who perſonated the accuſed, was obliged to put his naked arm into a cauldron full of *boiling water*; and to draw out a ſtone thence, placed at a greater or leſs depth, according to the quality of the crime. — This done, the arm was wrapped up, and the judge ſet his ſeal on the cloth; and at the end of three days they returned to view it; when, if it were found without any ſcald, the accuſed was declared innocent.

The nobles and great perſons purged themſelves thus by *hot water*; and the populace by *cold water*.

F. Mabillon will have this ceremony to have been introduced by pope Eugenius II. in lieu of making oath with the hand laid on the relicks of ſome ſaint; which, having been abuſed, was prohibited by Innocent III. at the council of Lateran.

“ Theotberge, wife of Lothaire of France, having been ac- “ cuſed of inceſt, committed before marriage with her bro- “ ther duke Hubert; as ſhe could not be convicted by any “ witneſſes, certain of the biſhops were conſulted as to the “ manner wherein the judges ſhould proceed, in an affair “ where the crime, though very dubious, did diſhonour to “ the king. — The biſhops were of opinion, they ſhould “ have recourſe to the proof by *boiling water*; which con- “ ſiſted in this: that the accuſed, to prove her innocence, “ ſhould plunge her hand into a baſon of *boiling water*, and “ take out a ring put therein. — Sometimes, indeed, they “ ſubſtituted another perſon to make the trial, in the room “ of the accuſed: accordingly, the rank and quality of “ Theotberge excuſing her from making the proof herſelf, “ ſhe choſe a man to do it for her; who, either out of zeal “ for the life and honour of the princeſs, or for money, ſtood “ the teſt, and drew out his hand and the ring, without “ harm.” *F. Daniel's Hiſt. of France.*

Trial or Purgation by cold **WATER.** — After certain prayers, and other ceremonies, the accuſed was ſwaddled, or tied up all in a pelotoon, or lump; and thus caſt into a river, lake, or veſſel of *cold water*; where, if he ſunk, he was held criminal; if he floated, innocent. See JUDICIUM, PURGATION, PROOF, DUEL, &c.

WATER, among jewelers, is properly the colour or luſtre of diamonds, and pearls; thus called, by reaſon theſe were antiently ſuppoſed to be formed, or concreted of *water*. See GEM, *&c.*

Thus, they ſay, ſuch a pearl is of a fine *water*. See PEARL. The *water* of ſuch a diamond is muddy. See DIAMOND. The term is ſometimes alſo uſed, though leſs properly, for the colour or hue of other precious ſtones. See PRECIOUS *Stone*, GEM, &c.

WATER-*Bailiff*, is an officer antiently eſtabliſhed in all port-towns, for the ſearching of ſhips; as appears from 28 Hen. VI. cap. v.

There is ſuch an officer ſtill on foot in the city of London, who ſuperviſes and ſearches all fiſh brought thither; and gathers the toll ariſing from the river of Thames. — He attends alſo on the lord-mayor in his expeditions by *water*, and hath the principal care of marſhalling the gueſts at the table. — He alſo arreſts men for debt, or other perſonal or criminal matters on the river of Thames, by warrant of his ſuperiors, &c.

WATER-*Born*, in the ſea language. — A ſhip is ſaid to be *water-born*, when ſhe is where there is no more *water* than will barely bear her from ground; or when lying even with the ground, ſhe firſt begins to float, or ſwim.

WATER-*Camblets*. See the article CAMBLET.

WATER-*Colours*, in painting, are ſuch colours as are only diluted and mixed up with *gum-water*. — In contradiſtinction to *oil colours*. See COLOUR.

The uſe of *water-colours*, makes what we call *limning*; as that of oil-colours does *painting*, properly ſo called. See LIMNING, and PAINTING.

Cut-**WATER.** See the article CUT-*Water*.

Dead-**WATER**, in the ſea language, is the *eddy water* that follows the ſtern of the ſhip, not paſſing away ſo faſt as that which ſlides by her ſides. See DEAD.

WATER-*Farcin*. See the article FARCIN.

WATER-*Gage*, an inſtrument to meaſure the depth, or quantity of any *water*. See GAGE, SOUNDING, &c.

WATER-*Gang*, a channel cut to drain a place, by carrying off a ſtream of *water*. See CANAL, TRENCH, &c.

WATER-*Gilding*. See the article GILDING.

WATER-*Line*, of a ſhip, is a line which diſtinguiſhes that part of her under *water*, from that above, when ſhe is duly laden.

WATER-*Meaſure.* — Salt, ſea-coal, *&c.* while aboard veſſels in the pool, or river, are meaſured with the corn-buſhel heaped up; or elſe five ſtriked pecks are allowed to the buſhel. — This is called *water-meaſure*; and exceeds Wincheſter-meaſure by about three gallons in the buſhel. See MEASURE, CHALDRON, &c.

WATER-*Poiſe*. See the article HYDROMETER.

Dr. Hooke has contrived a *water-poiſe*, which may be of good ſervice in examining the purity, *&c.* of *water.* — It conſiſts of a round glaſs ball, like a bolt-head, about three inches in diameter, with a narrow ſtem or neck, $\frac{1}{24}$ of an inch diameter; which being poiſed with red lead, ſo as to make it but little heavier than pure ſweet *water*, and thus fitted to one end of a fine balance, with a counterpoiſe at the other; upon the leaſt addition, of even $\frac{1}{2000}$th part of ſalt to a quantity of *water*, half an inch of the neck will emerge above the *water*, more than did before. *Philoſophical Tranſact.* N° 197.

WATER-*Rocket*. See the article ROCKET.

WATER-*Scape*, of the Saxon *waterſchap*, denotes an aquæduct, drain, or paſſage for *water*. See AQUÆDUCT.

WATER-*Shoot*, a young ſprig, which ſprings out of the root or ſtock of a tree. See SUCKERS, STOCK, &c.

WATER-*Shot*, in the ſea language, a ſort of riding at anchor, when a ſhip is moored neither croſs the tide, nor right up and down; but quartering betwixt both.

WATER-*Table*, in architecture, is a ſort of ledge, left in ſtone or brick walls, about 18 or 20 inches from the ground: from which place, the thickneſs of the wall begins to abate. See WALL.

WATER-*Way*, in a ſhip, is a ſmall ledge of timber, lying fore and aft on the deck, cloſe by her ſides; to keep the *water* from running down there.

WATER-*Wheel*, an engine for raiſing *water* in great quantity out of a deep well. See PERSIAN *Wheel*.

WATERING, in gardening, *&c.* the application of *water* to the ſoil of plants, *&c.* when not ſufficiently moiſtened with rain, dew, *&c.* See SOIL, VEGETATION, &c.

After ſowing ſeed of any kind, though the ground be ever ſo dry, they ſhould never be *watered* till they have been forty-eight hours in the ground, and the ground is a little ſettled about them; otherwiſe, a too great glut of nouriſhment at firſt will be apt to burſt them. See SEED, and SEMINATION.

Care is to be taken, that the leaves of young and tender plants be not *watered* at all while the weather is cold; only the ground to be wet about them. — For hardy plants and ſeeds, if the nights be cold, *water* in the forenoon; otherwiſe, in the evening.

Water that comes out of deep pits, or wells, ſhould ſtand a day in an open veſſel, ere it be applied to tender plants in the ſpring. — Dung of ſheep, pidgeons, or hens, or aſhes, lime, *&c.* infuſed in the water, will forward the growth of plants. See MANURING.

WATERING, in the manufactures. — *To* WATER *a Stuff*, is to give it a luſtre, by wetting it lightly, and then paſſing it through the preſs, or the calender, whether hot or cold. See CALENDER, TABBY, PRESSING, &c.

WATERY *Humour*. See the articles AQUEOUS, and HUMOUR.

WATTLES, among huſbandmen, grates or hurdles, for folds for ſheep. See HURDLES, PARK, *&c.*

The word is alſo uſed for the gills of a cock — and for the naked red fleſh that hangs under a turkey's neck.

WAVE, *Unda*, in phyſics, a cavity in the ſurface of water, or other fluid, with an elevation aſide thereof. See FLUID, and WATER.

The origin of *waves* may be thus conceived. — The ſurface of a ſtanding water being naturally plain, and parallel to the horizon; if by any means it be rendered hollow, as at A, (*Tab. Hydroſtatics, fig.* 30.) its cavity will be ſurrounded with an elevation B B; this raiſed water will deſcend by its gravity, and with the celerity acquired in deſcending, form a new cavity; by which motions, the water will aſcend at the ſides of this cavity, and fill the cavity A, while there is a new elevation towards C; and when this laſt is depreſſed, the water riſes a-new towards the ſame part. — Thus ariſes a ſucceſſive motion in the ſurface of the water; and a cavity, which carries an elevation before it, is moved along from A towards C. — This cavity, with the elevation next it, is called a *wave*; and the ſpace taken up by the *wave* on the ſurface of the water, and meaſured according to the direction of the *wave*'s motion, is called the *breadth of the wave*. See RIVER, and UNDULATION.

The Motion of WAVES makes an article in the new philoſophy; and the laws thereof being now pretty well determined, we ſhall give the reader the ſubſtance of what is taught thereon.

1°. Then, the cavity, as A, is incompaſſed every way with an elevation; and the motion above-mentioned expands itſelf every way: therefore the *waves* are moved circularly.

2°. Suppoſe, now, A B, (*fig.* 31.) an obſtacle, againſt which the *wave*, whoſe beginning is at C, ſtrikes; and we are to examine what change the *wave* ſuffers in any point, as E, when it is come to the obſtacle in that point. — In all places through which the *wave* paſſes in its whole breadth, the *wave* is raiſed; then a cavity is formed, which is again filled up; which change while the ſurface of the water undergoes, its particles go and return through a ſmall ſpace: the direction of this motion is along C E, and the celerity may be repreſented by that line. — Let this motion be contrived to be reſolved into two other motions, along G E and D E, whoſe celerities are reſpectively repreſented by thoſe lines. — By the motion along D E, the particles do not act againſt the obſtacle; but after the ſtroke, continue their motion in that direction with the ſame celerity; and this motion is here repreſented by E F, ſuppoſing E F and E D to be equal to one another: but by the motion along G E, the particles ſtrike directly againſt the obſtacle, and this motion is deſtroyed; for though the particles are elaſtic, yet, as in the motion of the *waves* they run through but a ſmall ſpace, going backward and forward, they proceed ſo ſlowly, that the figure of the particles cannot be changed by the blow; and ſo are ſubject to the laws of percuſſion of bodies perfectly hard. See PERCUSSION.

But there is a reflection of the particles from another cauſe: the water which cannot go forward beyond the obſtacle, and is puſhed on by that which follows it, gives way where there is the leaſt reſiſtance; that is, aſcends: and this elevation, which is greater in ſome than other places, is cauſed by the motion along G E; becauſe it is by that motion alone that the particles impinge againſt the obſtacle. — The water, by its deſcent, acquires the ſame velocity with which it was raiſed; and the particles of water are repelled from the obſtacle, with the ſame force in the direction E G, as that with which they ſtruck againſt the obſtacle. — From this motion, and the motion above-mentioned along E F, ariſes a motion above E H, whoſe celerity is expreſſed by the line E H, which is equal to the line C E: and by the reflection, the celerity of the *wave* is not changed; but it returns along E H, in the ſame manner, as if, taking away the obſtacle, it had moved along E *h*.

If from the point C, C D be drawn perpendicular to the obſtacle, and then produced, ſo that D *c* ſhall be equal to C D, the line H E continued will go thorough *c*: and as this demonſtration holds good in all points of the obſtacle, it follows, that the reflected *wave* has the ſame figure on that ſide of the obſtacle, as it would have had beyond the line A B, if it had not ſtruck againſt the obſtacle. — If the obſtacle be inclined to the horizon, the water riſes and deſcends upon it, and ſuffers a friction, whereby the reflection of the *wave* is diſturbed, and often wholly deſtroyed: and this is the reaſon why very often the banks of rivers do not reflect the *waves*.

If there be a hole, as I, in the obſtacle B L, the part of the *wave* which goes through the hole continues its motion directly, and expands itſelf towards Q Q; and there is a new *wave* formed, which moves in a ſemicircle, whoſe centre is the hole. For the raiſed part of the *wave*, which firſt goes through the hole, immediately flows down a little at the ſides; and by deſcending, makes a cavity, which is ſurrounded with an elevation on every part beyond the hole, which moves every way in the ſame manner as was laid down in the generation of the firſt *wave*.

In the ſame manner, a *wave* to which an obſtacle, as A O, is oppoſed, continues to move between O and N; but expands itſelf towards R, in a part of a circle, whoſe centre is not very far from O — Hence, we may eaſily deduce what muſt be the motion of a *wave* behind an obſtacle, as M N.

Waves are often produced by the motion of a tremulous body, which alſo expand themſelves circularly, though the body goes and returns in a right line; for the water which is raiſed by the agitation, deſcending, forms a cavity, which is every where ſurrounded with a riſing.

Different *waves* do not diſturb one another, when they move according to different directions. — The reaſon is, that whatever figure the ſurface of the water has acquired by the motion of the *waves*, there may in that be an elevation and depreſſion; as alſo ſuch a motion as is required in the motion of a *wave*.

To determine the celerity of the *waves*, another motion, analogous to theirs, muſt be examined. — Suppoſe a fluid in the bent cylindric tube E H, (*fig.* 32.) and let the fluid in the leg E F, be higher than in the other leg by the diſtance *l* E; which difference is to be divided into two equal parts at *i*. — The fluid, by its gravity, deſcends in the leg E F, while it aſcends equally in the leg E H: ſo that when the ſurface of the fluid is arrived at *i*, it is at the ſame heighth in both legs; which is the only poſition wherein the liquid can be at reſt: but by the celerity acquired in deſcending, it continues its motion, and aſcends higher in the tube G H; and in E F is depreſſed quite to *l*. except ſo much as it is hindered by the friction againſt the ſides of the tube. — The fluid in the tube G H, which is higher, alſo deſcends by its gravity, and ſo the fluid in the tube riſes and falls, till it has loſt all its motion by the friction.

The quantity of matter to be moved, is the whole fluid in the tube; the moving force, is the weight of the column *l* E, whoſe heighth is always double the diſtance E *i*; which diſtance, therefore, increaſes and diminiſhes in the ſame ratio with the moving force. — But the diſtance E *i*, is the ſpace to be run through by the fluid, in order to its moving from the poſition E H, to the poſition of reſt; which ſpace, therefore, is always as the force continually acting upon the fluid: but it is demonſtrated, that it is on this account that all the vibrations of a pendulum, oſcillating in a cycloid, are iſochronal; and therefore, here alſo, whatever be the inequality of the agitations, the fluid always goes and returns in the ſame time. — The time in which a fluid thus agitated aſcends, or deſcends, is the time in which a pendulum vibrates, whoſe length is equal to half the length of the fluid in the tube, or to half the ſum of the lines E F, F G, G H. This length is to be meaſured in the axis of the tube. See PENDULUM.

From theſe principles, to determine the celerity of the *waves*, we muſt conſider ſeveral equal *waves* following one another immediately; as A, B, C, D, E, F, (*fig.* 33.) which move from A towards F: the *wave* A has run its breadth, when the cavity A is come to C; which cannot be, unleſs, the water at C aſcends to the heighth of the top of the *wave*, and again deſcends to the depth C; in which motion, the water is not agitated ſenſibly below the line *h i*: therefore, this motion agrees with the motion in the tube abovementioned; and the water aſcends and deſcends, that is, the *wave* goes through its breadth, while a pendulum of the length of half B C performs two oſcillations, or while a pendulum of the length B C D, that is, four times as long as the firſt, performs one vibration. Therefore, the celerity of the *wave* depends upon the length of the line B C D; which is greater, as the breadth of the *wave* is greater, and as the water deſcends deeper in the motion of the *waves*. — In the broadeſt *waves*, which do not riſe high, ſuch a line as B C D, does not much differ from the breadth of the *wave*; and in that caſe, a *wave* moves its breadth, while a pendulum, equal to that *wave*, oſcillates once. See OSCILLATION.

In every equable motion, the ſpace gone through increaſes with the time and the celerity; wherefore, multiplying the time by the celerity, you have the ſpace gone through: whence it follows, that the celerities of the *waves*, are as the ſquare roots of their breadths: for as the times in which they go through their breadths are in that ratio, the ſame ratio is required in their celerities, that the products of the times, by their celerities, may be as the breadths of the *waves*, which are the ſpaces gone through.

WAVE *Camblets*. See the article CAMBLET.

WAVED, or WAVY, a term in heraldry, when a bordure, or any ordinary or charge in a coat of arms, has its outlines indented, in manner of the riſing and falling of *waves*. — This is alſo called *undy*, *undé*, or *ondé*.

To WAVE, is uſed in the ſea language, for the making ſigns, for a veſſel to come near, or keep off. See SIGNAL.

WAVESON, in the admiralty law, a term uſed for ſuch goods, as, after ſhipwreck, appear ſwimming on the waves. See FLOTSON, &c.

WAVY. See the article WAVED.

WAX, *Cera*, a ſoft yellowiſh matter, whereof the bees form cells to receive their honey. See HONEY-COMB, CELL, &c.

Wax is not the excrement of this laborious inſect, as the antients, and after them many of the moderns, have imagined. — It is properly a juice, exuding out of the leaves of plants, and adhering to the ſurface thereof; from which it is ſcraped off by the bees, with their rough thighs, to build their combs withal. — It is chiefly afforded by lavender and roſemary; from which laſt, any body may gather *wax*; and, with the aſſiſtance of the microſcope, the *wax* may be plainly ſeen ſticking on the leaves of the plant. — So that *wax* is not an animal, but a vegetable ſubſtance.

Naturaliſts have generally imagined *wax* to be gathered from the flower, ſome from the petala, and others from the apices; but Boerhaave affirms it a juice peculiar to the leaves, and not afforded by the flowers, which only yield honey. See HONEY.

The honey is formed of a liquid matter, ſucked into the body; and only ſeems to arrive at its perfection, in the entrails of the little animal: whereas the *wax*, being a hard ſubſtance, is gathered only with the fore legs and chaps; conveyed thence to the middle legs, and thence to the middle joint of the hind legs, where there is a ſmall cavity, like the bowl of a ſpoon, to receive it; and where it is collected into heaps, of a ſhape and ſize of lentils.

The bee arrived at the hive with its load of *wax*, finds ſome difficulty in unburdening himſelf of ſo tenacious a matter. — Frequently, being unable to lay it down himſelf, he calls for aſſiſtance, by a particular motion of the legs and wings; upon which, a number of his companions ſtreight run to his ſuccour, and each with his jaws takes off a ſmall quantity of the *wax*; others ſucceeding; till their laden fellow be quite diſburdened. See HONEY.

Wax makes a very conſiderable article in commerce; the conſumption thereof, throughout the ſeveral parts of Europe, being incredible. — There are two kinds, *white*, and *yellow*; the yellow is the native *wax*, juſt as it comes out of the hive, after expreſſing the honey, *&c.* the white is the ſame *wax*, only purified, waſhed, and expoſed to the air. The preparation of each follows.

Yellow-WAX. — To procure the *wax* from the combs. for uſe; after ſeparating the honey from them, in the manner deſcribed under the article HONEY; they put all the matter remaining in a large kettle, with a ſufficient quantity of water; where, with a moderate fire, they melt it, and then ſtrain it through a linen cloth, by a preſs: ere cold, they ſcum it with a tyle, or a piece of wet wood, and caſt it, while yet warm, in wooden, earthen, or metalline moulds; having firſt anointed them with honey, oil, or water, to prevent the *wax* from ſticking. — Some, to purify it, make uſe of Roman vitriol, or copperas; but the true ſecret is to melt, ſcum it, *&c.* properly, without any ingredients at all.

The beſt is that of a high colour, an agreeable ſmell, brittle, and that does not ſtick to the teeth when chewed. It is often ſophiſticated with roſin, or pitch coloured with rocou, or turmeric.

By chymiſtry, *wax* yields a white thick oil, reſembling butter; whence the chymiſts call it *butter of wax*. — From this oil is drawn a ſecond, as clear as water; both the one and the other are excellent for chilblains. — The fæces remaining in the bag, after expreſſing the *wax*, is uſed both by ſurgeons and farriers, with ſucceſs, againſt ſtrains.

White WAX. — The whitening or blanching of *wax*, is performed by reducing the yellow ſort, firſt, into little bits or grains, by melting it, and throwing it, while hot, into cold water, or elſe by ſpreading it into very thin leaves, or ſkins. See WHITE.

This *wax*, thus granulated, or flatted, is expoſed to the air on linen cloths; where it reſts night and day, having equally need of ſun and dew. — Then they melt and granulate it over again ſeveral times; ſtill laying it out to the air, in the intervals, between the meltings.

When the ſun and dew have at length perfectly blanched it, they melt it, for the laſt time, in a large kettle; out of which they caſt it, with a ladle, upon a table, covered over with little round dents or cavities, of a form of the cakes of *white wax* ſold by the apothecaries, *&c.* having firſt wet thoſe moulds with cold water, that the *wax* may be the eaſier got out. — Laſtly, they lay out theſe cakes to the air for two days and two nights, to render it more tranſparent, and drier.

This *wax* is uſed in the making of torches, tapers, flambeaux, figures, and other *wax*-works. See TAPER, FLAMBEAU, &c.

It is alſo an ingredient in plaiſters, cerats, and divers pomatums, and unguents, for the complexion. See CERATE, &c.

Yellow *wax* is made ſoft with turpentine, yet retains its natural colour. — Red *wax*, is only the white melted with turpentine, and reddened with vermilion or orcanette. — Verdegreaſe makes it green; and burnt paper, or lampblack, black. — Some travellers tell us of a natural black *wax*; aſſuring us there are bees, both in the Eaſt and Weſt-Indies, that make an excellent honey, included in black cells. — Of this *wax* it is, that the Indians make thoſe little vaſes, wherein they gather their balſam of Tolu.

Chafe WAX. See the article CHAFE.

Virgin WAX, *Propolis*, is a ſort of reddiſh *wax*, uſed by the bees to ſtop up the clefts, or holes of the hive. — It is applied juſt as taken out of the hive, without any art, or preparation of boiling, *&c.* — It is the moſt tenacious of any, and is held good for the nerves. See PROPOLIS, and VIRGIN.

Sealing WAX, or *Spaniſh* WAX, is a compoſition of gum-lacca, melted and prepared with roſin and chalk, and coloured red with ground cinnabar. See LACCA.

WAX-*Candles*. See the article CANDLE.

WAX-WORK. — Here we muſt not forget that pretty invention of M. Benoiſt, a man famous at Paris for his figures of *wax*. — Being, by profeſſion, a painter, he found the ſecret of forming moulds on the faces of living perſons, even the faireſt and moſt delicate, without any danger, either to their health, or complexion: in which moulds he caſt maſks of *wax*; to which, by his colours, and glaſs eyes imitated from nature, he gave a ſort of life: inſomuch, as when clothed in proper habits, they bore ſuch a reſemblance, that it was difficult diſtinguiſhing between the copy and the original.

Grafting WAX, is a compoſition ſerving to bind or fix the bud, or graft in the cleft of the ſtock. See ENGRAFTING.

Inſtead of *grafting wax*, the country gardeners, *&c.* only uſe clay, which they lay over a piece of linen cloth, and ſo keep it moiſt; and to prevent its cracking with the heat of the ſun, tie moſs over it. — But the *wax* ordinarily uſed, is a compoſt of one pound and a half of pitch, a quarter of a pound of *wax*, and an ounce of oil of almonds, melted and mixed together; with the addition, in ſpring or autumn, of a moderate quantity of turpentine. See MUMMY.

For cleft-grafting, whip-grafting, and grafting by approach, Mr. Mortimer recommends tempered clay, or ſoft *wax*; but for rind-grafting, clay and horſe-dung.

WAXING, *Ceratio*, in chymiſtry, the preparation of any matter to render it fit and diſpoſed to liquify, or melt, which of itſelf it was not.

This is frequently done, to enable things to penetrate into metals, or other ſolid bodies.

WAX-SCOT, or WAX-SHOT, *Ceragium*, in our ancient cuſtoms, money paid twice a year towards the charge of maintaining lights, or candles in the church.

WAY, *Via*. See ROAD, and VIA; ſee alſo WEIGH.

Roman *ways* are divided into *conſular*, *prætorian*, *military*, and *public*. See MILITARY, &c.

We have four notable ones in England; anciently called *chimini quatuor*, and entitled to the privileges of pax regis. The firſt *Watling-ſtreet*, or *Watheling-ſtreet*, leading from Dover to London, Dunſtable, Toueeſter, Atterſton, and the Severn, near the Wrekin in Shropſhire, extending as far as Angleſea in Wales. — The ſecond, called *Hikenild*, or *Ikenild-ſtreet*, ſtretches from Southampton, over the river Iſis at Newbridge, thence by Camden and Lichfield, then paſſes the Derwent near Derby, ſo to Bolſover-Caſtle, and ends at Tinmouth. — The third, called *Foſſe-Way*, becauſe in ſome places it was never perfected, but lies as a large ditch; leads from Cornwal through Devonſhire, by Tetbury near Stow in the Wolds; and beſide Coventry to Leiceſter, Newark, ſo to Lincoln. — The fourth, called *Erming*, or *Erminage-ſtreet*, ſtretches from S. David's in Weſt-Wales, to Southampton.

Milky WAY. See the article GALAXY.

WAY *of a ſhip*, is ſometimes uſed for the ſame with the *rake*, or run of her, forward and afterward on. See RUN.

But the term is more commonly underſtood, in reſpect of her ſailing. — When ſhe goes apace, they ſay, *ſhe has a good way*; and they call the account how faſt ſhe ſails by the log, *keeping an account of her way*. See LOG.

And becauſe moſt ſhips are apt to fall a little to the lee-ward of their true courſe; they always, in caſting up the log-board, allow ſomething for her *leeward way*: which is one point, or more, according to her *way* of ſailing. See LEE-WAY.

WAY *of the rounds*, *chemin des rondes*, in fortification, is a ſpace left for the paſſage of the rounds, between the rampart, and the wall of a fortified town. See ROUND.

This is not now much in uſe; becauſe the parapet not being above a foot thick, it is ſoon overthrown by the enemy's cannon.

Covert-WAY.	See the article	COVERT.
Foſſe-WAY.		FOSSE-*Way*.
Gang-WAY.		GANG-*Way*.
Hatch-WAY.		HATCH-*Way*.
Spur-WAY.		*Spur*-WAY.
Water-WAY.		*Water*-WAY

WAY-WISER an inſtrument for meaſuring the road, or diſtance gone; called alſo *perambulator*, and *podometer*, or *pedometer*. See PERAMBULATOR, and PEDOMETER.

WAYWODE, is properly a title given the governors of the chief places in the dominions of the czar of Muſcovy.

The palatines, or governors of provinces in Poland, alſo bear the quality of *waywodes*, or *waiwodes*. See PALATINE.

The Poles likewiſe call the princes of Walachia and Moldavia, *waywodes*; as eſteeming them no other, than on the foot of governors; pretending that Walachia and Moldavia are provinces of Poland, which have withdrawn themſelves from the obedience of the republic.— Every where elſe theſe are called *hoſpodars*. See HOSPODAR.

Du Cange ſays, that the name *waywode* is uſed in Dalmatia, Croatia, and Hungary, for a *general of an army*: and Leunclavius, in his *Pandects of Turkey*, tells us, it uſually ſignifies *captain*, or *commander*.

WEAK *Pulſe*. See the article PULSE.

WEALD, or WELD, the woody part of a country; as the *Weald* of Kent. — It is miſ-printed in ſome books and maps, The *Wilds* of Kent, Suſſex, and Surry.

WEANEL, a country word for a young beaſt newly weaned, or taken from ſucking its dam.

WEANING, *Ablactation*. See ABLACTATION.

WEAPONS. See the articles ARMS, and ARMOUR.

WEAPON-*Salve*, a kind of unguent, ſuppoſed to cure wounds ſympathetically, by being applied, not to the wound, but to the *weapon* that made it. See SYMPATHETIC *Powder*, TRANSPLANTATION, &c.

WEAR, or WEER, a great ſtank, or dam in a river; fitted for the taking of fiſh, or for conveying the ſtream to the mill. See FISHING.

WEATHER, the ſtate or diſpoſition of the atmoſphere, with regard to moiſture or drought, heat or cold, wind or calm, rain, hail, froſt, ſnow, fog, &c. See ATMOSPHERE, RAIN, HEAT, WIND, HAIL, FROST, &c.

As it is in the atmoſphere that all plants and animals live and breathe, and as that appears to be the great principle of moſt animal and vegetable productions, alterations, &c. (See AIR.) — There does not ſeem any thing in all philoſophy, of more immediate concernment to us, than the ſtate of the *weather*. — In effect, all living things are only aſſemblages, on bundles of veſſels, whoſe juices are kept moving by the preſſure of the atmoſphere; and which, by that motion maintain life. So that any alterations in the rarity or denſity, the heat, purity, &c. of that, muſt neceſſarily be attended with proportionable ones in theſe.

What vaſt, yet regular alterations, a little turn of *weather* makes, in a tube filled with mercury, or ſpirit of wine, or in a piece of ſtring, &c. every body knows, in the common inſtance of barometers, thermometers, hygrometers, &c. and it is owning partly to our inattention, and partly to our unequal, intemperate courſe of living, that we do not feel as great and as regular ones in the tubes, chords, and fibres, of our own bodies.

It is certain, a great part of the brute creation have a ſenſibility, and ſagacity this way, beyond mankind; and yet, without any means or diſpoſition thereto, more than we; except that their veſſels, fibres, &c. being, in other reſpects, in one equable habitude; the ſame, or a proportionable cauſe from without, has always a like, or proportionable effect on them: that is, their veſſels are regular barometers, &c. affected only from one external principle, *viz*, the diſpoſition of the atmoſphere; whereas ours are acted on by divers from within, as well as without; ſome of which check, impede, and prevent the action of others. See BAROMETER, THERMOMETER, HYGROMETER, &c.

We know of nothing more wanting than a juſt theory of the *weather*, on mechanical principles. — But, in order to that, a compleat hiſtory of the *weather* will be required.

Were regiſters carefully kept in divers parts of the globe, for a good ſeries of years, we ſhould be enabled to determine the directions, breadth, and bounds of the winds, and of the *weather* they bring with them; the correſpondence between the *weather* of divers places, and the dependance between one ſort and another at the ſame place.— In time, no doubt, we might learn to foretel divers great emergencies; as, extraordinary heats, rains, froſts, droughts, dearths, plagues, and other epidemical diſeaſes, &c.

The members of our Royal ſociety, the French academy of ſciences, and divers other authors of note, have made ſome eſſays this way; but the drineſs and quaintneſs of the ſubjects, has induced them all to drop it.

Eraſ. Bartholin, for inſtance, has obſervations of the *weather* for every day throughout the year 1671: Mr. W. Merle made the like at Oxford, for ſeven years, *viz.* the years 1337, 1338, 1339, 1340, 1341, 1342, 1343. Dr. Plot did the ſame at the ſame place, for the year 1684: Mr. Hillier, at Cape Corſe, for the years 1686, 1687: Mr. Hunt, &c. at Greſham College, for the years 1695, 1696; Mr. Derham, at Upminſter in Eſſex, for the years 1691, 1692, 1697, 1698, 1699, 1703, 1704, 1705; Mr. Townley, in Lancaſhire, in 1697, 1698; Mr. Cunningham, at Emin in China, for the years 1698, 1699, 1700, 1701; Mr. Locke, at Oats in Eſſex, 1692; Dr. Scheuchzer, at Zurich, in 1708; and Dr. Tilly, at Piſa, the ſame year. See the *Philoſoph. Tranſact.*

The form of Mr. Derham's obſervation, we give as a ſpecimen of a journal of this kind; obſerving that he notes the ſtrength of the winds, by 0, 1, 2, 3, &c. and the quantity of rain, as it fell through a tunnel, in pounds and centeſimals.

Phænomena of the WEATHER, October 1697.

Day.	Hour.	Weather.	Wind.		Barometer.		Rain.	
27	7	Fair	S. W.	2	29	37	1	52
	12	Rain	S.W. by W.	5	29	34		
	9	Stormy		0	29	88	0	29

As a ſpecimen of the uſe of ſuch hiſtories, we ſhall add ſome general remarks, drawn from them by Mr. Derham; and, — 1°. That foggy *weather* makes the mercury riſe in the barometer, as well as the north wind. — The cauſe, he ſuggeſts, probably enough, to be the acceſſion of the load of vapour, to the former weight of the atmoſphere. See FOG. *Miſling weather*, he likewiſe obſerves to have the like effect. See BAROMETER.

2°. The colds and heats in England and Switzerland, begin and end nearly about the ſame time: nay, and any remarkable *weather*, eſpecially if it continue any while, affects one place as well as the other. See HEAT.

3°. That the remarkably cold days in June, anno 1708, were found, in Switzerland, to precede ours, commonly by about five days, or more; and that the remarkable heats in the following months, began to abate in both places about the ſame time; only ſomewhat ſooner here than there. See COLD.

4°. That though the winds in both places frequently agree, yet they oftener differ. See WIND.

5°. That the barometer is always lower at Zurich than at Upminſter, by ſometimes one, and ſometimes above two Engliſh inches; but the common difference is about half an inch. Which may be ſolved, either by ſuppoſing Zurich ſituate one fourth of a mile higher above the level of the ſea than Upminiſter; or elſe, by ſuppoſing that part of the terraqueous globe, as lying nearer the line, to be higher, and more diſtant from the centre than ours is, which lies nearer the pole. See EARTH, MOUNTAIN, &c.

6°. That the barometers generally riſe and fall together at far diſtant places: though this agreement of the barometer is not ſo conſtant between Zurich and Upminſter, as in places nearer home, *viz.* at London and Paris; where, again, the agreement is not ſo great as between Upminſter and Lancaſhire.

7°. That the variations of the barometer are greateſt, as the places are neareſt the pole.— Thus, *e.gr.* the mercury at London has a greater range by two or three lines than at Paris; and at Paris, a greater than at Zurich. — In ſome places near the equinoctial, there is ſcarce any variation at all. See BAROMETER.

8°. That the rain in Switzerland and Italy is much greater in quantity, throughout the year, than that in Eſſex; yet the rains are more frequent, *i. e.* there are more rainy days in Eſſex, than at either of thoſe places. — The proportion of the annual rains that fall in ſeveral places we have any good obſervations of, ſtand thus: At Zurich, the depth of the annual rain, at a medium, is about 32½ Engliſh inches; at Piſa, 43¼; at Paris, 23; at Liſle in Flanders, 23½ inches; at Townley in Lancaſhire, 42½; at Upminſter, 19¼. See RAIN.

9°. That cold contributes greatly to rain; and that, apparently, by condenſing the ſuſpended vapours, and making them deſcend. — Thus, very cold months, or ſeaſons, are generally followed immediately by very rainy ones; and cold ſummers are always wet ones. See COLD, and VAPOUR.

10°. That high ridges of mountains, as the Alps, and the ſnows they are coved withal, not only affect the neigbouring places by the colds, rains, vapours, &c. they produce, but even diſtant countries, as England, often partake of their effects.— Thus, the extraordinary colds, December 1708, and the relaxations thereof, were felt in Italy and Switzerland, ſeveral days ere they reached us: an indication, Mr. Derham thinks, that they were derived from them to us.

Prognoſtics of the WEATHER.— We do not here mean to obtrude the idle, arbitrary obſervations of fanciful people upon our reader. — That cloud of popular predictions from the brute world, which partly the ſagacity, and partly the credulity of our countrymen have eſtabliſhed, we ſet aſide, as not flowing from any natural, neceſſary relations, that we know of, in the things themſelves. — Such is the foretelling of rain and wind, from water-fowls flocking to land, or land-fowls to the water; from birds pruning their feathers, geeſe gaggling, crows cawing loud, and flying in companies, ſwallows chattering, and flying low, peacocks crying much, aſſes braying, deer fighting, foxes and wolves howling, fiſhes playing, ants and bees keeping within doors, moles caſting up earth, earthworms creeping out, &c. — We ſhall offer nothing on this head, but what has ſome viſible foundation in the nature of things; and which lets ſome light into the cauſe and reaſon of *weather* itſelf, or diſcovers ſome notable effects thereof.

1°. Then, *a thick, dark ſky, laſting for ſome time, without either ſun or rain, always becomes firſt fair, then foul,* i. e. changes to a fair clear ſky, ere it turns to rain. — This, the rev. Mr. Clarke, who kept a regiſter of the *weather* for 30 years, ſince put into Mr. Derham's hands by his grandſon the learned Dr. Samuel Clarke; this, he ſays, he ſcarce ever knew to fail: at leaſt, when the wind was in any of the eaſterly points: but Mr. Derham has obſerved the rule to hold good, be the wind where it will. And the cauſe is obvious. — The atmoſphere is replete with vapours, which, though ſufficient to reflect and intercept the ſun's rays from us, yet want denſity to deſcend; and while the vapours continue in the ſame ſtate, the *weather* will do ſo too. — Accordingly, ſuch *weather* is generally attended with moderate warmth, and with little or no wind to diſturb the vapours, and an heavy atmoſphere to ſuſtain them; the barometer being commonly high. — But when the cold approaches, and, by condenſing, drives the vapours into clouds or drops, then, way is made for the ſun-beams; till the ſame vapours, being by further condenſation formed into rain, fall down in drops.

2°. *A change in the warmth of the* weather, *is generally followed by a change in the wind.* — Thus, the northerly and ſoutherly winds, commonly eſteemed the cauſes of cold and warm *weather*, are really the effects of the cold or warmth of the atmoſphere: of which Mr. Derham aſſures us he has had ſo many confirmations, that he makes no doubt of it. — Thus, it is common to ſee a warm ſoutherly wind ſuddenly changed to the north, by the fall of ſnow or hail; or to ſee the wind, in a cold froſty morning, north, when the ſun has well warmed the earth and air, wheel towards the ſouth; and again turn northerly or eaſterly in the cold evening.

3°. *Moſt vegetables expand their flowers and down in ſunſhiny* weather, *and towards the evening*; *and againſt rain, cloſe them again*; eſpecially at the beginning of their flowering, when their ſeeds are tender and ſenſible. — This is viſible enough in the down of dandelion, and other downs: and eminently in the flowers of pimpernel; the opening and ſhutting of which, Gerard obſerves, are the countryman's *weatherwiſer*, whereby he foretels the *weather* of the following day. — The rule is, if the flowers be cloſe ſhut up, it betokens rain and foul *weather:* if they be ſpread abroad, fair *weather*. Ger. Herb. Lib. II.

Eſt & alia [arbor in Tylis] *ſimilis, folioſior tamen, roſeique floris; quem noctu comprimens, aperire incipit ſolis exortu, meridie expandit. Incolæ dormire eum dicunt.* Plin. Nat. Hiſt. Lib. XII. cap. 11.

The ſtalk of trefoil, my lord Bacon obſerves, ſwells againſt rain, and grows more upright: and the like may be obſerved, though not ſo ſenſibly, in the ſtalks of moſt other plants. — He adds, that in the ſtubble fields there is found a ſmall red flower, called, by the country-people, *wincopipe*; which opening in a morning, is a ſure indication of a fine day.

That vegetables ſhould be affected by the ſame cauſes that affect the *weather*, is very conceivable; if we conſider them as ſo many hygrometers, and thermometers, conſiſting of an infinite number of tracheæ, or air-veſſels; by which they have an immediate communication with the air, and partake of its moiſture, heat, &c. — Theſe tracheæ are very viſible in the leaf of the ſcabioſe, vine, &c. See **Plant**, **Vegetable**, &c.

Hence it is, that all wood, even the hardeſt and moſt ſolid, ſwells in moiſt *weather*; the vapours eaſily inſinuating into the pores thereof; eſpecially of that which is lighteſt and drieſt. — And hence we derive a very extraordinary uſe of wood, *viz.* for breaking rocks and mill-ſtones. See **Wood**.

The method at the quarries is this. — Having cut a rock into a cylinder, they divide that into ſeveral leſſer cylinders, by making holes at proper diſtances round the great one: theſe holes they fill with ſo many pieces of ſallow wood, dried in an oven; which, in moiſt *weather*, becoming impregnated with the humid corpuſcles of the air, ſwell; and, like wedges, break or cleave the rock into ſeveral ſtones.

Predictions of the **Weather** *from the barometer.* See **Barometer**.

WEATHER-COCK, or **Weather-vane**, a moveable vane, in form of a cock, or other ſhape, placed on high, to be turned round according to the direction of the wind, and point out what quarter the wind blows from. See **Wind**, and **Anemometer**.

WEATHER-GLASSES, are inſtruments contrived to indicate the ſtate, or diſpoſition of the atmoſphere, as to heat, cold, gravity, moiſture, &c. to meaſure the changes befalling in thoſe reſpects; and, by thoſe means, to predict the alteration of *weather*, as rains, winds, ſnow, &c.

Under the claſs of *weather-glaſſes*, are comprehended *barometers, thermometers, hygrometers, manometers*, and *anemometers*, of each whereof there are divers kinds: ſee their theories, conſtructions, uſes, kinds, &c. under the reſpective articles, **Barometer**, **Thermometer**, **Hygrometer**, &c.

WEATHER-BOARD, in the ſea language, that ſide of a ſhip which is to the windward.

WEATHERGAGE at ſea. — A ſhip is ſaid to have the *weather-gage* of another, when ſhe is to windward of her. See **Gage**.

WEATHERING, a doubling, or ſailing by a point, or place.

To *weather a ſhip*, is to get to the windward of her.

The **Weathering** *of a hawk*, among falconers, is the ſetting her abroad to take the air. See **Hawk**, and **Hawking**.

WEAVING, the art or act of working a web of cloth, ſilk, linen, or other ſtuff, on a loom, with a ſhuttle. See **Loom**, **Shuttle**, **Web**, &c.

It is difficult to ſay, with any aſſurance, who it is we owe this admirable invention to, unleſs we chuſe to aſcribe it to the ſpider, that poiſonous, but ingenious little inſect, which draws certain infinitely fine threads from its own ſubſtance through papillæ near its *anus*. See **Silk**, and **Web**.

Weaving *of Cloth*	See	**Cloth**.
Weaving *of Tapeſtry*, &c.	See	**Tapestry**, &c.
Stocking **Weaving**.	See	**Stockings**.

WEB, a ſort of tiſſue, or texture, formed of threads interwoven with each other; ſome whereof are extended in length, and called the *warp*; and others drawn acroſs them, called the *woof*. See **Texture**, **Woof**, **Warp**, &c.

Spider's **Web**, or *Cob*-**Web**, is a very delicate and wonderful tiſſue, which that inſect ſpins out of its own bowels; ſerving it as a ſort of toil, or net to catch flies, &c. withal. — For the manner wherein the ſpider ſpins his *web*, the admirable mechaniſm of the parts ſubſervient thereto, and the uſes thereof, ſee **Silk**.

Dr. Liſter tells us, that attending nearly to a ſpider weaving a net, he obſerved it ſuddenly to deſiſt in the mid-work; and turning its tail to the wind, darted out a thread, with the violence and ſtream we ſee water ſpout out of a jet: this thread, taken up by the wind, was immediately emitted ſome fathoms long; ſtill iſſuing out of the belly of the animal. — By and by the ſpider leaped into the air, and the thread mounted her up ſwiftly. — After this diſcovery, he made the like obſervation in near thirty different ſorts of ſpiders; and found the air filled with young and old, ſailing on their threads, and doubtleſs ſeizing gnats and other inſects in their paſſage: there being often manifeſt ſigns of ſlaughter, legs and wings of flies, &c. on theſe threads, as well as in their *webs* below.

Dr. Hulſe diſcovered the ſame thing about the ſame time. — In a letter of Dr. Liſter to Mr. Ray, he thinks there is a fair hint of the darting of ſpiders in Ariſtotle, *Hiſt. An.* Lib. IX. cap. 39. and in Pliny, Lib. X. cap. 74. But for their ſailing, the antients are ſilent, and thinks it was firſt ſeen by him. — In another letter to Mr. Ray, dated January 1670, ſpeaking of the heighth ſpiders are able to fly to, he ſays, "Laſt October, &c. I took notice that the air was very full of *webs*; "I forthwith mounted to the top of the higheſt ſteeple on "the Minſter, [in York] and could there diſcern them yet "exceeding high above me."

Pin and **Web**. See **Pannus**.

WEDGE, *Cuneus*, in mechanics, the laſt of the five powers, or ſimple machines. See **Mechanical** *Power*.

The *wedge* is a triangular priſm, whoſe baſes are equilateral acute-angled triangles. See **Prism**.

Authors are divided about the principle whence the *wedge* derives its power. — Ariſtotle conſiders it as two levers of the firſt kind, inclined toward each other, and acting oppoſite ways. — Guido Ubaldus, Merſennus, &c. will have them levers of the ſecond kind. — But Fr. de Lanis ſhews, that the *wedge* cannot be reduced to any lever at all. See **Lever**.

Others refer the *wedge* to the inclined plane. — Others, again, with De Stair, deny the *wedge* to have ſcarce any force at all; and aſcribe much the greateſt part to the mallet that drives it. — But the lateſt authors agree to refer the effect of the *wedge*, to the cochlea, or ſcrew. See **Screw**.

Its doctrine is contained in this propoſition. — "If a power "be applied to a *wedge*, in ſuch manner, as that the line of "direction C D, (*Tab. Mechanics*, *fig.* 53.) perpendicular to "A B, is to the reſiſtance to be overcome, as A B to C D; "the power will be equal to the reſiſtance."

Or thus: "If the power directly applied to the head of the "*wedge*, be to the reſiſtance to be overcome by the *wedge*, "as the thickneſs of the *wedge* is to its heighth; then the "power will be equivalent to its reſiſtance; and, if increaſed, will overcome it."

For the firmneſs whereby the parts of the obſtacle, ſuppoſe wood, adhere to one another, is the reſiſtance to be overcome by the *wedge*. See **Firmness**, and **Resistance**.

Now it is evident, that while the *wedge* is drove into the wood, the way or length it has gone is B A, (*fig.* 54.) and D C is the way or length gone in the ſame time, by the impediment; that is, the parts C and D of the wood, are ſo far divided aſunder: and according as the *wedge* is drove down farther and farther along its heighth; ſo the parts C and D of the wood, are divided more and more, along the thickneſs of the *wedge*.

Hence, if the thickneſs of the *wedge* (that is, the way of the impediment, and conſequently its velocity) be to the heighth of the *wedge* (that is, the way, and conſequently the velocity of the power) as the power to the impediment, or reſiſtance; then the momentum of the power, and the impediment, will be equal the one to the other; and conſequently the power, being increaſed, will overcome the reſiſtance.

Hence, 1°. the power equivalent to half the reſiſtance, is to it as A C to D C, *fig.* 53. that is, as the whole ſine to the cotangent of half the angle of the *wedge* A D C. — And, 2°. as the tangent of a leſs angle is leſs than that of a greater, the power muſt have a greater propoition to half the reſiſtance, if the angle be greater, than if leſs. — Conſequently, the acuter the *wedge* is, the more does it increaſe the power.

To the *wedge* may be referred all edge-tools, and inſtruments which have a ſharp point, in order to cut, cleave, ſlit, chop, pierce, bore, or the like; as knives, hatchets, ſwords, bodkins, *&c.*

WEDLOCK. See MARRIAGE, WIFE, HUSBAND, &c.

WEDNESDAY. See the article MONTH, DAY, &c.

Aſh-WEDNESDAY. See the article ASH-*Wedneſday*.

WEED, a common name for all rank and wild herbs, that grow of themſelves, to the detriment of other uſeful herbs they grow among. See PLANT, HERB, &c.

Dyer's WEED, *woodwax*, or *geniſta tinctoria*. See DYING.

Fuller's WEED. See the articles THISTLE, and TEAZLE.

WEED, in the miners language, denotes the degeneracy of a load or vein of fine metal, into an uſeleſs marcaſite. See VEIN, MINE, METAL, MARCASITE, &c.

WEEDS, alſo denote a peculiar habit, wore by the relicts of perſons deceaſed, by way of mourning. See MOURNING.

WEEK, *Septimana*, *Hebdomada*, in chronology, a diviſion of time, compriſing ſeven days. See TIME, and DAY.

The origin of this diviſion of *weeks*, or of computing time by ſevenths, is greatly controverted. — Some will have it to take its riſe from the four quarters or intervals of the moon, between her changes of phaſes, which being about ſeven days diſtant, gave occaſion to the diviſion. See MOON, QUARTER, &c.

Be this as it will, the diviſion is certainly very antient. — The Syrians, Egyptians, and moſt of the oriental nations, appear to have uſed it from all antiquity: though it did not get footing in the weſt, till Chriſtianity brought it in: the Romans reckoned their days not by ſevenths, but by ninths; and the antient Greeks by decads, or tenths.

Indeed, the Jews divided their time by *weeks*, but it was upon a different principle from the other eaſtern nations. — God himſelf having appointed them to work ſix days, and to reſt the ſeventh, in order to keep up the ſenſe and remembrance of the creation; which being effected in ſix days, he reſted the ſeventh. See SABBATH.

Some authors will even have the uſe of of *weeks*, among the other eaſtern nations, to have proceeded from the Jews; but with little appearance of probability. — It is with better reaſon that others ſuppoſe the uſe of *weeks* among the heathens of the eaſt, to be a remain of the tradition of the creation, which they had ſtill retained with divers others.

This is the opinion of Grotius, *De Veritat. Relig. Chriſt.* Lib. I. who likewiſe proves, that not only throughout the eaſt, but even among the Greeks, Italians, Celtæ, Sclavi, and even the Romans themſelves, the days were divided into *weeks*; and that the ſeventh day was in extraordinary veneration. — This appears from Joſeph. *adv. Appion.* II. Philo *De Creatione*, Clem. Alexand. *Strom.* Lib. V. — Though Helmoldus, Lib. I. cap. 84. Philoſtratus, Lib. III. cap. 13. Dion. Lib. XXXVIII. Tibullus, Lucian, Homer, Callimachus, Suetonius, Herodotus, *&c.* who mention the ſeptenary diviſion of days as very antient, ſuppoſe it to have been derived from the Egyptians.

The *Days of the Week* were denominated by the Jews, from the order of their ſucceſſion from the ſabbath. — Thus, the day next after the ſabbath, they called the *firſt* of the ſabbath, the next, the *ſecond* of the ſabbath, and ſo of the reſt; except the ſixth, which they called *paraſceve*, or preparation of the ſabbath. See PARASCEVE.

The like method is ſtill kept up by the Chriſtian Arabs, Perſians, Ethiopians, *&c.* — The antient heathens denominated the days of the *week* from the ſeven planets; which names are ſtill generally retained among the Chriſtians of the weſt. — Thus, the firſt day was called *ſun-day*, dies ſolis; the ſecond *moon-day*, dies lunæ, *&c.* a practice the more natural on Dion's principle, who ſays, the Egyptians took the diviſion of the *week* itſelf from the ſeven planets.

In effect, the true reaſon of theſe denominations ſeems to be founded in aſtrology. — For the aſtrologers, diſtributing the government and direction of all the hours in the *week* among the ſeven planets, ♄ ♃ ♂ ☉ ♀ ☿ ☽, ſo as that the government of the firſt hour of the firſt day fell to Saturn, that of the ſecond day to Jupiter, *&c.* they gave each day the name of the planet which preſided over the firſt hour thereof: and that, according to the order ſpecified above; and which is included in the following technical verſe:

Poſt SIM SUM *ſequitur, pallida Luna ſubeſt.*

Wherein, the capital letters SIM SUM and L, are the initial letters of the planets. — So that, the order of the planets in the *week*, bears little relation to that in which they follow in the heavens: the former being founded on an imaginary power each planet has, in its turn, on the firſt hour of each day. See PLANET, HOUR, HOUSE, ASCENDENT, HOROSCOPE, &c.

Dion. Caſſius gives another reaſon of the denomination, fetched from the celeſtial harmony. — For it being obſerved that the harmony of the diateſſaron, which conſiſts in the ratio of 4 to 3, is of great force and effect in muſic; it was judged meet to proceed directly from Saturn to the Sun; becauſe there are three planets between Saturn and the Sun, and four from the Sun to the Moon. See DIATESSARON, HARMONY *of the Spheres*, &c.

To find the accompliſhment of Daniel's prophecy of the Meſſiah, the deſtruction, rebuilding, *&c.* of the temple, chap. ix. ver. 24, *&c.* the critics generally agree to underſtand *weeks of years*, inſtead of *weeks of days*. See PROPHECY, YEAR, &c.

Ember WEEKS. See the article EMBER.

Paſſion WEEK, or *the holy* WEEK, is the laſt *week* in Lent, wherein the church celebrates the myſtery of our Saviour's death and paſſion. See LENT, PASSION, *&c.*

This is ſometimes alſo called *the great week*. — Its inſtitution is generally referred, both by Proteſtants and Papiſts, to the times of the apoſtles. — All the days of that *week* were held as faſts: no work was done on them; no juſtice diſtributed; but the priſoners were ordinarily ſet at liberty, *&c.* even pleaſures otherwiſe allowed, were now prohibited.

The oſculum charitatis was now forborn; and divers mortifications practiſed by all ſorts of people, and even the emperors themſelves.

Rogation WEEK. See the article ROGATION.

WEEK, or WIECK *of a candle*, &c. the cotton match in a candle or lamp. See CANDLE, LAMP, &c.

WEEPING. See the article TEARS.

WEER. See the article WEAR.

WEFT, a kind of web, or thing woven: as, a *weft* or treſs of hair. See WEB, HAIR, TISSUE, &c.

WEIF. See the article WAIF.

WEIGH*, WAY, or WEY, *Waga*, a weight of cheeſe, wool, *&c.* containing 256 pounds averdupois. — Of corn, the *weigh* contains 40 buſhels; of barley or malt, 6 quarters. — In ſome places, as Eſſex, the *weigh* of cheeſe is 300 pounds. See MEASURE.

* — *Et decimam caſei ſui de Herting, præter unam peiſam quæ pertinet ad eccleſiam de* A. Mon. Angl. where *peiſa* ſeems to be uſed for a *weigh*. — Coke alſo ſpeaks of *weighs* of bay ſalt.

WEIGHER, an officer in divers cities, appointed to *weigh* the commodities bought or ſold, in a public balance, *&c.*

Theſe *weighers* are generally obliged by oath, to do juſtice to both parties; and to keep a regiſter of the things they weigh. — In Amſterdam there are twelve *weighers*, eſtabliſhed into a kind of office.

As it was formerly allowed them to touch the ſtrings of the balance of *weighing*, it was eaſy for them to favour either the buyer or ſeller, according as the one gave them more money than the other. — To prevent which abuſe, it was charged on them, by an ordinance of the burgomaſters, in 1719, not to touch the balance in any manner whatever.

WEIGHING, the act of examining a body in the balance, to find its *weight*. See BALANCE, and WEIGHT.

The diſtillers in London *weigh* their veſſels when full; and for half a hogſhead, which is 31 gallons and an half, allow 200 one quarter and 11 pounds for the caſk and liquor. — For a puncheon, they allow 600 one quarter and 2 pounds: for a canary pipe 800 a half and 17 pounds.

WEIGHING-*Chair*, a machine contrived by Sanctorius, to determine the quantity of food taken at a meal; and to warn the feeder when he had eat his quantum.

That ingenious author having obſerved, with many others, that a great part of our diſorders ariſe from the exceſs in the quantity of our foods, more than in the quality thereof; as alſo how much a fixed portion, once well adjuſted, would, if kept to regularly, contribute to health; bethought himſelf of an expedient to that purpoſe. — The reſult was the *weighing-chair*: which was a chair fixed at one arm of a ſort of balance, wherein a perſon being ſeated at meat, as ſoon as he had eat his allowance, the increaſe of *weight* made his ſeat preponderate: So that, deſcending to the ground, he left his table, victuals, and all out of reach. See PERSPIRATION.

WEIGHING *of the air*. See the article WEIGHT *of air*.

WEIGHING *Anchor*, in the ſea language, is the drawing up the anchor out of the ground it had been caſt into; in order to ſet ſail, or quit a port, road, or the like. See ANCHOR.

The anchor is ordinarily *weighed* or recovered by means of the capſtan; ſometimes by a windlaſs. See WINDLASS, and CAPSTAN.

WEIGHT, *Gravity*, *Pondus*, in phyſics, a quality in natural bodies, whereby they tend downwards, toward the centre of the earth. See BODY, DESCENT, EARTH, &c.

Or, *weight* may be defined, in a leſs limited manner, to be a power inherent in all bodies, whereby they tend to ſome common point, called the *centre of gravity*; and that with a greater or leſs velocity, as they are more or leſs denſe, or as the medium they paſs through is more or leſs rare. See CENTRE, DENSITY, &c.

In the common uſe of language, *weight* and *gravity* are conſidered as one and the ſame thing. — Some authors, however, make a difference between them; and hold *gravity* only to expreſs a *niſus*, or endeavour to deſcend; but *weight* an actual deſcent.

But there is room for a better diſtinction. — In effect, one may conceive gravity to be the quality, as inherent in the body; and *weight*, the ſame quality, exerting itſelf, either againſt an obſtacle, or otherwiſe. See QUALITY, &c.

Hence, *weight* may be diſtinguiſhed, like gravity, into *abſolute*, and *ſpecific*. See GRAVITY.

Sir Iſaac Newton demonſtrates, that the *weights* of all bodies, at equal diſtances from the centre of the earth, are proportionable to the quantities of matter each contains. — Whence it follows, that the *weights* of bodies have not any dependance on their forms, or textures; and that all ſpaces are not equally full of matter. See VACUUM.

Hence alſo it follows, that the *weight* of the ſame body is different, on the ſurface of different parts of the earth; by reaſon its figure is not a ſphere, but a ſpheroid. See PENDULUM.

The law of this difference, the ſame author gives in the following theorem. — "The increaſe of *weight*, as you proceed "from the equator to the poles, is, nearly, as the verſed "ſine of double the latitude; or, which amounts to the "ſame, as the ſquare of the right ſine of the latitude."

Therefore, ſince the latitude of Paris is 48° 50′, that of a place under the equator 00° 00′; and that of a place under the pole 90° 00′; and the verſed ſines of the double latitudes are 11334,00000 and 20000, the radius being 10000; and the *weight* at the pole, is to the *weight* at the equator, as 230 to 229; and the exceſs of *weight* at the pole, to that at the equator, as 1 to 229: the exceſs of gravity in the latitude of Paris, to that under the equator, will be as $1 \times \frac{11334}{20000}$ to 229, or as 5667, to 2290000; and therefore, the whole *weights* in thoſe places, will be to each other as 2295667, to 2290000.

Hence, alſo, as the lengths of pendulums that perform their vibrations in equal times, are as their *weights*; and the length of a pendulum, which in the latitude of Paris vibrates ſeconds, is three Paris feet, and eight lines $\frac{5}{9}$: the length of a pendulum, that vibrates ſeconds under the equator, will be ſhort of a ſynchronous pendulum at Paris, by one line, and an 87000th part of a line. *Phil. Nat. Princ. Math.* Lib. III. p. 382, *&c.* See PENDULUM.

A body immerged in a fluid ſpecifically lighter than itſelf, loſes ſo much of its *weight*, as is equal to the *weight* of a quantity of the fluid of the ſame bulk with itſelf. See FLUID.

Hence, a body loſes more of its *weight* in a heavier than in a lighter fluid; and therefore weighs more in a lighter, than a heavier fluid. See SPECIFIC *Gravity*.

To find the weight *of any quantity of a fluid*, *e. gr.* of the wine contained in a hogſhead. — Find the bulk or quantity of the liquor by the rules of gauging. See GAUGING.

Suſpend a cubic inch of lead therein by a horſe-hair; and by a balance note the *weight* loſt. — This will be the *weight* of a cubic inch of the fluid.

Wherefore, ſince in a homogeneous fluid, the *weight* is proportionable to the bulk; the *weight* of the fluid will be found by the rule of three. — Thus, if the capacity of the hogſhead be 88 cubic feet, and the cubic foot of wine 68 pounds; the whole *weight* of the wine will be 5984.

The *weight* of a cubic foot of water, has been determined by ſeveral; but as in different ſprings, *&c.* the *weight* of the water is different, and there is even a difference in the ſame water at different times; it is no wonder the obſervations of the ſeveral authors ſhould be found very different. — Dr. Wiberd, by repeated experiments, found a cubic foot of water to weigh 76 pounds troy. See WATER.

WEIGHT, *Pondus*, in mechanics, is any thing to be raiſed, ſuſtained, or moved by a machine; or any thing that in any manner reſiſts the motion to be produced. See MOTION, &c.

In all machines, there is a natural ratio between the *weight*, and the moving power. — If the *weight* be increaſed, the power muſt be ſo too; that is, the wheels, *&c.* are to be multiplied, and ſo the time increaſed, or the velocity diminiſhed. See POWER, and MACHINE.

"The centre of gravity F, (*Tab. Mechanics*, *fig.* 55.) of a "body I H, together with the *weight* of the body, being given; "to determine the point M, in which, lying on an horizon"tal plane, a given *weight* G, hung in L, cannot remove "the body I H out of its horizontal ſituation."

Conceive a *weight* hung in the centre of gravity F, equal to the *weight* of the whole body I H, and find the common centre of gravity M, of that and the given *weight* G. — If the point M be laid on the horizontal plane; the *weight* G will not be able to move the body H I out of its place.

Suppoſe, *e. gr.* F the centre of gravity of the ſtaff, which is diſtant from its extremity, by the ſpace I F 20 inches; the bucket of water to weigh 24 pounds, and the *weight* of the ſtaff to be 2 L F = 18 ounces: we ſhall find L M = L F. F. (G + F) = 18. 2 : 22 : : 18 : 11 = $16\frac{4}{11}$; ſo that it is no wonder the bucket hung on the ſtaff I H, laid on the table, does not fall.

"The centre of gravity C, (*fig.* 56.) of a body A B, to"gether with its *weight* G, being given; to determine "the points L and M, wherein props N and O are to be "placed, that each may bear any given proportion of the "*weight*."

In the horizontal line A B, paſſing through the centre of gravity C, aſſume the right lines M C and C L in the given ratio. — Props, then, N, O, placed in theſe points, will be preſſed in the given ratio.

Hence, if in the points M, L, in lieu of props, you place the ſhoulders, or arms of porters, *&c.* they will be able to bear the burden alike; if their ſhares be proportioned to their ſtrengths. — Thus we have a way of diſtributing a burden in any given ratio.

WEIGHT *of the atmoſphere*. See ATMOSPHERE.

WEIGHT in commerce, denotes a body of a known weight, appointed to be put in the balance againſt other bodies, whoſe weight is required. See WEIGHING, BALANCE, &c.

Theſe *weights* are uſually of lead, iron, or braſs; though in divers parts of the Eaſt-Indies they are common flints, and in ſome places, a ſort of little beans.

The ſecurity of commerce depending, in good meaſure, on the juſtneſs of theſe *weights*; there is ſcarce any nation, but has taken proper meaſures to prevent the falſification thereof. — The ſureſt means are the ſtamping, or marking them by proper officers, from ſome original or ſtandard, depoſited where recourſe may be had to them.

This expedient is very antient; and many authors are of opinion, that what among the Jews was called *ſhekel of the ſanctuary*, was not any particular kind of *weight*, different from the common one; but a ſtandard or original *weight*, preſerved by the prieſts in the ſanctuary. See SHEKEL, and SANCTUARY.

Thus, alſo, in England, the ſtandard of *weights* is kept in the Exchequer, by a particular officer, called the *clerk*, or *comptroller of the market*. — In France, the ſtandard *weight* is kept under ſeveral keys, in the cabinet of the cour des Monnoyes. See STANDARD.

Moſt nations, wherein there is any thing of commerce flouriſhing, have their particular *weights*; and even ſometimes different *weights* in the different provinces, and for the different kinds of commodities.

This diverſity of *weights*, makes one of the moſt perplexing articles in commerce; but it is irremediable. — The reducing the *weights* of different nations to one, is not only impracticable; but even the reduction of thoſe of the ſame nation: witneſs thoſe vain attempts made for reducing the *weights* in France, by ſo many of their kings, Charlemaign, Philip the long, Louis XI. Francis I. Henry II. Charles IX. Henry III. Louis XIV.

Weights may be diſtinguiſhed into *antient*, and *modern*, *foreign*, and *domeſtic*.

Modern WEIGHTS, *uſed in the ſeveral parts of Europe, and the Levant.*

Engliſh WEIGHTS. — By the twenty ſeventh chapter of *Magna Charta*, the *weights* are to be the ſame all over England; but for different commodities there are two different ſorts, *viz.* *troy weight*, and *averdupois weight*.

The origin from which they are both raiſed, is the grain of wheat, gathered in the middle of the ear. See GRAIN.

In Troy WEIGHT, 24 of theſe *grains* make a *penny weight* ſterling; 20 *penny weight* make an *ounce*; and 12 ounces a *pound*. See OUNCE, POUND, &c.

By this *weight* we weigh gold, ſilver, jewels, grains, and liquors. — The apothecaries alſo uſe the *troy pound*, *ounce*, and *grain*; but they differ from the reſt, in the intermediate diviſions. — They divide the ounce into 8 *drachms*; the drachm into 3 *ſcruples*; and the ſcruple into 20 *grains*. See DRACHM, SCRUPLE, &c.

In Averdupois WEIGHT, the *pound* contains 16 *ounces*; but the ounce is leſs by near $\frac{1}{12}$ than the troy ounce; this latter containing 490 grains, and the former only 448. — The ounce contains 16 drachms — 80 ounces averdupois, are only equal to 73 ounces troy; and 17 pounds troy, equal to 14 pounds averdupois. See POUND.

By *averdupois weight*, are weighed mercury and grocery wares, baſe metals, wool, tallow, hemp, drugs, bread, *&c.* See AVERDUPOIS.

Table of *Troy weight*, as uſed by the Goldſmiths, &c. Apothecaries.

Goldſmiths, &c.

Grains.			
24	Penny-weight.		
480	20	Ounce.	
5760	240	12	Pound.

Apothecaries.

Grains.				
20	Scruple.			
60	3	Drachm.		
480	24	8	Ounce.	
5760	288	96	12	Pound.

Table of *Averdupois weight.*

Scruples.					
3	Drachm.				
24	8	Ounce.			
384	128	16	Pound.		
43008	14336	1792	112	Quintal, or Hundred.	
860160	286720	35840	2240	20	Tun.

The moneyers, jewellers, &c. have a particular claſs of *weights*, for gold and precious ſtones, *viz. carat*, and *grain*; and for ſilver, the *penny-weight*, and *grain*. See CARACT; ſee alſo GOLD, and SILVER.

The moneyers have alſo a peculiar ſubdiviſion of the *grain* troy: Thus;

The *Grain* into 20 *Mites.*
The *Mite* into 24 *Droits.*
The *Droit* into 20 *Perits.*
The *Perit* into 24 *Blanks.*

The dealers in wool have likewiſe a particular ſet of *weights*, *viz.* the *ſack*, *weigh*, *tod*, *ſtone*, and *clove*. See WEIGH, &c. — The proportion of which, ſee under the article WOOL.

French WEIGHTS. — The common or *Paris pound*, is 16 ounces; which they divide two ways: the firſt diviſion is into two *marcs*, the marc into 8 *ounces*; the ounce into 8 *gros*; the gros into 3 *penny-weights*; the penny-weight into 24 *grains*; the grain equivalent to a grain of wheat. — The ſecond diviſion of the pound, is into 2 *half-pounds*; the half-pound into 2 *quarters*; the quarter into 2 *half-quarters*; the half-quarter into 2 *ounces*; and the ounce into two *half-ounces*.

The *weights* of the firſt diviſion are uſed to weigh gold, ſilver, and the richer commodities: and the *weights* of the ſecond diviſion, for commodities of leſs value.

Grains.					
24	Penny-weight.				
72	3	Gros.			
576	24	8	Ounce.		
7008	192	64	8	Marc.	
9216	384	128	16	2	Pound.

Half-ounce.						
2	Ounce.					
4	2	Half-quarter pound.				
8	4	2	Quarter pound.			
16	8	4	2	Half pound.		
32	16	8	4	2	Pound.	
3200	1600	800	400	200	100	Quintal.

But the pound is not the ſame throughout France. — At Lyons, *e. gr.* the city pound is only 14 ounces: ſo that 100 Lyons pounds, make only 88 Paris pounds. — But beſide the city pound, they have another at Lyons for ſilk, containing 16 ounces. — At Tholouſe, and throughout the Upper Languedoc, the pound is 13 ounces and ½ of Paris *weight*. — At Marſeilles, and throughout Provence, the pound is 13 ounces of Paris *weight*. — At Rouen, beſide the common Paris pound and marc, they have the *weight* of the *vicomte*; which is 16 ounces and ½ and ⅙, of the Paris *weight*.

The *weights* enumerated under the two articles of Engliſh and French *weights*, are the ſame that are uſed throughout the greateſt part of Europe; only under ſomewhat different names, diviſions, and proportions. See POUND, GROS, MARC, PENNY-WEIGHT, &c.

Particular nations, have alſo certain *weights* peculiar to themſelves: Thus, Spain has its *arrobas*, containing 25 Spaniſh pounds, or ¼ of the common quintal: its *quintal macho*, containing 150 pounds, or 1½ common quintal, or 6 *arrobas*: its *adarme*, containing 1/16 of its ounce. — and for gold, it has its *caſtillan*, or 1/100 of a pound. — Its *tomin*, containing 12 grains, or ⅛ of a caſtillan. — The ſame are in uſe in the Spaniſh Weſt-Indies.

Portugal has its *arroba*, containing 32 Liſbon *arratels*, or pounds: Savary alſo mentions its *faratelle*, containing two Liſbon pounds: and its *rottoli*, containing about 12 pounds. — And for gold, its *chego*, containing four *carats*. — The ſame are uſed in the Portugueze Eaſt-Indies.

Italy, and particularly Venice, have their *migliaro*, containing four mirres; the *mirre* containing 30 Venice pounds: the *ſaggio*, containing a ſixth part of an ounce. — Genoa has five kinds of *weights*, viz. *large weights*, whereby all merchandizes are weighed at the cuſtom-houſe: *caſh-weights*, for piaſters, and other ſpecies: the *cantara*, or *quintal*, for the coarſeſt commodities: the large balance, for raw ſilks; and the ſmall balance for the finer commodities. — Sicily has its *rottolo*, 32 and a half pounds of Meſſina. *Savar.*

Germany, Flanders, Holland, the Hanſe towns, Sweden, Denmark, Poland, &c. have their *ſchippondt*, which at Antwerp and Hamburgh is 300 pounds; at Lubeck, 320; and at Coningſberg, 400 pounds. — In Sweden, the *ſchippondt* for copper is 320 pounds; and the *ſchippondt* for proviſions 400 pounds. — At Riga, and Revel, the *ſchippondt* is 400 pounds; and at Dantzic, 340 pounds; in Norway, 300 pounds; at Amſterdam, 300; containing 20 *lyſpondts*, each weighing 15 pounds. *Id.*

In Muſcovy, they weigh their large commodities by the *bercheroct*, or *berkewits*, containing 400 of their pounds. — They have alſo the *poet*, or *poede*, containing 40 pounds, or 1/10 of the *bercheroct*. *Id.*

In Turky, at Smirna, &c. they uſe the *batman*, or *battemant*, containing ſix occos; the *occo* weighing 3 pounds ⅘ Engliſh. — They have another *batman* much leſs, conſiſting, as the former, of ſix occos: but the occo only containing 15 ounces Engliſh: 44 occos of the firſt kind, make the Turkiſh *quintal*. — At Cairo, Alexandretta, Aleppo, and Alexandria, they uſe the *rotto*, *rotton*, or *rotoli*. The *rotoli* at Cairo, and other parts of Egypt, is 144 drachms; being ſomewhat over an Engliſh pound. — At Aleppo there are three ſorts of *rottos*; the firſt 720 drachms, making about ſeven pounds Engliſh, and ſerving to weigh cottons, galls, and other large commodities: the ſecond is 624 drachms, uſed for all ſilks but white ones, which are weighed by the third *rotto* of 700 drachms. — At Seyda the *rotto* is 600 drachms.

The other ports of the Levant, not named here, uſe ſome of theſe *weights*; particularly the *occo*, or *ocqua*, the *rottoli*, and *rotto*.

To ſhew the proportion of theſe ſeveral *weights* to one another, we ſhall add a reduction of the divers *pounds* uſed throughout Europe, by which the other *weights* are eſtimated, to one ſtandard pound, *viz.* the pound of Amſterdam, Paris, and Bourdeaux; as calculated with great accuracy by M. Ricard, and publiſhed in the new edition of his excellent *Traite de Commerce*, in 1722.

Proportion of the WEIGHTS *of the chief cities in Europe, or thoſe of Amſterdam.*

An hundred pounds of Amſterdam, are equal to

108 Pounds of Alicant.
105 *lb.* of Antwerp.
120 *lb.* of Archangel, or three poedes.
105 *lb.* of Arſchot.
120 *lb.* of Avignon.
98 *lb.* of Baſil in Switzerland.
100 *lb.* of Bayonne in France.
166 *lb.* of Bergamo.
97 *lb.* of Berg ap zom.
95 *lb.* ¼ of Bergen in Norway.
111 *lb.* of Bern.
100 *lb.* of Beſancon.
100 *lb.* of Bilboa.
105 *lb.* of Bois le duc.

151 *lb.* of Bologna.
100 *lb.* of Bourdeaux.
104 *lb.* of Bourg en Breſſe.
103 *lb.* of Bremen.
125 *lb.* of Breſlaw.
105 *lb.* of Bruges.
105 *lb.* of Bruſſels.
105 *lb.* of Cadiz.
105 *lb.* of Cologne.
125 *lb.* of Coningsberg.
107 *lb.* and [illegible] of Copenhagen.
87 Rottos of Conſtantinople.
113 *lb* and [illegible] of Dantzic.
100 *lb.* of Dort.
97 *lb.* of Dublin.
97 *lb.* of Edenburgh.
143 *lb.* of Florence.

An hundred pounds of Amſterdam, are equal to

98 *l.* of Francfort on the Maine.
105 *l.* of Gaunt.
89 *l.* of Geneva.
163 *l.* of Genoa, *caſh-weight.*
102 *l.* of Hamburg.
106 *l.* of Leiden.
105 *l.* of Leipſic.
105 *l.* and ½ of Liege.
114 *l.* of Liſle.
143 *l.* of Leghorn.
106 *l.* and ½ of Liſbon.
109 *l.* of London, *Averdupois weight.*
105 *l.* of Lovaine.
105 *l.* of Lubec.
141 *l.* and ½ of Lucca, *light-weight.*
116 *l.* of Lyons, *city-weight.*
114 *l.* of Madrid.
105 *l.* of Malines.
123 *l.* and ½ of Marſeilles.
154 *l.* of Meſſina, *light-weight.*
168 *l.* of Milan.
120 *l.* of Montpellier.
125 *Bercherocts* of Muſcovy.
100 *l.* of Nantes.
106 *l.* of Nancy.
169 *l.* of Naples.
98 *l.* of Nuremberg.
100 *l.* of Paris.
112 *l.* and ½ of Revel.
109 *l.* of Riga.
100 *l.* of Rochel.
146 *l.* of Rome.
100 *l.* of Rotterdam.
96 *l.* of Rouen, *Vicounty-weight.*
100 *l.* of S. Malo.
100 *l.* of S. Sebaſtian.
158 *l.* and ½ of Saragoſa.
106 *l.* of Seville.
114 *l.* of Smirna.
110 *l.* of Stetin.
81 *l.* of Stockholm.
118 *l.* of Tholouſe, and Upper Languedoc.
151 *l.* of Turin.
158 *l.* and ½ of Valencia.
182 *l.* of Venice, *ſmall weight.*

WEIGHTS *uſed in the ſeveral parts of the Eaſt-Indies, China, Perſia*, &c. — The *Chineſe weights* are — The *pice*, for large commodities; it is divided into 100 *catis*, or *cattis*, though ſome ſay into 125: the cati into 16 *taels*, or *tales*; each tael equivalent to 1 ⅓ of an ounce Engliſh, or the *wieght* of one rial and $\frac{1}{12}$, and containing 10 *mas*, or *maſſes*; and each mas 10 *condrins*, So that the chineſe *pice* amounts to 137 pounds Engliſh Averdupois, and the cati to 1 pound 8 ounces. — The *picol*, for ſilk, containing 66 *catis* and ¾: the *babar*, *bakaire*, or *barr*, containing 300 catis.

Tonquin has all the ſame *weights*, meaſures, *&c.* as China. Japan has only one *weight*, *viz.* the *catti*; which, however, is different from that of China, as containing 20 *taels*. — At Surat, Agra, and throughout the ſtates of the great mogul, they uſe the *man*, or *maund*, whereof they have two kinds; the *king's man*, or *king's weight*; and the *man* ſimply: the firſt uſed for the weighing of common proviſions, containing 40 *ſeers*, or *ſerres*; and each ſeer a juſt Paris pound. Though Tavernier will have the ſeer near a ſeventh leſs than the Paris pound. — The common *man*, uſed in the weighing of merchandize, conſiſts likewiſe of 40 *ſeers*, but each ſeer is only eſtimated at 12 Paris ounces, or ¾ of the other ſeer.

The *man* may be looked on as the common *weight* of the Eaſt-Indies, though under ſome difference of name, or rather of pronunciation; it being called *mao* at Cambaya, and in other places *mein*, and *maun*.—The *ſeer* is properly the Indian pound, and of univerſal uſe: the like may be ſaid of the *babar*, *tael*, and *catti* abovementioned.

The *weights* of Siam are the *pice*, containing two *ſchans*, or *cattis*; but the Siameſe *catti* is only half the Japoneſe, the latter containing 20 *taels*, and the former only 10: though ſome make the Chineſe catti only 16 taels, and the Siameſe 8. — The *tael* contains 4 *baats*, or *ticals*; each about a Paris ounce: the *baat* 4 *ſelings*, or *mayons*: the *mayon* 2 *fouangs*: the *fouang* 4 *payes*: the *paye* 2 *clams*: the *ſompaye*, half a *fouang*. Savar.

It is to be obſerved, that theſe are the names of their coins, as well as *weights*; ſilver and gold being, there, commodities, ſold, as other things, by their *weights*. See COIN, &c.

In the iſle of Java, and particularly at Bantam, they uſe the *gantan*, which amounts to near three Dutch pounds. — In Golconda, at Viſapour and Goa, they have the *furatelle*, containing 1 pound 14 ounces Engliſh: the *mangalis*, or *mangelin*, for weighing diamonds and precious ſtones; weighing at Goa 5 grains, at Golconda, *&c.* 5 ½ grains. — They have alſo the *rotolo*, containing 14 ¼ ounces Engliſh: the *metricol*, containing the ſixth part of an ounce: the *vall*, for piaſtres and ducats; containing the 73d part of a rial.

In perſia, they uſe two kinds of *batmans*, or *mans*; the one, called *cahi*, or *cheray*, which is the king's *weight*; and the other *batman of Tauris*, from the name of one of the chief cities of Perſia. — The firſt weighs, according to Tavernier, 13 pounds 10 ounces Engliſh; the ſecond, 6 pounds ¾. According to Sir J. Chardin, the *king's batman* is 13 pounds 14 ounces, and the *batman of Tauris* 6 pounds ½. — Its diviſions are the *ratel*, or a 16th; the *derhem*, or drachm, which is the 50th; the *meſcal*, which is half the derhem; the *dung*, which is the 6th part of the meſchal; being equivalent to 6 *carat-grains*; and laſtly, the *grain*, which is the 4th part of the dung. — They have alſo the *vakie*, which exceeds, a little, our ounce: the *ſah-cheray*, equal to the 1170th part of the derhem: and the *toman*, uſed to weigh out large payments of money, without telling: its *weight* is that of 50 *abaſſis*. Savar. See TOMAN.

African and American WEIGHTS. — We have little to ſay as to the *weights* of America: the ſeveral European colonies there, making uſe of the *weights* of the ſtates or kingdoms of Europe they belong to. For as to the *aroue* of Peru, which weighs 27 pounds, it is evidently no other than the Spaniſh *arroba*, with a little difference in the name.

As to the *weights* of Africa, there are few places have any, except Egypt and the coaſts of Africa, whoſe *weights* are enumerated among thoſe of the ports of the Levant, *&c.*

As to the coaſts beyond Cape Verde, *viz.* Guinea, Congo, to Soffola, Mozambica, *&c.* they have no *weights*; only the Engliſh, French, Dutch, Portugueze, and Danes have introduced their own *weights* in their reſpective ſettlements.

The iſle of Madagaſcar, indeed, has its particular *weights*; but it has none that exceed the drachm, nor are they uſed for any thing but gold and ſilver. — Other commodities they never weigh.

Antient WEIGHTS.

Jewiſh *Weights* reduced to Engliſh *Troy Weight.*

			l.	*oz.*	*pwt.*	*gr.*
		Shekel.	00	00	09	02 $\frac{4}{7}$
60		Maneh.	02	03	06	10 $\frac{2}{7}$
3000	50	Talent.	113	10	01	10 $\frac{2}{7}$

Note, in reckoning money, 50 *ſhekels* made a *maneh*, but in *weight*, 160 *ſhekels*.

Grecian and Roman WEIGHTS reduced to Engliſh *Troy Weight.*

										l.	*oz.*	*pwt.*	*gr.*
									Lentes.	0	00	00	00 $\frac{85}{112}$
4									Siliquæ	0	00	00	03 $\frac{1}{28}$
12	3								Obolus	0	00	00	09 $\frac{3}{28}$
24	6	2							Scriptulum	0	00	00	18 $\frac{3}{14}$
72	18	6	3						Drachma	0	00	02	06 $\frac{9}{14}$
96	24	8	4	1 $\frac{1}{3}$					Sextula	0	00	03	00 $\frac{6}{7}$
144	36	12	6	2	1 $\frac{1}{2}$				Sicilicus	0	00	04	13 $\frac{2}{7}$
192	48	16	8	2 $\frac{2}{3}$	2	1 $\frac{1}{3}$			Duella	0	00	06	01 $\frac{5}{7}$
576	144	48	24	8	6	4	3		Uncia	0	00	18	05 $\frac{1}{7}$
6912	1728	576	288	96	72	48	36	12	Libra	0	10	18	13 $\frac{5}{7}$

The ſubdiviſions of the Roman as, libra, or pound.

		Unciæ, or ounces. contained
1	As, libra, &c.	12
$\frac{11}{12}$	Deunx	11
$\frac{5}{6}$	Dextans	10
$\frac{3}{4}$	Dodrans	9
$\frac{2}{3}$	Bes	8
$\frac{7}{12}$	Septunx	7
$\frac{1}{2}$	Semis	6
$\frac{5}{12}$	Quincunx	5
$\frac{1}{3}$	Triens	4
$\frac{1}{4}$	Quadrans	3
$\frac{1}{6}$	Sextans	2
$\frac{1}{12}$	Uncia	1

The Roman ounce is the Engliſh averdupoiſe ounce, which they divided into ſeven *denarii*, as well as eight *drachms*; and ſince they reckoned their denarius equal to the Attic drachm, this will make the Attic *weights* one eighth heavier than the correſpondent Roman *weights*. Arbuth.

Note, The Grecians divided their *obolus* into *chalci* and λεπτα. Some, as Diodorus, and Suidas, divided the *obolus* into ſix *chalci*, and every *chalcus* into ſeven λεπτα. Others divided the *obolus* into eight *chalci*, and every *chalcus* into eight λεπτα, or *minuta*.

WEIGHT *of the Air*, is equal to the elaſticity thereof. See AIR, and ELASTICITY.

To find the weight *of a cubit inch of Air.* — Weigh a round glaſs veſſel full of common air, very accurately: exhauſt the air out of it: weigh the exhauſted veſſel, and ſubtract the latter *weight* from the former; the remainder is the *weight* of the air exhauſted.

Find, then, the content of the veſſel by the laws of meaſuring, (ſee SPHERE:) — And the ratio of the remaining air to the primitive air. See AIR-*Pump*.

This done, the bulk of the remaining air is found by the rule of three; which being ſubtracted from the capacity of the veſſel, the remainder will be the bulk of air extracted. — Or, if the air-pump be very tight, and the exhauſtion continued as long as any air is got out, the remaining air will be ſo ſmall, that it may be ſafely neglected, and the content of the veſſel taken for the bulk of the exhauſted air.

Having, therefore, the *weight* and bulk of the whole exhauſted air, the *weight* of one cubic inch is eaſily had by the rule of three.

This method was firſt uſed by Otto Gueric, and aftewards by Burcher de Volder; who gives us the following particulars in his experiment. — 1°. That the *weight* of the glaſs ſpherical veſſel he made uſe of, full of common air, was 7 pounds, 1 ounce, 2 drams, 48 grains; when exhauſted of air, 7 *l.* 1 *oz.* 1 *dr.* 31 *gr.* and when full of water, 16 *l.* 12 *oz.* 7 *dr.* 14 *gr.* The *weight* of the air, therefore, was 1 *dr.* 12 *gr.* or 77 *gr.* the *weight* of the water 9 *l.* 11 *oz.* 5 *dr.* 43 *gr.* or 74743 *gr.* Conſequently, the ratio of the ſpecific gravity between water and air is 74743 : 77 :: $970\frac{53}{77}$: 1. — Now, de Volder having found a cubic foot of water to weigh 64 pounds, by inferring, as 970 is to 1, ſo is 64 pounds to a fourth proportional; which, found by the rule of three, is the weight of a cubic foot of air, *viz.* one ounce, 27 gr. or 507 grains nearly. See AIR.

The *weight* of ſea-water is different in different climates. — Mr. Boyle having furniſhed a learned phyſician, going on a voyage to America, with a hydroſtatical balance, and recommended him to obſerve, from time to time, the difference of *weight* he might meet withal, this account was returned him: That the ſea-water increaſed in *weight* the nearer he came to the line, till he arrived at a certain degree of latitude, as he remembers, about the 30th; beyond which, it retained the ſame ſpecific *weight*, till he came to Barbadoes. *Philoſoph. Tranſact.* N° 18.

Groſs WEIGHT.	See the article	GROSS.
Neat WEIGHT.		NEAT.
Penny WEIGHT.		PENNY.
Aſſay of WEIGHT.		ASSAY.
Auncel WEIGHTS.		AUNCEL *Weight*.

WELD, or WOLD, a plant uſed by the dyers to give a yellow colour; and for this reaſon called in Latin *luteola*, of *luteus*, yellow. See DYING, and YELLOW.

This plant is ſown in a light ground, in the months of March or September; and is ripe in June, or July. — In hot countries it is frequently dry enough when gathered; but in the colder, care muſt be taken to dry it. — Great circumſpection is to be uſed, that it be not gathered before thorough ripe; as alſo, to prevent its getting wet when gathered.

Weld is much cultivated in Kent, for the uſe of the London dyers. — With the help of pot-aſhes, it yields a deep lemon colour; but either by the ſmalneſs of the proportion put into the liquor, or by taking from it a ſlighter tincture, it ſerves to dye all colours between white and a deep yellow. — Its dye will hold well, except againſt urine and tartarous liquors.

WELD, or WEALD, in a chorographical ſenſe. See WEALD.

WELDING *Heat*, a degree of heat which ſmiths give their iron in the forge, when there is occaſion to double up the iron, and to *weld* a work in the doublings; ſo that the iron ſhould grow into a lump thick enough for the purpoſe. See IRON, FORGING, &c.

It is alſo uſed when two bars of iron are to be joined together at the ends to make a length. See HEAT.

WELL, a hole dug under ground, below the level or ſurface of the water collected in the ſtrata. See STRATA, and WATER.

It is uſually of a cylindrical figure, walled with ſtone, and lined with mortar. See SPRING.

M. Blondel informs the royal academy of ſciences of a device they uſe in the lower Auſtria, which is incompaſſed with the mountains of Stiria, to fill their *wells* with water, *viz.* That they dig in the earth to the depth of 20 or 25 feet, till they come to a clammy earth, which they bore through, till the waters break forcibly out: which water, in all probability, comes from the neighbouring mountains, in ſubterraneous channels. — Caſſini obſerves, that in many places of Modena, and Bologna, they make themſelves *wells* by the ſame artifice. — Mr. Derham adds, that the like has been ſometimes found in England, particularly in Eſſex.

In the *Philoſophical Tranſactions*, we are informed by Mr. Norwood, that in Bermudas, *wells* of freſh water are dug within twenty yards of the ſea, and even leſs, which ariſe and fall with the tides as the ſea itſelf does. — He adds, that in digging *wells* in that iſland, they dig till they come almoſt to a level with the ſurface of the ſea; and then they certainly find either freſh water or ſalt: if it prove freſh, yet by digging two or three feet deeper, they always come at ſalt-water. If it be ſandy ground, they uſually find freſh water; but if hard lime-ſtone rock, the water is ſalt or brackiſh. See FRESH *Water*, &c.

In the dioceſe of Paderborn in Weſtphalia, is a *well* which loſes itſelf twice in 24 hours; returning always, after ſix hours abſence, with great noiſe, and ſo forcibly, as to drive three mills not far off. — The inhabitants call it the *bolderbourn*, *q. d.* the boiſterous ſpring. — *Lay-well*, near Torbay, ebbs and flows very often every hour; though ſomewhat oftener in winter than in ſummer. Dr. Oliver obſerves, its flux and reflux ſometimes return every minute, though ſometimes not above 26, or 20 times in an hour. *Philoſoph. Tranſact.* N°. 104. See TIDES.

WELL-*Water*. See the article WATER.

WELL, in the military art, denotes a depth which the miner ſinks into the ground, from which he runs out branches or galleries, either to prepare a mine, or find out, and diſappoint the enemy's mine. See MINE, SAP, &c.

WELL-HOLE, in building, is the hole left in a floor, for the ſtairs to come up through. See STAIRS.

WEN, a tumor, or excreſcence, growing on divers parts of the body; conſiſting of a cyſtis, or bag, filled with ſome peculiar matter. See TUMOR, and EXCRESCENCE.

Of this, phyſicians uſually reckon three kinds, according to the matter it is formed of, *i. e.* the humour contained therein. — If ſoft, reſembling a pulp, the *wen* is called *atheroma*; if honey, *meliceris*; and if ſuet, *ſteatoma*. See ATHEROMA, MELICERIS, and STEATOMA.

M. Littre, in *Mem. de l' Acad. des Sciences*, adds a fourth kind, which he calls *lipoma*; by reaſon, the *wen* is formed of ſoft fat.

Wens are all, uſually, of the like colour with the reſt of the body; begin from very little, and grow gradually. They are not dangerous, but frequently laſt a long while. Sometimes they degenerate into abſceſſes. — The cure is, to cut off the cyſtis by the root, which is always narrow.

In the *Philoſophical Tranſactions*, we have an account of a very extraordinary *wen*, on the lower jaw of one Alexander Palmar, of Keith in Scotland. — It was 27 years a growing: at length its enormous bulk, and the pain it gave him together with its emaciating him exceedingly, determined him to have it cut off. — Dr. Bowers aſſures us, its baſis was five inches over, which ſhould ſeem too large for the whole face, and that, with blood and all, it weighed one or two and twenty pounds. — Its form was ſpheroidal; and when meaſured, was 34 inches about, one way, and 28 another. — It ſeemed to be an atheroma, being a glandulous ſubſtance, with ſeveral big blood-veſſels in it, and hair growing on it. It was as ſenſible as any other part. — The hæmorrhage, after cutting it off, was ſtopped by the vitriolic powder, and the ordinary dreſſing being uſed, a cure was compleated in ſix weeks time.

WENS *of pearl*. See the article PEARL.

WERE, WERA, in our old law-books, ſignifies as much as *æſtimatio capitis*, or *pretium hominis*; that is, ſo much as was antiently paid for killing a man. See ÆSTIMATIO *Capitis*, HINDENI, &c.

When ſuch crimes were purniſhed with pecuniary mulcts, not death; the price was ſet on every man's head, according to his condition and quality. — *Were ſuum*, id eſt, *pretium, ſuæ redemptionis*, his ranſom. See RANSOM.

WERELADA, among our Saxon anceſtors, the denying a homicide on oath, in order to be quit of the fine, or forfeiture called *were*. See WERE.

Where a man was ſlain, the price at which he was valued was to be paid to the king and his relations. For in the time of the Saxons, the killing a man was not puniſhed by death, but by a pecuniary mulct, called *wera*. See WERGILD.

If the party denied the fact, he was to purge himſelf by the oaths of ſeveral perſons, according to his degree and quality. — If the guilt amounted to four pounds, he was to have 18 jurors on his father's ſide, and four on his mother's: if to 14 pounds, he was to have ſixty jurors. And this was called *werelada*. — *Homicidium* werâ *ſolvatur aut* wereladâ *negetur*.

WERGILD, WEREGELD, in our antient cuſtoms, the price of a man's head: *pretium ſeu valor hominis occiſi, homi-*

cidii pretium; which was paid partly to the king for the loſs of his ſubject, partly to the lord whoſe vaſſal he was; and partly to the next of kin. See WERE.

The *wergeld* of an archbiſhop, and of an earl, was 15000 thrimſa's. Selden's *Titles of Honour*. — That of a biſhop, or alderman, 8000; that of a general, or governour, 4000; that of a prieſt, or thane, 2000; that of a king, 30000; half to be paid to his kindred, and the other half to the nation.

WEST, *Occidens*, *Occaſus*, in coſmography, one of the cardinal points of the horizon; diametrically oppoſite to the eaſt. See CARDINAL *Point*, EAST, &c.

Weſt is ſtrictly defined, the interſection of the prime vertical with the horizon, on that ſide the ſun ſets in. See SETTING. — *To draw a true* weſt-*line*. See MERIDIAN.

WEST, in aſtronomy, is chiefly uſed for the place in, or towards, which the ſun or ſtars ſink under the horizon. — Thus, we ſay, the Sun, Mars, *&c.* are in the *weſt*.

The point the ſun ſets in, when in the equator, is particularly called the *equinoctial weſt*, or *point of true weſt*. See EQUINOCTIAL.

WEST, and WESTERN, in geography, are applied to certain countries, *&c.* ſituate towards the point of ſun-ſetting with reſpect to certain others.

Thus, the empire of Rome, antiently, and of Germany, at preſent is called the *empire of the weſt*, or *weſtern empire*; in oppoſition to that of Conſtantinople, which is called the *empire of the eaſt*. See EMPIRE.

The Latin or Roman church, is called the *weſtern church*; in oppoſition to the Greek church. See CHURCH, GREEK, &c.

The French, Spaniards, Italians, *&c.* are called *weſtern nations*, in reſpect to the Aſiatics; and America, the *Weſt-Indies*, in reſpect of the Eaſt-Indies.

WEST-WIND, is alſo called *zephyrus*, and *favonius*. See WIND.

WEST-SAXONLAGE, or the law of the Weſt-Saxons. See LAW.

WEST-*India Companies.*	See the article	COMPANY.
WEST *Dial.*		DIAL.
Mooring for WEST.		MOORING.
WESTERN *Amplitude.*		AMPLITUDE.
WESTERN *Church.*		CHURCH.
WESTERN *Horizon.*		HORIZON.
WESTERN *Ocean*		OCEAN.

WESTPHALIA-*Ham*. See the article HAM.

WET-GLOVER, a dreſſer of the ſkins of ſheep, lambs, goats, *&c.* which are ſlender, thin, and gentle. See GLOVE, SKIN, &c.

WET *Dock*. See the article DOCK.

WEY. See the article WEIGH.

WHALE, in aſtronomy, one of the conſtellations. See CETUS.

WHALE-*Bone*, a commodity procured from the *whale*, uſed as ſtiffening in ſtays, fans, buſks, ſkreens, *&c.*

There are many kinds of *whales*; but two principal; one, retaining that name, the other called *cachalot*. — The difference conſiſts in this, that the cachalot has teeth, and the *whale* properly ſo called, inſtead of teeth, has a kind of whiſkers in his throat, about a ſpan broad, and 15 feet long, ending in a ſort of fringe, much like ſwine's briſtles.

They are ſet in the palate, and do, in ſome meaſure, the office of teeth. — Theſe whiſkers, ſplit and faſhioned, are what we call *whalebone*. — The pizzle, or genital member of the animal, ſerves likewiſe for the ſame purpoſe.

WHALE-*Fins*. See the article FIN.

WHALE-*Fiſhery*. See the article FISHERY.

WHARF, a ſpace on the banks of a haven, creek, or hithe; provided for the convenient loading and unloading of veſſels upon. See HAVEN, HITHE, &c.

The fee paid for the landing of goods on a *wharf*, or for ſhipping them off, is called *wharfage*. — And the perſon who has the overſight and direction of the *wharf*, receives *wharfage*, &c. is called the *wharfinger*. See KEY.

WHARLES *of flowers*, among herbaliſts, are rows of leſſer flowers, ſet at certain diſtances about the main ſtalk or ſpike. See FLOWER.

WHEAT, *Triticum*. See the article CORN.

WHEEL, *Rota*, in machanics, a ſimple machine conſiſting of a round piece of wood, metal, or other matter; which revolves on an axis. See AXIS.

The *wheel* is one of the principal mechanic powers. — It has places in moſt engines; in effect, it is of an aſſemblage of *wheels*, that moſt of our chief engines are compoſed. — Witneſs clocks, mills, *&c.* See CLOCK, MILL, &c.

Its form is various, according to the motions it is to have; and the uſe it is to anſwer. — By this it is diſtinguiſhed into *ſimple*, and *dented*.

Simple WHEELS, are thoſe whoſe circumference and axis is uniform, and which are uſed ſingly, and not combined. — Such are the *wheels* of carriages; which are to have a double motion: the one circular about their axis; the other rectilinear; by which they advance along the road, *&c.* which two motions they appear to have; though, in effect, they have but one: it being impoſſible the ſame thing ſhould move, or be agitated two different ways at the ſame time.

This one is a ſpiral motion; as is eaſily ſeen, by fixing a piece of chalk on the face of a *wheel*, ſo as it may draw a line on a wall, as the *wheel* moves. — The line it here traces is a juſt ſpiral, and ſtill the more curve, as the chalk is fixed nearer the axis. — For a very nice phænomenon, in the motion of theſe *wheels*, ſee ROTA *Ariſtotelica*.

We ſhall add, that in *wheels* of this kind, the heighth ſhould always be proportioned to the ſtature of the animal that draws or moves them. — The rule is, that the load, and the axis of the *wheels* be of the ſame heighth with the power that moves them: otherwiſe, the axis being higher than the beaſt, part of the load will lie on him; or, if it be lower, he pulls to diſadvantage, and muſt exert a greater force. Though Stevinus, Dr. Wallis, *&c.* ſhew, that to draw a vehicle, *&c.* over waſte, uneven places, it were beſt to fix the traces to the *wheels* lower than the horſes breaſt.

The power of theſe *wheels* reſults from the difference of the radii of the axis, and circumference. — The canon is this: "As the radius of the axis is to that of the circumference, ſo "is any power, to the weight it can ſuſtain hereby."

This is alſo the rule in the axis in the peritrochio; and, in effect, the *wheel*, and the axis in peritrochio; are the ſame thing; only, in theory, it is uſually called by the latter name, and in practice, by the former. See AXIS *in Peritrochio*.

Dented WHEELS, are thoſe either whoſe circumference, or axis, is cut into teeth, by which they are capable of moving and acting on one another, and of being combined together.

The uſe of theſe is very conſpicuous in clocks, jacks, *&c.* See CLOCKWORK, WATCHWORK, &c.

The power of the *dented wheel* depends on the ſame principle, as that of the ſimple one. — It is only that to the ſimple axis in peritrochio, which a compound lever is to a ſimple lever. See LEVER, and AXIS.

Its doctrine is compriſed in the following canon, *viz.* — "The ratio of the power to the weight," in order for that to be equivalent to this, "muſt be compounded of the ratios "of the diameter of the axis of the laſt *wheel* to the diame- "ter of the firſt; and of the ratio of the number of revolu- "tions of the laſt *wheel*, to thoſe of the firſt, in the ſame "time. — But this doctrine will deſerve a more particular "explication.

1°. Then, if the weight be multiplied into the product of the radii of the axis, and that product be divided by the product of the radii of the *wheels*, the power required to ſuſtain the weight will be found. — Suppoſe, *e. gr.* the weight A, (*Tab. Mechanics*, *fig.* 63.) = 6000 pounds, B C = 6 inches, C D = 34 inches, E F = 5 inches, E G = 35 inches, H I = 4 inches, H K = 27 inches. Then will B C, E F, H I = 120; and C D, E G, I K = 32130. — Hence the power, required to ſuſtain the weight, will be 6000. 120:32130 = $22\frac{1}{3}$ very nearly; a ſmall addition to which will raiſe it.

2°. If the power be multiplied into the product of the radii of the *wheels*, and the factum be divided by the product of the radii of the axis; the quotient will be the weight, which the power is able to ſuſtain — Thus, if the power be $22\frac{1}{3}$ of a pound, the weight will be 6000 pounds.

3°. "A power and a weight being given, to find the num- "ber of *wheels*, and in each *wheel*, ſo, as that the radius "of the axis, to the radius of the *wheel*: ſo, as that the "power being applied perpendicularly to the periphery of the "laſt *wheel*, may ſuſtain the given weight."

Divide the weight by the power: reſolve the quotient into the factors which produce it. — Then will the number of factors, be the number of *wheels*; and the radii of the axes will be to the radii of the *wheels*, as unity to the ſeveral *wheels*. — Suppoſe, *e. gr.* a weight of 3000 pounds, and a power of 60, is 500, which reſolves into theſe factors, 4. 5. 5. 5. Four *wheels* are to be made, in one of which, the radius of the axis is to the radius of the *wheel*, as 1 to 4. — In the reſt, as 1 to 5.

4°. If a power move a weight by means of two *wheels*, the revolutions of the ſlower *wheel*, are to thoſe of the ſwifter, as the periphery of the ſwifter axis, is to the periphery of the *wheel* that catches on it.

Hence, 1°. the revolutions are as the radius of the axis F E, to the radius of the *wheel* D C. — 2°. Since the number of teeth in the axis F D, is to the number of teeth in the circumference of the *wheel* M, as the circumference of that, to the circumference of this: the revolutions of the ſlower *wheel* M, are to the revolutions of the ſwifter N, as the number of teeth in the axis, to the number of teeth in the *wheel* M it catches into.

5°. If the factum of the radii of the *wheels* G D, D C be multiplied into the number of revolutions of the ſloweſt *wheel* M; and the product be divided by the factum of the radii of the axes which catch into them, G H, D E, &c. the quotient will be the number of revolutions of the ſwifteſt *wheel*

wheel O. *E. gr.* If $GE = 8$, $DC = 12$, $GH = 4$, $DE = 3$, and the revolution of the *wheel* M be one; the number of revolutions of the *wheel* O will be 8.

6°. If a power move a weight by means of divers *wheels*, the ſpace paſſed over by the weight, is to the ſpace of the power, as the power to the weight. — Hence, the greater the power, the faſter is the weight moved; and vice verſa.

7°. The ſpaces paſſed over by the weight and the power, are in a ratio compounded of the revolutions of the ſloweſt *wheel*, to the revolutions of the ſwifteſt; and of the periphery of the axis of that, to the periphery of this. — Hence, ſince the ſpace of the weight and the power are reciprocally as the ſuſtaining power to the weight; the power that ſuſtains a weight, will be to the weight, in a ratio compounded of the revolutions of the ſloweſt *wheel*, to thoſe of the ſwifteſt, and of the periphery of the axis of that, to the periphery of this.

8°. "The periphery of the axis of the ſloweſt *wheel*, with "the periphery of the ſwifteſt *wheel*, given; as alſo, the "ratio of the revolutions of the one, to thoſe of the other: "to find the ſpace which the power is to paſs over, while "the weight goes any given length.

Multiply the periphery of the axis of the ſloweſt *wheel*, into the antecedent term of the ratio, and the periphery of the ſwifteſt *wheel*, into the conſequent term; and to theſe two products, and the given ſpace of the weight, find a fourth proportional: this will be the ſpace of the power. — Suppoſe, *e. gr.* the ratio of the revolutions of the ſloweſt *wheel*, to thoſe of the ſwifteſt, to be as 2 to 7; and the ſpace of the weight 30 feet: and let the periphery of the axis of the ſloweſt *wheel*, be to that of the ſwifteſt, as 3 to 8. The ſpace of the power will be found 280.

9°. "The ratio of the peripheries of the ſwifteſt *wheel*, and "of the axis of the ſloweſt; together with the ratio of their "revolutions, and the weight, being given: to find the power "able to ſuſtain it."

Multiply both the antecedents, and the conſequents of the given ratios into each other: and to the product of the antecedents, the product of the conſequents, and the given weight, find a fourth proportional. That will be the power required. — Suppoſe, *e. gr.* the ratio of the peripheries 8 : 3. That of the revolutions 7 : 2; and the weight 2000: the power will be found $214\frac{2}{7}$. — After the ſame manner may the weight be found; the power and the ratio of the peripheries, *&c.* being given.

10°. "The revolutions the ſwifteſt *wheel* is to perform, "while the ſloweſt makes one revolution, being given; together with the ſpace the weight is to be raiſed, and the "periphery of the ſloweſt *wheel*; to find the time that will "be ſpent in raiſing it.

Say, as the periphery of the axis of the ſloweſt *wheel* is to the ſpace of the weight given; ſo is the given number of revolutions of the ſwifteſt *wheel*, to a fourth proportional; which will be the number of revolutions, performed while the weight reaches the given heighth. — Then, by experiment, determine the number of revolutions the ſwifteſt *wheel* performs in an hour; and, by this, divide the fourth proportional found before. — The quotient will be the time ſpent in raiſing the weight.

WHEELS *of a clock*, &c. are the crown *wheel*, contrat *wheel*, great *wheel*, ſecond *wheel*, third *wheel*, ſtriking *wheel*, detent *wheel*, &c. See CLOCK, and WATCH.

WHEELS *of coaches, waggons*, &c. — In the *Philoſophical Tranſactions*, we have ſome experiments, ſhewing the advantages of high *wheels* in carriages of all kinds: the reſults of the experiments amount to this:

1°. That, four *wheels* of $5\frac{2}{3}$ inches high, *viz.* one half of the ordinary heighth of the *wheels of a* waggon, draw a weight of $50\frac{1}{2}$ *l.* averdupoiſe up an inclined plane, with leſs power by ſix ounces, than two of them matched with two ſmaller ones of $4\frac{1}{3}$ inches heighth.

2°. That any vehicle might be much more eaſily drawn in rough ways, if the fore *wheels* were as high as the hind *wheels*, and the thills fixed under the axis.

3°. That ſuch a vehicle would likewiſe be drawn more eaſily where the *wheels* cut in clay, ſand, *&c.*

4°. That high *wheels* would not cut ſo deep as low *wheels.*

5°. That low *wheels* are indeed beſt for turning in a narrow compaſs.

Potter's WHEEL. See the article POTTERY.

Ariſtotle's WHEEL.	See the article	ROTA *Ariſtotelica.*
Meaſuring WHEEL.		PERAMBULATOR.
Perſian WHEEL.		PERSIAN.
Water WHEEL.		WATER.

WHEEL is alſo the name of a kind of puniſhment, which great criminals are put to in divers countries. See PUNISHMENT.

In France, their aſſaſſins, parricides, and robbers on the highway, are condemned to the *wheel*, *i. e.* to have their bones firſt broke with an iron bar on a ſcaffold, then to be expoſed, and left to expire on the circumference of a *wheel.* — In Germany, they break their bones on the *wheel* itſelf.

This cruel puniſhment was unknown to the antients; as is obſerved by Cujas. — It is not certain who was the inventor. — Its firſt introduction was in Germany. It was but rarely practiſed any where elſe, till the time of Francis I. of France; who, by an edict of the year 1534, appointed it to be inflicted on robbers on the highway. Richelet dates the edict in the year 1538, and quotes Brodæus, *Miſcell.* L. II. c. 10.

WHEEL, in the military art, is the word of command, when a battalion or ſquadron is to alter its front, either one way, or the other. See EVOLUTION, QUARTER-*Wheeling*, &c.

To wheel to the right, the man in the right angle is to turn very ſlowly, and every one to *wheel* from the left to the right, regarding him as their centre: and vice verſa, when they are to *wheel to the left.*

When a diviſion of men are on the march, if the word be *wheel to the right*, or *to the left*, then the right or left-hand man keeps his ground, turning only on his heel, and the reſt of the rank move about quick, till they make an even line with the ſaid right or left-hand man.

Squadrons of horſe *wheel* much after the ſame manner.

WHEEL-*Barometer.* See the article BAROMETER.

WHEEL-*Fire*, among chymiſts, a fire uſed for fuſing of metals; properly called *ignis rotæ.* See FUSION, METAL, &c. It is a fire which covers or incompaſſes the crucible, coppel, or melting-pot quite over; a-top, as well as around the ſides. See FIRE.

WHERLICOTES, a ſort of open chariots, of the antient Britons invention, uſed by perſons of quality, before the invention of coaches. See COACH, CARR, &c.

WHERRY. See the articles VESSEL, BOAT, &c.

WHETSTONE, *Cos*, a ſort of ſtone of a lax compoſition, and coarſe grain; ſerving for the whetting or ſharpening knives, and other tools upon. See STONE, and HONE.

WHEY, the ſerum or watery part of milk. See MILK, and SERUM.

WHIFFLER, of a company in London, a young freeman, who goes before, and waits on the company on occaſions of public ſolemnity. See COMPANY.

WHIGS, a party or faction in England, oppoſite to the *tories.* See FACTION, TORY, &c.

The origin of the names of theſe two mighty factions is very obſcure. — If ſome little trivial circumſtance, or adventure which eſcapes the knowledge of mankind, give the name to a party, which afterwards becomes famous, poſterity labours in vain to find the original of ſuch names: it ſearches the ſources, forms conjectures, invents reaſons, and ſometimes meets the truth, but always without knowing it aſſuredly.

Thus, in France, the Calviniſts are called *Huguenots*; yet no body was ever able certainly to aſſign the cauſe of that appellation. See HUGUENOT.

Whig is a Scottiſh, and ſome ſay, too, an Iriſh word, literally ſignifying *whey.* — *Tory* is another Iriſh word, ſignifying a *robber*, or *highwayman.*

Now, under the reign of king Charles the ſecond, while his brother, then duke of York, was obliged to retire into Scotland, there were two parties formed in that country. — That of the duke, which was ſtrongeſt, perſecuted the other, and frequently reduced them to fly into the mountains and woods, where thoſe unhappy fugitives had often no other ſubſiſtence for a long time, but cows milk. — Hence, their adverſaries they called *tories, q. d.* robbers; and the tories upbraiding them with their unhappineſs, from the milk whereof they lived, called them *whigs.* — From Scotland the two names came over with the duke into England.

Others give the origin and etymology of the two words thus: — During the unhappy war which brought king Charles I. to the ſcaffold, the partizans of that prince were at firſt called *cavaliers*; and thoſe of the parliament, *round-heads.* — Now, *tory* was a name for a kind of banditti in Ireland, who ſheltered themſelves in the mountains, and the iſlands formed by the bogs; as, then, the king's enemies charged him with favouring the rebellion in Ireland, which broke out at that time, they changed the name *cavalier* into that of *tory.* — And theſe laſt, to be even with their enemies, who were ſtrictly leagued with the Scots, changed *round-heads* for *whigs*, the name of a ſort of enthuſiaſts in Scotland, who living in the open fields and woods, fed much on milk. — *Diſſert. de M. Rapin Thoyras ſur les* wighs *&* les torys. *Haye An.* 1717.

WHINE, a hunting term, uſed in reſpect of the cry of an otter. See HUNTING.

WHIP, or WHIP-STAFF, in a ſhip, a piece of timber in form of a ſtrong ſtaff, faſtened into the helm, for the ſteersman, in ſmall ſhips, to hold in his hand; thereby to move the rudder, and direct the ſhip. — See *Tab. Ship. fig.* 2. *n.* 103; ſee alſo the articles HELM, and STEERING.

WHIP-*Grafting.*	See the article	ENGRAFTING.
WHIP-*Saw.*		*Whip*-SAW.

WHIPPER. See FISHING.

WHIPPING, a term uſed by anglers, when they faſten a line to the hook, or rod. See ANGLING.

The word is alſo taken for the caſting in of the hook, and drawing it gently on the water.

WHIPT *Syllabub.* See the article SYLLABUB.

WHIRL-POOL, an eddy, vortex, or gulph, where the water is continually turning round. See GULPH, EDDY, VORTEX, &c.

WHIRL-WIND, a wind that riſes ſuddenly, is exceedingly rapid, and impetuous when riſen, but ſoon ſpent. See WIND, and HURRICANE.

There are divers ſorts of *whirl-winds*, diſtinguiſhed by their peculiar names; as the *preſter*, *typho*, *turbo*, *exhydria*, and *ecnephias*.

The *preſter* is a violent wind, breaking forth with flaſhes of lightning. — This is rarely obſerved; ſcarce ever without the *ecnephias*. — Seneca ſays, it is a *typho*, or *turbo* kindled or ignited in the air. See PRESTER.

The *ecnephias* is a ſudden and impetuous wind, breaking out of ſome cloud; frequent in the Æthiopic ſea, particularly about the Cape of Good Hope. — The ſeamen call them *travados*.

The *exhydria* is a wind burſting out of a cloud, with a great quantity of water. — This only ſeems to differ in degree from the *ecnephias*, which is frequently attended with ſhowers.

A *typho*, or *vortex*, moſt properly called a *whirl-wind*, or *hurricane*, is an impetuous wind, turning rapidly every way, and ſweeping all round the place. — It frequently deſcends from on high. — The Indians call it *orancan*, the Turks, &c. *oliphant*. — It is frequent in the eaſtern ocean, chiefly about Siam, China, &c. and renders the navigation of thoſe parts exceeding dangerous. See VORTEX, HURRICANE, SPOUT, &c.

WHISPERING. See HEARING, ATTENTION, &c.

WHISPERING-*Places* depend on this principle, that the voice being applied to one end of an arch, eaſily rolls to the other. See SOUND, ARCH, &c.

Accordingly, all the contrivance in a *whiſpering-place* is, that near the perſon who whiſpers there be a ſmooth wall, arched either cylindrically, or elliptically. — A circular arch will do, but not ſo well. See PHONICS.

Places famed for the conveyance of *whiſpers*, are the priſon of Dionyſius at Syracuſe, which increaſed a ſoft *whiſper* to a noiſe, the clap of one's hand to the ſound of a cannon, &c. — The aquæducts of Claudius, which carried a voice ſixteen miles; and divers others, enumerated by Kircher in his *Phonurgia*.

The moſt conſiderable in England, are, the dome of S. Paul's, London, where the ticking of a watch may be heard from ſide to ſide; and a very eaſy *whiſper* be ſent all round the dome. — This, Mr. Derham found to hold not only in the gallery below, but above upon the ſcaffold, where a *whiſper* would be carried over one's head round the top of the arch, though there be a large opening in the middle of it into the upper part of the dome.

The famous *whiſpering-place* in Glouceſter cathedral, is no other than a gallery above the eaſt end of the choir, leading from one ſide thereof to the other. — It conſiſts of five angles, and ſix ſides, the middlemoſt of which is a naked window; yet two *whiſperers* hear each other at the diſtance of twenty five yards.

WHITE, one of the colours of natural bodies. See COLOUR.

White is not ſo properly ſaid to be any one colour, as a compoſition of all the colours; it being demonſtrated by Sir Iſaac Newton, that thoſe bodies only appear *white*, which reflect all the kinds of coloured rays alike. See WHITENESS.

Hevelius affirms it as a thing moſt certain, that in the northern countries, animals, as hares, foxes, bears, &c. become *white* in the winter-time; and in ſummer reſume their natural colours. See HAIR.

Black bodies are found to take heat ſooner than *white* ones; by reaſon the former abſorb or imbibe rays of all kinds and colours, and the latter reflect all. See BLACKNESS.

Thus, black paper is ſooner put into flame by a burning-glaſs, than *white*; and black clothes hung up by the dyers in the ſun, dry ſooner than *white* ones. See HEAT.

WHITE *Arſenic.*	See the article	ARSENIC.
WHITE *Aſhes.*		ASHES.
WHITE *Cinnamon.*		CINNAMON.
WHITE *Copperas.*		COPPERAS.
WHITE *Cordage.*		CORDAGE.
WHITE *Diachylon.*		DIACHYLON.
WHITE *Eagle.*		EAGLE.

WHITE *of the Eye*, denotes the firſt tunic or coat of the eye, called *albuginea*, and *conjunctiva*, becauſe ſerving to bind together, or incloſe the reſt. See CONJUNCTIVA, &c.

WHITE *Flag.*	See the article	FLAG.
WHITE *Froſt.*		FROST.

WHITE-*Friars*, a name common to ſeveral orders of monks, from their being clothed in a *white* habit. See MONK, HABIT, &c.

Such are the regular canons of S. Auguſtin, the Premonſtratenſes, and Bernardins. See AUGUSTIN, PREMONSTRATENSES, &c.

WHITE *Glaſs.* See the article GLASS.

WHITE-*hart Silver*, *candidi cervi Argentum*, a tribute or mulct paid into the exchequer, out of certain lands in or near the foreſt of *White-hart* in *Dorſetſhire*; which has continued from Henry the third's time, who firſt impoſed it upon Thomas de la Linde, and others, for killing a beautiful *white* hart, which that king had purpoſely ſpared in hunting.

WHITE *Hellebore.* See the article HELLEBORE.

WHITE *Lead*, is a ſort of ruſt of lead; or lead diſſolved with vinegar; much uſed by the painters. See LEAD.

It is prepared two ways: — either by reducing the lead into thin laminæ, ſteeping them in ſtrong vinegar, and every ten days ſcraping off the ruſt formed on the ſurface: and repeating this till the lead be quite conſumed.

Or, by rolling the laminæ into cylinders like ſheets of paper, only ſo as that there be a little ſpace left between the ſeveral folds or turns. — Theſe laminæ they ſuſpend in the middle of earthen pots, at the bottom of which is vinegar. — The pots being well cloſed, are buried in a dunghil for thirty days; after which, being opened, the lead is found, as it were, calcined, and reduced into what they call *ceruſſe*, or *white lead*, to be broke into pieces, and dried in the ſun.

It is uſed both in painting in oil and in water-colours, and makes a good colour in each. — But it is ſomewhat dangerous both in the grinding and uſing it, as being a rank poiſon. See COLOUR.

Of this *white lead* it is that the paint uſed by the ladies, called *ceruſs*, is made. See CERUSS.

WHITE *Line*, among printers, a void ſpace greater than uſual, left between two lines. See PRINTING.

WHITE *Line*, in anatomy. See the article LINEA *Alba*.

WHITE *Linen*, is cloth of hemp, or flax, bleached by divers lyes, and waterings on the ground. See BLEACHING.

WHITE *Meats*, include milk, butter, cheeſe, white-pots, cuſtards, and other foods coming of milk, or eggs. See MILK, FOOD, &c.

WHITE *Money*, *Libra albæ*. See the article MONEY.

WHITE *Mortar.*	See the article	MORTAR.
WHITE *Order.*		ORDER.

WHITE *Paper*, is that intended for writing, printing, &c. in contradiſtinction to *brown paper*, *marbled paper*, *blotting paper*, &c. See PAPER.

WHITE *Pepper*, is black pepper blanched, or whitened, by ſhelling off its upper ſkin. See PEPPER.

WHITE-*Pot*, denotes milk or cream baked with the yolks of eggs, fine bread, ſugar, and ſpice, in an earthen pot.

The cooks furniſh us with a variety of diſhes under this form and denomination, *Norfolk white-pot*, *Weſtminſter white-pot*, *rice white-pot*, &c.

WHITE *Precipitate.* See the article MERCURY.

WHITE *Rent*, a rent or duty of 8 *d.* payable yearly, by every tinner in the county of Devon, to the duke of Cornwall. See QUIT *Rent*.

WHITE *Salt*, is common, or ſea-ſalt, dried and calcined by the fire, ſo as not to leave any moiſture theren. — The chymiſts call it *decrepitated ſalt*.

There are ſome ſalts naturally *white*; and others that need to be *whitened*, either by diſſolving and purifying them in fair water, which is afterwards evaporated; or by means of fire; or by the ſun. See SALT.

WHITE *Sauce*, a ſort of ſauce made of blanched almonds, and the breaſt of a capon, pounded together with cloves, cinnamon, &c. — We alſo hear of *white broth*, being a ſort of broth enriched with ſack, and ſpices, having blanched almonds ſcraped into it, and the whole thickened with the yolks of eggs, &c.

WHITE *Soap.* See the article SOAP.

Spaniſh WHITE, is a kind of fucus uſed by the ladies to whiten the complexion, and hide the defects thereof. — It is made of tin-glaſs diſſolved in ſpirit of nitre, and precipitated into a very fine powder, by means of ſalt-water. See BISMUTH, &c.

WHITE *Spurs.*	See the article	ESQUIRE.
WHITE *Star.*		STAR.
WHITE *Sugar.*		SUGAR.
WHITE *Tartar.*		TARTAR.
WHITE *Varniſh.*		VARNISH.
WHITE *Vitriol.*		VITRIOL.

WHITE *Wax*, is yellow wax blanched, and purified by the ſun and dew. See WAX.

WHITE *Wine*, is that of a clear, bright, tranſparent colour, bordering on *white*. — It is thus called, to diſtinguiſh it from the red wines, or clarets.

The generality of *white wines* are made from white grapes; though there are ſome from black ones. See WINE.

WHITENESS, *Albedo*, the quality which denominates a body *white*. See WHITE, and COLOUR.

Sir Iſaac Newton ſhews, that *whiteneſs* conſiſts in a mixture of all the colours; and that the light of the ſun is only *white*, becauſe conſiſting of all colours. See RAY.

From the multitude of rings of colours, which appear upon compreſſing two priſms, or object-glaſſes of teleſcopes together, it is manifeſt, that theſe do ſo interfere and mingle with one another at laſt, as, after eight or nine reflexions, to dilute one another wholly, and conſtitute an even and uniform *whiteneſs:* whence, as well as from other experiments, it appears, that *whiteneſs* is certainly a mixture of all colours; and that the light which conveys it to the eye, is a mixture of rays indued with all thoſe colours. See LIGHT.

The ſame author ſhews, that *whiteneſs*, if it be moſt ſtrong and luminous, is to be reckoned of the firſt order of colours; but if leſs, as a mixture of the colours of ſeveral orders: of the former ſort he reckons white metals; and of the latter, the *whiteneſs* of froth, paper, linen, and moſt other white ſubſtances. — And as the white of the firſt order is the ſtrongeſt that can be made by plates of tranſparent ſubſtances, ſo it ought to be ſtronger in the denſer ſubſtances of metals, than in the rarer ones of air, water, and glaſs.

Gold or copper mixed either by fuſion, or amalgamation with a very little mercury, with ſilver, tin, or regulus of antimony, becomes white; which ſhews, both that the particles of white metals have much more ſurface, and therefore are ſmaller than thoſe of gold or copper; and alſo, that they are ſo opake, as not to ſuffer the particles of gold or copper to ſhine through them. — And as that author doubts not, but that the colours of gold and copper are of the ſecond or third order, therefore the particles of white metals cannot be much bigger than is requiſite to make them reflect the white of the firſt order. See PARTICLE.

WHITENING.	See the article	BLEACHING.
WHITENING *of Hair.*		HAIR.
WHITENING *of Wax.*		WAX.

WHITES, in medicine. See the article FLUOR *Albus.*

WHITLOW, or WHITLOE, the popular name for what the phyſicians commonly call *panaris.*

WHITSUN *Farthings.* See the article PENTECOSTALS.

WHITSUNTIDE, the fiftieth day after Eaſter. See EASTER, FEAST, *&c.*

The ſeaſon properly called *Pentecoſt*, is popularly called *Whitſuntide*; ſome ſay, becauſe in the primitive church, thoſe who were newly baptized came to church between Eaſter and Pentecoſt in *white* garments.

Whitſunday always falls between the 9th of May, and the 14th of June, excluſive. See PENTECOST.

WHOLE, *Totum*, in arithmetic, *&c.* See PART, DIVISION, PARTITION, &c.

WHOLE *Meaſure.*	See the article	MEASURE.
WHOLE *Number.*		NUMBER.
WHOLE *Sine.*		SINE.

WHOODINGS, or HOODINGS, a ſea term, uſed for planks joined and faſtened along the ſhip's ſides into the ſtem.

WHORE. See COURTESAN, HARLOT, CONCUBINE, &c.

WHORLBAT, or HURLBAT, a kind of gauntlet, or leathern ſtrap loaden with plummets; uſed by the antient Romans in their ſolemn games, and exerciſes; and by them called *cæſtus.* See CÆSTUS.

WHUR, in falconry, denotes the fluttering of partridges, or pheaſants, as they riſe.

WIC, denotes a place on the ſea-ſhore, or on the bank of a river — though, in the original Saxon, it more properly ſignifies a *ſtreet*, *village*, or *dwelling-place*; alſo a *caſtle.* See WYKE.

We often meet with *wic* in the Saxon writers, as a termination of the name of a town, which had a compleat name without it: — as, *Lunden-wic*; that is, London town; which ſignifies no more than *London:* — In the Saxon *Annals*, it is mentioned, that king Æthelbert made Mellitus biſhop of *Lunden-wic.* — So, Ipſwich is written in ſome old charters, *villa de Gippo*, and ſometimes *villa de Gippo wico*; which is no variance, but the ſame thing; for *Gipps* is the compleat name, and *Gipp-wic* is Gipps town.

WICKER, a twig of the oſier ſhrub.

WICKET, of the French, *guichet*, a little door within a gate; or a hole in a door, through which to view what paſſes without. See DOOR.

WICKLIFFISTS, or WICKLIFFITES, a religious ſect, who had their riſe in England, and their name from their leader *John Wickliff*, a profeſſor of divinity in the univerſity of Oxford. See LOLLARD.

To that immortal author it is we owe the firſt hint of the great reformation, effected 200 years after him. See REFORMATION.

Wickliff maintained, that the ſubſtance of the ſacramental bread and wine ſtill remained ſuch after conſecration. — He alſo oppoſed the doctrine of purgatory, indulgences, the invocation of ſaints, and the worſhip of images. See TRANSUBSTANTIATION, PURGATORY, &c.

He made an Engliſh verſion of the Bible; and compoſed two large volumes, called *Aletheia*; that is, *truth*; which was the ſource whence John Huſs firſt learned moſt of his doctrines. See HUSSITES.

The archbiſhop of Canterbury called a council againſt *Wickliff*, and he was condemned therein; but the good Reformer ſet the condemnation at nought. — After this, king Richard baniſhed him out of England; but he was afterwards recalled, and died in his own country in the year 1384.

Forty years afterwards, his doctrines, and the adherers thereto, were condemned by the council of Conſtance; in conſequence of which, his bones were dug up, and the council condemned him of forty errors.

WIDOW, *Vidua*, a woman that has loſt her huſband. See WOMAN, WIFE, HUSBAND, &c.

Some alſo uſe the term WIDOWER, for a man who has loſt his wife. — Marriage with a *widow*, is a kind of bigamy in the eye of the canon law. See BIGAMY.

WIDOW *of the King*, was ſhe, who, after her huſband's death, being the king's tenant in capite, was driven to recover her dower by the writ *de Dote Aſſignanda*; and could not marry again without the king's conſent.

WIDOW *Bench*, in the county of Suſſex, is that ſhare which a *widow* is allowed of her huſband's eſtate, beſides her jointure. See BENCH.

WIECK. See the article WEEK.

WIFE, *Uxor*, a married woman; or one joined with, and under the protection of a huſband. See WOMAN, MARRIAGE, and HUSBAND. — See alſo MATRON, &c.

A *wife*, in our Engliſh law, is termed *feme covert*; and, in the judgment of the law, is reputed to have no will, as being ſuppoſed entirely under, and ſubject to that of her huſhand: *uxor fulget radiis mariti.* See COVERT, and COVERTURE.

If any goods or chattels be given her, they all immediately become her huſband's. — She cannot let, ſell, give away, or alienate any thing, without her huſband's conſent. — Her very neceſſary apparel is not her's in property. — All her perſonal chattels which ſhe held at her marriage, are ſo much her huſband's, that after his death they ſhall not return to her, but go to the executor, or adminiſtrator of her huſband; except only her parapherna, or præter-dotalia, being her neceſſary apparel; which, with the conſent of her huſband, ſhe may demiſe by will. See PARAPHERNALIA.

The *wife* can make no contract without her huſband's conſent; and in all law matters, *ſine viro reſpondere non poteſt.*

The law ſuppoſes in the huſband, the full power over his *wife*, as over his child or ſervant; and therefore he muſt anſwer for all her faults, and treſpaſſes.

If a *wife* bring forth a child during her huſband's abſence, though of many years; yet if he lived all the time *inter quatuor maria*, within the iſland, he muſt father the child; and the child, if firſt born, ſhall inherit.

If a *wife* bring forth a child begot by a former huſband, or any other perſon, before marriage, but born after marriage with another man; this latter muſt own the child; and that child ſhall be his heir at law.

The *wife*, after her huſband's death, having no jointure ſettled before marriage, may challenge the third part of his yearly rents of land, during her life; and within the city of London, a third part of all her huſband's moveables for ever.

The *wife* partakes of the honours, and condition of her huſband; but none of the *wife*'s dignities come, by marriage, to her huſband.

Yet, the huſband, for getting his *wife* with child, which muſt appear by its being born alive, ſhall have all his *wife*'s lands for life. See COURTESY.

The Engliſh laws are generally eſteemed by foreigners, as very hard, in reſpect of the women; and yet Chamberlayne is of a very different ſentiment, aſſerting, that the condition of *wives* in England, is better than in any other country.

Tertullian has two books, on the ornaments and attire of *wives.* — In the ſecond he labours to prove, that a Chriſtian *wife* cannot, in conſcience, endeavour to pleaſe by her beauty, which ſhe knows to be naturally liable to raiſe looſe deſires; and that ſhe ought not only to avoid all affected beauty, but even to conceal and cover her natural beauty.

Mid-**WIFE**, *Obſtetrix.* See DELIVERY, FOETUS, SECUNDINE, VIRGINITY, &c.

WILDERNESS, ſee DESART, GROVE, LABYRINTH, &c.

WILD-FIRE, *Ignis Gregalis*, or *Græcus.* See FIRE.

WILD-FIRE *Arrows*, ſuch as are trimmed with *wild-fire*, and ſhot burning, to ſtick in the ſails or rigging of ſhips in a fight.

WILD-*Fire*, alſo denotes a diſeaſe in cattle; which is infectious, deadly, and even imputed incurable. See MURRAIN.

WILD-*Honey.* See the article HONEY.

WILL, *Voluntas*, is uſually defined a faculty of the mind, whereby it embraces or rejects any thing repreſented to it, as good or evil by the judgment. See SOUL, FACULTY, GOOD, EVIL, &c.

Others will have it to be the mind itſelf, conſidered as embracing or refuſing; adding, that as the underſtanding is nothing elſe but the ſoul, conſidered as *perceiving*; ſo the *will* is nothing elſe but the ſoul conſidered as *willing*, &c. See SOUL, UNDERSTANDING, *&c.*

Mr. Locke more intelligibly defines the *will*, a faculty which the ſoul has of beginning, or forbearing, continuing or ending ſeveral actions of the mind, and motions of the body, barely by a thought or preference of the mind, ordering, or as it were, commanding the doing, or not doing, ſuch and ſuch a particular action. — This power the mind has, to order the conſideration of any idea, or the forbearing to conſider it; or to prefer the motion of any part of the body to its reſt, and vice verſa, is what we call the *will*. See POWER.

The actual exerciſe of that power, is what we call *volition*, or *willing*; and the doing or forbearing any action conſequent on ſuch order of the mind, is called *voluntary*. See VOLUNTARY, &c.

Father Malebranche lays it down, that the *will* is that to the ſoul, which motion is to the body; and argues that as the author of nature is the univerſal cauſe of all the motions in matter, ſo he is of all the inclinations in the mind: and that as all motions are direct, unleſs their courſe be diverted and changed by ſome foreign cauſe: ſo all inclinations are right, and could have no other end, but the enjoyment of truth and goodneſs, were there not ſome foreign cauſe, to determine the natural impreſſion to evil ends. See NATURAL *Inclination*.

Accordingly, he defines *will* to be the impreſſion or natural motion, which carries us towards good indeterminately, and in the general; and the power the mind has, to direct this general impreſſion towards any particular object that pleaſes it, is what he calls *liberty*. See LIBERTY, and NECESSITY.

Ariſtotle diſtinguiſhes two kinds of acts of the *will*; viz. βουλησις, *willing*, *volition*; and προαιρεσις, *election*. — The firſt, that employed about the ultimate end; the latter, about the means.

The ſchoolmen alſo diſtinguiſh the actions of the *will*, into *elicit* and *commanded* — Elicit acts, *actiones elicitæ*, are thoſe immediately produced by the *will*, are really inherent therein; ſuch are *willing*, and *nilling* — Commanded acts, *actiones imperatæ*, are effects produced by other powers, *v. gr.* the ſenſitive, intellective, or locomotive powers, at the command or inſtigation of the *will* — As, to *follow*, *ſtay*, *fight*, *fly*, &c. See ACT, ACTION, &c.

But others will have the former kind properly to belong to the underſtanding; and only the latter to the *will*.

The word *will* is taken in three ſenſes; 1°. For the power, or faculty of *willing*; in which ſenſe it is, we have conſidered it above. — 2°. For the act, or exerciſe of this power; as, when we ſay, no man *wills* his own deſtruction. — 3°. For a habit, or a conſtant diſpoſition and inclination to do any thing. — In which ſenſe, juſtice is defined a conſtant *will*, to give every one what belongs to him: *juſtitia eſt conſtans & perpetua voluntas jus ſuum unicuique tribuendi. Inſtit.* Juſtin.

Antecedent WILL. See the article ANTECEDENT.

Free WILL. See LIBERTY, and FREEDOM.

WILL, *Laſt* WILL, or *Teſtament*, in law, a ſolemn act, or inſtrument, whereby a perſon declares his mind and intention as to the diſpoſal of his goods, effects, *&c.* after his death. See TESTAMENT.

Wills are of two kinds: A *will in writing* — And a *will by word of mouth* only, called a *nuncupative will*; which being proved by three or more witneſſes, may be of as good force as that in writing; except for lands, which are only deviſable by teſtament in writing, during the life of the teſtator. See NUNCUPATIVE.

Probate of a WILL. See the article PROBATE.

WILL *with a wiſp*, a meteor known among the people under this name; but more uſually among authors, under that of *ignis fatuus*. See *Ignis* FATUUS.

WIMPLE, of the Dutch *wimpel*, a muffler, or plaited linen cloth, which nuns wear to cover their necks and breaſt.

The word is alſo ſometimes uſed for a ſtreamer, or flag. See FLAG, &c.

WIN, in the beginning or end of the names of places, ſignifies that ſome great battle was fought, or a victory gained there. — The word is formed from the Saxon *winnan*, to win or overcome.

WIND, *Ventus*, a ſenſible agitation of the air, whereby a large quantity thereof flows out of one place, or region, into another. See AIR.

The *winds* are divided into *perennial*, *ſtated*, and *variable* — They are alſo divided into *general*, and *particular*.

Perennial, or *conſtant* WINDS, are ſuch as always blow the ſame way. — Of theſe we have a very notable one between the two tropics blowing conſtantly from eaſt to weſt; called the *general trade-wind*. See TRADE-*Wind*.

Stated, or *periodical* WINDS, are ſuch as conſtantly return at certain times. — Such are the ſea and land-breezes, blowing from ſea to land in the evening; and from land to ſea in the morning. See BREEZE.

Such alſo are the *ſhifting*, or *particular trade-winds*, which, for certain months of the year, blow one way, and the reſt of the year, the contrary way. See MONSOON.

Variable, or *erratic* WINDS, are ſuch as blow now this, now that way; are now up, now huſhed, without any rule or regularity, either as to time or place.

Such are all the *winds* obſerved in the inland parts of England, *&c.* Though ſeveral of theſe claim their certain times of the day. — Thus, the *weſt-wind* is moſt frequent about noon; the *ſouth-wind* in the night; the *north* in the morning, *&c.* See WEATHER.

General WIND, is ſuch a one, as at the ſame time blows the ſame way, over a very large tract of ground, almoſt all the year. — Such only is the *general trade-wind*.

But even this has its interruptions: for, 1°. At land it is ſcarce ſenſible at all, as being broke by the interpoſition of mountains, valleys, *&c.* 2°. At ſea, near the ſhore, it is diſturbed by vapours, exhalations, and particular *winds*, blowing from landward; ſo that it is chiefly conſidered as *general*, only at mid-ſea: Where, 3°. It is liable to be diſturbed, by clouds driving from other quarters.

Particular WINDS include all others, excepting the general *trade-winds*.

Thoſe peculiar to one little canton, or part, as called *topical*, or *provincial-winds* — Such is the north-*wind*, on the weſtern ſide of the Alps, which does not blow above one or two leagues lengthwiſe, and much leſs in breadth: ſuch alſo is the pontias in France, *&c.*

Phyſical cauſe of WINDS. — Some philoſophers, as Des Cartes, Rohault, *&c.* account for the general *wind*, from the diurnal rotation of the earth; and from this general *wind* derive all the particular ones. — The atmoſphere, ſay they, inveſting the earth, and moving round it; that part will perform its circuit ſooneſt, which has the ſmalleſt circle to deſcribe: The air therefore, near the equator, will require a ſomewhat longer time to perform its courſe in, from weſt to eaſt, than that nearer the poles. — Thus, as the earth turns eaſtward, the particles of the air near the equinoctial, being exceeding light, are left behind; ſo that, in reſpect of the earth's ſurface, they move weſtwards, and become a conſtant eaſterly *wind*.

This opinon ſeems confirmed by this, that theſe *winds* are found only between the tropics, in thoſe parallels of latitude, where the diurnal motion is ſwifteſt. — But the conſtant calms in the Atlantic ſea, near the equator, the weſterly *winds* near the coaſt of Guinea, and the periodical weſterly monſoons, under the equator in the Indian ſeas, declare the inſufficiency of this hypotheſis.

Beſides, the air being kept cloſe to the earth by the principle of gravity, would, in time, acquire the ſame degree of velocity, that the earth's ſurface moves with, as well in reſpect of the diurnal rotation, as of the annual about the ſun, which is about thirty times ſwifter.

Dr. Halley, therefore, ſubſtitutes another cauſe, capable of producing a like conſtant effect, not liable to the ſame objections, but agreeable to the known properties of the elements of water and air, and the laws of the motion of fluid bodies. — Such a one is the action of the ſun's beams upon the air and water, as he paſſes every day over the ocean, conſidered together with the quality of the ſoil, and the ſituation of the adjoining continents.

According to the laws of ſtatics, the air, which is leſs rarefied or expanded by heat, and conſequently more ponderous, muſt have a motion towards thoſe parts thereof, which are more rarefied, and leſs ponderous, to bring it to an equilibrium; alſo the preſence of the ſun, continually ſhifting to the weſtward, that part towards which the air tends, by reaſon of the refraction made by his greateſt meridian heat, is, with him, carried weſtward; and, conſequently, the tendency of the whole body of the lower air is that way.

Thus a general eaſterly *wind* is formed, which being impreſſed upon the air of a vaſt ocean, the parts impel one the other, and ſo keep moving till the next return of the ſun, whereby ſo much of the motion, as was loſt, is again reſtored; and thus the eaſterly *wind* is made perpetual.

From the ſame principle it follows, that this eaſterly *wind* ſhould, on the north ſide of the equator, be to the northwards of the eaſt, and in ſouth latitudes, to the ſouthwards thereof; for near the line, the air is much more rarefied, than at a greater diſtance from it; becauſe the ſun is twice in a year vertical there; and at no time diſtant above 23½ degrees: at which diſtance, the heat being as the ſine of the angle of incidence, is but little ſhort of that of the perpendicular ray; whereas under the tropics, though the ſun ſtay longer vertical, yet he is a long time 47 degrees off; which is a kind of winter wherein the air ſo cools, as that the ſummer heat cannot warm it to the ſame degree with that under the equator. Wherefore, the air towards the northward and ſouthward, being leſs rarefied than that in the middle, it follows, that from both ſides, it ought to tend towards the equator. See HEAT.

This motion compounded with the former eaſterly *wind*, accounts for all the phænomena of the general trade-*winds*; which, if the whole ſurface of the globe was ſea, would undoubtedly blow quite round the world, as they are found to do in the Atlantic, and the Ethiopic oceans. — But ſeeing ſo great continents do interpoſe, and break the continuity of the oceans, regard muſt be had to the nature of the ſoil, and the poſition of the high mountains, which are the two principal cauſes of the variation of the *wind*, from the former general rule: for if a country lying near the ſun prove to be flat, ſandy, and low land; ſuch as the deſarts of Libya are uſually reported to be; the heat occaſioned by the reflections of the ſun's beams, and the retention thereof in the ſand, is incredible to thoſe who have not felt it; whereby the air being exceedingly rarefied, it is neceſſary, that the cooler, and more denſe air, ſhould run thitherwards to reſtore the equilibrium.

This is ſuppoſed to be the cauſe, why near the coaſt of Guinea, the *wind* always ſets in upon the land, blowing weſterly, inſtead of eaſterly; there being ſufficient reaſon to believe, that the inland parts of Africa are prodigiouſly hot, ſince the northern borders thereof were ſo intemperate, as to give the antients cauſe to conclude that all beyond the tropics was uninhabitable by exceſs of heat. See TORRID, and ZONE.

From the ſame cauſe it happens, that there are ſo conſtant calms in that ſame part of the ocean called the *rains*; for this tract being placed in the middle, between the weſterly *winds* blowing on the coaſt of Guinea, and the eaſterly trade-*winds*, blowing to the weſtwards thereof; the tendency of the air here, is indifferent to either, and ſo ſtands in equilibrio between both: and the weight of the incumbent atmoſphere, being diminiſhed by the continual contrary *winds* blowing from hence, is the reaſon that the air here holds not the copious vapour it receives, but lets it fall in ſo frequent rains. See RAINS.

But, as the cool and denſe air, by reaſon of its greater gravity, preſſes upon the hot and rarefied, it is demonſtrable, that this latter muſt aſcend in a continued ſtream, as faſt as it rarefies; and that being aſcended, it muſt diſperſe itſelf, to preſerve the equilibrium; that is, by a contrary current, the upper air muſt move from thoſe parts where the greateſt heat is: ſo, by a kind of circulation, the north-eaſt trade-*wind* below, will be attended with a ſouth-weſterly *wind* above; and the ſouth-eaſt, with a north-weſt *wind* above. See CURRENT, UNDER-*Current*, &c.

That this is more than a bare conjecture, the almoſt inſtantaneous change of the *wind* to the oppoſite point, which is frequently found in paſſing the limits of the trade-*winds*, ſeems to aſſure us; but that which above all confirms this hypotheſis, is the phænomenon of the monſoons, by this means moſt eaſily ſolved, and without it hardly explicable. See MONSOON.

Suppoſing therefore ſuch a circulation as above; it is to be conſidered, that to the northward of the Indian ocean, there is every where land, within the uſual limits of the latitude of 30°, *viz.* Arabia, Perſia, India, *&c.* which, for the ſame reaſon as the Mediterranean parts of Africa are ſubject to inſufferable heats, when the ſun is to the north, paſſing nearly vertical; but yet are temperate enough, when the ſun is removed towards the other tropic, becauſe of a ridge of mountains at ſome diſtance within the land, ſaid to be frequently, in winter, covered with ſnow, over which the air, as it paſſes, muſt needs be much chilled. — Hence it happens, that the air coming, according to the general rule, out of the north-eaſt, to the Indian ſea, is ſometimes hotter, ſometimes colder, than that which, by this circulation, is returned out of the ſouth-weſt; and, by conſequence, ſometimes the under current, or wind, is from the north-eaſt, ſometimes from the ſouth-weſt.

That this has no other cauſe, is clear from the times wherein theſe winds ſet, *viz*, in April: when the ſun begins to warm theſe countries to the north, the ſouth-weſt monſoons begin, and blow, during the heats, till October, when the ſun being retired, and all things growing cooler northward, and the heat increaſing to the ſouth, the north-eaſt *winds* enter and blow all the winter, till April again. And it is, undoubtedly, from the ſame principle, that to the ſouthward of the equator, in part of the Indian ocean, the north-weſt *winds* ſucceed the ſouth-eaſt, when the ſun draws near the tropic of Capricorn. See TIDE.

But, the induſtry of ſome late writers, having brought the theory of the production and motion of *winds*, to ſomewhat of a mathematical demonſtration; we ſhall here give it the reader in that form.

Laws of the production of WINDS. — If the ſpring of the air be weakened in any place, more than in the adjoining places; a *wind* will blow through the place where the diminution is. See AIR, and ELASTICITY.

For, ſince the air endeavours, by its elaſtic force, to expand itſelf every way; if that force be leſs in one place than another; the niſus of the more, againſt the leſs elaſtic, will be greater than the niſus of the latter, againſt the former. — The leſs elaſtic air, therefore, will reſiſt with leſs force than it is urged by the more elaſtic: conſequently, the leſs elaſtic will be driven out of its place, and the more elaſtic will ſucceed.

If, now, the exceſs of the ſpring of the more elaſtic, above that of the leſs elaſtic air, be ſuch as to occaſion a little alteration in the baroſcope; the motion both of the air expelled, and that which ſucceeds it, will become ſenſible; *i. e.* there will be a *wind*.

2°. Hence, ſince the ſpring of the air increaſes, as the compreſſing weight increaſes; and compreſſed air is denſer than air leſs compreſſed: all *winds* blow into rarer air, out of a place filled with a denſer.

3°. Wherefore, ſince a denſer air is ſpecifically heavier than a rarer; an extraordinary lightneſs of the air in any place, muſt be attended with extraordinary *winds*, or ſtorms.

Now, an extraordinany fall of the mercury in the barometer, ſhewing an extraordinary lightneſs of the atmoſphere; it is no wonder if that foretels ſtorms. See BAROMETER.

4°. If the air be ſuddenly condenſed in any place, its ſpring will be ſuddenly diminiſhed: hence, if this diminution be great enough to affect the barometer, there will a *wind* blow through the condenſed air.

5°. But ſince it cannot be ſuddenly condenſed, unleſs it have before been much rarefied; there will a *wind* blow through the air, as it cools, after having been violently heated.

6°. In like manner, if air be ſuddenly rarefied, its ſpring is ſuddenly increaſed; wherefore it will flow through the contiguous air, not acted on by the rareſying force. — A *wind*, therefore, will blow out of a place, in which the air is ſuddenly rarefied: and on this principle, in all probability, it is, that,

7°. Since the ſun's power in rarefying the air is notorious, it muſt neceſſarily have a great influence on the generation of *winds*. See HEAT, RAREFACTION, *&c.*

8°. Moſt caves are found to emit *wind*, either more or leſs.

The riſing and changing of the *wind*, is determined experimentally, by means of weather-cocks, placed a-top of houſes, *&c.* — But theſe only indicate what paſſes about their own heighth, or near the ſurface of the earth: Wolfius aſſures us, from obſervations of ſeveral years, that the higher *winds*, which drive the clouds, are different from the lower ones, which move the weather-cocks. — And Mr. Derham obſerves ſomething not unlike this. *Phyſ. Theol.* L. I. c. 2.

The author laſt mentioned relates, upon comparing ſeveral ſeries's of obſervations made of the *winds* in divers countries, *viz.* England, Ireland, Switzerland, Italy, France, New-England, *&c.* that the *winds* in thoſe ſeveral places ſeldom agree; but when they do, it is commonly when they are ſtrong, and of long continuance in the ſame quarter; and more, he thinks, in the northerly and eaſterly, than in other points. — Alſo, that a ſtrong *wind* in one place, is oftentimes a weak one in another; or moderate, according as the places are nearer, or more remote. *Philoſoph. Tranſactions*, N° 267, and 321.

Laws of the Force and Velocity of WIND. — *Wind* being only air in motion, and air being a fluid, ſubject to the laws of other fluids, its force may be brought to a preciſe computation: thus — "The ratio of the ſpecific gravity of any other "fluid to that of air, together with the ſpace that fluid, im-"pelled by the preſſure of the air, moves in any given time, "being given; we can determine the ſpace which the air "itſelf, acted on by the ſame force, will move in the ſame "time:" By this rule:

1°. As the ſpecific gravity of air, is to that of any other fluid; ſo, reciprocally, is the ſquare of the ſpace which that fluid, impelled by any force, moves in any given time, to the ſquare of the ſpace which the air, by the ſame impulſe, will move in the ſame time.

Suppoſing, therefore, the ratio of the ſpecific gravity of that other fluid to that of air, to be $= b : c$; the ſpace deſcribed by the fluid to be called s; and that which the air will deſcribe by the ſame impulſe, x. The rule gives us $x = \sqrt{(bs^2 : c.)}$

Hence, if we ſuppoſe water impelled by the given force, to move two feet in a ſecond of time; then will $s = 2$; and ſince the ſpecific gravity of water to the air, is as 970 to 1; we ſhall have $b = 970$, and $c = 1$; conſequently $x = \sqrt{970 . 4} = \sqrt{3880} = 623$ feet. The velocity of the *wind*, therefore, to that of water moved by the ſame power, will be as 623 to 2; *i. e.* if water move two feet in a ſecond, the *wind* will fly 623 feet.

2°. Add, that $s = \sqrt{(c x^2 : b)}$; and therefore the ſpace any fluid, impelled by any impreſſion, moves in any time, is determined, by finding a fourth proportional to the two numbers that expreſs the ratio of the ſpecific gravity, and the ſquare of the ſpace the *wind* moves in, in the given time. — The ſquare root of that fourth proportional is the ſpace required.

M. Mariotte, *e. gr.* found, by various experiments, that a pretty ſtrong *wind* moves 24 feet in a ſecond of time; wherefore, if the ſpace which the water, acted on by the ſame force as the air, will deſcribe in the ſame time, be required; then will $c = 1$, $x = 24$, $b = 970$; and we ſhall find $f = \surd\,(576 : 970) = \frac{24}{31}$.

3°. "The velocity of *wind* being given, to determine the "preſſure required to produce that velocity;" we have this rule: — The ſpace the *wind* moves in one ſecond of time, is to the heighth a fluid is to be raiſed in an empty tube, in order to have a preſſure capable of producing that velocity; in a ratio compounded of the ſpecific gravity of the fluid to that of the air, and of quadruple the altitude a body deſcends in the firſt ſecond of time, to the aforeſaid ſpace of the air.

Suppoſe, *e. gr.* the ſpace the air moves in a ſecond, $a = 24$ feet, or 288 inches; call the altitude of the third x, and the ratio of mercury to air $b : c = 13580 : 1$, $d = 181$ inches; x will be leſs than that number by one line, or $\frac{1}{12}$ of an inch. — And hence we ſee why a ſmall, but ſudden change in the barometer, is followed with violent *winds*. See BAROMETER.

The force of the *wind* is determined experimentally by a peculiar machine, called an *anemometer*, wind-meaſurer; which being moved by means of ſails, like thoſe of a windmill, raiſes a weight, that, ſtill the higher it is raiſed, receding further from the centre of motion, by ſliding along an hollow arm fitted on to the axis of the ſails, becomes heavier and heavier, and preſſes more on the arm, till being a counter-poiſe to the force of the *wind* on the ſails, it ſtops the motion thereof. — An index, then, fitted upon the ſame axis at right angles with the arm, by its riſing or falling, points out the ſtrength of the *wind*, on a plane divided like a dial-plate into degrees. See ANEMOMETER.

Qualities and Effects of Wind. — 1°. "A *wind* blowing from "the ſea, is always moiſt: in ſummer, it is cold; and in "winter, warm; unleſs the ſea be frozen up." — This is demonſtrated thus: There is vapour continually riſing out of all water (as appears even hence, that a quantity of water being left a little while in an open veſſel, is found ſenſibly diminiſhed) but eſpecially if it be expoſed to the ſun's rays; in which caſe, the evaporation is beyond all expectation. See VAPOUR. — By this means, the air incumbent on the ſea becomes impregnated with a deal of vapour. But the *winds* blowing from off the ſea, ſweep theſe vapours along with them; and conſequently are always moiſt.

Again, water in ſummer, *&c.* conceives leſs heat than terreſtrial bodies expoſed to the ſame rays of the ſun; but in winter, ſea-water is warmer than the earth covered with froſt and ſnow, *&c.* Wherefore, as the air contiguous to any body, is found to partake of its heat and cold, the air contiguous to ſea-water will be warmer in winter, and colder in ſummer, than that contiguous to the earth. — Or thus: Vapours raiſed from water by the ſun's warmth in winter, are warmer than the air they riſe in (as appears from the vapours condenſing, and becoming viſible, almoſt as ſoon as they are got out into air.) Freſh quantities of vapour, therefore, continually warming the atmoſphere over the ſea, will raiſe its heat beyond that of air over the land. — Again, the ſun's rays reflected from the earth into the air, in ſummer, are much more than thoſe from the water into air: the air, therefore, over the earth, warmed by the reflection of more rays than that over water, is warmer. — Hence, *ſea-winds* make thick, cloudy, hazy weather.

2°. "*Winds* blowing from the continent, are always dry; "in ſummer, warm; and cold in winter." — For there is much leſs vapour ariſing from the earth, than from water; and therefore the air over the continent will be impregnated with much fewer vapours. — Add, that the vapours, or exhalations, raiſed by a great degree of heat out of the earth, are much finer, and leſs ſenſible, than thoſe from water. — The *wind*, therefore, blowing over the continent, carries but little vapour with it; and is therefore dry.

Further, the earth in ſummer is warmer than water expoſed to the ſame rays of the ſun. — Hence, as the air partakes of the heat of contiguous bodies; that over the earth in ſummer will be warmer than that over the water: therefore the *wind*, &c.

After the like manner it is ſhewn, that the *land-winds* are cold in winter. — Hence, we ſee why *land-winds* make clear, cold weather. See WEATHER.

Our northerly and ſoutherly *winds*, however, which are commonly eſteemed the cauſes of cold and warm weather, Mr. Derham obſerves, are really rather the effect of the cold or warmth of the atmoſphere. — Hence it is, that we frequently ſee a warm ſoutherly wind, on a ſudden, changed to the north, by the fall of ſnow, or hail; and that in a cold, froſty morning, we ſee the *wind* north, which afterwards wheels about towards the ſoutherly quarter, when the ſun has well warmed the air; and again, in the cold evening, turns northerly, or eaſterly.

For the manner wherein north-eaſterly *winds* contribute to blights, ſee BLIGHT. — For the effect of *winds* on the barometer, and thermometer; ſee BAROMETER, and THERMOMETER.

WIND, in navigation, is the ſame agitation of the air, conſidered as ſerving for the motion of veſſels on the water. See SAILING.

The *winds* are divided, with reſpect to the points of the horizon from which they blow, into *cardinal*, and *collateral*.

Cardinal **WINDS**, are thoſe blowing from the four cardinal points; eaſt, weſt, north, and ſouth. See POINT, and CARDINAL.

Collateral **WINDS**, are the intermediate *winds* between two cardinal *winds*. — The number of theſe is infinite, as the points from which they blow are; but only a few of them are conſidered in practice: *i. e.* only a few of them have their diſtinguiſhing names. See COLLATERAL.

The antient Greeks, at firſt, only uſed the four cardinal ones; at length they took in four more. — Vitruvius gives us a table of twenty, beſides the cardinals, in uſe among the Romans.

The moderns, as their navigation is much more perfect than the antients, have given names to twenty eight collateral ones; which they range into *primary*, and *ſecundary* — and the ſecundary, they ſubdivide into thoſe of the *firſt* and *ſecond order*. See POINT.

The Engliſh names of the primary collateral *winds* and points, are compounded of the names of the cardinal ones, north and ſouth being ſtill prefixed.

The names of the ſecundary collateral *winds* of the firſt order, are compounded of the names of the cardinals, and the adjacent primary one. — Thoſe of the ſecond order, are compounded of the names of the cardinal, or the next adjacent primary; and the next cardinal, with the addition of the word *(by)*. — The Latins have diſtinct names for each; all which are expreſſed in the following table.

Names of the *winds*, and points of the compaſs.		Diſtances of the points, *&c.* from the north.	
Engliſh,	Latin, and Greek.		
1. *North.*	*Septentrio*, or *Boreas*.	0°	0′
2. North by eaſt.	Hyperboreas. Hypaquilo. Gallicus.	11	15
3. North-north-eaſt.	Aquilo.	22	30
4. North-eaſt by north.	Meſoboreas. Meſaquilo. Supernas.	33	45
5. *North Eaſt.*	*Arctapeliotes.* *Borapeliotes.* *Græcus.*	45	
6. North-eaſt by eaſt.	Hypocæſias.	56	15
7. Eaſt-north-eaſt.	Cæſias, helleſpontius.	67	30
8. Eaſt by north.	Meſocæſias. Carbas.	78	45
		From the eaſt.	
9. *Eaſt.*	*Solanus*, *ſubſolanus*, *apeliotes.*	0°	0′
10 Eaſt by ſouth.	Hypeurus, or hypereurus.	11	15
11. Eaſt-ſouth-eaſt.	Eurus, or volturnus.	22	30
12. South-eaſt by eaſt.	Meſeurus.	33	45
13. *South-Eaſt.*	*Notapeliotes*, *euroauſter*	45	
14. South-eaſt by ſouth.	Hypophœnix.	56	15
15. South-ſouth-eaſt.	Phœnix, phœnicias, leuco-notus, gangeticus.	67	30
16. South by eaſt.	Meſophœnix.	78	45
		From the ſouth.	
17. *South.*	*Auſter*, *notus*, *meridies.*	0°	0′.
18. South by weſt.	Hypolibononotus, alſanus.	11	15
19. South-ſouth-weſt.	Libonotus, notoliblycus, auſtro-africus.	22	30
20. South-weſt by ſouth.	Meſolibonotus.	33	45
21. *South-weſt.*	*Noto-zephyrus,* *Noto-libycus.* *Africus.*	45	
22. South-weſt by weſt.	Hypolibs. Hypafricus. Subveſperus.	56	15
23. Weſt-ſouth-weſt	Libs.	67	30
24. Weſt by ſouth.	Meſolibs. Meſozephyrus.	78	45

Names of the *winds*, and points of the compaſs.		Diſtances of the points, *&c.* from the weſt.	
Engliſh,	Latin, and Greek.		
25. *Weſt.*	*Zephyrus, favonius, occidens.*	0°	0′
26. Weſt by north.	Hypargeſtes. Hypocorus.	11	15
27. Weſt - north-weſt.	Argeſtes. Caurus, corus, japyx.	22	30
28. North-weſt by weſt.	Meſargeſtes. Meſocorus.	33	45
29. *North-weſt.*	*Zephyro-boreas, borolibycus, olimpias.*	45	
30. North-weſt by north.	Hypocircius. Hypothraſcias. Scirem.	56	15
31. North-north-weſt.	Circius, thraſcias.	67	30
23. North by weſt.	Meſocircius.	78	45

Note, The antient names are here, after Ricciolus, adapted to the modern ones; not as the *winds* formerly denoted by thoſe, were preciſely the ſame with theſe, (for the antient number and diviſion being different from the modern, the points they refer to will be ſomewhat different) but as theſe are what come the neareſt. — Thus, Virtruvius only reckoning twenty four *winds*, diſpoſes the points they refer to in a different order; as in the following table.

Names of the *winds.*	Diſtance from north.		Names of the *winds.*	Diſtance from eaſt.	
1 *Septentrio.*	0°	0′	7 *Salanus.*	0°	0′
2 Gallicus.	15		8 Ornithias.	15	
3 Supernas.	30		9 Cæcias.	30	
4 Aquilo.	45		10 Eurus.	45	
5 Boreas.	60		11 Volturnus.	60	
6 Carbas.	75		12 Euronotus.	75	

Names of the *winds.*	Diſtance from ſouth.		Names of the *winds.*	Diſtance from weſt.	
13 *Auſter.*	0°	0′	19 *Favonius.*	0°	0′
14 Alſanus.	15		20 Eteſiæ.	15	
15 Libonotns.	30		21 Circius.	30	
16 Africus.	45		22 Caurus.	45	
17 Subveſper.	60		23 Corus.	60	
18 Argeſtes.	75		24 Thraſcias.	75	

For the uſe of the *winds* in navigation, *&c.* ſee SAILING, RHUMB, COMPASS, &c.

Quarter WIND. See the article QUARTER.

Whirl-WIND. See the article WHIRL-*Wind*.

WIND-COLIC. } See the article { COLIC.
WIND-DROPSY. } { TYMPANITES.

WIND-EGG, an addle egg, or egg that has taken *wind*. See EGG.

WIND-FALL, denotes fruit blown off the tree by the *wind*.

WIND-FURNACE. See the article FURNACE.

WIND-GALL, in horſes, a ſoft, flatulent tumor, or bladder, ariſing on the fetlock joint, and cauſing great pain, eſpecially in hot weather, and hard ways.

It is uſually owing to a violent ſtrain, extreme labour, and heat, a horſe's ſtanding on a ſloping floor, a blow from another, or the like.

WIND-GUN, a machine, ſerving to explode bullets, and other ſhot, with great violence, by the force of the air. See GUN.

This ſort of arm, charged with air, has an effect ſcarce inferior to that of a common fire-arm charged with gun-powder; but it diſcharges itſelf with a much leſs report: and it is this, which, in all probability, gave occaſion to the fable of white gun-powder. See GUN-*Powder*.

There are *wind-guns* of divers contrivances; the moſt eaſy and portable one, and the moſt in uſe, is repreſented *Tab. Pneumatics, fig.* 14. It conſiſts of a round metalline tube 3, 3. open at the end *c c*, and exactly ſtopped at the other end *a*, like the barrel of other guns; 1, 1, 1, 1, is another larger metal tube, wherein the former is diſpoſed, ſo as to leave a ſpace between them 4, 4, wherein air may be incloſed. — The two tubes are joined together at the common aperture *c c*, by a circular plate exactly ſoldered to both, ſo as to prevent the air from eſcaping out of the ſpace 4, 4, *&c.*— At 8 is a ſpring valve, which opening inwardly, lets the air paſs through from 2 into the ſpace 1, but prevents its return from 1 to 2. — Near the cloſe end of the inner tube are two holes, 6 and 5; by the firſt, the ſpace 1 and the inner tube communicate, ſo that the air would paſs out of that into this, but that the paſſage is ſtopped by a valve opening outwardly; by the latter, there is a communication between the open air, the ſpace 4, and the inner barrel: only the air pent up in the ſpace cannot eſcape at this hole, by reaſon of a little tube exactly ſoldered to both barrels, which ſtops the communication: nor can air eſcape out of the inner barrel through this little tube, by reaſon of a little moveable pin, which exactly fills the cavity of the tube.

Laſtly, the part 2, 2, 2, 2, repreſents the body of a ſyringe, or ſucking pump; by which, as much air as poſſible, is to be intruded into the ſpace 4, 4, *&c.* — After which a bullet being put into a cavity of the inner barrel as high as the little tube 5, the gun is charged. See SYRINGE.

Now, to diſcharge it, the little valve 6 is puſhed up by means of the pin that plays in the little tube 5. Upon this, the compreſſed air in the cavity of the outer barrel 4, ruſhing through the hole 6 into the cavity of the inner barrel; expels the bullet with a vaſt force, ſufficient to penetrate a thick board.

Note, To give the machine a greater reſemblance of a fire-arm, the part 2, 2, 2, 2, is uſually faſhioned like the butt-end of a muſquet; and on the part 2, 8, 2, 8, is fitted a lock; by turning the trigger of which, the pin 5 is made to puſh back the valve, and ſo diſcharge the piece. — By the lock too, it is contrived, that either the whole charge of air may be ſpent at one exploſion, or only part of it, and the reſt reſerved for freſh bullets. — By this piece of mechaniſm, we can have half a dozen good, effective ſhoots, with one charge of air.

WIND-INSTRUMENTS, in muſic, are inſtruments played by the *wind*, chiefly the breath; in contradiſtinction to *ſtring-inſtruments*, and inſtruments of the *pulſatile* kind. See MUSIC.

The *wind-inſtruments* known to the antients, were the *tibia*, *fiſtula*, *ſyringa* of Pan, conſiſting of ſeven reeds joined ſide-wiſe; alſo *organs*, *tubæ*, *cornua*, and *lituus*. See FISTULA, ORGAN, &c.

Thoſe of the moderns, are the *flute*, *bagpipe*, *hautboy*, *trumpet*, &c. See FLUTE, TRUMPET, BAGPIPE, &c.

WIND-MILL, a kind of mill which receives its motion from the impulſe of the *wind*. See MILL.

The *wind-mill*, though a machine common enough, has yet ſomewhat in it more ingenious than it is uſually imagined.— Add, that it is commonly allowed to have a degree of perfection, which few of the popular engines have attained to, and which the makers are but little aware of. — Though the new geometry, *&c.* has furniſhed ample matter for its improvement.

Structure of the WIND-*Mill.* — The internal ſtructure of the *windmill*, is much the ſame with that of water-mills.— The difference between them lies chiefly in an external aparatus, for the application of the power.

This apparatus conſiſts of an axis E F (*Tab. Pneumatics, fig.* 15.) through which paſs two arms, or yards, A B, and C E, interſecting each other at right angles in E, whoſe length is uſually about 32 feet: on theſe yards are formed a kind of ſails, vanes, or flights, in the figure of trapeziums, with parallel baſes, the greater whereof, H I, is about ſix feet, and the leſs, F G, determined by radii drawn from the centre E, to I and H.

Theſe ſails are to be capable of being always turned to the *wind*, that they may receive its impreſſion: in order to which, there are two different contrivances, which conſtitute the two different kinds of *wind-mills* in uſe.

In the one, the whole machine is ſuſtained upon a moveable arbor or axis, perpendicular to the horizon, on a ſtand, or foot; and turned occaſionally this way, or that, by means of a lever.

In the other, only the cover, or roof of the machine, with the axis and ſails, turn round. — In order to which,

The cover is built turret-wiſe, and the turret encompaſſed with a wooden ring, wherein is a groove, at the bottom whereof are placed, at certain diſtances, a number of braſs truckels, and within the groove is another ring, upon which the whole turret ſtands. — To the moveable ring are connected beams *a b* and *f c*; and to the beam *a b*, in *b* is faſtened a rope, which at the other extreme thereof, is fitted to a windlaſs, or axis in peritrochio: this rope being drawn through the iron hook G, and the windlaſs turned, the ſails will be moved round, and put in the direction required.

Theory of the motion of a WIND-*Mill with the poſition of the ſails, or vanes thereof.* — The angle the ſails are to make with their common axis, ſo as the *wind* may have the greateſt effect, is a matter of nice enquiry, and has employed the thoughts of the mathematicians.

To conceive why a *wind-mill* moves at all, the theory of compound motions muſt be ſuppoſed. — A body moving perpendicularly againſt any ſurface, ſtrikes it with all its force. If it move parallel to the ſurface, it does not ſtrike it at all: And if it move obliquely, its motion being compounded of the perpendicular and parallel motion, only acts on the ſurface, conſidered as it is perpendicular, and only drives it in the direction of the perpendicular. So that every oblique direction of a motion, is the diagonal of a parallelogram, whoſe perpendicular and parallel directions, are the two ſides. Add, that if a ſurface, which being ſtruck obliquely, has only received the perpendicular direction, be faſtened to ſome other body, ſo as that it cannot purſue its perpendicular direction, but muſt change it for ſome other; in that caſe, the perpendicular itſelf becomes the diagonal of a new parallelogram, one of whoſe ſides is the direction the ſurface may follow, and the other, that it cannot. See COMPOUND, and MOTION.

Thus, a rudder faſtened obliquely to the keel of a veſſel, being ſtruck by the current of water parallel to the keel, and, of conſequence, obliquely with regard to itſelf; it will appear, by drawing the line of perpendicular impulſe, that it tends to tear the rudder from the keel, and to carry it away: and that this direction perpendicular to the rudder, is oblique to the keel. — The rudder, then, would be carried off in an oblique direction: but, as, in reality, it is ſo ſecured, that it cannot be torn or carried off; we are only to conſider, in this compound motion, that of the two directions, wherewith it can move without being torn from the keel: and leave the other, which would tear it off, as uſeleſs.

Now, the direction in which it can move without parting from the keel, is that which carries it circularly about its extremity, as a centre. So that the effect of the oblique impulſe of the water on the rudder, is reduced, firſt to a perpendicular impreſſion, which is again reduced to the mere turning the rudder round; or, if the rudder be immoveable, to the turning of the veſſel.

Now, in an oblique and compound motion, where only one of the directions is of ſervice; the greater ratio the other has thereto, the leſs effect will the motion have; and vice verſa. —In examining the compound motions of the rudder, we find that the more oblique it is to the keel, the ratio of the direction that ſerves to turn it to the other, is the greater. But, on the other hand, the more oblique it is to the keel, and, of conſequence, to the courſe of the water which is ſuppoſed parallel thereto, the more weakly it ſtrikes. The obliquity of the rudder, therefore, has, at the ſame time, both an advantage, and a diſadvantage; but as thoſe are not equal, and as each of them is ſtill varying with every different poſition of the rudder, they become complicated variouſly, ſo that ſometimes the one prevails, and ſometimes the other.

It has been a point of enquiry to find the poſition of the rudder, wherein the advantage ſhould be the greateſt. — M. Renau, in his famous theory of the working of ſhips, has found, that the beſt ſituation of the rudder is, when it makes an angle of 55 degrees with the keel. See SAILING, STEERING, &c.

If, now, a *wind-mill*, expoſed directly to the wind, ſhould have its four ſails perpendicular to the common axis wherein they are fitted, they would receive the *wind* perpendicularly; and it is viſible that impulſe would only tend to overturn them. — There is a neceſſity, therefore, to have them oblique to the common axis, that they may receive the *wind* obliquely.

For the greater eaſe; let us only conſider one vertical ſail.— The oblique impulſe of the wind on this ſail, is reducible to a perpendicular impulſe: and that direction, as the ſail cannot abſolutely keep to it, is compounded of two; one whereof tends to make it turn on its axis, and the other to fall backwards. — But it is only the firſt of theſe directions can be obeyed. — Of conſequence, the whole impulſe of the *wind* on the ſail has no other effect, but to make it turn from right to left, or from left to right, as its acute angle turns this way or that. And the ſtructure of the machine is ſo happy, that the three other ſails are determined, from the ſame reaſons, to move the ſame way.

The obliquity of the ſails, with regard to their axis, has preciſely the ſame advantage, and diſadvantage, with the obliquity of the rudder to the keel. — And M. Parent, ſeeking by the new analyſis, the moſt advantageous ſituation of the ſails on the axis, finds it preciſely the ſame angle of 55 degrees. Yet, in practice, this rule is very little obſerved; as, indeed, being little known. — The ſails are uſually fixed at an angle of about 60 degrees, which is very much out of the way.

Elliptical WIND-*Mill*. — M. Parent conſiders further, what figure the ſails of a *wind-mill* ſhall have, to receive the greateſt impulſe from the *wind*; and he determines it to be a ſector of an ellipſis, whoſe centre is that of the axis or arbor of the mill; and the little ſemi-axis, the heighth of thirty-two feet: As for the greater, it follows neceſſarily from the rule that directs the ſail to be inclined to the axis in an angle of 55 degrees.

On this foot he aſſumes four ſuch ſails, each whereof is one fourth of an ellipſis; which, he ſhews, will receive all the *wind*, and loſe none, as the common ones do. — Theſe four ſurfaces multiplied by the lever, with which the *wind* acts on one of them, expreſs the whole power the *wind* had to move the machine, or the whole power the machine has when in motion.

The ſame manner of reaſoning, applied to a common *wind-mill*, whoſe ſails are rectangular, and their length about five times their breadth; ſhews that the *elliptic wind-mill* has above ſeven times the power of the common one. A prodigious advantage! and worthy, ſure, to have the common practice ſet aſide for, could ſo common a practice be eaſily changed.

A *wind-mill*, with ſix elliptic ſails, he ſhews, would ſtill have more power than one with four. — It would only have the ſame ſurface with the four; ſince the four contain the whole ſpace of the ellipſis, as well as the ſix. But the force of the ſix, would be greater than that of the four, in the ratio of 245 to 231. — If it were deſired to have only two ſails, each being a ſemi-ellipſis, the ſurface would be ſtill the ſame, but the power would be diminiſhed, by near one third of that with ſix ſails; by reaſon the greatneſs of the ſectors would much ſhorten the lever with which the *wind* acts.

Beſt form and proportion of rectangular WIND-*Mills*. — But, as elleptical ſails would be ſomething ſo new, that there is little room to expect they will come into common uſe; the ſame author has conſidered which form, among the rectangular ones, will be the moſt advantageous, *i. e.* which, the product of whoſe ſurface, by the lever of the *wind*, will be the greateſt. — And by the method *de maximis & minimis*, he finds it very different from the common ones.

The reſult of his enquiry is, that the width of the rectangular ſail ſhould be nearly double its length; whereas the length is uſually made almoſt five times the width. — Add, that as we call heighth or length, the dimenſion which is taken from the centre of the axis; the greateſt dimenſion of the new rectangular ſail, will be turned towards the axis; and the ſmalleſt from it: quite contrary to the poſition of the common ſails.

The power of a *wind-mill*, with four of theſe new rectangular ſails, M. Parent ſhews, will be to the power of 4 elliptic ſails, nearly as 13 to 23; which leaves a conſiderable advantage on the ſide of the elliptic ones: yet will the force of the new rectangular ſails, be conſiderably greater than that of the common ones.

M. Parent likewiſe conſiders what number of the new ſails will be moſt advantageous, and finds that the fewer ſails, the more ſurface there will be, but the leſs power. — The ratio of the power of a *wind-mill* with 6 ſails, will be to another with 4, nearly as 14 to 13. And the power of another with 2, will be to that with 4, nearly as 13 to 9.

As to the common *wind-mill*, its power ſtill diminiſhes as the breadth of the ſails is ſmaller, in proportion to the length. The uſual proportion, therefore, of 5 to 1, is exceedingly diſadvantageous.

The uſes of this new theory of *wind-mills* are very obvious. — The more power a *wind-mill* has, the ſwifter it turns, the more it diſpatches, and the leſs *wind* it needs. — Add, that on this theory, one may have a *wind-mill*, whoſe ſails ſhall be a deal ſhorter, and yet the power greater, than in the common one.

WIND *Tumors*, &c. See the article TUMOR.

WINDASS*, WANDASS, or WANLASS, an antient term in hunting. — Thus, to drive the *windaſs*, ſignifies the chaſing a deer to a ſtand, where one is ready with a bow or gun to ſhoot. See HUNTING.

WINDERS *of wool*. See the article WOOL-*Winders*.

WINDING *Stairs*. See the article STAIR.

WINDLASS, or WINDLACE, a machine uſed to raiſe huge weights withal, as guns, ſtones, anchors, *&c.* See MACHINE.

It is very ſimple, conſiſting only of an axis, or roller ſupported horizontally at the two ends by two pieces of wood; and a pully. — The two pieces of wood meet a-top; being placed diagonally, ſo as to prop each other. — The axis or roller goes through the two pieces, and turns in them. — The pully is faſtened a-top, where the pieces join.

Laſtly, there are two ſtaves, or hand-ſpikes go through the roller, whereby it is turned; and the rope, which comes over the pully, is wound off and on the ſame.

WINDLASS *in a ſhip*, is an inſtrument in a ſmall veſſel, placed upon the deck, abaft the fore-maſt: it conſiſts of a piece of timber, having ſix or eight ſquares. It is turned by hand-ſpikes, put into holes made for that purpoſe.

This *windlaſs* will purchaſe more than any capſtan in the weighing of an anchor or the like, and without any danger to thoſe that heave. — Since if any of the hand-ſpikes ſhould break, the *windlaſs* would pall of itſelf.

WINDOW, q. d. *Wind-door*, an aperture, or open place in the

* — *Omnes illi qui tenuerunt in bondagii tenura ſolebant vocari cuſtumarii: et quotieſcunque dominus ad venandum venerit, illi cuſtumarii ſolebant fugare* windaſſum, *ad ſtabulum, in venatione ferarum beſtiarum ſecundum quantitatem tenuræ ſuæ*, MS. de Conſuetud. Manerii de Sutton Colfield, An. 3. Ed. II.

the ſide of an houſe, to let in the air and light. — See *Tab. Archit. fig.* 49. ſee alſo the articles BUILDING, APERTION, LIGHT, &c.

We have various kinds and forms of *windows*; as glaſs *windows*, wire *windows*, horn *windows*, &c. — Arched *windows*, circular *windows*, elliptical *windows*, ſquare and flat *windows*; round *windows*, oval *windows*, gothic *windows*, regular *windows*, ruſtic *windows*, to which add ſky-lights. See GLASS, LEAD, PLUMBERY, VICE, &c.

The chief rules, with regard to *windows*, are — 1°. That they be as few in number, and as moderate in dimenſions as may conſiſt with other reſpects; inaſmuch as all openings are weakenings.

2°. That they be placed at a convenient diſtance from the angles, or corners of the building; becauſe that part ought not to be open and infeebled, whoſe office is to ſupport and faſten all the reſt of the building.

3°. That care be taken the *windows* be all equal one with another, in their rank and order; ſo that thoſe on the right hand may anſwer to thoſe on the left, and thoſe above, be right over thoſe below: for this ſituation of *windows*, will not only be handſome and uniform; but alſo the void being upon the void, and the full upon the full, it will be a ſtrengthening to the whole fabric.

As to their dimenſions, care is to be uſed, neither to give them more, or leſs light than is needful; therefore regard is to be had to the bigneſs of the rooms which are to receive the light. — It is evident that a great room needs more light, and, conſequently, a greater *window* than a little room; and è contra.

The apertures of *windows*, in middle-ſized houſes, may be four and a half, or five feet between the jambs; and in the greater buildings, ſix and a half, or ſeven feet; and their heighth may be double the length at the leaſt. — But in high rooms or larger buildings, their heighth may be a third, a fourth, or half their breadth, more than double their length.

Such are the proportions for *windows* of the firſt ſtory; and according to theſe muſt thoſe in the upper ſtories be for breadth: but, as to heighth, they muſt diminiſh; the ſecond ſtory may be one third part lower than the firſt, and the third ſtory one fourth part lower than the ſecond. See BUILDING.

Architrave WINDOWS. See the article ARCHITRAVE.

Dormer WINDOWS, or *Lutherns*. See LUTHERN, &c.

Tranſom WINDOWS. See the article TRANSOM.

Scenography of WINDOWS. See the article SCENOGRAPHY.

WINDOW, in anatomy, *&c.* See FENESTRA.

WIND-TACKLE-*Blocks*, in a ſhip, are the main double blocks or pulleys; which, being made faſt to the end of a ſmall cable, ſerve for the hoiſting of goods into the ſhip, *&c.* See BLOCK, TACKLE, &c.

To wind, or wend a ſhip, ſignifies to bring her head about.

How winds, or wends the ſhip? is a queſtion aſked by mariners concerning a ſhip under ſail, ſignifying as much as, upon what point of the compaſs does ſhe lie with her head?

WIND-TAUGHT, a ſea-term, implying as much as, *ſtiff in the wind*. See TAUGHT.

Too much rigging, high maſts, or any thing catching or holding wind aloft, is ſaid to hold a ſhip *wind-taught*; by which they mean, that ſhe ſtoops too much in her ſailing, in a ſtiff gale of wind.

Again, when a ſhip rides in a main ſtreſs of wind and weather, they ſtrike down her top-maſts, and bring her yards down, which elſe would hold too much wind, or be too much diſtended, and *wind-taught*.

WINDWARD *Tide*, in the ſea language, a tide which runs againſt the wind. See TIDE.

WINDY *Tumors*. See the article TUMOR.

WINE, *Vinum*, a briſk, agreeable, ſpirituous, and cordial liquor, drawn from vegetable bodies, and fermented. See VEGETABLE, and FERMENTATION.

The character of a *wine*, according to Boerhaave, is, that the firſt thing it affords by diſtillation, be a thin, oily, inflammable fluid; called a *ſpirit*. See SPIRIT.

This diſtinguiſhes *wines* from another claſs of fermented vegetable juices, *viz. vinegars*; which, inſtead of ſuch ſpirit, yield, for the firſt thing, an acid, un-inflammable mattter. See VINEGAR.

All ſorts of vegetables, fruits, ſeeds, roots, *&c.* afford *wine*; as grapes, currants, mulberries, elder, cherries, apples, pulſe, beans, peaſe, turnips, radiſhes, and even graſs itſelf. See VINOUS.

Hence, under the claſs of *wines*, or vinous liquors, come not only *wines* abſolutely ſo called, but alſo ale, cider, *&c.* See MALT *Liquor*, ALE, CIDER, &c.

WINE is, in a more particular manner, appropriated to that which is drawn from the fruit of the vine, by ſtamping its grapes in a vat, or cruſhing and expreſſing the juice out of them in a preſs, and then fermenting, *&c.* See VINE, and VINEYARD.

The goodneſs of *wine* conſiſts in its being neat, dry, fine, bright, and briſk, without any taſte of the ſoil, of a clean ſteddy colour; having a ſtrength, without being heady; a body, without being ſour; and keeping, without growing, hard, or eager.

Wine being a liquor moſtly of foreign produce; the divers names, forms, kinds, diſtinctions, *&c.* thereof, are borrowed from the countries where it is produced; the principal whereof, at this day, is France: to *wines* of which country, a good part of what we have to ſay of this noble liquor, will more immediately belong.

Wine, in France, is diſtinguiſhed, from the ſeveral degrees and ſteps of its preparation, into

Mere-goutte, mother-drop; which is the virgin *wine*, or that which runs of itſelf out of a tap of the vat wherein the grapes are laid, before the vintager enters to tread, or ſtamp the grapes.

Muſt, *ſurmuſt*, or *ſtum*; which is the *wine* or liquor in the vat, after the grapes have been trod, or ſtamped.

Preſſed WINE, *vin de preſſurage*, which is that ſqueezed with a preſs out of the grapes half bruiſed by the treading.

The huſks left of the grapes, are called *rape*, *murk*, or *mark*; by throwing water upon which, and preſſing them a-freſh, they make a liquor for ſervants uſe, anſwerable to our cyderkin, and called *boiſſon*; which is of ſome uſe in medicine, in the cure of diſorders occaſioned by viſcid humours.

Sweet WINE, *vin doux*, is that which has not yet worked, or fermented.

Bouru, that which has been prevented working, by caſting in cold water.

Cuvé, or *worked wine*; that which has been let work in the vat, to give it a colour.

Cuit, or *boiled wine*; that which has had a boiling ere it worked; and which, by that means, ſtill retains its native ſweetneſs.

Paſſé, or *ſtrained wine*, that made by ſteeping dry grapes in water, and letting it ferment of itſelf.

Wines are alſo diſtinguiſhed, with regard to their colour, into *white wine*, *red wine*, *claret wine*, *pale wine*, *roſe*, or *black wine*. — And, with regard to their country, or the ſoil that produces them, into *French wines*, *Spaniſh wines*, *Rheniſh wines*, *Hungary wines*, *Greek wines*, *Canara wines*, &c. — And more particularly into *Port wine*, *Madera wine*, *Burgundy wine*, *Champaign wine*, *Falernian wine*, *Tokay wine*, *Schiras wine*, &c.

Wines, again, are diſtinguiſhed, with regard to their quality, into *ſweet wines*, *rough* or *dry wines*, and *rich* or *luſcious wines*, *vins de liqueur*; of which laſt, ſome are exceedingly ſweet, others ſweet and poignant: all chiefly uſed by way of dram after meals, *&c.*

Such are French *Frontigniac*, *Madera*, the *Canary*, the *Hungary*, *Tokay*, the Italian *Monteſiaſcone*, the Perſian *Schiras*, the *malmſey wines* of Candia, Chio, Leſbos, Tenedos, and other iſlands of the Archipelago, which antiently belonged to the Greeks, but now to the Turks. — Theſe are ſometimes called *Greek wines*, and ſometimes *Turkey wines*.

Wine is alſo variouſly denominated, according to its ſtate, circumſtances, qualities, *&c.*

Natural WINE, is ſuch as comes from the grape, without further mixture, or ſophiſtication.

Brewed, or *adulterated* WINE, is that wherein ſome drug is added to give it a ſtrength, fineneſs, flavour, briſkneſs, ſweetneſs, or ſome other quality which is wanted.

Pricked, or *eager* WINE, is that turned ſouriſh.

Flat WINE, is that fallen weak and vappid, for want of being drank in time.

Sulphured WINE, is that put in caſks wherein ſulphur has been burnt; in order to fit it for keeping, or for carriage by ſea. See SULPHUR.

Colour WINE, is ſome thick *wine*, of a very deep colour, ſerving to die the *wines*, that are too pale, *&c.* as the *black wine*, in uſe among our vintners.

Chip WINE, is that poured on chips of beech wood, to fine, or ſoften it.

Rape WINE, is that put in a caſk half full of freſh grapes picked for the purpoſe, to recover the ſtrength, briſkneſs, *&c.* it had loſt by keeping, *&c.*

Burnt WINE, is that boiled up with ſugar; and ſometimes with a little ſpice. See HIPPOCRAS.

There is alſo a ſort of *Malmſey wine*, made by boiling of muſcadine. See MALMSEY.

Method of making and fining WINE. — In the ſouthern parts of France, their way is, for *red wines*, to tread, or ſqueeze the grapes between the hands, and to let the whole ſtand, juice and huſks, till the tincture be to their liking: after which they preſs it. — But for *white wines*, they preſs the grapes immediately.

When preſſed, they tun the muſt, and ſtop up the veſſel; only leaving the depth of half a foot or more empty, to give room for it to work. — At ten days end, they fill this ſpace with ſome other proper *wine*, that will not provoke it to work again. — This they repeat from time to time; new *wine* ſpending itſelf a little ere it come to perfection.

About Paris, and the northern parts of France, they let the murk and muſt ſtand two days and nights for *white wines*, and at leaſt a week for *claret wines*, ere they tun it. — While it continues working, it is kept as warm as poſſible.

Some, upon ſtopping it up for good and all, roll the caſk about the cellar, to mix the liquor with the lees; and, after ſettling a few days, rack it off with great improvement.

To fine it down, they put ſhavings of green beech into the veſſel; having firſt taken off all the rind, and boiled them an hour in water, to extract their rankneſs; and afterwards dried them in the ſun, or an oven: a buſhel of theſe ſerve for a tun of *wine*. Theſe put the liquor in a gentle working, and purify it in twenty four hours. They alſo give an agreeable flavour. — The ſame chips being waſhed, ſerve again and again, till almoſt quite conſumed.

Some ſweeten their *wines* with raiſins of the ſun, trod in the vat with the grapes, having been firſt plumped by boiling: others, by boiling half the muſt, ſcumming it, and tunning it up hot with the other.

For Engliſh *wine*, the method recommended by Mr. Mortimer, is, firſt, to gather the grapes when very dry, to pick them from the ſtalks, then to preſs them, and let the juice ſtand twenty four hours in the vat covered. Afterwards, to draw it off from the groſs lees, and then put it up in a caſk, and to add a pint or quart of ſtrong red or white port to every gallon of juice; and let the whole work: bunging it up cloſe, and letting it ſtand till January; then bottle it in dry weather.

By this method, he aſſures us, he has made Engliſh *wine* as good as any the beſt and pureſt French *wine*, drank either in Paris, or Champaign.

Mr. Bradley chuſes to have the liquor, when preſſed, ſtand with the huſks, ſtalks and all, in the vat to ferment for fifteen days.

He adds, that, according as the vines have been managed, the *wine* will be ſtronger or weaker. — Thoſe, *e. gr.* which run at liberty up high trees, and are never pruned, make the ſmalleſt *wines:* thoſe kept tied to ſtakes about four feet high, and which have their branches duely pruned, ſtronger *wines:* And thoſe neareſt the ground, the ſtrongeſt.

The force of the fermenting *wine* is very great; being able, if cloſe ſtopped up, to burſt through the ſtrongeſt caſk. — The readieſt and only way to ſtop or abate the fermentation, is by the fume of burning ſulphur.

Add, that when *wine* already made is upon the fret, or, by any alteration in the air, begins to ferment again; the way uſed by the vintners and wine-coopers to ſave it, is by the flame of common ſulphur, or a lighted match dipped in it; which, held under a caſk juſt ready to burſt its hoops, calms its fury, and makes it immediately ſubſide. See SULPHUR.

Piece of WINE.	See the article	PIECE.
Priſage of WINE.		PRISAGE.
Racking of WINE.		RACK.
Spirit of WINE.		SPIRIT.
Stooming of WINE.		STOOMING.

The uſes of WINE are very great; not only as a drink, but as a medicine. See DRINK, &c. — Several phyſicians recommend it as an excellent cordial, and particularly ſerviceable in fevers, the lues venerea, *&c.*

Pliny mentions Staphylus as the firſt who mixed *wine* with water; but Athenæus gives the credit thereof to Amphitryon king of Athens. — On this occaſion a fable was invented; that Bacchus having been ſtruck with a thunderbolt, and being all inflamed, was preſently caſt into the nymph's bath, to be extinguiſhed.

The age of WINE is properly reckoned by leaves. — Thus, they ſay, *wine* of two, four, ſix leaves, to ſignify a *wine* of ſix, four, or two years old; taking each new leaf put fourth by the vine, ſince the *wine* was made, for a year.

Among the Romans, the age of *wines* was, as it were, the criterion of their goodneſs. — Horace, in his *Odes*, which one may call *Bacchic ſongs*, boaſts of his drinking Falernian *wine*, born, as it were, with him, or which reckoned its age from the ſame conſuls.

Pliny mentions *wines* kept above a hundred years, and yet potable — Others he ſpeaks of kept two hundred years, which, by that time, were reduced to the conſiſtence of honey.

But the moderns keep no *wines* to any ſuch age. — Where they are kept the longeſt, as in Italy and Germany, there are ſcarce any to be found above fifteen leaves. — In France, the *wines* that keep beſt, are thoſe of Dijon, Nantz, and Orleans, are reckoned ſuperannuated at five or ſix leaves old.

Lees of WINE, are the impurities thereof, or the thick ſediment, remaining at the bottom of the caſks, when the *wine* is drawn out. See LEES, and VINEGAR.

WINE is alſo a denomination, applied in medicine and pharmacy, to divers mixtures or compoſitions, wherein the juice of the grape is a principal ingredient. See VINUM.

Theſe medicated *wines* makes a conſiderable article in our diſpenſatories, in quality of diet-drinks; ſome being denominated from the ingredients uſed in them; ſome from the intentions wherewith they are preſcribed; and ſome from their qualities, *&c.*

Bitter WINE, *vinum amarum*, is an infuſion of certain bitter ſtomachic herbs, as gentian root, juniper-berries, tops of centaury, orange and lemon peel, in white port, or other white *wine*; taken by way of whet in a morning, to reſtore the palled ſtomach after a debauch, and bring the fibres to their due tenſion.

Chalybeate, or *Steel* WINE, is prepared of ſteel-filings, and ſaffron infuſed and filtered. — It is good for removing obſtructions in the viſcera, as in the chloroſis, *&c.*

Vinum benedictum, the *bleſſed* WINE, is made of crocus metallorum, and mace, infuſed in *wine.* — It was formerly a celebrated emetic, but now almoſt out of uſe for its roughneſs.

Elecampane WINE, *vinum enulatum*, is an infuſion of the root of that plant, with ſugar and currants, in white port. — It cleanſes the viſcera, prevents diſorders and obſtructions of the lungs, and is good in aſthmatic caſes, cachexies, *&c.*

Hog-lice WINE, *vinum millepedum*, is prepared of hog-lice put alive in white port; and after ſome infuſion, preſſed and ſtrained out: to the liquor is added ſaffron, ſalt or ſteel, *&c.* — It is recommended againſt the jaundice, dropſy, cachectic habits, *&c.* See MILLEPEDES.

Pectoral WINE, *vinum pectorale*, is prepared of liquorice, ſaffron, coriander-ſeeds, carraway, aniſe, ſalt of tartar, pennyroyal, and hyſſop waters, digeſted with canary *wine*, and ſtrained. — It is a good expectorant, helping to deterge and cleanſe the lungs, *&c.*

Emetic WINE, *vinmm emeticum.* See the article EMETIC.

Hippocrates's WINE, *vinum Hippocraticum*, or *Hippocras.* See HIPPOCRAS.

Viper WINE, *vinum viperinum*, is a preparation of female vipers, infuſed ſix months in canary *wine.* — It is a great reſtorative, and provokes to venery; good againſt cutaneous eruptions, *&c.*

Vinum Scilliticum, WINE, *of Squills*, is an infuſion of thoſe onions in white *wine* for forty days; after which the ſquills are ſtrained out, and the liquor preſerved for uſe. — It is a gentle emetic, good againſt inundations of rheum, *&c.* See SCILLÆ.

WINE-*Meaſure.* See the article MEASURE.

WING. See the articles FEATHER, and FLYING.

Warbling of the WINGS. See the article WARBLING.

WINGS, in heraldry, are born ſometimes ſingle, ſometimes in pairs, in which caſe they are called *conjoined*; when the points are downward, they are ſaid to be *inverted*; when up, *elevated.* See VOL.

WING, *Ala*, or *Axilla*, in botany, the angle which the leaves of a plant, or the pedicles of the leaves, form with the ſtem, or a branch of the plant. See LEAF.

This angle is commonly acute, and always turned upward. — It has its name from its reſembling the angle which the *wings* of a bird form with the body; or rather, from the angle which a man's arms makes with his trunk, which is alſo called *ala*, wing. See AXILLA.

WINGS, in gardening, *&c.* denote ſuch branches of trees, or other plants, as grow up aſide of each other. See BRANCH.

La Quintiny ſays, the term is particularly applied to artichoaks, whoſe *wings*, or *alæ*, are the leſſer heads or fruits that grow up with the principal one, on the ſame ſtalk.

WINGS, *alæ*, in the military art, are the two flanks or extremes of an army, ranged in form of battle; being the right and left ſides thereof, and including the main body. See ARMY, BATTALION, *&c.*

The cavalry are always poſted in the *wings*; *i. e.* on the flanks, or the right and left ſides of each line; to cover the foot in the middle. See LINE, and FLANK.

Pan, one of Bacchus's captains, is ſaid to have been the firſt inventor of this method of ranging an army; whence, ſay they, it is that the antients painted him with horns on his head; what we call *wings*, being by them called *cornua*, horns. See PANIC.

This, at leaſt, is certain, that the method of arranging in *wings* is very antient. — The Romans, we know, uſed the term *alæ*, or *wings*, for two bodies of men in their army; one on the right, the other on the left, conſiſting each of 400 horſe, and 4200 foot uſually, and wholly made up of confederate troops. — Theſe were deſigned to cover the Roman army, as the *wings* of a bird cover its body.

The troops in theſe *wings* they called *alares*, and *alares copiæ*; and we at this day diſtinguiſh our armies into the *main-body*, the *right* and *left wings.*

WINGS are alſo uſed for two files that terminate each batallion, or ſquadron, on the right and left. — The pikes are ranged in the middle, and the muſqueteers in the *wings.*

WINGS, in fortification, denote the longer ſides of horn-works, crown-works, tenailles, and the like out-works; including the ramparts, and parapets, with which they are bounded on the right and left, from the gorge to their front.

Theſe *wings*, or ſides, are capable of being flanked, either with the body of the place, if they ſtand not too far diſtant;

or with certain redoubts; or with a traverſe made in their ditch.

S. Michael's **WING**, is the name of a military order in Portugal, inſtituted, according to the jeſuit Mendo, in 1165; or according to di Michieli, in his *Teſoro Militar de Cavalleria*, in 1171. Its inſtitutor was, Alphonſus Henry I. king of Portugal; and the occaſion was a victory gained by him over the king of Sevil, and his Saracens; for which he thought himſelf beholden to S. Michael, whom he had choſe for his patron in the war againſt the infidels.

The banner they bore was a *wing* reſembling that of the arch-angel, of a purple colour, encompaſſed with rays of gold.—Their rule was that of S. Benedict; the vow they made was to defend the Chriſtian religion, and the borders of the kingdom, and to protect orphans.—Their motto, *Quis ut Deus.*

WINGED, in botany, a term applied to ſuch ſtems of plants as are furniſhed, all their length, with a ſort of membranous leaves. See STALK, STEM, &c.

Several kinds of thiſtles have *winged* ſtalks, and branches. See THISTLE, &c.

WINGED *Leaves*, are ſuch as conſiſt of divers little leaves, ranged in the ſame direction, ſo as to appear no more than one and the ſame leaf.—Such are the leaves of agrimony, acacia, aſh. *&c.* See LEAF.

WINGED *Seeds*, are ſuch as have down or hairs on them; whereby the wind taking hold, blows them to a diſtance. See SEED, and SEMINATION.

WINGED *Stalk.* See the article STALK.

WINGED, in heraldry, is applied to a bird, when its *wings* are of a different colour, or metal, from the body.

Winged is alſo applied to any thing repreſented with *wings*, though contrary to its nature; as a *winged*, or *flying hart*, &c.

WINNOW, ſignifies *to fan*, or ſeparate corn from the chaff by wind.

WINTER, one of the four ſeaſons, or quarters of the year. See SEASON, *&c.*

Winter commences on the day when the ſun's diſtance from the zenith of the place is the greateſt, and ends on the day when its diſtance is at a mean between the greateſt and leaſt. See SUN.

Notwithſtanding the coldneſs of this ſeaſon, it is proved, in aſtronomy, that the ſun is really nearer to the earth in *winter* than in ſummer.—The reaſon of the decay of heat, *&c.* ſee under the articles HEAT, LIGHT, &c.

Under the equator, the *winter*, as well as the other ſeaſons, return twice every year; but all other places have only one *winter* in the year; which, in the northern hemiſphere, begins when the ſun is in the tropic of Capricorn; and in the ſouthern hemiſphere, when in the tropic of Cancer: ſo that all places in the ſame hemiſphere have their *winter* at the ſame time. See TROPIC.

WINTER, among printers, that part of the printing-preſs, ſerving to ſuſtain the *carriage*, &c. See PRINTING-*Preſs*.

WINTER'S *Bark*, *Cortex* WINTERI, or WINTERANUS. See CORTEX, and CINNAMON.

WINTER-*Quarters.* See the article QUARTERS.

WINTER-*Rig*, amongſt huſbandmen, ſignifies to *fallow*, or till the land in *winter*. See FALLOW, &c.

WINTER-*Solſtice.* See the article SOLSTICE.

WINTONIÆ *Rotulus.* See the article ROTULUS.

WIRE, WIAR, WIER, or WYRE, a piece of metal, drawn through the hole of an iron, into a thread, of a fineneſs anſwerable to the hole it is paſſed through. See IRON.

Wires are frequently drawn ſo fine, as to be wrought along with other threads of ſilk, wool, or hemp: and thus they become a conſiderable article in the manufactures.

The metals moſt commonly drawn into *wire* are gold, ſilver, copper, and iron.—And hence we have *gold wire*, *ſilver wire*, *iron wire*, &c. as in the following articles.

Gold and ſilver **WIRE**.—What we call *gold wire*, is made of cylindric ingots of ſilver, covered over with a ſkin of gold; and thus drawn ſucceſſively through a vaſt number of holes, each ſmaller and ſmaller, till at laſt it is brought to a fineneſs exceeding that of a hair.

That prodigious ductility which makes one of the diſtinguiſhing characters of gold, is no where more conſpicuous than in this gilt *wire*.—A cylinder of 48 ounces of ſilver, covered with a coat of gold, only weighing one ounce, Dr. Halley informs us, is commonly drawn into a *wire*, two yards of which only weigh one grain: whence 98 yards of the *wire* only weigh 49 grains; and one ſingle grain of gold covers the ſaid 98 yards.—So that the ten thouſandth part of a grain is above half an inch long.

The ſame author, computing the thickneſs of the ſkin of gold, found it to be only $\frac{1}{134500}$ part of an inch—yet ſo perfectly does it cover the ſilver, that even a microſcope does not diſcover any appearance of the ſilver underneath.

M. Rohault obſerves, that a like cylinder of ſilver covered with gold, 2 feet 8 inches long, and 2 inches 9 lines in circumference, is drawn into a *wire* 307200 feet long; *i. e.* into 115200, its former length.

Mr. Boyle relates, that 8 grains of gold covering a cylinder of ſilver, is commonly drawn into *wire* thirteen thouſand feet long. See GOLD.—The method of drawing it, ſee further illuſtrated under the article DUCTILITY.

Silver **WIRE** is the ſame with gold *wire*, except that the latter is gilt, or covered with gold, and the other is not. See SILVER.

There are alſo counterfeit gold and ſilver *wires:* the firſt made of a cylinder of copper, ſilvered over, then covered with gold; and the ſecond of a like cylinder of copper ſilvered over, and drawn through the iron, after the ſame manner as gold and ſilver *wire*.

Braſs **WIRE** is drawn after the ſame manner as the former.—Of this, there are divers ſizes, ſuited to the divers kinds of works. The fineſt is uſed for the ſtrings of muſical inſtruments, as ſpinets, harpſichords, manichords, *&c.* See CHORD.

The pinmakers likewiſe uſe vaſt quantities of *wire* of ſeveral ſizes, to make their pins of. See PIN.

Iron **WIRE**, is called, by the French, *fil d'archal*; the reaſon of which, their authors are not agreed about.—That celebrated etymologiſt, M. Menage, derives it from *filum & aurichalcum*; but others, more converſant in the commerce thereof, deduce it from one Richard Archal, the firſt inventor thereof.

There are various ſizes of this *wire*, from ½ an inch, to $\frac{1}{10}$ of an inch diameter. The ſmalleſt ſizes are uſed to ſtring muſical inſtruments withal, particularly harpſichords, pſalteries, *&c.*—Vaſt quantities of *iron-wire* are brought yearly from the Baltic; partly ſpent at home, and part exported to France, *&c.*

WIRE-*Drawing.*—For the ſeveral manners of drawing gold and ſilver, ſee GOLD, SILVER, DUCTILITY, &c.

The firſt iron that runs from the ſtone, when melting, being the ſofteſt, and tougheſt, is preſerved to make *wire* of. See IRON.

WISDOM, *Sapience*, uſually denotes a higher and more refined knowledge of things, immediately preſented to the mind, as it were by intuition, without the aſſiſtance of ratiocination. See KNOWLEDGE, DISCOURSE, SCIENCE, &c.

In this ſenſe, *wiſdom* may be ſaid to be a faculty of the mind, or at leaſt a modification and habit thereof. See FACULTY, MODIFICATION, HABIT, &c.

Sometimes the word is more immediately uſed in a moral ſenſe, for what we call *prudence* or *diſcretion*; which conſiſts in the ſoundneſs of the judgment, and a conduct anſwerable thereto. See JUDGMENT.

The ſchool-divines, ſometimes reſtrain *wiſdom* to the knowledge of the more ſublime and remote objects, as that of God, *&c.* In which ſenſe, theology is properly ſaid to be *wiſdom.*

The Latin word for *wiſdom*, is *ſapientia*, which literaly expreſſes the ſenſe of taſting; to which *wiſdom* is ſuppoſed to have ſome conformity—The ſight, and other ſenſes, only repreſent to us the ſurface of things: taſte goes deeper, penetrates into the ſubſtances; ſo that what, *e. gr.* to the feeling ſeemed cold, to the taſte ſhall be found hot: ſo *wiſdom*, ariſing from a deep attention to our ideas, goes further, and frequently judges otherwiſe than the common apprehenſions of men would reach to. See UNDERSTANDING, REASON, &c.

WIST, WISTA, a quantity, or meaſure of land among our Saxon anceſtors; of different dimenſions, in different places.—In the *Monaſticon*, it is ſaid to be half a hide, or ſixty acres: in an old chronicle of the monaſtery of Battle, it is ſaid to be forty eight acres. See HIDE, &c.

WIT, a faculty of the mind, conſiſting, according to Mr. Locke, in the aſſembling, and puting together of thoſe ideas with quickneſs and variety, wherein can be found any reſemblance or congruity; whereby to make up pleaſant pictures, and agreeable viſions to the phantaſy. See FACULTY, and IMAGINATION.

This faculty, the ſame great author obſerves, is juſt the contrary of *judgment*, which conſiſts in the ſeparating carefully from one another, ſuch ideas wherein can be found the leaſt difference, thereby to avoid being miſled by ſimilitude, and, by affinity, to take one thing for another. See JUDGMENT.

It is the metaphor, and alluſion, wherein, for the moſt part, lies the entertainment and pleaſantry of *wit*; which ſtrikes ſo livelily on the fancy, and is therefore ſo acceptable to all people, becauſe its beauty appears at firſt ſight, and there is required no labour of thought, to examine what truth or reaſon there is in it.—The mind, without looking any further, reſts ſatisfied with the agreeableneſs of the picture, and the gaiety of the imagination; and it is a kind of affront to go about to examine it by the ſevere rules of truth, or reaſon.—Whence it ſhould ſeem, that *wit* conſiſts in ſomething that is not perfectly comformable to them. *Eſſay on Hum. Underſt.* Lib. I. cap. 11.

WIT is alſo an appellation, given to perſons poſſeſſed of the faculty called *wit*, *eſprit.*

A French author, who, in 1695, publiſhed a treatiſe *of wit*, *du bel eſprit*, lays down four characteriſtics thereof.—

1°. A man, who, with an open air, and eaſy motions, affects thoſe he converſes withal agreeably; and on any ſubject that preſents itſelf, advances new thoughts, and adorns them with a ſpritely turn; is, all the world over, a *wit*.

2°. Another, who, leſs ſolicitous about the choice and delicacy of his ſentiments, knows how to make himſelf valued by I know not what elevation of diſcourſe; who draws a deal of attention, and ſhews a deal of vivacity in his ſpeaking, and readineſs in his anſwers; is likewiſe acknowledged a *wit*.

3°. A third, who takes leſs care about thinking, than about ſpeaking well; who affects fine words, though perhaps low and poor in matter; who pleaſes by any eaſy pronunciation, and a certain tone of voice, is placed in the ſame rank.

4°. Another, whoſe chief aim is not to make himſelf eſteemed, ſo much as to raiſe mirth and laughter: who jokes pertinently, rallies pleaſantly, and finds ſomething to amuſe himſelf withal in every pretty ſubject; is likewiſe allowed a *wit*.

Yet, it may be obſerved, that in all theſe caſes, there is nothing of real *wit*, as above defined; but the whole is *imagination*, or *memory* at moſt: nay the whole is no more than temperament may give.

A true *wit* muſt have a juſt faculty of diſcernment; muſt have, at the ſame time, both a deal of energy, and of delicacy in his ſentiments; his imagination muſt be noble, and withal happy and agreeable; his expreſſions polite and well turned; without any thing of parade or vanity in his diſcourſe, or his carriage. — It is not at all eſſential to a *wit*, to be ever hunting after the brilliant; ſtill ſtudying fine thoughts, and affecting to ſay nothing but what may ſtrike and ſurprize.

This is a fault very frequent in dramatic perſons: the duke of Buckingham rallies it very juſtly. —

> " What is that thing which we *ſheer wit* do call?
> " 'Tis when the *wit* of ſome great writer ſhall
> " So overflow, that is, be none at all;
> " That even his fools ſpeak ſenſe. —

Humour, ſay our critics, is the genuine *wit* of comedy. See HUMOUR, COMEDY, &c.

Child-WIT. See the article CHILD-*Wite*.

WITCHCRAFT, the crime of ſorcery, eſpecially in women. See SORCERY, and MAGIC.

There may, perhaps, be ſome foundation for what we call *faſcination*, and *witchcraft*. — We have infinite inſtances, and hiſtories to this purpoſe; which it were not fair to ſet aſide, merely becauſe they are not reconcileable to our philoſophy: but, as it happens, there ſeems to be ſomething in philoſophy to countenance them. See FACINATION.

All living things, we know, emit effluvia, both by the breath, and the pores of the ſkin. — All bodies, therefore, within the ſphere of their perſpiratory, or expiratory effluvia, will be affected by them; and that, in this or another manner, according to the quality of the effluvia; and in this or that degree, according to the diſpoſition of the emittent, and recipient parts. See EFFLUVIA.

This far is inconteſtable; nor need we produce inſtances of animals exhaling ſweet, or ſtinking ſmells; or of infectious diſeaſes conveyed by effluvia, &c. in confirmation thereof.

Now, of all parts of an animal body, the eye, we know, is the quickeſt. — It moves with the greateſt celerity, and in all the variety of directions. — Again, its coats and humours are permeable as any other part of the body, (witneſs the rays of light it ſo copiouſly receives). — The eye, therefore, no doubt, emits its effluvia like the other parts. — The fine humours of the eye muſt be continually exhaling. — The heat of the pervading rays will rarefy and attenuate them: and that, with the ſubtile juice, or ſpirit of the neighbouring optic nerve, ſupplied, in great abundance, by the vicinity of the brain, muſt make a fund of volatile matter to be diſpenſed, and, as it were, determined by the eye.

Here, then, we have both the dart, and the hand to fling it. — The one furniſhed with all the force and vehemence, and the other with all the ſharpneſs and activity, one would require. No wonder if their effects be great!

Do but conceive the eye as a ſling, capable of the ſwifteſt and intenſeſt motions and vibrations: and, again, as communicating with a ſource of ſuch matter, as the nervous juice elaborated in the brain; a matter ſo ſubtile and penetrating, that it is ſuppoſed to fly inſtantaneouſly through the ſolid capillaments of the nerves; and ſo active and forcible, that it diſtends and convulſes the muſcles, and diſtorts the limbs, and alters the whole habitude of the body, giving motion and action to a maſs of inert, inactive matter. — A projectile of ſuch a nature, flung by an engine as the eye, muſt have an effect wherever it ſtrikes: and the effect will be limited and modified by the circumſtances of diſtance, the impetus of the eye, the quality, ſubtility, acrimony, &c. of the juices, and the delicacy, coarſeneſs, &c. of the object it falls on.

This theory, we are of opinion, may account for ſome of the phænomena of witchcraft, particularly of that branch called *faſcination*. — It is certain the eye has always been eſteemed the chief ſeat, or rather organ of *witchcraft*; though, by moſt, without knowing why, or wherefore: The effect was apparently owing to the eye; but, how was not dreamed of. — Thus, the phraſe, to have an *evil eye*, imports as much as to be a *witch*. — And hence Virgil — *Neſcio quis teneros oculus mihi faſcinat agnos*. — Again, old, bilious perſons, are thoſe moſt frequently ſuppoſed to have the faculty; the nervous juice in them being depraved, and irritated by a vicious habitude of body; and ſo rendered more penetrating, and malignant. — And young perſons, chiefly children and girls, are moſt affected by it; by reaſon their pores are patent, their juices incoherent, and their fibres delicate, and ſuſceptible. Accordingly, the *witchcraft* mentioned by Virgil, only reaches to the tender lambs. — Laſtly, the faculty is only exerciſed when the perſon is diſpleaſed, provoked, irritated, &c. It requiring ſome extraordinary ſtreſs, and emotion of mind, to dart a proper quantity of the effluvia, with a ſufficient impetus, to produce the effect at a diſtance.

That the eye has ſome very conſiderable powers, is paſt diſpute. — The antient naturaliſts aſſure us, that the baſiliſk, and opoblepa, kill other animals merely by ſtaring at them. If this fail of credit; a late author aſſures us to have ſeen a mouſe running round a large toad, which ſtood looking earneſtly at it, its mouth open: ſtill the mouſe made leſs and leſs circles about it; crying all the while, as if compelled thereto; and, at laſt, with a deal of ſeeming reluctance, ran into the gaping mouth, and was ſtreight ſwallowed.

Who has not obſerved a ſetting-dog; and the effects of its eye on the partridge? The poor bird, when once its eyes meet thoſe of the dog, ſtands as if confounded, regardleſs of itſelf, and eaſily lets the net be drawn over it. — We remember to have read of ſquirrels ſtupified, and overcome by a dog's ſtaring hard at them, and thus made to drop out of their trees into his mouth.

That man is not ſecure from the like affections, is matter of eaſy obſervation. Few people but have, again and again, felt the effects of an angry, a fierce, a commanding, a diſdainful, a laſcivious, an intreating eye, &c. — Theſe effects, no doubt, are owing to the different ejaculations from the eye; and are a degree of *witchcraft*. See PHYSIOGNOMY.

WITENA-*Mot*, or WITENA-*Gemot*, among our Saxon anceſtors, a term literally ſignifying council, or aſſembly of ſages, or wiſe men; applied to the great council of the land, of latter days called *parliament*. See PARLIAMENT.

WITHERNAM*, in law, a repriſal, or taking of other goods or cattle, in lieu of thoſe unjuſtly taken and eſloined, or otherwiſe with-holden.

* The word is compounded of the Saxon ƿiðeꞃ, *contra*, againſt, and *nam captio*, taking. See NAM.

Where goods are taken by colour of diſtreſs, and driven to an hold, or out of the county; ſo that the ſheriff cannot, upon replevin, make deliverance thereof to the party diſtrained: in this caſe the writ of *withernam*, or *de vetito namio*, is iſſued, directed to the ſheriff, for the taking as many of the party's beaſts, as he did thus unlawfully reſtrain; or as much goods of his, till he had made deliverance of the firſt diſtreſs. See DISTRESS, REPLEVY, &c.

Homine capto in WITHERNAMIUM. See HOMINE.

WITHERS *of an horſe*, the juncture of the ſhoulder-bones at the bottom of the neck and main, towards the upper part of the ſhoulder. See HORSE.

WITNESS, *Teſtis*, a perſon who certifies, or aſſerts the truth of any fact. See EVIDENCE.

Among the Romans, it was a cuſtom to pull or pinch the ears of *witneſſes* preſent at any tranſaction; that they might remember it when they were called to give in their teſtimony.

Two eye-*witneſſes*, or *de viſu*, not ſuſpected, are deemed a concluſive proof. See TESTIMONY, PROOF, CERTITUDE, &c.

Falſe *witneſſes*, ſuborners of *witneſſes*, &c. in England, are puniſhed with the pillory; in ſeveral other countries, with death. See PERJURY, SUBORNATION, &c.

In a ſynod at Rome, under Conſtantine, in the year 320, it was decreed, that there ſhould be 72 *witneſſes* heard, to condemn a biſhop; which was called *libra teſtium*, a pound of *witneſſes*. Accordingly there were 72 *witneſſes* heard againſt Pope Marcellinus; who, ſays the hiſtorian, *erant electi libra occidua*. See OATH, PURGATION, &c.

Antiently there were ſynodal *witneſſes*, *teſtes ſynodales*, in each pariſh, choſe by the biſhop, to enquire into the hereſies, and other crimes of the pariſhioners; and to make oath thereon on the relics of the ſaints. See SYNODALES.

Attic WITNESS. See the article ATTIC.

WOAD, *Guadum*, or *Glaſtum*, a drug uſed by the dyers, to give a blue colour. See BLUE, and DYING.

It ariſes from a ſeed, ſown annually in the ſpring; which puts forth a plant called *glaſtum ſativum*, whoſe leaves reſemble thoſe of ribwort-plantain. — They have uſually three, four, or five crops of leaves every year; but only the two or three firſt are of any value; whereof the firſt is beſt, and the reſt in their order.

When the leaves are ripe, they crop or gather them; after which, they carry them to a woad-mill to grind them ſmall: after which, they are laid eight or ten days in piles or heaps; and at laſt made into a kind of balls, which are laid in the ſhade, on hurdles, to dry.

This done, they break or grind them to powder; and when ground, ſpread it on a floor, and water it, which they call *couching*.

Here they let it ſmoke and heat, till, by torrifying it every day, it becomes quite dry, which they call *ſilvering*.

A week after which, it is in a condition to be uſed in dying.

The antient Britons uſed to dye their bodies herewith; and ſome hold, that it was from this plant, glaſs took its denomination; though others derive both *glaſs*, and *glaſtum*, from the Britiſh *glas*, which, to this day, denotes a blue colour. See GLASS.

A *woad blue*, is a very deep blue, almoſt black; and is the baſe of ſo many ſorts of colours, that the dyers have a ſcale, whereby they compoſe the divers caſts or degrees of *woad*, from the brighteſt to the deepeſt. See DYING.

WOLD*, ſignifies a plain down, or open champain-ground, hilly, and void of wood.

* Hence the names, Stow in the *Wold*, and *Cotſwold* in Glouceſterſhire; whence alſo that part of Leiceſterſhire, which lies northward beyond the Wrekin, is called the *Wold of Leiceſterſhire*.

WOLD, or **WELD**, among dyers, See the article WELD.

WOLFESHEAD*, or **WULVESHEAD**, *Caput lupinum*, denoted the condition of thoſe out-lawed for criminal matters in the Saxons time, and not yielding themſelves to juſtice. — For if they could have been taken alive, they muſt have been brought to the king; and if they, for fear of being apprehended, did defend themſelves, they might be ſlain, and their heads brought to the king; for their head was no more to be accounted of than a *wolf's head*. *LL. Edw.* in *Lamb.* fol. 127. and *Bract.* Lib. III. Tract. 2. cap. 11. See UTLAWRY

* The word is originally Saxon, ƿulꝼeꞅ-heaꝼoꝺ, compounded of ƿulꝼ, *wolf*, and heaꝼoꝺ, *head*.

WOLVES *Teeth*, of an horſe, are over-grown grinders, the points of which being higher than the reſt, prick their tongue and gums in feeding, ſo as to hinder the chewing of the meat.

They are ſeldom met with in young horſes; but if the teeth be not daily worn by chewing, they will grow up even to pierce the roof of the mouth. See TOOTH.

Rout of **WOLVES**. See the article ROUT.

WOMAN, FOEMINA, *Mulier*, the female of man. See FFMALE, MALE, &c.

S. Auguſtin calls *women* the *devout ſex*: at leaſt this is the common opinion; though others rather think, that in the prayer uſually attributed to that father, and ſtill rehearſed in the Romiſh church to the holy virgin, the words *intercede pro devoto fœmineo ſexu*, are to be underſtood of *women* devoted, or conſecrated to God in religious houſes; which had been ſufficiently expreſſed by the words, *ora pro populo, interveni pro clero*, See SEX; ſee alſo RELIGIOUS, &c.

It is a popular tradition among the Mahometans, which obtains to this day, that *women* ſhall not enter paradiſe. See HEAVEN.

An anonymous author, about the cloſe of the ſixteenth century, publiſhed a little Latin diſſertation, to prove that *women* are not men; that is, are not reaſonable creatures: *diſſertatio perjucunda qua anonymus probare nititur* mulieres *homines non eſſe*. — He alſo endeavours to prove, what naturally follows from this principle, *viz.* that *women* ſhall not be ſaved; that there is no future life, or happineſs for them.

His proofs are all taken from ſcripture, or founded on ſcripture. — Though, after all, his aim is not ſo much to degrade *women* to the condition of brutes; as to ridicule the principle or method of many Proteſtants, who, in points of controverſy, admit of no proofs or conſiderations, but what are taken from ſcripture alone. — This appears from the concluſion of the work. — *Probavi, opinor, invictiſſimis SS. Literarum teſtimoniis*, mulierem *non eſſe hominem, nec eam ſalvari: quod ſi non effeci, oſtendi tamen univerſo mundo quo modo hujus temporis hæretici, & præſertim Anabaptiſtæ, ſacram ſoleant explicare ſcripturam, & quo utantur methodo ad ſtabilienda ſua execranda dogmata.*

Yet, Simon Gediccus, a Lutheran divine, wrote a ſerious confutation of this piece in 1595; wherein the *women* are reſtored to the expectation of heaven, on their good behaviour.

The antient Marcionites allowed their *women* to baptize; as weare aſſured by S. Epiphanius, *Hær.* 42. c. 4. — The Montaniſts admitted *women* to the prieſthood, and even the epiſcopate. Epiph. *Hær.* 49. c. 2. — The modern Quakers alſo permit their *women* to preach and propheſy, on an equal footing with the men. See MARCIONITE, QUAKER, &c.

It is a point much controverted, how far learning and ſtudy become the ſex? — Eraſmus handles the queſtion at large in one of his letters to Budæus. — Lud. Vives, in his *Inſtitutio Fœminæ Chriſtianæ*, has a chapter expreſs on the ſame ſubject. — Madam Schurman, a German lady, has gone beyond them both, in a treatiſe on this problem; *Num Fœminæ Chriſtianæ conveniat ſtudium literarum?*

Several of the *women* remarkable for learning, have been alſo diſtinguiſhed for their want of conduct. — The reaſon, no doubt, lay in this; that their firſt ſtudies lying in books of gallantry and intrigue, the imagination was early turned that way, and the memory filled with a ſort of ideas, which a favourable diſpoſition, and age, adopted too eaſily, and improved too faſt. — It is not that ſtudy in itſelf has any natural tendency to produce ſuch effects; rather the contrary: The cloſe abſtracted reſearches of metaphyſics, logics, mathematics, phyſics, criticiſm, &c. no doubt, would be one of the ſureſt means to ſecure and eſtabliſh the virtue of continency in a *woman*.

A *woman*, in England, as ſoon as ſhe is married, with all her moveables, is wholly *in poteſtate viri*, at the will and diſpoſal of her huſband. See HUSBAND.

There are divers conſiderable things relating to *women* in the laws of England; which ſee under the article WIFE.

WOMB. See the article MATRIX.

Suffocation of the **WOMB**. See the article SUFFOCATION.

WONDER. See the article MIRACLE.

The *ſeven wonders of the world*, as they are popularly called, were, the *Egyptian pyramids*; the *mauſoleum*, erected by Artemiſia; the *temple of Diana* at Epheſus; the *walls* and *hanging gardens* of the city of Babylon; the *coloſſus*, or brazen image of the ſun at Rhodes; the *ſtatue of Jupiter Olympius*; and the *pharos*, or watch-tower, of *Ptolemy Philadelphus*. See PYRAMID, MAUSOLEUM, COLOSSUS, PHAROS, &c.

WONDERFUL *Water*. See the article WATER.

WOOD, *lignum*, a ſolid ſubſtance, whereof the trunks and branches of trees conſiſt; and deriving its growth from certain juices in the earth. See TRUNK, BRANCH, UNDERWOOD, &c.

The *wood* is all that part in a tree, included between the bark and the pith. See TREE, and BARK.

Dr. Grew, in his *Anatomy of Plants*, has diſcovered, by means of the microſcope, that what we call *wood* in a vegetable, notwithſtanding all its ſolidity, is only an aſſemblage of infinate minute canals, or hollow fibres; ſome of which riſe from the root upwards, and are diſpoſed in form of a circle; and the others, which he calls *inſertions*, tend horizontally from the ſurface to the centre; ſo that they croſs each other, and are interwove like the threads of a weaver's web. See VEGETATION, SAP, &c.

Woods are diſtinguiſhed into divers kinds, with regard to their natures, properties, virtues, and uſes. — Of *wood*, conſidered according to its qualities, whether uſeful, curious, medicinal, &c. the principal is that called *timber*, uſed in building houſes, laying floors, roofs, machines, &c. See TIMBER.

Woods valued on account of their curioſity, are *cedar*, *ebony*, *box*, *calambo*, &c. which, by reaſon of their extraodinary hardneſs, agreeable ſmell, or beautiful poliſh, are made into tables, combs, beads, &c. See EBONY, &c.

The *medicinal woods* are, *guaiac*, which the Spaniards call *ligno ſancto*; *aloes*, or *agallochum*; *ſaſſafras*, *nephriticum*, *ſantal*, *ſarſaparilla*, *aſpalathum*, *eagle wood* or *pao d'aquila*, &c. See ALOES, SASSAFRAS, &c.

Woods uſed in dying, are the *Indian wood*, *Brazil*, *Campeche*, &c. See BRASIL, INDIAN, &c.

Cord **WOOD**, denotes *wood* for the fire, generally made of the branches or loppings of trees, piled up in order.

This is limited to be below, ſeventeen inches, and above, ſix inches thick; and, at leaſt, three feet and a half long. See CORD.

Foſſil ſubterraneous **WOOD**. — There are divers places where *wood* is found under ground: whether overturned, and buried there from the time of the deluge, as many ſuppoſe; or weither formed and produced there, as jet is known to be. See SUBTERRANEOUS, FOSSIL, JET, &c.

Not long ago, there were found in England, above a hundred feet depth, ſeveral huge oaks, with all their branches on; and which, by their ſubterraneous ſituation, had contracted a black colour, nothing inferior to jet, joined with a hardneſs, which far ſurpaſſed that of any living oak. — It is hard to conceive how ſuch trees ſhould have come there, unleſs by a general ſubverſion of the whole terreſtrial globe at the flood. See DELUGE.

Mr. Boyle mentions a huge oak dug out of a ſalt-mine in Tranſilvania, ſo hard as not eaſily to be wrought on by iron tools; yet being expoſed to the air, out of the mine, became ſo rotten, that in four days it crumbled between the fingers. *Diſſert. de Admir. Hyng.* — And Mr. Derham obſerves the ſame of the trees lately turned up by the breaches at Dagenham, &c. *Philoſ. Tranſ.* N° 335. See MOSS.

Cutting in WOOD.	See the article	CUTTING.
Meaſure of WOOD.		MEASURE.
Painting on WOOD.		PAINTING.
Sculpture in WOOD.		SCULPTURE.
Stack of WOOD.		STACK.

WOOD, *Sylva*, in geography, a multitude of trees, extended over a large continued track of land, and propagated without culture. See FOREST.

The generality of *woods* only conſiſt of trees of one kind. — At Cape Verd in Africa, are *woods* of orange and lemon trees; in Ceylon, are *woods* of cinnamon trees; in the Molucca iſlands, *woods* of carroway trees; in the iſlands of Nero, Lontour, Loſgain, *&c. woods* of nutmeg trees; in Brazil, *woods* of brazil trees, *&c.* in Numidia, *woods* of date trees; in Madagaſcar, *woods* of tamarind trees, *&c.*

WOOD *and wood*, in the ſea language, is when two pieces of timber are ſo let into each other, that the *wood* of the one joins cloſe to the other.

WOOD-CORN, is a certain quantity of oats, or other grain antiently given by cuſtomary tenants to their lord, for the liberty to pick up dead or broken *wood*.

WOOD-GELD, WOODGELDUM, in our antient cuſtoms, the gathering, or cutting of *wood* within the foreſt. — Or it may denote the money paid for the ſame, to the foreſters. Sometimes it alſo ſeems to ſignify an immunity from this payment, by the king's grant. — Crompton ſays expreſly, it ſignifies to be free from the payment of money for taking of *wood* in a foreſt. See GELD.

WOOD-HAY, an antient cuſtom at Exeter; whereby a log out of every ſeam of *wood* brought over Ex bridge, is taken towards the reparation of that bridge. *Antiq. of Exeter.*

WOOD-MOTE, the antient name of that foreſt-court, now called *the court of attachment.* See ATTACHMENT, and FOREST.

WOOD-PLEA-*Court*, is a court held twice a year in the foreſt of Clun in Shropſhire, for determining all matters relating to *wood*, and the feeding of cattle there. — Perhaps it was originally the ſame with *wood-mote-court.*

WOODWARD*, an officer of the foreſt, whoſe function is to look after the *woods*, and obſerve any offences either in vert, or veniſon, committed within his charge; and to preſent the ſame; and in caſe any deer are found killed, or hurt, to inform the verderer thereof, and preſent them at the next court of the foreſt. See FOREST.

* *Woodward* may not walk with bows, and ſhafts, but with foreſt-bills. — *Arcum & calamos geſtare in foreſta non licet, ſed* (*ut reſcripti utar verbo*) *hachetum tantummodo.* Term. Hill. An. 13 Ed. III.

WOOF, among manufacturers, the threads which the weavers ſhoot a-croſs, with an inſtrument called the *ſhuttle*, between the threads of the warp, to form the web. See WARP, WEB, WEAVING, &c.

The *woof* is of different matter, according to the piece to be wrought. — In taffety, both *woof* and warp are ſilk. See TAFFETY.

In mohairs, the *woof* is uſually wool, and the warp ſilk. — In ſattins, the warp is frequently flax, and the *woof* ſilk. See CLOTH, SERGE, SATTIN, VELVET, &c.

WOOL, *lana*, the hair, or covering of ſheep; which, waſhed, ſhorn, dreſſed, combed, ſpun, wove, *&c.* makes divers kinds of ſtuffs, cloths, *&c.* for apparel, furniture, *&c.* See HAIR, and MANUFACTURE.

While the *wool* remains in the ſtate it was firſt ſhorn off the ſheep's back, and not ſorted into its different kinds, it is called *fleece.* See FLEECE.

Each fleece conſiſts of *wool* of divers qualities, and degrees of fineneſs, which the dealers therein take care to ſeparate.

The French and Engliſh uſually ſeparate each fleece into three ſorts; *viz.* 1°. *Mother-wool*, which is that of the back and neck. 2°. The *wool* of the tails and legs. 3°. That of the breaſt, and under the belly.

The Spaniards make the like diviſion into three ſorts, which they call *prime*, *ſecond*, and *third*; and, for the greater eaſe, denote each bale or pack with a capital letter, denoting the ſort. — If the triage, or ſeparation be well made, in fifteen bales there will be twelve marked R; that is, refine, or prime; two marked F, for fine, or ſecond; and one S, for thirds.

The *wools* moſt eſteemed are the Engliſh, chiefly thoſe about Leominſter, Cotſwold, and the Iſle of White; the Spaniſh, principally thoſe about Segovia; and the French, about Berry: which laſt are ſaid to have this peculiar property, that they will knot or bind with any other ſort; whereas the reſt will only knot with their own kind.

Among the antients, the *wools* of Attica, Megara, Laodicea, Apulia, and eſpecially thoſe of Tarentum, Parma, and Altino, were the moſt valued. — Columella ſets the two laſt even about that of Tarentum, Lib. VIII. c. 2. — And Varro aſſures us, the people there uſed to clothe their ſheep with ſkins, to ſecure the *wool* from being damaged. *De Re Ruſt.* Lib. II. c. 2.

Tavernier affirms, that the *wools* in Aſia are incomparably finer than thoſe of Europe; and that there is no doubt, but that *wool* was the golden fleece ſought for at Colchis. See GOLDEN *Fleece.*

The art of preparing and working *wool*, is attributed, by the antients, to Minerva; who, accordingly, is made the genius and protectreſs thereof. See WOOLLEN.

Engliſh WOOL. — The *wools* of England have always been in the higheſt repute; and that more abroad than at home. — Some we have, which, manufactured by our own clothiers, Chamberlayne obſerves, does, both for ſoftneſs and fineneſs, vie with the choiceſt ſilks. — *Spaniſh wools*, we know, bear a great price among us; but it is certain, much the greateſt part of that, which, when manufactured, our clothiers, *&c.* call *Spaniſh cloth*, grows in England. — Add, that the French can make no good cloth of their own *wool*, without, at leaſt, one third of Engliſh *wool* mixed with it. — It is allowed, the goodneſs of the Spaniſh *wool* is owing to a few Engliſh ſheep ſent over into Spain, as a preſent, by Henry II. of England; or, as others will have it, though we think miſtakenly, by Edward IV. in 1465.

The fineneſs and plenty of our *wools* is owing, in ſome meaſure, to the ſweet, ſhort graſs in many of our paſtures and downs; though the advantage of our ſheeps feeding on this graſs all the year, without being obliged to be ſhut up in folds during the winter, or to ſecure them from wolves at other times, contributes not a little thereto.

The Scotch and Iriſh *wools*, are commonly ſold abroad for Engliſh; and upon the ſame footing. — But foreigners, ſkilled in thoſe matters, find they come far ſhort of it in fineneſs; though, in ſome markets, the Iriſh is even ſaid to be preferred to the Engliſh.

The yearly produce of *wool* in England is calculated by Dr. Davenant, and Mr. King, at two millions ſterling. See WOLLEN *Manufactory.*

Antiently, the principal commerce of the nation conſiſted in *wool* unmanufactured; which foreigners, eſpecially the French, Dutch, and Flemiſh bought of us. Inſomuch, that the cuſtoms of Engliſh *wool* exported in Edward the third's reign, amounted, at 50 *s.* a pack, to 250000 *l.* per annum. An immenſe ſome in thoſe days! See COMMERCE.

This exceſſive cuſtom on the export of unmanufactured *wool*, ſet our people to the making it into cloth themſelves. — In which they ſucceeded ſo well, that towards the cloſe of the ſixteenth century, under the reign of queen Elizabeth, the exportation of any *wool* at all was abſolutely prohibited; and this, upon pain of having the right hand ſtruck off. See CONTRABAND.

From that time, England has been exceedingly jealous of its *wool.* — To prompt their vigilance, the judges, king's council at law, and maſters in chancery, in parliament, are ſeated on *wool* packs. — Accordingly, ſcarce a parliament but has renewed, and reinforced the prohibition; particularly, about the middle of the ſeventeenth century, the exporting of *wool* was made a capital crime.

But all theſe precautions are ineffectual; the Engliſh themſelves, particularly about the coaſts of Suſſex, making uſe of the long winter nights to waft over their *wools* to France: being ſure of carrying them to a good market, they deſpiſe the penalty, with an intrepidity, that the reſt of Europe are amazed at. See OWLERS.

M. Colbert, a name the French manufactures and commerce are infinitely indebted to, had entertained a deſign of procuring ſome of our Engliſh ſheep, and propagating them in France; hoping, that by chuſing them, in the provinces of that kingdom, ſuch paſtures, and ſuch a ſky as they had in their own iſland, they might there be perpetuated; and France be no longer obliged precariouſly to depend on the clandeſtine ſupplies of *wool* from the Engliſh owlers. — But the count de Cominges, then ambaſſador of France at the Engliſh court, laid the impoſſibility of having ſuch an export of ſheep, and the almoſt equal impoſſibility of keeping and making them multiply there, ſo ſtrongly before him, that he abandoned the deſign.

Wool is reckoned by the *ſack*, containing two weighs; the *weigh*, ſix tod and a half; the *tod*, two ſtones; the *ſtone*, two cloves; and the *clove*, ſeven pounds. — Twelve ſacks make a *laſt*, or 4368 pounds. See LAST, SACK, &c.

A *ſack of wool*, or 364 pounds, is ſufficient for four ſtandard cloths, to render them true breadth, *i. e.* ſix quarters and a half; true weight, *i. e.* ſixty pound; and the true length, *i. e.* twenty four yards.

From the divers preparations of *wool*, ſee CARDING, COMBING, SPINNING, WEAVING, FULLING, CLOTH, &c.

Pocket of WOOL.	See the article	POCKET.
Sarplar of WOOL.		SARPLAR.

WOOL-DRIVERS, are thoſe who buy *wool* of the ſheep-owners in the country, and carry it on horſeback to the clothiers, or market-towns, to ſell it again.

WOOLLEN *Manufactory*, includes the ſeveral ſorts of commodities into which *wool* is wrought; as *broad cloths*, *long* and *ſhort kerſeys*, *bays*, *ſerges*, *flannel*, *perpetuanas*, *ſays*, *ſtuffs*, *frize*, *penniſtons*, *ſtockings*, *caps*, *rugs*, &c. — Each whereof, ſee under its reſpective article CLOTH, SERGE, FLANNEL, &c.

The *woollen manufactory*, which now makes the principal article both in our foreign and domeſtic trade, being that which furniſhes the cargoes of our veſſels, that employs our people, *&c.* may be ſaid to have had its riſe in the fifteenth century.

Till that time, our *wool* was all ſold in the fleece, to ſuch of our neighbours as came to fetch it. — Among our cuſtomers, however, the principal were the Flemings, and Brabanters; and particularly the merchants of Gant and Louvain, who took off vaſt quantities to ſupply two manufactories that had flouriſhed in thoſe two cities from the tenth century; and had furniſhed the greateſt part of Europe, and even England itſelf, with all ſorts of *woollen* cloths, *&c.* — But the richneſs of the manufactories of Gant, and the incredible number of hands employed therein, having ſpirited up the inhabitants to revolt, divers times, againſt their ſovereigns, on account of certain taxes which they refuſed to pay; the ſeditious were at length puniſhed, and diſperſed, and part of them took refuge in Holland, and the reſt in Louvain.

Theſe laſt, together with their art of manufacturing cloths, carried with them their ſpirit of ſedition. — And it was not long ere ſeveral of them, to avoid the puniſhment they had deſerved for killiug ſome of the magiſtrates, removed into England; where they inſtructed our people how to work their own *wools*.

This eſtabliſhment is referred to the year 1420; from which time no endeavours have been ſpared to keep our *wools* to ourſelves. See WOOL.

The preſident Thuanus makes this epocha an hundred years later; and attributes the eſtabliſhment of the *woollen manufactures* in England to queen Elizabeth, and the troubles about religion, which the ſeverity of the duke of Alva and the Spaniſh inquiſition had occaſioned, and kept up ſo long in the Low Countries. — But what that noble author ſays, is rather to be underſtood of their perfection, than their firſt eſtabliſhment; and of the ſeveral great manufactures then ſet up at Norwich, Colcheſter, Sandwich, Hampton, *&c.* — For in the Engliſh and Flemiſh hiſtorians, we find mention made of the manufactures of London, long before any part of the ſeventeen provinces had attempted to throw off the Spaniſh yoak.

As this manufacture now ſtands, Dr. Davenant and Mr. King compute the produce thereof to be eight millions per annum; three fourths whereof are conſumed at home, and the reſt exported. See REVENUE, POLITICAL *Arithmetic*, &c.

So jealous are we now become of our *woollens*, that, beſides the precautions taken to uſe all our own *wools* ourſelves, we have added that of ſelling them ourſelves, and of carrying them to the places where they are required; not admitting ſtrangers to come and buy any in England. See NAVIGATION.

And hence the eſtabliſhment of thoſe famous magazines in Holland, the Levant, and the North, where our *woollens* are repoſited, to be vended by factors, or commiſſioners. — The magazine in Holland has changed place divers times; and it has been ſucceſſively at Middleburgh, Delf, Rotterdam, and Dort, where it now remains; and where all the Germans come to furniſh themſelves. — That for the Levant, is at Smyrna; and that for the North, at Archangel.

A pack, or 240 pounds weight of ſhort *wool*, it is computed, employs ſixty three perſons a week, to manufacture it into cloth; *viz.* three men to ſort, dry, mix, and make it ready for the ſtock-carder; five to ſcribble, or ſtock-card it; thirty five women and girls, to card and ſpin it; eight men to weave it; four men and boys to ſpoole it, and reed quills; eight men and boys to ſcour, burl, mill, or full it; tow, ſhear, pack, and preſs it.

A pack of large, long, combing *wool*, made into ſtuffs, ſerges, ſagathies, *&c.* for the Spaniſh trade, will employ, for one week, 202 perſons, whoſe wages amount to 43 *l.* 10 *s.* — Thus, 7 combers, 3 *l.* 10 *s.* dyers, 5 *l.* 150 ſpinners, 18 *l.* 20 throwers, and doublers, 5 *l.* 25 weavers, and attendants, 12 *l.*

A pack of *wool* made into ſtockings, will employ, for one week, 184 perſons, who will earn 56 *l.* — Thus, 10 combers, 5 *l.* 5 *s.* the dyer, 1 *l.* 6 *s.* 102 ſpinners, 15 *l.* 12 *s.* doublers and throwers, 4 *l.* 10 *s.* 60 ſtocking-weavers, 30 *l.*

Bleaching of WOOLLENS. See the article BLEACHING.

WOOL-STAPLE, denotes a city or town where *wool* uſed to be ſold. See STAPLE.

WOOLSTED. See the article WORSTED.

WOOL-WINDERS, are perſons employed in winding up fleeces of *wool* into bundles, to be packed, and ſold by weight. — Theſe are ſworn to do it truly between the owner and the merchant.

WORD, in language, is an articulate ſound, deſigned to repreſent ſome idea. See SOUND, VOICE, SIGN, IDEA, &c.

WORD, in writing, is an aſſemblage of ſeveral letters, forming one or more ſyllables, and ſignifying ſome thing. See LETTER, and SYLLABLE.

The Port-Royaliſts define *words* to be diſtinct articulate ſounds, agreed on by mankind, to convey their thoughts and ſentiments by. See LANGUAGE.

Grammarians divide *words* into eight claſſes, called *parts of ſpeech*; which are the *noun*, *pronoun*, *verb*, *participle*, *adverb*, *conjunction*, *prepoſition*, and *interjection*; to one or other of which, all the *words* and terms in all languages, which have, or may be invented to expreſs our ideas, are reducible. See each under its proper article, NOUN, PRONOUN, VERB, &c.

Words, again, are divided into *primitives* and *derivatives*, *ſimple* and *compound*, *ſynonymous* and *equivocal*. See PRIMITIVE, DERIVATIVE, ROOT, &c.

With regard to their ſyllables, *words* are further divided into *monoſyllables*, and *polyſyllables*. See MONOSYLLABLE, and POLYSYLLABLE.

The grammatical figures of *words*, which occaſion changes in the form, *&c.* thereof, are *ſyncope*, *apocope*, *apoſtrophe*, *diæreſis*, *aphæreſis*, *proſtheſis*, *epentheſis*, *paragoge*, *metatheſis*, &c. See each in its proper place, SYNCOPE, APOCOPE, &c. ſee alſo FIGURE, &c.

The uſe of *words*, we have obſerved, is to ſerve as ſenſible ſigns of our ideas; and the ideas they ſtand for in the mind of the perſon that ſpeaks, are their proper ſignifications. See SIGN, SEMEIOTICA, SCIENCE, &c.

Simple and *primitive words* have no natural connection with the things they ſignify; whence there is no rationale to be given of them: it is by a mere arbitrary inſtitution and agreement of men, that they come to ſignify any thing. — Certain *words* have no natural propriety or aptitude, to expreſs certain thoughts, more than others; were that the caſe there could have been but one language. See PRIMITIVE.

But, in derivative and compound words, the caſe is ſomewhat different. — In the forming of theſe, we ſee, a regard is had to agreement, relation, and analogy: thus, moſt *words* that have the ſame ending, have one common and general way of denoting or ſignifying things; and thoſe compounded with the ſame prepoſitions, have a ſimiliar manner of expreſſing and ſignifying ſimilar ideas in all the learned languages where they occur.

For the perfection of language, it is not enough, Mr. Locke obſerves, that ſounds can be made ſigns of ideas; unleſs theſe can be made uſe of, ſo as to comprehend ſeveral particular things; for the multiplication of *words* would have perplexed their uſe, had every particular thing needed a diſtinct name to be ſignified by.

To remedy this inconvenience, language had a farther improvement in the uſe of general terms, whereby one *word* was made to mark a multitude of particular exiſtences; which advantageous uſe of ſounds was obtained only by the difference of the ideas they were made ſigns of; thoſe names becoming general, which are made to ſtand for general ideas; and thoſe remaining particular, where the ideas they are uſed for are particular. See GENERAL, ABSTRACT, *&c.*

It is obſervable, that the *words* which ſtand for actions, and notions quite removed from ſenſe, are borrowed from ſenſible ideas; as, to imagine, apprehend, comprehend, underſtand, adhere, conceive, inſtil, diſguſt, diſturbance, tranquility, *&c.* which are all taken from the operations of things ſenſible, and applied to modes of thinking. — *Spirit*, in its primary ſignification, is no more than breath; *angel*, a meſſenger. By which we may gueſs what kind of notions they were, and whence derived, which filled the minds of the firſt beginners of languages; and how nature, even in the naming of things, unawares, ſuggeſted to men the originals of all their knowledge: whilſt, to give names that might make known to others any operations they felt in themſelves, or any other ideas that came not under their ſenſes, they were forced to borrow *words* from the ordinary and known ideas of ſenſation. See SENSATION, PERCEPTION, &c.

The ends of language in our diſcourſe with others, are chiefly three: firſt, to make our thoughts or ideas known one to another. — This we fail in, 1°. When we uſe names without clear and diſtinct ideas in our mind. 2°. When we apply received names to ideas, to which the common uſe of that language doth not apply them. 3°. When we apply them unſteadily, making them ſtand now for one, and anon for another idea.

Secondly, to make known our thoughts, with as much eaſe and quickneſs as is poſſible. — This men fail in, when they have complex ideas, without having diſtinct names for them; which may happen either through the defect of a language, which has none; or the fault of the man, who has not yet learned them.

Thirdly, to convey the knowledge of things. — This cannot be done, but when our ideas agree to the reality of things. — He that has names without ideas, wants meaning in his *words*, and ſpeaks only empty ſounds. — He that has complex ideas without names for them, wants diſpatch in his expreſſion. — He that uſes his *words* looſely and unſteadily, will either not be minded, or not underſtood. — He that applies names to his ideas, different from the common uſe, wants propriety in his language, and ſpeaks gibberiſh; and he that has ideas of ſubſtances, diſagreeing with the real exiſtence of things, ſo far wants the materials of true knowledge. See KNOWLEDGE.

Diviſion of WORDS.	See the article	DIVISION.
General WORDS.		GENERAL.

WORD, *Watch*-**WORD**, in an army, or garriſon, is ſome peculiar *word*, or ſentence, by which the ſoldiers know, and diſtinguiſh one another in the night, &c. and by which ſpies, and deſigning perſons are diſcovered.

It is uſed alſo to prevent ſurprizes. — The *word* is given out in an army every night by the general, to the lieutenant, or major-general of the day, who gives it to the majors of the brigades, and they to the adjutants; who give it firſt to the field-officers, and afterwards to a ſerjeant of each company, who carry it to the ſubalterns.

In garriſons it is given, after the gate is ſhut, to the town-major, who gives it to the adjutants, and they to the ſerjeants. See ROUNDS.

WORD, in heraldry, &c. See the article MOTTO.

WORK-HOUSE, a place where indigent, vagrant, and idle people are ſet to *work*, and maintained with cloathing, diet, &c.

Such is Bridewell, and ſeveral other places about the city, or ſuburbs; particularly that in Biſhopſgate-Street, for employing the poor children of the city and liberties, who have no ſettlement; and that for the pariſh of S. Margaret's Weſtminſter, called the *grey-coat hoſpital*. See HOSPITAL.

At Amſterdam they have a famous *work-houſe*, or houſe of correction, called the *Raſphuyſe*, which, by a privilege granted in 1602, has alone the right of ſhaving, and cutting the dyers woods, as brazil, ſantal, campeche, ſaſſafras, &c.

Each perſon, tolerably ſtrong, kept in the houſe, is obliged to furniſh 250 pounds of raſped wood per day; and the weaker, a certain quantity of chips.

WORKS, *Opera*, in fortification, the ſeveral lines, trenches, ditches, &c. made round a place, an army, or the like, to fortify, and defend it. — See *Tab. Archit. fig.* 21. ſee alſo the articles LINE, TRENCH, &c.

The principal *works*, in a fortreſs, or fortified place, ſee under the articles FORTIFIED *Place*, FORTIFICATION, &c.

Carpenters WORK.	See	CARPENTER.
Clock-WORK.		CLOCK.
Crown-WORK.		CROWN-*Work*.
Field-WORK.		FIELD-*Work*.
Fire-WORK.		FIRE, and ARTIFICIAL.
Fret-WORK.		FRET.
Groteſque-WORK.		GROTESQUE.
Horn-WORK.		HORN-*Work*.
Moſaic-WORK.		MOSAIC.
Out-WORK.		OUT-*Work*.
Regimen of the WORK.		REGIMEN.
Ruſtic-WORK.		RUSTIC.
Scratch-WORK.		SCRATCH.
Stream-WORK.		STREAM.
Vermicular-WORK.		VERMICULAR.
Wax-WORK.		WAX.
WORKING-*Furnace*		FURNACE.
WORKING *of Glaſs*.		GLASS.

WORLD, *Mundus*, the aſſemblage of parts which compoſe the univerſe. See UNIVERSE.

The *duration of the world*, is a thing which has been greatly diſputed. — Plato, after Ocellus Lucanus, held it to be eternal; and to have flowed from God, as rays flow from the ſun. Ariſtotle was much of the ſame mind: he aſſerts, that the *world* was not generated, ſo as to begin to be a *world*, which before was none: and, in effect, his whole eighth book of *Phyſ.* and firſt book *de Cœlo*, is ſpent in proving the eternity of the *world*. See ETERNITY.

He lays down a pre-exiſting and eternal matter, as a principle; and thence argues the *world* eternal. — His argument amounts to this, that it is impoſſible an eternal agent, having an eternal paſſive ſubject, ſhould continue long without action. See ARISTOTELIAN, MATTER, &c.

His opinion was generally followed; as ſeeming to be the fitteſt to end the diſpute among ſo many ſects about the firſt cauſe. See CAUSE.

Epicurus, however, though he makes matter eternal, yet ſhews the *world* to be but a new thing, formed out of a fortuitous concourſe of atoms. See *Lucretius*, Lib. V. See MATTER, ATOM, &c. ſee alſo EPICUREAN, &c.

Some of the modern philoſophers refute the imaginary eternity of the *world*, by this argument: that, if it be ab eterno, there muſt have been a generation of individuals, in a continual ſucceſſion from all eternity; ſince no cauſe can be aſſigned why they ſhould not be generated, *viz.* one from another. — Therefore, to conſider the origin of things, and the ſeries of cauſes, we muſt go back in infinitum, *i. e.* there muſt have been an infinite number of men, and other individuals already generated; which ſubverts the very notion of number. — And if the cauſe which now generates have been

produced by an infinite ſeries of cauſes; how ſhall an infinite ſeries be finite, to give room for new generations?

Dr. Halley ſuggeſts a new method of finding the age of the *world*, from the degree of ſaltneſs of the ocean. See SALTNESS, &c.

It is another popular topic of controverſy, whether the *world* be finite, or infinite? See the arguments on both ſides, under the article UNIVERSE.

It is likewiſe diſputed, whether the plurality of *worlds* be poſſible? See PLUARLITY.

Some hold the affirmative, from an opinion of the infinite power of the Deity; it being a ſetting bounds to omnipotency, to ſay, that he created ſo many bodies at firſt, and that he could not create more.

The Carteſians maintain the negative, upon theſe principles: that it is a contradiction to ſay, there are ſeveral *worlds* exiſting at the ſame time, ſince this implies ſeveral univerſes of created beings, the *world* being the το παν. That if there were ſeveral *worlds*, they muſt either be at a diſtance from one another, or contiguous; but neither can be ſaid: for were they contiguous, they would only conſtitute one; and were they diſtant, there muſt be ſomething between. But what can be between? If it be extended, it is corporeal; and inſtead of ſeparating the ſeveral *worlds*, will connect them into one.

The *Exiſtence of an eternal World* has been much controverted of late. The arguments on either ſide, ſee under the articles BODY, EXISTENCE and EXTERNAL.

The *world* is ſometimes divided into *upper*, and *lower*.

Lower, or *ſublunary* **WORLD**, is the globe of our earth. See EARTH.

Upper **WORLD**, includes the heavens, and heavenly bodies. See HEAVEN, COELESTIAL, &c.

Axis of the WORLD.	See the article	AXIS.
Map of the WORLD.		MAP.
Soul of the WORLD.		ANIMA *Mundi*.
Syſtem of the WORLD.		SYSTEM.

WORMS, *Lumbrici*, or *Vermes*, in medicine, a diſeaſe ariſing from ſome of thoſe reptiles being generated, and growing in the body: whence, frequently, dire ſymptoms do proceed.

The ordinary place of the *worms*, is the inteſtines: though there is ſcarce any part of the body but is ſometimes infected with them: for beſides the *vermes inteſtinales*, there are *dentales*, *gingivales*, *pulmonarii*, *cardiaci*, *ſanguinarii*, *cutaneous*, *umbilical*, *hepatic*, *ſalival*, &c.

They are all uſually ſuppoſed to be ingendered from the eggs of ſome inſect, depoſited in ſomething that is taken into the body by way of food; or ſome other way: an hypotheſis, however, which will hardly account for certain ſpecies of theſe inſects, not to be found but in the bodies of animals. — A ſolution of this difficulty will, perhaps, be hard to find, without having recourſe to the firſt ſtamina of animals, and the principles of generation. See ANIMAL, GENERATION, INSECT, &c.

There are three ſpecies of *worms*, moſt frequent in the human body: the *teretes*, or round and thick, moſtly found in the duodenum; the *latus*, or flat, called alſo *tænia*; and the round and ſmall, found in the rectum, called *aſcarides*. See ASCARIDES, &c. — Sometimes, indeed, there are anomalous *worms* expelled; as horned, hairy, four-footed, two-headed, &c. *worms*.

The ſymptoms of this diſeaſe are, vomiting, head-ach, heart-burn, ſighing, ſwooning, feeble pulſe, heavy ſleep, deliria, ſquinancy, pleuriſy, canine hunger, and innumerable others; occaſioned by the animals ſucking, moving, vellicating, gnawing, conſuming the chyle, irritating the nerves, wounding the ſolids, &c.

As to the latus, beſide the other common ſymptoms, thoſe affected with this, have one peculiar to them; which is, that with their ſtools they diſcharge ſeveral little bodies, like gourd-ſeeds.

Dr. Tyſon, in the *Philoſophical Tranſactions*, N° 146. gives a curious account of the *flat worm*, or *lumbricus latus*; called by Hippocrates, ταινια, and in Engliſh, ordinarily, the *tape-worm*, or *joint-worm*. — This is always ſingle: it lies variouſly convoluted; being ſometimes as long as all the guts; and ſometimes, vaſtly exceeds that length.

Olaus Borrichius aſſures us, a patient of his, in a year's time, voided 800 foot of this *worm*, though he had not yet met with the head: in voiding, the patient always obſerved it to break off.

Dr. Tyſon parallels this caſe with that of a patient of his, who voided vaſt quantities of this *worm*, for ſeveral years together; but in various pieces: ſome two, three, four, ſix, or more yards long: but all put together, he ſays, would much exceed the length of that of Borrichius.

The joints in this *worm* are very numerous: in one of 24 feet long, Dr. Tyſon numbered 507 joints. — Above the middle of the edges of each joint, he obſerved a protuberant orifice. — Thoſe orifices he takes for ſo many *mouths*; the beſt microſcopes diſcovering no mouth in what uſually paſſes for the head.

The *worm* is frequent enough in moſt kinds of animals; as dogs, oxen, crabs, herrings, pikes, *&c.* — Some authors aſſert, that it is not one, but many *worms* linked together, and included in a ſpolium of the inteſtines; and that this ſpolium is not animated, but receives its ſenſe and motion from a ſort of vermiculi cucurbitini incloſed in it. — This, Gabucinus, *de Lumb. Com.* ſays, he has plainly diſcovered: but Dr. Tyſon abundantly evinces the contrary.

In Perſia, *&c.* there are very long ſlender *worms*, ſix or ſeven yards long, bred in the legs, and other parts of men's bodies: when arrived at a certain pitch, they put out their heads, necks, *&c.* and withdraw them (if diſpleaſed or hurt) again, cauſing intolerable pains, fevers, *&c.* See CRINONES, and DRACUNCULI.

Ariſtotle obſerves, that all deer have *worms* under their tongues. — Sheeps noſes often abound with them.

In the *Philoſoph. Tranſact.* N°. 113. we have accounts of divers remarkable operations whereby *worms* were taken out of divers unſuſpected parts of the body; the operators being chiefly women. — Mrs. Mary Haſtings is there recorded, as famous for the diſcovering of *worms* hid in the face, gums, tongue, *&c.* which ſhe managed with ſuch addreſs, that ſhe took them out of any part affected, with a gooſe-quill. — Mr. Dent relates, that he himſelf was cured of certain odd tumors on his tongue, by one of thoſe worm-doctreſſes, Mrs. French; who, piercing the parts affected with a lancet, drew out five or ſix *worms* at a time. — In leſs than eight days, he aſſures us, ſhe took out of his tongue above a hundred *worms*, and thirty out of his gums. See HYDATIDES.

Sir Theodore Mayerne aſſures us, in the *Philoſoph. Tranſact.* N°. 211. that the famous ſugar, or remedy given by Pontæus, (a celebrated chymical empiric) for the *worms* in children, is fifteen grains of mercurius dulcis, with five grains of ſcammony, or two or three times as much ſugar, made up in lozenges. — He adds, that this doſe, which in France purges grown perſons, is ineffectual in England, to perſons of above fifteen years old, and ought to be augmented. See WORMSEED.

Cochineal WORM.	See the article	COCHINEAL.
Silk WORM.		SILK.
Solitary WORM.		SOLITARY.
Spermatic WORM.		SPERMATIC.

WORM, in chymiſtry, denotes a long, winding pewter-pipe, which diſtillers and apothecaries place in a tub of water, to cool and condenſe the vapours in the diſtillation of ſpirits. See ALEMBIC, DISTILLATION, &c.

This the chymiſts alſo call a *ſerpentine*. See SERPENTINE. — Formerly, this *worm*, or ſomething like it, was placed above the head of the ſtill, with a refrigeratory at the upper end of it, which is uſeful enough in the diſtilling of ſpirit of wine. See REFRIGERATORY.

To WORM *a cable*, or *hawſer*, in the ſea-phraſe, ſignifies to ſtrengthen it, by winding a ſmall line, or rope, all along between the ſtrands. See CABLE, &c.

To WORM *a dog*, is to take out a kind of *worm* from under his tongue; which, if let alone, would make him mad.

WORM-SEED, *Semen contra*, *ſemen ſanctum*, or *ſemen ſantonicum*, is a hot, bitter, drying kind of ſeed, proper to deſtroy *worms* generated in a human body, particularly in children. See WORMS.

This ſeed is ſmall, of a browniſh colour, an oblong figure, a bitter taſte, and a ſtrong ſmell. — It muſt be choſen new, greeniſh, of a ſharp, bitter, aromatic taſte, not a little diſagreeable.

The place where it is produced, is Perſia, about the frontiers of Muſcovy. It is brought to us from Aleppo, *&c.* — Naturaliſts are not agreed about the plant that produces it. J. Bauhine has a large diſſertation on the ſubject. — Some will have it the ſpecies of abſynthium, or wormwood, called *ſantonicum*, or *marinum abſynthium*; others will have it the *tanacetum*, others the *abrotanum*.

M. Tournefort gives us the following account of this notable drug, in the ſecond volume of his travels. The ſementine, or *worm-powder*, is not gathered like our ſeeds. — The plant grows in the meadows, and muſt be let ripen; and the miſchief is, that as it grows near to maturity, the wind ſcatters a good part of it among the graſs, where it is loſt; and this it is makes it ſo dear.

As they dare not touch it with the hand, for fear of making it ſpoil the ſooner; when they would gather what is left in the ear, they have recourſe to this expedient. — They take two hand-baſkets, and, walking along the meadows, ſweep the baſkets, the one from right to left, the other from left to right, as if they were mowing; by this means the ſeed is ſhook out into the baſkets.

WORMWOOD, a medicinal herb, among phyſicians, *&c.* called *abſynthium*. See ABSYNTHIUM.

WORMWOOD-*Wine*, *Vinum abſynthites*. See VINUM.

WORSHIP *of God*, *Cultus Dei*, amounts to the ſame with what we otherwiſe call *religion*. See RELIGION.

This *worſhip* conſiſts in paying a due reſpect, veneration, and homage to the Deity, under a certain expectation of reward. See GOD.

And this internal reſpect, *&c.* to be ſhewn and is teſtified by external acts; as prayers, ſacrifices, thankſgivings, *&c.* See PRAYER, SACRIFICE, &c.

The Quietiſts, and ſome other myſtic divines, ſet aſide not only all uſe of external *worſhip*; but the conſideration of rewards and puniſhments. See QUIETISM, DEIST, &c.

Yet, even the heathens had a notion, that God did not require us to ſerve him for nought: — *Dii quamobrem colendi ſint*, ſays Cicero, *non intelligo, nullo nec accepto ab illis nec ſperato bono.*

The ſchool-divines divide *worſhip* into divers kinds, *viz. latria*, that rendered to God; and *idolatria*, that rendered to idols, or images. — To which the Romaniſts add, *dulia*, that rendered to ſaints; and *hyperdulia*, that to the virgin. See IDOLATRY, IMAGE, LATRIA, HYPERDULIA, &c.

WORSTED, or WOOLSTED, in matters of commerce and manufacture, is a kind of woollen-thread. See WOOL.

Worſted is, properly, a thread ſpun of wool that has been combed; and which, in the ſpinning, is twiſted harder than ordinary. See COMBING.

It is chiefly uſed either to be knit, or wove into ſtockings, caps, gloves, or the like. See STOCKING, &c.

The name *worſted*, is ſuppoſed to be borrowed from a town thus called, in Norfolk, noted for fine ſpinning. — They who write it *woolſted*, do it on ſuppoſition of the word's being formed from *wool*, the matter of this thread.

WOVEN *Stockings*. See the article STOCKING.

WOULD, or WELD, among dyers. See WELD.

WOULDING, a ſea-term, for the winding of ropes faſt round about a yard, or maſt of a ſhip, after it has been ſtrengthened by ſome piece of timber nailed thereto.

WOUND, *Vulnus*, in medicine and chirurgery, a recent ſeparation, made in the ſoft or fleſhy parts of the body, from an external cauſe; and particularly the action of ſome hard and ſharp inſtrument. See SOLUTION.

Or, it is a ſolution of the continuity of a fleſhy part, made by ſome penetrating body; while it yet remains freſh, bloody, and without putrefaction: by which circumſtances a *wound* is diſtinguiſhed from an *ulcer*. See ULCER.

A like ſeparation happening in a bony part, is called a *fracture*. See FRACTURE; ſee alſo FLESH, BONE, &c.

All *wounds* proceed either from puncture, inciſion, or contuſion, according to the nature and make of the inſtrument they were cauſed by. See PUNCTURE, CUTTING, CONTUSION, &c.

Wounds are uſually divided, with reſpect to their cauſe, circumſtances, cure, *&c.* into *ſimple*, and *compound*. — *Simple wounds* are thoſe made by puncture, inciſion, or contuſion ſeparately; thoſe of the outer ſkin, without any conſiderable loſs of ſubſtance, or hurting any remarkable veſſel; and thoſe not complicated with any dangerous ſymptoms.

Compound wounds, are thoſe made both by puncture and inciſion at the ſame time, to which is ſometimes alſo added contuſion; thoſe attended with great loſs of fleſh, or the hurt of ſome conſiderable veſſel; add, thoſe made by envenomed inſtruments, or attended with violent ſymptoms.

The hiſtory of a *wound* is thus delivered by Boerhaave. — Immediately upon the ſolution, the *wounded* parts recede further and further from each other. — The blood guſhes out, at firſt, with ſome violence; but ſtops of itſelf: then a bloody ſcab is formed in the cavity of the *wound*, and a thin ruddy humour oozes out; the lips of the *wound* begin to redden, ake, ſwell, and turn back; and in (great *wounds*) a fever and thirſtineſs ſucceed. — On the third or fourth day, there is found a white, viſcid pus; upon which, the heat, redneſs, tumor, *&c.* abate, and the cavity gradually fills up from the bottom upwards, and from the circumference to the centre with growing fleſh. — Laſtly, the *wound* dries, and cicatriſes. But note, theſe ſymptoms vary according to the nature and cauſe of the *wound*. — Thus, if it be by inciſion, and a large blood-veſſel be cut, the hæmorrhage is more violent; eſpecially if it be an artery; in which caſe florid blood flies out impetuouſly, and by ſtarts: if only a vein be cut, the flux is more moderate and equable, and the blood of a darker colour. — If the *wound* be attended with contuſion, the hæmorrhage is ſmall.

In *wounds*, where any large artery is quite cut in two, the flux uſually proves mortal. — A leſſer artery, cut tranſverſely, flies back againſt the ſolid parts, and will have its mouth ſtopped: if an artery be not quite cut off, there ariſes a perpetual flux; or, if that be ſtopped, an aneuryſma. — A nerve being cut off, flies back, produces a pain, and obſtruction about the *wound*; and below it, a numbneſs, and waſting immobility: the caſe is much the ſame in wounded tendons, and membranes. — *Wounds* of the temporal muſcle are rarely cured; but generally bring on horrible convulſions.

The following *wounds* are commonly reputed mortal; *viz.* thoſe of the cerebellum, and of the cerebrum if they be deep enough to hurt the medulla oblongata; deep *wounds* in the ſpinal marrow, eſpecially the upper part thereof; thoſe of the heart, lungs, liver, ſpleen, kidneys, pancreas, meſentery, ſtomach, inteſtines, *&c.* is thoſe of the cava, aorta, carotides,

rotides, pulmonary, and other large veins and arteries; thoſe of the bronchia, thorax, diaphragm; large *wounds* of the oeſophagus, trachea, and the bladder; and all invenomed *wounds*.

In young children, and aged perſons, *wounds* frequently prove mortal, which ſeemed but ſlight. — Thoſe *wounds* generally prove troubleſome which happen in an ill ſtate of body, and eſpecially a low, or ſpare diet. — All *wounds* are reputed more dangerous and difficult of cure in winter, than ſummer; in autumn, than in ſpring.

The cure of *wounds* conſiſts in uniting the divided parts; which is the work of nature alone, and which the chirurgeon can only contribute to by removing external impediments, and applying medicines familiar to the part, called *vulneraries*, and *balſamics*. See Vulnerary, &c.

The firſt ſtep, then, to be taken in a ſimple *wound*, is to cleanſe it, and extract any heterogeneous body that may chance to be lodged therein. — Next, the cavity to be gently wiped with doſſils dipt in warm red wine. — The lips, now, to be brought together by bandages or ſutures; and the *wound* to be covered with a pledget dipt in balſam of Peru, or oil of ſweet almonds. — The pain thus eaſed, and the ſymptoms removed, the *wound* is to be ſuppurated, deterged, incarnated, and cicatrized after the manner of tumors, and ulcers. See Suppuration, Detergent, Incarnative, Cicatrisive, &c.

If the *wound* be dangerous, the ſymptoms violent, and the body cacochymic, more powerful means are had recourſe to; as, firſt, phlebotomy, then gentle cathartics, or clyſters; then vulnerary drinks, apozems, and ptiſans; with cardiacs and paregorics interpoſed. — In internal *wounds*, vulneraries and alkalies do well, particularly album græcum, river lobſters, mercurials, *&c.*

Freſh *wounds* are cured, ordinarily, in three or four days, without any other means, than applying a few drops of balſam of Peru. — Sometimes, however, digeſtives are required.

Gun-ſhot *wounds* are uſually the worſt of all, by reaſon of the violent contuſion and ſeparation of the parts; which prevent their coming to digeſtion for the ſpace of three or four days.

In the cure of large *wounds*, bandages and ſutures are required, to fit and diſpoſe them for healing. See Suture, &c.

WRACK. See the article Wreck.

WREATH, in heraldry, a roll of fine linen, or ſilk, (like that of a Turkiſh turbant) conſiſting of the colours born in the eſcutcheon; placed, in an atchievement, between the helmet and the creſt, and immediately ſupporting the creſt. See Crest, &c.

WRECK, **Wrack**, or *Sea*-**Wreck**, in natural hiſtory, a kind of herb growing in the ſea, upon rocks, and which the waves tearing off, caſt upon ſhore.

In ſome places it is uſed to manure the ground. — In Normandy, and other parts, they burn it; and of the aſhes make a kind of ſoda, which they uſe in the making of common green glaſs, to promote the fuſion or vitrification of the other materials. See Glass.

Wreck, **Wreccum**, called alſo *Ship*-Wreck, or *Ship*-Wrack, in law, *&c.* is when a ſhip periſhes in the ſea, and no man eſcapes alive out of it.

The civilians term it *naufragium*. — The goods in the ſhip, which are brought to land by the waves, belong to the king, or him to whom he aſſigns the right thereof *.

* Thus, in the *Stat. Prærog. Reg.* c. 11. — *Rex habebit* wreckum maris *per totum regnum, balænas & ſturgiones captas in mari, vel alibi intra regnum, exceptis quibuſlibet privilegiatis locis, &c.*

If a man, a dog, or even a cat eſcape alive, the party to whom the goods belong coming within a year and a day, and proving the goods to be his, ſhall have them again.

In divers charters, and old writings, it appears, that *wreck*, antiently, not only comprehended goods which came from a periſhing ſhip, but whatever elſe the ſea caſt upon land; whether it were precious ſtones, fiſhes *, ſea-weed, or the like.

* This *wreck*, in the *Grand Cuſtomary of Normandy*, c. 17. is called *varech*, and latined *veriſcum*; and in ſome of our antient charters, *wreche*, *werec*, *werech*, and *ſeup-werp*; q. d. *ſea-upwerp*, of *ſea*, and *up-werpen*, to caſt up.

WRESTLING, a kind of combat, or engagement between two perſons, unarmed, body to body, to prove their ſtrength and dexterity; and try which can throw his opponent to the ground. See Exercise, Game, &c.

Wreſtling, *palæſtra*, is an exerciſe of very great antiquity and fame. — It was in uſe in the heroic age; witneſs Hercules, who *wreſtled* with Antæus. See Palæstra, and Gymnastics.

It continued a long time in the higheſt repute; and had very conſiderable rewards and honours aſſigned it at the Olympic games. — It was the cuſtom for the athletæ to anoint their bodies with oil, to give the leſs hold to their antagoniſt. See Athleta, &c.

Ablancourt obſerves, that Lycurgus ordained the Spartan maids to *wreſtle* in public, quite naked, to break them of their too much delicacy and niceneſs; to make them appear more robuſt, and to familiarize the people, *&c.* to ſuch nudities. See Gymnasium, Gymnastic, &c.

WRIST. See the article Carpus.

WRIT *, *Breve*, in law, a precept of the king in writing, under ſeal, whereby any thing is commanded to be done, touching a ſuit, action, or proceſs for juſtice. — As, the ſummoning a defendant, taking a diſtreſs, redreſſing a diſſeiſin, or the like. See Breve, Precept, &c.

* The word is formed from the Saxon, ƿꞃıꞇan, to write.

Writs are variouſly divided, and in various reſpects. — Some, with regard to their order, or manner of granting, are termed *original*, and others *judicial*.

Original **Writs**, are thoſe ſent out of the high court of chancery, to ſummon the defendant in a perſonal, or tenant in a real action; either before the ſuit begins, or to begin the ſuit thereby. See Process, &c.

Judicial **Writs** are thoſe ſent by order of the court where the cauſe depends, upon emergent occaſions, after the ſuit begins.

Judicial Writs are diſtinguiſhed from original, in that their teſte bears the name of the chief juſtice of that court whence they come; whereas the original ſay, *teſte me-ipſo*, in the name, or relating to the king.

Writs are alſo diſtinguiſhed, according to the nature of the action, into *real* and *perſonal*. — *Real*, are either touching the poſſeſſion, called *writs of entry*; or the property, called *writs of right*. See Entry, and Right.

Perſonal writs, are thoſe relating to goods, chattels, or perſonal injuries. See Personal.

To which may be added, *mixt writs*, for the recovery both of the thing and damages.

Some *writs*, again, are at the ſuit of the party; ſome, of office; ſome, ordinary; ſome, of privilege. — A *writ of privilege*, is that which a privileged perſon brings to the court for his exemption, by reaſon of ſome privilege which he enjoys.

Writ *of Neifty*. See the article Neif.

Writ *of Rebellion*. See the article Commission *of Rebellion*.

Writs *Vicountiel*, are ſuch as are triable in the ſheriff's, or county court. See Vicountiel.

Writ *of Aſſiſtance*, that iſſuing out of the exchequer, to authorize ſome perſon to take a conſtable, or other public officer, to ſeize goods or merchandize prohibited, and uncuſtomed, *&c. Stat.* 14. 2 *Car.* II. c. 1.

There is alſo a *writ* of this name iſſuing out of chancery, to give poſſeſſion of lands.

Action of a **Writ.**	See	Action.
Appeal by **Writ.**		Appeal.
Attachment by **Writ.**		Attachment.
Continuance of a **Writ.**		Continuance.

WRITER *of the Tallies*, an officer of the exchequer, being clerk to the auditor of the receipt; who writes upon the tallies the whole letters of the tellers bills. See Tally, Exchequer, &c.

WRITING, *Scriptura*, the art or act of ſignifying and conveying our ideas to others, by letters, or characters viſible to the eye. See Character, Letter, Word, &c.

Writing is now chiefly practiſed among us by means of pen, ink, and paper. See Paper, Ink, &c. — The antients had other methods. See Book, Bark, Style, &c.

The invention of the art of *writing* is referred to Cadmus. See Letter, and Greek.

In law, we ſay, deeds, conveyances, *&c.* are to be in *writing*. — A will may either be in *writing*, or by word of mouth. See Deed, Conveyance, Will, &c.

We alſo ſay, *written law*, *lex ſcripta*, in oppoſition to common law, which is called *lex non ſcripta*. See Law, Statute, Common *Law*, &c. — We have alſo *written* and *unwritten* traditions, *&c.* See Tradition, Oral, &c.

Authentic *writings* of any contract, ſealed, and delivered, make the evidences thereof. See Authentic, Evidence, Muniment, Seal, Signature, Testimony, &c.

J. Ravenau has a treatiſe entitled *Des Inſcriptions en Faux*, wherein he ſhews how to revive, and reſtore old *writings* almoſt effaced, by means of galls ground in white wine, and diſtilled; and thus rubbed over the *writing*.

La Vayer has a curious diſſertation on the proof of facts by compariſon of hand *writings*, wherein he endeavours to ſhew this method of proof to be very ſuſpicious and fallacious. See Proof, &c.

It is a point controverted among the ſchool-philoſophers, what it is that *writing* properly ſignifies, or repreſents? whether ideas, or things, or words? *i. e.* whether it expreſſes things themſelves, or our ideas of things, or the articulate ſounds by which, on other occaſions, we expreſs thoſe ideas? See Word, Sign, Science, &c.

The common opinion is, that *writing* only repreſents words, that its proper object is the voice, and that it only ſignifies ideas mediately, or ſecondarily; and by means of thoſe, things themſelves.

Others, on the contrary, will have ideas, ſpeech, and *writing*, all equally, and immediately repreſentatives of things. See IDEA, NOTION, &c.

But the controverſy is impertinent enough! — No doubt, our ideas of things, are the things themſelves; there being no foundation for any diſtinction between them. See EXTERNAL, EXISTENCE, BODY, &c.

And as to *writing*, ſome may be ſaid to be *real*, or *ſignificative* of things and ideas. — As, the Egyptian hieroglyphics; the characters of chymiſts, aſtronomers, *&c.* which are a kind of images, or bear ſome natural reſemblance or analogy with the things they are intended to expreſs. See SYMBOL, HIEROGLYPHIC, *Real* CHARACTER, &c.

But the common *writing* only repreſents ſounds, which is the firſt and moſt natural language; and accordingly, our orthography is apparently formed on, or adapted to the pronunciation. See ORTHOGRAPHY, and PRONUNCIATION.

Hence, the end of *writing* is to excite, as it were, certain ſounds which have been made the arbitrary ſigns of certain ideas. — This they do by virtue of a combination, or aſſociation between ſuch and ſuch figures made with the pen, and ſuch and ſuch inflexions of the voice.

In effect, we have a great many *written* words which have no ideas belonging to them; as, *ſcindapſus*, *bladri*, &c. which tend no further than to produce ſounds. — Add, that people, when they begin to learn to read *writing*, take it from ſounds which they hear produced by the perſon who teaches them: an abundant argument, that writing does not immediately ſignify ideas and things; but firſt ſounds, and then things.

Gothic WRITING. See the article GOTHIC.

Secret WRITING. See CRYPTOGRAPHY, STEGANOGRAPHY, SCYTALA, CIPHER, DECIPHERING, &c.

Short WRITING. See the article BRACHYGRAPHY.

WRITTEN *Tradition*. See the article TRADITION.

WRONG, in a logical ſenſe. See ERROR, FALSHOOD, TRUTH, &c.

WRONG, in a legal ſenſe, *injury tort*. See INJURY, JUSTICE, TORT, RIGHT, &c.

WULVESHEVED, or WULWESHEAD. See WOLFESHEAD.

WYCH-*Houſe*, a houſe in which ſalt is boiled. See SALT.

WYDRAUGHT, a water-courſe, or water-paſſage, to carry off the filth and ſuillage of a houſe; properly a ſink, common-ſhore. See SEWER, and CLOACA.

WYKE, antiently denoted a farm, hamlet, or little village. See WIC, FARM, HAMLET, and VILLAGE.

WYTE*, WYTA, or WITE, WITA, in our antient cuſtoms, a pecuniary penalty, or mulct.

* — *Jurat ſecundum* witam *quod nec fuerat furti conſcius nec coadjutor in eo.* Leg. Inæ.

The Saxons had two kinds of puniſhments, *were*, and *wyte*; the firſt, for the more grievous offences. See WERE.

The *wyte* was for the leſs heinous ones. — It was not fixed to any certain ſum; but left at liberrty, to be varied according to the caſe.

Hence, alſo, *wyte*, or *wittree*, one of the terms of privilege granted our portſmen; ſignifying a freedom or immunity from fines, or amerciaments: or, as it is vulgarly conceived, from being liable to be begged for fools, for lack of *wit*.

WYTA, or WITA *Plena*, ſignified a forfeiture of one hundred and twenty ſhillings. — *Si pundbreche fiat in curia regis* plena wita *ſit*; *alibi quinque marcæ*.

To ſwear according to the *wyte*, *ſecundum* witam *jurare*, was to purge one's ſelf by the oaths of ſo many witneſſes, as the nature of the crime, and the puniſhment, or *wyte*, did require. See PURGATION.

Hence, alſo, *bloodwite*, *legerwite*, *ferdwite*, *childwite*, *wardwite*, &c. See FERDWITE, LEGERWITE, CHILDWITE, &c.

WYTHE, in law, the ſame as *waif*. See WAIF.

X.

X, A double conſonant, and the twenty ſecond letter in the Engliſh alphabet. See LETTER, CONSONANT, ALPHABET, &c.

The *x* of the Latins, and ξ of the Greeks, are compounded of *c s*, and *κ σ*; whence to this day, the letter *x*, in the Engliſh and French, has the ſame ſound with *c s*, or *k s*. — Thus we pronounce *Alexander*, as if wrote *Alecſander*, or *Alekſander*. See C, K, S, *&c.*

The Italians have no *x* at all in their language; but, both ſpeak and write *Aleſſandro.* — The Spaniards pronounce the *x*, like our *c* before *a*; viz. *Alexandro*, as if it were *Alecandro.* — The Portugueze pronounce it like *ſh.*

In foreign words, uſed in Engliſh, we ſometimes ſoften the *x* into a double *s*; as *Bruſſels*, for *Bruxelles*, &c.

The letter is not known in the Hebrew, or other oriental languages; but, in lieu of it, they write the two ſimple letters whereof it is compounded. — And the like do the modern Germans.

X is alſo a numeral letter, and ſignifies ten; as repreſenting two V's placed one a-top of the other. See V.

> X *Supra denos numero tibi dat retinendos.*

When laid flat, thus ⋈ it ſignifies a thouſand; and when a daſh is added over it, X̄, it ſignifies ten thouſand.

XENIA, in ſome antient cuſtoms, were gifts, or preſents, made to the governors of provinces, by the inhabitants thereof.

The word occurs pretty frequently in charters of privileges; where, *quietos eſſe à* xeniis, denotes an exemption from making ſuch preſents to kings and queens, upon their travelling through ſuch precincts.

XENODOCHUS, an eccleſiaſtical officer of the Greek church; the ſame with *hoſpitaler*; or a perſon who takes care of the reception and entertainment of ſtrangers. See HOSPITALER.

S. Iſidore, a prieſt and ſolitary, ſurnamed *Xenodochus*, lived in the fourth century. — He was thus called, becauſe entruſted with that office in the church of Alexandria.

XEROPHAGIA*, XEROPHAGY, in church-hiſtory, the feeding on dried foods. See FOOD.

* The word is formed from ξειος *ſiccus*, dry, and φαγω, I eat.

In the firſt ages, ſome, not contented with ſimple faſting, added the *xerophagy* thereto; abſtaining not only from fleſh and wine, but alſo from all freſh, ſucculent, and vinous fruits. — And ſome even brought themſelves to bare bread and water. See FAST, and ABSTINENCE.

Tertullian, in his book *de Abſtinentia*, c. 9. ſpeaks of the *xerophagia*, as a thing commendable in time of perſecution.

XEROPHTHALMIA*, ΞΗΡΟΦΑΛΜΙΑ, a kind of ophthalmia, wherein the eyes itch, and are red, but without ſwelling, or watering See OPHTHALMIA, and SCLEROPHTHALMIA.

* The word is compounded of ξηρος dry, and οφθαλμος, eye.

XESTA, ΞΕΣΤΗΣ an Attic meaſure of capacity; anſwering to the Roman *ſextary*. See MEASURE, and SEXTARY.

XIPHIAS, ΞΙΦΙΑΣ, a fiery meteor, in form of a ſword. See METEOR.

It differ from the *acontias*, in that this latter is longer, and more like a dart; and the former ſhorter, and broader in the middle. See ACONTIAS.

XIPHOIDES, ΞΙΦΟΕΙΔΗΣ, in anatomy, a cartilage at the bottom of the ſternum, called alſo *enſiformis*. See CARTILAGE,

It is about an inch long, and ſhaped like the point of a ſword. — Whence its appellation, from ξιφος, ſword and ειδος, figure. See STERNUM.

XV.VIR, *Quindecimvir*. See the article QUINDECIMVIR. Authors, and eſpecially antiquaries, make uſe of ſuch abbreviations, which they borrow from medals, and other monuments of antiquity, where thoſe names are ſo expreſſed.

XYLO-ALOE*, in medicine, the lignum aloes: called alſo *agallochum*. See ALOES.

* The word is compounded of ξυλον, *lignum*, wood, and αλοη, aloes.

XYLO-BALSAMUM*, ΞΥΛΟΒΑΛΣΑΜΟΝ, a name which naturaliſts, *&c.* give to the wood of the tree, which yields that precious gum, known to the Latins by the name of *opo-balſamum*, and among us, by the name of *balm of Gilead*. See BALSAM.

* The word is compounded of ξυλον, wood, and βαλσαμον, balſam, balm.

We have branches of this tree brought us from Cairo. They are very ſtreight, brittle, unequal, and full of knots; their bark reddiſh without, and greeniſh within. —The wood is whitiſh, and full of pith; and, when broke, yields an agreeable ſmell, reſembling that of the balm.

The *xylo-balſamum* is reputed good to ſtrengthen the brain, and ſtomach, and to expel poiſon.

XYNOECIA*, a feaſt among the antient Athenians, inſtituted on occaſion of Theſeus's uniting all the petty communities of Attica into one commonwealth; the aſſemblies whereof were to be held at Athens, in the Prytaneum. See FEAST.

* The word is formed of the Greek, ξυν, or συν, with, and οικεω, I inhabit.

XYSTARCHA, in antiquity, the maſter or director of the xyſtus. See XYSTUS, and GYMNASTICS.

In the Greek gymnaſium, the *xyſtarcha* was the ſecond officer: the firſt was the gymnaſiarcha. —The *xyſtarcha* was his lieutenant, and preſided over the two xyſti, and all exerciſes of the athletæ therein. See GYMNASIUM, and GYMNASIARCH.

XYSTUS*, in the antient architecture— A *xyſtus*, among the Greeks, was a long ſpacious portico, either open, or covered over; wherein the athletæ, and others, practiſed wreſtling, and running. See WRESTLING, &c.

* The word is Greek, ξυστος, formed of ξυειν, to poliſh, ſhave, rub.

The *xyſtus* made a neceſſary part of a gymnaſium. See GYMNASIUM. —The athletæ, who practiſed therein, were called *xyſtici*. See ATHLETA, &c.

XYSTUS, among the Romans, was an alley, or double row of trees, meeting arbor-wiſe a-top, and forming a ſhade to walk under.

Y.

Y, The twenty third letter in the Engliſh alphabet, borrowed, originally, from the Greek *υ*. See LETTER, and ALPHABET.

It is occaſionally both vowel, and conſonant. — A a vowel, ſome authors have judged it unneceſſary in our language, in regard its ſound is preciſely the ſame with that of the *i*. — Accordingly, it is but little uſed, except in words borrowed from the Greek, to denote their origin, by repreſenting the Greek ψιλον.

The vowel *y*, however, has a place even in ſome words purely Engliſh; and that both in the middle thereof, as in *dying*, *frying*, &c. and at the end, as in *lay*, &c.

Some aſcribe the uſe of the *y*, in pure Engliſh and French words, and thoſe that have no *y* in Latin or Greek, to this, that antiently each of thoſe words were pronounced with a double ii; which having ſomething aukward in it, the *y* was ſubſtituted in lieu thereof. See I.

Others ſay, that thoſe words being antiently wrote, as well as pronounced with a double ii, which they ſtill are in the Walloon, as *paiing*, *paiiſan*, &c. to avoid their being miſtaken for an u with two dots over it, they made the ſecond i longer then the firſt, and and ſo formed the *y* without deſigning it. — Some give a particular reaſon, why words ending in i, came to be wrote with *y*; *viz.* that the copiſts found the tail of the *y* very commodious, to adorn the margins, and bottoms of pages withal.

When the *y* follows a conſonant, it is a vowel; and when it precedes a vowel, it is a conſonant, and ſhould be called *ye*, and not *wy*.

The Romans uſed the *y* for the vowel *u*, which they had no character for, diſtinct from the v conſonant: their way being to pronounce the common *u*, as we do the diphthong *ou*; and the Greek υψιλον, as the Engliſh and French *u*.

In our own, and ſome other modern tongues, authors begin to diſpenſe more and more, with the preciſe orthography, which requires all words that have an upſilon, in the Greek, to be wrote with a *y*. And with reaſon; ſince our Greek *y* has loſt the ſound it had, in the language whence we borrow it. — But it is certainly ridiculous to uſe it, as many do, in words which indeed have a Greek origin, but have no *u* in the Greek; as in *eclipſe*. See ECLIPSE, ECLIPTIC, &c.

Y is alſo a numeral letter, ſignifying 150, or, according to Baronius, 159; as in the verſe.

Y *dat centenos & quinquaginta novenos.*

When a daſh was added a-top, $\bar{Y}$, it ſignified 150 thouſand. — Pythagoras uſed the Y as a ſymbol of human life; the foot repreſenting infancy, and the forked top the two paths of vice and virtue, one or the other of which, people are to enter upon, after attaining to the age of diſcretion.

YACHT, or **YATCH**, a kind of veſſel uſed by the Engliſh, furniſhed with maſts, and ſails; fit to go to ſea; and commodiouſly contrived and adorned, withinſide and without, to ſuit it for ſtate-paſſengers, *&c.*

* The word ſeems derived from the Dutch *Iacht*, hunting, by reaſon of the lightneſs of theſe veſſels.

Yachts are veſſels with one deck, carrying from 4 to 12 guns, with from 20 to 40 men; being of burden from 30 to 160 tun. —They draw little water, and are uſed for running, and making ſhort trips, *&c.* — Their make and form is various.

The Dutch have alſo *yachts*, but not ſo well prepared to live at ſea. — They are ſeldom uſed, but to ſail on rivers and canals.

YARD, *Virga*, a long meaſure, uſed in England, and Spain; chiefly to meaſure cloth, ſtuffs, *&c.* See MEASURE, VERGE, VIRGA, *&c.*

The Engliſh *yard* contains three feet. — It was firſt ſettled by Henry I. from the length of his own arm. See FOOT, &c.

The Engliſh *yard* is juſt ſeven ninths of the Paris ell; ſo that nine *yards* make ſeven ells. — To reduce ells, therefore, into *yards*, ſay, if ſeven ells give nine *yards*, how many *yards* will the given number of ells give?

Yards are converted into ells Flemiſh, by adding a third part; into ells Engliſh, by ſubſtracting a fifth part; or multiplying by 8, and caſting off the right-hand figure. — Ells Engliſh are converted into *yards*, by adding a fourth. — To turn ells Flemiſh into *yards*, ſubſtract one quarter. See ELL.

The Spaniſh vara, or *yard*, chiefly uſed at Sevil, is, in ſome places, called *barra*. — It cantains $\frac{17}{24}$ of the Paris ell; ſo that 17 ells make 24 Spaniſh *yards*.

YARD, in anatomy, the penis, or virile member; ſerving for the evacuating of the urine, and ſeed. See PENIS; ſee alſo URINE, and SEED.

YARD-LAND *, *Virgata terræ*, or *virga terræ*, is a certain quantity of land, various according to the place. — At Wimbleton in Surrey, it is only 15 acres; but in moſt other countries it contains 20, in ſome 24, in ſome 30, and in others 40, to 45 acres. See ACRE.

* *Virgata terræ continet 24 acras; & 4 virgatæ conſtituunt unam hidam, & quinque hidæ conſtituunt feodum militare.* MS. Abbat. Malmeſ. See HIDE, KNIGHT's *Fee*, PLOW-*Land*, &c.

YARDS, or *Sail*-**YARDS**, of a ſhip, are long pieces of timber, tapering at each end, fitted acroſs the ſeveral maſts, to carry the ſails. See MAST, and SAIL.

The ſails are faſtened to the *yards* at the heads; ſo as to be hoiſted up, and let down together with them, by ropes called *halliards*. See HALLIARD.

The main *yard*, is that of the main-maſt. —The mizzen *yard*, the bolt-ſprit *yard*, &c. are thoſe of the mizzen, *&c.* — See *Tab. Ship*, *fig.* 1. *n.* 2. 20. 37. 44. 67. 86. 93. 109. 126. 138. ſee alſo MIZZEN, BOW-SPRIT, &c.

They have ſeveral phraſes, and words of command, relating to the management of the *yards*; as — *Brace the yard*, which ſignifies to traverſe aſt the *yard*-arm, whoſe brace is haled; ſo that to *traverſe the yard*, is the ſame as to ſay, brace it aſt. — *Square the yard*, is as much as to ſay, ſee that it hang right a-croſs the ſhip, and one *yard*-arm not traverſed more than the other. — *Top the yards*, that is, make them hang even.

YARD-*Arm*, is that half of the *yard* which is on either ſide the maſt, when it lies athwart the ſhip.

YARDS alſo denote places belonging to the navy, where the ſhips of war, *&c.* are laid up in harbour. See NAVY, HARBOUR, SHIP, &c.

The king's *yards*, are Chatham, Deptford, Woolwich, Portſmouth, Shereneſs, Plimouth, and Harwich; each of which is provided with ſeveral docks, wharfs, launches, and graving places for the building, repairing, and cleaning his majeſty's ſhips. See DOCK, WARF, &c.

In theſe *yards* are alſo lodged great quantities of timber, maſts, planks, anchors, *&c.* There are alſo ſtore-houſes belonging to each *yard*, wherein are reſerved vaſt quantities of cables, rigging, ſails, blocks, *&c.*

In the ſeveral *yards* are great rope-*yards*, wherein cables, and all ſorts of cordage are made. See CORDAGE, CABLE, &c.

YARE, among ſailors, implies as much as, nimble, ready, quick, expeditious. — Hence, to *be yare at the helm*, as ſome ſay, ſignifies to ſet a freſh man at the helm.

YARN, denotes ſpun wool. See WOOL, SPINNING, CLOTH, &c.

Rope-**YARN**. See the article ROPE.

YARRINGLES, or **YARRINGLE** *Blades*, a kind of reel, or inſtrument, with which hanks of yarn are wound on to clues, or balls. See REEL.

YATCHES. See the article YACHT.

YAWS, or **YAWES**, in the ſea-language — A ſhip is ſaid to make *yawes*, when, through the fault of him at the helm, ſhe is not kept ſteady in her courſe; but makes angles in and out. See HELM, RUDDER, STEERING, &c.

To prevent this, the conner cries to him at the helm, *ſteady*, *ſteady*. See STEADY.

YAWNING, *Oſcitatio*, an involuntary opening of the mouth, occaſioned by a vapour, or ventoſity, endeavouring to eſcape; and generally witneſſing an irkſome wearineſs, or an inclination to ſleep.

The remedy Hippocrates preſcribes againſt continual *yawnings*, is to make long breathings, or reſpirations. — The ſame he recommends againſt the hiccough. See HICCUP.

The nervous membrane of the oeſophagus, has been held the ſeat of *yawning*, which, according to the uſual ſyſtem, is produced, whenever any irritation determines the ſpirits to flow thither in too great abundance. — The cauſe of the irritation is ſuppoſed to be ſome troubleſome humour, wetting the inner membrane of the oeſophagus; which humour may proceed either from the glands ſpread throughout the membrane, or from acid vapours ariſing from the ſtomach, and condenſing on the ſides of the oeſophagus. — By ſuch means, the nervous fibres of the membrane of the gullet being irritated, dilate the gullet; and the mouth is conſtrained to follow the ſame motion, as being lined with the ſame membrane. — But this ſyſtem of oſcitation has, of late, given way to a better, and more mechanical one.

Yawning is performed by expanding almoſt all the muſcles of voluntary motion at the ſame time; but moſt conſiderably thoſe of the lungs: by ſpringing a great quantity of air, very ſlowly, and after retaining it ſome time, and rarefying it, by expelling it again, ſlowly, and reſtoring the muſcles to their natural ſtate.

Hence, its effects are to move, accelerate, and diſtribute all the humours of the body, equably through all the veſſels; thereby diſpoſing the organs of ſenſation, and all the muſcles of the body, for the performance of their reſpective functions. *Vid.* Boerh. Inſt. Med. §. 638.

YCONOMUS. See the article OECONOMUS.

YDRARGYROS, HYDRARGYROS, or *Quickſilver.* See MERCURY.

YEAR, *Annus*, in the full extent of the word, is a ſyſtem, or cycle of ſeveral months; uſually twelve. See CYCLE, and MONTH.

Others define *year*, in the general, a period, or ſpace of time, meaſured by the revolution of ſome celeſtial body in its orbits. See TIME, and PERIOD.

Thus, the time wherein the fixed ſtars make a revolution, is called the *great year*. And the times wherein Jupiter, Saturn, the Sun, Moon, &c. finiſh their revolutions, and return to the ſame point of the zodiac, are reſpectively called the *years of Jupiter*, and *Saturn*; the *Solar*, and the *Lunar years*. See SUN, MOON, PLANET, &c. *Solar* YEAR, *Lunar* YEAR, &c.

Year, properly, and by way of eminence ſo called, is the *ſolar year*; or the ſpace of time wherein the ſun moves through the twelve ſigns of the ecliptic. See ECLIPTIC.

This, by the obſervations of Caſſini, Bianchini, and de la-Hire, contains 365 days, 5 hours, and 49 minutes; which is the quantity of the *year* aſſumed by the authors of the Gregorian calendar. See *Solar* YEAR.

But, in the civil, or popular account, this *year* only contains 365 days; except every fourth, which contains 366. See *Civil* YEAR.

The viciſſitude of ſeaſons ſeems to have given occaſion to the firſt inſtitution of the *year*. — Man, naturally curious to know the cauſe of that diverſity, ſoon found it was the proximity and diſtance of the ſun; and upon this, gave the name *year* to the ſpace of time wherein that luminary, performing his whole courſe, returned to the ſame point of his orbit. See SEASON.

And hence as it was on account of the ſeaſons, in a great meaſure, that the *year* was inſtituted, their chief regard and attention was, that the ſame parts of the year ſhould always correſpond to the ſame ſeaſons; *i. e.* that the beginning of the *year* ſhould always be when the ſun was in the ſame point of his orbit; and that they ſhould keep pace, come round, and end together.

This, different nations aimed to attain by different ways; making the *year* to commence from different points of the zodiac; and even the time of his progreſs different. So that ſome of their *years* were much more perfect than others, but none of them quite juſt; *i. e.* none of them but whoſe parts ſhifted, with regard to the parts of the ſun's courſe.

It was the Egyptians, if we may credit Herodotus, that firſt formed the *year*, making it to contain 360 days; which they ſubdivided into 12 months.

Mercury Triſmegiſtus added five days more to the account. — And, on this footing, Thales is ſaid to have inſtituted the *year* among the Greeks. Though that form of the *year* did not hold throughout all Greece. — Add, that the Jewiſh, Syrian, Roman, Perſian, Ethiopic, Arabic, &c. *years*, were all different.

In effect, conſidering the poor ſtate of aſtronomy in thoſe ages, it is no wonder different people ſhould diſagree in the calculus of the ſun's courſe. — We are even aſſured by Diod. Siculus, Lib. I. Plutarch. *in Numa*, and Pliny, Lib. VII. c. 48. that the Egyptian *year* itſelf was at firſt very different from that now repreſented. See *Egyptian* YEAR, *Roman* YEAR, *Jewiſh* YEAR, &c.

Solar YEAR, is the interval of time wherein the ſun finiſhes his courſe through the zodiac; or, wherein he returns to the ſame point thereof whence he had departed. See SUN.

This, according to our account, is 365 days, 5 hours, 49 minutes; though ſome aſtronomers make a few ſeconds, and ſome a whole minute leſs; as Kepler, for inſtance, who makes it 365 days, 5 hours, 48 minutes, 57 ſeconds, 39 thirds. — Ricciolus, 365 days, 5 hours, 48 minutes; and Tycho Brahe, 365 days, 5 hours, 48 minutes.

The *ſolar year* is either *aſtronomical*, or *civil*.

Solar aſtronomical YEAR, is that determined preciſely by the obſervations of aſtronomy; and is of two kinds, *tropical*, and *ſiderial* or *aſtral*.

Tropical, or *Natural* YEAR, is the time which the ſun employs in paſſing through the zodiac; which, as before obſerved, is 365 days, 5 hour, 49 minutes.

Siderial or *aſtral* YEAR, is the ſpace of time wherein the ſun, going from any fixed ſtar, returns to the ſame. — This conſiſts of 365 days, 6 hours, 10 minutes. See SIDERIAL.

Civil YEAR, is that form of *year* which each nation has contrived to compute time by: or the *civil* is the tropical *year*, conſidered as only conſiſting of a certain number of whole days; the odd hours and minutes being ſet aſide, to render the computation of time, in the common occaſions of life, more eaſy. See CIVIL.

Hence, as the *tropical year* is 365 days, 5 hours, 49 minutes, the *civil year* is 365 days. — And hence, alſo, as it is neceſſary to keep pace with the heavens, it is required that every fourth *year* conſiſts of 366 days.

Hence, laſtly, the *civil year* is either *common*, or *biſſextile*.

The common civil YEAR, is that conſiſting of 365 days. — This, therefore, has ſeven months of 30 days each, and five of 31 days.

Biſſextile, or *Leap* YEAR, is that conſiſting of 366 days; or has one day extraordinary; which day is called the *intercalary*, or *biſſextile day*. See INTERCALARY, and LEAP-*Year*.

This intercalary, or additional day to every fourth *year*, was firſt appointed by Julius Cæſar; who, to make the *civil years* keep pace with the tropical ones, contrived that the ſix hours which the former came ſhort of the latter, ſhould, in four *years*, make a whole day, and be added after the twenty-fourth of February, which was their ſixth of the calends of March.

Hence, as, in that *year*, they reckoned this day twice over, or had *bis ſexto calendas*, the *year* itſelf came to be called *bis ſextus*, and *biſſextile*.

The intercalary day, however, among us, is not got in by telling the twenty fourth of February twice over; but by adding a day after the twenty eighth of February; which month, that *year*, comes to contain twenty nine days. See BISSEXTILE.

A further reformation, in this *year*, was made by pope Gregory. See *Gregorian* YEAR.

Lunar YEAR, is a ſyſtem of twelve lunar months. See LUNAR.

Hence, from the two kinds of ſynodical lunar months, there ariſe two kinds of *lunar years*; the one *aſtronomical*, the other *civil*.

Lunar aſtronomical YEAR, conſiſts of twelve lunar ſynodical months; and therefore contains 354 days, 8 hours, 48 minutes, 38 ſeconds, 12 thirds. See SYNODICAL.

Lunar civil YEAR, is either *common*, or *emboliſmic*.

The common Lunar YEAR, conſiſts of twelve lunar civil months; and therefore contains 354 days.

The emboliſmic, or *intercalary* YEAR, conſiſts of thirteen lunar civil months; and therefore contains 384 days. See EMBOLISMIC.

Note, as the difference between the common lunar civil *year* and the tropical *year* is 11 days, 5 hours, and 49 minutes; to have the former keep pace with the latter, there are 34 months of 30 days, and 4 months of 31 days each, to be inſerted in every 100 lunar *years*; which ſtill leave behind them an appendix of 4 hours, 21 minutes, which in ſix centuries make nearly a day more.

Thus far we have conſidered *years* and months, with a view to the principles of aſtronomy, whereon the diviſion is founded. — By this, the various forms of civil *years* that have antiently obtained, or ſtill do obtain, in divers nations, are to be examined.

Antient Roman YEAR, was the *lunar year*, which, as firſt ſettled by Romulus, only conſiſted of ten months; *viz.* 1°. March, containing 31 days. 2°. April, 30. 3°. May, 31. 4°. June, 30. 5°. Quintilis, 31. 6°. Sextilis, 30. 7°. September, 30. 8°. October, 31. 9°. November, 30. 10°. December, 30; in all 304 days; which came ſhort of the true lunar *year* by 50 days; and of the ſolar, by 61 days.

Hence, the beginning of Romulus's *year* was vague, and unfixed to any preciſe ſeaſon; which inconvenience to remove, that prince ordered ſo many days to be added yearly as would make the ſtate of the heavens correſpond to the firſt month, without incorporating theſe additional days, or calling them by the name of any month.

Numa Pompilius corrected this irregular conſtitution of the *year*, and compoſed two new months, January and February, of the days that were uſed to be added to the former *year*. — Thus, Numa's *year* conſiſted of twelve months; *viz.* 1°. January, containing 29 days. 2°. February, 28. 3°. March, 31. 4°. April, 29. 5°. May, 31. 6°. June, 29. 7°. Quintilis, 31. 8°. Sextilis, 29. 9°. September, 29. 10°. October, 31. 11°. November, 29. 12°. December, 29; in all 355 days; which exceeds the quantity of a lunar civil *year* by one day; and that of a lunar aſtronomical *year*, by 15 hours, 11 minutes, 24 ſeconds; but came ſhort of the common ſolar *year* by ten days; ſo that its beginning was vague, and unfixed.

Numa, however, deſiring to have it fixed to the winter-ſolſtice, ordered 22 days to be intercalated in February every ſecond year, 23 every fourth, 22 every ſixth, and 23 every eighth *year*.

But this rule failing to keep matters even, recourſe was had to a new way of intercalating; and inſtead of twenty three days every eighth *year*, only fifteen were added; and the care of the whole committed to the pontifex maximus; who, neglecting the truſt, let things run to the utmoſt confuſion. — And thus the Roman *year* ſtood till Julius Cæſar made a reformation. See *Julian* YEAR.

For the manner of reckoning the days of the Roman months, ſee CALENDS, NONES, and IDES.

Julian YEAR, is a ſolar *year*, containing, commonly, 365 days; though every fourth *year*, called *biſſextile*, contains 366. See BISSEXTILE.

The months, *&c.* of the Julian *year* ſtand thus: 1°. January, 31 days. 2°. February, 28. 3°. March, 31. 4°. April, 30. 5°. May, 31. 6°. June, 30. 7°. July, 31. 8°. Auguſt, 31. 9°. September, 30. 10°. October, 31. 11°. November, 30. 12°. December, 31. — But, every *biſſextile year*, a day is added after the 28th of February; which month, then, contains 29 days.

The aſtronomical quantity, therefore, of the *Julian year* is 365 days, ſix hours, which exceeds the true ſolar *year* by eleven minutes; which exceſs, in 131 *years*, amounts to a whole day. — And thus the Roman *year* ſtood, till the reformation made therein by pope Gregory. See *Gregorian* YEAR.

For this form of the *year*, we are indebted to Julius Cæſar; who, in the contrivance thereof, was aſſiſted by Soſigenes, a famous mathematician, called over from Egypt for this very purpoſe; who, to ſupply the defect of ſixty ſeven days, which had been loſt through the fault of the pontifices, and to fix the beginning of the *year* to the winter ſolſtice, made that *year* to conſiſt of fifteen months, or 445 days; which, for that reaſon, is uſed to be called *annus confuſionis*, the *year of confuſion*.

This form of the *year* was uſed in all Chriſtian nations, till the middle of the ſixteenth century; and ſtill continues to be ſo, not only by ſeveral nations (and, among the reſt, by the Engliſh, Swedes, Danes, *&c.*) but alſo by the modern aſtronomers, and chronologers. — For, ſince the error is known, there is no danger from it.

Gregorian YEAR, is the *Julian year* corrected by this rule; that, whereas on the common footing, every ſecular or hundredth *year*, is biſſextile; on the new footing, three of them are common *years*, and only the fourth biſſextile.

The error of eleven minutes in the *Julian year*, little as it was, yet, by being repeated over and over, at length became conſiderable; and from the time when Cæſar made his correction, was grown into thirteen days, by which means the equinoxes were greatly diſturbed. — To remedy this irregularity, which was ſtill a-growing, pope Gregory XIII. called together the chief aſtronomers of his time, and concerted this correction; and, to reſtore the equinoxes to their place, threw out the ten days that had been got from the time of the council of Nice, and which had ſhifted the fifth of October to the fifteenth.

In the *year* 1700, the error of ten days was grown to eleven; upon which the Proteſtant ſtates of Germany, to prevent further confuſion, accepted the Gregorian correction. See CALENDAR, STYLE, &c.

Yet is the *Gregorian year* far from being perfect; for we have ſhewn, that, in four centuries, the *Julian year* gains three days, one hour, twenty minutes: but it is only the three days are kept out in the *Gregorian year*; ſo that here is ſtill an exceſs of one hour, twenty minutes, in four centuries; which, in ſeventy two centuries amounts to a whole day. See EASTER.

Egyptian YEAR, called alſo the *year of Nabonaſſar*, is the ſolar *year* of 365 days, divided into twelve months, of thirty days each, beſides five intercalary days added at the end.

The names, *&c.* of the months are as follows: 1°. Thot. 2°. Paophi. 3°. Athyr. 4°. Chojac. 5°. Tybi. 6°. Mecheir. 7°. Phamenoth. 8°. Pharmuthi. 9°. Pachon. 10°. Pauni. 11°. Epiphi. 12°. Meſori; beſide the ημεραι επαγομεναι.

Hence, as the *Egyptian year*, in every four *years*, loſes a whole day of the *Julian year*, its beginning, in the ſpace of 460 *years*, runs through every part of the *Julian year*; which ſpace elapſed, they meet again.

This *year* is uſed by Ptolemy in his *Almageſt*; ſo that the knowledge thereof, is of uſe in aſtronomy, for comparing the antient obſervations with the modern.

The antient Egyptians, we are told by Diodorus Siculus, Lib. I. Plutarch, in the life of *Numa*, and Pliny, Lib. VII. c. 48. meaſured their *years* by the courſe of the moon. — At firſt, they were only one month; then three; then four, like that of the Arcadians; and then ſix, like that of the people of Acarnania — Thoſe authors add, that it is on this account, they reckon ſuch a vaſt number of *years* from the beginning of the world; and that in the hiſtory of their kings, we meet with ſome who lived 1000, or 1200 *years*.

But Herodotus is ſilent on this point: he only ſays, that the Egyptian *year* conſiſted of 12 months, as we have above repreſented it. — Beſides, we learn from ſcripture, that, from the times of the flood, the *year* was compoſed of 12 months: Cham, conſequently, and his ſon Miſraim, the founder of the Egyptian monarchy, muſt have had that cuſtom; and it is no way probable his deſcendants ſhould alter it. — Add, that Plutarch ſpeaks of it with a deal of uncertainty; and as no more than a report: and Diod. Siculus, as only a conjecture of I know not what authors, whom he does not name; and who, in all probability, might have framed this hypotheſis, to reconcile the Egyptian chronology with that of ſome other nations.

F. Kircher, however, maintains, that beſides the ſolar *year*, there were ſome of the names, or cantons of Egypt, who uſed a lunar one; and that, in the remoteſt ages, there were ſome who took a revolution of the moon, that is, a month, for a *year*; and others, who finding the *year* too ſhort, made it two months, others three, and others four, *&c. Oedip. Egypt.* Tom. II. p. 252.

A late author obſerves, that Varro has affirmed of all nations, what we have here quoted of the Egyptians; and adds, that Lactantius takes him to taſk on that ſubject. — We do not know in what places of Varro, or Lactantius he has ſeen this: all we can ſay, is, that Lactantius, *Divin. Inſt.* Lib. II. c. 13. where he gives Varro's opinion, only repreſents him as ſpeaking of the Egyptians. — However, S. Auguſtin, *de Civit. Dei*, *l.* 15. c. 14. ſhews, that the *years* of the patriarchs mentioned in ſcripture, are like ours, and not one of ours equal to ten of theirs, as, it appears, had been the opinion of ſome people.

Upon the Egyptians being ſubdued by the Romans, they received the *Julian year*; though with ſome alteration; for they ſtill retained their antient months, with the five ημεραι επαγομεναι, and, every fourth *year*, intercalated another day between the 28th and 29th of Auguſt. — Add, that the beginning of their *year* anſwered to the 29th of Auguſt of the *Julian year*.

This *year*, thus reformed, was called the *annus Actiacus*, as being inſtituted ſoon after the battle of Actium. See ACTIAN.

Antient Greek YEAR, was lunar; conſiſting of 12 months, which at firſt was 30 days a-piece, then alternately 30, and 29 days, computed from the firſt appearance of the new moon; with the addition of an emboliſmic month of 30 days, every 3d, 5th, 8th, 11th, 14th, 16th, and 19th *years* of a cycle of 19 *years*; in order to keep the new and full moons, to the ſame terms or ſeaſons of the *year*. See EMBOLISMIC.

Their *year* commenced at the full moon next after the ſummer ſolſtice. — The order, *&c.* of their months was thus: 1°. Ἑκατομβαιων, containing 29 days. 2°. Μεταγειτνιων, 30. 3°. Βοηδρομιων, 29. 4°. Μαιμακτηριων, 30. 5°. Πυανεψιων, 29. 6°. Ποσειδεων, 30. 7°. Γαμηλιων, 9. 8°. Ανθεστηριων, 30. 9°. Ελαφηβολιων, 29. 10°. Μουνυχιων, 30. 11°. Θαργηλιον, 29. 12°. Σκιροφοριων, 30.

The Macedonians had other names for their months: ſo had the Syro-Macedonians, Smyrnæans, Tyrians; ſo alſo the Cypriots, Paphians; and ſo the Bithynians, *&c.* See *Macedonic* YEAR.

Antient Macedonian YEAR, is a lunar *year*, only differing from the Attic, in the names and order of the months; the firſt Macedonian month, agreeing with the Attic mæmacterion. — The months ſtand thus: 1°. Διος, 30 days. 2°. Απελλαιος, 29. 3°. Αυδυναιος, 30. 4°. Περιτιος, 29. 5°. Δυστρος, 30. 6°. Ξανθικος, 29. 7°. Αρτεμισιος, 30. 8°. Δαισιος, 29. 9°. Πανεμος, 30. 10°. Λωος, 29. 11°. Γορπιαιος, 30. 12°. Ὑπερβερεταιος, 29.

Modern Macedonian YEAR, is a ſolar *year*, whoſe beginning is fixed to the firſt of January of the *Julian year*, with which it perfectly agrees.

This year was particularly called the *Attic year*; and the intercalary month, after poſideon, was called ποσειδεων β, or *latter poſideon*.

Antient Jewiſh YEAR, is a lunar *year*, conſiſting, commonly, of eleven months, which alternately contain 30 and 29 days.

It was made to agree with the ſolar *year*, either by the adding of 11, and ſometimes 12 days at the end of the *year*, or by an emboliſmic month.

The names and quantities of the months ſtand thus: 1°. Niſan, or Abib, 30 days. 2°. Jiar, or Zius, 29. 3°. Siban, or Siwan, 30. 4°. Thamuz, or Tamuz, 29. 5°. Ab, 30. 6°. Elul, 29. 7°. Tiſri, or Ethanim, 30. 8°. Marcheſvam, or Bul, 29. 9°. Ciſleu, 30. 10°. Tebeth, 29. 11°. Sabat, or ſchebeth, 30. 12°. Adar, in the emboliſmic *year*, 30. Adar, in the common *year*, was but 29. Note, in the defective *year*, Ciſleu was only 29 days; and in the redundant *year*, Marcheſvam was 30.

Modern Jewiſh YEAR, is likewiſe lunar, conſiſting, in common *years*, of 12 months, but of 13 in emboliſmic *years*; which, in a cycle of 19 *years*, are the 3d, 6th, 8th, 11th, 14th, 17th, and 19th. — Its beginning is fixed to the new moon next after the autumnal equinox.

The names, &c. of the months are, 1°. Tiſri, containing 30 days. 2°. Marcheſvan, 29. 3°. Ciſleu, 30. 4°. Tebeth, 29. 5°. Schebeth, 30. 6°. Adar, 29. 7°. Veadar, in the emboliſmic *year*, 30. 8°. Niſan, 30. 9°. Ijar, 29. 10°. Sivan, 30. 11°. Thamuz, 29. 12°. Ab, 30. 13°. Elul, 29.

Syrian YEAR, is a ſolar *year*, having its beginning fixed to the beginning of October in the Julian *year*; from which it only differs in the names of the months, the quantities being the ſame; as follows:

1°. Tiſhrin, anſwering to our October, and containing 31 days. 2°. Latter Tiſhrin, containing, like our November, 30. 3°. Canun, 31. 4°. Latter Canun, 31. 5°. Shabat, 28. 6°. Adar, 31. 7°. Niſan, 30. 8°. Aiyar, 31. 9°. Haziram, 30. 10°. Tamuz, 31. 11°. Ab, 31. 12°. Elul, 30.

Perſian YEAR, is a ſolar *year*, of 365 days, conſiſting of 12 months of 30 days each, with 5 intercalary days added at the end.

The months are as follow: 1°. Aſrudia meh. 2°. Ardihaſcht meh. 3°. Cardi meh. 4°. Thir meh. 5°. Merded meh. 6°. Schabarir meh. 7°. Mehar meh. 8°. Aben meh. 9°. Adar meh. 10°. Di meh. 11°. Behen meh. 12°. Affirer meh.

This *year* is called the *yezdegerdic year*, to diſtinguiſh it from the fixed ſolar *year*, called the *gelalean year*, which the Perſians began to uſe in the *year* 1079; and which was formed by an intercalation made ſix or ſeven times in four *years*, and then once every fifth *year*.

The yezdegerdic *year*, it may be obſerved, is the ſame with Nabonaſſar's *year*. — As to the gelalean *year*, it is abſolutely the beſt and juſteſt of all the civil *years* yet invented, as being found, by calculation, to keep the ſolſtices and equinoxes preciſely to the ſame days, and anſwering very accurately to the ſolar motions; which no other civil *year* does, not even the Gregorian, for want of ſo commodious an intercalation.

Arabic, and *Turkiſh* YEAR, is a lunar *year*, conſiſting of 12 months, which contain, alternately, 30, and 29 days.

Though, ſometimes it contains 13 months; the names, &c. whereof are as follow: 1°. Muharram, containing 30 days. 2°. Saphar, 29. 3°. Rabia, 30. 4°. Latter Rabia, 29. 5°. Jomada, 30. 6°. Latter Jomada, 29. 7°. Rajab, 30. 8°. Shaaban, 29. 9°. Samadan, 30. 10°. Shawal, 29. 11°. Dulkaadah, 30. 12°. Dulheggia, 29; and in the emboliſmic *year*, 30. — An intercallary day is added every 2d, 5th, 7th, 10th, 13th, 15th, 18th, 21ſt, 24th, 26th, 29th, in a cycle of 29 *years*.

Ethiopic YEAR, is a ſolar *year* perfectly agreeing with the Actiac, except in this, that the names of the months are different. — It commences with the Egyptian *year*, on the 29th of Auguſt of the Julian *year*.

Its months are, 1°. Maſcaram. 2°. Tykympt. 3°. Hydar. 4°. Tyſhas. 5°. Tyr. 6°. Jacatit. 7°. Magabit. 8°. Mijazia. 9°. Ginbat. 10°. Syne. 11°. Hamle. 12°. Hahaſe. Intercalary days 5.

Metonic YEAR.	See the article	METONIC.
Actian YEAR.		ACTIAN.
Attic YEAR.		*Macedonian* YEAR.
Yezdegerdic YEAR.		*Perſian* YEAR.
Gelalean YEAR.		*Perſian* YEAR.

Nabonaſſar's YEAR. See EGYPTIAN *Year*, and NABONASSAR.

Sabbatic YEAR, *Annus ſabbaticus*, among the antients, was every ſeventh *year*; during which, the Jews let their land lie at reſt. See SABBATH.

Every ſeventh *ſabbatic year*, *i. e.* every 49th *year*, was called the *year of jubilee*; and held with ſolemnity extraordinary. See JUBILEE.

Anomaliſtical YEAR.	See the article	ANOMALISTICAL.
Climacteric YEAR.		CLIMACTERIC.
Emergent YEAR.		EMERGENT.
Enneatical YEAR.		ENNEATICAL.
Holy YEAR,		HOLY.
Platonic, or *great* YEAR.		PLATONIC.
YEAR *of the Hegira*.		HEGIRA.

New YEAR's *day*, or the day wherein the *year* commences, has always been very different, in different nations, and yet in all held in great veneration.

Among the Romans, the firſt and laſt day of the *year* were conſecrated to Janus; on which account it was, that they repreſented him with two faces.

To them we owe the ceremony of wiſhing *a happy new year*; which appears to be very antient. — Before the firſt day was ſpent, they not only viſited and complimented each other, but alſo preſented ſtrenæ, and offered vows to the gods for the preſervation of each other. — Lucian repreſents it as a practice of a very antient ſtanding, even in his time; and refers it to Numa. See STRENÆ, VOW, &c.

Ovid intimates the ſame ceremony, in the beginning of his *Faſti*.

> *Poſtera lux oritur, linguiſque animiſque favete:*
> *Nunc dicenda bono, ſunt bona verba die.*

And Pliny, more expreſly, Lib. XXVIII. cap. 1. *Primum anni incipientis diem lætis precationibus invicem fauſtum ominantur*.

The civil, or *legal* YEAR, in England, commences on the day of the annunciation, *i. e.* on the 25th day of March; though the hiſtorical *year* begins on the day of the circumciſion, *i. e.* the firſt of January, on which day the German and Italian *year* alſo begins. — Stow obſerves, that William the conqueror, having been crowned on the firſt of January, that thenceforth became the firſt of the *year* for hiſtorians, &c. Though, in all civil affairs, they retained the antient manner of accounting, which began with the 25th of March. See CIRCUMCISION, NATIVITY, &c.

The part of the *year* between thoſe terms is uſually expreſſed both ways, as 172$\left.\begin{matrix}4\\5\end{matrix}\right.$ or 172$\frac{4}{5}$. — Since the conqueror, the king's patents, charters, proclamations, &c. are uſually dated by the *year* of the king's reign.

The church, as to her ſolemn ſervice, begins the *year* on the firſt Sunday in advent, which is always that next S. Andrew's day, or the 30th of November. See ADVENT.

The Jews, as moſt other nations of the eaſt, had a civil *year*, which commenced with the new moon in September; and an eccleſiaſtical *year*, which commenced from the new moon in March.

The French *year*, during the reigns of the Merovingian race, began on the day wherein the troops were reviewed; which was the firſt day of March. — Under the Carlovingians it began on Chriſtmas-day; and, under the Capetians, on Eaſter-day; which, therefore, varied between the 22d of March, and the 25th of April.

And this is ſtill the beginning of the French eccleſiaſtical *year*. — But for the civil, Charles IX. appointed in 1564, that for the future it ſhould commence on the firſt of January.

The Mahometans begin their *year* the minute the ſun enters aries. — The Perſians in the month anſwering to our June. The Chineſe, and moſt of the Indians, begin it with the firſt moon in March. — The Brachmans begin it with the new moon in April; on which day they hold a feaſt called *ſamwat ſaradi pauduga*, *q. d.* feaſt of *New-year's day*. — The Mexicans, according to d'Acoſta, begin the *year* on our 23d of February, when the leaves begin to grow green. — Their *year* conſiſts of 18 months, 20 days each: which making 360 days, the remaining five days are ſpent in mirth, and no buſineſs ſuffered to be done, nor even any ſervice at the temples. — Alvarez relates much the ſame of the Abyſſinians; who begin their *year* on the 26th of Auguſt, and have five idle days at the end, which they call *pagomen*. — At Rome there are two ways of computing the *year*; the one beginning at the nativity of our Lord: this the notaries uſe, dating à nativitate. The other in March, on occaſion of the incarnation; and it is by this the bulls are dated, anno incarnationis. — The Greeks begin their *year* of the world from the firſt of September. See INCARNATION.

Years are alſo diſtinguiſhed with regard to the epocha's whence they are numbered: thus, *years of our Lord*, are thoſe reckoned from the birth of Jeſus Chriſt, which are now 1727. — *Years of the world*, are thoſe elapſed ſince the creation, which Scaliger makes to be 5676. — *Years of Rome*, *of the Hegira*, *of Nabonaſſar*, &c. See the difference between theſe *years*, under the article EPOCHA.

YEAR *and Day*, in law, &c. is a time that determines a right in many caſes, and is in ſome an uſucaption, and in others a preſcription. See PRESCRIPTION, &c.

Thus, in the caſe of an eſtray, if the owner, proclamation being made, challenge it not within a *year and day*, it is forfeit. In like manner is the *year and day* given in caſes of appeal, of deſcent, of entry or claim, of non-claim upon a fine, or writ of right, of the death of a man ſore bruiſed, or wounded; of protections, eſſoins in reſpect of the king's ſervice; of a wreck, &c. See APPEAL, WRECK, &c.

YEAR *Day and Waſte*, *annus dies & vaſtum*, is a part of the king's prerogative, whereby he challenges the profits of the lands and tenements of perſons attainted for petit-treaſon, or felony, for the ſpace of a *year* and a day; whoſoever is lord of the manour to which they belong.

Not only this, but at the end thereof he may waſte the tenements, deſtroy the houſes, root up the woods, gardens, paſture, and plow up the meadows, unleſs the lord of the fee agree with him for the redemption of ſuch waſte. — After the *year day and waſte*, they are to be reſtored to the lord of the fee.

YEARN, in hunting, ſignifies to bark, as beagles properly do, at their prey. See HUNTING.

YELK. See the article YOLK.

YELLOW*, a bright colour, reflecting the moſt light of any after white. See COLOUR, and LIGHT.

* The word is formed from the Italian *giallo*, or the German *geel*, which ſignifies the ſame; or from the Latin *galbanus*, bright, gay.

There are divers *yellow* ſubſtances that become white, upon wetting and drying them again ſeveral times at the ſun: As wax, linnen-cloth, &c. See BLEACHING; ſee alſo HAIR, &c.

The ſame bodies, if they be already white, and continue a long time in the air without being wetted, turn *yellow*.

Paper and ivory applied near the fire, become ſucceſſively *yellow*, red, and black. — Silk, when turned *yellow*, is whitened again with the fumes of ſulphur. See WHITE, WHITENESS, &c.

YELLOW, in dying, is one of the five ſimple and mother colours. See COLOUR, and DYING.

For the fineſt *yellows*, they firſt boil the cloth, or ſtuff, in allum and pot-aſhes; then give the colour with the weld, or would. See WELD.

Turmeric likewiſe gives a good *yellow*, though not the beſt. There is alſo an Indian wood that gives a *yellow* colour bordering on gold. — A fourth ſort of *yellow* is made with ſavory, but this is inferior to them all.

Greens are uſually made of *yellow* and blue mixed. See GREEN. — With *yellow*, madder red, and goat's-hair prepared with madder, are made the golden *yellow*, aurora, panſy, nacarate, iſabella, and chamois-colour; which are all caſts or ſhades of *yellow*.

Painters and enamellers make their *yellow* of maſſicot, which is ceruſs raiſed by the fire; or with yellow oker. See ENAMEL, and ENAMELING. — Limners and illuminers make it with ſaffron, and French berries, orcanette, &c.

Brantom obſerves, it was antiently the cuſtom to paint a man's door *yellow*, and ſtrew his houſe with ſalt; to declare him traytor to his king.

YELLOW, or *French berries*. See the article AVIGNON.

YELLOW *Jaundice*. See the article JAUNDICE.

YELLOWS, a diſeaſe in a horſe, much the ſame with that called *jaundice* in man. See JAUNDICE.

There are two kinds of it, the *yellow*, and the *black*.

The *yellows* is a very frequent diſorder, ſay the farriers, ariſing from obſtructions in the gall-pipe, or the little ducts opening into the ſame, occaſioned by viſcid or gritty matters lodged therein, or a plenitude and compreſſion of the neighbouring blood-veſſels; by means whereof, the matter that ſhould be turned into gall, is taken up by the vein, and carried into the maſs of blood; which it tinctures *yellow*: ſo that the eyes, inſide of the lips, and other parts of the mouth capable of ſhewing the colour, appear *yellow*.

The effect whereof is, that a horſe will be dull, heavy, and low-ſpirited; eaſily jaded by the leaſt labour or exerciſe, &c.

YEOMAN, the firſt or higheſt degree among the commons, or plebeians of England; next in order to the gentry. See COMMONS, and GENTLEMAN.

The *yeomen* are properly the freeholders, who have land of their own; ſo called from the Saxon *gemane*, or *geman*, common. — The word *yongman*, is uſed for *yeoman* in the ſtatute 33 Hen. VIII. and in an old deeds it is ſometimes alſo written *jeman*, which, in the German, ſignifies any body.

According to Sir Thomas Smith, a *yeoman* is a free-born Engliſhman, who can lay out of his own free-land in yearly revenue, to the ſum of forty ſhillings ſterling.

The *yeomanry* of England, are capable of holding lands of their own to a good value; are adjudged capable of certain offices, as conſtables, church-wardens, jury-men, to vote in elections to parliament, and to ſerve in the army.

The *yeomen* were famous, in antient times, for military valour, being particularly expert at the management of the bow; whence the infantry was compoſed chiefly of them. See ARCHER.

In many caſes, the law conceives a better opinion of the *yeomanry*, that occupy lands, than of tradeſmen, artificers, &c. See FREEHOLDER.

By a ſtatute, 2 Henry IV. it is enacted, That no *yeoman* ſhall take or wear a livery of any lord, upon pain of impriſonment, and a fine at the king's pleaſure. See LIVERY.

YEOMEN, is alſo a title of office in the king's houſhold, of a middle place, or rank, between an uſher and a groom. See USHER, and GROOM.

Such are the — *Yeoman* of the pantry; *yeoman* of the ſcullery; *yeoman* of the ſtirrop, &c. See HOUSHOLD.

YEOMEN *Warders*. See WARDERS *of the Tower*.

YEOMEN *of the Guard*, properly called *yeomen of the Guard of the king's body*, were antiently 250 men, and of the beſt rank under gentry, and of larger ſtature than ordinary; every one being required to be ſix feet high. See GUARD.

At preſent they are but one hundred *yeomen* in conſtant duty; and ſeventy more not in duty; and as any of the hundred die, his place is ſupplied out of the ſeventy.

They go clad after the manner of King Henry the eighth's times. — They had diet as well as wages, when in waiting, but this was taken off in the reign of queen Anne.

Their attendance is on the ſovereign's perſon, both at home, and abroad; and they have a room allotted for them only, called the *guard-chamber*.

The officers and *yeomen* are at the diſpoſal of the captain; but the captain at the appointment of the king.

YERKING, in the manage, is when a horſe ſtrikes with his hind legs, or flings and kicks back with the whole hind quarters; ſtretching out the two legs nearly together, and even to their full extent. See AIR, SALT, &c.

YEST, or *Barm*, a head, or ſcum riſing upon beer, or ale, while working or fermenting in the vat. See BREWING, MALT-*Liquor*, &c.

It is uſed for a leven or ferment in the baking of bread; as ſerving to ſwell or puff it up very conſiderably in a little time, and to make it much lighter, ſofter, and more delicate. — When there is too much of it, it renders the bread bitter. See BAKING.

The uſe of *yeſt* in bread, is but of late ſtanding among us: it is not above eighty years ſince the avarice of the bakers firſt introduced it; and then it was only done by ſtealth. — Though Pliny witneſſes it to have been uſed by the antient Gauls.

The faculty of medicine of Paris, by a decree of the 24th of March 1688, ſolemnly maintained it noxious to the health of the people; yet could not that prevent its progreſs. See BEER, BREWING, &c.

YEZDEGERDIC *Year*. See *Perſian* YEAR.

YGROMETER. See the article HYGROMETER.

YIELDING *and paying*, a law phraſe, formed by corruption from the Saxon *geldan*, or *gildan*, to pay. — Hence, in Domeſday, *gildare* is frequently uſed for *ſolvere*, *reddere*; the Saxon G being eaſily converted into a Y. See GELD, and GILD.

YNCA, YNCAN, or INCA, an appellation antiently given to the kings of Peru, and the princes of their blood; the word ſignifying, literally, *lord*, *king*, *emperor*, and *royal blood*. See INCA.

The king himſelf was particularly called *capac ynca*, *i. e.* great lord. — His wife, *pallas*, and the princes ſimply, *ynca's*. Theſe *ynca's*, before the arrival of the Spaniards, were exceedingly powerful. — Their people revered them to e xceſs, as believing them to be ſons of the ſun, and never to have committed any fault. — If any perſon offended the royal majeſty in the ſmalleſt matter, the city he belonged to was totally demoliſhed.

When they travelled, whatever chamber they lay in on the road, was walled up as ſoon as they departed, that no body might ever enter in after them. — The like was done to the room wherein the king died; in which, likewiſe all the gold, ſilver, and precious furniture were immured, and a new apartment built for his ſucceſſor.

His beloved wives, domeſtics, &c. likewiſe ſacrificed themſelves, and were buried alive in the ſame tomb along with him. See the *Hiſtory of the* Yncas, by Garcilaſſo de la Veſia.

YOAK, or YOKE, in agriculture, a frame of wood, fitted over the necks of oxen; whereby they are coupled together, and harneſſed to the plough, &c. See PLOUGH.

It conſiſts of ſeveral parts; as, the *yoke* properly ſo called, which is a thick piece of wood, lying over the neck; the *bow*, which compaſſes the neck about; the *ſtitchings* and *wreathings*, which hold the bow faſt in the *yoke*; and the *yoke-ring*, and *ox-chain*.

The Romans made the enemies they ſubdued, paſs under the *yoke*, which they called *ſub jugum mittere*: that is, they made them paſs under a ſort of *furcæ patibulares*, or gallows, conſiſting of a pike, or other weapon laid acroſs two others planted upright in the ground. — This done, they treated them with humanity enough, and ſent them home again. See FURCA.

The ſame meaſure was ſometimes dealt them by their enemies upon the ſame occaſion. — Thus Cæſar, Lib. II. obſerves, that the conſul L. Caſſius, had been killed by the Swiſs, his army defeated, and made paſs under the *yoak*.

YOAK *of Land*, *jugata terræ*, in our antient cuſtoms, was the ſpace which a *yoke* of oxen, that is, two oxen, may plough in one day. See HIDE, YARD-*Land*, &c.

Sea-YOAK. See the article SEA.

YOIDES*, or HYOIDES, in anatomy, a bone ſituate at the root of the tongue, and compoſed of divers little bones, united by cartilages which ſometimes oſſify. See HYOIDES.

* It has its name υοειδης, and ſometimes υψιλοειδης, *ypſiloides*, from its reſembling a Greek υ, or upſilon. — Some call it *lambdoides*, as reſembling a lambda inverted.

It is not contiguous to the extremity of any other bone, nor has any articulation with them: on which account, it is not ſhewn in the ſkeletons.

Its uſe is to fortify the baſe or root of the tongue, and facilitate the paſſage of the air into the trachea, and the food into the gullet. — It has five pair of muſcles, which move it together with the tongue. See TONGUE.

YOLK, or **Yelk**, in natural hiſtory, the yellow part in the middle of an egg. See Egg.

The chicken is formed out of, and nouriſhed by the white alone, till it be grown to ſome bulk: after which, the *yolk* ſerves it for nouriſhment; which it likewiſe does, in part, after it is hatched. — For a good part of the *yolk* remains after excluſion; being received into the chicken's belly: and being there reſerved, as in a ſtore-houſe, is by the ductus inteſtinalis, as by a funnel, conveyed into the guts, and ſerves inſtead of milk. *Willugh. Ornithol.* Lib. I. c. 3. — This was even known to Pliny: *Iſpſum animal ex albo liquore ovi corporetur: cibus ejus in luteo eſt.* Lib. X. c. 53.

YOUNG. See Generation, Conception, Gestation, Embryo, Foetus, Delivery, Child, &c. ſee alſo Storge, &c.

In the army, that regiment or officer, is ſaid to be the *younger*, *junior*, which was laſt raiſed, or whoſe commiſſion is of lateſt date, whatever be the age of the man, or however long he may have ſerved in other capacities.

YOUNKERS, among ſailors, are the *younger* ſailors, otherwiſe called *foremaſt-men*; whoſe buſineſs is to take in the top-ſails, furl the ſails, ſling the yards, &c.

YOUTH, *Adoleſcence.* See Age, and Adolescence.

YPSILOIDES, ΥΨΙΛΟΕΙΔΗΣ, in anatomy, the third genuine ſuture of the cranium; thus called from its reſembling a Greek *y*, or upſilon. See Suture.

Some alſo call it λαμϐδοειδης, *lambdoides.* See Lambdoides.

There is alſo a bone at the root of the tongue, called *ypſiloides*, and *yoides.* See Yoides.

YQUETAYA, in natural hiſtory, a plant in Braſil, long uſed as a medicine in that country; and lately diſcovered to the Europeans by a French ſurgeon.

It has been ſince found in France, where, being cultivated and examined by M. Marchant, it appears to be a kind of ſcrophulary, or blood-nettle.

It has this remarkable property, that it takes away from ſenna all its ill taſte and ſmell; which property of correcting the infuſion of ſenna, was unknown in the ſcrophulary. See Senna.

To uſe this plant, it muſt be dried ten or twelve days in the ſhade, and afterwards expoſed to the ſun, till quite dry.

Z.

Z, The laſt letter in the alphabet, and one of the double conſonants, both among the Latins and Greeks. See LETTER, and CONSONANT.

Its pronunciation is much more ſoft and obtuſe than the x, which makes Quintilian call it *jucundiſſima*, and *dulciſſima*. — Nevertheleſs, the ſound was not always the ſame as it is now; which is but, as it were, half that of an S. See S.

It had ſomething alſo in it of the d; but only what ſounded very ſmoothly: Thus, *Mezentius* was pronounced, as if it had been *Medſentius*, &c. See D.

The Z had alſo an affinity with the g: Thus Capella; *z à Græcis venit, licet etiam ipſi primo* g *Græcâ utebantur*. See G.

Z was alſo a numeral letter, ſignifying 2000; according to the verſe:

Ultima z tenens, finem bis milli tenebit.

When a daſh was added a-top $\bar{Z}$, it ſignified two thouſand times two thouſand.

ZAIM, a portion of land, allotted for the ſubſiſtence of a horſe-man in the Turkiſh militia; called alſo *timar*. See TIMAR, and TIMARIOT.

ZAIRAGIA, or ZAIRAGIAH, a kind of divination in uſe among the Arabs; performed by means of divers wheels or circles, placed concentric to one another, and noted with ſeveral letters which are brought to anſwer to each other, by moving the circles according to certain rules. See DIVINATION.

This is alſo called *zaraiah*, by reaſon the circle of this machine, which are called *mutazariat*, *laſlak*, &c. correſpond to the orbs of the planets, and the atmoſpheres of the ſeveral elements.

ZAPATA*, or *Sapata*, a kind of feaſt, or ceremony held in Italy, in the courts of certain princes, on S. Nicholas's day, wherein people hide preſents in the ſhoes or ſlippers of thoſe they would do honour to, in ſuch manner, as they ſurprize them on the morrow when they come to dreſs.

* The word is originally Spaniſh, *zapato*, and ſignifies a ſhoe, or ſlipper.

It is done in imitation of the practice of S. Nicholas, who uſed, in the night time, to throw purſes of money in at the windows, to marry poor maids withal.

F. Meneſtrier has deſcribed theſe *zapatas*, their origin, and different uſages, in his treatiſe *des ballets anciens, & modernes*.

ZEAL, ZELUS, ζηλος, the exerciſe of a warm animated affection, or paſſion for any thing. See PASSION, &c.

Some will have *zeal* to be properly a mixt, or compound ſenſation, where one affection is raiſed or inflamed by another. — On theſe principles, it may be defined an affection ariſing from love and indignation, which cannot bear a thing to be given to another, that a perſon deſires for himſelf, or one whom he loves and favours. — Others make it conſiſt in an eager ſtudy, or deſire to keep any thing inviolate; or a fervour of mind, ariſing from an indignation againſt thoſe who abuſe or do evil to a perſon beloved.

The Greek philoſophers make three ſpecies of *zeal*. — The firſt, of *envy*: the ſecond, of *emulation*, or imitation: the third of *piety*, or devotion; which laſt makes what the divines call *religious zeal*. See EMULATION, &c.

Joſephus ſpeaks much of a party or faction, called the *zealous*, or *zealots*, which aroſe among the Jews during the war with Veſpaſian and Titus. Lib. XIV. c. 6. *Antiq.* and Lib. IV. c. 12. *de Bello Judaico*.

ZECHIN, or ZECCHINO. See the article SEQUIN.

ZEDOARY, ZEDOARIA, a medicinal root, belonging to a plant growing in the Eaſt-Indies, whoſe leaves are like thoſe of ginger, only longer and broader. See ROOT.

Zedoary is of an aſh-colour, has an aromatic, bitteriſh taſte; and is ranked in the claſs of cephalics: but it is alſo reckoned, by many, amongſt the alexipharmics, whereupon it comes to have a place in the capitals; and is even ſaid to prevent infection, by holding it only in the mouth. See ALEXIPHARMIC, &c.

On account of its agreeable bitter, it is alſo preſcribed among ſtomachics; and for its ſpicy warmth, is commended in colics, and hyſterical affections, for promoting the menſes, &c. See AROMATIC.

ZENITH, in aſtronomy, the vertical point; or a point in the heavens directly over our head. See VERTEX, and VERTICAL.

Or, the *zenith* is a point, as Z (*Tab. Aſtronomy, fig.* 52.) in the ſurface of the ſphere, from which a right line, drawn through the ſpectator's head, paſſes through the centre of the earth. See VERTEX, and VERTICAL.

Hence, there are as many *zeniths* as there are different places on the earth, where the heavens may be ſeen; and upon the changing our place, we alſo change our *zenith*.

The *zenith* is alſo called the *pole of the horizon*, becauſe 90 degrees diſtant from each point thereof. See HORIZON.

It is alſo the pole of all the almucantars, or parallels of the horizon, whereby the altitude of the ſtars is eſtimated. See ALMUCANTAR.

Through the *zenith* paſs the vertical-circles, or azimuths. See VERTICAL-*Circle*, and AZIMUTH.

The point diametrically oppoſite to the *zenith*, is called the *nadir*; which is the point directly under our feet. See NADIR.

The nadir is the *zenith* to our antipodes; as our *zenith* is the *nadir* to them. See ANTIPODES.

ZENITH-*Diſtance*, is the complement of the ſun's, or a ſtar's meridian altitude; or what the meridian altitude wants of 90 degrees. See COMPLEMENT, and ALTITUDE.

ZENSUS, in arithmetic, a name which ſome authors give to a ſquare number; or the ſecond power. See SQUARE *Number*, and POWER.

The higher powers they call *zenſizenſus*, *zenſicubus*, *zenſizenzenſus*, *zenſurdeſolidus*, &c. See POWER.

ZEPHYRUS*, or ZEPHYR, the weſt-wind; a wind blowing from that cardinal point of the horizon oppoſite to the eaſt. See WEST, WIND, and CARDINAL-*Point*.

* The word is Greek, ζεφυρος. — The poets perſonify it.

It is alſo called *favonius*, and *occidens*; and by many confounded with *africus*.

ZEST, the woody, thick ſkin, quartering the kernel of a walnut. — Some phyſicians preſcribe *zeſt*, dried and taken with white-wine, as a remedy againſt the gravel.

The word is alſo uſed for a chip of orange or lemon-peel; ſuch as is uſually ſqueezed into ale, wine, &c. to give it a flavour.

Hence, to *zeſt* an orange or lemon, among confectioners, is to cut the peel from top to bottom into ſmall ſlips, as thin as poſſible.

ZETA*, or ZETECULA, a little cloſet, or withdrawing-chamber, with pipes running along the walls, to receive, from below, either the cool air, or ſteam of warm water. See CALEDUCT, HYPOCAUSTUM, &c.

* The word is formed either from ζειν, to be warm; or of ζην, *vivere*, to live, on account of the uſe made hereof for love and enjoyment.

ZETETICE*, ZETETIC-*Method*, in mathematics, the method made uſe of to inveſtigate, or find the ſolution of a problem. See RESOLUTION, PROBLEM, &c.

* The word is Greek ζητητικη, formed from ζητεω, I ſeek.

The antient Pyrrhanians were ſometimes called *zetetici*, *q. d.* ſeekers. See PYRRHONIANS.

ZEUGMA*, a figure in grammar, whereby an adjective, or verb, which agrees with a nearer word, is alſo, by way of ſupplement, referred to another more remote. See FIGURE.

* The word is Greek, ζευγμα, which literally denotes a joining together: from ζευγνυω, I join.

Thus Terence, *Utinam aut hic ſurdus, aut hæc muta facta ſit*. — So Virgil, *Hic illius arma hic currus fuit*. — In which caſes, the words *facta ſit*, agreeing primarily with *hæc muta*, are alſo made to agree or extend to *hic ſurdus*: and the verb *fuit*, is not only referred to *hic currus*, which is properly reſpects, but further, to *hic illius arma*.

The Latins, it may be here obſerved, take a liberty in conſtruction, which ſome of the nicer critics among the moderns, particularly the French, will not allow in the modern tongues. See CONSTRUCTION.

ZIBETHUM, or ZIBETTA, in naturrl hiſtory, *civet*; a perfume like muſk, contained in a kernelly bladder, in the groin of a civet cat. See CIVET.

ZICZAC. See the article ALLEY *in Ziczac*.

ZINDIKITES, a ſect among the Mahometans, denominated from their leader Zindik, whom Grotius makes to be one of the magi, and a follower of Zoroaſter. See MAGI.

The *Zindikites* believe no providence nor reſurrection. — They allow no other God but the four elements; and in this ſenſe aſſert, that a man, being a mixture of thoſe ſimple bodies, returns to God when he dies.

ZINK, a kind of metalline ſubſtance, very hard, white, and brilliant; and which, though not ductile enough to denominate it a metal, yet ſtretches a little under the hammer. See METAL, DUCTILITY, &c.

Zink is the ſame with what is otherwiſe called *ſpelter*, and uſed to purge and purify tin; much as lead is to purify gold, ſilver, and copper. See SPELTER, and LEAD.

Founders, toy-men, &c. alſo uſe it with turmeric to tinge copper, &c. It gives a fine gold colour, though not a very laſting one. See COPPER, BRASS, &c.

M. Homberg conjectures, with a good deal of probability, that *zink* is no other than a natural mixture of two real metals, *viz.* tin, and iron. — What led him to the opinion was, that *zink* yields preciſely the ſame fumes by the burning-glaſs, as ſuch a mixture does. — Accordingly, he aſſures us, he often ſubſtituted the one for the other; and this always with the very ſame effect.

ZINZIBER, or ZINGIBER. See the article GINGER.

ZIZYPHA, or ZIZYPHUS, a name ſometimes given to a kind of fruit, more uſually called *jujub*. See JUJUB.

ZOCCO, ZOCCOLO, ZOCLE, or SOCLE, in architecture, a kind of ſtand or pedeſtal; being a low, ſquare piece, or member, ſerving to ſupport a buſto, ſtatue, pedeſtal, or the like thing, that needs to be raiſed. — See *Tab. Archit. fig.* 24. *lit.* z. ſee alſo the article SOCLE.

ZODIAC*, ZODIACUS, in aſtronomy, a faſcia, or broad circle, whoſe middle is the ecliptic, and its extremes two circles parallel thereto, at ſuch diſtance from it as to bound, or comprehend the excurſions of the ſun and planets. See SUN, and PLANET.

* The word is formed from the Greek ζωον, animal; by reaſon of the conſtellations therein: others derive it from ζωη, life; from an opinion that the planets have a great influence on animal life.

The ſun never deviates from the middle of the *zodiac*; *i. e.* from the ecliptic; the planets all do, more or leſs. See ECLIPTIC.

Their greateſt deviations, called *latitudes*, are the meaſure of the breadth of the *zodiac*: which is broader, or narrower, as the greateſt latitude of the planets is made more or leſs. — Accordingly, ſome makes it 16, ſome 18, and ſome 20 degrees broad. See LATITUDE.

The *zodiac* cutting the equator obliquely, makes an angle therewith of 23 degrees and an half; or more preciſely of 23°, 29′, which is what we call the *obliquity of the zodiac*, and is the ſun's greateſt declination. See OBLIQUITY, and DECLINATION.

The *zodiac* is divided into twelve portions, called *ſigns*; and thoſe diviſions or ſigns are denominated from the conſtellations which antiently poſſeſſed each part. See CONSTELLATION. — But the *zodiac* being immoveable, and the ſtars having a motion from weſt to eaſt, thoſe conſtellations no longer correſpond to their proper ſigns; whence ariſes what we call the *preceſſion of the equinoxes*. See PRECESSION.

When a ſtar, therefore, is ſaid to be in ſuch *a ſign of the zodiac*, it is not to be underſtood of that ſign, or conſtellation of the firmament; but only of that twelfth part of the *zodiac*, or dodecatemory thereof. See SIGN, STAR, and DODECATEMORY.

Caſſini has alſo obſerved a track in the heavens, within whoſe bounds moſt of the comets, though not all of them, are obſerved to keep; which, for this reaſon, he calls the *zodiac of the comets*. See COMET.

This he makes as broad as the other *zodiac*, and marks it with ſigns or conſtellations like that; as Antinous, Pegaſus, Andromeda, Taurus, Orion, the leſſer Dog, Hydra, the Centaur, Scorpion, and Sagittary.

ZONE*, ZONA, in geography and aſtronomy, a diviſion of the terraqueous globe, with reſpect to the different degree of heat found in the different parts thereof. See EARTH, and HEAT.

The word is Greek ζωνη, q. d. belt, girdle.

A *zone* is the fifth part of the ſurface of the earth, contained between two parallels. See PARALLEL.

The *zones* are denominated *torrid*, *frigid*, and *temperate*.

Torrid ZONE, is a faſcia, or band ſurrounding the terraqueous globe, and terminated by the two tropics. See TROPIC. — Its breadth, therefore, is 46°, 58′. The equator running through the middle of it, divides it into two equal parts, each containing 23°, 29′.

The antients imagined the *torrid zone* uninhabitable. See TORRID.

Temperate ZONES, are two faſciæ, or bands environing the globe, and contained between the tropics, and the polar circles. — The breadth of each is 43°, 2′. See TEMPERATE.

Frigid ZONES, are ſegments of the ſurface of the earth terminated, the one by the antarctic, and the other by the arctic circle. — The breadth of each is 46°, 58′. See ARCTIC, ANTARCTIC, &c.

The difference of *zone* is attended with a great diverſity of phænomena. — 1°. In the torrid *zone*, the ſun paſſes through the zenith twice a year; and his receſs from the equator towards the pole which is above the horizon, is twice a year equal to the heighth of the pole.

2°. In the temperate and frigid *zones*, the leaſt heighth of the pole exceeds the greateſt diſtance of the ſun from the equator; and therefore, to the inhabitants thereof, the ſun never paſſes through the zenith; yet if on the ſame day the ſun riſes at the ſame time to a greater heighth, the heighth of the pole is the leſs, in regard the inclination of the circles of diurnal revolution to the horizon is leſs.

3°, In the temperate and torrid *zones*, the ſun riſes and ſets every natural day, by reaſon the diſtance of the ſun from the pole always exceeds the heighth of the pole; yet every where but under the equator, the artificial days are unequal, and the inequality is the greater as the place is leſs diſtant from the frigid *zone*. See DAY.

4°. Where the temperate *zones* terminate on the frigid, the heighth of the pole is equal to the ſun's diſtance from the pole, when in the neighbouring tropic; and, conſequently, once a year, the ſun, in its diurnal motion, performs an entire revolution, without going down under the horizon.

5°. Every where in a frigid *zone*, the heighth of the pole is greater than the leaſt diſtance of the ſun from the pole; and therefore during ſome revolutions of the earth, the ſun is at a diſtance from the pole leſs than the pole's heighth; and during all that time, does not ſet, nor ſo much as touch the horizon. — Where the diſtance from the pole, as the ſun recedes from it, exceeds the heighth of the pole, or latitude of the place, the ſun riſes or ſets every natural day. See DAY, NIGHT, RISING, SETTING, &c.

ZONNAR*, a kind of belt, or girdle of black leather, which the Chriſtians and Jews of the Levant, particularly thoſe in Aſia, and the territories of the grand ſeignior, are obliged to wear; to diſtinguiſh themſelves from the Mahometans.

* The word is corrupted from the vulgar Greek, a contraction of ζωναριον, of ζωνη, girdle.

It was Motavakkel X. kaliph, of the family of the Abaſſides, that firſt enjoined the Chriſtians, *&c.* to wear the *zonnar*. The ordinance to this effect was publiſhed in the year of the Hegira 235.

Hence, as moſt of the Chriſtians of Syria, Meſopotamia, *&c.* are either Neſtorians, or Jacobites; thoſe ſectaries are often called *Chriſtians of the girdle*. See GIRDLE.

ZOOLOGIA*, ZOOLOGY, a diſcourſe, or treatiſe upon animals, or living creatures. See ANIMAL.

Zoology makes a conſiderable article in natural hiſtory; comprehending what relates to the form, ſtructure, method of living, feeding, propagating, *&c.* of the divers ſpecies of brute creatures. See NATURAL *Hiſtory*.

* The word is Greek ζωολογια, comprehended of ζωη, life, and λογος, ſpeech, diſcourſe.

ZOOPHORIC *Column*, is a ſtatuary column; or a column that bears or ſupports the figure of an animal. See COLUMN.

ZOOPHORUS, or ZOPHORUS, in the antient architecture, the ſame thing with the *frieze* in the modern. See FRIEZE.

It was thus called in Greek, becauſe antiently adorned with the figures of animals; from ζωον, animal, and φερω, I bear. The Greeks ſometimes alſo call the zodiac, *zoophorus*, becauſe of the ſigns and conſtellations therein. See ZODIAC.

ZOOPHYTON*, ZOOPHYTE, in natural hiſtory, a kind of intermediate body, partaking both of the nature of a ſenſitive, and a vegetable.

* The word is Greek ζωοφυτον, compounded of ζωον, animal, and φυτον, plant, *q. d.* plant-animal.

Such is the planta pudica commonly ſuppoſed to be; though with little foundation. See SENSITIVE *Plant*. — The antients alſo reputed ſponges to be *zoophytes*. See SPONGE.

The fœtus, while in the womb, appears to be a real *zoophyte*; growing to the mother by the funiculus umbilicalis, as plants do to the earth by their ſtem. See FOETUS, EMBRYO, &c.

Olearius mentions a very extraordinary ſort of *zoophyte*, called *agnus Scythicus*, or *borametz*, growing near Samara on the Volga. — It is a kind of melon ſhaped like a lamb, all the parts whereof it has, and grows to the earth by a ſtem, which ſerves it for a navel-ſtring. — As it grows, it changes place as much as its ſtem will allow of; and it conſumes and dries up all the graſs where it grows. — When ripe, the ſtem withers, and the body, or fruit, becomes covered with a downy ſkin, which may be dreſſed, and uſed as fur.

Olearius was ſhewn ſome of this ſkin, taken off the covering of a bed; which the people ſwore came from the fruit; but he could hardly believe them: it was covered with a ſoft curled wool, like that of a young lamb. — Scaliger adds, that this fruit lives, and grows, till ſuch time as it wants graſs. — But what credit is to be given to moſt of the marvellous in theſe accounts, may be ſeen in *Philoſoph. Tranſ.* n. 247. p. 461. and n. 390. p. 353. The ſkin ſhewn to Olearius was, in all probability, ſuch as thoſe deſcribed by Breynius from Kæmpfer, in the forecited *Tranſact.* n. 390.

ZOOTOMY*, ΖΩΟΤΟΜΗ, the art or act of diſſecting animals, or living creatures. See DISSECTION.

* The word is compounded of ζωον, animal, and τεμνω, *ſeco*, I cut.

Zootomy amounts to the ſame with *anatomy*, or rather *comparative anatomy*. See ANATOMY, and COMPARATIVE.

ZOPHORIC. See the article ZOOPHORIC.

ZOPHORUS. See the article ZOOPHORUS.

ZOPISSA*, ΖΩΠΙΣΣΑ, *Naval-pitch*; a kind of mixture of pitch and tar, ſcraped off ſhips that have been a long time at ſea. See PITCH, and TAR.

* The word ſeems formed from ζεω, *bullio*, I boil, and πισσα, pitch; *q. d.* boiled, or concocted pitch.

This matter, by being gradually penetrated by the ſalt of the ſea, becomes partaker of its qualities; and being applied to the body, externally, is found reſolutive and deſiccative.

ZUINGLIANS, a branch of antient Reformers or Proteſtants; denominated from their author Uldric, Huldric Zuinglius. See REFORMATION.

This eminent divine was born at Wildehauſen, in the county of Toggenbourg in Switzerland, in 1487. — After having finiſhed his ſtudies in theology, and received the doctor's cap at Baſil, in 1505, he applied himſelf to preaching; and with good ſucceſs.

Soon after Luther had taken up arms againſt Rome, Zuinglius, being then miniſter of the chief church in Zurich, fell in with him; preached openly againſt indulgences, then againſt the interceſſion of the ſaints, then againſt the maſs, the hierarchy, the vows, and celibate of the clergy, abſtinence from fleſh, *&c.*

As to the euchariſt, interpreting *hoc eſt corpus meum* by *hoc ſignificat corpus meum*, he maintained, that the bread and wine were only bare ſignifications, or repreſentations of the body and blood of Jeſus Chriſt; in which he differed from Luther, who held a conſubſtantiation. See LUTHERANS, EUCHARIST, CONSUBSTANTIATION, *&c.*

In a conference held with the deputies of the biſhop of Conſtance, in 1523, he procured moſt of the external ceremonies of religion to be aboliſhed. — As to matters of grace, Zuinglius ſeemed inclined to Pelagianiſm; giving all to free-will, conſidered as acting by the mere ſtrength of nature; in which he differed from Calvin. See CALVINISM, GRACE, PELAGIAN, &c.

ZYGOMA*, ΖΥΓΩΜΑ, in anatomy, a bone of the head, otherwiſe called *os jugale*. See BONE.

* The word is formed from ζευγνυμαι, I join; ſo that *zygoma*, properly ſpeaking, is the juncture of thoſe two bones.

The *zygoma* is no ſingle bone, but an union or aſſemblage of two proceſſes, or eminences of bones; the one from the os temporis, the other from the os malæ. — See *Tab. Anat.* (*Oſteol.*) *fig.* 2. *lit. c*; ſee alſo the article *Os* TEMPORIS.

Theſe two eminences, or apophyſes, are joined together by a ſuture, thence called *zygomaticus*. See ZYGOMATICUS.

ZYGOMATICUS, a muſcle of the head, which has its origin in the proceſſus jugalis, or zygoma; and paſſing obliquely, is inſerted near the angle of the lips. — It helps to draw the lips obliquely upwards. — See *Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 9. *fig.* 6. *n.* 4. *fig.* 7. *n.* 2; ſee alſo LIPS.

ZYGOMATICUS, is alſo an epithet given to the ſuture that binds the two proceſſes of the *zygoma* together. See ZYGOMA, and SUTURE.

ZYMOSIMETER*, an inſtrument propoſed by Swammerdam, in his book *de Reſpiratione*, wherewith to meaſure the degree of fermentation occaſioned by the mixture of different matters; and the degree of heat which thoſe matters acquire in fermenting; as alſo the heat or temperament of the blood of animals. See FERMENTATION, HEAT, &c.

* The word is formed from ζυμωσις, fermentation, and μετρον, meaſure.

ZYTHUM, or ZYTHOS, a ſort of malt liquor, in uſe among the antient Germans. See MALT-*Liquor*.

Matthiolus repreſents the antient *zythum*, and curmi, as the ſame with our beer and ale. See BEER, and ALE.

FINIS.

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Alms, *plow.*		Plow.
Alms, *pure*		Pure.
Caballine *Aloes.*		Aloes.
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Cable, *Rouſing.*		Rouse.
Cable, *Worming.*		Worm.
Cabled *Column.*		Column.
Cadere *Aſſiſa.*		Assisa.
Cæsarius *Partus.*		Partus.
Calculation *of Friction.*		Friction.
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Calculus, *integral.*		Integral.
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Calf, *golden.*		Golden.
Caliper.		Caliber.
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Calx *of Tin.*		Tin.
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Canada *Company.*		Company.
Canalis *Arterioſus.*		Arteriosus.
Cancellariam *mittendam.*		Transcriptio.
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Cannon, *demi*.		Demicannon.
Cannon, *Carriage of*.		Carriage.
Cannon, *Elevation of*.		Elevation.
Cannon, *mounting of*.		Mounting.
Cannon, *nailing of*.		Nailing.
Canon.		Nomocanon.
Canon *regular of Lateran*.		Lateran.
Canonical, *poſt*.		Deuterocanonical.
Canonical *Purgation*.		Purgation.
Canonicate.		Canonry.
Cantic *Quoins*.		Quoin.
Canting *Arms*.		Arms.
Cantoned *Columns*.		Column.
Canvas, *Painting on*.		Painting.
Canula.		Cannula.
Caps, *fulling of*.		Fulling.
Capacity.		Incapacity.
Cape, *doubling of*.		Doubling.
Cape *Verd Company*.		Company.
Capiendo *Apoſtata*.		Apostata.
Capiendo *Excommunicato*.		Excommunicato.
Capillaceous.		Capillary.
Capital *Aid*.		Aid.
Capital *Duumviri*.		Duumviri.
Capital *Triumviri*.		Triumviri.
Capital *Line*.		Line.
Capital, *Axis of*.		Axis.
Capital, *Flower of*.		Flower.
Capite, *Tenant in*.		Tenant.
Capitis *æſtimatio*.		Æstimatio.
Capitis, *Flexor*.		Flexor.
Capitis, *Obliquus*.		Obliquus.
Capitis, *Rectus lateralis*.		Rectus.
Capons *Flight*.		Flight.
Caprinus *Sanguis*.		Sanguis.
Capsella.		Capsula.
Capstan, *heave at*.		Heave.
Captain *Galley*.		Galley.
Captain, *ſecond*.		Second.
Capto *Homine*.		Homine.
Capto *Clerico*.		Clerico.
Carat.		Caract.
Cardan's *Lamp*.		Lamp.
Cardiac *Waters*.		Water.
Cardinal *Canons*.	See	Canon.
Carduus *Water*.		Water.
Cargo.		Supercargo.
Carmen *Ambarvale*.		Ambarvale.
Carmen *Seculare*.		Seculare.
Carnation.		Incarnation.
Carnaval.		Carnival.
Carneæ *Columnæ*.		Columnæ.
Caroli, *Cor*.		Cor.
Carolitic *Column*.		Column.
Carpenters *Level*.		Level.
Carpi *Extenſor*.		Extensor.
Carpi *Flexor*.		Flexor.
Carpus.		Metacarpus, and Pericarpus.
Cartelois.		Quartelois.
Cartilaginous *Fiſh*.		Fish.
Carucarum *Eleemoſyna*.		Eleemosyna.
Carunculæ *Myrtiformes*.		Myrtiformes.
Caryatic *Order*.		Order.
Case, *Action upon*.		Action.
Cases, *oblique*.		Oblique.
Cash-*Book*.		Book.
Casing.		Uncasing.
Cask, *Ullage of*.		Ullage.
Cast *Medals*.		Medal.
Cast, *repairing of*.		Repair.
Casting *Glaſs*.		Glass.
Casting *the hoof*.		Hoof.
Castrensis *Corona*.		Crow.
Castus, *Agnus*.		Agnus *Caſtus*.
Casual *Homicide*.		Homicide.
Casual *Offices*.		Office.
Cat's *Eye*.		Eye.
Catadioptric *Teleſcope*.		Telescope
Catalectic.		Acatalectic, and Hypercatalectic
Catallis *rahabendis*.		Terris.
Catallis *tentis*.		
Categorical *Syllogiſm*.		Syllogism.
Catharsis.		Hypercatharsis, Hypocatharsis.
Cathartic.		Anacathartic.
Catharticum *Linum*.		Linum.
Cathedral, *Chancellor of*.		Chancellor.
Cathedrals, *Vergers of*.		Verger.

Cathetus *of Obliquation*.		Obliquation.
Catoptric *Teleſcope*.		Telescope.
Causa, *Corpus cum*.		Corpus.
Causal *Conjunctions*.		Conjunction.
Cause *of Gravity*.		Gravity.
Cause *of Winds*.		Wind.
Cause *of Continuation of Motion*.		Projectile.
Cause *de Vicinage*.		Common.
Cause, *Challenge upon*.		Challenge.
Cause, *Continent*.		Continent.
Cause, *Procatarctic*.		Procatarctic.
Caustic *Oil of Arſenic*.		Arsenic.
Caustic *Water*.		Water.
Cautelam, *abſolutio ad*.		Absolutio.
Caxton *Plough*.		Plough.
Cele.		Bronchocele, Bubonocele, Cirsocele, Enterocele, Hydrocele, Omphalocele, Oscheocele, Pneumatocele, Spermatocele, and Steatocele.
Celestial *Obſervations*.		Coelestial.
Celestial *Harmony*.		Harmony.
Celestial *Magic*.		Magic.
Celestial *Muſic*.		Music.
Cemetery.		Coemeterium.
Centaur.		Bucentaur, and Hippocentaur.
Center, *Angle at*.		Angle.
Center, *Angle without*.		
Center, *Equation of*.		Equation.
Centers, *Dials without*.		Dial.
Centinel.		Sentinel.
Central *Line*.		Line.
Centre.		Center.
Centric.		Concentric, Homocentric, and Excentric.
Centuriata *Comitia*.		Comitia.
Cephalic *Waters*.		Water.
Cereales *Ædiles*.		Ædiles.
Cerebelli *Medulla*.	See	Medulla.
Cerebri *Medulla*.		
Cerebri *Nates*.		Nates.
Cerecloth.		Searcloth.
Ceremonies, *Maſter of*.		Master.
Cerevisiæ *& Panis aſſiſa*.		Assisa.
Cerevisiæ *& Panis Emendatio*		Emendatio.
Certainty *moral*.		Moral.
Ceruss *of Antimony*.		Antimony.
Cession.		Concession, and Retrocession.
Ceti, *Sperma*.		Sperma *Ceti*.
Chace, *frank*.		Frank.
Chacing-*Back*.		Rechacing.
Chaldee *Bibles*.		Bible.
Chalybeat *Water*.		Water.
Chalybeat *Wine*.		Wine.
Chalybeated *Tartar*.		Crystals.
Chamber *of Accounts*.		Accounts.
Chamber, *imperial*.		Imperial.
Chamber, *Star*.		Star-*Chamber*.
Chambers, *String of*.		Fugue.
Chamberlain, *Arch*.		Arch-*Chamberlain*.
Chamberlain, *Vice*.		Vice-*Chamberlain*.
Chamlet.		Camblet.
Chancellor, *Arch*.		Arch-*Chancellor*.
Chancellor, *Vice*.		Vice-*Chancellor*.
Chancery, *Attachment out of*.		Attachment.
Chancery, *Inns of*.		Inn.
Change.		Rechange.
Changer, *Money*.		Money *Changer*.
Chanter, *Arch*.		Arch-*Chanter*.
Chanter, *Sub*.		Sub-*Chanter*.
Chapel, *free*.		Free.
Charge.		Countercharge, Recharge, and Surcharge.
Charge *a Mortar*.		Mortar.
Charge, *Rent*.		Rent.
Charged, *counter*.		Counter-*charged*.
Charged *Arms*.		Arms.
Charged *Cylinder*.		Cylinder.
Charity, *Roman*.		Roman.
Charm, *Counter*.		Counter-*Charm*.
Chart, *Mercator's*.		Mercator's *Chart*.
Chart, *Plain*.		Plain.
Chartæ *Warrantia*.		Warranty.

CHARTER, *Tenant by.*		TENANT.
CHASE, *Beaſts of.*		BEASTS.
CHEAP, *Land.*		LAND-*cheap.*
CHEAT, *Soul's.*		SOUL'*s Cheat.*
CHEMICAL *Pharmacy.*		PHARMACY.
CHEMICAL *Phyſicians.*		PHYSICIAN.
CHEMICAL *Pyrotechny.*		PYROTECHNY.
CHEMICAL *Qualities.*		QUALITY.
CHEMISTRY.		CHYMISTRY.
CHEQUER.		EXCHEQUER.
CHERRY-*Water.*		WATER..
CHEST, *Bomb.*		BOMB *Cheſt.*
CHEST, *Powder.*		POWDER.
CHEVALRY.		CHIVALRY.
CHEVEL, *Aid.*		AID.
CHEVIN *Fiſhing.*		FISHING.
CHEVRONED, *counter.*		COUNTER-*chevroned.*
CHICKEN *Pox.*		POX.
CHIEF *Arch.*		ARCH.
CHIEF, *dexter.*		DEXTER.
CHIEF, *Tenant in.*		TENANT.
CHIEVES.		CHIVES.
CHIMNEY, *Funnel of.*		FUNNEL.
CHIMNEY, *Gorge of.*		GORGE.
CHINA *Silks.*		SILK.
CHINA *Varniſh.*		VARNISH.
CHINESE *Coins.*		COIN.
CHINESE *Ink.*		INK.
CHINESE *Money.*		MONEY.
CHINESE *Printing.*		PRINTING.
CHINESE *Weights.*		WEIGHT.
CHIP-*Wine.*		WINE.
CHIROGRAPHARY *Debt.*		DEBT.
CHIRURGEONS *Needles.*		NEEDLE.
CHIVALRY, *Court of.*		COURT.
CHOLERIC *Complexion.*		COMPLEXION.
CHORAICO *Stylo.*		STYLE.
CHORD.		HEPTACHORD, HEXACHORD, MONOCHORD, PENTACHORD, and TETRACHORD.
CHORDA *Achillis.*		ACHILLES.
CHORI, *Domeſticus.*		DOMESTICUS.
CHRIST, *Year of.*		EPOCHA.
CHRIST'*s Hoſpital.*		HOSPITAL.
CHRISTIAN *Oeconomy.*		OECONOMY.
CHRISTIAN *Calendar.*		CALENDAR.
CHROMA.	See	MONOCHROMA.
CHROMATIC *Dieſis.*		DIESIS.
CHRONOLOGICAL *Column.*		COLUMN.
CHUB *Fiſhing.*		FISHING.
CHURCH, *Chop.*		CHOP *Church.*
CHURCH, *collegiate.*		COLLEGIATE.
CHURCH, *Roman.*		ROMAN.
CHURCH, *titular.*		TITLE.
CHURCH, *Doctor of.*		DOCTOR.
CHURCH, *Honours of.*		HONOUR.
CHURCH, *Nomenclator.*		NOMENCLATOR.
CHURCH, *Peace of.*		PEACE.
CHURCH-*Reeve.*		REEVE.
CHURCH, *Vergers of.*		VERGER.
CHYLI, *Receptaculum.*		RECEPTACULUM.
CHYMA.		HYPOCHYMA.
CHYMICUM *Ovum.*		OVUM.
CHYMISTRY, *Characters in.*		CHARACTER.
CINERATION.		INCINERATION.
CINQUE-PORTS, *Barons of.* CINQUE-PORTS, *Guardians of.*		BARON.
DACE *Fiſhing.*		FISHING.
DACTYLIC *Alcaics.*		ALCAIC.
DALLER.		DOLLAR.
DAME, *notre.*		NOTRE-*Dame.*
DAMNUM, *ad quod.*		AD *quod.*
DANCE, *Moreſk.*		MORESK.
DANISH *Companies.*		COMPANY.
DANISH *Monies.*		MONEY.
DAPIFER, *Arch.*		ARCHIDAPIFER.
DARE, *Arma.*		ARMA.
DARE *Fiſhing.*		FISHING.
DATIVE *Tutorage.*		TUTORAGE.
DATUS, *Dies.*		DIES.
DAY, *Anniverſary.*		ANNIVERSARY.
DAYS, *Court.*		COURT.
DAYS, *enneatical.*		ENNEATICAL.
DAYS, *ferial.*		FERIAL.
DAYS, *Halcyon.*		HALCYON.
DAYS, *Holy-rood.*		HOLY-ROOD.
DAYS, *Houſhold.*		HOUSHOLD.
DAY, *Innocents.*		INNOCENT.
DAY, *Lammas.*		LAMMAS.

DAY, *Luſtral.*		LUSTRAL.
DAY, *Midſummer.*		MIDSUMMER.
DAYS, *Quarter.*		QUARTER.
DAY'*s Journey, Sabbath.*		SABBATH.
DAY, *Twelfth.*		TWELFTH.
DAY, *Year and.*		YEAR.
DAYS *of Grace.*		GRACE.
DAY, *Signals by.*		SIGNAL.
DAY, *Teleſcope.*		TELESCOPE.
DEACON, *ſub.*		SUBDEACON.
DEAD *Water.*		WATER.
DEAD, *Maſs of.*		MESSE.
DEAN, *ſub.*		SUBDEAN.
DEATH, *civil.*		CIVIL.
DEATH, *Article of.*		ARTICLE.
DEATH *of Enemies.*		MASS.
DEBILITY, *accidental.*		ACCIDENTAL.
DEBT-*Book.*		BOOK.
DEBT, *Tallies of.*		TALLY.
DECADAL *Arithmetic.*		ARITHMETIC.
DECENNA.		TITHING.
DECIMÆ.		NONÆ *&* *decimæ.*
DECIMARUM *Advocatione.*		ADVOCATIONE.
DECIMANDI *modus.*		MODUS.
DECK-*Nails.*		NAIL.
DECK, *quarter.*		QUARTER.
DECLINATION *of the Needle.*		NEEDLE.
DECLINATION, *Parallels of.*		PARALLEL.
DECLINING *Recliner.*		RECLINER.
DECREE, *antecedent.*		ANTECEDENT.
DECRESSANT.		DECREMENT.
DECRIED *Species.*		SPECIES.
DECURY.		TITHING.
DECYPHERING.		DECIPHERING.
DEED, *counter.*		COUNTERDEED.
DEED, *Aſſignee by.*		ASSIGNEE.
DEED, *Condition in a.*		CONDITION.
DEEDS, *falſe, forger.*		FORGER.
DEED, *Surrender in.*		SURRENDER.
DEER, *hunting of.*		HUNTING.
DEFECTIVE *Numbers.*		NUMBER.
DEFEISIBLE.		INDEFEISIBLE.
DEFENCE-*Line, Complement.*		COMPLEMENT.
DEFENDENDO *ſe.*		SE *defendendo.*
DEFENDENDO *ſe, perdonatio.*		CHARTA.
DEFINITE *Propoſition.*		PROPOSITION.
DEFINITIVE *Torture.*		TORTURE.
DEGREE, *Addition of.*		ADDITION.
DEGREE, *comparative.*	See	COMPARATIVE.
DEGREES, *conjoint.*		CONJOINT.
DEGREES, *parodical.*		PARODICAL.
DEGREE, *poſitive.*		POSITIVE.
DEGREE, *ſuperlative.*		SUPERLATIVE.
DEI, *agnus.*		AGNUS *Dei.*
DEI, *Argentum.*		ARGENTUM.
DEI, *Denarius.*		DENARIUS.
DEI, *Judicium.*		JUDICIUM.
DELIAC *Problem.*		PROBLEM.
DELIBERANDO *Excommunicato.*		EXCOMMUNICATO.
DELIBERANDO *Hærede.*		HÆREDE.
DELIBLE.		INDELIBLE.
DELIVERIES, *Clerk of.*		CLERK.
DELIVERY, *Goal, Juſtices of.*		JUSTICE.
DEMARCATION, *Line of.*		LINE.
DEMEANOUR.		MISDEMEANOUR.
DEMESNE.		DEMAIN.
DEMI-*Pauſe.*		PAUSE.
DEMI-*Relievo.*		RELIEVO.
DEMI-*Volt.*		VOLT.
DEMONSTRATION, *apagogical.*		APAGOGICAL.
DEMONSTRATIONS, *oſtenſive.*		OSTENSIVE.
DEMY.		DEMI.
DENTES *Oculares.*		OCULARES.
DENTES *Sapientiæ.*		SAPIENTIÆ.
DEPART, *Water of.*		WATER.
DEPONERE, *Arma.*		ARMA.
DERIVATIVE *Affections.*		AFFECTION.
DERIVATIVE *Words.*		WORD.
DESCENDENS *obliquus.*		OBLIQUUS.
DESCENDENTES *Cervicales.*		CERVICALES.
DESCENSION, *oblique.*		OBLIQUE.
DESCENSUM, *per.*		PER *Deſcenſum.*
DESCENT, *Diſtillation by.*		DISTILLATION.
DESCENT, *Riens par.*		RIENS.
DESCRIPTION *of the Globes.*		GLOBE.
DESCRIPTION, *organical.*		CURVE, and ORGANICAL.
DESIGN, *Reduction of.*		REDUCTION.
DESIRE, *antecedent.*		ANTECEDENT.
DESIRE', *comme eſt.*		SOIT *fait.*
DETAINING, *forcible.*		FORCIBLE.
DETERMINATE *Number.*		NUMBER.

DEUM, *Te.*		TE *Deum.*
DEVOTION, *Homage of.*		HOMAGE.
DEW, *mil.*		MILDEW.
DEW, *Honey.*		HONEY.
DEXTER, *Bend.*		BEND.
DEXTER, *Bend, party per.*		PARTY.
DIABOLI *morſus.*		MORSUS.
DIABOLICUM *Parliamentum.*		PARLIAMENTUM.
DIACONATE.		DEACONRY.
DIAEX, *Diapaſon.*		DIAPASON *Diaex.*
DIAGONAL *Barometer.*		BAROMETER.
DIAL, *azimuth.*		AZIMUTH.
DIAL, *catoptrical.*		CATOPTRICAL.
DIAL, *declining.*		DECLINING.
DIAL, *deinclining.*		DEINCLINING.
DIAL, *elliptical.*		ELLIPTICAL.
DIAL, *horizontal.*		HORIZONTAL.
DIALS, *polar.*		POLAR.
DIALS, *refracted.*		REFRACTED.
DIAL, *univerſal.*		UNIVERSAL.
DIAL, *Cock of.*		COCK.
DIAL, *Plane of.*		PLANE.
DIAMETER, *apparent.*		APPARENT.
DIAMETER, *Figure of.*		FIGURE.
DIAMOND, *falſe.*		FALSE.
DIAPASON.		DIS-DIAPASON, SEMI-DIAPASON, and TETRA-DIAPASON.
DIAPENTE.		SEMI-DIAPENTE, DIAPASON-DIAPENTE, and DISDIAPASON-DIAPENTE.
DIAPHORETIC *of Tin.*		TIN.
DIAPHRAGMATIC *Nerves.*		NERVE.
DIATESSARON, *Diapaſan.*		DIAPASON-DIATESSARON, DISDIAPASON-DIATESSARON, and SEMI-DIATESSARON.
DIAZEUCTIC *Syllogiſm.*		SYLLOGISM.
DIAZEUGMENON *Nete.*		NETE.
DICTATOR, *Pro.*		PRO-DICTATOR.
DICTION, *obſcurity of.*		OBSCURITY.
DIE, *ſine.*		SINE *Die.*
DIEM, *poſt.*		POST *Diem.*
DIEN, *Ich.*		ICH *Dien.*
DIES, *feſti.*		FESTI.
DIET, *imperial.*		IMPERIAL.
DIFFERENCE, *deſcenſional.*		DESCENSIONAL.
DIFFERENCE, *numerical.*	See	NUMERICAL.
DIFFERENT, *equi.*		EQUIDIFFERENT.
DIFFERENTIAL *Calculus.*		CALCULUS.
DIFFORM *Temperament.*		TEMPERAMENT.
DIGESTING *Fire.*		FIRE.
DIGNITIES, *accidental.*		ACCIDENTAL.
DII *Manes.*		MANES.
DII *novemſiles.*		NOVEMSILES.
DIMINISHED *Angle.*		ANGLE.
DIMINUTION, *Diameter of.*		DIAMETER.
DINOSTRATES's *Quadratrix.*		QUADRATRIX.
DIOCESAN *Synod.*		SYNOD.
DIOCESE, *Chanceller of.*		CHANCELLOR.
DIOCESE, *Exarch of.*		EXARCH.
DIPT *Candles.*		CANDLE.
DIPT *Medals.*		MEDAL.
DIPTERE, *pſeudo.*		PSEUDO-DIPTERE.
DIRE *Voir.*		VOIR.
DIRECT *Confirmation.*		CONFIRMATION.
DIRECT *Method of Fluxions.*		FLUXIONS.
DIRECT *Mood.*		MOOD.
DIRECT *Percuſſion.*		PERCUSSION.
DIRECT *Propoſition.*		PROPOSITION.
DIRECT *Line, ſucceſſion in.*		SUCCESSION.
DIRECTION, *arch of.*		ARCH.
DIRECTION, *converſe.*		CONVERSE.
DIRECTUM *Dominium.*		DOMINIUM.
DISCLAIMER, *recto ſur.*		RECTO.
DISCOIDAL.		FLOWERS.
DISCOUS.		
DISEASE, *endemic.*		ENDEMIC.
DISEASE, *exotic.*		EXOTIC.
DISEASE, *organical.*		ORGANICAL.
DISEASE, *periodic.*		PERIODIC.
DISEASE, *popular.*		POPULAR.
DISEASE, *proleptic.*		PROLEPTIC.
DISEASE, *ſimilar.*		SIMILAR.
DISEASE, *ſpurious.*		SPURIOUS.
DISEASE, *venereal.*		VENEREAL.
DISGUST.		DISTASTE.
DISJUNCT *Affection.*		AFFECTION.
DISJUNCTIVE *Syllogiſm.*		SYLLOGISM.
DISPERSION, *Point of.*		POINT.
DISSOLVING *Appropriation.*		APPROPRIATION.

DISTANCE, *acceſſible.*		ACCESSIBLE.
DISTANCE, *inacceſſible.*		INACCESSIBLE.
DISTANCE, *meridional.*		MERIDIONAL.
DISTANCE, *Sun's.*		SUN.
DISTANCE, *zenith.*		ZENITH.
DISTANCES *and Rhumbs.*		CHART.
DISTANT, *equi.*		EQUIDISTANT.
DISTILLATION *of Brandy.*		BRANDY.
DISTILLATUM *Acetum.*		ACETUM.
DISTINCT *Small-pox.*		POX.
DITCH, *Tenaille of.*		TENAILLE.
DITONE.		DIAPASON-DITONE, DISDIAPASON-DITONE, SESQUI-DITONE.
DIVINA *virgula.*		VIRGULA.
DIVINATORIUS *Baculus.*		BACULUS, and VIRGULA.
DIVINE *Faith.*		FAITH.
DIVINE *Fate.*		FATE.
DIVINE *Law.*		LAW.
DIVINE *Prebend.*		PREBEND.
DIVINITY, *ſcholaſtic.*		SCHOLASTIC.
DIVISE.		DEVISE.
DIVISOR, *common.*		COMMON.
DIVORTIUM, *Cui ante.*		CUI *ante.*
DIURNAL *Arch.*		ARCH.
DOCTRINE *of Sphere.*		SPHERICS.
DOG-*Nails.*		NAIL.
DOGS, *lawing of.*		LAWING.
DOGS, *worming of.*		WORM.
DOGE, *vice.*		VICE-*Doge.*
DOG-*legged Stairs.*		STAIRS.
DOLLAR, *Rix.*		RIXDOLLAR.
EXCICCATION.		EXSICCATION.
FABLE, *Moral of.*		MORAL.
FACERE *Regalia.*		REGALIA.
FACIA.		FACE.
FACIAS, *fieri.*		FIERI.
FACIAS, *habere Seiſinam.*		SEISINAM.
FACIAS, *levari.*		LEVARI.
FACIAS, *Recordari.*		RECORDARI.
FACIAS, *ſcire.*		SCIRE.
FACIAS, *venire.*		VENIRE.
FACIENDA *Allocatione.*		ALLOCATIONE.
FACIENDA *Contributione.*		CONTRIBUTIONE.
FACIENDA *Converſione.*	See	CONVERSIONE.
FACIENDA *Executione.*		EXECUTIONE.
FACIENDA *Perambulatione.*		PERAMBULATIONE.
FACIENDA *Reparatione.*		REPARATIONE.
FACIENDO *atturnato.*		ATTURNATO.
FACT, *Covenant in.*		COVENANT.
FACT, *Releaſe in.*		RELEASE.
FACTITIOUS *Allum.*		ALLUM.
FACTITIOUS *Diamonds.*		DIAMOND.
FACTITIOUS *Salt-petre.*		SALTPETRE.
FACTITIOUS *Vermillion.*		VERMILLION.
FACTIVE *Art.*		ART.
FACTO, *de.*		POSSESSION.
FACTUM, *non eſt.*		NON *eſt factum.*
FACULTY *of Advocates.*		ADVOCATE.
FACULTIES, *Maſter of.*		MASTER.
FÆCULENT.		FECULENT.
FAILING.		FAILURE.
FAIT, *ſoit comme il eſt deſire.*		SOIT.
FAIT, *riens paſſe par.*		RIENS.
FAITH, *Article of.*		ARTICLE.
FAITH, *Confeſſion of.*		CONFESSION.
FALL, *land.*		LAND-FALL.
FALL, *wind.*		WIND-FALL.
FALLEN, *creſt.*		CREST-FALLEN.
FALLIBLE.		INFALLIBLE.
FALLOWING, *twi.*		TWIFALLOWING.
FALLOWS, *ploughing of.*		PLOUGHING.
FALSE *Judgment.*		JUDGMENT.
FALSE *Medals.*		MEDAL.
FALSE *Propoſition.*		PROPOSITION.
FALSE *Root.*		ROOT.
FALSE *Species.*		SPECIES.
FALSE *Suture.*		SUTURE.
FALSE *Deeds, Forger of.*		FORGER.
FALSITY.		FALSHOOD.
FAMOUS.		INFAMOUS.
FAN, *mounting of.*		MOUNTING.
FANCY.		PHANTASY.
FARM, *Fee.*		FEE-*farm.*
FARTHING, *ſmoak.*		SMOAK.
FASCIA.		FACE.
FASHIONS.		FARCIN.
FAST, *hold.*		HOLD-FAST.

	See
Fat.	Vat.
Fat *Waters.*	Water.
Fathemites.	Fathimites.
Fathers *of S. Lazarus.*	Lazarus.
Fatuus, *Ignis.*	Ignis.
Faucon.	Falcon.
Fauconry.	Falconry.
Favour, *Reſignation in.*	Resignation.
Fear, *panic.*	Panic *Fear.*
Feast *of Purification.*	Purification.
Feasts, *moveable.*	Moveable.
Feather, *Cut.*	Cut.
Fee, *alienating in.*	Alienate.
Fee, *arriere.*	Arriere.
Fee, *bar.*	Bar *Fee.*
Fee, *baſe.*	Base *Fee.*
Fee, *frank.*	Frank.
Fee, *guaranty.*	Guaranty.
Fee, *hors de ſon.*	Hors.
Fee, *Knights.*	Knight.
Fee, *retaining.*	Retaining.
Feeding *Fiſh.*	Fish.
Feet, *Crows.*	Crows *Feet.*
Feet, *foundering in.*	Foundering.
Feigned *Recovery.*	Recovery.
Felony, *Miſpriſion of.*	Misprision.
Feme, *Baron and.*	Baron.
Femoris *Quadratus.*	Quadratus.
Femoris *Rectus.*	Rectus.
Fence, *Frampole.*	Frampole *Fence.*
Fennel-*Seed.*	Seed.
Fennel-*Water.*	Water.
Feodal.	Feudal.
Feodatary.	Feudatary.
Feoffamenti *forma.*	Contra *formam.*
Feriæ *ſementinæ.*	Sementinæ.
Ferm, *frank.*	Frank *Ferm.*
Ferrea *ulna.*	Ulna.
Fesse, *party per.*	Party *per feſſe.*
Feud, *deadly.*	Deadly *Feud.*
Feudary.	Feodary.
Feudatary.	
Feudum.	Fee.
Feudi *apertura.*	Apertura.
Fever, *continent.*	Continent.
Fever, *continued.*	Continued.
Fever, *miliary.*	Miliary.
Fever, *military.*	Military.
Fever, *peſtilential.*	Pestilential.
Fever, *purple.*	Purple.
Fever, *putrid.*	Putrid.
Fever, *ſecondary.*	Secondary.
Fial, or Fiol.	Phial.
Fichant *Flank.*	Flank.
Fichant *Line of defence.*	Line.
Fiducial *Line.*	
Field *Officers.*	Officer.
Fifth *Pair of Nerves.*	Nerve.
Fifth-*Rate.*	Rate.
Fights, *cloſe.*	Close *Fights.*
Fight, *Signals for.*	Signal.
Figurate *Deſcant.*	Descant.
Figurate *Hiſtory.*	History.
Figure, *Academy.*	Academy.
Figures, *Arabic.*	Arabic.
Figures, *curvilinear.*	Curvilinear.
Figures, *equal.*	Equal.
Figure, *generating.*	Generating.
Figures, *hyperboliform.*	Hyperboliform.
Figures, *iſoperimetrical.*	Isoperimetrical.
Figures, *like.*	Like.
Figure, *mixt.*	Mixt.
Figure, *plain.*	Plain.
Figure, *prime.*	Prime.
Figures, *reciprocal.*	Reciprocal.
Figure, *reſidual.*	Residual.
Figure, *Ambit of.*	Ambit.
Figure, *Meaſure of.*	Measure.
Figure, *Reduction of.*	Reduction.
File, *half, Rear.*	Rear *half File.*
Filius, *Terræ.*	Terræ *Filius.*
Filling, *Beam.*	Beam *filling.*
Fillings *up of Vault.*	Vault.
Filtre.	Filter.
Final *Execution.*	Execution.
Fine, *ſuper.*	Super-*fine.*
Fine, *common.*	Common.
Fine, *poſt.*	Post-*fine.*
Fines, *Chirographer of.*	Chirographer.
Fines *and Recoveries, Clerk of.*	Clerk.
Fine, *Note of.*	Note.
Fines, *Tabling of.*	Tabling.

	See
Fine, *Capias pro.*	Capias.
Finite *Diſtreſs.*	Distress.
Finite *Propoſition.*	Proposition.
Firdwite.	Ferdwite.
Fire-*Works, artificial.*	Artificial.
Fire *chemiſe.*	Chemise.
Fire, *culinary.*	Culinary.
Fire, *naked.*	Naked.
Fire, *olympic.*	Olympic.
Fire, *port.*	Port.
Fire, *Wheel.*	Wheel.
Fire, *gilding by.*	Gilding.
Fire, *Interdiction of.*	Interdiction.
Firing, *Meaſure of.*	Measure.
Firma *alba.*	Alba.
Firma *Terra.*	Terra.
Firmæ *Ejectione.*	Ejectione.
First *efficient Cauſe.*	Efficient.
First *formal Notion.*	Notion.
First *objective Notion.*	
First *Rate.*	Rate.
First *Tithe.*	Tithe.
First *Year, Tree, pruning.*	Pruning.
First *Fruits, Remembrancer.*	Remembrancer.
Fish-*Glue.*	Glue.
Fishes, *cruſtaceous.*	Crustaceous.
Fish, *ſtock.*	Stock.
Fishery, *coral.*	Coral *Fiſhery.*
Fishing *Line, Float of.*	Float.
Fissure, *contra.*	Contra-fissure.
Fistula *Lachrymalis.*	Lachrymalis.
Fistulous *Ulcers.*	Ulcer.
Fitchant *Flank.*	Flank.
Fitche', *double.*	Double *Fitché.*
Five, *Ombre by.*	Ombre.
Five, *Rule of.*	Rule.
Fixedness.	Fixity.
Fixt *Alkaly.*	Alkaly.
Flagon, *Shot.*	Shot-*flagon.*
Flajolet.	Flageolet.
Flanc.	Flank.
Flanders *Blue.*	Blue.
Flanders *Meaſure.*	Measure.
Flank, *Angle, forming.*	Angle.
Flank, *open.*	Open.
Flank, *Attack in.*	Attack.
Flanked *Column.*	Column.
Flanking *Angle.*	Angle.
Flannel.	Flanel.
Flat *Baſtion.*	Bastion.
Flat *bottomed Moat.*	Moat.
Flat *Roof.*	Roof.
Flat *Wine.*	Wine.
Flatulency.	Flatus.
Flax, *Hurds of.*	Hurds.
Flemish *Coins.*	Coin.
Flemish *Meaſures.*	Measure.
Flemish *Monies.*	Money.
Flemish *Tyles.*	Tyle.
Flexion *of Knee.*	Genuflexion.
Flexure, *contrary, Point of.*	Point.
Flightwite.	Fledwite.
Flint-*Walls.*	Wall.
Floatsam.	Flotson.
Flora, *Field of.*	Field.
Florence.	Florin.
Florence, *Barrel of.*	Barrel.
Florentine *Thermometer.*	Thermometer.
Florette'e.	Flory.
Floriani.	Floriniani.
Florid *Attire.*	Attire.
Florid *Deſcant.*	Descant.
Florum *omnium, aqua.*	Aqua.
Flotta.	Flota.
Flourished *Freezes.*	Freeze.
Flower *of Antimony.*	Antimony.
Flower *of Tin.*	Tin.
Flowers, *Truſs of.*	Truss.
Flowers, *Wharls of.*	Wharls.
Flowers, *compound.*	Compound.
Flowers, *cucullate.*	Cucullate.
Flower, *diſcous.*	Discous.
Flowers, *erect.*	Erect.
Flower, *falſe.*	False.
Flowers, *fiſtular.*	Fistular.
Flowers, *imperfect.*	Imperfect.
Flowers, *ingeminated.*	Ingeminated.
Flowers, *paled.*	Paled.
Flowers, *perfect.*	Perfect.
Flowers, *radicated.*	Radicated.
Flowers, *ſtamineous.*	Stamineous.
Flowers, *uniform.*	Uniform.

FLOWERED *Crowns.*		CROWN.
FLOWING, *over.*		OVERFLOWING.
FLOWRY.		FLORY.
FLUIDS, *Elaſticity of.*		ELASTICITY.
FLUTED *Column.*		COLUMN.
FLUTES, *cabled.*		CABLED *Flutes.*
FLUTINGS, *Platbands of.*		PLATBANDS *of Flutings.*
FLUX-*Small-pox.*		POX.
FLY *of a Compaſs.*		FLIE.
FLY, *fiſhing.*		FISHING.
FOECIALES.		FECIALES.
FOECUNDANS *farinæ.*		FARINA.
FOG, *Signals in.*		SIGNALS.
FOIL, *counter.*		COUNTERFOIL.
FOLD, *frank.*		FRANK-*fold.*
FOLIA *pennata.*		PENNATA.
FOLIA *pinnata.*		PINNATA.
FOLIATED *Tartar.*		TARTAR.
FOLLOWING *Sections.*		SECTION.
FONT.		FOUNT.
HABENDO *returno.*		RETURNO.
HABHDALAH.		HABDALA.
HABITUAL *Aſſent.*		ASSENT.
HÆREDIS *raptu.*		RAPTU.
HÆREDIS & *Terræ cuſtodia.*		RECTO.
HAGA, *Emir.*		EMIR *haga.*
HAGBUT.		HARQUEBUSS.
HAIR-*Compaſſes.*		COMPASSES.
HAIR, *Tour of.*		TOUR.
HALF *Duration.*		SCRUPLE.
HALF *Files, Rear.*		REAR *half Files.*
HALF-*penny Bord.*		BORD *half-penny.*
HALF-*ſugared Confects.*		CONFECTS.
HALSER.		HAWSER.
HALT, *String.*		STRING-HALT.
HALYARDS.		HALLIARDS.
HAMAC.		HAMMOCK.
HAMECH *Confection.*		CONFECTION.
HAMPER.		HANAPER.
HAMPER, *Clerk of the.*		CLERK.
HAMSTRINGING.		HAMELING.
HAMUS.		UNGULA.
HANCH.		HAUNCH.
HAND-*mill.*		MILL.
HAND-*ſaw.*		SAW.
HAND-*vice.*	See	VICE.
HAND, *bloody.*		BLOODY.
HAND, *ambling in.*		AMBLE.
HANDS, *Impoſition of.*		IMPOSITION.
HAND, *juſt Appui of.*		APPUI.
HANG *out the white Flag.*		FLAG.
HANGINGS, *Arras.*		ARRAS *Hangings.*
HARBOROUGH *Company.*		COMPANY.
HARD *Pulſe.*		PULSE.
HARD *Roe.*		ROE.
HARD *Soap.*		SOAP.
HARDENING, *Caſe.*		CASE-*hardening.*
HARE'S *Eye.*		EYE.
HARE, *Trace of.*		TRACE.
HARMONICA *Trias.*		TRIAS.
HARMONICAL.		CONTRAHARMONICAL, and ENHARMONICAL.
HARMONICAL *Hand.*		HAND.
HARMONICAL *Trumpet.*		TRUMPET.
HARMONY, *natural.*		NATURAL.
HARPOCRATES.		HERMHARPOCRATES.
HARPONEER.		HARPINEER.
HARPOON.		HARPING-*Iron.*
HATTERS *Form.*		FORM.
HATTERS *Furnace.*		FURNACE.
HAVING, *Modes of.*		MODES.
HAUBERGEON.		HABERGION.
HAUTGOUT.		HOGOE.
HAWARD.		HAYWARD.
HAWK, *ragged.*		RAGGED *Hawk.*
HAWK, *ramage.*		RAMAGE.
HAWK, *weathering of.*		WEATHERING.
HAWSER, *rouſing of.*		ROUSE.
HAY, *Truſs of.*		TRUSS *of Hay.*
HAY, *Wood.*		WOOD-*hay.*
HAYE.		HAY.
HEAD-*borough.*		BOROUGH.
HEAD, *Beak.*		BEAK.
HEAD, *Bolt.*		BOLT.
HEADS, *Bulk.*		BULK.
HEADS, *forked.*		FORKED.
HEAD, *Hogs.*		HOGSHEAD.
HEAD, *Moors.*		MOOR.
HEALSFANG.		HEALFANG.
HEARING *Trumpet.*		TRUMPET.

HEAT, *actual.*		ACTUAL *Heat.*
HEAT, *Sand.*		SAND.
HEAT, *welding.*		WELDING.
HEAVEN.		MIDHEAVEN.
HEDGEBOTE.		HAYBOTE.
HEDGE *ſtalking.*		STALKING.
HEICETÆ.		EICETÆ.
HEIGHTH, *acceſſible.*		ACCESSIBLE.
HEIGHTH, *inacceſſible.*		INACCESSIBLE.
HEIGHTH *of Atmoſphere.*		ATMOSPHERE.
HEIR *Co.*		COHEIR.
HELPING *Verbs.*		VERB.
HEMP, *Hards of.*		HARDS.
HENRICUS, *Piger.*		PIGER.
HEPATIC *Waters.*		WATER.
HEPATIS, *Anima.*		ANIMA.
HERBS, *cauliferous.*		CAULIFEROUS *Herbs.*
HERBS, *gramineous.*		GRAMINEOUS.
HERBS, *polyſpermous.*		POLYSPERMOUS.
HERETIC, *negative.*		NEGATIVE *Heretic.*
HERMETIC *Column.*		COLUMN.
HERMETIS *trutina.*		TRUTINA.
HEROPHILI *torcular.*		TORCULAR.
HETEROGENEAL.		HETEROGENEOUS.
HETEROGENEAL *Number.*		NUMBER.
HETEROGENEOUS *Air.*		AIR.
HETEROGENEOUS *Continuity.*		CONTINUITY.
HHABAKKUK.		HABAKKUK.
HICETÆ.		EICETÆ.
HIDE, *green.*		GREEN *Hide.*
HIGH *Admiral.*		ADMIRAL.
HIGH *Airs.*		AIRS.
HIGH *Apparatus.*		APPARATUS.
HIGH *Maſs.*		MASS.
HIGH *Treaſon.*		TREASON.
HIGHER *Geometry.*		GEOMETRY.
HIGHER *Kinds, Circles of.*		CIRCLE.
HIGHER *Kinds, Cones of.*		CONE.
HIGHER *Kinds, Parabola's of.*		PARABOLA.
HIPPARCHUS'S *Period.*		PERIOD.
HIPPOCRATICUM *Vinum.*		VINUM.
HIRCINUS *Sanguis.*		SANGUIS.
HISTORICAL *Freezes.*		FREEZE.
HISTORICAL *Types.*		TYPE.
HISTORY, *natural.*		NATURAL.
HITH.		HYTH.
HOBOY.		HAUBOY.
HOG-LICE *Wine.*	See	WINE.
HOLD *Land in Peerage.*		PEERAGE.
HOLD, *Copy.*		COPY-*hold.*
HOLD, *Free.*		FREE.
HOLDER, *Copy.*		COPY-*holder.*
HOLDING, *forcible.*		FORCIBLE *Holding.*
HOLES, *Loop.*		LOOP *Holes.*
HOLES, *Port.*		PORT.
HOLE, *Scoper.*		SCOPER.
HOLE, *Well.*		WELL.
HOLLAND *Meaſure.*		MEASURE.
HOLLAND, *Sleaſy.*		SLEASY.
HOLLAND, *States of.*		STATES.
HOLLOW *Baſtions.*		BASTION.
HOLLOW *Column.*		COLUMN.
HOLY-*Day Maſs.*		MASS.
HOLY *War.*		WAR.
HOLY *Water.*		WATER.
HOLY *Week.*		WEEK.
HOLY *Virgin, Charity of.*		CHARITY.
HOLY *Ghoſt, Maſs of.*		MASS.
HOMAGE, *Receipt of.*		RECEIT *of Homage.*
HOMAGE, *Reſpite of.*		RESPITE.
HOMINES *hindeni.*		HINDENI.
HOMINES *quatuor prepoſiti.*		PREPOSITI.
HOMMES *prodes.*		PRODES.
HOMO *legalis.*		LEGALIS.
HOMO *ecce.*		ECCE.
HOMOGENEAL *Continuity.*		CONTINUITY.
HOMOLOGOUS *Angle.*		ANGLE.
HONOURARY *Canons.*		CANON.
HONOURARY *Games.*		GAME.
HONOREM, *appropriari ad.*		APPROPRIARE.
HOOD, *Rufter.*		RUFTER-*hood.*
HOODINGS.		WHOODINGS.
HOOK, *Ward.*		WARD-HOOK.
HORARY *Circles.*		CIRCLE.
HORARY *Line.*		LINE.
HORIZON, *apparent.*		APPARENT *Horizon.*
HORIZONTAL *Barometer.*		BAROMETER.
HORIZONTAL *Line.*		LINE.
HORIZONTAL *Needle.*		NEEDLE.
HORNED *Angle.*		ANGLE.
HORSE-*Guards.*		GUARDS.
HORSE-*radiſh-Water.*		WATER.

Horse's *Tail.*		Tail.
Horse, *light.*		Light-*Horſe.*
Horse, *punch.*		Punch.
Horse, *ſtalking.*		Stalking.
Horse, *ſumpter.*		Sumpter.
Horse, *Heel of.*		Heel.
Horse, *Major of.*		Major.
Horse, *Meaſure for.*		Measure.
Horse, *rounding of.*		Round.
Horse, *rowelling of.*		Rowelling.
Horse, *Withers of.*		Withers.
Horse, *Wolves Teeth of.*		Wolves.
Horseman, *Heel of.*		Heel.
Hot *Baths.*		Bath.
Hot *Diamargariton.*		Diamargariton.
Hot *Diatragacanth.*		Diatragacanth.
Hot *Waters.*		Water.
Hotel.		Hostel.
Hour-*Climate.*		Climate.
Hours, *medicinal.*		Medicinal.
Hours, *forty, Prayers of.*		Prayer.
House *of Health.*		Health.
House, *Alms.*		Alms.
House, *Compting.*		Compting.
House, *Cuſtom.*		Custom.
House, *Glaſs, fire.*		Fire.
House, *Glaſs, furnace.*		Furnace.
House, *green.*		Green-house.
House, *muniment.*		Muniment.
House, *Peſt.*		Pest.
House, *Printing.*		Printing.
House, *round.*		Round.
House, *Trinity.*		Trinity.
House, *Wych.*		Wych-*Houſe.*
House, *framing of.*		Framing.
House, *Honours of.*		Honour.
Houses, *Inſurance, Policy of.*		Policy.
House *of Commons.*		Speaker.
Houses, *Table of.*		Table.
Houshold *Officers.*		Officers.
Human *Laws.*		Law.
Human *Muſic.*		Music.
Human *Uſnea.*		Usnea.
Hungary *Green.*		Green.
Hunt, *common.*		Common.
Hurt, *Hoof.*		Hoof *hurt.*
Huygens's *Level.*		Level.
Hydræ *cor.*		Cor.
Hydraulic *Column.*	See	Column.
Hydraulic *Machine.*		Machine.
Hydraulic *Organ.*		Organ.
Hydraulic *Statue.*		Statue.
Hydrostatical *Ballance.*		Ballance.
Hyemal *Solſtice.*		Solstice.
Hyoides.		Yoides.
Hyperbola, *ambigenal.*		Ambigenal *Hyperbola.*
Hyperbola, *diverging.*		Diverging.
Hyperbola's, *equal.*		Equal.
Hyperbola, *equilateral.*		Equilateral.
Hyperbola, *nodated.*		Nodated.
Hyperbola, *punctated.*		Punctated.
Hyperbola, *redundant.*		Redundant.
Hyperboleon, *nete.*		Nete.
Hyperchematico *Stylo.*		Style.
Hypothecary *Debt.*		Debt.
Hypothetical *Syllogiſm.*		Syllogism.
Hysteric *Waters.*		Water.
Jacent *Succeſſion.*		Succession.
Iambic, *Galli.*		Galliambic.
Jambus, *Chimney.*		Chimney.
Iambus, *Galli.*		Galliambus.
Japan *Coins.*		Coin.
Japan *Silks.*		Silk.
Japan *Monies.*		Money.
Icanatorum *Domeſticus.*		Domesticus.
Iced *Waters.*		Water.
Icy *Ocean.*		Ocean.
Idioms, *Communication of.*		Communication.
Jewish *Year.*		Year.
Imperial *Water.*		Water.
Impressa *vis.*		Vis.
Inartificial *Argument.*		Argument.
Inundation.		River, and Overflowing.
Macedonian *Year.*		Year.
Mackarel *fiſhing.*		Fishing.
Macle.		Mascle.
Madrigalesco *Stylo.*		Style.
Magdeburg *Centuries.*		Century.
Magistery *of Antimony.*		Antimony.

Magistery *of Sulphur.*		Sulphur.
Magistrate, *curule.*		Curule *Magiſtrate.*
Magna *Foſſa.*		Fossa.
Magnatum, *Scandalum.*		Scandalum.
Magnet, *arſenical.*		Arsenical *Magnet.*
Magnet, *Axis of.*		Axis.
Magnetical *Azimuth.*		Azimuth.
Magnetical *Direction.*		Direction.
Magnetical *Meridian.*		Meridian.
Magnetical *Needle.*		Needle.
Magnitude *of the Earth.*		Earth.
Magnitude *of the Stars.*		Star.
Magnitude, *apparent.*		Apparent.
Magnum *Cape.*		Cape.
Magnus *Pſoas.*		Psoas.
Magni *Rotuli Ingroſſator.*		Ingrossator.
Mahometan *Epocha.*		Epocha.
Maid, *marine.*		Mermaid.
Maids *of Honour.*		Honour.
Maihem.		Mahim.
Maii *Campus.*		Campus.
Main *Guard.*		Guard.
Main, *ouſter le.*		Ouster.
Maior.		Mayor.
Major, *Canis.*		Canis.
Major, *Gaſtricus.*		Gastricus.
Major, *Glutæus.*		Glutæus.
Major, *obliquus capitis.* Major, *obliquus oculi.*		Obliquus.
Major *Orders.*		Order.
Major, *rectus internus capitis.* Major, *rectus externus capitis.*		Rectus.
Major, *ſerratus anticus.*		Serratus.
Major, *Teres.*		Teres.
Major, *Urſa.*		Ursa.
Majores, *Barones.*		Baron.
Majores, *Ædiles.*		Ædiles.
Makers, *Parcel.*		Parcel *Makers.*
Male *Plants.*		Plant.
Maltese *Monies.*		Money.
Mammillaris *Areola.*		Areola.
Mammillares *Carunculæ.*		Carunculæ.
Man.	See	Alderman. Chairman. Ealderman. Friendless-man, Gavelman. Gentleman. Hebberman. Hodman. Journeyman. Layman. Mussulman, and Yeoman.
Man, *Generation of.*		Generation.
Manerio, *ſtatus de.*		Status *de manerio.*
Manifest *Acids.*		Acid.
Manifest *Qualities.*		Quality.
Manifold *Propoſition.*		Proposition.
Mannor.		Manor.
Manoscope.		Manometer.
Manour.		Mainour.
Mansard *Roof.*		Roof.
Manual, *Sign.*		Sign.
Manubiary *Column.*		Column.
Manufactory, *woollen.*		Woollen.
Manufacture *of Cloth.*		Cloth.
Manufacture *of Needles.*		Needle.
Manufacture *of Paper.*		Paper.
Manufacture *of Parchment.*		Parchment.
Manufacture *of Porcelain.*		Porcelain.
Manus, *dorſum.*		Dorsum.
Manus, *interoſſei.*		Interossei.
Manus, *perforans.*		Perforans.
Manus, *perforatus.*		Perforatus.
Marble, *Moſaic work of.*		Mosaic.
Marble, *Sculpture in.*		Sculpture.
Marc.		Mark.
March, *counter.*		Counter-*March.*
March, *Order of.*		Order.
Mare, *night.*		Night-*Mare.*
Maria, *Ave.*		Ave-Maria.
Mariæ *Balneum.*		Balneum.
Marina *Aqua.*		Aqua.
Marine.		Transmarine, and Ultramarine.
Marine *Barometer.*		Barometer.
Marine *Fountain.*		Fountain.
Marine *Freezes.*		Freeze.
Marine *Rainbow.*		Rainbow.
Marine *Trumpet.*		Trumpet.
Marine *Provoſt.*		Provost.

Marinum *Vinum.*		Vinum.
Marinus *Pulmo.*		Pulmo.
Maritagii *Valore.*		Valore.
Mark.		Counter-*Mark*, and Half-*Mark.*
Market, *Clerk of.*		Clerk.
Marriage, *frank.*		Frank *Marriage.*
Marriage, *ſolemn.*		Solemn.
Marriage, *Bans of.*		Banns.
Marriage, *Forfeiture of.*		Forfeiture.
Marriage, *frank, tenant in.*		Tenant.
Nabonassar, *Epocha of.*		Epocha *of Nabonaſſar.*
Nænia.		Nenia.
Naids.		Naiads.
Nails, *clamp.*		Clamp.
Nails, *port.*		Port.
Naiper's *Bones.*		Nepers.
Naked *Stalk.*		Stalk.
Napier's *Bones.*		Nepers.
Narium, *fœtor.*		Foetor.
Nasi, *Columna.*		Columna.
Nasi, *Conſtrictores.*		Constrictores.
Nasi, *Dialatatores.*		Dilatatores.
Nasi, *Dorſum.*		Dorsum.
Nasi, *Elevator.*		Elevator.
Nasi, *Globulus.*		Globulus.
Nata.		Natta.
Natant.		Naiant.
Nati, *Poſt.*		Post-nati.
Nations, *quatre.*		Quatre *Nations.*
Native *Allum.*		Allum.
Native *Arſenic.*		Arsenic.
Native *Cinnabar.*		Cinnabar.
Native *Foſſils.*		Fossil.
Native *Sulphur.*		Sulphur.
Naturæ *Curioſi.*		Academy.
Naturæ, *Minima.*		Minima.
Natural *Agents.*		Agent.
Natural *Arbors.*		Arbor.
Natural *Aſtrology.*		Astrology.
Natural *Canon.*		Canon.
Natural *Colcothar.*		Colcothar.
Natural *Conſumption.*		Consumption.
Natural *Delivery.*		Delivery.
Natural *Divination.*		Divination.
Natural *Evil.*		Evil.
Natural *Father.*	See	Father.
Natural *Flying.*		Flying.
Natural *Forms.*		Form.
Natural *Foundation.*		Foundation.
Natural *Fruits.*		Fruit.
Natural *Glands.*		Gland.
Natural *Good.*		Good.
Natural *Grace.*		Grace.
Natural *Hunger.*		Hunger.
Natural *Lacca.*		Lacca.
Natural *Litharge.*		Litharge.
Natural *Month.*		Month.
Natural *Obligations.*		Obligation.
Natural *Perfection.*		Perfection.
Natural *Phoſphori.*		Phosphori.
Natural *Ports.*		Port.
Natural *Poſtures.*		Posture.
Natural *Quantity.*		Quantity.
Natural *Religion.*		Religion.
Natural *Road.*		Road.
Natural *Salt-petre.*		Salt-petre.
Natural *Theology.*		Theology.
Natural *Vermilion.*		Vermilion.
Natural *Wine.*		Wine.
Naturalia *Prima.*		Prima.
Naturals, *non.*		Non-naturals.
Nature *of Air.*		Air.
Nature *of Comets.*		Comet.
Naval *Architecture.*		Architecture.
Naval *Army.*		Army.
Naval *Fountain.*		Fountain.
Naval *Pitch.*		Pitch.
Navicularis *Foſſa.*		Fossa.
Navy, *Surveyor of.*		Surveyor *of the Navy.*
Navy, *Treaſurer of.*		Treasurer.
Nautica *Pyxis.*		Pyxis.
Nazareans.		Nazarites.
Nealing *of Porcelain.*		Porcelain.
Necessary *Novation.*		Novation.
Necessitas *Trinoda.*		Trinoda.
Negationis *Medium.*		Medium.
Negative *Demonſtration.*		Demonstration.
Negative *Propoſition.*		Proposition.
Negative *Theorem.*		Theorem.

Negligent *Eſcape.*		Escape.
Nephritic *Waters.*		Water.
Pace, *in.*		In *Pace.*
Pacis *Oſculum.*		Osculum.
Pacis *ſecuritate.*		Securitate.
Pad-*Saddle.*		Saddle.
Pagan's *Fortification.*		Fortification.
Pagnote, *Mount.*		Mont *Pagnote.*
Paillier.		Pallier.
Pains, *after.*		After-*Pains.*
Pains, *nocturnal.*		Nocturnal.
Painters *Glaſs Furnace.*		Furnace.
Painting *of Porcelain.*		Porcelain.
Pal, *Fendue en.*		Fendue *en Pal.*
Palatii *ſacri quæſtor.*		Quæstor.
Paleing.		Paling.
Paled, *counter.*		Counter-*paled.*
Pall.		Pallium.
Palm, *Oil of.*		Oil *of Palm.*
Pan-*Tiles.*		Tyle.
Plant, *annual.*		Annual *Plant.*
Plant, *capillary.*		Capillary.
Plant, *capſulate.*		Capsulate.
Plant, *corniculate.*		Corniculate.
Plant, *corymbiferous.*		Corymbiferous.
Plant, *cucurbitaceous.*		Cucurbitaceous.
Plant, *dorſiferous.*		Dorsiferous.
Plant, *exotic.*		Exotic.
Plant, *frumentaceous.*		Frumentaceous.
Plant, *imperfect.*		Imperfect.
Plant, *pentapetalous.*		Pentapetalous.
Plant, *ſenſitive.*		Sensitive.
Plant, *tergifœtous.*		Tergifoetous.
Plant, *umbelliferous.*		Umbelliferous.
Plants, *Diſeaſes of.*		Disease.
Plants, *Parenchyma of.*		Parenchyma.
Plantæ *capitatæ.*		Capitatæ.
Plantæ *capreolatæ.*		Capreolatæ.
Plantæ *fundus.*		Fundus.
Plantation.		Implantation, and Transplantation
Planting.		Replanting.
Plate-*Glaſs.*		Glass.
Platfond.		Plafond.
Platic *Aſpects.*		Aspect.
Plea, *counter.*		Counter-plea.
Plea-*Wood, Court.*	See	Wood-*Plea Court.*
Pleas, *Clerk of.*		Clerk.
Pleas, *common, Prothonotary of.*		Prothonotary.
Plea, *double.*		Double.
Plead.		Implead.
Plead *in Arreſt.*		Arrest.
Plebeii *Ædiles.*		Ædiles.
Pledge, *ſafe.*		Safe-*Pledge.*
Pleggery.		Pledgery.
Plegiis *acquietandis.*		Acquietandis.
Plevin, *non.*		Non-plevin.
Plexus *meſentericus.*		Mesenteric.
Plinths, *Courſe of.*		Course *of Plinths.*
Plot, *counter.*		Counter-plot.
Plottoon.		Plattoon.
Plough, *Peace of.*		Peace.
Plough, *trenching.*		Trenching.
Plumbers *Furnace.*		Furnace.
Plumb *Level.*		Level.
Plumb-line. Plumb-rule.		Plummet.
Plume *Allum.*		Allum.
Plura, *Quæ.*		Quæ *plura.*
Pneumatical, *Hydraulo.*		Hydraulo-pneumatical.
Poem, *Action of.*		Action.
Poena, *Sub.*		Subpoena.
Poena *talionis.*		Talio.
Poeon.		Pæan.
Poetical *Elegancies.*		Elegancy.
Poetical *Licence.*		Licence.
Poetical *Numbers.*		Number.
Poetical *Pleiades.*		Pleiades.
Poetry, *dithyrambic.*		Dithyrambic.
Quadrabilis *Teſtudo.*		Testudo.
Quadrant, *Gunter's.*		Gunter's *Quadrant.*
Quadrant, *ſinical.*		Sinical.
Quadrant, *triangular.*		Triangular.
Quadrata, *Caro Muſculoſa.*		Caro.
Quadrate, *ſeſqui.*		Sesquiquadrate.
Quadratic *Parabola.*		Parabola.
Quadrature *of Curve.*		Curve.

Quadratus *pronator Radii.*		Pronator.
Qeadruple *winding Stairs.*		Stair.
Quæstor, *Pro.*		Proquæstor.
Sabbatic *Year.*		Year.
Saccharine *Allum.*		Allum.
Sacerdotal *Crown.*		Crown.
Sacerdotal *Title.*		Title.
Sacramentalis *Lex.*		Lex.
Sacred *Buildings.*		Building.
Sacred *Criticiſm.*		Criticism.
Sacred *Diptychs.*		Dyptychs.
Sacred *Games.*		Game.
Sacred *Hiſtory.*		History.
Sacri *Palatii quæſtor.*		Quæstor.
Sacrifices, *King of.*		King.
Sacrorum, *Duumviri.*	See	Duumviri.
Sacrum *Os, Nerves of.*		Nerves.
Sævis *abſolutio a.*		Absolution.
Sail-*yards.*		Yard.
Sail, *Bunt of.*		Bunt.
Sail, *cut.*		Cut.
Sail, *drift.*		Drift.
Sail, *fore.*		Fore.
Sail, *preſt.*		Prest.
Sails, *ſhort.*		Short.
Sailing, *middle Latitude.*		Middle *Latitude.*
Sailing, *oblique.*		Oblique.
Sailing, *parallel.*		Parallel.
Sailing, *plain.*		Plain.
Sailing, *right.*		Right.
Saillant.		Saliant.
Saints, *Maſs of.*		Mass.
Saints, *Suffrages of.*		Suffrage.
Saique.		Saick.
Sak.		Sac.
Sal *Enixum.*		Enixum.
Salade.		Salet.
Sale *by Inch of Candle.*		Candle.
Sale, *Bill of.*		Bill.
Sale, *Port.*		Portsale.
Saliens, *punctum.*		Punctum.
Salient, *counter.*		Countersalient.
Saline *Waters.*		Water.
Salique.		Salic.
Sallad.		Salet.
Sallet.		
Salmon *Fiſhery.*		Fishery.
Salpingæus, *Palato.*		Palatosalpingæus.
Salt *Fiſh.*	See	Fish.
Salt *of Lead.*		Lead.
Salt *of Tartar.*		Tartar.
Salt *of Tin.*		Tin.
Saltpetre.		Refining.
Salt, *Spirit of.*		Spirit.
Salt, *Attic.*		Attic.
Salts, *eſurine.*		Esurine.
Salts, *neutral.*		Neutral.
Salt, *white.*		White.
Saltans, *Capra.*		Capra.
Salted *Hide.*		Hide.
Salvage.		Savage.
Salve, *Weapon.*		Weapon-*ſalve.*
Sambucinum, *Acetum.*		Acetum.
Sanctifying *Grace.*		Grace.
Sand, *caſting in.*		Casting.

THE END.